SYM 1A  
NICOTINE MODULATES ACTIVITY OF THE MITOGEN ACTIVATED PROTEIN KINASE (MAPK) SIGNALING PATHWAY IN MOUSE

Darlene H. Brunzell, David S. Russell, Marina R. Picciotto*, Department of Psychiatry, Yale University, New Haven, CT, USA

Nicotine enhances mesocorticolimbic dopamine (DA) activity, and this is thought to underlie its reinforcing properties. Chronic activation of this system is likely to result in altered signaling through intracellular pathways in DAergic brain regions and may be critical in the switch between nicotine reinforcement to dependence. Nicotine has been shown to regulate MAPK activity in culture. In addition, activation of the MAPK signaling pathway may underlie the induction of tyrosine hydroxylase (TH) levels in response to nicotinic receptor stimulation. We examined whether chronic oral nicotine exposure resulted in levels or phosphorylation state of MAPK, CREB, and PYK2, as well as changes in TH, using Western blot analysis. C57Bl/6J mice received either 2 hr or 30 days treatment with 200 μg/ml nicotine in 2% saccharin or saccharin alone in their drinking water. A separate group of animals was withdrawn from nicotine for 24 hr. The ventral tegmental area (VTA), nucleus accumbens (NAC), prefrontal cortex (PFC), and amygdala (AMY) were harvested from mice during the animals’ dark cycle. Nicotine exposure and withdrawal were found to regulate levels of TH as well as levels and activity of MAPK and CREB in PFC, NAC and AMY, but had little effect on VTA. These results suggest that MAPK signaling activity is altered by nicotine exposure downstream of DAergic cell bodies. We hypothesize that changes in this pathway may contribute to the biochemical changes leading to nicotine dependence.

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SYM 1B  
EFFECTS OF NICOTINE ON SIGNALLING PATHWAYS IN RAT BRAIN AND PC-12 CELLS USING cDNA MICROARRAY

Ming D. Li*, Justin K. Kane, Ozlen Konu, Jennie Z. Ma, Ju Wang, Xiaoyuan Xu and Shirley Shi, Department of Psychiatry, The University of Texas Health Science Center, San Antonio, TX 78229

Even though nicotine has been shown to modulate mRNA expression of a variety of genes, a comprehensive high-throughput study of the effects of nicotine on brain tissue or cell-specific expression profiles has been lacking in the literature. During the past couple of years, our laboratory has been using cDNA microarray technique to determine how genes may response to nicotine in rat and PC-12 cells with the aim to identify novel genes and biochemical pathways that are regulated by nicotine. In this presentation, we will first present some of our recent findings and their significance to biological effects to each region in response to nicotine. Second, we will describe several newly identified biological pathways in our laboratory that are potentially involved in nicotine addiction and neurodegenerative diseases. Although it is still in the early stages of microarray research on the neurological effects of nicotine, recent findings from our laboratory and others suggest that such a systematic approach may eventually lead to insights behind questions that have not been able to be answered using conventional molecular techniques. Through the identification of novel gene set in the context of their signaling pathway, we are beginning to decipher the genes within a pathway that may be responsible for certain effects of nicotine in specific areas of the brain or cells. Eventually, we hope this type of global approach will lead to a better understanding of how nicotine is changing the fundamental signaling processes of the brain.

Supported by NIH grants DA-12844 and DA-13783.

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SYM 1S  
CHANGES IN GENE EXPRESSION IN RESPONSE TO NICOTINE: MOLECULAR AND GENETIC APPROACHES

David J. Vandenberghe*, Pennsylvania State University, Marina R. Picciotto, Yale University School of Medicine, Ming Li, University of Texas Health Science Center at San Antonio, Jerry Stitzel, University of Michigan

The brain responds to nicotine with a wide range of changes at the gene, protein, cell, and systems levels. Analysis of adaptations to chronic nicotine exposure may reveal much about the underlying physiology that leads from adolescent smoking to long-term tobacco addiction, sex-differences in smoking-related behaviors, and difficulty in quitting smoking. The use of animal models affords the chance to bring analysis to very specific levels of genetic and/or environmental manipulation up to global levels of analysis of thousands of genes that act on multiple systems within the brain. Dr. Marina Picciotto will describe experiments on regulation of the MAP kinase signaling pathway in mesocorticolimbic pathways in the mouse. Dr. Ming Li will explore the effects of nicotine on second messenger pathways of the neuron by using a cDNA microarray approach. Dr. David Vandенbergh will compare differences in male and female responses to nicotine exposure in urology by analysis of transcription at a genome-wide level. Dr. Jerry Stitzel will describe Quantitative Trait Locus and candidate gene approaches to identify genes that may play a role in nicotine preference in mice.

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SYM 1C
SEX DIFFERENCES IN GENOME-WIDE TRANSCRIPTIONAL RESPONSE TO NICOTINE EXPOSURE IN UTERO

David J. Vandenbergh*, Jessica Mong*, Laura Cousino Klein*, Michele M. Stine*, Donald Pfaff†, George P. Vogler*, Francesca Callegari, and Francesca Chiaromonte†; 1Pennsylvania State University, and 2Rockefeller University

Nicotine, like other drugs of abuse, can regulate gene expression in the brain. This knowledge has come one gene at a time, from which it is difficult to detect broad patterns and trends that might indicate which regulated genes are relevant to behaviors associated with the drug. Microarray experiments of gene expression have the ability to analyze thousands of genes simultaneously, allowing a view of a genetic response to nicotine from a new vantage point. We have collected brain RNA from one-day old mouse pups that had been exposed to nicotine in utero by administering the nicotine to the mothers in their drinking water. Microarray results indicate that roughly 40% (5,000 out of 12,400) of genes examined are expressed in the three brain regions tested, including the Nucleus Accumbens, Precoptic Area, and Medial Basal Hypothalamus. We analyzed the fold change in gene expression levels in the presence of nicotine compared to absence of nicotine. These expression ratios cause the experiments to cluster with sex as the main factor. Secondary clusters are based on region. Thus, nicotine causes greater differences between sexes than between brain regions. Nicotinic acetylcholine receptors are expressed in many areas of the brain and activation of these receptors is central to many brain functions. Nicotine may be exerting relatively consistent changes in gene expression from region to region, but changes that are distinct to each sex.

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SYM 1D
MOLECULAR GENETIC ANALYSIS OF NICOTINE ORAL-SELF SELECTION IN MICE

Jerry A. Sitzel*, Ph.D., Xiaochun Li, M.D., Meeghan Lautner, B.S., Paul Jenkins, B.S., and Mark Karadshshe, University of Michigan, Ann Arbor, MI

Like smoking behavior in humans, acute and long-term responsiveness to nicotine in experimental organisms are complex traits influenced by both environmental and genetic factors. Utilizing experimental organisms to discover those genes that influence individual variability in initial sensitivity to nicotine and to identify gene expression changes resulting from exposure to nicotine should result in a better appreciation for the biological underpinnings of nicotine addiction. Among the nicotine-related behaviors influenced by genetic factors in mice is nicotine oral self-selection. This behavior has many features in common with smoking including free-choice consumption during the normal awake cycle, self-dosing and individual variability in the level of nicotine consumption. We have begun efforts to identify genes that influence individual variability to this measure of nicotine responsiveness in mice. Phenotyping, quantitative trait loci mapping and candidate gene analysis is being conducted in F2 generation mice derived from the inbred mouse strains C57Bl/6J and C3H/HeJ. Consistent with what has been observed in similar studies of drug consumption in mice, initial results indicate that there are sex differences in nicotine consumption. Female mice exhibit greater nicotine consumption than their male counterparts. In addition, single-point analysis indicates that the association of several microsatellite marker and candidate gene alleles is sex-dependent. Updates on these preliminary findings and the results of a genome-wide scan to identify quantitative trait loci will be presented.

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SYM 2S
DENICOTINIZED OR NICOTINE-FREE CIGARETTES AS RESEARCH AND TREATMENT TOOLS

Jed E. Rose*, Ph.D., Wallace B. Pickworth, Ph.D., Kenneth A. Perkins, Ph.D., Laura Juliano, Ph.D., Neal L. Benowitz, M.D.

Nicotine is generally considered to be the main addictive agent in tobacco. Therefore, an important manipulation in laboratory and treatment studies has been to present cigarettes that do not contain significant quantities of nicotine. Denicotinized or nicotine-free cigarettes are useful in elucidating the effects of nicotine on smoking behavior, craving and other withdrawal symptoms. Moreover, these cigarettes might have promise as a tools for reducing nicotine dependence in preparation for smoking cessation. The speakers will present data from laboratory and field studies of various types of cigarettes having selective reductions in nicotine content. Dr. Pickworth will discuss the use of the balanced placebo design in smoking research, and will also describe male-female differences in response to nonpharmacologic smoking cues. Dr. Juliano will present data on the responses to denicotinized and nicotine-containing cigarettes after a period of smoking abstinence. Dr. Rose will describe results of a study using nicotine-free cigarettes as an extinction tool to promote smoking cessation. Dr. Benowitz will serve as a discussant, commenting on the studies and their potential implications for tobacco regulation.

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SYM 2A
PLACEBO EFFECTS OF SMOKING

Kenneth A. Perkins*, Ph.D., University of Pittsburgh

Reinforcement of smoking behavior is critically dependent on nicotine delivery. However, non-pharmacological aspects of smoking may be at least as important, under some circumstances. Denicotinized (i.e. “placebo”) cigarettes are an invaluable tool in controlled examinations of many of these aspects, notably non-nicotine cues associated with smoking and the effects of “expectancies”. This presentation will first provide an overview of concepts and designs in placebo research, emphasizing the balanced-placebo design. The few relevant studies specifically testing placebo effects in smoking will be briefly discussed. Then, recent research on the influence of smoking cues and expectancies from the author’s lab, using ultra-low or denicotinized cigarettes, will be presented. This research has shown that women are more responsive to smoking-associated cues and less responsive to nicotine dose of cigarettes, relative to men. We have also found that instructions concerning the nicotine content of a cigarette, which alter subjects’ expectancies regarding the cigarette, can influence several subjective effects of smoking (e.g. “liking”, “how much nicotine”) independently of the actual nicotine content of the cigarette. Research of this type can identify the often-overlooked non-pharmacological sources of reinforcement due to smoking, thus aiding efforts to counter this reinforcement and improve interventions for cessation.

Supported by NIDA grant DA12655.

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SYM 2B  SUBJECTIVE AND PHYSIOLOGICAL REACTIONS TO SMOKING A NICOTINE OR DE-NICOTINIZED CIGARETTE AFTER A BRIEF PERIOD OF ABSTINENCE

Laura M. Juliano, Ph.D.*, and Maxine L. Stitzer, Ph.D., The American University and Johns Hopkins University School of Medicine

Analogue models of smoking cessation and relapse allow for controlled examination of addiction processes, such as lapse-relapse mechanisms. We developed an analogue model of quitting and relapse that involved a 10 day “practice” quit attempt. After the first 4 days of biologically confirmed abstinence, participants smoked either a cigarette with standard nicotine content or a de-nicotinized cigarette in a double-blind fashion. Immediate subjective and physiological reactions to the cigarettes were assessed. This paper will review original data on post-abstinence differential reactions to nicotine and de-nicotinized cigarettes on dimensions such as craving, withdrawal, mood, cigarette ratings, and heart rate. The role of such reactions as potential mediators of smoking relapse will be discussed.

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SYM 2D  NICOTINE-FREE CIGARETTES AS WEANING TOOLS IN SMOKING CESSATION TREATMENT

Jed E. Rose, Ph.D.*, and Frederique M. Behm, Duke University

A study will be described employing nicotine-free cigarettes, manufactured from genetically modified tobacco, as a treatment to reduce nicotine dependence and facilitate smoking cessation. Ninety smokers, including equal numbers who smoke mentholated and regular brands of cigarettes, are randomly assigned to three groups. Groups 1 and 2 gradually introduce nicotine-free cigarettes as they reduce the number of usual-brand cigarettes smoked daily. One group wears nicotine skin patches and the second group receives placebo patches, to determine whether nicotine replacement eases the transition to nicotine-free cigarettes. Group 3 receives cigarettes in which the nicotine content of the tobacco is gradually reduced over 4 weeks. After smoking the nicotine-free cigarettes for up to six weeks, all subjects are instructed to reduce the number of cigarettes to zero over three weeks. Compliance, withdrawal symptoms, Fagerstrom dependence scores and abstinence will be compared between the three groups and between menthol and non-menthol smokers.

Supported by an unrestricted donation from Vector, Inc.

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SYM 2C  EFFECTS OF DENICOTINIZED PLACEBO CIGARETTES (DC) IN SMALL SAMPLE LABORATORY STUDIES

Wallace B. Pickworth, Ph.D., NIDA Intramural Research Program, Baltimore, MD

Although there is a documented association between plasma nicotine levels and smoking behavior, recent studies indicated that placebo, denicotinized cigarettes (DC), reduced craving and symptoms of tobacco withdrawal. Several small-sample within-subject studies have reported that DC are useful in distinguishing the effects of smoke-delivered nicotine from other components of tobacco smoke and the behavioral process of smoking. This presentation will contrast physiologic and subjective effects of acute administration of DC and conventional cigarettes. In some studies, a single acute administration of DC were compared in a within-subject spaced smoking study. In others, DC and conventional cigarettes were compared in a within-subject spaced smoking study. In another study, the effects of DC in a rapid smoking procedure were compared to effects of conventional cigarettes. The results of these studies indicate that physiologic effects of smoking (e.g., increased heart rate and EEG changes) are mediated through the delivery of nicotine; whereas subjective effects such as diminished tobacco craving may be related to the behavior of smoking and cues associated with the process of smoking. The implication of these results are discussed in terms of the process of smoking and the importance of the placebo in smoking research. The ideal placebo cigarettes, advantages and disadvantages of the available products will be discussed.

Supported by NIDA Intramural Research Funds.

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SYM 3S  INNOVATIVE APPROACHES TO YOUTH TOBACCO CONTROL

Kenneth E. Warner, Ph.D.*, University of Michigan, Melanie Wakefield, Ph.D., The Cancer Council Victoria, Jack E. Henningfield, Ph.D., Johns Hopkins University, Robin Mermelstein, Ph.D., University of Illinois at Chicago, Matthew C. Farrelly, Ph.D., Research Triangle Institute, Annice Kim, M.P.H., University of North Carolina

Several approaches to youth tobacco control have been employed for decades, with research having developed considerable understanding of whether or not they are effective, and if so, to what extent and under what circumstances. Examples include taxation, school health education, and enforcement of minimum-age-of-purchase laws. Despite the effectiveness of some approaches, youth smoking rates remain high, ensuring a steady flow of new smokers to replace adult smokers who quit or die. Selected states and communities, as well as national public health organizations, are experimenting with novel interventions intended to reduce the rate of smoking initiation by each new generation. This symposium identifies these innovative approaches and assesses what is known to date about their effectiveness, what needs to be learned (and how), and whether each represents an approach worthy of further exploration. The innovations of interest include the following: teen penalties for possession; new regulatory approaches, primarily related to the marketing of potentially reduced-exposure products; teen-specific methods of cessation; novel use of the media and marketing; and the use of the Internet. Preparation of each of the papers presented in this symposium was supported by an honorarium provided by the organizers of the July 8-11, 2002 invitational conference on Innovations in Youth Tobacco Control, funded by the Robert Wood Johnson Foundation, the University of Michigan Tobacco Research Network, and a private grant from Ted Klein.

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SYM 3A  TEEN PENALTIES FOR TOBACCO POSSESSION, USE AND PURCHASE: EVIDENCE AND ISSUES

Melanie Wakefield, Ph.D.*, The Cancer Council Victoria, and Gary Giovino, Ph.D., Roswell Park Cancer Institute

During the past decade, there has been an unprecedented increase in the number of U.S. states and counties that have passed youth tobacco possession, use, and purchase (PUP) laws. By 2001, only six states and the District of Columbia did not have a PUP law. Over two-thirds of states with PUP laws authorize penalties in addition to a monetary fine, such as suspension from school, denial of a driver’s license, or attendance at an education class about smoking. There are few empirical studies relating PUP laws to change in youth smoking. Collectively, they provide little support for the notion that such laws produce substantial effects. In addition, there are theoretical, practical, and strategic reasons to suspect that PUP laws will not be able to significantly impact youth smoking at the population level. Theoretically, PUP laws lack important features required for punishment to be effective, including the low likelihood of detection and punishment. Practically, developing the resources to effectively enforce PUP laws is a serious challenge, and the addictiveness of smoking raises the question of whether punishment is the right approach. Strategically, PUP laws may divert policy attention from effective tobacco control strategies, relieve the tobacco industry of responsibility for its marketing practices, and reinforce the industry’s claim that smoking is for adults only. Supporting continuation of the laws is their popularity with the public and the opportunity cost for the time and complex public education effort it would take to overturn them.

This study was supported by an honorarium received from the organizers of the Innovations in Youth Tobacco Control Conference, held in Santa Fe, NM, July 8-11, 2002.

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SYM 3B  REDUCING ADDICTION AND OTHER TOBACCO-CAUSED DISEASES IN THE YOUNG THROUGH HARM REDUCTION AND ITS REGULATION

Jack E. Henningfield, Ph.D.*, Johns Hopkins University, Eric T. Moolchan, M.D., National Institute on Drug Abuse, and Mitchell Zeller, American Legacy Foundation (at the time the paper was written)

Harm reduction products hold the potential of reducing the exposure of smokers to deadly tobacco toxins. Whether the advent of an active harm reduction market would achieve this goal, or would exacerbate health damage, is unknown. Even less clear is the impact that harm reduction would have on young people. Whereas most of the adults who might try harm reduction products would be likely to be addicted cigarette smokers, children otherwise unexposed to nicotine might experiment with new-generation products. Essential in understanding the effect of harm reduction on youth is the development of a scientific foundation for predicting youth tobacco use trajectories. Could ostensibly lower-risk products entice children into experimenting with and, in many instances, becoming addicted to nicotine? Might such children eventually “graduate” to smoking conventional cigarettes? Harm reduction could either reinforce the prevention and cessation messages of tobacco control or conflict with them. Crucial to controlling the influx of new harm reduction products, and to maximizing their public health benefit, is enhancing federal authority to regulate all tobacco and nicotine-yielding products. Conducting research to scientifically evaluate the effects of harm reduction products, already difficult in the adult population, would face additional barriers with regard to youthful consumers, including legal and ethical restrictions on such research.

This study was supported by an honorarium received from the organizers of the Innovations in Youth Tobacco Control Conference, held in Santa Fe, NM, July 8-11, 2002. Henningfield works with Pinney Associates, a firm with a pharmaceutical company as one of its major clients.

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SYM 3C  TEEN-SPECIFIC APPROACHES TO SMOKING CESSATION

Robin Mermelstein, Ph.D., University of Illinois at Chicago

Interest in smoking cessation for adolescents has increased dramatically as researchers and practitioners have acknowledged the high rates of adolescent smoking and the low probability that adolescents who are regular smokers will quit on their own. In 2001, 19.0% of 12th graders were daily smokers and 10.3% smoked at least half a pack a day. Evidence indicates that a substantial proportion of adolescent smokers are dependent on nicotine, even before they become daily smokers. Published empirical studies on adolescent smoking cessation interventions number fewer than 50, with only 15 having employed randomized, experimental designs. The studies are plagued by multiple methodological problems. A recent literature review concluded that cessation success rates in intervention conditions were almost double those of controls, with the former achieving an immediate post-intervention quit rate of 14%, a rate substantially below that of adults in cessation trials. Other researchers have drawn more guarded conclusions, finding it premature to identify any “best practices” per se. Cognitive-behavioral approaches that emphasize skills training and self-management approaches may hold promise. Two studies using pharmacological approaches (the nicotine patch) achieved extremely low success rates (4-5% abstinence at six months). Youth smokers undoubtedly face unique challenges with regard to quitting, including their relative lack of self-regulation skills and the emotional turmoil in their lives. The issue of confidentiality may be particularly important for youth. Clearly, there is room for substantial improvement in the adolescent smoking cessation field. Intervention strategies that have worked well with adults do not necessarily generalize to adolescents. Future interventions must better reflect the unique characteristics of adolescence as a developmental phase.

This study was supported by an honorarium received from the organizers of the Innovations in Youth Tobacco Control Conference, held in Santa Fe, NM, July 8-11, 2002.

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SYM 3D  FUTURE DIRECTIONS IN TOBACCO COUNTERMARKETING MASS MEDIA CAMPAIGNS

Matthew C. Farrelly, Ph.D.*, Jeff Niederdeppe, M.A., and Jared Yarsevich, M.A., Research Triangle Institute

At both the state and national levels, tobacco countermarketing mass media campaigns have become part of the tobacco control landscape. Campaigns specifically directed at curbing youth smoking have been center stage in many of these efforts. Given the frequency of mass media campaigns over the past 35 years, it is perhaps surprising that there is only limited evidence that countermarketing is a cost-effective strategy in isolation. The one exception with regard to youth smoking is the successful Florida “truth” campaign. More generally, however, experimental work has found that mass media campaigns are most effective when complemented with a school- or community-based program. The experiences of California and Massachusetts, each possessing a well-funded comprehensive tobacco control program, support the view of CDC that states should mount comprehensive programs, including media countermarketing campaigns. State and national campaigns have been characterized by a wide diversity of themes and strategies. Counter-industry and branding approaches are fashionable based on the experimental literature and results from recent campaigns (Florida and Minnesota). However, most states have employed a variety of thematic material. Messages depicting the consequences of smoking, de glamorization themes, and the use of role models characterize many of the campaigns. More research is needed on the effects of message type, emotional content, and production features. More generally, given the heavy reliance on mass media countermarketing campaigns, a better understanding of their effectiveness is vital to the cost-effective deployment of tobacco control resources in the future.

This study was supported by an honorarium received from the organizers of the Innovations in Youth Tobacco Control Conference, held in Santa Fe, NM, July 8-11, 2002.

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SYM 3E

THE POTENTIAL OF THE INTERNET AS A MEDIUM TO ENCOURAGE AND DISCOURAGE YOUTH TOBACCO USE

Annice Kim, M.P.H.*, and Kurt M. Ribisl, Ph.D., University of North Carolina

Although the impact of the Internet on tobacco use behavior among youth has probably been modest to date, new media will likely have a greater impact in the future. The Internet is fast becoming a new battleground between tobacco control advocates and tobacco companies and other pro-tobacco forces. In 1997 an Internet search found just over a dozen sites that sold tobacco. In January 2002, 195 were identified. Typical age verification practices are inadequate to prevent tobacco sales to minors. One online tobacco purchase survey found that over 90% of Internet vendors sold cigarettes to youth. However, only a very small fraction of youth smokers (1-2%) report purchasing cigarettes from the Internet. Barriers include 1-5 carton minimum purchase requirements, difficulty hiding deliveries from parents, and lack of credit cards for payment. These barriers do not ensure that Internet sales will not pose a problem in the future. Of greater public health concern is the emergence of hundreds of Web sites and chat rooms that glamorize smoking. Sites depict celebrity smokers and discuss smoking in movies. Chat rooms and teen smoking Web sites provide ample advice on smoking. Little is known about whether youth are visiting these sites and what impact they might have. Online grassroots antismoking advocacy efforts are in their infancy. Many countermarketing sites exist, although their impact is unknown as well. Future research should monitor both pro- and anti-smoking Internet content and attempt to develop methods to assess its impact on youth smoking behavior.

This study was supported by an honorarium received from the organizers of the Innovations in Youth Tobacco Control Conference, held in Santa Fe, NM, July 8-11, 2002.

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SYM 4A

SEX DIFFERENCES IN TOBACCO WITHDRAWAL: INTERACTIONS WITH ALCOHOL AND DEPRESSION DIAGNOSES

Sherry A. McKee, Ph.D.*, Paul Maciejewski, Ph.D., Suchitra Krishnan-Sarin, Ph.D., Carolyn M. Mazure, Ph.D., and Stephanie O’Malley, Ph.D., Yale University School of Medicine

Problematic alcohol use and depression are two psychiatric diagnoses that are highly comorbid with tobacco use and predict negative smoking cessation outcomes. Nicotine withdrawal symptoms are more severe in persons with a depression diagnosis, however, this has yet to be investigated in persons with an alcohol diagnosis. Additionally, there has been little investigation examining possible interactions of psychiatric status and sex with regard to nicotine withdrawal. Using population based data from the National Comorbidity Survey (NCS), we investigated whether sex differences exist in self-reported tobacco withdrawal symptoms and whether such differences interacted with an alcohol or depression diagnosis. We investigated differences in the number of quit attempts, occurrence of withdrawal symptoms, length and recurrence of withdrawal symptoms, and relapse due to withdrawal symptoms in 186 nicotine dependent adults who had attempted to quit at least once in their lifetime. The sample was stratified on diagnoses of lifetime depression (26.9% women, 18.8% men) and lifetime alcohol abuse or dependence (22.9% women, 39.7% men). There were no main effects of sex or depression on indices of withdrawal, however, the presence of an alcohol diagnosis minimized the occurrence of withdrawal symptoms in both women and men. Women with an alcohol diagnosis experienced withdrawal symptoms for an increased duration but had a reduced likelihood of relapsing due to withdrawal symptoms. A depression diagnosis exacerbated nicotine withdrawal in women only. Interactions of sex differences and other psychiatric comorbidities (e.g., anxiety spectrum disorders) on indices of withdrawal also will be presented.

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SYM 4B

ACUTE TOBACCO ABSTINENCE EFFECTS IN ADOLESCENTS: INFLUENCE OF SEX

Suchitra Krishnan-Sarin, Ph.D.*, Dana Cavallo, M.S., Sherry McKee, Ph.D., Tony P. George, M.D., Yale University School of Medicine

Understanding factors that mediate maintenance of smoking in adolescents is an important step towards developing better treatment options. While it has been suggested that acute tobacco withdrawal symptoms may be responsible for maintaining smoking in adult smokers, there is limited information on the effects of acute tobacco abstinence in adolescent smokers. This study provides a preliminary prospective evaluation of tobacco abstinence including changes in mood, nicotine withdrawal, craving for cigarettes as well as alterations in cognitive and stress responses in male and female adolescent smokers. Smokers (n=45) and nonsmokers (n=44) participated in a 48-hour inpatient session at the YNHH-CCRC, during which smokers were required to be abstinent from tobacco. Subjects were assessed repeatedly using several withdrawal and mood measures as well as cognitive tasks, psychological and physiological stressors. Data indicate that during acute tobacco abstinence, female smokers had significantly lower pain tolerance and experienced time-dependent decreases in cognitive responses, when compared with male smokers and with male and female nonsmokers. Male smokers experienced decrements in cognitive and stress responses, but these effects were not as great as those seen in female smokers. Results from evaluations of nicotine withdrawal symptoms and mood changes will also be presented. These preliminary data suggest that adolescent smokers experience abstinence effects when they quit smoking; however, there are significant sex differences in these tobacco abstinence effects that could mediate differences in ability to quit as well as relapse to tobacco use.

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SYM 4S

SEX-SPECIFIC EFFECTS IN NICOTINE WITHDRAWAL: THE ROLE OF PSYCHIATRIC, COGNITIVE, AND HORMONAL FACTORS

Co-Chairs: Stephanie S. O’Malley, Ph.D., and Marina Picciotto, Ph.D., Yale University School of Medicine; Discussant: Kenneth A. Perkins, Ph.D., University of Pittsburgh; Presenters: Sherry A. McKee, Ph.D., Suchitra Krishnan-Sarin, Ph.D., Yale University, Cynthia Pomerleau, Ph.D., and Sharon Allen, Ph.D.

Understanding the effects of nicotine withdrawal is crucial to developing effective smoking cessation and relapse prevention strategies. Increasing retrospective and prospective data suggest that there are differences in withdrawal between males and females which may be key to tailoring such interventions. Dr. Sherry McKee will present population data highlighting the importance of interactions between sex and psychiatric diagnosis on indices of nicotine withdrawal in adult smokers. Dr. Suchitra Krishnan-Sarin will present evidence on withdrawal in adolescent smokers; prospective data from an inpatient abstinence study highlighting sex-specific changes in mood, nicotine withdrawal symptomatology, craving, as well as cognitive and stress responses, will be presented. Dr. Cynthia Pomerleau will provide retrospective and prospective data examining sex differences in the emergence of depressed mood during withdrawal. Dr. Sharon Allen will present data examining menstrual cycle and hormonal effects on withdrawal symptomatology and relapse to smoking. Dr. Kenneth Perkins will moderate questions and discussion from the audience, as well as discuss ideas for future research.

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DEPRESSED MOOD AS A WOMEN’S WITHDRAWAL SYMPTOM

Cynthia S. Pomerleau, Ph.D.*, Ann M. Mehringer, M.S., Sandy M. Snedecor, M.S., and Ovide F. Pomerleau, Ph.D.; Univ. of MI Dept. of Psychiatry, Ann Arbor, MI, USA

Depressed mood as a withdrawal symptom or abstinence effect is in some ways in a class by itself. It is not a common symptom, emerging in only around 20% of quitters, and prior to DSM-IV, it wasn’t even part of the pantheon of DSM withdrawal symptoms. Moreover, it is the only withdrawal symptom that is consistently associated with poorer cessation outcomes. We have previously reported that depressed mood is significantly more likely to emerge upon abstinence in individuals with a diathesis for depression, and that in a sample of women quitters, those with elevated depression scores prior to quitting were likely to report more severe and persistent depressed mood upon abstinence than those with lower depression scores. To determine whether there were gender differences in the rate of retrospectively assessed DSM-IV withdrawal symptomatology over and above those that might be expected because of differential prevalence of co-factors, we studied a community-based sample of men (N=76) and women (n=83) smokers, matched for age, race, and degree of dependence, from which all individuals with elevated scores on baseline measures of depression and disordered eating (“women’s disorders”) were excluded. There were no significant sex differences for any symptom except depressed mood (4% among men, 17% among women; p<.01). These findings raise the possibility that the poorer cessation rates often observed for women in smoking cessation trials may be attributable in part to the greater likelihood of depressed mood as a withdrawal symptom, even in smokers without elevated baseline levels of depression. Prospective data on depressed mood as a withdrawal symptom collected in a laboratory setting will also be presented and discussed.

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INFLUENCES OF HORMONES ON PHYSICAL DEPENDENCE AND RELAPSE

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This paper presents current knowledge about effects of ovarian hormones on smoking behavior, nicotine withdrawal symptoms, and relapse in women. Investigative studies are presented on effects of menstrual phase and hormone replacement therapy in reproductive and postmenopausal women, during short-term smoking cessation and for women using placebo or transdermal nicotine patch. Preliminary studies on menstrual phase effect on relapse is also presented. Smoking behavior remained stable across the menstrual cycle and was not affected by HRT use. For the inpatient menstrual study, withdrawal symptoms were not affected by cycle phase during short-term smoking cessation. In a second outpatient menstrual study, women on transdermal nicotine had diminished nicotine craving and premenstrual pain and water retention symptoms and this effect was greatest in the late luteal (LL) phase. In the postmenopausal study exogenous hormones did not have a differential effect on withdrawal symptoms but had an unexpected effect on depressive symptomatology where Beck Depression Scores increased in women on HRT during short-term smoking cessation. In a second study, where postmenopausal women used placebo or active patch, craving scores were diminished in women on HRT and active patch. Preliminary studies on menstrual phase effects on relapse using transdermal nicotine patch showed that women are more likely to relapse when quitting in the LL verses the F phase. These overall results suggest that ovarian hormones may play a role in physical dependence of nicotine in women and will be discussed in the context of the current literature on hormonal influence on nicotine response and clinical implications for improving smoking cessation efforts for women.

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TOBACCO TREATMENT EVALUATION: ACHIEVING TRANSDISCIPLINARY INTEGRATION

Timothy B. Baker*, Ph.D., University of Wisconsin; Dorothy Hatsukami, Ph.D., University of Minnesota; Caryn Lerman, Ph.D., University of Pennsylvania; Stephanie O’Malley, Ph.D., Yale University; Alexandra Shields, Ph.D., Georgetown University; and Michael Fiore, M.D., M.P.H., University of Wisconsin

Transdisciplinary research involves the use and integration of measures and methodologies across diverse response systems and levels of analysis (e.g., subcellular to social) and optimally, integration is achieved at a theoretic as well as a methodologic level. Transdisciplinary research on tobacco cessation treatment poses special challenges since treatments may be evaluated across many dimensions or facets. For instance, treatments may be evaluated with respect to their attractiveness to the target population, their impacts on process measures, as well as their impacts on proximal and ultimate outcomes. Moreover, these effects may be influenced by individual differences and contextual factors. This complexity allows ample opportunity for the integration of diverse research disciplines, with the integration yielding new measurement models, new constructs to be targeted, or new synthetic theories. In this presentation a model is offered that can be used to guide and appraise treatment evaluation, and explore opportunities for transdisciplinary collaboration and integration. The individual talks will address how different Transdisciplinary Tobacco Use Research Centers (TTURC’s) attempt to adopt a transdisciplinary approach to tobacco treatment research. Dorothy Hatsukami, University of Minnesota TTURC, will address research aimed at harm reduction treatment approaches. Caryn Lerman, University of Pennsylvania, TTURC will address genetic predictors and mechanisms of response to bupropion treatment. Stephanie O’Malley, Yale University, will address naltrexone treatment as it affects smoking and alcohol use and their reciprocal relations. Finally, Timothy Baker, University of Wisconsin TTURC, will discuss attempts to validate a transdisciplinary model of nicotine dependence using treatment outcome data.

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TRANSDISCIPLINARY TREATMENT RESEARCH: UNIVERSITY OF WISCONSIN

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The University of Wisconsin TTURC is using transdisciplinary strategies to investigate treatment effects and to characterize individual differences that are thought to affect treatment response. We will present plans for using diverse methods to accomplish these goals, and will also present preliminary data from these research efforts. We will discuss the use of a novel assessment of nicotine dependence as well as the use of effective measures to explore individual differences that may moderate treatment effects. The dependence measure arises from psychometric research designed to assess nicotine dependence as a multidimensional construct, with its defined dimensions arising from diverse literature/disciplines (e.g., neuropharmacology, behavioral economics, motivational theory). Plans for the construct validation of the dependence measures will focus on the use of psychopharmacologic and behavioral economic measures, and upon the ability of the dependence measure to predict relapse, self-administration of nicotine and withdrawal severity. Individual differences related to negative affect are assessed via specific genotypes, structured interviews, and trajectories of affective symptoms collected via real-time data acquisition. Both dependence and affective measures will be related to response to both psychosocial and pharmacologic treatments. These research efforts will be discussed in terms of opportunities and challenges posed by transdisciplinary research.

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SYM 5B  TOBACCO EXPOSURE REDUCTION: IS IT FEASIBLE?  THE UNIVERSITY OF MINNESOTA TTURC

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

Harm or tobacco toxin exposure reduction is a potential method for intervention. The concept of harm reduction is not new. The introduction of filter and low tar and nicotine exposure cigarettes was initially considered to potentially reduce, although not eliminate harmful effects on health. Unfortunately, these cigarettes may in the long run have contributed to public health harm. The lessons learned from this experience include the importance of carefully examining the characteristics and motivations of smokers who seek these methods, human smoking behavior and consequent biological exposure to tobacco toxins, the impact on public perceptions on perceived safety of these methods and consequent effects on quitting behavior or reuptake of smoking. Using the treatment evaluation model presented by Dr. Baker, this presentation will explore some of these issues. A study comparing the "smoker population" that expresses interest in a reduced toxin exposure approach vs. cessation will be described. This study showed that smokers interested in reduction of smoking are more highly dependent and experiences greater health and emotional disorders than smokers interested in cessation. The characteristics of these smokers may have implications on the feasibility of using a harm reduction method in a population that is already experiencing medically compromised conditions. In addition, data will be presented on an "intervention method" that targets sustained cigarette reduction and examines its perceived effects on health, motivations to quit and actual quit attempts. Biomarkers for tobacco related constituents and cardiovascular risk factors will also be presented and implications for health care programs and policies will be discussed.

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SYM 5C  GENETIC APPROACH TO SMOKING CESSATION TREATMENT: THE UNIVERSITY OF PENNSYLVANIA/ GEORGETOWN UNIVERSITY TTURC

Caryn Lerman, Ph.D., University of Pennsylvania

Data from animal and human twin studies have established that smoking behavior is, in part, heritable. With advances in molecular genetics, recent studies have sought to identify specific genes associated with different smoking phenotypes. Initial studies have found associations of smoking behavior with genes involved in the catecholamine pathways, supporting a more general genetic susceptibility to addictive behavior. Other studies have provided evidence relating smoking behavior to genes in pathways that are more specific to nicotine, such as nicotine metabolism and receptor polymorphisms. The emerging field of pharmacogenetics has the potential to advance the science of nicotine addiction and smoking cessation treatment by generating new knowledge about genetic factors that influence clinical treatment outcome. Inherited differences in drug metabolism and drug targets may have important effects on treatment toxicity and efficacy. Using a treatment evaluation framework, this presentation will present data on a pharmacogenetic approach to smoking cessation treatment. Genetic and non-genetic data were collected from participants in a randomized placebo-controlled trial of bupropion. The results have shown that the polymorphic CYP2B6, implicated in bupropion and nicotine metabolism, is associated significantly with smoking cessation. Such effects appear to be mediated, in part, by inter-individual differences in abstinence-induced smoking urges. In females, bupropion attenuates the genetic disparities in smoking cessation, perhaps by minimizing abstinence symptoms. Additional data from this trial point to an interaction between the dopamine receptor and transporter genes in smoking cessation. However, in this case, a gene x treatment interaction was not detected. Data on other gene variants and implications will be discussed.

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SYM 5D  UNDERSTANDING AND ADDRESSING RISK FACTORS FOR TREATMENT FAILURE: YALE UNIVERSITY TTURC

Stephanie O'Malley, Ph.D., Yale University School of Medicine

Most current smokers are interested in quitting smoking. However, many find it very hard to quit, either failing to try or failing when they make an attempt. An understanding of how treatment response is influenced by individual differences, such as heavy alcohol use and gender, will be important to helping a greater proportion of the remaining smokers quit successfully. This presentation will discuss the design of an ongoing investigation to illustrate how a transdisciplinary approach is being implemented within a single study. This study evaluates the efficacy of naltrexone, a medication approved for alcoholism, to augment the effectiveness of transdermal nicotine replacement. Based on the hypothesis that alcohol and nicotine reinforcement and dependence may involve common endogenous mechanisms (e.g., opioid release), the study also evaluates the extent to which treatment impact is mediated via two distinct mechanisms: reduction in priming effects of smoking vs. reduction in alcohol drinking. In an effort to examine how treatment affects life "broadly conceived," weight gain is an important treatment outcome. The perceived value of hypothetical treatments that increase effectiveness and prevent weight gain are being evaluated using contingent valuation methods, or willingness-to-pay questions. Preliminary results indicate that prevention of weight gain is a highly valued outcome, particularly by women. Conversely, male smokers may benefit particularly from hypothesized effects of naltrexone on alcohol-mediated relapse. Cost-effectiveness and population impacts of the treatment will be estimated to gauge potential societal value.

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SYM 6S  TOWARDS A HEALTH SERVICES RESEARCH AGENDA THAT SUPPORTS THE ADOPTION OF TOBACCO TREATMENT

Paul A. Fishman, Ph.D.*, Group Health Cooperative; Susan J. Curry, Ph.D., University of Illinois-Chicago; Susan H. Swartz, M.D., Maine Medical Center

Smoking cessation programs are the most cost effective health promotion activities available to health plans, and David Eddy suggests that smoking cessation is the gold standard to which other programs should be compared. Compared to other medical treatments, such as those for high cholesterol and hypertension, treating tobacco yields a significantly lower cost per life year saved. However, only 1/3 of US managed care plans provide coverage for tobacco treatments. Furthermore, smokers wishing to use these services are usually subject to copays or deductibles for medication or behavioral therapies, reducing the likelihood they will use these services. One reason for the failure of most US health care plans to provide a comprehensive benefit for tobacco cessation may be that public health and health services research have not developed a common message that merges existing epidemiologic, behavioral and economic evidence supporting broader adoption of tobacco programs. This symposium is designed to help bridge the gap between disciplines engaged in tobacco control research and policy by examining key health service and health policy questions about tobacco control. We will present perspectives from health psychology, economics and clinical practice to propose a research agenda designed to increase the impact of tobacco research on health benefit design and practice. Dr. Susan Curry will examine the elements of a reasonable insurance benefit for smoking cessation. Dr. Paul Fishman will review evidence from 4 studies examining the cost consequences of cessation and the impact that changes in benefit design has on individual smoker's use of cessation services. Dr. Susan Swartz will examine how coding and reimbursement factors serve as additional barriers to providers and practices delivering effective care to patients who smoke.

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Based on a rigorous review of the evidence base for effective smoking cessation treatments, the Public Health Service's Clinical Practice Guideline for the Treatment of Tobacco Use and Dependence recommends that insurers provide coverage for effective behavioral and pharmaceutical treatments and reimburse clinicians for office-based counseling. Implementation of these policy recommendations lags. For example, among health plans responding to a recent survey from the American Association of Health Plans, less than half reported full coverage of either a pharmacotherapy or behavioral program for smoking cessation. Consultation with insurers, including large systems such as the Centers for Medicare and Medicaid Services, the Department of Defense and the Veteran's Administration show consistent challenges to implementing coverage. This presentation synthesizes published and ongoing research on the design and implementation of smoking cessation benefits related to the following key issues: (1) What should a reasonable insurance benefit include? For example, should coverage include both behavioral and pharmacotherapy? Should obtaining pharmacotherapy be contingent on participation in a behavioral program? How many treatments should be covered and over what time period? (2) How much demand for treatment does implementation of coverage create? A key component of this issue is the effect on demand of different strategies for communicating the benefit's existence to both patients and physicians; (3) What constitutes reasonable and feasible reimbursement for office-based counseling? Separate from coverage for state of the art treatments for smoking cessation is the challenge of designing systems for reimbursing clinicians for office-based counseling. Several recent evaluations of reimbursement methods provide insights both to nuts and bolts questions of amount and mechanisms for reimbursement as well as data on the impact of reimbursement on rates of clinician counseling. The presentation will conclude with a proposed transdisciplinary research agenda to inform and accelerate tobacco-related health benefit policy.

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**SYM 7A** ANIMAL MODELS OF SMOKING REDUCTION ACHIEVED THROUGH NICOTINE REPLACEMENT THERAPY

Mark G. LeSage, Ph.D., Daniel E. Keyler, Pharm.D., and Paul R. Pentel, M.D.

Extensive human research has examined the efficacy of nicotine replacement therapy (NRT) as an aid for smoking cessation and, to a lesser extent, reduction. However, few studies have examined NRT using animal models. This presentation will discuss the appropriateness and advantages of nicotine self-administration (NSA) assays in animals for preclinical assessment of medications for smoking reduction, and present an animal model of smoking and NRT as an example. An NSA assay in which rats have 23 h/day access to response-contingent infusions of nicotine (0.01 or 0.03 mg/kg/infusion) has been used to model smoking, and has been shown to produce serum nicotine concentrations and temporal patterns of intake comparable to human smokers. NSA has also been simulated in rats by programmed infusions of nicotine in order to estimate serum nicotine concentrations associated with actual NSA. A range of continuous nicotine infusion rates (1 - 8 mg/kg/day) has been administered to rats concurrently self-administering nicotine in order to model NRT. Continuous nicotine infusion promotes an infusion rate-dependent decrease in NSA, but not responding for other reinforcers. The efficacy of continuous nicotine infusion is directly related to the degree to which it replaces nicotine intake from NSA and matches peak arterial nicotine concentrations during simulated NSA. These findings provide an animal model of smoking reduction by means of NRT and demonstrate quantitative relationships between the efficacy of continuous nicotine infusion and other variables (e.g., serum nicotine concentrations, nicotine intake). The potential relevance of these findings to NRT and smoking reduction in human smokers will be discussed.

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**SYM 7B** BIOMARKERS FOR CARCINOGENESIS BY TOBACCO CONSTITUENTS

Stephen S. Hecht, Ph.D.

Harm reduction strategies can be assessed by measuring the uptake of toxic and carcinogenic constituents in people exposed to tobacco products. This presentation will discuss chemical biomarkers that have been developed to determine human carcinogen uptake. These biomarkers include urinary carcinogen metabolites, binding products (adducts) of carcinogens and their metabolites to blood proteins, and carcinogen-DNA adducts. Reliable assays have been developed for a number of urinary metabolites of tobacco smoke carcinogens. For example, trans, trans-muconic acid has been widely used as an uptake marker for the human leukemogen benzene, 1-hydroxypyrene as an uptake marker for carcinogenic polycyclic aromatic hydrocarbons, and 4-(methylisimidazolino)-1-(3-pyridyl)-1-butanone (NNAL) and its glucuronides as biomarkers for the tobacco-specific lung carcinogen 4-(methylisimidazolino)-1-(3-pyridyl)-1-butanone (NNK) and its glucuronides (NNAL-Glu) for the tobacco-specific lung carcinogen 4-(methylisimidazolino)-1-(3-pyridyl)-1-butanone (NNK). Protein adducts of the human bladder carcinogen 4-aminobiphenyl as well as adducts of related aromatic amines have been widely measured and provide useful dosimetry information. Protein adducts of other carcinogens such as ethylating agents, ethylene oxide, acrylamide, acrylonitrile, benzo[a]pyrene, and tobacco-specific nitrosamines have also been quantified in humans exposed to tobacco products. DNA adducts provide the most direct indication of target carcinogen dose, but are difficult to measure with specificity. Reported adducts include those derived from benzo[a]pyrene, tobacco-specific nitrosamines, methylating and ethylating agents, acrolein, crotonaldehyde, ethylene oxide, 4-aminobiphenyl, and oxidants. Uncharacterized DNA adducts have also been quantified in many studies using non-specific techniques. Overall, certain urinary carcinogen metabolites and hemoglobin adducts appear to be the most practical and reliable measures of human carcinogen uptake for application in studies of tobacco harm reduction.

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**SYM 7C** CORRELATIONS AMONG BIOMARKERS OF TOBACCO EXPOSURE AND THE USE OF THESE MARKERS IN A CIGARETTE REDUCTION TRIAL

Sharon E. Murphy

The use of tobacco-related biomarkers to examine the extent of tobacco toxic exposure is crucial when examining "harm reduction" approaches. Cotinine, the primary metabolite of nicotine is routinely used as a measure of tobacco exposure. However, if nicotine replacement therapies are used concurrently with tobacco use a different measure of tobacco exposure is necessary. One candidate biomarker is the tobacco alkaloid, anatabine. A second is NNAL, a metabolite of the tobacco specific lung carcinogen NNK. In a recent study on the effect of cigarette reduction on tobacco toxins, we monitored the urinary levels of NNAL, anatabine, cotinine and its metabolite trans-3'-hydroxy-NNK. Four independent "baseline" urine samples were obtained from the subjects (n=46) prior to the reduction phase of the study, and the concentration of each biomarker was determined at each time point. None of the four biomarkers correlated with cigarettes per day, all correlated with each other. Total cotinine (free plus glucuronidated) correlated with anatabine (r = 0.599, p <0.0001), and with NNAL (r = 0.683, p<0.0001) and anatabine correlated with NNAL (r = 0.620, p <0.0001). These correlations were consistent for the four baseline samples. Urinary biomarkers were measured throughout the cigarette reduction period of the study. In subjects who successfully reduced cigarette consumption for 12 weeks, the average percent reductions in urinary levels of anatabine and NNAL at week 8 were 53.1% ± 61.5% (n = 42) and 36.3% ± 56.0% (n = 32), respectively. These data suggest that some individuals successfully reduced their exposure to the tobacco carcinogen, NNK, when they reduced their daily cigarette consumption.

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**SYM 7D** TOBACCO REDUCTION: EFFECTS ON RISK FACTORS FOR DISEASE

C.A. Lemmonds, D.K. Hatsukami

Harm reduction is a potential treatment method for tobacco users who are not willing or able to quit. The following two harm reduction approaches were examined: (1) cigarette smokers who reduced their cigarette smoking and (2) smokeless tobacco (ST) users who switched to a low nitrosamine ST or quit using the nicotine patch. In study 1, subjects were assigned to waitlist control or a nicotine reduction treatment group. Reduction treatment consisted of subjects reducing cigarette smoking by 25%, 50%, and 75% in two-week incremental periods. Subjects supplemented their cigarette use with nicotine replacement therapy during the reduction process. Data collection occurred at the end of week 4 (50% reduction) and week 6 (75% reduction). Only those subjects (n=47) who self-reported reducing smoking by at least 40% at week 4 and 70% at week 6 were compared with the waitlist control (n=23). No significant effects were observed between the waitlist control and reduction treatment groups on hemoglobin, blood pressure, heart rate, total cholesterol, LDL, HDL, lipoproteins B, FEVI or WBC. Only lipoprotein A and CO were significantly improved. In study 2, 54 male ST users were randomly assigned to brand switching (snus) or to quit tobacco using the 21 mg nicotine patch (Nicoderm CQ) for a 4-week period. Preliminary analyses show that subjects assigned to the snus treatment group had higher total NNAL levels (a metabolite of the tobacco-specific lung carcinogen 4-(methylisimidazolino)-1-(3-pyridyl)-1-butanone than those assigned to the nicotine patch group.

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SYM 7E  TOBACCO CONTROL OPINION LEADERS’ PERCEPTIONS OF HARM REDUCTION

Anne Joseph, Deborah Hennrikus, Merry Jo Thoele, Dorothy Hatuskami

Tobacco harm reduction is controversial. Perceptions about the risks and benefits of harm reduction approaches will influence future development in this area. Tobacco control opinion leaders in Minnesota working in the areas of public policy, clinical treatment of nicotine dependence and education/youth development participated in nine focus groups in Fall, 2001. Participants discussed their definitions of tobacco harm reduction methods; their risks and benefits; how funds for tobacco control research and programs should be allocated among harm reduction, prevention and cessation; and what needs to be done to ensure that the benefits of harm reduction methods outweigh their risks. Results indicated confusion about the definition of harm reduction. Most groups included a broad range of strategies that extended beyond those typically referenced in the scientific literature. Many participants stated that harm reduction might be beneficial, particularly for smokers who could not or would not quit. Harm reduction was seen as a strategy that might serve as a gateway to cessation. However, most also expressed concern about a number of risks, including delivering a mixed message about tobacco, inadvertently benefiting the tobacco industry and causing unanticipated health effects. Participants were more inclined to suggest public policy measures (e.g., smoking bans, increased taxes) than individual treatment methods as means for reducing harm. Benefits of harm reduction strategies would outweigh risks only if they were part of a comprehensive tobacco control program that targets both the individual and the population. The participants cited a need for research and surveillance to decrease the potential risks of harm reduction and they stressed the importance of dialogue and a unified approach to harm reduction among the tobacco control community.

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SYM 8A  PATTERNS AND PREVALENCE OF SMOKING AMONG WOMEN: CONSIDERATIONS FOR INTERVENTIONS

Robin Mermelstein, Ph.D., University of Illinois at Chicago

Despite increased attention to the problem of women and smoking over the past decade, rates of smoking among women, and especially among young women, remain unacceptably high. This paper will present an overview of the patterns and prevalence of smoking among women, highlighting differences in trends between women and men, and differences among women by ethnic group and age. Possible hypotheses for differential rates and patterns will be posed, with considerations for differences in initiation by gender and ethnic group, maintenance of smoking, development of dependence, profiles of dependence, and cessation and relapse. In addition, methodological considerations for addressing gender differences will be discussed.

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SYM 8B  GENDER-SPECIFIC RESPONSE TO COMBINATION BUPROPION/NICOTINE PATCH/COUNSELING TREATMENT FOR SMOKERS

Lirio Covey*, Rene Laje, Jane Fried, Joshua Berman, Alexander Glassman, Jenny Masmela, Sally Woodring, Cathy LoDuca, Fay Stetner; Columbia University and New York State Psychiatric Institute, New York, NY

A 3-phased trial to examine the efficacy of maintenance pharmacotherapy is ongoing. Phase I is an 8-week open treatment period with bupropion, nicotine patch, and brief counseling. Continuous abstainers during the last 4 weeks of this treatment enter the experimental maintenance period (Phase 2) where they are treated with bupropion, nicotine gum, combined bupropion or nicotine gum, and double placebo, with adjuvant counseling over an additional 16 weeks. Phase 3 is a 6-month no-treatment follow-up phase. Data from the first 200 subjects who completed the open treatment phase offers an early opportunity to examine the effectiveness of the triple-combination treatment across different demographic subgroups. Subject characteristics are: 56% male, mean age = 43.4 (10.5) (range = 21-73); ethnic distribution=19% African American, 65% Caucasian, 12% Hispanic; education=75% college or graduate school level; occupational status=76% white collar; marital status=43% married; sexual orientation=11.5% homosexual; major depression history=18.6%, past alcohol abuse/dependence=11.8%. The mean FTND score was 5.37 (2.1), and the average cigarettes smoked per day (CPD) was 21.6 (10.3) (range =15 to 60). The proportion of 4-week continuous abstainers at the EOT for the total sample was 63%. No statistically significant effect on 8-week abstinence was seen by gender, marital status, sexual orientation, nicotine dependence level (FTND), CPD, past major depression, or past alcoholism; but differences by age, race, and educational level emerged. Gender-specific analysis revealed significantly lowest cessation rates (30-45%) among particular female subgroups (rates not seen among men); those 21-35 yrs, college educated (vs. HS and Graduate School) women, and African-American (vs. Caucasian and Hispanic). While indicating, overall, a high short-term effectiveness of the combination treatment (63%), these data point to particular female smokers subgroups for whom the combination of bupropion, NRT, and counseling appears to have limited effectiveness. Further work with larger samples may clarify putative differences in gender response to smoking cessation treatment.

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SYM 8S  WOMEN, GENDER, AND SMOKING CESSATION

Joy M. Schmitz, Ph.D.*, University of Texas Medical School; Robin Mermelstein, Ph.D., University of Illinois at Chicago; Lirio Covey, Ph.D., Columbia University; Timothy B. Baker, Ph.D., University of Wisconsin; David W. Wetter, Ph.D., University of Texas

Whereas the gender gap in smoking prevalence has narrowed considerably over time, gaps remain in our understanding of differences between women and men in smoking and abstinence. First, there is a lack of data to support the general recommendation that the same smoking cessation treatments are effective for both men and women. Second, to the extent that gender differences exist, little is known about factors that may influence differential response to treatment, although mechanisms related to negative affect, coping styles, and nicotine sensitivity have been hypothesized. Finally, because so few trials have been designed specifically for women, it is difficult to determine whether gender-tailored interventions are needed to improve treatment success in women. The research presented in this symposium will attempt to fill in the gaps in our understanding of women, gender, and smoking cessation. Dr. Robin Mermelstein will introduce the topic with an overview of current population-based data showing trends in smoking and smoking cessation in women and female youth. Dr. Lirio Covey will present data on treatment effectiveness by gender and race, showing interesting differences in response to bupropion, nicotine patch, and counseling. Dr. Timothy Baker will address gender differences using a model-fitting strategy to identify psychosocial predictors of smoking cessation for men and women. Dr. Joy Schmitz will present new research results from a randomized controlled trial evaluating the efficacy of combining behavior therapy and pharmacotherapy for women who smoke. Finally, Dr. David Wetter will describe ecological momentary assessment (EMA) data from a relapse prevention trial and show how this information is useful in differentiating relapse vulnerability among women. The session will conclude with the discussant, Dr. Kenneth Perkins, commenting on the papers specifically, and how recent research from the laboratory may be consistent with the clinical findings from this symposium.

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SYM 8C  AFFECT, RELAPSE, AND GENDER

Timothy B. Baker*, Ph.D., University of Wisconsin, Stevens S. Smith, University of Wisconsin, Megan Piper, University of Wisconsin, Thomas Piatecki, University of Missouri, Douglas E. Jorenby, University of Wisconsin, Claire Schneider, Bates College, and Michael C.Fiore, University of Wisconsin

There is reason to believe that men and women smokers differ with respect to processes involved in nicotine motivation, the impacts of cessation, and response to smoking cessation treatments. Such differences may have both theoretical as well as public health significance. Considerable research over the past 20 years reveals gender differences in affective processing and implicates affective processing in nicotine/smoking motivation. We present the results of two studies that support the central role of affect in smoking relapse, and that point to gender differences in relapse predictors. Specifically, growth curve modeling of withdrawal data show that women (N=438) and men (N=398) smokers report volitive affective/withdrawal symptoms in the postcessation period, and that such symptom volatility predicts 6 mo relapse. These data also show that not only did men have a lower average level of symptoms than did women, but men’s symptoms showed less day-to-day variation. In a second study men (N=266) and women (N=365) smokers were administered self-report measures of affective processing prior to a quit smoking attempt. For all subjects, level of negative affect postquit was a powerful predictor of relapse, but in addition, appraisal dimensions of stress reactivity (attributional style and expectations of stress coping) predicted relapse over and above tonic negative affect. Moreover, the patterns of relations differed for men and women. Gender differences were found with respect to both attributions regarding the causes of stressors, as well as controllability of affect by means of smoking and by other means. This research was supported by the National Institute on Drug Abuse and by the National Cancer Institute.

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SYM 8D  BUPROPION AND COGNITIVE-BEHAVIORAL THERAPY FOR SMOKING CESSATION IN WOMEN

Joy M. Schmitz*, Ph.D., Angela L. Stotts, Ph.D., Patricia S. Hokanson, B.A., Shelly L. Sayre, M.P.H., Katherine DeLaune, Ph.D., University of Texas

The most recent national Clinical Practice Guideline for treating tobacco use and dependence recommends combined behavioral and pharmacological therapies as most effective for smokers in general. For women, however, who tend to quit smoking with more difficulty and less success, different treatment combinations may be more (or less) effective. Some gender data for bupropion suggest that this non-nicotine cessation aid may be more appropriate for women than nicotine replacement medications. If so, it would be important to determine whether the type of behavioral adjunct to bupropion differentially influences its success. In a randomized clinical trial a 2 x 2 factorial design was used to evaluate pharmacological (bupropion vs. placebo) and psychological (cognitive behavioral vs. supportive) therapy in 140 women. Group therapy sessions were conducted over 7 weeks, with medication provided in double-blind fashion. It was hypothesized that the combination of bup 300 mg/d with cognitive behavioral interventions focusing on skills training to cope with stress and negative affect would promote smoking cessation more effectively than the other treatment combinations. The proportion quit (biochemically verified) at end-of-treatment was higher for the bup-CBT combination (45.5%) relative to bup-Sup (31.8%), pla-CBT (35.5%), and pla-Sup (35.0%). Bup-CBT efficacy compared to control groups improved for subjects who were highly compliant with taking the medication. There was less evidence for differentiation among treatments conditions at later time points. Preliminary results of this clinical trial indicate that combined therapies can produce beneficial effects on early abstinence. Possible mechanisms for the additive effects of bupropion and CBT will be explored. Supported by NIDA grant DA-08888-06 and GlaxoSmithKline.

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SYM 8E  AFFECT REGULATION AND RELAPSE AMONG WOMEN

David Wetter*, Ph.D., Ludmila Coffa-Gunn, Ph.D., Rachel Fouladi, Ph.D., Paul Cinciripini, Ph.D., UT M.D. Anderson Cancer Center; Jennifer McClure, Ph.D., Center for Health Studies

Negative affect (NA) and affect regulation expectancies for smoking (ARE) are posited to be of particular importance to women. This study examined the association of NA and ARE during the first postcessation week with relapse at week five postcessation among women receiving counseling and the nicotine patch. Data were collected using ecological momentary assessments (EMA) via palmtop computers. Assessments were administered at random (four/day; 79% compliance) and during urges. Only women abstinent during the first postcessation week were included (~80%; N=222). Generalized linear mixed models revealed Time X Relapse Status interactions for both NA and ARE. NA and ARE decreased across the first week of quitting, but the decrease was less steep for women who eventually relapsed. We also examined ARE after including NA in the model. The Time X Relapse Status interaction remained significant and the NA X Assessment Type X Relapse Status interaction was also significant. During urge assessments, ARE increased linearly with increases in NA, but there were no differences by relapse status. During random assessments, ARE increased linearly with increases in NA, but women who eventually relapsed displayed slightly higher levels of ARE as NA increased. Our findings demonstrate that (a) relations among relapse, NA, and ARE are complex; (b) differential trajectories of NA and ARE that are associated with later relapse emerge almost immediately after quitting; and, (c) differences in background phenomena (patterns of association between NA and ARE during random assessments) as well as urge phenomena may be important in predicting relapse.

Supported by NIH grant R01CA74517.

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DISCUSSANT COMMENTS

Kenneth A. Perkins, Ph.D., University of Pittsburgh

After the presentation of sex differences in smoking onset and prevalence by Dr. Mermelstein, the papers presented in this symposium generally address factors associated with smoking cessation outcome in women, noting directly or indirectly those that differ from men. Clearly, identification of predictors of cessation outcome in women versus men and discovery of improved treatments in women are the most critical steps for raising the success of interventions to treat smoking in women. Toward these ends, laboratory based research on sex differences in factors that reinforce smoking behavior can contribute information relevant to the development of pharmacological and behavioral interventions to attenuate smoking. Examples of such studies from the discussant’s lab will be briefly described, including research showing that women are more responsive to smoking-associated cues and less responsive to nicotine dose of cigarettes, relative to men. Other very recent research from the laboratory may also be consistent with the clinical findings of Baker and Wetter regarding the importance of affect regulation to successful abstinence in women. Finally, the case will briefly be made that animal models of nicotine self-administration are very relevant to understanding factors that may differentially reinforce nicotine self administration in males and females. Additional applications of this lab-based research to the clinical findings from this symposium will be discussed.

Supported by NIDA grant DA 12655.
SYM 9A

ADDRESSING TOBACCO IN MANAGED CARE: PROMISING PRACTICE AND SYSTEMS CHANGES

Susan J. Curry*, Michael Fiore

Managed care organizations (MCOs) are poised to be leaders in implementing evidence-based tobacco treatment guidelines and recommendations. Core elements across many managed care models are health care delivery systems with an identifiable group of accountable primary care providers whose practices can be influenced by performance incentives and/or reimbursement. MCOs also have centralized resources for quality improvement to review and customize evidence-based guidelines and conduct provider education. MCOs' data systems can be adapted to population-based tracking registries and to provide feedback on practice patterns. Finally, MCOs can work with purchasers and insurers to structure benefit plans that remove financial barriers to patients' access to the state of the art behavioral medicine treatments. Addressing Tobacco in Managed Care is a Robert Wood Johnson Foundation initiative to increase the integration of effective tobacco interventions into the basic healthcare provided by MCOs. The initiative includes a national grants program that focuses on evaluating the effectiveness of replicable organizational strategies (including systems-related clinical, financial and administrative practices) that lead providers, practices and plans to adhere to evidence-based tobacco use cessation guidelines. To date the program includes twenty-five projects (9 large-scale evaluations and 16 pilot/planning grants). This presentation synthesizes findings from these projects with regard to potential 'best practices' and real-world challenges for evidence-based guideline implementation and evaluation. Promising innovations include the use of automated billing systems for tracking registries, performance feedback and incentives both to physicians and senior-level MCO leadership, linkages between clinic- and neighborhood-based services in low income urban areas; and providing reimbursement through the creation of 'relative value units' (RVUs) for smoking cessation counseling.

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SYM 9B

BUILDING DEMAND FOR EVIDENCE-BASED INTERVENTIONS FOR PREGNANT SMOKERS AND THEIR HEALTHCARE PROVIDERS

Cathy L. Melvin, Ph.D., M.P.H., UNC-Chapel Hill

Cost-effective, evidence-based interventions exist to treat tobacco dependence among pregnant smokers. Many pregnant smokers do not, however, believe that healthcare providers can help them quit smoking and, although healthcare providers are well positioned to help pregnant smokers, they themselves do not often understand how to intervene or how intervening can benefit practice goals of improving outcomes and reducing costs. Innovative approaches are currently being used to build demand for tobacco dependence treatment among pregnant smokers and health care decision-makers. Direct-to-consumer marketing campaigns are designed to increase awareness among pregnant smokers of the help available to them from their healthcare providers and other sources; and, among healthcare providers, of the effectiveness and cost savings associated with evidence-based interventions. Several national and state efforts have used direct-to-consumer marketing to drive pregnant smokers to use quit line services, to ask their prenatal care team members for help in quitting and to use educational and motivational print and media resources designed to help them quit smoking. Similarly, programs targeting health care providers drive them to opportunities for training in evidence-based interventions and approaches to systems change, ongoing technical support services and specific tools designed to increase their motivation to provide these services such as ways to estimate cost savings for their state or healthcare organization. The structure, intended impact on behavior of both pregnant smokers and their care providers and the results of these and other promising approaches for increasing demand will be discussed.

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SYM 9C

THE ALLIANCE FOR TOBACCO CESSATION: LESSONS LEARNED ABOUT EXPANDING COVERAGE FOR EVIDENCE-BASED TOBACCO DEPENDENCE TREATMENT

Linda A. Bailey, J.D., M.H.S.

The Public Health Service's clinical guideline documents effective interventions for tobacco dependence treatment. However, this guideline has not yet been widely implemented by clinicians and public health professionals. The lack of adequate coverage for tobacco dependence treatment by many public and private health care programs is a significant barrier to implementation. The presenter will describe the newly established Alliance for Tobacco Cessation, and its efforts to help implement the guidelines. The Alliance for Tobacco Cessation is a coalition of organizations committed to promoting public and private sector policy changes that will expand the availability and use of effective cessation treatment and activities. The Alliance has convened advocates and researchers to discuss benefit design, reimbursement, and financing sources for treatment. It has developed a policy agenda and is coordinating advocacy activities to achieve priority objectives. Progress towards achievement of this policy agenda will be described through case studies of Medicaid legislation (benefit design and reimbursement) and excise tax increases. The importance of translating scientific information into policy-relevant documents and messages will be discussed.

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SMOKE ON THE RISE AMONG YOUNG ADULTS: IMPLICATIONS FOR RESEARCH AND POLICY

Paula Lantz, Ph.D.∗  Department of Health Management and Policy, University of Michigan School of Public Health

In the late 1990s, evidence from a number of different sources pointed to a disquieting trend: cigarette smoking among young adults in the United States. A prominent hypothesis is that the recent observed increase is an artifact of the almost simultaneous increase in smoking among high school students. Time-series analysis of Monitoring the Future data do support this hypothesis, as trends in smoking among high school seniors during the 1990s explain the majority of the variance in trends in smoking among 19-24 year olds. It also appears, however, that there have been some changes in smoking patterns among young adults above and beyond an increase in prevalence due to a cohort effect. Analyses of NHIS survey data suggest that the proportion of smokers who establish regular or habitual smoking as young adults has been sizeable for some time, but that this increased, particularly among males, during the late 1990s. In addition, the increase in cigarette smoking among young adults has occurred simultaneously with an increase in other risk-taking behaviors, including binge drinking and the use of marijuana and other illicit drugs.

While there are many unanswered questions about recent trends in cigarette smoking and other drug use among both adolescents and young adults, what is known to date leads to a clarion call for increased intervention and policy action regarding the prevention and control of tobacco use among young adults. Potential policy responses and intervention strategies that need to be discussed in the tobacco control community include: 1) investing in smoking cessation and primary prevention interventions aimed at young adults; 2) considering potential counterproductive effects of interventions targeting adolescents; 3) promoting smoke-free environments; and 4) considering smoking in a broader context of risk-taking behavior.

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SYM 10D  
A COMPREHENSIVE APPROACH TO REDUCING TOBACCO USE AMONG YOUNG ADULTS IN THE MILITARY

Harry Lando, Ph.D.*, University of Minnesota; Pamela Xaverius, Ph.D., C. Keith Haddock, Ph.D., and W.S. Carlos Poston, Ph.D., M.P.H., University of Missouri-Kansas City; and Colonel Wayne Talcott, Ph.D., and Major Lisa Schmidt, R.N., U.S. Air Force

Smoking among young adults is a major problem in the military. Recent survey data indicate that 39.1% of enlisted personnel between the ages of 18 and 25 smoke cigarettes. The official policy of the Department of Defense is to discourage smoking and other tobacco use. Consumption of tobacco is strictly prohibited during basic military training. Despite this ban, however, smoking prevalence has been shown to increase during the first year of military service. Initiation of smoking is relatively common even among those who claim to have never smoked so much as a puff prior to entering the military. We have attempted in two prior studies to intervene in Air Force basic military training to reduce tobacco use with limited success. We are now undertaking a more comprehensive approach in four branches of the armed services. We are including both individual and community intervention with particular emphasis on the 18 to 24 year old population. The intervention consists of a leadership and policy plan, a community action board, a plan for intervention in primary care and dental settings, basic tobacco cessation skills training, programs targeted specifically at junior enlisted personnel, and social marketing. We will report on preliminary implementation of this comprehensive approach with particular emphasis on young adults.

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SYM 10E  
OPPORTUNITIES IN THE HEALTH CARE SYSTEM TO REDUCE YOUNG ADULT TOBACCO USE

Virginia Quinn, Ph.D.*, Kaiser Permanente Southern California, Jonathan Winickoff, M.D., M.P.H., Massachusetts General Hospital, Harvard Medical School

The health care setting is a key channel for delivering tobacco cessation and prevention interventions. Most existing efforts focus on adults visiting a primary care provider. Young adults (especially males) visit physicians less often because they have low rates of chronic disease. However, opportunities remain. These include visits by young adult females for reproductive health care, particularly prenatal care and visits by young adults who are parents to the pediatrician for their child's health care. This presentation will address the potential for intervening with tobacco use through these two settings: (1) obstetricians and other prenatal care providers and (2) pediatricians and other providers of health care for children. Substantial efforts have been made over the past decade to develop and disseminate interventions for pregnant smokers, but challenges remain. Interventions based in the pediatric office are newer; most target adolescents and aim to prevent tobacco use. However, the child health provider caring for infants and young children could address parental tobacco use. This presentation will consider what proportion of young adult smokers can be reached through these health care settings, review the evidence to date of what interventions are effective, and consider what novel approaches are being or could be tested.

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YI 1

EFFECT OF PHYSICIAN CLINICAL INTERVENTIONS ON INDICATORS OF CESSATION

A. Hyland, H. Xu, M. Mahoney, D. Levy, J. Bauer, G. Giovino, K.M. Cummings

OBJECTIVE: To assess the effect of physician advice to stop smoking on indicators of cessation Method: A total of 4,449 persons age 38 to 77 years who were smokers enrolled in the Community Intervention Trial for Smoking Cessation from 1988 and 1993 and also completed a detailed tobacco use telephone survey in 2001 are included in this analysis. Respondents retrospectively self-reported physician advice to stop smoking between 1993 and 2001 and this measure was categorized into no clinical intervention, lower intensity clinical intervention (asked if smoked or advised to quit or explained the dangers of smoking, but did not receive a higher intensity intervention), and higher intensity clinical intervention (stop smoking medication given or referral to cessation clinic/program, irrespective of other clinical interventions received).

RESULTS: Among those who saw a doctor between 1993 and 2001, 95% of subjects reported their physician at least asked if they smoked sometime between 1993 and 2001. Heavier smokers and those who self-reported they had ever been diagnosed with a smoking-related disease or depression were more likely to report a higher intensity clinical intervention. After controlling for potential confounders, including amount smoked, smokers who received a higher intensity clinical intervention since 1993 were more likely to make a quit attempt (RR=2.32, 95% CI 1.69-3.20) and use stop smoking medications (RR=5.42, 95% CI 3.53 - 8.31); however, no such positive significant effect was observed for the effect of higher intensity advice on actual cessation. Similar relationships were observed for those who received lower intensity clinical interventions.

CONCLUSION: Physician advice to stop smoking in this cohort increased quit attempts and use of stop smoking medications, but did not increase cessation. This project was supported by a grant 5R01CA8622503 from the National Cancer Institute.

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YI 2

PSYCHOPATHOLOGY AND SOCIAL ENVIRONMENTS IN THE PROGRESSION FROM INITIATION OF TOBACCO USE TO NICOTINE DEPENDENCE

Scott P. Novak, Ph.D., Brown University; Stephen L. Buka, Sc.D., Harvard School of Public Health

Numerous studies have examined the complex relationships between psychopathology and stages of adolescent tobacco use, but few have systematically examined these links within the familial and neighborhood contexts. It is hypothesized that those with negative affect, when exposed to environments that promote smoking, are likely to transition to higher stages of use, ranging from initiation to nicotine dependence. Conversely, social environments with social norms against smoking may buffer psychological deficits that heighten the risk for smoking. We draw on longitudinal data from 1,805 adolescent subjects ages 12-18 living in 80 Chicago neighborhoods, their primary caregivers, and independent social observations of the neighborhood environments, to consider the following: 1) Does the relation between psychopathology and smoking vary across stages of use, ranging from initiation to nicotine dependence; 2) Do these relations differ between adolescents from households where family members smoke compared to those living in non-smoking households; and 3) Do neighborhood environments with a high proportion of tobacco outlets and advertising either magnify or attenuate these individual and familial risk factors. Models were estimated using a cumulative logit random effects (HLM) approach, and findings indicated that familial and neighborhood factors exhibited independent and interactive effects on transitions between stages. We find that adolescents with attentional problems and negative affect (anxiety/depression) were more likely to transition to higher stages of smoking, including nicotine dependence, in families where household members smoke. These effects are magnified by neighborhood environments, which exhibited strongest influence on adolescents with lower levels of psychological risk. This study illustrates the utility of multivariate, multilevel models that synthesize community and family characteristics with individual risk factors.

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YI 3

MISSED OPPORTUNITIES FOR SMOKING CESSATION INTERVENTION FOR FATHERS OF BABIES BEING TREATED IN A SPECIAL CARE NURSERY

Olga Nin*, Kelvin Chan, Bruce Becker, M.D., Beth Bock, Ph.D., Rosa Carmona-Barro, M.S., Brown Medical School

Babies treated in a Special Care Nursery (SCN) have a high prevalence of respiratory problems with an increased vulnerability to ETS. In Rhode Island more than 20% of mothers of babies being treated in the SCN smoke; however, the prevalence of smoking among these fathers has not been reported. Trained research assistants recruited 336 participants (mothers n= 235, fathers n=83, and other household members n=18). Demographics: mean age = 29.8, SD = 7.5. Education: 26% HS graduate, 26.5% college graduates. Ethnicity: 70% white, 15% Hispanic, 7% African-American. Fathers were more likely to be current smokers than mothers (31.3% vs. 21.7%, p<0.05). Fathers smoked significantly more cigarettes per day than mothers (15.4, SD=10.2 vs. 10.8, SD=7.9; t=11.4, p<0.01). Maternal status was associated with smoking. Among unmarried parents (n=123), 63% of fathers and 37% of mothers were current smokers. Among married parents (n=195) 21% of fathers and 9% of mothers smoked (p<0.001). Fathers were as likely as mothers to perceive risk from ETS to their baby’s health (4.19 vs. 4.0, ns). Although fathers were often present in the SCN and easily recruited for this study, fewer were asked about their smoking status than were mothers (21% vs. 55%, p<0.01). Only 28% of fathers were advised to quit smoking versus 48% of mothers (p<0.05). No fathers were offered assistance in quitting versus 24% of mothers (p<0.001). The SCN provides an opportunity for health care providers to intervene with fathers who smoke, thus improving their health and the health of their vulnerable new babies.

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HOW VALID ARE SELF-REPORT AND BIOCHEMICAL MEASURES OF YOUTH SMOKING, REDUCTION AND CESSATION?

Paul W. McDonald, Ph.D.*, Karen Pieters, MSc., K. Stephen Brown, Ph.D., Terry Stewart, M.A., Linda Jessup

RATIONALE: Adolescents variable smoking patterns, sharing of tobacco products and other factors effect retrospective self-reports of smoking and quitting behavior. Biochemical measures have short half lives. These limitations make it difficult to assess youth smoking and quitting. This study compared responses from standard questionnaires, a daily email survey using a handheld wireless device, and biochemical measures of smoking and quitting behavior among 14 to 18 year old smokers.

METHODS: 80 students from 16 high schools completed pencil and paper questionnaires at four points in time: baseline (T1), and approximately 30 (T2), 60 (T3), and 90 (T4) days later. Commonly employed items were used to assess smoking history and status, quitting history, efficacy and support. At T1, students also received a handheld wireless communication device capable of receiving and sending email. Participants completed an email survey on each of the approximately 90 days between T1 and T4. The email survey asked about smoking status, tobacco consumption, influences on smoking, withdrawal (where appropriate), self efficacy and future intentions regarding quitting. At T2 students received a brief cessation intervention. Salivary cotinine and expired CO were assessed at T2 and T4. Results: 66 students provided baseline and follow-up data. Preliminary analyses suggest smoking status, quit rates, quit attempts, consumption and other outcomes depend upon the assessment methods used. Compliance rates for providing daily reports using the handheld wireless device was relatively high. Several small technical and operational issues were addressed.

CONCLUSIONS: Standard questionnaires and biochemical measures may not lead to valid conclusions about intervention effectiveness. The Blackberry wireless communication device represents a promising alternative method for collecting data.

This study was supported by the Ontario Tobacco Research Unit.

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PA1-1  PRENATAL TOBACCO EXPOSURE: A CONTINUED RISK FACTOR FOR ADOLESCENT SMOKING

Marie D. Cornelius, Ph.D., Sharon L. Leech, M.P.H., Nancy L. Day, Ph.D.

Few studies explore the role of the fetal environment on offspring’s substance use. This longitudinal study examines the relationships between maternal prenatal tobacco use and offspring smoking behavior. A birth cohort of 574 14-year-olds, followed since gestation, completed a substance use questionnaire and provided a urine sample for cotinine levels. Half were female; 54% were African-American. Average age was 14.8 years (Range: 13.9-16.6). Data on tobacco and other substance use were collected from the mothers pre- and postnatally, 51% of the mothers were prenatal smokers; 54% were smokers when their children were 14. Having ever smoked and current smoking were reported by 45% and 16.2% of the offspring, respectively. Significant bivariate associations were found between prenatal tobacco exposure at each trimester of pregnancy and offspring ever and current smoking. Multipleregression analyses used a categorical childsmoking variable: 0, >0-<1, 1+-<5, 5+-<10, 10+. Significant predictors were: gender (female), Caucasian race, maternal education (less), home environment (worse), more depressive symptoms (child), more aggressive behavior (child), and exposure to tobacco at any trimester. Our earlier report that prenatal tobacco exposure predicts early experimentation among 10-year-olds was confirmed at age fourteen years. NIDA03872, NIAAA06666, NICHD36890.

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PA1-2  MORNING PLasma Luteinizing HormONE CONCENTrATIONS IN PRE-ADOLESCENT MALES PREDICTS REGULAR SMOKING IN MID-ADOLESCENCE

Howard B. Moss, M.D., Menia White, M.D., University of Pennsylvania School of Medicine; Jeffrey K. Yao, Ph.D., University of Pittsburgh School of Medicine

The onset of puberty is marked by a surge in circulating concentrations of the gonadotropins luteinizing hormone (LH) and follicle-stimulating hormone (FSH). In boys, about six months after the onset of elevations in LH and FSH, testosterone concentrations rise leading to progressive reproductive maturation. Several prior studies have suggested that early onset of puberty may be associated with behavioral deviancy, aggression, and conduct disturbances. Consequently, we examined early morning fasting plasma FSH, LH, testosterone concentrations and pubertal staging in pre-adolescent boys (n=264, mean age 11.1 years) who were participating in a longitudinal study of children of drug dependent parents and controls conducted at the University of Pittsburgh. Five years later, these subjects (approximately age 16 years), were ascertained for tobacco and other drug use behavior. Subjects were categorized as being “regular smokers” if they smoked 10 or more times a month during the previous year. Logistic regression analysis of predictors of smoking status indicated non-significant contributions of FSH concentration, testosterone concentration, pubertal stage, and family history of drug dependence. However, morning plasma LH concentrations were a highly significant predictor of regular smoking in mid-adolescence such that greater LH concentrations were more frequent among regular smokers (OR = 6.76, Wald = 12.45, p=.000). The mechanism through which this gonadotropin is associated with the liability for smoking is unclear. However, the results are intriguing given pre-clinical evidence of nicotine’s effect in lowering LH concentrations and speculations that this effect is exerting through D1 dopamine receptors.

This data was collected at the Center for Education and Drug Abuse Research (a consortium of the University of Pittsburgh and St. Francis Medical Center) and supported by the National Institute on Drug Abuse (P50-DA05605) and Senior Scientist Award to Dr. Moss (KO-5DA-00308).

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PA1-3  SINGLE TRIAL CONDITIONED REINFORCEMENT AND LOCOMOTOR SENSITIZATION IN ADOLESCENT RATS

Frances M. Leslie, Ph.D.*, Alex Lee, B.S., Heather Ollif, Ph.D., and James Belluzzi, Ph.D., University of California-Irvine TTURC, Irvine, CA 92697

An unbiased conditioned place preference (CPP) paradigm was used to compare nicotine-induced reinforcement and locomotor activity in early adolescence (postnatal day (P) 27), late adolescence (P38) and adult (P90). Age differences were observed in the acute locomotor response to nicotine during the 20 min drug conditioning session, with significant dose (F3,38 = 30.44, p<0.0001) and age x dose (F6,96 = 6.16, p<0.0001) effects. Whereas all doses of drug (0.125-0.5 mg/kg) significantly inhibited locomotion in adults and older adolescents, there was no acute locomotor response during early adolescence. However, significant nicotine-induced CPP was observed following a single conditioning trial in early adolescence (F3,112 = 5.67, p<0.002), but not at older ages. Since no CPP was detected following single trial conditioning of older adolescents and adults, a four-trial conditioning paradigm was tested at these ages. A significant age effect was observed in the adaptive locomotor response to repeated nicotine administration. Following initial drug exposure in adolescents, there was development of tolerance to the inhibitory locomotor effects and, at the highest dose, the emergence of an excitatory response. This adaptation was maximal at the second drug injection and did not change for subsequent treatments. In contrast, this rapid adaptation in locomotor response to repeated nicotine treatment was not observed in adults. No significant CPP was detected in either age group after four-trial conditioning (F3,66 = 2.42, p>0.05). These data provide evidence that adolescent brain is differentially sensitive to both acute and repeated nicotine administration as compared to that of adult. Furthermore there are significant differences in drug response between early and late adolescence.

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ADOLESCENT NICOTINE EXPOSURE RESULTS IN SENSITIZATION TO NICOTINE IN ADULTHOOD

Martha M. Faraday, Ph.D.*, Brenda M. Elliott, M.S., Jennifer M. Phillips, B.S., and Neil E. Grunberg, Ph.D., Uniformed Services University of the Health Sciences

Adolescence is a critical period for initiation of tobacco use, with > 90% of smokers beginning to smoke before age 19. The earlier that individuals initiate tobacco use, the more difficult it is to quit smoking. It is possible that exposure to nicotine in adolescence alters nicotine’s actions in adulthood in ways that make continued nicotine self-administration more likely. This experiment examined whether nicotine exposure in adolescence compared to adulthood altered locomotion responses with and without re-exposure to nicotine. Sprague-Dawley male rats were exposed initially to nicotine (saline, 0.01, 0.10, 0.50, or 1.0 mg/kg daily sc injections) during adolescence (age 31 to 42 days) or during adulthood (age 61 to 72 days). Locomotion was measured after the exposure period and during a 12-day nicotine re-exposure period in adulthood. Animals initially exposed to nicotine in adolescence exhibited hyperactivity in adulthood in the absence of nicotine administration. Initial exposure to nicotine in adolescence, but not in adulthood, resulted in sensitization to nicotine’s activity-increasing actions with re-exposure in adulthood. The finding that repeated-acute exposure to nicotine via injection during adolescence results in hyperactivity in adulthood replicates our report that adolescent rats administered nicotine via osmotic minipump become hyperactive adults (Faraday, Elliott, & Grunberg, 2001). The finding that adolescent nicotine exposure sensitizes animals to nicotine’s actions in adulthood is consistent with reports for other drugs of abuse (e.g., cocaine). These results are of potential importance to understand adolescence as vulnerable period for the onset of nicotine dependence.

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REPEATED EARLY METHYLPHENIDATE EXPOSURE ALTERS NICOTINE CONSUMPTION BY PERIADOLESCENT C57BL/6J MALE MICE

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Attention deficit hyperactivity disorder (ADHD), the most commonly diagnosed childhood psychological disorder, is associated with tobacco use (Pomerleau et al., 1995; CDC 1999). Epidemiologic studies suggest that early psychostimulant treatment of ADHD with methylphenidate (MPD) may lead to tobacco use (Lambert & Hartsough 1998). The current experiment examined the causal relationship between early exposure to MPD and later nicotine consumption using a mouse model of adolescent nicotine consumption (Klein, Stine, et al. in press). Thirty-eight pre-adolescent male C57Bl/6J mice (29 days old) were exposed to saline, 2.5 mg/kg MPD (low-MPD) or 5 mg/kg MPD (high-MPD) via ip injection for 7 days. After a 2-day washout period, periadolescent mice (38 days old) then were provided a choice between a nicotine solution (25 mg/ml nicotine dissolved in water) and water in their home cage, continuously, for 7 days (Klein et al., in press). High-MPD mice consumed significantly less nicotine than did mice exposed to low-MPD prior to adolescence (p<0.05). Low-MPD and saline mice consumed similar amounts of nicotine during adolescence. MPD treatment did not affect body weight throughout the experiment. Findings suggest a relationship between MPD exposure and nicotine consumption during early development. Further studies are needed that include females and additional MPD dosages.

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WHY DO ADOLESCENTS GET ADDICTED TO NICOTINE? EFFECTS ON CHOLINERGIC SYSTEMS IN A RAT MODEL

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Epidemiological studies in adolescents indicate that symptoms of nicotine dependence may develop before the onset of daily smoking. We investigated whether short-term nicotine exposure in adolescent rats induces alterations in cholinergic systems associated with addiction. Rats were given a one week regimen of either continuous nicotine infusions (to simulate regular smoking) or twice-daily injections (to simulate intermittent smoking), at three doses (0.6, 2 and 6 mg/kg/day) set to achieve plasma nicotine levels found in occasional to regular smokers. We assessed nicotinic cholinergic receptor (nAChR) binding, choline acetyltransferase (ChAT) activity and [3H]hemicholinium-3 (HC-3) binding to the high affinity choline transporter. Substantial nAChR upregulation was observed during nicotine exposure, even at the lowest dose, with effects persisting for at least one week after the end of treatment. For ChAT, a constitutive marker for cholinergic nerve terminals, low doses of nicotine elicited increased activity that disappeared at the highest dose. HC-3 binding, which is responsive to cholinergic neuronal impulse activity, showed a long-lasting decrease (at least one month posttreatment) with either exposure model, with significant effects seen at all doses. Our results suggest that, in adolescents, even a short period of nicotine exposure, with only intermittent dosing, elicits alterations in cholinergic systems that are associated with nicotine dependence. Exposures as low as 0.6 mg/kg/day in the rat, which elicits plasma concentrations one-tenth of those in regular smokers, produce these effects.

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**PA1-8**

**NICOTINE INDUCED CFOS MRNA ACTIVATION IN ADOLESCENT BRAIN**

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A majority of smokers become addicted to tobacco during adolescence. We and others have recently shown that rodents are differentially sensitive to the reinforcing and locomotor effects of nicotine during early and late adolescence. Using a quantitative functional imaging technique to visualize nicotine-induced mRNA for the immediate early gene c-fos, we now demonstrate parallel differences in limbic, visual and stress-related brain regions. The posterocortical and lateral amygdaloid nuclei express c-fos mRNA in response to nicotine during adolescence but not in adult. Other limbic regions, including the islands of Calleja and anterior cingulate cortex, are more sensitive during early, but not late adolescence, whereas retrosplenial cortex is activated in late, but not early adolescence. The bed nucleus of the stria terminalis, central nucleus of the amygdala, and paraventricular nucleus, all components of the central stress pathway, are more sensitive to nicotine in adolescence than in adulthood. In visual cortex, the response to nicotine also varies with developmental stage. Layers III and IV of visual cortex are activated during early and late adolescence, but not in adult. In layers V and VI of primary visual cortex, there is a significant response to a low dose of nicotine which is present only during early adolescence. These differences, especially the selective activation of visual and cingulate cortices by nicotine in early adolescence, suggest a possible important mechanism for conferring salience to visual cues associated with differential behavioral sensitivity to nicotine and tobacco.

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**PA2-1**

**CORRELATION BETWEEN SEVERITY OF NICOTINE DEPENDENCE AND BENZODIAZEPINE RECEPTOR BINDING IN ALCOHOLICS**

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Tobacco smoking and alcohol dependence are synergistically associated such that smokers drink more than nonsmokers and drinkers smoke more than nondrinkers. Smokers feel less intoxicated by alcohol suggesting that smoking may enhance tolerance to alcohol. The benzodiazepine (BDZ) receptor is a primary substrate for alcohol’s actions in brain. Alcohol and nicotine appear to exert opposing effects on BDZ binding to GABA-A receptors such that chronic alcohol decreases and chronic nicotine increases BDZ receptors. In this study, we assessed BDZ receptor numbers in alcoholic smokers (AS) and nonsmokers (ANS) abstinent from alcohol for < 7 days using [123I]iomazenil and single photon emission computed tomography (SPECT) imaging. To date six healthy smokers (HS), nine nonsmokers (NS), twelve AS and six ANS have been recruited (age 30-52 y). HS and AS smoked on average a pack of cigarettes/day and exhibited means scores of 4.0 and 5.3 on the Fagerstrom Test for Dependence throughout cortical limbic brain areas in AS and ANS. The findings suggest that the severity of nicotine dependence correlates with BDZ receptor availability in alcoholics.

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**PA2-2**

**CONCURRENT VS. DELAYED TREATMENT FOR NICOTINE DEPENDENCE FOR PATIENTS IN INTENSIVE TREATMENT FOR ALCOHOL DEPENDENCE**

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There is a high prevalence of smoking among alcoholics, and data show interest in quitting smoking, even at the time of alcohol treatment, however tobacco has generally been excluded from mixed alcohol and drug treatment. The objective of this randomized controlled trial was to compare smoking and alcohol treatment outcomes among patients receiving smoking intervention concurrently with intensive alcohol treatment vs. smoking intervention that was delayed 6 months. Patients with alcohol use disorder who also smoked from three treatment programs in Minnesota were randomized to concurrent or delayed smoking intervention, including individual behavioral therapy and nicotine replacement. 1943 patients were screened for participation. 499 (26%) patients enrolled. Approximately one-half of the participants received advice from counselors and fellow patients either to quit in the future or not at all. There was more participation in treatment for nicotine dependence in the concurrent than the delayed treatment group (78.5% vs. 65.3%, p=0.001), but no difference in point prevalent smoking abstinence 12 months after smoking intervention (18.6% vs. 18.1%). The proportion of participants who made quit attempts was 88.0% in the concurrent and 81.6% in the delayed group (p=0.052). The intensity of intervention as measured by duration and receipt of NRT was similar. Alcohol treatment outcomes were similar in both groups. These findings suggest smoking treatment delivered concurrently with intensive treatment for alcohol dependence results in improved participation rates, but no advantage or disadvantage for long-term smoking or alcohol treatment outcomes. Smoking cessation treatment outcomes were comparable to the general population of smokers.

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**PA2-3**

**EFFICACY OF NICOTINE REPLACEMENT IN SMOKERS WITH AND WITHOUT PAST ALCOHOL PROBLEMS**

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Some have suggested smokers with a past history of alcohol dependence have more difficulty quitting, might relapse to alcohol use and might especially benefit from nicotine replacement therapy for smoking cessation. We report final results of a previously presented trial (NIDA Research Monograph 179:91). We randomly assigned 115 smokers with a history of alcohol dependence to either 21 mg transdermal nicotine or placebo and examined abstinence as well as self-reports of alcohol use and desire to use alcohol. The subject selection, interventions, measures, etc of this trial were designed to be as similar as possible to a previous study that examined smokers with no history of alcoholism (NRT 1:169). Both studies were of heavy smokers with similar FTND scores; thus, differences in outcome between studies are unlikely to be due to differences in nicotine dependence. In the present trial, the adjusted prolonged abstinence rate among smokers with a history of alcohol dependence was higher in the active than the placebo group at 16 wk end-of-treatment follow-up (28% vs 11%, OR = 3.2 p=0.04) and at 6 mo followup (24% vs 6%, OR = 4.9, p=.02). Among subjects not lost to followup, none reported drinking problems or increases in craving for alcohol. Abstinence rates were not different in smokers with a history of alcohol problems vs smokers without this history; e.g., 6% (95% CI = 2-18%) abstinent at 6 mo in placebo group in those with alcohol history vs 3% (2-7%) in no history smokers. The OR for nicotine patch therapy was also similar; i.e., 4.9 (1.3-18.4) for alcohol history vs 3.1 (1.3-7.5) for no history smokers. These results replicate prior results that NRT is effective in smokers with a history of alcohol problems. Although they also suggest abstinence does not threaten alcohol sobriety, a trial in which very few subjects are lost to follow-up is needed to verify this. Finally, these results suggest alcohol history per se (i.e. independent of nicotine dependence) does not influence treatment success or response to nicotine replacement.

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PA2-4
NICOTINE DEPENDENCE SERVICES IN METHADONE AND OTHER OPIOID TREATMENT FACILITIES

Kimber Paschall Richter, Won S. Choi, Robert M. McCool, Kari J. Harris, Jasjit S. Ahluwalia

A million Americans are in drug treatment on any given day. Most (70-90%) smoke cigarettes. We surveyed lead clinicians from all opioid treatment facilities in the United States to assess how many are addressing nicotine dependence. The 20-minute surveys were completed by phone, fax, or mail according to clinic preference. We obtained data from 59% of clinics (408/697). Responding clinics were similar to the total clinic population in terms of ownership and region. Most (83%) clinics had a place on their intake form to record smoking status. Clinics were asked to report whether they provided a variety of nicotine dependence services to at least one patient in the past 30 days. Most (78%) had advised patients to quit, some provided individual (32%) or group (18%) counseling, and few provided NRT (12%) or bupropion (7.3%) for quitting smoking. These practices are far from routine as clinics provided services to a small proportion of patients. Clinic ownership significantly impacted service provision, with private, for-profits providing fewer services than public or private nonprofit clinics. One in four respondents (25%) reported they or a staff member had advised a patient to delay quitting smoking. Thirteen percent felt that some patients benefited from smoking. Reasons for advising delay, and ways staff said smoking benefited patients, will be presented. We will also present data on correlates of service provision and the prevalence of cigarette smoking among staff. Opioid treatment oversight is shifting to an increased emphasis on health and wellness. To reduce tobacco-related mortality, nicotine dependence treatment should be included in new accreditation standards.

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PA2-5
NICOTINE AND DRUG INTERACTION EXPECTANCIES AMONG METHADONE MAINTAINED CIGARETTE SMOKERS

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Smoking rates among persons being treated with methadone for opiate dependence (MMT) are exceptionally high; some surveys place the smoking prevalence at over 90%. Thus, even though patients in MMT seem to be taking steps toward improving their health and functioning, the fact that the vast majority still smoke and may smoke at high rates makes them very susceptible to the adverse health effects of smoking. Nonetheless, there is debate about whether smoking cessation has a negative effect on substance abuse treatment outcomes. To understand patient perceptions of the interaction between smoking and drug use we administered the Nicotine and Other Substances Interaction Expectancies Questionnaire to smokers receiving MMT as part of a smoking cessation clinical trial. This 17-item instrument measures self-perceived: 1) effects of drugs on smoking (DEFF, 5 items), 2) effects of smoking on drug use (SEFF, 3 items), and 3) smoking to cope with drug urges (COPE, 9 items). Higher scores signal greater agreement. Data are based on 168 (48% female; 79% Caucasian) smokers and are drawn from the baseline survey all participants completed prior to randomization into treatment. Reliability for the scales was high: DEFF α=.84, SEFF α=.74, COPE α=.91. DEFF scale mean 3.9 and SEFF mean 1.7 suggest that MMT clients believe drug use increases smoking, but that smoking does not trigger drug use. COPE mean 1.8 suggests that clients do not believe smoking reduces the urge or substitutes for drug use. Years of heroin use and years of smoking were not associated with any subscales. Fagerstrom scores are positively associated with all subscales: DEFF (r =.16; p=.04), SEFF (r =.25; p=.01), COPE (r =.20, p=.01). These data provide preliminary information about the interaction of smoking and drug use and offer some insight into the processes of quitting in this underserved population.

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PA2-6
DIFFERENTIAL RESPONSE TO NICOTINE REPLACEMENT THERAPIES IN OBSESE AND NON-OBSESE SMOKERS

Caryn Lerman*, Janet Audrain, Freda Patterson, Vyga Kaufmann, Margaret Rukstalis, Paul Wileyto, Susan Kucharski, Chris Jepson

Obesity and smoking are both major risk factors for cardiovascular disease and cancer. There is some evidence to suggest that obesity and nicotine addiction have a common genetic basis that relates to the drive for reinforcement (from food or drugs of abuse). Thus, we compared the efficacy of two forms of nicotine replacement therapy that differ in terms of their reinforcing properties, among 72 obese (body mass index (BMI)≥30) and 183 non-obese smokers. The study design was an open-label randomized clinical trial comparing transdermal nicotine (TN) to nicotine nasal spray (NS). Both treatments were delivered over an 8-week period in conjunction with behavioral smoking cessation group counseling. Baseline assessments included: demographic factors, smoking history, and depression symptoms. Smoking status was assessed and verified at the end of treatment (EOT) and at 6-month follow-up. Among non-obese individuals, verified point-prevalence abstinence rates at EOT were 46% for TN and 28% for NS (p=.01). For obese individuals, the EOT abstinence rates were 35% for TN and 43% for NS (p>.10). In a logistic regression model of abstinence at EOT (controlling for smoking rate, sex, race, and education), there was a significant group (BMI < vs ≥ 30) by treatment interaction effect (p=.03), suggesting a differential response to treatment in these two groups. Data collection for the six-month follow-up and analyses of mediating mechanisms (e.g., usage, percent replacement) are underway. These initial results indicate a clear advantage for TN over NS for non-obese individuals. Among obese smokers, response to TN and NS is variable, and at least some obese individuals may have a better treatment outcome with NS.

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PA2-7
PROJECT READY: A MOTIVATIONAL INTERVENTION TO REDUCE SMOKING AND NONADHERENCE AMONG SMOKERS WITH HIV

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Smoking and non-adherence threaten the health of people with HIV. This paper presents outcomes of a novel motivational interviewing (MI) intervention, READY, on smoking and medication non-adherence in HIV+ individuals. The pilot study was a pre-post design that compared smoking and non-adherence before the intervention and at one month follow-up. READY included feedback on the participant’s health status, medication adherence, risks of smoking, and readiness to change, delivered via MI. Subjects were 22 adult HIV+ patients taking combination antiretroviral therapy for treatment of HIV and smoking cigarettes daily. Smoking measures included the Fagerstrom, TLFB, Stage and Processes of Change, Self-Efficacy and Decisional Balance. Feedback included lifetime cigarette use and costs, CO blood levels, pulse rate, lung capacity and blood pressure. Adherence was measured via the TLFB and a Health Status form.

RESULTS: Participants were an average age of 42, with 65% men, 94% African American, 35% less than high school, 29% high school, 35% some college; onset of smoking was 14.8 (sd 4.2) years; onset of daily smoking was 17.6 (sd 3.6) years. Participants smoked 17 cigarettes per day, and had tried to quit 2.9 times (sd 3.2). Longest quit in months was 13.6. They smoked high tar (88%) cigarettes that were mentholated (82%). They bought by the pack (53%) and paid an average of $3.09 per pack. Although the sample size was small in this feasibility study, outcomes of the intervention were in the positive direction for both targeted behaviors. At follow-up, the average medication adherence increased from 93% to 99%, and the average number of TLFB-reported daily cigarettes declined from 15 to 11. Mediating variables including demographics, personality, medical status, and psychiatric status will be discussed. This study provided evidence that further research on dually-focused MI interventions for HIV+ smokers is warranted.

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CHARACTERISTICS OF PSYCHIATRIC PATIENTS WITH NICOTINE PROBLEMS
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Cigarette smoking among psychiatric patients is an issue of great concern. Little is known about the clinical characteristics of psychiatric patients with nicotine problems seen in routine psychiatric practice. The purpose of this study is to compare the demographic, clinical, treatment and health plan characteristics of psychiatric patients with or without nicotine problems.

METHODS: Psychiatrists participating in the American Psychiatric Institute for Psychiatric Research and Education’s Practice Research Network were asked to complete a self-administered questionnaire to provide detailed sociodemographic, clinical, treatment, and health plan information on 3 of their patients seen during routine clinical practice. Weighted bivariate Wald-chi-square, Wald F-test, and logistic regression analyses assessed which factors were associated with nicotine problems.

RESULTS: A total of 615 psychiatrists provided information on 1,843 patients. Of the patients, 280 (16.6%) were reported to have a current nicotine problem. Patients with nicotine problems were significantly more likely to be male, divorced or separated, with lower education, and disabled. They were also significantly more likely to have co-morbid schizophrenia or alcohol/substance use disorders, more than two Axis IV psychosocial problems, lower Global Assessment Functioning score, depressive and psychotic symptoms, disability in family, social and work functioning areas, and poorer treatment compliance. Also, patients with nicotine problems were more likely to be treated as inpatients, with antipsychotic medications, to receive a greater number of medications, and to have no health insurance. Only 9.1% of patients with nicotine problems were currently receiving smoking cessation treatment.

CONCLUSIONS: The results suggest that psychiatric patients with nicotine problems have considerably more psychosocial stressors and severer psychiatric problems. However, they have less health coverage and only few of them are reported to receive smoking cessation treatment. Medication and behavioral strategies to assist psychiatric patients reduce or stop smoking should be incorporated as part of the routine psychiatric treatment.

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THE FRENCH MINISTERIAL REPORT ON TOBACCO RISK REDUCTION
Gérard Dubois, Chairman of the Ministerial Working Group

Tobacco has been consumed for a long time but the research on the subject is not as extensive as one might imagine. The prevention of risk associated with tobacco dependence can be summarized as follows: a) Elimination of risk factors (smoking cessation). b) Reducing the risks (reducing the adverse effects). c) Modification of products smoked or the method of consumption (reduction nicotine, filters...). d) Temporary substitution. e) Alternative means of administration of nicotine. f) Use of another psychoactive product that reduce consumption (bupropion). 1. Interventions on the product The working group draws attention to the fact that there is no "safe" cigarette. It stresses the pitfall of only taking an interest in new products when the older products represent the majority of the market. Thus, the measures proposed should affect the whole range of tobacco products. The knowledge of tobacco products is insufficient, the means of study and research limited, and regulation inadequate and unsuitable. The working group therefore agrees to make 12 rational proposals, based on scientific knowledge or research of acceptable compromise. 2. Reduction of tobacco consumption The working group notes that cessation should be the main aim. A reducing consumption should only be considered as a second-line option. The working group does not therefore favour a policy of reducing tobacco consumption for all smokers. Several ongoing studies might allow a revaluation of this position. However, in the case of smokers with tobacco-related illness who are unable to stop smoking despite support, even in the absence of clear evidence, the working group considers that smoking reduction can be proposed with the eventual aim of cessation at some future date, even if the date is unknown.

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WHAT DO MARLBORO LIGHT SMOKERS KNOW ABOUT LOW-TAR CIGARETTES?
K.M. Cummings, M.A. Bansal, A. Hyland, B. Yost, G. Giovino

OBJECTIVE: To assess Marlboro Light smokers’ knowledge, attitudes, and beliefs about low tar cigarettes.

METHODS: Data were collected with a 25-minute random digit dialed telephone survey conducted with a nationally representative sample of 1,046 adult smokers between May and September 2001. The response rate for the survey was 77%. To summarize the knowledge these smokers possessed on low tar and filter cigarettes, eight questions from the survey were used to create an index that reflects the range of knowledge in this area. A standardized knowledge score was computed for the index by scoring the average percent of correct responses by total responses for each smoker.

RESULTS: Of the total sample, 197 (19%) reported they smoked Marlboro Lights. Sixty-eight percent of Marlboro Light smokers were not aware of ventilation holes located on the filter. Sixty percent of Marlboro Light smokers thought that the reduction of tar made the cigarette less dangerous to the smoker and 48% reported that high tar cigarettes were at least twice as likely to cause illness compared to ones low in tar. Eighty-seven percent of Marlboro Light smokers reported that someone would have to smoke two or more light cigarettes to get the same amount of tar as from one regular cigarette. Overall, Marlboro Light smokers answered only 36% of the low tar knowledge index questions correctly. Marlboro Light smokers who believed they would stop smoking in the next year were more knowledgeable about low tar and filter cigarettes.

CONCLUSIONS: Many Marlboro Light smokers are misinformed about product features of their cigarettes and this knowledge is correlated with their intentions of quitting.

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DESIGNING THE PERFECT DRUG DELIVERY DEVICE: MANIPULATION AND CONTROL OF NICOTINE SMOKE YIELD, INTAKE, AND SMOKER BEHAVIOR
Geoffrey Ferris Wayne, Greg N. Connolly

Prior research has demonstrated that changes in smoker behavior, such as increased puff volume, puff duration, and vent blocking, may alter the delivery of “tar” and nicotine relative to smoke machine measured values. In this study, we analyzed internal tobacco industry documents to identify changes in cigarette product design that may affect smoker behavior or alter patterns of smoke delivery and intake. Our findings suggest that cigarette design is more successful to the degree that it allows a smoker precise control over smoke delivery throughout the smoking of the cigarette. Internal industry projects that targeted products with unique delivery profiles or "variable" deliveries proved commercially unsuccessful due to unexpected impact on human smoking behavior. Increasing understanding of the importance of smoker perception, especially ease and perception of draw, has led to the development of products that are more easily manipulated by the smoker. Regulatory attention directed at brand specific smoke deliveries must take into account the degree of delivery control afforded by the product and its effects on smoker behavior.

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PA3-4

ARE SMOKERS ADEQUATELY INFORMED ABOUT CIGARETTE PRODUCT CHARACTERISTICS AND THE HEALTH RISKS OF SMOKING?
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OBJECTIVE: To assess smokers’ knowledge about cigarette product characteristics and the health risks from smoking.

METHODS: Data were collected with a 25-minute random-digit dialed telephone survey conducted with a nationally representative sample of 1,046 smokers 18+ years of age between May and September 2001. The survey response rate was 77%. To summarize the knowledge that smokers possessed on different tobacco related topics, a subset of 35 questions from the survey were used to create six knowledge area indices: health risks of smoking, content of cigarette smoke, safety of nicotine, low tar and filter cigarettes, additives in cigarettes, and nicotine medications. A standardized knowledge score was computed for each index by scoring the average percent of correct responses by total responses for each smoker.

RESULTS: The domain smokers knew the least about was questions regarding low tar and filter cigarettes (only 35% of responses were correct) and the domain they scored best on was questions regarding the health risks of smoking (61% of responses were correct). When all six indices were combined into a summary score, the smokers’ characteristics most predictive of misinformation were: age (55+ years), use of ultralight cigarettes, belief in one’s ability to stop smoking before a serious health problem occurs, and less education. Those who believed they would stop smoking in the next year were more knowledgeable about smoking. While smokers lack accurate knowledge about cigarettes and health effects, 77% reported a desire for additional information from tobacco companies on the health dangers of smoking, fewer than 3% reported that a cigarette company had ever advised them how they could make their smoking less risky but over 70% of respondents reported the have received discount coupons in the mail from tobacco companies.

CONCLUSION: Smokers are misinformed about many aspects of the cigarettes they smoke and information may be related to future quitting. Smokers desire more information about the health risks from smoking, yet few have received this information from tobacco companies.

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PA3-5

DO REDUCED EXPOSURE PRODUCTS ACTUALLY REDUCE EXPOSURE? NITROSAMINE LEVELS IN ADVANCE USERS
Alison Breland, M.S., August R. Buchhalter, Ph.D., and Thomas Eissenberg, Ph.D.

The tobacco industry is developing products that may reduce smokers’ exposure to lethal smoke constituents, though little objective research supports a claim of reduced exposure. For example, Brown and Williamson’s ADVANCE cigarette purportedly contains low levels of tobacco-specific nitrosamines (e.g., NNK), though we are aware of no published study that demonstrates that ADVANCE smokers are exposed to lower nitrosamine levels. This study examined NNK exposure in smokers who smoked own brand, ADVANCE, or no cigarettes for five days. Twelve smokers (4 men, >15 cigarettes/day for the past two years) participated in this three-condition, within-subject, outpatient study. Five-day conditions (own brand, ADVANCE, no cigarettes) were Latin-square ordered, and were separated by a minimum 72-hour washout period. Compliance with each condition was reinforced monetarily and monitored with daily butt counts and expired-air CO measurement, as well as thrice-weekly urine cotinine assessment. Outcome measures included thrice-weekly urinalysis for NNAL (an NNK metabolite). Relative to the last day of own brand (604 picograms/ml), NNAL levels were reduced significantly after no cigarettes (182 picograms/ml) and ADVANCE (298 picigrams/ml), though NNAL levels after ADVANCE were significantly greater than after no cigarettes (all Ps < .05). PREP cigarette yield can be measured in smokers over a five-day exposure period. Smokers using low-nitrosamine cigarettes may receive less NNK exposure than when using regular cigarettes, but more NNK exposure than when not smoking. These results highlight the need for an objective and comprehensive PREP testing strategy that includes clinical behavioral pharmacology laboratory methods.

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PA3-6

SMOKING BEHAVIOR AND CARBON MONOXIDE AND COTININE LEVELS WITH A “REDUCED RISK” CIGARETTE (OMNI) VS TRADITIONAL CIGARETTES
J.R. Hughes, J. Keely, E. Iula, J. Hirsch

Omni cigarettes are currently marketed and report reduced PAH and nitrosamine exposure (two classes of carcinogens in cigarettes) by 15-60% via a novel curing and catalytic systems. Nicotine and carbon monoxide levels are reported to be similar to light cigarettes. We tested whether smokers would smoke Omni and their own cigarettes similarly and whether nicotine and CO levels would be similar. We recruited 21 low-tar smokers and 16 high-tar smokers to test “a possibly safer new cigarette.” Subjects smoked their own cigarettes for 6 wks and the Omni cigarette for 6 wks in a randomized, crossover study. Low tar smokers smoked the “light” version of Omni and high tar smokers smoked the “full-flavor” version. Smokers reported cigs/day twice weekly. Every other week smokers reported craving, withdrawal, cigarette ratings (satisfaction, etc), nicotine toxicity, adverse events and readiness to quit. They also provided breath samples for carbon monoxide and urine samples for cotinine. (We also collected 24 hr urines for carcinogen markers but these will not be available to present by Feb.) In addition, smokers smoked two of the cigarettes they were using on a pneumotachograph. Among the 15 low-tar and 9 high-tar smokers who have completed the study, preliminary results did not differ between low-tar and high-tar smokers. Smokers appeared to smoke slightly more cigs/day with Omni (33 vs 31, p=0.09) and had a slightly higher CO (39 vs 32 ppm, p=0.02). Although the total puff volume of the in-lab smoked cigarettes did not differ between the two cigarettes, Omni cigarettes had a slightly higher mean CO increase (+4.8 vs 3.4 ppm, p=0.05). Cotinine levels are not currently available. At the exit interview, 16 smokers stated they were very interested in purchasing Omni, 5 were somewhat interested and 3 were slightly or not interested. These preliminary results suggest Omni may produce higher CO levels than traditional cigarettes in the first few weeks of using Omni.

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PA3-7

ROLE OF SNUS (ORAL MOIST SNUFF) IN SMOKING CESSATION AND SMOKING REDUCTION AMONG SWEDISH MEN
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AIMS: To assess to what extent snus has been used as an aid to stop smoking among Swedish smokers. Design: A random telephone retrospective survey of Swedish smokers and ex-smokers.

SETTING: Survey conducted in November-December 2000. Participants: A national sample of 1000 former and 985 current daily smokers aged 25-55 years. Measurements: Smoking status, date and method of quitting by self report. Findings: Thirty-three percent of former smokers and 27% of current smokers had ever used snus. The difference was larger among men (55% vs. 45%, p=0.003). Current smokers who made use of snus smoked on average fewer cigarettes per day than non-users of snus. The mean duration of abstinence among former smokers was not influenced by snus use. Conditionally on age, education, and use of NRT there was an increased probability to be a former rather than a current smoker with ever use (OR 1.72, 95% CI=1.30-2.28) or current use (OR 1.81, 95% CI=1.31-2.53) of snus. Having used snus at the latest quit attempt increased the probability of being abstinent by about 50% (OR 1.54, 95% CI=1.09-2.20).

CONCLUSIONS: Our study suggests that by using snus, Swedish male smokers may increase their overall chances of abstinence. However, 71% of the men in this sample who quit smoking did so without using snus and the duration of abstinence was not affected by snus use. This suggests that snus is not a necessary component of smoking cessation at the population level. Snus use was very rare among women.

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PA3-8  WHAT IS THE EFFECT OF INCREASES IN CIGARETTE EXCISE TAXES ON THE REAL COST OF CIGARETTES TO THE CONSUMER?

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The price of tobacco products has significant impact on use. With price increases, smokers often consume fewer cigarettes, increase quit attempts, switch to cheaper brands, and/or use alternative sources. It has been suggested that manufacturers attempt to “sticker shock” by temporarily reducing cigarette prices in response to tax increases. To determine the effect of state tax increases on the retail cost of cigarettes, we surveyed prices in representative samples of stores, before and after increases, in Maryland, Rhode Island, and Massachusetts. Following a $0.34 increase in taxes in Maryland, the mean cost of single packs of Newports and Basics increased by the equivalent of the tax increase ($0.36 and $0.34, respectively). In contrast, the change in mean price of Marlboros exceeded the tax increase ($0.59). For all three brands, the magnitude of increase was significantly related to the baseline price, so that the greatest changes were seen in stores with the cheapest cigarettes at baseline, and the smallest increases in stores with highest baseline prices (p<0.01). The effect was most marked for Marlboros, resulting in significant reduction in variation in price of Marlboros between stores. Influence of the industry on pricing, contrasting data for RI and MA, and variations in state laws which may account for the contrasts will be discussed.

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PA4-1  HEIGHTENED REACTIVITY TO SMOKING CUES AS A FUNCTION OF DOPAMINE TRANSPORTER (SLC6A3) GENOTYPE

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A recent report has suggested that a polymorphism in the DRD4 gene influences smoking cue reactivity. The influences of genotypes previously found to be related to smoking cessation outcomes (i.e., SLC6A3, DRD2) on reactivity are not known. This study represents the first test of the possibility that polymorphisms in the dopamine transporter (SLC6A3) and DRD2 genes influence craving reactions to smoking cues. Healthy smokers (n=71), recruited through advertisements in an urban medical center (65% female, 68% African-American, age=40.1±8.3), donated a 5 ml blood sample and reported craving levels before and after exposure to classic sets of imaginal and in-vivo neutral and smoking cues. DNA extracted from whole blood was subjected to PCR amplification for genotyping by our Core Laboratory (Diaz). Results indicated that smokers carrying the 9-repeat VNTR polymorphism in SLC6A3 had significantly stronger craving reactions to both imaginal and in-vivo smoking cues than those who were homozygous for the 9-repeat sequence (p<0.05). Results could not be attributed to baseline differences in smoking variables (e.g., cigarettes per day, strength of habit). No significant differences were found between smokers with variants of the DRD2 gene (presence vs. absence of A1 allelotype). Findings suggest a biobehavioral mechanism by which genetic factors may influence cessation success among smokers.

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PA4-2  TRANSCRIPTOMES COMPARISON IN HIPPOCAMPUS OF SMOKERS AND NON-SMOKERS: DIFFERENTIAL REGULATION BY SMOKING IN SCHIZOPHRENIA

S. Leonard, S. Wang, M. Frank, R. Berger

Neuronal nicotinic acetylcholine receptors play an important role in the modulation of neurotransmitter release in both the brain and periphery. Stimulation, either by the endogenous agonist acetylcholine or by nicotine in tobacco products results in opening of a channel in the pentameric receptor and the influx of Ca++, which facilitates vesicle release. Cigarette smoking is known to be common in the mentally ill. Approximately 30% of smokers in the US today are mentally ill and they purchase 45% of tobacco products. Smoking is highest in patients with schizophrenia, approaching 85% in most cohorts examined. Both high- and low-affinity nicotinic receptor levels have been measured in schizophrenic postmortem brain and in blood leukocytes, and found to be decreased by 50%. Mutations in the promoter region of the alpha 7 nicotinic receptor that decrease transcription are consistent with the observed decreased expression in the disease. Affymetrix oligonucleotide arrays were used to evaluate the expression of ~12,000 genes in postmortem hippocampus of normal smokers and nonsmokers, and in schizophrenic smokers and nonsmokers. The hippocampus was selected for analysis as this region is involved in cognitive and sensory processing deficits in schizophrenic patients. The expression of 72 genes was decreased in smokers, while 60 genes were upregulated. Approximately half of the transcripts reduced in smokers are involved in either cell growth and differentiation or cytoskeleton and cell adhesion, supporting previous evidence suggesting an impairment in hippocampal plasticity by drugs of abuse. In schizophrenic smokers and non-smokers, smoking changed expression for many of the same genes. However, for a subset of genes, expression changes were differentially regulated by nicotine in schizophrenic and control subjects. This could be due to the decreased levels of nicotinic receptors in the patients and account for differential responses to nicotine in sensory processing and cognitive measures.

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PA4-3  PHARMACOKINETIC MECHANISM OF TOXICITY FROM TRANSDERMAL NICOTINE IN NONSMOKERS

Neal L. Benowitz, M.D.*, Delia Dempsey, M.D., Faith Allen, M.D., Peyton Jacob III, Ph.D.

Individuals differ in their susceptibility to nicotine toxicity, and such susceptibility might influence the risk of developing nicotine dependence. Individual differences could be related to differences in nicotine sensitivity at the receptor level or differences in pharmacokinetics. To investigate these possibilities, we administered a 7-mg nicotine patch to 20 never-smokers with frequent measurement of blood nicotine concentrations and pharmacologic responses. The subjects were 10 men and 10 women averaging 26 years of age. Five subjects (25%) became toxic with nausea and/or vomiting. In 4 of these subjects, nicotine toxicity (NT) developed at 60-100 minutes, while one developed toxicity 372 minutes after patch application. The NT group included 3 Asian females and 2 Caucasian men. Compared to subjects who did not develop toxicity, the NT subjects had significantly higher peak plasma nicotine concentrations (10.9 vs. 6.8 ng/ml, p<0.001), and a more rapid rate of rise of plasma nicotine concentration (slope 0.049 vs. 0.025 ng/ml/min <0.001). Our study demonstrates that the mechanism of toxicity from transdermal nicotine in nonsmokers is pharmacokinetic as manifested by more rapid absorption and higher peak plasma nicotine levels. The genetic basis for this pharmacokinetic difference is currently under investigation.

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PA4-4

GENETIC AND ENVIRONMENTAL INFLUENCES ON MULTIPLE TOBACCO-RELATED PHENOTYPES IN FAMILIES

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Questionnaire data from 128 nuclear families ascertained as part of a longitudinal investigation of social and behavioral risk factors for substance use were used to estimate the heritability (H) of various smoking-related phenotypes. A classical variance component approach was used to determine the polygenic model in which the smoking related traits are determined by the additive effects of multiple unmeasured genes of small effect (polygenes), unmeasured individual specific environmental effects, and the effects of measured covariates. Gender effects were modeled as linear fixed effects through the mean and the variance of the smoking traits. The total phenotypic variance was partitioned into an additive genetic variance component and an individual specific environmental variance component, conditional on the gender effect, if gender was significant. Using the Sequential Oligogenic Linkage Analysis Routine (SOLAR) program, a maximum likelihood approach and a likelihood ratio test was used to test for the significance of heritability and gender. The phenotypes demonstrating significant heritability included time to first cigarette (H=0.44, p=0.00004), FTND total score (H=0.30, p=0.0044), withdrawal symptom experience (sum of all possible symptoms; H=0.25, p=0.005), CAGE total score (H=0.22, p=0.00175), and two measures of smoking motivations: Energy (H=0.28, p=0.0022), and Negative smoking (H=0.20, p=0.011). These findings suggest that a biological pathway controlling addiction to smoking and nicotine metabolism has a strong genetic component.  

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PA4-6

DIFFERENCES IN PLATELET SEROTONIN TRANSPORTER SITES BETWEEN AFRICAN-AMERICAN TOBACCO SMOKERS AND NONSMokers

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RATIONALE: The serotonin transporter (SHTT) regulates the magnitude and duration of serotonergic neurotransmission. Although nicotine and other constituents of tobacco smoke may alter serotonin turnover among animals, few studies have examined whether levels of SHTT may be influenced by smoking in humans.

OBJECTIVES: We investigated whether, platelet tritiated paroxetine binding, a measure of SHTT sites differed among tobacco smokers and nonsmokers, and whether severity of nicotine dependence (ND) was related to differences in SHTT sites. Methods: Tritiated paroxetine binding sites on platelets were assayed in 26 African-American smokers and 30 nonsmokers. Severity of smoking was assessed using the Fagerstrom Test for Nicotine Dependence (FTND). Relationships between FTND scores and maximum number of transporter sites (Bmax) and affinity constant (Kd) of paroxetine binding were determined.

RESULTS: Bmax values showed a significant negative correlation with FTND scores (r=−0.30, p<0.05). Notably, smokers with higher ND had significantly lower Bmax compared to those with lower ND and nonsmokers; the latter two groups did not differ in Bmax (F=3.92, p<0.05). Smokers were more impulsive than nonsmokers, however, behavioral variables did not influence the relationship of smoking with Bmax. Age, gender and Kd values were not associated with smoking or Bmax.

CONCLUSIONS: Smoking appears to be associated with decreased density of platelet SHTT sites in African-Americans. The SHTT differences seem to be particularly prominent in individuals with higher ND. Whether similar changes occur in the brain and mediate addiction to nicotine merits further investigation.  

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PA4-7

SMOKING TOPOGRAPHY AND EXPOSURE ACROSS LEVELS OF CIGARETTE AVAILABILITY IN BLACK AND WHITE WOMEN

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Economic factors influence cigarette availability with potential smoking behavior compensation in response. Increased salience of widely spaced cigarettes has been reported. Purposes of this investigation were to examine differences in smoking topography and smoke exposures across three smoking conditions: usual number of cigarettes, restricted (50%) and increased (167%) conditions simulating financial constraints and removal of cost factors. A repeated-measures counterbalanced design with a sample of 25 women (13 African American; 12 Caucasian) was implemented with a 6-day inpatient protocol conducted in the General Clinical Research Center. Ad libitum smoking of usual cigarette brand occurred on Days 1 and 4, with random assignment to restricted or increased condition on Days 2 and 3, or Days 5 and 6. Data, collected on Days 1, 3, 4, and 6 to provide an adjustment to each condition, included pre and post-cigarette CO, plasma nicotine and smoking topography. Time and butt length of each cigarette were recorded. There were significant differences in daily average percentage increase in carbon monoxide pre to post-cigarette, cigarette butt lengths, and cotinine/cigarette ratio across conditions. Women with baseline cotinine/cigarette ratios >20 ng/ml/cigarette, considered efficient smokers, had significantly higher CO increases pre- to post-cigarette at baseline than participants with lower cotinine/cigarette ratios, yet increased this exposure further during the restricted condition. Differences by race were also noted with significantly higher CO percentage increases pre- to post-cigarette in African Americans across all conditions, compared to Caucasians. Smoke constituent exposure in persons who reduce cigarettes per day in response to financial constraints or as a smoking cessation strategy may be substantial.

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PA4-8
THE FAMILIAL TRANSMISSION OF HABITUAL SMOKING IN ALCOHOL DEPENDENT FAMILIES: DIFFERENCES BETWEEN CAUCASIAN AND AFRICAN-AMERICAN FAMILIES

The purpose of this study is to examine the aggregation of habitual smoking in Caucasian and African American families who participated in the Collaborative Study on the Genetics of Alcoholism (COGA). Individuals who met criteria for both DSM-IIIR alcohol dependence and Feighner definite alcoholism (COGA criteria) were identified in substance related disorder treatment settings. First degree relatives were recruited as a sample at high risk for smoking and alcohol dependence. All subjects were interviewed using a semi-structured interview (SSAGA) that evaluated smoking, alcohol dependence, and other psychiatric disorders. Caucasian sibings (N=1923) had a higher lifetime prevalence of habitual smoking (defined as smoking 20 cigarettes daily for 6 months or more) when compared to African American siblings (N=491) (40.0% vs 20.0% p < 0.001). This increased rate of habitual smoking was present even when analyzing siblings who ever smoked daily for a month or more (61.4% vs 37.8% p < 0.001). Using multivariate survival analysis to control for multiple potentially confounding variables such as birth cohort, gender, and comorbid psychiatric disorders, African American siblings of alcohol dependent subjects were significantly less likely to become habitual smokers compared to Caucasian siblings of alcohol dependent subjects (Risk ratio = 0.41). In this sample, there is a stronger familial clustering of habitual smoking in the Caucasian families compared to the African American families.

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PA5-1
FACTOR STRUCTURE OF A SURVEY-BASED SCALE OF ADOLESCENT SMOKING-RELATED COGNITIONS ACROSS ETHNIC GROUPS
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Large-scale surveys frequently assess tobacco-related cognitions, however few studies have examined the psychometric properties and cultural validity of such measures. The present study examined the factor structure of a dichotomous 8-item tobacco-related beliefs scale administered in English and Spanish as part of the state-wide California Tobacco Survey. It was expected that scale factor structure would be invariant across the Non-Hispanic White and English-speaking Mexican-Americans, but would differ for Spanish-speaking Mexican-Americans. Participants were adolescents ages 14-18 (50% female), including 1960 Non-Hispanic Whites, 593 English-speaking Mexican/Mexican-Americans, and 455 Spanish-speaking Mexican/Mexican-Americans. Exploratory factor analysis with robust weighted least squares estimation was conducted on a random half of the Non-Hispanic Whites, and identified a single factor which was confirmed within the remaining half (Chi square(4) = 17.73, CFI = .99, RMSEA = .08). The factor solution was also confirmed for English-speaking Mexican-Americans (Chi square(4) = 25.17, CFI = .98, RMSEA = .09), and Spanish-speaking Mexican-Americans (Chi square(4) = 1.91, CFI = 1.00; RMSEA = .00). Factorial invariance analyses revealed differences across the 3 groups (Chi square difference (8) = 19.03, p < .025). Follow-up invariance analyses indicated the factor structure was invariant across the Non-Hispanic whites and English-speaking Mexican-Americans (Chi square difference (4) = 8.07, NS), but varied for the Spanish-speaking Mexican-Americans (Chi square difference (4) = 13.59, p < .01). These findings underscore the importance of examining the psychometric properties of scales employed to assess tobacco-related cognitions across cultural groups.

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PA5-2
THE MEASUREMENT PROPERTIES OF A NICOTINE DEPENDENCE SCALE FOR ADOLESCENTS: FURTHER EVIDENCE
James M. Nonnemaker, Ph.D.*, Christian T. Nimshc, M.A., RTI, and M. Lyndon Haviland, Dr.PH., American Legacy Foundation

In previous work we proposed a new scale for measuring nicotine dependence in adolescents and tested its measurement properties in an adolescent sample (American Legacy Longitudinal Tobacco Use Reduction Study or ALLTURS). The scale, which we call Nicotine Dependence Scale for Adolescents (NDSA), is a simple linear sum of items associated with behaviors to avoid withdrawal and items associated with experiences of craving. The NDSA had good measurement properties in the ALLTURS sample. In this study we present additional evidence for the validity of the NDSA as a measure of nicotine dependence using several strategies and data sources. First, using both waves of the ALLTURS sample we examined the effect of an adolescents’ wave one NDSA score on the probability that the adolescent quit smoking between wave one and two. The results indicate that adolescents with a higher NDSA score at wave one were significantly less likely to quit smoking by wave two. Second, using data from a study to validate self-reports of smoking in the NYTS (National Youth Tobacco Survey), we examine the correlation between adolescent saliva cotinine levels and NDSA scores. Higher levels of saliva cotinine were associated with higher NDSA scores (r = .60, p < .001). Finally, we examined the measurement properties of the NDSA using NYTS 2002 data. The measurement properties of the NDSA in the NYTS 2002 were very similar to those observed in the ALLTURS sample. The results presented in this study strengthen the case that the NDSA scale is a reliable and valid measure of nicotine dependence in adolescents.

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PA5-3
A NEW SELF-ADMINISTERED QUESTIONNAIRE TO MEASURE CIGARETTE WITHDRAWAL SYMPTOMS: THE CIGARETTE WITHDRAWAL SCALE (CWS-20)
Jean-Francois Etter

OBJECTIVES: To develop and assess the validity of a new, self-administered measure of tobacco withdrawal symptoms, for use in cigarette smokers. Methods. The content of the instrument was generated in qualitative surveys. A long version of 61 items was tested on the internet in 3050 smokers and ex-smokers. Subsamples provided retest data after 17 days and follow-up data after 41 days. RESULTS: The study resulted in a 20-item, 6-dimension scale labelled the Cigarette Withdrawal Scale (CWS-20). The six subscales cover the main components of tobacco withdrawal in DSM-IV and ICD-10 and in qualitative data: Depression-Anxiety, Craving, Irritability-Impatience-Nervousness, Appetite-Weight gain, Insomnia, and Difficulty Concentrating. The six scores had a high test-retest reliability (r=0.71 to r=0.83), and a high internal consistency (Cronbach’s alpha 0.84 to 0.94). The factor structure of the scale was stable in a bootstrap resampling procedure. In recent ex-smokers who had quit smoking <14 days before baseline, all scores except Appetite decreased between baseline and 17-day retest. In baseline ex-smokers who relapsed to smoking at 17-day retest, Appetite decreased and Craving increased between baseline and follow-up. In baseline ex-smokers, all scores except Appetite predicted relapse at 41-day follow-up. Conclusions. CWS-20 is a valid, reliable, multi-dimensional scale that is sensitive to change over time and predicts relapse to smoking. It can be used by clinicians and researchers to assess withdrawal symptoms in cigarette smokers.

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PA5-4  VALIDATION AND REPLICATION OF THE NICOTINE EFFECTS QUESTIONNAIRE
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In this study, we examined the factor structure of the Nicotine Effects Questionnaire (NEQ), a 15-item scale designed to measure adults' subjective positive and negative perceptions of emotional and physiological responses to smoking. The NEQ was administered to 174 daily smokers following overnight abstinence (12h) and after smoking a standard cigarette (1.0 mg dose of nicotine) using the Quantified Smoke Delivery System. All participants were motivated to quit smoking with minimal assistance. Using principal components analysis (PCA), the following three factors were identified: positive effects (6 items), negative effects (4 items), and autonomic activation/sedation (5 items). All showed acceptable internal consistency (alphas = .78, .78, .67, respectively). We evaluated the validity of this three factor solution in a second sample of 120 daily smokers prior to smoking treatment involving naltrexone. Participants completed the NEQ following 10 hours of abstinence and after ad lib smoking of one cigarette. Results of this PCA produced the same three components. In sum, findings provide initial support for the validity of the NEQ for assessing subjective responses to smoking in the context of smoking manipulations. In future analyses, we plan to test whether NEQ subscale scores differ by gender or degree of nicotine dependence.

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PA5-5  EFFECTS OF REPEATED DAYS OF SMOKING CUE EXPOSURE ON SUBJECTIVE AND PHYSIOLOGIC REACTIVITY
Robert Miranda, Damaris Rohsenow, Peter Monti, Jennifer Tidey, and Robert Swift, Center for Alcohol and Addiction Studies, Brown University, Providence VA Medical Center

The present study used a laboratory-based, cue reactivity paradigm to investigate the effects of repeated smoking cue exposure on subjective and physiologic reactivity. Twenty non-treatment seeking smokers (80% male), 20 to 67 years of age (M = 50), were recruited from the community. Participants smoked 15 to 40 cigarettes per day (M = 24) for an average of 23 years (SD = 15.3). Each participant completed three nonconsecutive laboratory sessions, 3 to 11 days apart (M = 5.9), following 10-hour nicotine deprivation periods. CO levels were taken prior to each session to confirm abstinence. Cue reactivity procedures consisted of a relaxation period followed by two cigarette cue exposure periods. Measures included urge to smoke, a withdrawal questionnaire, mean arterial pressure (MAP), and heartbeats per minute (BPM). Condition (relaxation, cue exposure) X Day (2 X 3) repeated measures ANOVAs were conducted for each measure. Results indicated a significant main effect for condition, with greater urge to smoke reported during exposure to cigarette cues (p < .05). No effects were revealed for Day or the Condition X Day interaction. An increase in MAP and BPM was found following cue exposure and this effect did not abate across days. Withdrawal was minimally reported in this study, though there was a significant increase in symptoms following cue exposure on days 1 and 2 but not day 3. This is the first study to directly examine the stability of subjective and physiological responsivity across multiple administrations of a smoking cue reactivity paradigm.

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PA5-6  COMPARING PERSONALIZED SMOKING CUES AND STANDARDIZED SMOKING CUES IN REGULAR SMOKERS
William G. Shadel, Ph.D., University of Pittsburgh; Raymond Niaura, Ph.D., and David B. Abrams, Ph.D., Brown Medical School

Research has found that exposing smokers to active smoking cues leads to increases in craving compared to exposure to neutral cues. One issue that has not been addressed in depth, but is important for theoretical and methodological reasons, is the degree to which idioographically-designed smoking cues compare to standardized cues in eliciting craving. In this study, we analyzed data from 22 regular smokers (from a larger ongoing laboratory trial) to evaluate this question. During a baseline session, each smoker completed a semi-structured interview with a researcher who asked them to describe a “situation or event in which you know that for you personally triggers an intense and extremely strong craving” (strong personal trigger [SP]) and a “situation or event in which you know that for you personally triggers a weak and not very strong craving” (weak personal trigger [WP]). Content from these individualized responses were transcribed into a standardized script format. During a second session, participants were exposed to their own WP and SP script cues, and to a standardized in vivo active smoking cue (i.e., a lit cigarette; AIV) and to a standardized neutral in vivo cue (i.e., a pencil; NIV). Craving self-reports were taken immediately following each exposure. Results revealed a significant effect of cue type on craving (p < .001) and specific comparisons revealed that SP generated stronger craving than WP (p<.02), and that AIV generated stronger craving than NIV (p<.0001). No significant differences in craving were observed when comparing SP to AIV (p > .25), or WP to NIV (p > .71). These results have implications for craving theories and for craving manipulations.

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PA5-7  TAILORED INTERVENTIONS FOR SMOKING CESSATION: THE EFFECTS OF PLACEBO-TAILORING AND EXPECTANCIES
Monica S. Webb, B.S., Vani Nath, M.A., and Thomas H. Brandon, Ph.D.

Over the past decade, there has been a proliferation in research examining the effectiveness of computer-tailored interventions to promote various health outcomes. The present study examined possible mechanisms underlying the effectiveness of tailored interventions for smoking cessation. The study utilized a “placebo tailoring” design to test whether the efficacy of tailoring was due, at least in part, to personalized features, rather than the theoretically developed tailored content of the intervention. Additionally, the moderating role of baseline expectancies about tailored interventions was evaluated. A randomized trial with pre and post-intervention assessments was conducted, assigning 242 adult smokers contemplating quitting to one of three conditions that varied on the degree of ostensible tailoring. Two degrees of apparent tailoring were compared to a standard condition in a three-cell design: 1) A standard booklet/not told tailored; 2) A personalized booklet/told tailored; 3) A placebo tailored booklet/told placebo (placebo tailoring). Although the three conditions received booklets that varied in their degree of apparent tailoring, the actual smoking-related content of the booklets was identical. Dependent variables included: evaluations of the content, readiness to quit smoking, and perceived self-efficacy for quitting. It was hypothesized that the most positive outcomes would be found among smokers in the Placebo-Tailored condition, and the least positive outcomes would be found among subjects in the Standard condition. Results suggested that smokers evaluated the content of the Placebo-Tailored intervention more favorable than the content in the Standard intervention. Additionally, the effect of Placebo-Tailoring was moderated by participants’ expectancies about tailoring. Implications for tailored interventions will be discussed.

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PA5-8
COMPARATIVE EFFICACY OF RAPID-RELEASE NICOTINE GUM VS. NICORETTE IN RELIEVING SMOKING CUE-PROVOKED CRAVING

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Current nicotine gum can help relieve cravings provoked by smoking cues, but faster effects may be needed. We tested a prototype formulation of a new rapid-release gum (RRG) that provides more rapid release and absorption of nicotine, for its ability to provide faster and better craving relief. 319 smokers completed craving assessments at regular intervals before and after being exposed to a smoking cue (baseline, pre-cue, and 3, 6, 9, 12, 15, 18, 21, 25, 30, and 35 minutes after the cue). Smokers were exposed to a cigarette of their preferred brand, which they lit without inhaling. Subjects then chewed a piece of RRG or Nicorette gum according to randomized assignment (RRG n=159, Nicorette n=160). Smokers chewing RRG showed significantly lower craving than Nicorette subjects starting with the first assessment at 3 minutes (p<.025). Repeated measures ANOVA revealed a significant treatment-by-time interaction (p<.037); craving scores were reduced more rapidly in RRG subjects during the post-cue chewing period, compared to Nicorette. Time-to-event analyses also indicated superiority of RRG gum in achieving more rapid self-reported meaningful relief (p<.051) and complete relief (p<.033) of craving. Adverse effect data will also be presented. RRG nicotine gum more rapidly reduces cue-provoked craving compared to Nicorette, and thus merits further study in cessation efficacy trials.

Supported by Bayer Corporation. Dr. Shiffman is a coinventor of RRG gum and holds an interest in the product.

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PA6-1
ASSOCIATION BETWEEN EXPOSURE TO WORKPLACE SECOND-HAND SMOKE AND REPORTED RESPIRATORY AND SENSORY SYMPTOMS: CROSS-SECTIONAL STUDY

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This study aimed to assess the relation between exposure to second-hand smoke (SHS) at work and reported respiratory and sensory symptoms. A stratified random sample of 1,078 members from the Victorian state branch of the Australian Liquor Hospitality and Miscellaneous Workers Union (LHMU) was interviewed by telephone in September 2001 (77% response rate). From this sample, we selected workers who were non-smokers or ex-smokers quit for more than one year, worked indoors and were employed for 35 hours or more per week. Overall, 382 workers were selected for this study. Respiratory and sensory symptoms in the past month were assessed using a standard questionnaire. After controlling for potential confounders including exposure to SHS at home and during recreation, exposure to SHS at work for part of the day was significantly associated with an increased risk of past month wheeze (OR=4.26), frequent cough (OR=2.28), sore eyes (OR=3.77) and sore throat (OR=2.70). Among workers who had not experienced a cold in the past 4 weeks, we found strong dose-response relationships between increasing levels of exposure to SHS at work and morning cough, frequent cough, sore eyes and sore throat, and a positive relationship for wheeze. These findings provide compelling evidence that indoor workers are adversely affected by exposure to SHS at work and underline the importance of workplace smoke-free policies in protecting the health of workers.

This study was funded by the Victorian Health Promotion Foundation.

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PA6-2
DEFIANCE OF SMOKEFREE BAR POLICY: STRUCTURED OBSERVATIONS IN SAN FRANCISCO BARS

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A ban on smoking in California worksites was extended to bars at the outset of 1998. In this study, we evaluated the effectiveness of the ban through several methods, including sending pairs of observers to 120 randomly selected standalone bars in San Francisco. This presentation focuses on the prevalence of smoking in these bars and an analysis of factors identified in the observations that were associated with defiance of the smokefree bar policy. Pairs of trained observers were sent out on four separate occasions (on different days of the week and time periods) to randomly selected bars throughout 2002. The sample represents approximately one-third of the city’s standalone bars. Following hourlong visits to each bar, the observers recorded their highly structured observations in and around the bars using handheld computers. They also wrote semi-structured narrative field notes to elaborate qualitatively what they had seen, with special attention to details of the bar environments and staff-patron interactions that were relevant to smoking behavior. The structured observations were downloaded to an Access database and the narratives were compiled in ATLAS.ti, software facilitating text analysis. Smoking in the bars was observed to varying extents across visits. In 62% of the bars, no smoking was ever witnessed, whereas in 24% of the bars, smoking was endemic. In the remaining 14%, smoking was rare or circumstantial (e.g., smoking in the doorway). Analysis of the structured and narrative observations revealed correlates of the bars in which smoking was endemic, including Asian and Irish ethnicity.

This study was supported by the University of California Office of the President’s Tobacco-Related Disease Research Project (TRDRP) Grant # 10RT-0276.

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PA6-3
INFLUENCING PUBLIC POLICY: ENVIRONMENTAL TOBACCO SMOKE EXPOSURE IN TULSA

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Environmental tobacco smoke (ETS) exposure is linked to many health problems for children and adults. These risks resulted in greater restrictions in many public facilities, with most creating smoke-free environment. In Oklahoma, bars and restaurants typically provide nonsmoking sections, however, there is concern that workers are exposed to high levels of ETS and are at increased risk for health problems. To address this issue, the Tulsa City-County Health Department contracted with researchers from Oklahoma State University to replicate and extend work on ETS exposure for restaurant workers in the Tulsa Metropolitan area. The present study examined the ETS exposure for 45 nonsmoking restaurant workers and a control group of 30 nonsmoking controls. ETS exposure was measured using nicotine monitors worn at work and urine cotinine collected at the end of each shift. All subjects provide a urine sample, wore a nicotine monitor, and complete questionnaires regarding ETS exposure outside of work. Two restaurant workers were eliminated due to excessively high cotinine levels indicating that the participant was very likely a smoker. T-tests were conducted to determine group differences. ETS exposed participants had significantly higher levels for both measures. (Nicotine: t(68)=2.638, p<.010; Cotinine: t(64)=2.656, p<.010). The correlation between observed cotinine and nicotine exposure at work was .438 (p<.01). These data have been one component of new policy regulations in the State of Oklahoma. In July of this year, the Governor signed an emergency regulation that greatly restrict smoking in public places. This paper will discuss the use of research data to influence public policy.

This Study was funded by the Oklahoma Department of Health/Tulsa City-County Health Department.

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PA6-4 KNOWLEDGE, ATTITUDES, AND PERCEPTIONS ABOUT ENVIRONMENTAL TOBACCO SMOKE AMONG LOUISIANANS

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PURPOSE: ETS has been associated with SIDS, upper respiratory and cardiovascular disease, and cancer. The purpose of this study was to conduct formative research on the knowledge, attitudes, and perceptions about ETS among Louisiana residents. Results of this study will be used to identify media strategies for development of ETS-reducing behaviors.

METHODS AND RESULTS: Focus groups (n=16) were conducted throughout Louisiana and a systematic content analysis of the transcripts performed. Seven recurring themes emerged: A) There are considerable knowledge deficits regarding the health effects of ETS. This is in stark contrast to the extensive knowledge about the health hazards of smoking itself. B) Subjects want to improve their ETS knowledge base. C) Subjects voiced doubt about the health effects of ETS, with the frequent suggestion that public health and media “invented” ETS. This is accompanied by a striking cynicism about science and statistics. D) The aesthetic effects of ETS (e.g., malodorous breath, smells, messiness) are perceived as negative attributes of ETS. E) The amount of control a person has over exposure to ETS corresponds to the amount of disapproval interviewees have about ETS: those who smoke around children are perceived more negatively than those who do around adults. F) Legislation is viewed as an acceptable means of reducing ETS, but banning of indoor smoking is perceived as overly harsh. G) There is compassion between smokers and non-smokers regarding their rights, with civility and respect repeated suggestions about how to reduce ETS. Conclusions. A campaign to reduce ETS should include educational messages about ETS and its effects, teach smokers behaviors to reduce ETS around non-smokers and vulnerable populations, and teach non-smokers behaviors to reduce their own exposure.

This study was funded by the Louisiana State Office of Public Health.

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PA6-5 EXPOSURE TO SECOND HAND SMOKE IN CANADIAN HOME ENVIRONMENTS: A NATIONAL STUDY

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Home environments remain largely unregulated for exposure to second hand smoke. We carried out a national study in Canada to examine attitudes and behaviours regarding second hand smoke in homes and vehicles. Data were collected by computer-assisted telephone interview from July 2001 to January 2002 in a population-based survey (N=5009) of Canadian adults, aged 18+. We oversampled households with smokers and children and developed population-based estimates of household exposure and beliefs about the effects of second hand smoke. Three quarters of Canadian homes were smoke free (77.6%). Daily home exposure ranged widely from 11% in British Columbia to 24% in the Atlantic region. Of homes with smokers, 65% allowed smoking inside their home. When children were present, the rate dropped to 58%, ranging from 29% in British Columbia to 76% in Quebec. Beliefs about health effects of second hand smoke in children varied considerably by smoking status. Only 20% of non-smokers and 12% of smokers believed that smoke caused ear problems in children, and only 15% of non-smokers and 8% of smokers believed smoke caused SIDS. Having children in the home increased beliefs that second hand smoke caused health problems in children. Public education programs should address widely held misconceptions about the health effects of second hand smoke. Although home exposure is declining, efforts to protect children through existing child protection legislation should be explored.

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PA6-6 RELATIONSHIP OF CLEAN INDOOR AIR POLICIES AT WORK, HOME, AND IN THE FAMILY CAR WITH CESSEATION BEHAVIORS

J.E. Bauer*, A. Hyland, Q. Li, G. Giovino, and K.M. Cummings

OBJECTIVE: To assess the relationship between smoke-free policies in various locations and cessation behaviors.

METHODS: A follow-up study of the NCI Community Intervention Trial for Smoking Cessation (COMMIT) was completed in 2001. Detailed tobacco use surveys were administered over the phone and 7,329 subjects were successfully re-interviewed. Respondents reported on the extent of smoking rules at work, home, and in the family car, along with several related measures of cessation behavior (e.g. quitting, quit attempts, reduction in amount smoked, use of low tar cigarettes, use of nicotine replacement therapy, etc.).

RESULTS: Preliminary analyses indicate that policies that prohibit smoking at the worksite, in the home, or in the family car, were all significantly associated with increased rates of making a quit attempt and with successfully quitting. The prevalence of those who never allow smoking was similar for family car (43%) and home (42%) in 2001. The prevalence of worksite policies that prohibited smoking everywhere, dramatically increased from 28% in 1993 to 72% in 2001. Additional analyses, including multivariate approaches will be completed to more fully characterize these relationships.

DISCUSSION: This study provides information about the long-term effects of an array of clean indoor air policies on quitting, as well as other measures that smokers commonly take when trying to stop smoking.

LEARNING OBJECTIVE: To understand how smoke-free policies are related with cessation behaviors.

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PA6-7 REDUCING ENVIRONMENTAL TOBACCO SMOKE EXPOSURE IN PRIVATE PLACES: A QUALITATIVE STUDY OF TOBACCO CONTROL ADVOCATES

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OBJECTIVES: 1) To examine opinions held by tobacco control advocates about environmental tobacco smoke (ETS) exposure in private places (homes and vehicles) and strategies for ETS control and 2) To explore policy options for reducing ETS exposure in private places.

METHODS: Semi-structured interviews with 25 key informants from public health and medicine were conducted to examine the role for policy in private places and elicit recommendations on what ETS control measures would “look” like and how they could be enacted.

RESULTS: There was much consensus regarding opposition to 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. The extent to which ETS exposure could be characterized as child abuse was an area of debate among participants. A need for an integrated approach involving mass media campaigns, health education and clinical interventions was identified.

CONCLUSION: Tobacco control in private places is a politically charged topic. Opponents raise issues related to individual rights, freedoms and choices. Supporters argue that exposure of infants/children to ETS in the home is not substantially different from child abuse or neglect. Strategies for dealing with ETS in private places cannot be seen in isolation of the broader context of smoking prevalence and addiction. The thinking around ETS control in private places is a much debated yet premature topic. A progressive approach to ETS control where the need to first “tackle” public places before moving into private places is recommended. A “soft” sell approach involving culturally sensitive messages which convey the health risks associated with infant/child exposure to ETS is needed.

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PA6-8

USING DRUG TESTING TO IMPROVE ESTIMATES OF POPULATION TOBACCO SMOKE EXPOSURE

Michael Fendrich, Amy Hubbell, Mary Ellen Mackesy-Amiti

A general population survey focused on ascertaining substance use prevalence was administered to 627 adults, ages 16 to 40 years in the City of Chicago between June 2001 and February 2002. Surveys were privately administered by trained interviewers using an Audio Computer Self-Assisted Interview format. Subjects were selected from randomly sampled households in the community. The survey incorporated questions closely paralleling those used in the National Household Survey on Drug Abuse. Immediately following the survey, subjects were asked to participate in three biological tests, including hair, oral fluid, and urine. The oral fluid tests included a screen for cotinine, the major metabolite of tobacco. About 90% of all subjects participated in this cotinine screen. Irrespective of self-disclosed smoking status, over 80% of all subjects screened positive at any level for cotinine. Use of the standard cutoff for cotinine levels suggested by researchers as indicative of smoking behavior (20 ng/ml), we found that nearly 4 in 10 subjects were exposed to levels of nicotine matching what would be detected among recent smokers. In comparison, just over 3 in 10 subjects admitted to smoking during the past 24 hours. Of those testing positive at 20 ng/ml, over one in four did not indicate that they smoked during the past 24 hours. Additionally, over 15% of those not admitted to recent smoking tested positive at smoking-like levels. Half of the non-smokers testing positive were aware of recent passive exposure to smoking. Self-reported smoking prevalence, when adjusted by sample sensitivity, yields levels of toxic tobacco exposure that are substantially higher than those based on self-report alone. These findings underscore the public health importance of toxicological screening for cotinine in general population surveys.

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PA7-1

MOST SMOKELESS TOBACCO USE IS NOT A CAUSAL GATEWAY TO CIGARETTES: USING ORDER OF PRODUCT USE TO EVALUATE CAUSATION IN A NATIONAL U.S. SAMPLE

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To evaluate relationships between smokeless tobacco (SLT) and cigarette use and to assess the evidence for a causal gateway from SLT to cigarettes, data from the Cancer Control Supplement to the 1987 National Health Interview Survey were analyzed. This representative survey of non-institutionalized adults in the United States included data on age at first use of cigarettes, snuff, and chewing tobacco. In order to minimize the possibility of future product switching, a subsample of young males aged 23-34 (N=2,614) were categorized by type and sequence of tobacco product use. Of those 23-34 year olds who had ever used SLT 77.2% (95% CI: 71.3, 83.3) were classifiable as non-gateway users: 35.0% (95% CI: 29.9, 40.1) had only ever used SLT [i.e. had not smoked] and 42.2% (95% CI: 36.8, 47.7) had used cigarettes prior to SLT. Cigarette smoking among younger cohorts was less common than among older cohorts, even though the younger cohort had greater SLT use. In addition, those who used moist snuff after cigarettes were 2.1 times more likely to have quit smoking (95% CI: 1.21, 6.39) than cigarette-only users. Due to these findings and other deficiencies in the gateway model, we conclude that casual gateway effects should be of minor concern for policy.

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PA7-2

WEIGHT CONCERN AND ITS RELATIONSHIP TO THE INITIATION AND ESCALATION OF SMOKING AMONG 6TH GRADE STUDENTS: A PRELIMINARY REPORT


Literature report that the peak age for smoking initiation are students in the 6th and 7th grades. The importance of weight concern as a reason for the initiation and escalation of smoking is not completely understood among this age group. This study was to examine whether weight concern is a significant factor for the initiation and escalation of smoking among 6th graders. The hypotheses tested in this study were: (1) 6th graders who have weight concern will be more likely to initiate smoking than those who do not express concerns about their weight and (2) 6th graders who have weight concern will be more likely to escalate smoking than those who do not express concern about their weight. The sample consisted of 104 6th graders (48 girls and 56 boys) who participated in a smoking prevention program. Most of the students (91.3%) were white. Baseline and post-intervention questionnaires included the Youth Risk Behavior Survey and Fagerstrom Tolerance Questionnaire. Results from chi-squared tests showed that weight-concern-group had a significantly higher rate of initiation of smoking (p = .048) than no-weight-concern-group at post-intervention. Results also indicated that weight-concern-group had a significantly higher rate of smoking escalation than no-weight-concern-group at both baseline (p = .049) and post-intervention (p = .010). This information provides support for developing an intervention prevention program which specifically addresses weight concerns in a 6th grade smoking population.

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PA7-3

THE INFLUENCE OF DEPRESSIVE SYMPTOMS ON SMOKING BEHAVIOR & INTENTION TO SMOKE IN ACCULTURATING YOUTH

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Depressive symptoms have been shown to be predictive of smoking initiation in several studies. This study explored the relative impact of depression on smoking among three acculturating ethnic groups in Los Angeles area-Chinese, Persian and Latino adolescents. Over 800 seventh graders in the Los Angeles area participated in this cross-sectional analyses and completed measures of acculturation, depressive symptoms (CES-D), ever smoking, and intention to smoke. The ethnic background of participants were 30% white, 40% Latino, 41% Chinese, and 10% Persian. The Chinese students were the least acculturated, and had the lowest levels of depressive symptoms. Latinos reported the highest levels of depressive symptoms, were most likely to intend to smoke in the next year, and were the most likely to have started experimenting with cigarette smoking. Acculturation was not predictive of smoking behavior or intention. Depressive symptoms remained a significant predictor of intention to smoke when acculturation, SES, gender and ethnicity were controlled for, but was predictive of actual smoking for Latinos only. Yet those in the highest quartile of the CES-D were at two times the risk for smoking as compared to those in the lower quartiles. Some notable gender differences were also found. These cross-sectional results suggest that future longitudinal studies should address ethnic differences in the impact of depression on smoking.

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PA7-4
THE IMPACT OF DEPRESSION AND PHYSICAL ACTIVITY ON SMOKING PROGRESSION
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Research supports a negative relationship between physical activity and smoking, and a positive relationship between depression and smoking. Depression has also been found to relate negatively to physical activity. These relationships have not been evaluated longitudinally, particularly in the context of ethnicity and gender. We assessed the longitudinal relationships of smoking progression and physical activity with depression, gender, and ethnicity as predictors of rate of change in both. Participants were 1060 adolescents participating in a longitudinal study of the genetic and non-genetic determinants of smoking adoption. Parallel process linear growth modeling was conducted with data collected at three time points (grades 9-10). Results supported the fit of the model to the data. Smoking progression increased and physical activity decreased over time. Depression predicted change in both physical activity and smoking progression, indicating that higher levels of depression related to greater smoking progression and less physical activity. Physical activity did not predict smoking progression. Males and white adolescents exhibited higher smoking progression and physical activity. The results for physical activity on smoking progression are puzzling. Because Physical Education (PE) was mandatory for 9th and 10th graders, it is possible that participation in PE masked the effects of voluntary physical activity on smoking progression. Future studies should account for different types of physical activity. If these preliminary findings are replicated, it may help inform youth prevention and intervention efforts by suggesting the need to address depression and physical activity in smoking progression, as well as gender and ethnic differences.

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PA7-5
AN ATTEMPT TO UNDERSTAND INDIVIDUAL DIFFERENCES AMONG SMOKERS USING THE BIG FIVE PERSONALITY FACTORS
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It is important to establish whether individual difference variables such as personality traits are associated with smoking variables because the underlying mechanisms that contribute to those relationships could potentially be identified and treatments could be developed that are tailored to those underlying mechanisms in order to improve treatment outcome. However, over 50 years of research has failed to find consistent relationships in this domain and one reason may be the substantial diversity across studies in the measures that are used to assess trait variables. One direction that future research on personality, individual differences, and smoking might take, then, is to use trait measures from the contemporary field of personality. A significant level of progress has been made in uncovering the smallest, most parsimonious set of individual difference variables that summarize general trends in observed behavior, affect, and cognition in the population. Five trait factors (i.e., Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Intellect) have been identified. In this ongoing study, a sample of regular smokers (n = 70) complet ed measures of the five factors and measures of smoking history, cessation success, and nicotine dependence. Of the 30 correlations computed, only one (Intellect with motivation to quit smoking) reached statistical significance. The remaining correlation coefficients were small in size and nonsignificant. The lack of significant associations is consistent with a larger literature that investigates trait variables and smoking. These data can be seen to call into question the practice of using trait variables to study individual differences and personality in smokers, and suggests that new approaches are needed.

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PA7-6
IDENTIFYING CLUSTER SUBTYPES FOR THE PREVENTION OF SMOKING ACQUISITION
Wayne F. Velicer, Ph.D., Colleen A. Redding, Ph.D., Richard Broomfield, M.S., James O. Prochaska

School-based smoking prevention programs typically are identical for all students. Tailoring prevention materials to focus on individual needs with an emphasis on students at highest risk is a promising alternative. Recent prevention programs have tailored materials based on the Stages of Acquisition, an extension of the Stages of Change used to tailor smoking cessation materials effectively for adults. Three stages of acquisition have been identified: Acquisition Precontemplation (aPC), Acquisition Contemplation (aC) and Acquisition Preparation (aPR). However, about 90% of adolescents classify themselves in the aPC stage. A cluster analysis was performed, using the Decisional Balance and Situational Temptations scales, for 401 adolescents within the aPC stage. Four distinct subtypes were identified: High Risk, Incubated, Ambivalent, and Disengaged. These four subtypes were replicated in four more random samples of the same size. External validity was established using future smoking status, family influences, and peer variables. The High Risk subtype was four times as likely to be a smoker at both 12 months and 24 months post-assessment compared to the Incubated subtype and twice as likely as both the Ambivalent and Disengaged subtypes. Family support for nonsmoking was related to subtype much more strongly than peer interactions. Subtype membership, along with membership in the aC and aPR stages, provides important additional information for tailoring smoking prevention materials. Interventions can focus on those adolescents at highest risk and avoid expending resources on those at very low risk. This research was supported by Grants CA56087 and CA27821 from the National Cancer Institute.

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PA7-7
THE EFFECTS OF TRAUMA RECALL ON SMOKING TOPOGRAPHY IN PTSD AND NON-PTSD TRAUMA SURVIVORS
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Sixty percent of individuals with PTSD smoke, but the role of nicotine and smoking in affect regulation in this population remains unknown. Trauma survivors with PTSD (n = 76) and without PTSD (n = 37) smoked a cigarette after developing two trauma-related (e.g., sexual assault event) or two neutral (e.g., sitting quietly on the porch) scripts based on each individual’s personal experiences. Each script required approximately 8 minutes to develop and required the recall of emotional, physiological, and cognitive aspects of events. After completing two scripts of the same type (i.e., trauma or neutral), participants completed mood and craving questionnaires, and smoked a cigarette through an apparatus designed to assess puff volume, interpuff interval (log transformed for analyses), and the number of puffs taken. ANCOVA was performed using FTOQ scores as a covariate. Puff volumes were higher in men relative to women, p = .008, and were higher following trauma script development, p = .021. Covariate-adjusted log of interpuff interval varied with Script and PTSD Group, p = .03. The PTSD group exhibited no change in interpuff interval while the non-PTSD group exhibited significantly (p < .01) smaller intervals following trauma script relative to neutral script development. Mood effects and correlational analyses will be presented. These findings suggest that PTSD may prevent smokers from modifying smoking behavior to meet situational demands and will be discussed within the context of Gilbert’s (1995) Situation x Trait Adaptive Response model of smoking motivation.

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PA8-1
GENDER DIFFERENCES IN THE PREDICTION OF INITIATION OF CIGARETTE SMOKING

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An examination of gender differences in the etiology of smoking is necessary for the design of prevention programs. Within a cohort–sequential design, a representative sample of 1027 school-aged children participated in four annual assessments. Students were in the 1st through 5th grade at the first assessment and in the 4th through 8th grade at the fourth assessment. Questionnaire assessments were obtained from the student, their parents, and their teachers. The finding of no cohort effects allowed us to collapse across cohorts to examine developmental trends and identify predictors of initiation of smoking across grades. Rate of initiation was nearly identical across genders from the 1st through the 7th grade. However, girls were more likely than boys to initiate smoking between the 7th and 8th grade (15% vs 4.5%). Across grades, for both boys and girls, subjective norms predicted smoking initiation two years later and, for girls only, attitudes toward smoking (as measured by kids who smoke are cool, popular and exciting) predicted initiation. Psychosocial variables, including depression, number of stressful events experienced in the last twelve months, and overt and covert aggression predicted initiation in boys in the 6th through the 8th grade. However, for girls, these variables predicted initiation of smoking only in the 8th grade. These findings suggest that, until the 8th grade, girls’ cigarette smoking may be more influenced by social influences, whereas boys’ cigarette smoking may be more influenced by internalizing and externalizing behavior.

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PA8-2
GIRLS WHO START TO SMOKE EARLIER ARE DIFFERENT AND HAVE MORE TROUBLES

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AIM: To analyse the differential characteristics of smoker girls, specially in those points which might suggest higher psychic vulnerability.

MATERIAL AND METHODS: 3,757 students (13-18 y/o) filled a questionnaire which included 144 items about some personal characteristics and about their smoking habits, perceptions and beliefs.

RESULTS: 1) Alcohol and caffeine consumption While 15-18 y/o smoker girls consume 3.5 times more alcohol than non-smokers; 13-14 y/o consume 6.9 times more. Caffeine consumption is higher in smokers and increases with age. 2) Academic results & expectations Smoker girls fail in a higher number of subjects than non-smokers. Whereas the increase in the older group was only 48%, it was 100% in 13-14 y/o girls. 3) Concerns about body weight. Smoker girls agree to the five related statements in a higher significant way than non-smokers. Compared to their respective controls, 13-14 y/o smokers agree even more strongly (OR: 2.3-4.0 vs. 1.6-2.9) 4) Depressive symptoms In all four related questions, 15-18 y/o smoker girls score 60-93% higher than non-smokers. 13-14 y/o smokers girls score even higher, 25-90%, than 15-18 y/o (p<0.0001). 5) Anxiety, stress and other subtle psychiatric signs Nearly two thirds of female adolescent smokers consider smoking a useful tool to manage stress-producing situations and to control emotions; the number is higher in the youngest smokers. Smokers, specially the youngest ones, consider themselves more nervous than their classmates are.

CONCLUSIONS: Girls who start smoking at 14 or earlier present differential characteristics in their struggle for life, in their: a) consume of psychoactive substances; b) academic results and expectations; c) concerns about their body weight; d) presence of symptoms suggestive of depression, nervousness or insecurity. From these results, it can be concluded that girls who start to smoke early may be considered in some sense weaker and, consequently, more vulnerable.

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PA8-3
PREDICTORS OF RAPID PROGRESSION TO REGULAR CIGARETTE SMOKING AMONG ADOLESCENTS: INTERACTIONS WITH GENDER AND ETHNICITY.

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Although hundreds of studies have explored the reasons that adolescents begin to smoke, little research has addressed the speed at which they progress to regular (weekly) smoking. However, it is clear that some teens move quickly to regular smoking, whereas others remain experimenters. The current report is designed to identify the characteristics of youth who progress rapidly vs. those who do not. We assessed 653 youths from the Memphis Health Project. Our sample was 74.7% African American and 25.3% female. Participants averaged 13.8 years at baseline, with a range of 12 to 16. We identified participants who escalated from non-smoking to regular smoking in one year as rapid progressors (n=98) and those who escalated from non-smoking to experimental smoking in the same time period as slow progressors (n=555). We entered demographic and psychosocial variables, initial reactions to smoking (RTS), and interactions with gender and ethnicity into a logistic regression comparing rapid progressors with slow progressors. Youth who reported having more close friends who smoked were more likely to progress rapidly to regular smoking. Girls who reported more concern with dieting and less social success were also more likely to become regular smokers within one year. These variables did not influence progression in boys. RTS variables also predicted rapid progression. Youth who reported feeling relaxed and not coughing on first exposure to cigarettes were more likely to progress rapidly. In addition, feeling high was associated with rapid progression among boys, whereas feeling dizzy was associated with rapid progression among African Americans.

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PA8-4  
GENDER DIFFERENCES IN POSITIVE AND NEGATIVE AFFECT IN RESPONSE TO SMOKING FOLLOWING OVERNIGHT ABSTINENCE

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The purpose of this study was to explore gender differences in positive and negative affect following overnight smoking abstinence and in response to standardized smoking. Subjects were 183 smokers (females n = 93, males n = 78) motivated to quit smoking with minimal assistance. Subjects averaged 42.8 years old (SD = 11.6) and 25.8 cigarettes per day (SD = 10.5). Their mean FTQ score was 6.5 (SD = 1.8). Prior to their quit date, and following overnight abstinence (12h), subjects smoked 3 cigarettes (1mg nicotine spaced 30 min apart) using the Quantified Smoke Delivery System. The Positive and Negative Affect Scale was completed at baseline and after each cigarette. Plasma nicotine and expired carbon monoxide levels were collected at these same timepoints to assess changes in nicotine intake. For positive affect, results revealed a significant interaction of gender x cigarette trial [F(3, 171) = 6.9, p < .01]. Relative to males, females reported lower positive affect following overnight abstinence. Smoking, however, led to a significant increase in positive affect for females, but not for males. This pattern persisted when controlling for boost in plasma nicotine. For negative affect, there was only a significant main effect of cigarette trial [F(1, 171) = 11.5, p < .01], indicating that negative affect scores for males and females decreased across cigarettes. While males and females showed comparable reductions in negative affect, only females reported acute increases in positive affect. Smoking in females may be reinforced because of its ability to heighten positive emotional states.

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PA8-5  
PITUITARY-ADRENOCORTICAL RESPONSES TO STRESS AND NEGATIVE AFFECT AS PREDICTORS OF SMOKING RELAPSE IN MEN AND WOMEN

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Stressful events that are characterized by negative emotions, similar to those induced by smoking abstinence, have been associated with rises in adrenocorticotrophic hormone (ACTH) and cortisol concentrations. Emotional stressors may also increase the risk for smoking relapse. The extent to which hypothalamic-pituitary-adrenocortical (HPA) responses to stress predict smoking relapse has not been investigated. This study was conducted to evaluate hormonal changes during early abstinence and in response to psychological stress, in an attempt to assess the extent to which these changes predict smoking relapse. Data presented from 48 smokers (28 men and 20 women) who were in the process of quitting. Plasma ACTH, cortisol, cardiovascular activity, and withdrawal symptoms were measured during a laboratory session conducted following 24 hours of abstinence. During the laboratory session participants performed a 24-minute public-speaking challenge and a 16-minute cognitive challenge. In addition, participants attended a weekly assessment session for four weeks, and were followed-up by phone at 3 months, 6 months, and 12 months after quitting. Men and women showed significant ACTH, cortisol, and cardiovascular responses to the acute stressors (ps < 0.01). Withdrawal symptoms and craving increased during the stressors (ps < 0.01), and these increases were greater in women than in men (ps < 0.05). A series of regression analyses conducted to predict the number of days until relapse revealed that greater intensity of withdrawal symptoms and distress predicted shorter time to relapse (r > 0.30; ps < 0.05). These analyses also revealed that greater ACTH and cortisol concentrations after performing the stressors predicted longer time to relapse (r > 0.37; ps < 0.05). The ACTH association with relapse was more consistent in men (r = 0.50 - 0.67) than in women (r = 0.17-0.33), while reported distress and intensity of withdrawal symptoms were more consistent in women (r = 0.42 - 0.58) than in men (r = 0.15 - 0.37). The results demonstrate that HPA responses to stress predict relapse, and that intensity of withdrawal symptoms and negative affect in women predict smoking relapse better than biological measures.

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PA8-8  HETEROGENEITY IN 12-MONTH OUTCOME FOLLOWING TREATMENT FOR SMOKING CESSION AMONG FEMALE SMOKERS


While several studies have shown that women are less likely than men to remain nonsmokers following treatment with both nonpharmacological and pharmacological interventions over short and long-term follow-up, the reasons for women’s increased liability for post-treatment smoking remain elusive. The present study examined heterogeneity in treatment outcome in 875 women randomized to one of four combina-
tions of treatment (either telephonic proactive counseling or a tailored mail-based approach combined with either 150 mg or 300 mg bupropion SR), and assessed for pretreatment smoking characteristics and indices of adherence and reactions to the treatment. Point prevalent smoking outcome at 12 months was defined as any smoking within the 7 days prior to follow-up contact. Multiple logistic regression identified use of the tailored mail approach, a history of shorter previous quit attempts, and more pretreatment perceived stress as associated with a greater likelihood of smoking at the 12-month follow-up (overall model chi-square = 23.2, 5 df, p<0.0001). Classification and regression tree analysis identified six subgroups of women that ranged from 9.8% (n = 112) to 42.9% (n = 91) nonsmokers at 12 months. Subsequent analyses revealed significant associations between subgroup membership and age, ethnicity, education, BMI, nicotine dependence, perceived stress, and depression, along with indices of adherence such as total days of medication taken. These results demonstrate a substantial amount of variation in treatment responsiveness among women receiving combined counseling and bupropion SR, suggesting that the ques-
tion of increased liability for post-treatment smoking among women should be refined to focus on causal mechanisms in subgroups of women at the highest risk for relapse as opposed to a generalized mechanism common to all women.

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PA9-2  STABILITY AND CHANGE IN CIGARETTE SMOKING CLASSES OF U.S. ADOLESCENTS

Brian P. Flaherty, M.S.*, and Linda M. Collins, Ph.D., The Pennsylvania State University

In previous work, Flaherty (2002) presented a latent class analysis of four commonly used measures of cigarette smoking behavior. The current work examines this class structure longitudinally with data from the Teenage Attitudes and Practices Survey (TAPS). Specifically, smoking class memberships in 1989 and 1993 are modeled in a subsample of adolescents who reported some cigarette smoking in the 1989. A longitudinal latent class model called latent transition analysis (LTA) is used to fit the models. The latent class model posits a latent categorical variable (the cig-
arette smoking classes) that is considered responsible for the observed data. The latent transition model examines how peoples’ class memberships change over time. A model including five smoking classes is presented. The classes are: past experi-
menters, past smokers, regular smokers, irregular smokers, and experimenters. Change over time was restricted to allow only logical transitions. For example, the transition from regular smoker to experimenter was not allowed. The sample exhibits both stability and change. The most stable class was the regular smoker class, with roughly 80% of Time 1 regular smokers remaining regular smokers four years later. The past experimenters class was also pretty stable, with about 65% remaining past experimenters at Time 2. As expected, the experimenter class was quite unstable with only 15% remaining there in 1993. Thirty percent of experimenters were regular smokers at Time 2 and 25% were past experimenters. These results are compared with estimates from the literature. Advantages of the latent variable approach to lon-
gitudinal categorical variable analysis are discussed.

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PA9-3  DO CHANGES IN MOOD FOLLOWING SMOKING PREDICT LONGITUDINAL CHANGES IN ADOLESCENT SMOKING PATTERNS?

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This paper examines the hypothesis that adolescents’ subjective experiences of smoking, such as mood changes, predict longitudinal changes in smoking patterns. More specifically, we hypothesized that adolescents who experience greater mood benefits from smoking are more likely to escalate in their smoking compared with those who experience fewer mood benefits. Using ecological momentary assess-
ments (EMA), 36 adolescents (8th and 10th graders at baseline; 58 percent female; 65 percent white) provided subjective mood responses to smoking via handheld com-
puters at both a 7-day monitoring period at baseline and at a 12-month follow-up. At baseline, all participants had smoked between 1-99 cigarettes in their lifetime. At 12 months, adolescents were divided into 2 groups: 1) stable experimenters (those who still had smoked less than 100 cigarettes in lifetime, N = 19) and 2) escalators (those who smoked more than 100 cigarettes in lifetime; N = 17). There were no differences in baseline levels of smoking between the groups. As expected, escalators experi-
enced significantly greater increases in positive moods following smoking at baseline than did stable experimenters (p less than .05). Changes in negative moods follow-
ing smoking did not predict escalation. In addition, at 12 months, the escalators showed a significant diminution of positive mood change (development of tolerance) after smoking. These results highlight the importance of positive mood experiences following smoking for experimenters.

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Tobacco use in Arab and Arab American adults is among the highest in the world (WHO, 1999); less is known about tobacco use in Arab American teens. A convenience sample of 1671 Arab American 14-18 year olds completed questionnaires in the initial phase of this clinical trial. The sample was 52% male; average age was 15.4 years (SD = 1.27); 57% percent were immigrants. Twenty-seven percent had one or more friends who smoked, this increased with age (p < .0001); from 1% at age 14 to 15% at age 18; 26.6% reported using the narghile, a traditional and social form of tobacco use found in the Middle East and northern Africa. Bivariate and multivariate logistic regressions were used to examine 24 predictors in a proposed Adolescent Tobacco Use Model (ATUM). Except for father smoking and father born in the USA, all predictors were significantly correlated in the right direction to one or more of the outcome variables (“Smoked a cigarette in the past 30 days,” “Ever smoked a cigarette,” and “Intention to use tobacco”). The strongest relationships were with “one or more close friends smoke,” “one or more tobacco offers by family or friends per week,” “depression,” and “low self-esteem.” Youth with one or more close friends who smoked were 4.31 times more likely to contemplate smoking in the future, 5.11 times more likely to have used tobacco in the past 30 days, and 4.94 times more likely to have experimented with cigarettes. Peer and family tobacco use are powerful predictors of Arab American adolescent tobacco use and point the way for intervention.

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THE EFFECTS OF TOBACCO COUNTERMARKETING CAMPAIGNS ON YOUTH PERCEPTIONS OF PEER SMOKING

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Previous research has shown that adolescents greatly overestimate actual smoking rates among their peers. This phenomenon is often explained as evidence of a “false consensus” effect whereby youth perceive smoking behavior as relatively common. However, most previous studies have not investigated the determinants of smoking perceptions in a multivariate framework and have been based upon non-representative samples. This paper uses a nationally representative sample of 23,115 adolescents from the Legacy Media Tracking Surveys (LMTS), conducted in four cross sections between Winter 1999 and Spring 2002. The LMTS measures perceived smoking prevalence by asking youth to estimate the number of adolescents, out of every ten their own age, they think smoke. In addition, the LMTS measures awareness of anti-tobacco campaigns, including specific television advertisements from the American Legacy Foundation’s “truth” campaign and Phillip Morris’ “Think. Don’t Smoke” campaign. This design allows us to examine national trends in smoking perceptions and the extent to which tobacco countermarketing has changed those perceptions over time. This study uses a broad set of socio-demographic factors as control variables in a series of regression models that estimate the effects of exposure to the “truth” and “Think. Don’t Smoke” campaigns on perceived smoking prevalence. We find that exposure to the “truth” campaign has a negative and statistically significant effect on perceived smoking prevalence while exposure to “Think. Don’t Smoke” has no effect. These results suggest that exposure to “truth” may diminish the perceived social benefit to smoking. The documented correlation between smoking perceptions and smoking behavior may further imply this as another means by which countermarketing can effectively change smoking behavior.

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POS1-1  
DEFINING HOMOGENEOUS SUBGROUPS AT RISK FOR EXPERIMENTAL AND REGULAR SMOKING

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BACKGROUND: If multiple etiologies of smoking are truly at work in the population, then further strides in accurate prediction will likely be built on pattern-centered approaches that explore the presence of multiple population subgroups across various stages of the smoking progression.

OBJECTIVE: To identify population subgroups defined by individual risk factors or risk factor constellations that prospectively predict specific smoking stages.

METHOD: Using data from the National Longitudinal Study of Adolescent Health (Add Health), analyses were conducted on subjects that took part in the baseline and one-year follow-up assessment. Classification and regression tree (CART) procedures were used to investigate the structure of individual risk factors, or constellations of risk, that define population subgroups with high rates of both experimental and established smoking.

RESULTS: For each level of smoking, a relatively simple model including two subgroups predicted over half of the smoking cases. Adolescents who proceeded to smoking experimentation by follow-up were correctly classified by deviant behavior and unsupervised alcohol use. In contrast, rapid regular smokers were captured by the criterion of a relatively low grade point average and those with three or more smoking friends. Further, nearly three quarters of adolescents who progressed from experimental smoking to regular smoking were identified based on previous smoking frequency and smoking by at least one friend. The two-group models identified higher rates of regular smokers compared to experimental smokers.

CONCLUSIONS: This study adds to etiologic work by identifying population subgroups that may provide clues into the major mechanisms at work in smoking progression.

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POS1-2  
PREDICTING CIGARETTE USE AMONG CANADIAN ADOLESCENTS: AN EVALUATION OF THE PROTOTYPE-WILLINGNESS MODEL


Adolescents often don’t intend to try cigarettes, but may be willing to try smoking under certain social circumstances. The prototype/willingness (P/W) model of behavior challenges the assumption that tobacco use is a planned, rational act (Gibbons et al., 1998). This study tested the P/W model in predicting stages of tobacco use among adolescents. A school survey was administered to a stratified random sample of 1795 Albertans aged 11-16 (45% male; mean age = 12.7 years). Logistic regression predicted baseline differences between nonsmokers (did not smoke in the past 30 days; have never smoked 100+ cigarettes), experimental smokers (smoked in the past 30 days; have never smoked 100+ cigarettes), and regular smokers (smoked in the past 30 days; have smoked 100+ cigarettes). Predictors included: behavioral willingness (6 items; alpha = .84), behavioral expectations (2 items; alpha = .93), subjective norms (4 items; alpha = .72), smoking attitudes (2 items; alpha = .85), and smoker prototypes (12 items; alpha = .81). The transition from nonsmoking to experimental smoking was predicted by behavioral expectations (Odds Ratio [OR] = 1.58), subjective norms (OR = 1.20) and behavioral willingness (OR = 1.09; all p < .05), as was the transition from nonsmoking to regular smoking (ORs = 1.61, 1.40, and 1.17, respectively; all p < .05). Only social norms predicted the transition from experimental to regular smoking (OR = 1.83, p < .001). Smoker prototypes moderated the impact of other predictors. Attitudes had no effect. These results confirm the utility of the P/W model and suggest significance changes by different stages of smoking.

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POS1-3  
IMPACT OF PERSONALITY ON REASONS FOR SMOKING ONSET AND DEGREE OF DEPENDENCE

Cynthia S. Pomerleau, Ph.D.**, Jean Francois Etter, Dr.Sci.Polit.; and Ovide F. Pomerleau, Ph.D.

To determine whether reasons for smoking initiation and subsequent degree of dependence may be influenced by stable personality traits, we studied 275 smokers (mean age 34.5 [SD=12.5] years; 70% female; 78% White; 94% daily smokers; mean smoking rate 17.9 [SD=9.7] cigarettes/day) who completed the Tridimensional Personality Questionnaire (TPQ) and provided retrospective assessments of the impact of the following factors on progression from experimentation to regular smoking: physical addiction, experiencing a “buzz”, social factors, taste, weight control, depression, alcohol accompaniment, improved concentration, stress, and “perked me up.” Current degree of dependence was assessed using the the Fagerstrom Tolerance Questionnaire (FTQ). Results for reasons for smoking onset were as follows: Novelty-Seeking (adjusting for age) was associated with social factors (r=.16, p<.05) and, negatively, with stress (r=-.18, p<.01). Harm-Avoidance was associated with depression (r=.27, p<.001), difficulty concentrating (r=.4, p<.05), stress (r=.25, p<.001), and “perked me up” (r=.15, p<.05). Reward Dependence was associated with “buzz” (r=.2, p<.01) and social factors (r=.4, p<.05). All three personality dimensions predicted current degree of dependence as measured by the FTQ: the relationship was positive for Harm Avoidance (r=.16, p<.05) and negative for both Novelty Seeking (r=-.14, p<.05) and Reward Dependence (r=-.19, p<.01). Our findings suggest that personality dimensions as assessed by the TPQ may be helpful in identifying adolescents who are differentially vulnerable to smoking initiation and/or who are likely to be susceptible to nicotine dependence. Further research using prospective measures will be needed to strengthen these inferences.

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POS1-4
A QUALITATIVE ANALYSIS OF COLLEGE STUDENTS SMOKING: PERCEPTIONS OF ADVANTAGES AND DISADVANTAGES

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Although cigarette smoking is increasing among college students, there is little detailed information concerning students' own perspectives on advantages and disadvantages of smoking, and how different levels of smoking impact their perspectives. We conducted 12 single gender focus groups with male (n=41) and female (n=44) undergraduates at a Midwestern University. Researchers stratified groups by level of smoking, resulting in 6 groups comprised of occasional smokers [OS] and 6 of regular smokers [RS]. On average, occasional smokers smoked 3.15 cigarettes on each day of 9.35 days out of the last 30 days; regular smokers smoked 12.65 cigerettes on each day of 29.5 days out of the last 30 days. After completing surveys, students participated in two-hour groups using questions: What do you like (and dislike) about smoking? What positive (and negative) things does smoking do for you? Responses were audiotaped, transcribed, and coded for main themes, using qualitative methodology and computer software. Counts of main themes discussed by each group, averaged across multiple sub-themes, were tallied. Perceived advantages of smoking by all groups included: benefits related to alcohol (discussed by 6 of the OS/ RS) and drugs (1/5); social needs (6/5); emotional needs (4/5); physical needs (2/4); and smoker image (3/4). Perceived disadvantages of smoking included health concerns (5/6); negative images (3/2); physical concerns (5/3); parental relationship (3/2); and financial concerns (5/4). In all, RS had 29 responses on advantages, more than the 22 responses reported by OS, while OS had 21 responses on disadvantages, more than the 17 responses from RS. Alcohol was mentioned by both OS and RS, while drugs were mostly mentioned by RS. RS identified more health concerns and also perceived more advantages from smoking than OS did. The above findings will help researchers to develop programs effective for different needs at different smoking levels.

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POS1-5
FULL-INFORMATION ITEM-LEVEL FACTOR ANALYSIS OF THE FAGERSTROM TOLERANCE QUESTIONNAIRE

George D. Papandonatos, Ph.D.*, Raymond Niaura, Ph.D., Elizabeth Lloyd-Richardson, Ph.D., Richard Brown, Ph.D., Shang-Ying Shiu, M.S., Brown Medical School.

A sample of 560 smokers enrolled in a smoking cessation trial (81% White, 53% male, mean age = 44 years, mean cigarettes/day=24) provided baseline assessments on the Fagerstrom Tolerance Questionnaire (FTQ). Its measurement properties were evaluated using a 2-parameter logistic Item Response Theory (IRT) model. Item characteristic curves revealed that, with the exception of daily cigarette consumption, the criteria show poor discrimination at the higher end of the liability scale, although they perform adequately at the lower end of dependence intensity. The expectation function for the total score was obtained for all possible response patterns and its information content was compared patternwise to that of an optimal scoring scheme: the rate of information loss was greatest for patterns corresponding to low liability levels, indicating that summing up the items fails to take advantage of their differential discriminating power over the dependence range and results in an information curve much flatter than that obtained using weights from an item-wise analysis. The dimensionality of the latent dependence construct was explored via likelihood ratio testing and a two-factor solution was chosen over the one factor model (p=0.045). The scale was simplified by dropping items whose loadings were not significantly different from zero (Do you inhale, p=0.067; Nicotine Content, p=0.456) and confirmatory factor analysis was used to estimate optimal weights for two positively correlated factors (Rho=0.633) representing Morning Smoking and Smoking Pattern.

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POS1-6
ESTABLISHING VALIDITY AND RELIABILITY OF ASSESSMENT INSTRUMENTS FOR TREATING OLDER MINORITY SMOKERS

Lynn M. Tepper, Daniel F. Seidman

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 paucy of information on health programs, and in particular, smoking cessation programs for them. Optimal care requires 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 our knowledge to address this problem, and establish a set of criteria for assessing older tobacco users. This study was an ideal partnership between a health sciences academic institution—Columbia University—and the diverse urban community it serves—Northern Manhattan. 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 study, five assessment instruments were designed specifically for this population, translated into Spanish, and tested for reliability and validity. A sample of older minority smokers from the community was then interviewed using these 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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POS1-7
STANDARDIZED MEASUREMENT OF SOCIAL NETWORK INFLUENCES ON ADOLESCENT SMOKING

Linda A. Brazil, M.S.*, and Suzanne M. Colby, Ph.D., Brown University

The Importance of People and Activities (IPA) measure, originally developed for use in adult alcohol treatment studies (Clifford and Longabaugh, 1991), was modified and used to examine adolescents’ social networks with regard to smoking. The standardized interviewer-administered questionnaire yields numerous network summary indices including presence of smoking, and levels of contact, importance, and supportiveness (general and smoking-specific.) Participants (M age=16.6, 56% female) included smokers (N=54) and non-smokers (N=14). Overall network size (M=7.6), size of daily network (M=3.7), average importance (“very important”) and proportion of peers to adults did not differ significantly between groups. Independent t-tests showed significant differences between smokers’ and non-smokers’ network members (NM’s) with respect to smoking indices, including NM daily smoking rate, % daily smokers, % non- and former-smokers, exposure to smoking (a product of NM smoking status and contact frequency), and NM support for smoking (all p’s<.001), and NM smoking frequency (p<0.05). Non-smokers reported a network significantly more opposed to the teen’s smoking (p<0.001) than smokers. Smokers reported significantly more neutral reactions to the teen’s smoking than non-smokers (p<0.001). Among smoking teens, those describing more neutral reactions to their smoking reported lower self-efficacy for quitting (p<0.06). Smokers and non-smokers reported few NMs (5% and 3%) who support/encourage smoking. Findings support the utility of the modified IPA for quantifying network influences on adolescent smoking. IPA indices could serve as pre-post measures of change for interventions designed to increase social support for smoking abstinence. Substantive analyses underscore the importance of strong discouragement of smoking as opposed to neutral messages to youth for prevention of smoking.

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POS1-8  

VALIDITY OF THE WISCONSIN INVENTORY OF SMOKING DEPENDENCE MOTIVES: ASSOCIATIONS WITH PROCESS MEASURES IN A BEHAVIORAL ECONOMIC PARADIGM  

Thomas M. Piasecki, Ph.D.*, Daniel A. Green, B.A., and Eric M. Peters, University of Missouri-Columbia  

The development of measures that sensitively reflect individual differences in the degree of tobacco dependence remains an important challenge. The Wisconsin Inventory of Smoking Dependence Motives (WISDM) is a new, 68-item instrument with 13 subscales written to tap an array of motivational processes hypothesized to contribute to dependence. We evaluated the WISDM using process data collected as part of 2 ongoing behavioral economic studies. Smokers (N=56) ranging in smoking heaviness (2 to 50 cigarettes/day) completed the WISDM and the Fagerstrom Test for Nicotine Dependence (FTND) during a screening session. Each subject made additional 3-hour laboratory visits after mild (2.5 hour) smoking deprivation during which they could earn puffs under varying fixed ratio schedules (data from FR50 and FR1500 sessions used here). Three intrasession measures were used as validation criteria: withdrawal symptoms, craving prior to each puff, and the number of puffs taken. Correlations between the WISDM total score and withdrawal ranged from 0.53 to 0.65 and were stronger than FTND-withdrawal relations (range: 0.33 to 0.49) at all assessments. A similar pattern emerged for correlations with pre-puff craving intensity. FTND scores predicted number of puffs taken better than did the WISDM total score, but the WISDM Tolerance subscale was comparable to the FTND in predicting puff consumption. The WISDM subscales related to the process measures in theoretically meaningful ways. The findings support the construct and incremental validity of the WISDM and demonstrate the value of testing instruments under laboratory challenge conditions in samples ranging in dependence severity.  

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POS1-9  

DEVELOPMENT OF A SMOKELESS TOBACCO DEPENDENCE SCALE  

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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 23-item dependence scale was administered over an Internet (web-based) interface to 55 current ST users. The scale consisted of 10 items from the FTQ, revised for ST users, and 13 items focusing 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). Principal axis factor analysis along with item analysis resulted in two subscales, with five items each. The resulting 10-item dependence scale (alpha = .8913) reflects two dimensions of dependence: intensity of use (5 items, alpha = .7945) and propensity to experience withdrawal symptoms (5 items, alpha = .9033). Two additional studies are planned with larger samples to confirm the factor structure among items, to examine the stability of these measures over time, and to validate these scales through examining their correlation with successful quit attempts. Implications for broader application of the new scale with ST users will be discussed.  

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POS1-10  

THE MODIFIED REASONS FOR SMOKING SCALE: FACTORIAL STRUCTURE, GENDER EFFECTS, RELATIONSHIP WITH NICOTINE DEPENDENCE AND SMOKING  

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AIMS: To validate the French version of the Modified Reasons for Smoking Scale (MRSS), and to identify i) smoking patterns related to tobacco dependence as assessed by the Fagerstrom Test for Nicotine Dependence (FTND), and ii) predictors of successful quitting. Participants: 330 smokers (40 ± 9 years, 44 % women, FTND score: 6.2 ± 2), candidates for a smoking cessation program and smoking ≥15 cigarettes/day.  

FINDINGS: Factor analysis of the 21-item scale gave the highest loadings (>0.5) for the 4 factor-model. This model yielded the following factors: “Mood enhancement,” “Pleasure to smoke,” “Negative/Positive Reinforcement” and “Automation.” Women had higher scores on “Mood enhancement” (men: 18.8 ± 4.8, women: 21 ± 4.3, p<0.001) and “Pleasure to smoke” (men: 12.8 ± 4.2, women: 13.8 ± 4.2, p<0.04). Daily cigarette consumption was in a dose-dependent fashion associated with “Automation.” Time to first cigarette after awakening was associated with higher “Automation” (p<0.0009) and “Negative/Positive Reinforcement” (p<0.001). FTND ≥ 6 was associated with significantly higher scores on “Automation” and “Negative/Positive Reinforcement” but not with “Pleasure to smoke” or “Mood enhancement.” The only factor significantly predicting cessation was “Automation”: Higher score predicted lower cessation rate.  

CONCLUSIONS: In this sample of French smokers (1) women smoked more for mood enhancement and pleasure than men; (2) automation of smoking and behaviors reflecting negative or positive reinforcement were strongly associated with a high level of nicotine dependence; (3) successful quitting was associated with low automation of smoking suggesting that interventions targeted to disrupt automatic smoking may facilitate smoking cessation.  

Funding: Roche.  


POS1-11  

BIPSYCHOSOCIAL INFLUENCES ON NICOTINE DEPENDENCE  

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Gender, racial, ethnic, and economic subgroups have importance for tobacco dependence research and treatment. Such factors may influence the level of dependence and response to pharmacologic treatment. The number of cigarettes smoked per day (CPD) is widely used to determine nicotine replacement therapy dose. The Fagerstrom Tolerance Questionnaire (FTQ) is also used in research and treatment clinics, while the level of serum or salivary cotinine, a nicotine metabolite, is used primarily in research to more accurately measure nicotine intake and dependence. We analyzed, in a community-based sample (n=273), the relationship between CPD and salivary cotinine level (COT) at baseline (mean of two measurements). The overall r for the entire sample between CPD and COT was 0.28 (p<0.01); however, the r for women was -0.10 (ns) and 0.44 (p<0.001) for men. When examining white (87%) and black (13% of sample) women separately, the rs were -0.03 (ns) and -0.23 (ns), respectively. For white (85%) and black (15% of sample) men, the rs were 0.55 (p<0.01) and 0.10 (ns), respectively. For women, the FTQ was not associated with COT, while it was among men (p<0.01). A multivariate analysis of variance showed a significant gender x race interaction, even when controlling for CPD, FTQ, BMI, age, education, and depression (p<0.05: white women had the lowest mean COT (398 ng/ml) in comparison to other subgroups (568B_WOMEN, 518B_MEN, and 527B_MEN)). These newly identified differences in COT suggest the need to more fully individualize diagnosis and treatment parameters for tobacco dependence.  

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POS1-12

STRUCTURAL DISPARITIES BETWEEN SMOKERS AND NEVERSMOKERS IN SELECT BRAIN REGIONS

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Neuromaging techniques offer the opportunity to search for the brain substrates of addiction and relapse vulnerability. Here we used voxel based morphometry (VBM) to determine whether, and where, structural disparities exist between the brains of smokers (N=18) and a group of demographically-matched neversmokers (N=15; P<.001, uncorrected). This method utilizes statistical parametric software (SPM’99) and high-resolution structural magnetic resonance images (MRIs) to provide a measure of the difference between groups of neuronal tissue within a particular voxel or cluster of voxels. Less gray matter was observed in smokers in the midbrain (region of the pedunculopontine tegmental nucleus [PPTg] and ventral tegmental area [VTA]), the anterior cingulate and the left dorsolateral prefrontal cortex. More white matter was observed in a similar area of the midbrain, in the left dorsolateral prefrontal cortex and in the area of the right amygdala. The VTA and PPTg are part of a neuronal circuit activated by self-administered nicotine and other reinforcing substances. Deficiencies in neural matter in these regions could result in low dopaminergic tone in the downstream nucleus accumbens, the substrate strongly implicated as the final common pathway in drug addiction. Whether these deficits are a result of nicotine exposure, pre-existing, or a consequence of both is not clear. Nonetheless, individuals with low dopaminergic tone may continue to smoke in an attempt to normalize dopaminergic tone and thus may be more susceptible to nicotine dependence.

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POS1-13

EFFECTS OF ACUTE TOBACCO WITHDRAWAL ON HUMAN EGG

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There are marked individual differences in the severity of symptoms and signs of tobacco withdrawal. However, few studies have investigated the sources of the variation. As part of an on-going study of the effects of gender, ethnicity, and genetic makeup on various measures of withdrawal, EEG recordings were collected from (n=50) heavy smokers (22 cig/d) on days when the participants were freely smoking (mean exhaled CO= 26.2 ppm) and on another day when they had not smoked for at least 12 hr (mean exhaled CO= 7.2 ppm). EEGs were recorded from scalp locations Fz and Pz and were automatically converted to the frequency domain using a computer-based FFT algorithm. One-minute samples of artifact-free recordings were collected as the participants relaxed with eyes open (EO) or eyes closed (EC). Acute tobacco abstinence increased power in the theta, alpha, and beta1 bands in the EO condition; in the EC condition abstinence increased power in the theta and beta1 bands. Acute tobacco abstinence decreased dominant EEG frequency in the alpha and beta1 frequency bands in the EO condition. Results were similar for the two electrodes. In future analyses, we shall determine whether individual differences in these EEG effects are related to subjective and cognitive indices of acute tobacco withdrawal.

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POS1-14

CARDIOVASCULAR RISK FACTORS IN POSTMENOPAUSAL WOMEN DURING SHORT-TERM ABSTINENCE

T. Bade, M.P.H., S.S. Allen, M.D., Ph.D., D. Hatsukami, Ph.D.

Cardiovascular diseases are the leading cause of death among women in the United States with the largest rate increase around age 50. Smoking is well established as a coronary risk factor. Given the recent study that HRT is no longer indicated as being cardioprotective, it seems prudent to examine the effect of smoking abstinence on cardiovascular risk factors in smoking postmenopausal women on HRT and not on HRT. Sixty postmenopausal smokers (ages 40-70) were recruited for a three-week outpatient, non-treatment smoking abstinence study (33 HRT and 27 non-HRT). HRT subjects were switched to a transdermal estrogen (Climara 0.1 mg) and oral progesterone (Cycrin 2.5 mg daily) before the measurement period. At baseline subjects were smoking and then randomized to abstinence or continued smoking for two weeks. Smoking status was monitored by saliva cotinine, breath CO and smoking records. Dependent measures of fasting lipoprotein profiles, blood pressure, and weight were collected at clinic visits. The four groups were HRT abstinent (n=17), HRT continued smoking (n=16), non-HRT abstinent (n=13), non-HRT continued smoking (n=14). Results indicated no significant changes in lipids between screening and exit visits for the four groups (p>0.05). Abstainers gained a mean of 1.28 kg + 2.9 (SD) compared to weight loss of 0.54 kg + 1.2 (SD) in continued smokers (p=0.002). Both abstainers and continued smokers decreased systolic pressure over time (p=0.002). There was no smoking status effect. In conclusion, there was a smoking status effect for weight gain, where abstainers gained weight after two weeks of abstinence. There was no HRT effect. Lipoprotein and blood pressure measurements showed neither HRT nor smoking status effect. These findings provide information for tailoring treatment programs for this understudied population.

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POS1-15

TEMPORAL PATTERNS OF SMOKING, AS OBSERVED WITH ELECTRONIC DIARY

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To date, analyses of smoking behavior have not considered how smoking might vary by time of day. To assess daily cycles in smoking behavior, we examined data from 282 smokers who used Electronic Diaries (EDs) to track when each cigarette was smoked during the day. The waking day was divided into 6 “bins” of approximately 2.5 hours each and cigarette counts were tallied for each bin. Trends over days were removed, and the data were normalized for each smoker’s overall smoking rate. Spectral analysis was used to select smokers with distinguishable cycles of smoking. Cluster analyses were used to group smokers according to their pattern of smoking over time. Results of the cluster analyses revealed five distinct smoking patterns: Afternoon peak — evening valley; gradual rise — rapid fall, flatline, afternoon dips, and morning valley — afternoon high. Smokers demonstrating each of these five patterns differed significantly in several ways, such as nicotine dependence (FTND) and smoking hedonics (e.g. “I enjoy the flavor of a cigarette”). These results suggest that smoking behavior can be characterized by regular cycles or patterns of smoking and non-smoking during the waking day. The observed correlations with individual differences in other smoking variables may suggest that the clusters describe distinct groups of smokers. Future research will consider whether these different patterns of smoking also foretell patterns of post-cessation craving and relapse.

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POS1-16  THE INFLUENCE OF INSTRUCTIONS AND NICOTINE DOSE ON THE SUBJECTIVE AND REINFORCING EFFECTS OF SMOKING

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Factors contributing to tobacco dependence include nonpharmacological aspects of smoking behavior, in addition to actual nicotine intake. For example, beliefs about the likely effects of cigarettes (i.e. expectancies) may influence responses to smoking. In this study, we examined the subjective and reinforcing effects of smoking as functions of specific instructions regarding the nicotine content of cigarettes given to smokers (“regular” versus “ultra low”), and the actual nicotine content of the cigarette (“regular” 0.9 mg versus “ultra low” 0.05 mg). A balanced-placebo design was used to independently manipulate instructions and nicotine dose via a 2 x 2 between-subjects approach (i.e. told “regular” and given “regular,” told “regular” but given “ultra-low,” told “ultra-low” and given “ultra-low,” told “ultra-low” but given “regular”). Subjects abstained for 1 hr prior to a single lab session. Following instructions, subjects, who were blind to cigarette brand, took 2 puffs from the designated cigarette, rated it (“liking,” “how much nicotine,” etc.), and rested for 10 mins. Reinforcement was then determined by responses on a progressive ratio computer task to earn more puffs on the cigarette. Main effects of instructions and dose were significant for “liking” and “how much nicotine,” as each was higher for those told regular vs. ultra-low and for those given regular vs. ultra-low. Instructions, but not dose, influenced ratings of “strength,” while dose, but not instructions, influenced “satisfying” and “similar to own brand.” However, neither instructions nor dose affected smoking reinforcement. There were no interactions of instructions x dose for any measure. These results show that instructions about nicotine dose, as well as the dose itself, can influence self-reported effects of smoking.

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POS1-18  DO BRAND-INDUCED CHANGES IN PUFF TOPOGRAPHY OCCUR OUTSIDE OF THE LABORATORY?

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Smokers who switch from regular to low-yield cigarettes (e.g., ultra light brands) change their smoking behavior (e.g., increases in puff volume). Observation of brand-induced changes in puff topography has been limited to short-term laboratory studies, though epidemiological data suggest that the effect is long-term and occurs outside of the laboratory. The goal of this study was to characterize the extent and duration of compensatory changes in puff topography associated with switching to low-yield cigarettes in smokers using cigarettes outside of the laboratory for a four-day observation period. Nine smokers (3 men), who smoked > 5 regular or light cigarettes/day, have completed this two (own brand, ultra-light), 4-day condition, within-subjects, counterbalanced, study (15 subjects are scheduled). Conditions were separated by a minimum 96-hr washout period. On Monday of each condition, participants smoked their first cigarette of the day (FCoD) in the laboratory using an ambulatory puff topography measurement device. They then left the laboratory with the device and instructions to use it to smoke the FCoD and four additional cigarettes on each condition day. The amount of payment subjects received was contingent on compliance with these instructions. Analysis of the FCoD data revealed that, relative to own brand, ultra light cigarettes increased mean puff volume (6.9 ml) and decreased inter-puff interval (2.9 sec, P<.05) across all four days of the study. These results suggest that brand-induced changes in puff topography are not limited to the laboratory settings in which they have been studied.


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POS1-17  INDIVIDUAL DIFFERENCES IN NICOTINE INTAKE PER CIGARETTE IN MEN AND WOMEN

Freda Patterson, Neal Benowitz, Peter Shields, Vyga Kaufmann, Christopher Jepson, Paul Willeyo, Susan Kucharski and Caryn Lerman

The increase in levels of blood nicotine that occurs from smoking a single cigarette, sometimes referred to as a “nicotine boost,” is an individualized measure of how much nicotine has been extracted from smoking a cigarette. As such, nicotine boost is a key indicator of tobacco smoke exposure and a possible risk factor for tobacco-related disease. This study investigated the demographic, smoking status, and psychological predictors of nicotine boost in the context of an ongoing clinical trial of nicotine replacement therapy. Participants were 95 male and 95 female treatment-seeking smokers who reported smoking at least 10 cigarettes a day. To assess nicotine boost, participants provided a blood sample before and after smoking one of their own brand cigarettes. Positive affect (mood) was a significant positive predictor (p=.03) of nicotine boost, controlling for baseline cotinine and cigarettes brand (FTC) nicotine delivery. Among males, significant predictors included smoking rate (p=.005) and positive affect (p=.02). Among females, only race predicted boost (p=.001), with African Americans exhibiting higher boost levels than Caucasians. These results suggest that positive mood states may lead to increases in overall nicotine intake, particularly among men. Future studies examining the role of nicotine boost could lead to individually tailored harm-reduction interventions.

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POS1-19  AMBULATORY PUFF TOPOGRAPHY MEASUREMENT: A VALIDATION STUDY

Sarah E. Evans, B.A., August R. Buchhalter, Ph.D., Alison Breland, M.S., Bethae A. Kleykamp, B.S., and Thomas Eissenberg, Ph.D., Virginia Commonwealth University

Puff topography has been used in clinical laboratories to study smoking behavior for decades. Topography measurement outside of the laboratory might reveal how smoking behavior is influenced by factors that are challenging to control in that setting (e.g., context, alcohol use, etc.), but has been limited by the poor availability of measurement hardware that can be used by smokers at home, work, or play. This study’s goal was to validate an off-the-shelf, handheld, ambulatory puff topography measurement device by comparing it with a well-accepted desktop system in a laboratory study of brand-induced changes in smoking topography. Smokers (>15 regular or light cigarettes/day) were eligible for this within-subject, 2 (device: desktop or handheld) by 2 (brand: own or ultra-light) study. Participants (N=20; 12 men) completed four Latin square-ordered, 2.5-hour, laboratory sessions, in which they smoked one cigarette ad libitum every 30 minutes. Relative to own brand, ultra lights increased mean puff volume (5.6 ml), number (1.6 puffs/cig), and duration (0.2 sec; main effect Ps<.05, no interactions). Relative to the desktop system, the handheld device was associated with greater puff number (0.6 puffs/cig) and altered smoking behavior less, as assessed by self-report (Ps<.05). These results suggest that 1) the desktop and handheld devices are equally sensitive to brand-induced changes in topography in a laboratory setting, 2) the handheld device is a valid measure of puff topography, and 3) the handheld device’s greater ease of use (relative to desktop systems) may explain small but reliable differences in topography values.

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POS1-20  
**THE EFFECT OF PUFF VOLUME ON CARBON MONOXIDE EXPOSURE IN 1MG TAR AND LIGHT CIGARETTES**

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When the filter vents of low-yield, heavily-ventilated cigarettes (e.g., 1mg tar) are blocked, smokers produce greater carbon monoxide (CO) boosts than when filter vents are not blocked. Prior research found that vent blocking on Light cigarettes does not increase CO boost. When smoking 1mg tar cigarettes, some smokers produce relatively larger CO boosts compared to other smokers. Smoking topography variables (puff volume, puff velocity, and puff duration) were investigated as potential sources of individual differences in CO boost. Participants completed four cigarette conditions: Light unblocked, Light blocked, 1mg tar unblocked, 1mg tar blocked, under controlled smoking conditions (8 puffs, 45 second interpuff interval), and had smoking topography and CO boost measured. CO boost for the unblocked and blocked Light cigarettes were 4.5 ppm and 6.8 ppm. CO boost for the unblocked and blocked 1mg tar cigarettes were 0.9 ppm and 3.4 ppm. Main effects (cigarette type and blocking) were statistically significant, but the interaction effect was not significant meaning the difference in CO boost between unblocked and blocked did not differ by cigarette type. This differs from results in previous research (e.g., Sweeney and Kozlowski, 1998; Sweeney et al., 1999). Smokers took significantly larger, faster, and longer puffs on 1mg tar cigarettes compared to the Light cigarettes; and on unblocked cigarettes compared to blocked cigarettes. Smoking topography measures did not explain individual differences in CO boost.

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POS1-21  
**COMPARATIVE AMERICAN AND JAPANESE TOBACCO SMOKE UPTAKE PARAMETERS AFTER OVERNIGHT TOBACCO DEPRIVATION**

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The purpose of this study was to determine various tobacco smoke uptake parameters in American and Japanese smokers. After overnight tobacco deprivation, expired CO, plasma nicotine and cotinine, and red cell carboxymicroglobin were measured. Fifty-one of 59 American and 55 of 86 Japanese cigarette smokers of mixed gender who met similar strict criteria were compared. Female and male American tobacco smokers were similar in mean age, number of cigarettes smoked per day, machine rated nicotine and tar yield per cigarette and per 24 hours, plasma cotinine, calculated previous 24 hour nicotine dose, and exhaled CO. Only mean plasma nicotine levels were higher in American females than males. American and Japanese female smokers had similar tobacco smoke uptake parameters. However, American and Japanese male smokers differed on many parameters. The latter had higher plasma nicotine and lower cotinine levels as well as calculated 24 hour dose of nicotine and lower exhaled CO. Japanese females and males were similar in all tobacco smoke uptake parameters. There were fewer Japanese female than male smokers; the former also smoked fewer cigarettes per day and were somewhat older. When the two racial groups were compared, irrespective of gender, the major statistically significant differences were lower mean exhaled CO levels and percent COHb in Japanese. It is concluded that Japanese males smoke cigarettes in moderation compared to American males.

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POS1-22  
**EATING AS A BEHAVIORAL SUBSTITUTE FOR SMOKING?**

Darla Kendzor, Sherry Pagoto, and Bonnie Spring Louisiana State University and University of Illinois at Chicago

Weight gain associated with smoking cessation arises, in part, from increased caloric intake. Our prior findings show that the reinforcing value of food increases during smoking cessation, suggesting that food might constitute an effective, immediately rewarding substitute for smoking during a quit attempt. Those who disinhbit dietary restraint during smoking cessation may be more likely to quit because they have a convenient behavioral substitute for smoking, i.e., eating. We hypothesized that disinhibition would positively predict cessation and that caloric intake following a quit attempt would account for this relationship. Female smokers (N=315) were randomized to 3 versions of a 16-week group behavioral smoking cessation intervention that also addressed post-cessation weight gain. Prolonged abstinence criteria required self-reported abstinence bioverified by expired carbon monoxide levels of <9 ppm during the third month of the quit. Caloric intake was assessed weekly via diet records. After controlling for treatment group and nicotine dependence, regression analyses revealed that baseline disinhibition predicted prolonged abstinence (p=.05) and average caloric intake over first 10 weeks after a scheduled quit (p=.004). After controlling for average post-quit caloric intake, disinhibition no longer predicted prolonged abstinence (p=.17). A mediational model was confirmed when average post-quit caloric intake positively predicted prolonged smoking abstinence (p=.02). Results suggest that the association between disinhibition and prolonged smoking abstinence is explained by post-quit caloric intake. Disinhibition is associated with higher levels of caloric intake after quitting smoking, and this caloric intake, while a risk factor for weight gain, appears to assist in prolonged abstinence.

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POS1-23  
**DESIGNING CIGARETTES TO KEEP SMOKERS SLIM: HOW THE TOBACCO INDUSTRY HAS USED PRODUCT DESIGN TO TARGET PEOPLE TRYING TO CONTROL BODY WEIGHT**

Benjamin L. Cook, Geoffrey Ferris Wayne, Gregory N. Connolly

Despite the fact that the tobacco industry has been unable to overtly promote weight control properties of cigarette smoking due to FDA restrictions, previous studies have shown that the tobacco industry has used media advertising to target smokers, especially females, with body image related issues. In this study, we analyze internal tobacco industry documents to test the hypothesis that tobacco companies have intentionally altered cigarette product design in order to create more desirable cigarettes for people trying to manage their weight. First, industry researchers have identified weight control as a salient reason for continuing to smoke, especially among women. Second, researchers have identified an appetite suppressing cigarette as a potentially advantageous prototype. Third, the industry has intentionally altered the shape of cigarettes in new products and brand extensions in order to appeal to smokers concerned about weight control. Finally, the industry has explored design changes including use of appetite suppressant additives, flavored filter tips, and altered tobacco taste, which directly target the weight control segment. These findings have implications for tobacco cessation efforts as well as government regulation of tobacco industry product design.

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POS1-24  CONJOINT BEHAVIOR CHANGE INTERVENTION FOR SMOKING CESSATION AND WEIGHT CONTROL

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The advisability of combining behavioral smoking cessation and weight control interventions remains controversial. We tested whether requirements to change smoking, eating and activity, compared to smoking only, would impede smoking cessation but improve weight control. Female regular smokers (n=315) were randomized to 3 treatment groups. All received 16 weeks of behavioral smoking cessation treatment, quit at week 5 and were followed up for 6 months. Early Diet (ED) group received weight management treatment during the first 8 weeks of the smoking cessation treatment. Late Diet (LD) group received weight management during the final 8 weeks of smoking cessation treatment. Controls received weight loss counseling at week 16. Outcomes for abstinence (ecology-bioverified) and weight change were analyzed via mixed linear modeling. The final model for abstinence showed negative effects of higher Fagerstrom (p<.001), shorter time to dropout (p<.001), and greater nonattendance (p=.05) but no significant differences in abstinence between groups (and directionally better abstinence for Diet groups than Control). The final model for weight change adjusted for nicotine-suppressive effects on weight by covarying out time-varying smoking status (p=.01) and cumulative percent of visits abstinent (p=.001). The ED versus Control comparison showed a linear interaction with time [(F(1,1451)=4.83, p=.03)]. The LD vs. Control comparison showed a quadratic interaction with time [(F(1,1451)=11.17, p=.001)]. ED initially showed a weight suppression advantage that was lost over time, whereas LD initially lacked but gradually gained a weight suppression advantage that stabilized. Behavioral weight control efforts did not undermine smoking cessation, and produced better suppression of weight gain when initiated after the smoking quit date.

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POS1-25  DEVELOPMENT OF AN INDIVIDUALLY TAILORED, DIETARY AND WEIGHT-CONTROL SMOKING CESSATION PROGRAM FOR WEIGHT-CONCERNED WOMEN

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Research indicates that women get more weight-control benefits from smoking, suffer more postcessation weight gain, and are more concerned about postcessation weight gain than men. Fear of weight gain is often cited as a deterrent to smoking cessation in women and may be a trigger for relapse. Moreover, one of the primary withdrawal symptom differentiating men and women is increased appetite in women. Smoking cessation programs that have included weight management components have reported recruiting success, indicating that these programs were attractive to smokers. However, these programs have been largely unsuccessful in decreasing postcessation weight gain, suggesting that revised treatments are necessary. In the present study, we compared the relative effectiveness of an empirically validated smoking cessation program alone and in combination with an individually tailored, multidisciplinary, weight management program in a sample of weight-concerned female smokers. Participants were 71 weight-concerned female smokers (mean age = 36.7 years; mean BMI = 24.7; mean daily smoking rate = 21 cigarettes; mean years smoked = 20.6; mean FTND = 5; mean CO = 21.6 ppm; mean % past quit attempts = 3.2). All participants completed a 2-week, 8-session cessation program, including a combination of coping response training and 8 weeks of the nicotine transdermal patch. They subsequently attended 6 individually tailored (n = 37) or 6 group (n = 34) followup meetings in which they received counseling from psychologists, dietitians, and exercise physiologists. Preliminary analyses indicate higher smoking rates among the tailored participants at 8 weeks followup, and greater weight gain among the tailored participants at 24 weeks followup. Data collection is ongoing for the followup period. Discussion will address the effectiveness and economy of individually tailored vs. group interventions for smoking cessation and weight gain prevention.

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POS1-26  CRAVING AND PREPULSE INHIBITION OF STARTLE DURING EXPOSURE TO SMOKING AND FOOD CUES AMONG FOOD-DEPRIVED NON-SMOKERS

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Prepulse inhibition (PPI) of startle, a decrement in the startle response caused by a weak prestimulus presented 60-500 ms before a startling noise, is impaired by manipulations that increase mesolimbic dopamine. Recent work demonstrated reduced PPI among smokers during craving of a lit cigarette compared to a neutral cue, consistent with the hypothesis that smoking cues stimulate dopamine release. However, a lit cigarette is more interesting than a neutral cue, and attention can also affect PPI. To test these alternative hypotheses, we examined PPI during exposure to smoking, neutral, and food cues among 29 undergraduate non-smokers (16 female) following overnight food-deprivation. Each of the 9 cue presentations (3 of each cue) lasted 4.5 min. During each cue, 9 startle probes (102-dB white noise) were presented, and a prepulse (20-ms noise 8 dB above background) preceded 2/3 of the probes by 60 or 120 ms. Despite the deprivation manipulation, only half of the sample reported reliable craving of the food cue. Percent PPI was reduced during the food cue, relative to the smoking cue, among participants who reported craving the food cue, but not among those who did not crave. Percent PPI was not diminished during the smoking cue relative to the neutral cue. Thus, the prior finding of diminished PPI during smoking cues among smokers is not likely due to a craving-independent attention mechanism. More broadly, PPI may be a useful index of cue reactivity.

Supported by a interdisciplinary grant from SUNY-Buffalo to Larry W. Hawk, Ph.D.

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POS1-27  LEPTIN, HUNGER, AND BODY WEIGHT: INFLUENCE OF GENDER, TOBACCO SMOKING, AND SMOKING ABSTINENCE

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Leptin is a hormone involved in body weight and hunger regulation, and may contribute to the inverse relationship between cigarette smoking and body weight. Leptin levels, body mass indices (BMI), and hunger ratings were determined in 22 nonsmokers (12 male, 10 female) and 19 cigarette smokers (11 male, 8 female). Smokers were tested after ad lib smoking and following 24-hr smoking abstinence; non-smokers came to the laboratory once. Leptin levels were not different among the groups. Hunger ratings, however, were higher after smoking abstinence compared to after ad lib smoking and compared to nonsmokers (p's<0.05); levels of hunger did not differ between ad lib smokers and nonsmokers. Men reported higher hunger levels than did women, but women had higher serum leptin levels than did men, regardless of smoking condition (p<0.05). Leptin levels were correlated with BMI (p<0.05) among smokers only. This first study on leptin responses in female smokers suggests that leptin levels do not change following 24-hr smoking abstinence, and that leptin may not contribute to increased appetite following smoking abstinence.

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SMOKERS’ EXPECTANCIES FOR SMOKING VERSUS NICOTINE PER SE

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Smoking-related outcome expectancies are among the best predictors of smoking motivation and behavior, including cessation. Moreover, expectancies about nicotine replacement therapy (NRT) appear to influence the perceived effects of NRT. To better understand the structure of smokers’ expectancies and the potential for harnessing expectancy effects to enhance treatment, it is important to parse smoking-related expectancies into their components. Although nicotine is generally accepted by researchers as responsible for tobacco dependence, it is clear that the full act of smoking comprises much more than nicotine intake. What is not known is how smokers themselves conceptualize the role of nicotine within the full act of smoking. The present study examined smokers’ expectancies for smoking in general versus nicotine in particular. Two methods were used to assess expectancies: completion of the Smoking Consequences Questionnaire (SCQ) and subjects’ own generation of associative word lists. Subjects were 201 undergraduate smokers randomly assigned to complete the two measures with regard to either “smoking” or “nicotine.” Results from the SCQ indicated that subjects held similar smoking and nicotine expectancies with regard to Negative Reinforcement (e.g., relief from withdrawal); and Appetite/Weight Control. However, they held stronger Positive Reinforcement expectancies for smoking in general. Moreover, they held equivalent expectancies about Negative Consequences (e.g., health risks) of smoking and nicotine. Thus, nicotine is associated with the negative consequences of smoking, but not with all the positive effects. Findings from the associative assessment will also be presented, and the theoretical and applied implications will be discussed.

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NALTREXONE ATTENUATES BEHAVIORAL AND OBJECTIVE MEASURES OF CIGARETTE SMOKING

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Several studies have supported naltrexone’s attenuation of acute nicotine response, although these findings are mixed. This placebo-controlled study was designed to examine the effects of naltrexone on smoker’s cigarette response in a laboratory paradigm intended to simulate clinical aspects of initial smoking cessation. Subjects (N=44) smoked 20.7 cigarettes daily (mean FTND=2.6). Subjects were tested in two separate morning sessions (avg. 9 days apart, range 4-21 days) after maintaining 12 hours of smoking abstinence in an overnight stay at the Clinical Research Center. Each subject received preadministration of either 50 mg oral naltrexone or identical placebo in random order. Subjective measures of craving (BQSU) and side effects were assessed at morning baseline, two hours post-baseline, and five hours post-baseline. The afternoon consisted of a choice smoking phase (maximum 4 choice cigarettes) of the subjects’ preferred brand. Results show that naltrexone significantly reduced the total number of cigarettes smoked (p<.05), which was supported by reduced carbon monoxide levels (p<.05). Naltrexone increased scores on the side effects scale at three hours (p<.05) but not at other post pill administration. Post-hoc analyses revealed that this effect was due to increases specifically in sedation (p<.05), but not nausea or other aversive side effects. Women smokers may be more sensitive to naltrexone than men, as they tended to report more overall side effects (p=0.7). However, naltrexone did not affect craving scores. Further research is needed to discern whether this effect is due to smoking-specific subjective effects or to a nonspecific effect (i.e., increases in sedation).

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LONGITUDINAL SAFETY AND IMMUNOGENICITY DATA OF TA-NIC, A NOVEL NICOTINE VACCINE


TA-NIC, a novel nicotine vaccine, has been studied in a phase I safety and immunogenicity trial. TA-NIC is designed to induce nicotine antibodies capable of binding with free nicotine in the blood. It is intended that the bound nicotine is prevented from crossing the blood-brain barrier, thus providing an important aid to smoking cessation. This phase I randomised, double-blind, placebo-controlled study in both smokers and non-smokers consisted of a primary vaccination course (of 0, 2, 4, 6 weeks, 0, 2, 4, 8 weeks, 0, 2, 4, 6, 8 weeks or 0, 2, 4, 6, 20 weeks) followed by a booster vaccination at around 9 months for eligible subjects. The study was designed to investigate the safety and immunogenicity profile of TA-NIC. Results from the study have concluded that TA-NIC is safe, well tolerated and immunogenic at doses of 10 micrograms and 50 micrograms using up to 6 vaccinations. Detailed safety and immunogenicity data will be presented. This study was conducted in Belgium.

The study was supported by Xenova Research Limited.

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RESULTS OF A PHASE 1, DOUBLE-BLADED, CONTROLLED SAFETY AND IMMUNOGENICITY TRIAL OF NICVAX, A CONJUGATED NICOTINE VACCINE

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BACKGROUND: Nabi Biopharmaceuticals has developed an investigational alum adjuvanted, nicotine conjugate vaccine (NicVAX), that consists of 3-amaminomethyl-nicotine conjugated to a carrier protein. The carrier protein, recombinant exoprotein A (rEPA), produced in Escherichia coli, is derived from detoxified Pseudomonas aeruginosa exotoxin A, and has been shown to be safe and well tolerated in over 1000 patients administered a Staphylococcus aureus capsular polysaccharide rEPA conjugate vaccine.

METHODS: In a double-blinded, placebo-controlled, phase 1, single center, safety and immunogenicity trial, 20 healthy adults were randomly assigned 1:1 to receive an intramuscular injection of 200 µg NicVAX or alum placebo. Safety and anti-nicotine antibody (ELISA) were assessed for 63 days following vaccination. Safety (unblinded reactogenicity and other adverse events) were reviewed by an independent Safety Committee.

RESULTS: Local reactogenicity to the vaccine was mild to moderate, transient, and at no time required medical intervention. While remaining blinded to vaccine assignment, results from ELISA shows that a single dose of the vaccine produced measurable antibody titers to nicotine by day 7 post-vaccination. Antibody levels of 100 to 820 (reciprocal dilution) were seen as early as 21 days and in some subjects continued to increase during the 60 days of observation following vaccination.

SUMMARY: The vaccine was safe, well-tolerated and resulted in a rapid immune response that generated substantial amounts of nicotine-specific antibodies. These encouraging results suggest that additional investigation of this vaccine as an aid to smoking cessation, to prevent relapse in ex-smokers, and to prevent nicotine addiction in those just beginning to use tobacco, is warranted.

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POS1-32 PERCEIVED STRESS IN CIGARETTE SMOKERS UNDERGOING SURGERY

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The forced abstinence from cigarettes accompanying surgery in smoke-free facilities may increase psychological stress postoperatively by removing a coping mechanism and via nicotine withdrawal. We hypothesized that increases in stress after surgical procedures are exaggerated in cigarette smokers compared with non-smokers. We examined perceived stress (assessed by the Perceived Stress Scale (PSS)) and nicotine withdrawal (assessed by the Hughes Hatsuakami nicotine withdrawal score (NWS)) in 141 cigarette smokers and 150 non-smokers undergoing surgery. Assessments occurred preoperatively and up to 30 days postoperatively. The majority of smokers (61%) smoked immediately (within 2 hours) before entering the hospital, and most (73%) resumed smoking within 1 day after hospital discharge. Fifteen (11%) smokers self-reported continuous abstinence through 30-day follow-up. PSS scores were significantly (p<0.001) higher in smokers throughout the study period. There was no significant interaction between smoking status and time, indicating that changes in PSS during the perioperative period did not differ between smokers and non-smokers. The same result was found if analysis was restricted to data collected prior to hospital discharge (and thus during assured abstinence). Similar results were found for the NWS, even when analysis was restricted to hospitalized patients, suggesting that smokers did not experience more withdrawal symptoms relative to nonsmokers. We conclude that 1) although smokers report increased baseline stress, smoking status does not affect changes in perceived stress over the perioperative period, and 2) nicotine withdrawal symptoms do not appear to be a clinically-significant problem in the perioperative period. We suggest that the time of surgery may represent a window of opportunity to help cigarette smokers quit.


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POS1-33 ATTENUATED CORTISOL RESPONSES TO ACUTE STRESSFUL CHALLENGE ARE ASSOCIATED WITH ENHANCED DESIRE TO SMOKE

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Research has demonstrated sex differences in the influence of negative affect and stress on craving for smoking. The extent to which adrenocortical changes under acute stress contribute to increased craving for smoking is not known. The present study was conducted to assess sex differences in adrenocortical and cardiovascular responses to acute stress in smokers. Seventy two smokers (34 women) participated in the study during the morning hours after minimal deprivation. The protocol included 40 minute rest baseline followed by exposure to the cold pressor test (CPT) and a 20 minute recovery. Participants rated their pain every 15 sec. during a 90-sec. hand CPT (0-4 oc) and a 90-sec. post-CPT recovery period. Salivary cortisol samples were collected every 15 minutes, while blood pressure (BP) and cardiac output measures were obtained throughout the experiment. Negative affect, physical symptoms, and ratings of craving for a cigarette were assessed at the beginning of the session, after a 30 minute rest before CPT, and after CPT. All participants showed significant cortisol and cardiovascular responses to CPT (p<0.01). Reported craving and negative affect also increased with time (p<0.01). Women reported greater pain during and after CPT (p<0.05). A series of regression analyses showed that steeper declines in cortisol during rest and smaller cortisol responses to CPT were associated with greater reported craving for a cigarette (r = 0.26-0.29). Specific examination of these relationships in men and women separately showed that cortisol correlations with craving were significant only in men (r = 0.35 - 0.45; p< 0.05) but not in women (r = 0.0 - 0.10; ps > 0.5). These findings support the hypothesis that enhanced craving may be associated with declining rather than increases in adrenocortical functions. Results also suggest different mechanisms responsible for craving in male and female smokers.

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POS1-34 SMOKING AND STRESS: DISENTANGLING NICOTINE EFFECTS ON EXOGENOUS AND WITHDRAWAL STRESS

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Negative reinforcement models suggest that nicotine use is reinforcing because it can reduce stress. However, these models are vague with respect to the mechanisms involved. In particular, it is unclear if nicotine reduces stress resulting from exogenous stressors or if it is only effective at relieving stress due to the nicotine withdrawal process itself. This project was designed to examine the affective consequences of nicotine withdrawal, and to disentangle the effects of nicotine on exogenous vs. withdrawal-related stress. Ninety-six subjects ages 18-40 (50% male) were recruited from the university and surrounding community and assigned to one of four groups based on their smoking behavior determined at screening. Daily smokers (>15 cpd, >10 ppm CO) were randomly assigned to either a 24-hour withdrawal condition (WS) or a continued smoking condition (CS). The other two groups were never smokers (NS) and occasional smokers (OS); never daily smokers, at least one cigarette in the last month, <8 ppm CO). Participants ongoing tonic stress level and phasic stress response to a noxious stimulus (electric shock) were assessed prior to and following cigarette administration in the laboratory (NS did not smoke). Tonic and phasic components of affect were indexed with psychophysiological indices of central nervous system (e.g. fear-potentiated startle) and neuroendocrine stress response (e.g. salivary cortisol). Results of comparisons between WS and other groups prior to cigarette administration are discussed to characterize the affective consequences of withdrawal. Additional comparisons of pre vs. post cigarette stress level and stress response among the three groups of smokers are discussed to address the effects of nicotine on exogenous and withdrawal related stress.

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POS1-35 THE MOOD EFFECTS AND REINFORCING VALUE OF NICOTINE: PRELIMINARY FINDINGS FROM A LABORATORY STUDY

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Theory and some empirical research suggests that the mood effects and reinforcing value of nicotine are moderated by individual differences and situational contingencies. This study utilizes a mixed within- and between-subjects design to investigate (1) the moderating effects of neurotism, stress and nicotine dose on anxiety; (2) the moderating effects of neurotism, stress and nicotine dose on the reinforcing value of nicotine; (3) the relationship between the anxiolytic effects and the reinforcing value of nicotine. The within-group factor is stressful condition (no stress vs. moderate stress). The between-group factors are nicotine dose (0.07-mg vs. 1.0-mg) and neurotism (high vs. low). Ss attend one baseline session and two experimental sessions. In one experimental session, Ss receive a mood induction. Ss are nicotine deprived for 45 minutes prior to smoking the research cigarette. Preliminary data (N=15) are promising for hypothesis 1. The mood effects of nicotine are greatest for Ss with high neurotism scores who receive the cigarette containing 1-0mg (vs. 0.07-mg) of nicotine under high stress (p<0.16). Data thus far are less promising for hypothesis 2 (p>0.20). Findings for all 3 hypotheses will be presented. This study is being supported by a seed grant from the Department of Psychiatry, Boston University School of Medicine.

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POS1-36  SUBJECTIVE AND REINFORCING EFFECTS OF SMOKING DURING NEGATIVE AFFECT

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Past research has established a strong relationship between negative mood and increased self-reports of craving to smoke and smoking frequency. This relationship is often assumed to be due to alleviation of negative mood by smoking. However, few controlled laboratory studies have specifically examined the impact of manipulated mood on subjective and behavioral indices of smoking. The present study used a modified mood induction procedure to examine both the impact of smoking on induced mood states, as well as the effect of induced mood on actual smoking behavior. A 3 x 2 mixed design involving the induction of mood (Positive, Negative, and Neutral) in 2 groups of smokers (“Smoking,” “Water”) was used. Forty-eight smokers attended 3 individual sessions during which one of three mood states was continually induced via IAP picture stimuli and affect congruent classical music. Each session involved a controlled smoking/sipping procedure, as well as a subsequent ten-minute smoking/drinking ad lib period. A manipulation check verified an overall robust main effect for mood in the predicted direction under each mood condition. Contrary to what was expected, smoking did not attenuate negative mood. However, the smoking group showed enhanced self-reported craving under negative and neutral mood conditions, and smoking did attenuate craving under these mood conditions. Behaviorally, negative mood increased subsequent reinforcement of smoking as evidenced by decreased latency to puff and greater number of puffs during the ad lib period. These findings demonstrate that smokers experience increased craving and motivation to smoke under negative affect conditions, but they question the notion that such effects are driven by resulting relief from negative mood.

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POS1-37  CORRUGATOR SUPERCILII EMG AND SELF-REPORT NEGATIVE AFFECT IN SMOKERS

Cho Y. Lam, Paul M. Cinciripini, Jason D. Robinson, Brian L. Carter, Tracy Y. Long, David W. Wetter, Deena L. Martinez

Both pre- and post-cessation levels of self-report negative affect have been shown to be strong predictors of smoking relapse. However, while activation of the corrugator supercilii (frown muscle) has been found to index negative mood in depressed individuals, it remains unclear how it may apply to smokers attempting to quit. This study examined corrugator supercilii EMG responses to emotional stimuli and self-report negative affect in 99 smokers. Participants were randomly assigned to either quit smoking (n = 58) or to continue smoking regularly (n = 41). Participants in the quit condition were categorized as abstainers (n = 31), relapsers (n = 15), and never-abstainers (n = 12). A significant two-way interaction showed that never-abstainers reported higher negative affect as measured by the PANAS and CES-D at the sixth day postquit than did the rest of the participants (i.e., controls, abstainers, and relapers, p < .01). A significant Abstinence Status X Days Postquit X Picture Type interaction (p < .01) was also found indicating that when viewing negative pictures, never-abstainers exhibited marked increases in corrugator activity that peaked at the sixth day postquit. These findings suggest that corrugator EMG activity corroborates self-report measures in indexing negative affect in unsuccessful quitters during quit attempt.

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POS1-38  EFFECTS OF NICOTINE ON BRAIN RESPONSES TO NEGATIVE AND POSITIVE EMOTIONAL IMAGES

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The effects of nicotine patch vs. placebo patch on brain event-related potential (ERP) responses to emotionally negative, positive, and neutral color picture stimuli were assessed in habitual smokers (n = 16) in a double-blind, counterbalanced, within-subjects design. After overnight smoking deprivation (12+ hr), participants were placed on an active nicotine patch during one experimental session and a placebo patch on a second occasion. ERPs to emotional stimuli were recorded at 29 brain sites beginning 3 hours after the application of the patch. Nicotine, relative to placebo, enhanced the P200, decreased the N290, and enhanced the P300 responses to negative pictures. In contrast, nicotine, modulation ERPs to positive pictures was limited to the N290 and latency changes in late potentials. Nicotine’s effects on ERPs to neutral stimuli were relatively limited to an attenuation of the N290 amplitude. These and other theoretically informative effects were demonstrated by statistically significant nicotine x valence, nicotine x hemisphere, and nicotine x valence x hemisphere interactions. These differential effects of nicotine on ERPs may reflect mechanisms that contribute to nicotine’s ability to modulated affect.

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POS1-39  IMAGERY-INDUCED TOBACCO CRAVING: PERSISTENT TIME COURSE AND LACK OF REACTIVITY EFFECTS

Carol S. Myers, Ph.D.*, Sunipa Saha, Edward G. Singleton, Ph.D., Eric T. Moolchan, M.D., and Stephen J. Heishman, Ph.D., NIDA/IRP

Craving for tobacco can be a significant impediment to quitting smoking. The purpose of this study was to examine the time course of imagery-induced craving and to determine whether repeated exposure to a self-report questionnaire would increase subsequent craving. We hypothesized that craving reports would decrease over a 15-min period and that repeated completion of the 12-item Tobacco Craving Questionnaire (TCQ) would not increase craving. Nonabstinent smokers (n = 24 to date, 40 planned) were divided into four groups: 1) imagined a scene describing a person experiencing smoking urges and completed the TCQ every min for 15 min (craving-repeated, C-R); 2) imagery and completed the TCQ every min immediately after the scene (min 1) and 15 min later (craving-not repeated, C-NR); 3) no imagery (rested) and completed the TCQ every min for 15 min (no craving-repeated, NC-R); and 4) no imagery and completed the TCQ at min 1 and 15 (no craving-not repeated, NC-NR). TCQ scores at min 1 were significantly greater in the imagery groups compared to those who rested. In the C-R and C-NR groups, TCQ scores at min 15 were not significantly different from those at min 1. Finally, TCQ scores at min 15 were not significantly different between groups C-R and C-NR and between NC-R and NC-NR, indicating that repeated completion of the TCQ did not increase craving scores. These data suggest that imagery-induced craving persists for at least 15 min and that reactivity effects are not apparent from repeated administration of the TCQ.

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POS1-40

CUE-INDUCED CRAVING IN ADOLESCENTS WITH NICOTINE DEPENDENCE

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OBJECTIVE: There is a lack of investigation examining smoking cue reactivity among adolescent smokers. This pilot study was designed to explore whether cue-induced craving can be elicited among adolescents with nicotine dependence.

METHODS: We have recruited 11 nicotine dependent adolescent smokers between ages 12 and 19 in the study to date. Participants were exposed to “in vivo” nicotine cues and “neutral cues” with a 10 min. rest period. Subjective (craving, Questionnaire for Smoking Urges- Brief), as well as objective (heart rate, skin conductance) measures of craving were obtained.

RESULTS: Nicotine dependent adolescent smokers reported higher craving to “in vivo” smoking cues as compared to the neutral cues. We will also report results of the real-time heart rate and skin conductance data.

CONCLUSION: Preliminary evidence from our study indicates that adolescents exhibit craving to cigarettes, similar to adult smokers. Hence, it may be possible to elicit cue-induced craving among adolescents with nicotine dependence in a laboratory. Implications of the results will be discussed.

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POS1-43

IMPLICATIONS OF COGNITIVE DISSONANCE IN SMOKERS AND NON-SMOKERS AS EVIDENCED BY LINGUISTIC PREDICTORS

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Cognitive dissonance was induced in smokers, but not in non-smokers, by means of writing an essay about the dangers of smoking. Forty-eight undergraduate students (23 female and 25 male) recruited from introductory psychology classes participated. Smokers reported smoking at least 16 cigarettes per day, and non-smokers reported never having smoked on a self-report measure. Linguistic analysis examined the differences in language use between smokers and non-smokers. There were significant differences in total pronoun usage (F(1, 46) = 15.789, p < 0.000), first person pronouns (F(1, 46) = 36.545, p < 0.000), first person singular pronouns (F(1, 46) = 40.544, p < 0.000), second person pronouns (F(1, 46) = 4.377, p < 0.05), and third person pronouns (F(1, 46) = 8.315, p < 0.01). Additionally, there was a significant difference in the number of inhibition related words (F(1, 51) = 8.953, p < 0.01), and insight related words (F (1, 51) = 7.558, p < 0.01). Smokers’ language use mirrored previous studies finding a relationship between pronoun usage and depression among students. Given that a person’s language use has been shown to be predictive of personality characteristics and health outcomes, such a finding offers insight into why people smoke, as well as predicting treatment outcomes. Similar linguistic style might indicate that smokers were depressed, lending additional support for nicotine being used to regulate affect. Future studies should address the effect of depression on smoker’s language use, and linguistic style as a predictor of smoking cessation.

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POS1-42

PRIMING OF TOBACCO EXPECTANCIES IN FREE RECALL AND RECOGNITION TASKS

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Research concerning tobacco-related expectancies has shown that they are stored in memory and are organized in semantic networks. Evidences suggest that tobacco associated stimuli can prime these semantic networks altering the accessibility of expectancies. This study examined the effect of a tobacco-related word prime or a neutral word prime on the ability to recall and recognize either tobacco expectancy words (e.g., relax, satisfy, hooked) or grocery words (e.g., cereal, carrots, butter). The sample consisted of 305 college students, with a mean age of 19.77, of which 52% had smoked daily. Subjects were first presented with a priming word (either cigarette or milk), followed by 40 randomly presented words; of which 20 were tobacco expectancy words and 20 were grocery words. The recognition task consisted of 60 words; 40 from the original list, 10 new tobacco expectancy words, and 10 new grocery words. Subjects who received the tobacco prime recalled more tobacco words than grocery words, and subjects who received the grocery prime recalled more grocery words than tobacco words. For the recognition task, subjects who received the tobacco prime were more likely to recognize the original list of tobacco expectancy words and were also more likely to endorse false-positives. These results are striking given the abstractness of the tobacco-related words when compared to grocery words and support the notion that tobacco related expectancies operate as a semantic associative network in memory.

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POS1-44

INFLUENCE OF TOBACCO USE, ABSTINENCE AND GENDER ON VERBAL LEARNING IN ADOLESCENTS

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Understanding factors that mediate maintenance of smoking in adolescents is an important step towards developing better treatment options. While it has been suggested that tobacco withdrawal related cognitive decrements may play a role in maintaining smoking, there is limited information on the effect of tobacco use and abstinence on cognitive performance in adolescents. This study will present a preliminary evaluation of performance by adolescent male smokers (n=21), female smokers (n=18) female non-smokers (n=25) and male non-smokers (n=18) on a verbal learning task (HVLT, Brandt 1991). Smokers were required to be abstinent from cigarettes during a 48-hour inpatient session; the HVLT was repeated at 1 hour, 14 hours and 38 hours following initiation of abstinence. The HVLT consists of two learning trials followed 20 minutes later by a delayed recall and recognition trial; the data is summarized into four variables, total recall, learning, delayed recall and recognition. Overall, smokers had significantly lower scores on total and delayed recall when compared with non-smokers (p'<0.01). Female smokers experienced significant time-dependent decreases in total recall and recognition during the abstinence period, when compared with female non-smokers. Both male smokers and non-smokers experienced time-dependent changes in total and delayed recall and recognition, that were not significantly different. These preliminary data suggest that smoking status and gender effect verbal learning in adolescents and that tobacco (nicotine) withdrawal further decreases these abilities in adolescent female smokers.

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**POS1-45**

**RELATIONSHIP OF NICOTINE DEPENDENCE WITH SENSATION SEEKING AND AGGRESSION AMONG AFRICAN-AMERICAN HEALTHY VOLUNTEERS AND COCAINE**

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Objective: We examined the relationship between nicotine dependence and personality traits of sensation seeking and aggression among African-American cocaine abusers and healthy volunteers. Methods: Assessments of sensation seeking (Zuckerman Sensation seeking scale [SSS]), aggression (Buss-Durkee Hostility Inventory [BDHI]), and nicotine dependence (the Fagerstrom Test for Nicotine Dependence [FTND]) were compared between smokers and nonsmokers among 60 African-American healthy volunteers and 141 cocaine-dependent individuals entering outpatient treatment. Results: As expected, significantly more cocaine patients (83%) were nicotine dependent compared to healthy volunteers (46%) (chi squared=27.81, df=1, p<0.001). After controlling for depression, FTND scores were not significantly correlated with the total SSS or the total BDHI scores among healthy volunteers as well as the cocaine group. However, nicotine dependent cocaine patients were significantly more sensation seeking (t=2.76, df=143, p<0.01) and aggressive (t=3.71, df=142, p<0.01) compared to nicotine dependent healthy volunteers. Conclusion: Traits of sensation seeking and aggression appear to be associat-
ed with cocaine dependence rather than nicotine dependence.

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**POS1-46**

**BEHAVIORAL AND CARDIOVASCULAR EFFECTS OF NICOTINE PATCHES AND STIMULANT MEDICATION ON ADULT ABSTINENT SMOKERS WITH ADHD**

Jean-G. Gehricke*, Larry D. Jamner, Carol K. Whalen, and Kenneth Steinhoff, University of California, Irvine

Individuals with attentional and emotional problems are not only more at risk to start and maintain smoking, but also less successful in smoking cessation. In smokers with ADHD, symptoms and negative moods associated with nicotine withdrawal may be reduced with a combination of nicotine patches and stimulant medication. The objective of this study was to monitor ADHD symptoms, moods, and cardiovascular activity in the daily lives of adult smokers with ADHD. The study used a 2 by 2 crossover design with nicotine and placebo patches in the presence and absence of stimulant medication. The first five patients in this ongoing study were clinically diagnosed with ADHD and completed four 2-day sequences, each time under a different nicotine and stimulant medication condition. ADHD symptoms, moods, and behaviors were monitored with an electronic diary. Heart rate and blood pressure as indicators of physiological arousal and cardiovascular side effects were recorded with an ambulatory blood pressure monitor. Results showed that ADHD symptoms and negative moods were reduced by approximately 20% under nicotine patches with stimulant medication compared to placebo patch conditions (p<.048). Heart rate and arterial pressure were elevated in response to nicotine patches with stimulant medication compared to placebo patch conditions (p's <.047). The findings suggest that smokers with ADHD are highly susceptible to the symptom-reducing and arousal-enhancing effects of nicotine. Nicotine patches in combination with stimulant medication may facilitate smoking cessation in smokers with ADHD.

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**POS1-47**

**IMPULSIVITY PREDICTS REACTIVITY TO SMOKING CUES**

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More impulsive individuals have an increased probability of initiating smoking and heightened difficulty remaining abstinent. Mechanisms to explain linkages between impulsivity and smoking remain largely unexplored. Prior research suggests that impulsive persons show heightened awareness of rewarding stimuli, and impulsive smokers find cigarettes more rewarding than other smokers do. We hypothesized that the association between impulsivity and smoking can be at least partly explained by heightened reactivity to environmental smoking cues among more impulsive smokers. Regular smokers [n=37] classified as either high or low in impulsivity based on Barratt Impulsiveness Scale scores were assessed for physiological reactivity to smoking cues. Participants underwent a neutral mood induction, following which they held a lit cigarette for two minutes without putting it to their mouth. More impulsive smokers exhibited a greater increase in mean arterial pressure [F (1, 36)=4.44, p=0.042] and in heart rate [F (1, 36)=4.29, p=0.046] from baseline to cue exposure than did less impulsive smokers. Results suggest that impulsive smokers show heightened responsivity to environmental cues associated with smoking. To the extent that increased reactivity to smoking cues is associated with increased difficulty attaining and maintaining nicotine abstinence, this finding may explain highly impulsive smokers’ increased difficulty quitting smoking.

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**POS1-48**

**MAIN AND INTERACTIVE EFFECTS OF IMPULSIVITY AND NEGATIVE EMOTIONALITY IN NICOTINE ADDICTION**

J. Lee Westmaas, Ph.D., Patricia Conrod, Ph.D., and Patricia Woicik, Ph.D.

Although impulsivity and neurotic traits have been implicated in smoking status, the relative importance of these dimensions in predicting nicotine addiction and related variables is unclear. In 3 samples that included (i) 93 men and 117 women smokers from the community (86% Caucasian, mean age 41, 31% married or living with a partner) and (ii) 419 predominantly Caucasian undergraduates (mean age 20, 54% male), factor analyses of various personality measures (including the Big 5) confirmed two basic personality configurations among smokers: Impulsivity and Negative Emotionalty (low self-esteem, high sociotropy, trait anxiety, depression proneness). In two samples, impulsivity, either alone (b=2.22, p<0.002) or in interaction with sex (b=-21, p<0.03), was a better predictor of dependence compared to negative emotionality. In addition, in the non-undergraduate sample, impulsivity interacted with negative affectivity in predicting age of smoking initiation (b=-14, p<.04) and for men, in predicting number of previous life-time quit attempts (b=.27, p<0.01). Specifically, only among smokers high in negative emotionalty did greater impulsivity predict earlier age of smoking initiation. Among high but not low impulsive men, greater negative emotionality predicted more frequent attempted quits. In all samples, self-efficacy for resisting smoking in high-risk situations (negative affect, desire for social enhancement) was also predicted by impulsivity and negative emotionality, or their interaction. Results suggest that attention to smokers’ status on two personality dimensions can be used to identify problematic smoking behavior (e.g., repeated quit attempts with- out adequate planning) that can be addressed in treatment.

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POS1-49  SUBCLINICAL LEVELS OF ATTENTION DEFICIT-HYPERACTIVITY DISORDER ARE ASSOCIATED WITH TOBACCO CONSUMPTION IN MALE BUT NOT IN FEMALE SMOKERS

ADHD symptoms were assessed in a non-clinical sample of 22 male and 45 female smokers, and 66 male and 97 female nonsmokers. Overall, relative to nonsmokers, the smoking subjects reported significantly higher levels of inattention and hyperactivity. In male smokers, both inattentive and hyperactive/impulsive symptoms were positively associated with the number of cigarettes smoked daily. This relationship did not hold for female smokers, for whom no association was found between symptoms and nicotine consumption. Findings imply that even sub-clinical levels of inattention and hyperactivity/impulsivity are related to indices of tobacco use in males, and support previous research suggesting that significant gender difference may exist in tobacco smoking motives.

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POS1-50  THE EFFECTS OF NICOTINE AND SUCROSE ON SPATIAL MEMORY AND VIGILANCE ATTENTION
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Evidence in support of nicotine’s effects on memory and attention in humans is robust. Sugar intake can also have effects on cognitive behavior, such as augmenting long-term verbal and spatial memory. Currently, no data exists as to whether sugar and nicotine act jointly on cognitive performance. This study investigated if there was an interaction between nicotine and sucrose on attention and hyperactivity in C57BL/6J mice. Mice were administered 200 ug/mL nicotine, 10% polarilexgum (2mg), and an 8-oz sucrose-containing beverage, respectively. The Fagerstrom Test of Nicotine Dependence was administered at an initial orientation. Participants smoked at least ten cigarettes per day (mean 14.0; SD=4.3) for a minimum of one year (mean 3.8 years; SD=2.1). Nicotine and sucrose were administered orally as a piece of nicotine polarilex gum (2 mg), and an 8-oz sucrose-containing beverage, respectively. The control conditions were a sugarless piece of placebo gum and an 8-oz aspartame-containing beverage. The Profile of Mood Scale was administered three times during each trial to assess mood changes as a function of nicotine and sucrose administration. The Continuous Performance Task (CPT), which measured attention, and a Spatial Memory Task were used to assess cognitive behavior. Participants made significantly more correct responses and significantly less incorrect responses on the CPT when they received nicotine than when they received the placebo gum. Sucrose did not alter performance for the CPT. Neither nicotine nor sucrose affected spatial memory or mood. This research supports the hypothesis that nicotine increases informational processing via improved attention.

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POS1-51  GENDER DIFFERENCES IN ACUTE ETHANOL EFFECTS AS A FUNCTION OF NICOTINE PATCH PRETREATMENT
Elissa M. McCarthy, M.A.*, Elena M. Kouri, Ph.D., Michelle M. Gross, B.A., and Scott E. Lukas, Ph.D., McLean Hospital/Harvard Medical School

Studies have shown that nicotine and alcohol are often self-administered simultaneously. Smokers are more likely to drink alcohol and alcohol consumption increases the frequency of smoking. However, only a few studies have investigated the acute effects of this drug combination in humans. This study examined gender differences in ethanol effects following transdermal nicotine (21 mg) and placebo pretreatment. Women were studied during the follicular phase (days 6-10) of their menstrual cycle. Following, a 3-hour nicotine pretreatment, subjects were challenged with an ethanol drink (0.4 g/kg) and monitored for another 3 hours. Preliminary data from 9 men and 6 women indicate a significant gender by dose interaction on heart rate responses post-ethanol. Specifically, women experienced significantly higher heart rates following the active nicotine dose compared to men. There was also a significant nicotine effect on heart rate, with nicotine increasing heart rate over time compared to placebo for both genders. Subjective reports of ethanol effects were analyzed by calculating the difference between the active nicotine condition and the placebo nicotine condition for each subject. Analyses of these nicotine scores revealed a significant gender effect on peak reports of feeling drunk and stimulated. Women had higher peak scores of feeling drunk and stimulated during the active nicotine condition compared to men. These findings suggest that nicotine’s modulation of alcohol’s effects may vary as a function of gender. Women appear to experience increases in heart rate and some of ethanol’s subjective effects more than when men is present. Future studies should investigate the role these gender differences play in nicotine/alcohol interactions.

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POS1-52  NICOTINE-ETHANOL INTERACTIONS IN MOUSE MODELS OF ANXIETY
Jen-Jane Liu, Barbara J. Caiderone, Sarah L. King, and Marina R. Picciotto

Nicotine and alcohol are two widely abused drugs, and there is a well-established correlation between cigarette smoking and alcohol consumption. However, the biological basis of this co-morbidity is not yet understood. One hypothesis is that nicotine may attenuate the aversive effects of ethanol, and vice versa. The present study examined the effects of chronic nicotine and ethanol administration on anxiety-like behavior in C57BL/6J mice. Mice were administered 200 ug/mL nicotine, 10% ethanol, or a combination of the two in their drinking water (with 2% saccharin added to all solutions to increase palatability). Control mice received 2% saccharin alone. After 36 days of chronic administration, mice were observed to maintain stable drug intake. Mice were tested in the elevated plus maze, open field, and light/dark transition test to assess anxiety-like behavior. In the elevated plus maze and light/dark tests, ethanol tended to have an anxiolytic effect, which was blunted by the coadministration of nicotine. However, in the open field test, nicotine tended to have an anxiolytic effect, which was blunted by the coadministration of ethanol. These data demonstrate that depending on the behavioral paradigm, ethanol or nicotine can be anxiolytic, but that the coadministration of the two drugs blunts the actions of the other. These results, which suggest that nicotine and ethanol can each attenuate the behavioral effects of the other substance, may offer insight into the high comorbidity of smoking and drinking in humans.

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NICOTINE-ETHANOL INTERACTIONS AND ATTENTIONAL PERFORMANCE ON AN OPERANT VISUAL SIGNAL DETECTION TASK IN RATS

Amir H. Rezvani and Edward D. Levin

This study examined the interaction of nicotine and ethanol on attention using an operant signal detection task. Female Sprague-Dawley rats (N=35) were trained on a visual operant signal detection task for food reinforcement with 300-trial sessions, in three time blocks. The rats were divided into low and high performers according to their pre-drug baseline choice accuracy. Experiment 1 examined the dose-effect function of ethanol (0.375 and 0.75 g/kg). The higher ethanol dose significantly impaired hit response during the first (p<0.005) and second (p<0.025) but not the third time block within each session. The low baseline group was significantly (p<0.025) impaired by 0.75 g/kg ethanol, while the high baseline group was not. Experiment 2 examined ethanol interactions with nicotine (0, 12.5, 25 and 50 micrograms/kg). There was a significant complex nicotine-ethanol interaction with session block and baseline performance level as co-factors (p<0.01). With the low baseline group, as seen in Experiment 1, ethanol significantly impaired performance early in the session (p<0.025) but not later. The 25 and 50 microgram/kg nicotine doses caused a significant (p<0.05) improvement in hit accuracy during the later time blocks of the session. Ethanol blocked this nicotine-induced improvement, even though at this later time it no longer had an effect of its own. In the high baseline group the 25 microgram/kg nicotine dose also caused a significant (p<0.025) improvement in hit accuracy. As in Experiment 1 the high baseline group was not significantly impaired by 0.75 g/kg of ethanol. However, this ethanol dose did eliminate the nicotine-induced improvement. Ethanol blocks nicotine-induced attentional improvements even when it does not cause impairments on its own.

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ENVIRONMENTAL STIMULI ENHANCE NICOTINE SELF-ADMINISTRATION IN RATS: THE IMPACT OF GENDER AND DOSE


Drug-related environmental stimuli influence aspects of drug-dependence such as acquisition and maintenance. Studies indicate that a visual stimulus (VS: the onset of a 1-sec cue light and the offset of a chamber light for 1-min) paired with nicotine (NIC) infusions (0.03 mg/kg freebase, i.v.) was as important as NIC in the acquisition of self-administration (SA), and reacquisition after extinction (Caggiula et al, 2001). The present study determined how the addition of a VS would impact responding if it first experienced after NIC-SA was acquired. Also, because data suggests that non-NIC stimuli are more important for smoking in women than men (Perkins, Donny & Caggiula, 1999), SA was compared in male and female rats. Sprague-Dawley rats acquired SA for NIC alone (21 days; 1hr/day) at 0.03, 0.06 and 0.15 mg/kg/inf (i.v.; free base). Dose-response curves (FR3) were relatively flat, with peak responding at 0.06 mg/kg/inf for both males and females. Responding was similar for both sexes, except females were higher at 0.15 mg/kg/inf. For both genders, the addition of a contingent VS after acquisition elevated responding above NIC alone at 0.03 and 0.06, but not at 0.15 mg/kg/inf; the increase was greater for females at 0.06 mg/kg/inf. Responding declined to NIC-only levels when the VS was removed. These data demonstrate the ability of a VS to influence responding when first presented during maintenance. They also illustrate an increased sensitivity to environmental stimuli in female rats.

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EFFECTS OF CONTINUOUS NICOTINE INFUSION ON NICOTINE AND COCAINE SELF-ADMINISTRATION IN RATS

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Continuous nicotine infusion has been shown to reduce nicotine self-administration (NSA) in rats, serving as a model of nicotine replacement therapy (NRT) in human smokers. The purpose of the present study was to determine whether continuous nicotine infusion at a rate producing serum nicotine concentrations that match estimated peak arterial nicotine concentrations associated with NSA produces greater suppression of NSA than lower infusion rates, and whether the effects of such an infusion are selective for nicotine-maintained behavior. An NSA model in which rats had 23hr/day access to nicotine (0.03 mg/kg/inf) under a fixed-ratio (FR) 3 schedule was used. This model approximates the nicotine access conditions and serum nicotine concentrations observed in cigarette smokers. Cocaine self-administration (0.17 mg/kg/inf) was examined during daily 2-hr sessions under an FR 3 schedule. The effects of noncontingent continuous nicotine infusion were studied by administering nicotine at various rates (1, 3, and 8 mg/kg/day, i.v.) to animals concurrently self-administering nicotine or cocaine. Continuous nicotine infusion suppressed NSA in a rate-related fashion. The 8.0 mg/kg/day rate which produced serum nicotine concentrations that matched estimated peak arterial levels associated with NSA was more effective than lower infusion rates, but had no effect on cocaine-maintained responding. This infusion rate provided a daily nicotine dose five times higher than that provided by NSA. Together with prior studies, these findings suggest that continuous nicotine infusion is most effective when it provides nicotine doses and serum concentrations substantially higher than those typically associated with NRT in humans.

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INTRAVENOUS NICOTINE SELF-ADMINISTRATION BY SQUIRREL MONKEYS AND HUMAN VOLUNTEERS

Deon M. Harvey, Ph.D.*, Stephen J. Heishman, Ph.D., Jack E. Henningfield, Ph.D., Steven R. Goldberg, Ph.D., NIDA, Intramural Research Program, Baltimore, MD

Numerous animal drug self-administration studies have clearly documented that nicotine is the addictive component in tobacco. However, there are few studies of nicotine self-administration in humans, and further validation of results from animal studies is essential to understand better the determinants of patterns of nicotine self-administration. In this study, we used i.v. nicotine injections to compare the reinforcing effects of nicotine in squirrel monkeys and human research volunteers responding under similar operant schedule conditions. Relatively low FR response requirements (10 to 1600 responses) and time-out (TO) values (60 to 1200 seconds) were used initially and then varied systematically. We also varied the dose of nicotine (0.75, 1.5, 3.0 mg) per injection before and after these manipulations. A high degree of similarity in the effects of behavioral and pharmacological manipulations was observed between the monkeys and humans. In both species, the rates of responding for nicotine increased as the TO value increased. As the FR value increased in monkeys, the response rate actually decreased, but as the FR value increased in humans, the response rate increased at both the 1.5 mg and 3.0 mg dose. In conclusion, under comparable experimental conditions, similar dose-related patterns of response rates and number of nicotine injections were observed in squirrel monkeys and human smokers. These results confirm the reinforcing effects of nicotine and indicate the environmental conditions under which nicotine self-administration is optimal.

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Adolescence is a critical period for initiation of tobacco use, with >90% of smokers beginning to smoke before age 19. Adolescents may differ from adults in responses to nicotine in ways that make them vulnerable to develop nicotine dependence. In adult rats, nicotine exerts biphasic activity actions with an initial activity decrease and a subsequent activity increase. Over time, tolerance develops to the activity-decreasing action and sensitization develops to the activity- increasing action. This experiment examined whether adolescent and adult rats exhibited different responses to an initial nicotine exposure and whether tolerance developed differently based on age. The time-course of nicotine activity effects in Sprague-Dawley adolescent and adult male rats administered nicotine (saline, 0.01, 0.10, 0.50, or 1.0 mg/kg) daily by sc injection was examined over 12 days of nicotine administration. There were striking age differences in responses to the initial nicotine dosage. Adolescent rats were insensitive to nicotine’s activity-decreasing actions; adult rats exhibited marked sensitivity to nicotine’s activity-decreasing actions. Over repeated injections, adolescents remained insensitive to nicotine’s activity-decreasing actions. In contrast, adults developed partial tolerance to these actions. Adolescents and adults exhibited sensitization to the activity-increasing actions. If these findings extrapolate to humans, then the adolescent human may experience different nicotine actions than the adult human with initial and subsequent tobacco exposures. These differences may constitute part of the adolescent vulnerability to nicotine dependence.

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POSI-59

ANTINOICEPTIVE EFFECTS OF NICOTINE IN ADOLESCENT AND ADULT, MALE AND FEMALE RATS

Jennifer M. Phillips, B.A., Martha M. Faraday, Ph.D., and Neil E. Grunberg, Ph.D., Uniformed Services University of the Health Sciences

The present research examined the effects of daily administration of nicotine (0, 0.01, 0.10, 0.50, and 1.0 mg/kg SC) on nociception in 300 male and female, adult and adolescent Sprague-Dawley rats (n=15/treatment group). Subject responses were measured on hotplate and tail-flick apparatus twice during the 10-day nicotine administration period, first on days 2 or 3 and later on days 8 or 9. Animals were injected with nicotine and then tested at 8 and 12 minutes post-injection. Half of the subjects were tested first on hotplate and the other half were tested first on tail-flick to prevent exposure or order effects. Nicotine decreased nociception, especially at the highest doses, for both measures. On the hotplate measure, adults were more sensitive to the antinoiceptive effects of nicotine than were adolescents. Males were slightly more sensitive to nicotine’s effects on hotplate response. Moderate tolerance developed in all groups to these effects at the second testing point. In the tail flick test, nicotine had antinoiceptive effects in all groups except adult females. Adolescent responses were slightly more sensitive to lower dosages than the adults. Complete tolerance to the effects of nicotine on tail flick developed by the second testing period in all groups. These findings of antinoiceptive effects of nicotine are consistent with previous reports. The findings for antinoiceptive effects and tolerance development in adolescent rats are new.

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POS1-60

NICOTINE’S EFFECTS ON VISUAL PREPULSE INHIBITION IN MALE AND FEMALE, ADULT AND ADOLESCENT RATS

Jennifer M. Phillips, B.A. and Neil E. Grunberg, Ph.D., Uniformed Services University of the Health Sciences

Effects of nicotine on the acoustic startle reflex (ASR) and prepulse inhibition (PPI) in rats has been studied and interpreted as indices of sensorimotor-gating, information processing, or attention. Previous research has focused specifically on acoustic startle and acoustic prepulse stimuli. The present research investigated effects of daily nicotine administration (0, 0.01, 0.10, 0.50, and 1.0 mg/kg SC) on inhibition of the acoustic startle reflex by a visual prepulse in 300 male and female, adult and adolescent Sprague-Dawley rats (n=15 / treatment group). Animals were exposed to 48 ASR trials consisting of an acoustic startle stimulus or an acoustic startle stimulus preceded by a visual prepulse. Startle was measured as weight displacement following a startle stimulus. Visual PPI was calculated as percent inhibition of startle when the startle stimulus was preceded by a light prepulse. Animals were tested three times (days 1, 6 and 10) during the 10-day nicotine administration phase. On day 1, nicotine increased visual PPI significantly in adult females and non-significantly in adult and adolescent males in a dose-response manner. By day 10, animals in all groups demonstrated a significant decrease in visual PPI when treated with nicotine. The effects of nicotine on visual PPI appear to reverse with repeated acute administration. The adult females habituated by day 6; the adolescent females showed the smallest response; and both groups of males habituated by day 6. These age and gender differences in response to nicotine may be relevant to tobacco use in different demographic groups.

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POS1-61

EFFECTS OF NICOTINE ON LOCOMOTOR ACTIVITY DIFFER IN ADOLESCENT AND ADULT MALE AND FEMALE RATS

Brenda M. Elliott, M.S.*, Jennifer M. Phillips, B.A., Martha M. Faraday, Ph.D., and Neil E. Grunberg, Ph.D., Uniformed Services University of the Health Sciences

Nine tenths of smokers begin smoking as adolescents. The reasons for smoking during adolescence and adulthood in females and males may differ. Open field activity (OF) was used to examine nicotine's effects in a 2 (adolescent/adult) X 4 (saline, 0.1 mg/kg, 0.5 mg/kg, or 1.0 mg/kg nicotine) X 2 (male/female) factorial design. Subjects were 80 Sprague-Dawley males and 80 Sprague-Dawley females, half adolescent (30 days old) and half adult (65 days old). Horizontal activity and vertical activity were recorded for 60 minutes. This study was conducted as an attempt to replicate a previous study that reported age and gender differences in effects of nicotine on activity. Adult rats showed an inverted dose-response effect of nicotine on horizontal and vertical activity with peak increases at 0.5 mg/kg. In contrast, adolescent rats showed a maximum horizontal activity level at 0.5 and 1.0 mg/kg. Vertical activity peaked at 1.0 mg/kg for adolescent males. These findings indicate that the dose-effect curves for nicotine's effects on activity differ depending on age and gender. These findings replicate a recent report. These results are of potential importance to understand adolescent human smoking initiation and maintenance.

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POS1-62

HIPPOCAMPAL NICOTINIC INTERACTIONS WITH CLOZAPINE AND WORKING MEMORY PERFORMANCE IN THE RADIAL-ARM MAZE

Ana Pociavsek, Nii Addy and Edward D. Levin

Hippocampal nicotinic systems play an important role in memory function. Decreased hippocampal nicotinic alpha7 receptor number in people with schizophrenia may be an important basis of their cognitive deficits. We modeled the chronic decrease in hippocampal alpha7 receptors in schizophrenia with four-week continuous bilateral local infusions of the alpha7 nicotinic antagonist MLA (0 or 82 micrograms/side/day) into the ventral hippocampus of female Sprague-Dawley rats (N=33). Their working memory performance was assessed by performance on the radial-arm maze. To test the impact of antipsychotic medicine in this model, we tested the impact of acute injections of clozapine (0, 1.25 and 2.5 mg/kg, sc). Finally we determined the importance of clozapine, which is widely used by people with schizophrenia, within each of the MLA and control local infusions conditions approxi- mately half of the rats received chronic systemic infusions of nicotine (0 or 5 mg/kg/day). Chronic hippocampal MLA infusions caused a significant (p<0.001) working memory impairment. Clozapine (2.5 mg/kg) also caused a significant (p<0.005) impairment. The hippocampal MLA x clozapine interaction varied significan- tly (p<0.0005) over weeks of treatment. The working memory impairment seen early during chronic hippocampal MLA infusion was not seen by the fourth week of treatment. Hippocampal MLA infusion exacerbated the memory impairment caused by clozapine. This was seen both early during chronic MLA treatment and later dur- ing treatment when the MLA effect by itself was no longer evident. This did not signi- ficantly interact with chronic systemic nicotine administration. Decreased alpha7 nicotinic receptor number in the hippocampus impairs working memory function and appears to potentiate the amnestic effects of the antipsychotic drug clozapine.

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POS1-63

EFFECTS OF NICOTINE ON ELEVATED PLUS MAZE ACTIVITY IN ADOLESCENT AND ADULT FEMALE RATS

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Ninety percent of smokers begin smoking as adolescents. The reasons for smoking during adolescence and adulthood in females and males may differ. The elevated plus maze (EPM) was used to examine nicotine’s effects in a 2 (adolescent/adult) X 4 (saline, 0.1 mg/kg, 0.5 mg/kg, or 1.0 mg/kg nicotine) factorial design. This task has been conceptualized as a model of the escape aspects of panic responses (File et al., 2000). More time in the open arms of the maze may indicate decreased panic, whereas less time in open arms may indicate panic. Subjects were 72 Sprague- Dawley females, half adolescent (30 days old) and half adult (65 days old). Animals were placed on the EPM 10 minutes following injections. Percent time spent in open arms and percent closed arm entries were recorded for 5 minutes. Nicotine reduced percentage of time spent in open arms for adolescent and adult females. Nicotine did not affect the percentage of closed arm entries. The findings for adult female rats are similar to our findings in adult males that nicotine reduced percent time in the open arms. In contrast, findings for adolescent females differ from those for adolescent males. In adolescent males, nicotine increased percent time in the open arms. If these findings extend to humans, then female adolescents and both genders of adults may smoke for reasons that differ from male adolescents.

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POS1-64

CHOICE ORAL NICOTINE CONSUMPTION DECREASES BODY WEIGHT IN ADULT BUT NOT ADOLESCENT C57BL/6J MICE

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The inverse relationship between nicotine and body weight (Grunberg, 1982; Perkins et al., 1993) may be one explanation for the initiation of cigarette smoking among adolescents. Recent rat studies using passive nicotine administration via osmotic minipump suggest that nicotine exposure decreases body weight in peri-adolescents (Klein, 2001), particularly males (Faraday et al., 2001). We sought to determine whether nicotine’s effects on body weight occurred in adult and periadolescent mice using a 24-hr choice oral nicotine consumption paradigm (Klein et al., in press). Nicotine consumption and body weight were evaluated in 126 periadolescent male and female C57Bl/6J mice that were followed into adulthood. 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 the next 4 weeks: “Choice” (NIC-WTR), “Forced” (NIC-NIC), or “Control” (WTR-WTR). In periadolescent mice, forced nicotine consumption decreased body weight (p=0.001), but Choice consumption did not. Then, as adults, all mice were pro- vided a choice between NIC and WTR for the next 21 days. Choice nicotine con- sumption and body weight were inversely related during this phase of the experiment, regardless of prior nicotine exposure (p<0.001). Males and females did not differ in their response to nicotine, regardless of age or nicotine administration paradigm. Results are consistent with prior studies of adolescent rats and suggest important age-related differences in effects of nicotine on body weight.

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AN EVALUATION OF NICOTINE PHYSICAL DEPENDENCE IN THE MOUSE AFTER ORAL ADMINISTRATION

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Nicotine produces physical dependence in mice as demonstrated by withdrawal signs to mecamylamine administration or nicotine cessation preceded by chronic nicotine infusion. The present experiment further explored nicotine dependence by (1) examining withdrawal signs following chronic exposure to various doses of oral nicotine and (2) evaluating the involvement of the alpha7 receptor subtype in oral nicotine dependence. In Experiment 1, male ICR mice were chronically exposed to oral nicotine (0-200 micro-g/ml) for 30 days. Animals were subsequently injected with mecamylamine and tested for precipitated withdrawal signs. Specific behaviors measured included somatic signs, anxiety (plus maze), hypoalgesia (plantar stimulation, tail flick and hot plate) and hyperactivity (locomotor activity). Oral nicotine preexposure produced dose-dependent increases in somatic signs and hyperactivity, but not in anxiety or hypoalgesia, for animals injected with 2 mg/kg mecamylamine. In Experiment 2, alpha7 KO and WT mice were chronically exposed to oral nicotine (0 or 200 micro-g/ml) for 20 days. Animals were tested 24-72 hours following nicotine cessation using the same assays as in Experiment 1. Alpha7 KO and WT saccharin controls generally did not differ in baseline withdrawal behaviors. Cessation of chronic oral nicotine produced increases for both WT and alpha7 KO mice in somatic signs. Nicotine cessation resulted in increases for WT mice in hypoalgesia (hot plate) and anxiety; these increases disappeared in alpha7 KO mice. These results demonstrate that oral nicotine exposure induces physical dependence in various mouse strains and that this dependence may be partly mediated by the alpha7 nicotinic receptor subtype.

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LONG-TERM, LOW-LEVEL NICOTINE EXPOSURE DURING ADOLESCENCE DECREASES ETHANOL-INDUCED CHANGES IN ANXIETY AND REWARD IN ADULT MICE

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Behavioral pharmacological methods known to play a role in measures of anxiety (elevated-plus maze, EPM) and reward (conditioned-place-preference, CPP) were used to assess changes in ethanol sensitivity. Testing was performed on fully mature mice that were exposed to nicotine (1.0 mg/kg, SC, M-F, b.i.d.) or saline during peri-adolescence (postnatal days 25-50). Prior to testing, subjects had a 21-day drug-free, time-off period. EPM tests were conducted for 2 days with the order of the saline/ethanol (16% v/v, IP) injections counter-balanced across subjects. Time in the open-arms and open-arm entries were recorded for 5 min. Compared to saline, ethanol-induced changes in anxiety were noted as increased open arm entries and increased time spent in the open arms. Following EPM tests and another 1-week time-off period, mice underwent CPP testing. A pre-test was performed to determine compartment preference (i.e., no injection, 20-min test). Ethanol (16% v/v, IP) was paired with the subjects’ non-preferred side. Conditioning sessions were conducted for 10 days with the order of ethanol/saline injections counter-balanced across subjects. A drug-free, post-test occurred on the day following the final conditioning session. Subjects exposed to nicotine showed a decreased response to ethanol’s anxiolytic effects and a decreased response to ethanol’s rewarding effects. These results provide converging validity that periadolescent nicotine exposure can permanently decrease a subject’s sensitivity to ethanol. This is important because previous research, in humans and animals, has shown that reduced ethanol sensitivity is a risk factor for increased ethanol self-administration and subsequent ethanol abuse and dependence; thus, it is possible that exposure to nicotine during adolescence may serve as a predictor/risk-factor for ethanol-related problems in adulthood.

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LONG-TERM, LOW-LEVEL NICOTINE EXPOSURE DURING ADOLESCENCE ALTERS COCAINE REWARD IN ADULT MICE


Work utilizing mutant mice shows that the alpha4/beta2 nicotinic receptors mediate several behavioral responses to ethanol (Owens et al., 2002), which prompted us to investigate the role of other nicotinic receptor subtypes in behavioral responses to ethanol. The beta3 subunit was particularly interesting, because it is found in dopaminergic neurons (Quik et al., 2000), which are thought to be important in the rewarding properties of alcohol. The role of beta3 subunit of the nicotinic receptor in behavioral responses to ethanol was assessed using beta3−/− mutant mice. Behavioral tests consisted of the acoustic startle response, prepulse inhibition of acoustic startle, open-field, y-maze, hypothermia, and loss of righting reflex. Animals were assessed following an i.p. injection of saline or ethanol ranging from 0.75 to 3.5 g/kg. Relative to wildtype mice beta3 null mutant mice had a shifted ethanol dose response curve with a lower ED50 value for acoustic startle, showing the null mutants were more sensitive to the depressant effects of ethanol. Ethanol also improved prepulse inhibition of acoustic startle. Further, beta3 null mutant mice exhibited longer latencies to regain the righting reflex. In contrast, the beta3 null mutants and controls did not differ in ethanol-induced hypothermia or in activity as measured by open-field or y-maze. These data show that removing the beta3 subunit of the nicotinic receptor alters several behavioral responses to ethanol, suggesting that nicotinic receptors that contain this receptor subtype are important in the co-abuse of alcohol and nicotine.

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LONG-TERM, LOW-LEVEL NICOTINE EXPOSURE DURING ADOLESCENCE ALTERS COCAINE REWARD IN ADULT MICE


Work utilizing mutant mice shows that the alpha4/beta2 nicotinic receptors mediate several behavioral responses to ethanol (Owens et al., 2002), which prompted us to investigate the role of other nicotinic receptor subtypes in behavioral responses to ethanol. The beta3 subunit was particularly interesting, because it is found in dopaminergic neurons (Quik et al., 2000), which are thought to be important in the rewarding properties of alcohol. The role of beta3 subunit of the nicotinic receptor in behavioral responses to ethanol was assessed using beta3−/− mutant mice. Behavioral tests consisted of the acoustic startle response, prepulse inhibition of acoustic startle, open-field, y-maze, hypothermia, and loss of righting reflex. Animals were assessed following an i.p. injection of saline or ethanol ranging from 0.75 to 3.5 g/kg. Relative to wildtype mice beta3 null mutant mice had a shifted ethanol dose response curve with a lower ED50 value for acoustic startle, showing the null mutants were more sensitive to the depressant effects of ethanol. Ethanol also improved prepulse inhibition of acoustic startle. Further, beta3 null mutant mice exhibited longer latencies to regain the righting reflex. In contrast, the beta3 null mutants and controls did not differ in ethanol-induced hypothermia or in activity as measured by open-field or y-maze. These data show that removing the beta3 subunit of the nicotinic receptor alters several behavioral responses to ethanol, suggesting that nicotinic receptors that contain this receptor subtype are important in the co-abuse of alcohol and nicotine.

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BEHAVIORAL RESPONSES TO ETHANOL ARE ALTERED IN MICE LACKING THE BETASUBUNIT OF THE NICOTINIC RECEPTOR


Work utilizing mutant mice shows that the alpha4/beta2 nicotinic receptors mediate several behavioral responses to ethanol (Owens et al., 2002), which prompted us to investigate the role of other nicotinic receptor subtypes in behavioral responses to ethanol. The beta3 subunit was particularly interesting, because it is found in dopaminergic neurons (Quik et al., 2000), which are thought to be important in the rewarding properties of alcohol. The role of beta3 subunit of the nicotinic receptor in behavioral responses to ethanol was assessed using beta3−/− mutant mice. Behavioral tests consisted of the acoustic startle response, prepulse inhibition of acoustic startle, open-field, y-maze, hypothermia, and loss of righting reflex. Animals were assessed following an i.p. injection of saline or ethanol ranging from 0.75 to 3.5 g/kg. Relative to wildtype mice beta3 null mutant mice had a shifted ethanol dose response curve with a lower ED50 value for acoustic startle, showing the null mutants were more sensitive to the depressant effects of ethanol. Ethanol also improved prepulse inhibition of acoustic startle. Further, beta3 null mutant mice exhibited longer latencies to regain the righting reflex. In contrast, the beta3 null mutants and controls did not differ in ethanol-induced hypothermia or in activity as measured by open-field or y-maze. These data show that removing the beta3 subunit of the nicotinic receptor alters several behavioral responses to ethanol, suggesting that nicotinic receptors that contain this receptor subtype are important in the co-abuse of alcohol and nicotine.

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POS1-69

GENETIC BACKGROUND AFFECTS PHENOTYPES OF ANXIETY OBSERVED AFTER KNOCKOUT OF THE BETA3 SUBUNIT OF THE NICOTINIC ACETYLCHOLINE RECEPTOR

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Mice carrying a deletion of the beta3 subunit of the neuronal nicotinic acetylcholine receptor on a mixed 129/SvEv x C57BL/6 background show reduced anxiety in the elevated plus maze [Bookey et al. (2001) Soc. Neurosci. Abs. 26: 1405]. It was therefore expected that mutants would have decreased corticosterone levels. However, mutants actually have higher corticosterone than their wildtype littermates when measured in unstressed, homecage conditions and after 20 minutes on the elevated plus maze. The measurement of corticosterone levels over the circadian cycle as well as adrenal gland weights indicated that HPA axis regulation was intact. When the same experiments were done using mice resulting from ten generations of backcrossing the mutation onto a C57BL/6 background no difference in time spent in the open arm of the plus maze was seen in the beta3 +/- mice. Biochemical measures also showed no effect on homocorticosterone levels. The data suggests that the beta3 subunit plays a role in glucocorticoid regulation. The data also argue for caution when interpreting gene deletion experiments that involve polygenic behavioral traits because genetic background may have a significant effect. Experiments measuring corticosterone after stress in beta3 X C57BL/6 mice and beta3 X 129/SvEv mice are currently underway. We have also started a "rescue cross" of the mutation back to the mixed background.

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POS1-70

EFFECT OF ALPHA4 nAChR SUBUNIT NULL MUTATION ON AGONIST-EVOKED NEUROTRANSMITTER RELEASE

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Previously it has been demonstrated that beta2 nAChR subunit deletion abolishes agonist effects measured by Rb+-efflux, dopamine (DA) - and GABA-release. The deletion of beta2 subunit had no effect on agonist-stimulated acetylcholine (ACh)-release in interpeduncular nucleus (IPN). Given that alpha4beta2 is the most widely distributed nAChR subtype, it is of considerable interest to study the effect of alpha4 subunit deletion. In this study the effect of alpha4 subunit null mutation on neurotransmitter release was examined. Release assays included ACh-induced GABA, ACh- and DA-release from different mouse brain areas using alpha4 +/- and +/- genotypes. GABA release from cortex, striatum, thalamus and hippocampus is dependent on the alpha4 subunit, since ACh-induced GABA-release was totally abolished in +/- mice in these brain regions. K+-induced GABA-release was unchanged. There were no changes in either ACh- or K+-induced ACh-release from IPN between both genotypes studied. Total DA-release was decreased by 80% in alpha4 +/- mice when compared with wild-type +/- mice. Alpha4 gene deletion totally abolished the alpha-conotoxin MII (MII)-resistant DA-release indicating that this component of DA-release is dependent on the alpha4 subunit. Further, MII-sensitive DA-release was decreased by 55% suggesting that there may be two different receptor populations regulating the process.

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POS1-71

ALPHA5 NICOTINIC SUBUNIT- MUTATION REDUCES MOUSE BRAIN NICOTINIC RECEPTOR-MEDIATED ION FLUX BUT NOT EXPRESSION.

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The dependence of nicotinic acetylcholine receptor expression and function on alpha5 subunit expression was assessed using alpha5-/-mutant mice. Alpha5 subunit mRNA (visualised using in situ hybridisation) is expressed strongly in the cortex and hippocampus of wild-type mice, and less strongly in the ventral tegmental area and substantia nigra (SN/VTA). The effects of alpha5-/-mutation were determined in cortex, hippocampus, thalamus (to measure effects on cortico-thalamic projections) and the striatum (which receives dopaminergic projections from the SN/VTA). Nicotinic receptor expression was quantified by [125I]epibatidine binding to membrane prepreparations from each of the target regions. Alpha5-, mutation did not alter the density of [125I]epibatidine-binding sites in any region, as assessed by saturation binding (10 - 400 pm [125I]epibatidine). Inhibition of 200 pm [125I]epibatidine by cytisine (0.1 - 3000 nM) and A85380 (0.01 - 300 pm) was used to identify non-alpha4beta2-like and beta4-containing receptor subtypes, respectively. Again, no differences in subtype expression were detected between wild-type and alpha5-/- mutants. Nicotinic receptor function was measured by agonist-stimulated 86Rb+ efflux from synaptosomal preparations of the candidate regions. Ion flux was strongly diminished in the cortex (25% decline) and thalamus (40% decline) of alpha5-/- mutants, when compared to wild-type littermates, with smaller decreases observed in hippocampus and striatum. These findings suggest that while alpha5 expression does not measurably affect nicotinic receptor assembly or pharmacology in these regions, it strongly affects the functional properties of the receptors it assembles into.

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POS1-72

ALPHA7 NICOTINIC RECEPTOR SUBUNIT NULL MUTANT MICE EXHIBIT ALTERED RESPONSES TO ALCOHOL


Nicotine and alcohol are commonly abused together. Our laboratories have shown that mice with altered alpha4 or beta2 neuronal nicotinic receptor (nAChR) subunit function display differential responsiveness to both nicotine and ethanol, suggesting that alpha4beta2 nAChRs may be a common site of action for these substances. Nicotine and ethanol have diverse behavioral actions, so the involvement of other nicotinic receptors, including alpha7, was examined. Homeric alpha7 nAChRs, one of the most common nAChRs found in the mammalian brain, are inhibited by ethanol. Despite high level of expression and wide distribution, alpha7-/- mice are surprisingly normal. Responses to low doses of ethanol were assessed by measuring the acoustic startle response, pre-pulse inhibition of startle, and the disruption of body temperature regulation after 0.75, 1.5, 2.25, or 3.0g/kg i.p. ethanol. The sedative-hypnotic effect of high dose ethanol was measured as the duration of the loss of righting reflex after a 3.8g/kg injection. Relative to wild type and heterozygous mice, alpha7-/- mice were less sensitive to the depressant effects of alcohol on acoustic startle; pre-pulse inhibition was not altered by ethanol in any genotype. They also exhibited greater hyperthermia in response to ethanol injection and took significantly longer to regain the ability to right themselves. alpha7 nAChRs appear to mediate some of the diverse actions of alcohol. In combination with our previous data on alpha4beta2 receptors, these data suggest that brain nicotinic receptors may be important regulators of some of the actions of both nicotine and ethanol.

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POS1-73 THE EFFECTS OF AGING ON NICOTINIC RECEPTOR EXPRESSION IN A TRANSGENIC MOUSE MODEL OF ALZHEIMER’S DISEASE

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Alzheimer’s disease (AD) is characterized by progressive cognitive impairment, which has often been correlated with deficits in CNS cholinergic neurotransmission. Recent studies suggest that beta-amyloid, a pathological hallmark of AD, affects the activity and expression of alpha 7 nAChRs. This study evaluated the effects of aging on nAChr expression in a mouse model of AD. Transgenic mice expressing chimeric mouse/human APP 695 containing the Swedish double mutation (APPsw) and wild-type (B6C3F1) controls were obtained from Dr. Mattson at the NIA. Mice ranged from 45 to 558 days of age. Brains were processed for quantitative receptor autoradiography using alpha-[125I]-bungarotoxin (BTX; alpha 7 nAChr) or [125I]-epibatidine (EPI; non-alpha 7 nAChrs). In aged APPsw mice there was a significant increase in BTX binding in several cortical and midbrain regions. Although there was no effect of aging on BTX binding in hippocampal regions, APPsw mice had elevated alpha 7 expression compared to controls at each age studied. In other brain regions (e.g. striatum) aging was associated with a significant reduction in BTX binding in both transgenic and wild-type animals. The effects of genotype and aging on non-alpha 7 nAChr expression were minimal. These results suggest that the alpha 7 nicotinic receptor is a sensitive target for regulation by aging and genotype in mice engineered to overexpress amyloid precursor protein (APP). The mechanism by which APP overexpression affects alpha 7 nAChr binding remains to be determined.

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POS1-74 A METHOD FOR MEASURING SYNAPTOSOMAL DOPAMINE RELEASE IN LESIONED MICE


Measuring dopamine (DA) release from mouse striatal synaptosomes is an established procedure. This assay has been used successfully to measure function of presynaptic nicotinic acetylcholine receptors (nAChRs) on DAergic terminals, including the potency and efficacy of nicotinic agonists, the effects of nicotinic antagonists, the effects of chronic treatment with nicotine, and to assess the effects of null mutations of nAChR subunits. Measurements of the effects of a DAergic lesion, however, presents a somewhat different problem. The assay must be conducted under conditions where the synaptosomes of a lesioned mouse and a control are equally loaded with tritiated-DA. For the assay as conducted in the past, the synaptosomes take up the majority of the tritiated-DA used to label the endogenous pool of DA. Using the same amount of protein from a lesioned mouse results in fewer DAergic synaptosomes, but with a similar or only slightly reduced amount of DA uptake. Under these conditions the assay may not adequately measure a deficit of DAergic activity. In order to adapt the assay to measure altered DAergic function, the concentration of protein was varied. A linear relationship between amount of crude protein and basal release, stimulated release and measures of uptake were observed with decreased protein levels. The ideal conditions were 0.4-1.6% of total striatal preparation from one mouse, a decrease of 4-16-fold from the original assay. This alteration of the assay allowed measurement of changes in DAergic function after 6-hydroxydopamine lesions which corresponded to decreases in DA transporter levels.

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POS1-77 CANDIDATE REGIONS FOR SMOKING BEHAVIOUR: RESULTS OF A GENOME LINKAGE ANALYSIS USING 1161 DIZYGO TIC TWIN PAIRS
M.R. Munafò, T.G. Clark, E. Johnstone, R. Walton, M.F.G. Murphy, T. Spector
Genomic scans offer a complementary approach to candidate gene approaches, and have been used to identify chromosomal regions linked to various aspects of smoking behaviour and nicotine dependence. However, in the genomic scans published to date on smoking phenotype data small sample sizes and low-density maps have reduced the ability to both identify genes and replicate the significant effects of other studies. We report here the preliminary results of a complete genomic scan of the largest twin cohort in the United Kingdom on four smoking behaviour phenotypes. The genome scan consisted of 700 microsatellite (MS) markers. The mean (genome-wide) intermarker distance was for 4.7cM. Data was collected from 1161 female DZ sib pairs. Tests of non-parametric linkage and association and tests for combined linked age and association were performed using the software package Quantitative Transmission Disequilibrium Test. Both unadjusted and adjusted smoking initiation (ever vs never) and smoking cessation (ex- vs current) linkage analyses had no lod scores above 2. For cigarette consumption regions on chromosome 7 and 18 had lod scores greater than 3. The effects on chromosomes 7 and 18 were robust to adjustment and, in addition, a region on chromosome 8 showed high linkage. The analysis of age of initiation indicated several regions of high linkage on chromosome 8, chromosome 13 and chromosome 18. The effect on chromosome 18 disappeared after covariate adjustment. Promising chromosomal regions for further investigation are identified by this study, although these do not correspond to existing candidate genes that are of theoretical interest in relation to smoking behaviour.

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POS1-78 THE INFLUENCE OF DopAMINE RECEPtor GENES (DRD2, DRD3, & DRD4) ON SMOKING STATUS: SMOKERS AND NON-SMOKERS STUDY (SANS)
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Smoking and smoking-related behaviors have long been considered multi-factorial, polygenic outcomes. The difficulty of smokers in cessation is attributed to nicotine and nicotine's action resulting in activation of the mesolimbic dopamine reward pathway. DRD2, DRD3, and DRD4 encode proteins that respond to the neurotransmitter dopamine in the brain. DRD2 and DRD3 have simple tandem repeat polymorphisms that confer four and six common alleles respectively. The DRD4 has a variable number of tandem repeats (VNTR) in the third cytoplasmic loop. A sub-sample of adult volunteers (recruited by random-digit dialing) provided DNA from buccal swabs that was subsequently genotyped for the three dopamine receptor genes of interest. Analysis of variance was utilized to determine effects of DRD2, DRD3, and DRD4 on various smoking-related behaviors. Preliminary analysis indicates that the DRD2-80 allele is associated with trouble concentrating during withdrawal, while the 88 allele is associated with trouble sleeping during withdrawal. For DRD3, the 125 allele is higher with increasing Heaviness of Smoking Index; the 131 allele is associated with age of initiation, and the 139 allele is associated with feeling down/depressed during withdrawal. Finally, DRD4 shows no statistically significant association to smoking status or smoking-related behaviors in this sample. Sample size is insufficient to analyze gene-interaction effects due to the large number of alleles at DRD2 and DRD3.

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POS1-79 CHARACTERIZATION OF GENETIC VARIATION IN THE HUMAN DopAMINE TRANSPORTER GENE AND ITS RELEVANCE TO SMOKING BEHAVIOUR
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Polygenic variation in the dopamine transporter gene has been implicated in many neurological disorders and also has a recognised role in smoking behaviour. Its effect on function is uncertain, but it may modify the availability of the dopamine transporter protein and possibly also its binding affinity. Due to its location within the 3' untranslated region, the well-studied VNTR may in fact be acting as a marker for another site of functional variation within the gene. Seventeen polymorphic loci (SNP) in the DAT gene were identified from the literature and SNP databases, of which only three were variant in a control panel made up of 100 Caucasian individuals. We developed novel genotyping assays for three SNPs (Exon 9 A141370G, Exon 15 T57840C and G58133A) and combined this with analysis of the VNTR in order to construct common haplotypes. The initial analyses were carried out in three different ethnic populations, Caucasian, Asian and Afro-Caribbean (100 subjects each). Preliminary data suggest that alleles A-T-G at the three SNP loci are linked to the 10-repeat allele of the VNTR in a haplotype and this haplotype was the most frequent in all ethnic groups. Linkage disequilibrium across the region varies with ethnicity but in Caucasians appears to extend across the whole region studied (Exon 9 to 3'UTR). To examine smoking-related phenotypes, DNA was obtained from individuals randomly selected from a large general population (age range 35-65). Current smokers (n=250) were individually age and sex matched each to a never smoker and an ex-smoker. The three SNP loci were examined and the genotype frequencies found to be broadly similar in each group. This suggests variation at each individual SNP locus does not greatly influence smoking status. However, there is some evidence that the SNP in Exon 9 may be associated with smoking cessation.

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POS1-80 NICOTINE DEPENDENCE: ASSOCIATION STUDY WITH SNPS FROM CANDIDATE GENES
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The genetic basis of nicotine addiction vulnerability remains largely unknown. To identify genes that contain allelic variants predisposing individuals to nicotine dependence, blood samples were collected from predominantly Caucasian and African-American families that had both smokers and nonsmokers. Individuals of these families are being genotyped by the TaqMan assay with SNPs selected from candidate genes related to drug abuse and dopamine metabolism pathways. Approximately a thousand individuals have been genotyped with 8 SNPs that showed sufficient heterozygosity among the individuals. Data generated were being analyzed by whole population contingency tests, case/control analyses and a combined approach of contingency test and TDT. The contingency TDT analysis utilizes the same criteria required by TDT except it categorizes individuals based upon the number of cigarettes smoked per day and the two alleles of a specific SNP were arranged in a contingency table. Of the 8 assayed SNPs, one SNP showed a difference that approaches significance using the whole population contingency analysis. Another SNP yielded a chi square value approaching to a significant level as determined by the contingency TDT analysis among Caucasians, but not among African-Americans. In this ongoing collaborative effort, we are continuing to recruit more families for genotyping that we hope will provide a clearer picture to the associative relationship between these SNPs and nicotine addiction.

Supported by DA12944.

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POS1-81 DOES PERSONALITY MODERATE THE ASSOCIATION BETWEEN GENOTYPE AND SMOKING BEHAVIOUR?
M.R. Munafò, K.H. Roberts, P. Yudkin, E. Johnstone, R. Walton

Several studies have reported associations between promising candidate genes, in particular those associated with the dopaminergic system, and various aspects of smoking behaviour. These results, while promising in some respects, have been equivocal and non-replication is common. One possibility is that important moderating variables are not being considered in the majority of association studies, which may mask important interaction effects. There are recent reports, for example, of a moderating effect of personality on the association between the SHTT LPR polymorphism and smoking behaviour. We attempted to replicate and extend this work on a large UK sample of current and ex-smokers. The Eysenck Personality Questionnaire was sent to 757 current and ex-smokers on whom extensive phenotypic (smoking status, quitting history, dependence score, cigarette consumption) and genotypic (DRD2, DRD4, DAT, DBH, MAO-A, MAO-B, COMT, SHTT) already existed. The analysis of genetic associations with smoking behaviour were stratified by three personality dimensions (Extraversion, Introversion, Psychoticism) and by history of depression assessed by DSM-IV criteria to test for the moderating effect of these variables. In particular, the following interactions were of interest: Extraversion x DRD4 VNTR, Introversion x SHTT LPR, Psychoticism x MAO-A). Results are discussed in the context of the value of investigating potential moderator variables in association studies, and the possible insights such interactions may give into the mechanisms mediating genetic associations with various aspects of smoking behaviour.

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POS1-82 LIMBIC SYSTEM COMPONENTS OF ALPHA7 AND ALPHA4BETA2 NICOTINIC RECEPTOR ROLES IN MEMORY FUNCTION
Edward D. Levin

Central nicotinic receptor systems play important roles in memory function. We have shown that nicotinic receptor activation in the hippocampus and amygdala is particularly important. Local instigators of alpha7 or alpha4beta2 nicotinic antagonists MLA and DH-beta-E into the hippocampus or amygdala cause significant working memory impairments in rats tested on the radial-arm maze. Despite the common amnestic effects of alpha7 or alpha4beta2 blockade, these receptor subtypes have different roles in the basis of memory function. Interestingly, the amnestic effects of MLA and DH-beta-E in the hippocampus are not additive and in the amygdala these drugs actually counteract each other, suggesting a complex interaction between nicotinic alpha7 or alpha4beta2 receptors in these areas with regard to memory. Another difference in function of these nicotinic receptor subtypes is the finding that hippocampal alpha7 blockade-induced amnesia can be reversed with chronic systemic nicotine (5 mg/kg/day), whereas hippocampal alpha7 blockade is not reversed by the same dose of chronic systemic nicotine. Chronic blockade of hippocampal alpha7 receptors can be used as a model of the chronic decrease in hippocampal alpha7 receptors in schizophrenia whereas chronic blockade of hippocampal alpha4beta2 receptors can be used as a model of the chronic decrease in hippocampal alpha4beta2 receptors in Alzheimer's disease. With these models not only can the immediate roles of alpha7 and alpha4beta2 nicotinic receptors in memory function can be studied, the adaptation of these receptor systems and interacting systems to chronic underactivity seen in chronic disease states can be determined. This will help in understanding the role of nicotinic systems in cognitive function and development of new treatments for cognitive dysfunction.

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POS1-83 IDENTIFICATION AND CHARACTERISATION OF ANKRD4, A NOVEL KINASE GENE CLOSELY LINKED TO THE Dopamine D2 RECEPTOR
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Due to its central involvement in the dopaminergic reward pathway, the dopamine D2 receptor has been well studied in the smoking field. A number of polymorphisms exist within DRD2 and variation has been suggested to alter receptor density in the striatum. The Taq1A single nucleotide polymorphism (SNP) of DRD2 (a C/T change at position 32806 in EMBL database entry AF050737) has been frequently examined and is associated with persistent smoking behaviour and early age of smoking initiation, along with alcoholism and drug abuse. This polymorphism is 10k downstream of DRD2 and is therefore unlikely to have a direct effect on DRD2 function. It is known that linkage disequilibrium (LD) extends over long distances within DRD2, so it may be the case that the Taq1A SNP is in LD with an as yet unidentified functional polymorphism within DRD2. However, mutational analysis has failed to confirm this. It is also possible that the Taq1A site falls within a further coding or regulatory region downstream of DRD2. Within this region we have identified a novel kinase gene, tentatively named ANKRD4, which contains a single serine/threonine kinase domain at the N-terminus region and is expressed at low levels in placental and whole spinal cord RNA. This gene is a member of an extensive family of proteins, many of which are involved in signal transduction and cellular responses to external stimuli. The Taq1A polymorphism (previously associated with DRD2) has been found to cause an amino acid substitution within the 11th ankyrin repeat, which whilst unlikely to affect structural integrity of the gene may affect substrate-binding specificity. The precise functional basis of this SNP to smoking-related phenotypes remains to be elucidated. Future work will include characterisation of variation within this extended genomic region and associations of extended DRD2/ANKRD4 haplotypes with smoking behaviour.

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POS1-84 URINARY COTININE AS AN INDEX OF SMOKING STATUS: COMPARISON OF GC/MS WITH IMMUNOASSAY TEST STRIPS.
Duncan C.P. Hamilton, August R. Buchhalter, Ph.D., and Thomas Eissenberg, Ph.D., Virginia Commonwealth University

Cotinine is a major metabolite of nicotine and can be found in smokers' blood, saliva, and urine. Cotinine has a half-life of about 20 hours, and urinary cotinine levels commonly are used as a biochemical indicator of smoking status. Gas Chromatography/Mass Spectroscopy (GC/MS) analysis is a valid, sensitive, and reliable method for determining cotinine levels in urine quantitatively. GC/MS can be time consuming and expensive, and many clinicians and/or researchers do not have the specialized equipment and personnel required to use this technique routinely. Immunoassay test strips (ITS, etc., Nicalert) are a semi-quantitative measure of urinary cotinine and have several advantages over GC/MS: they are cheaper, can be used by non-specialists, and yield results within 10 minutes. The goal of this project was to assess the validity of ITS by comparing GC/MS and ITS in a large group of urine samples with a wide range of cotinine content. A total of 300 urine samples were collected from smokers who participated in two separate studies involving three independent, 5-day (i.e., Monday-Friday), Latin-square ordered, abstinence or smoking conditions; a minimum 72-hr washout separated each period. Each sample was analyzed with GC/MS and ITS. Analyses of 72 samples revealed that there was a strong and highly significant exponential relationship between ITS and GC/MS (Rsqured = 0.81). ITS assessment of urinary cotinine is a valid assessment of urinary cotinine level that can be used by non-specialists to ascertain smoking status quickly, conveniently, and cost-effectively.

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Nicotine, cotinine and trans 3'-hydroxycotinine glucuronides account for >30% of the excreted nicotine metabolites in smokers. What UDP-glucuronosyltransferases (UGTs) catalyze the formation of these metabolites is unknown. Cotinine and nicotine are glucuronidated at the pyridine nitrogen. The glucuronide of trans 3'-hydroxycotinine is reported to be O-linked. However, we report here the formation of both an O-linked and N-linked glucuronide of trans 3'-hydroxycotinine by human liver microsomes (HLM). N-Glucuronidation of a number of drugs is catalyzed by UGT1A4, and to a lesser extent UGT1A3. We previously reported that UGT1A9 is a catalyst of the N-glucuronidation of NNAL, a metabolite of the nicotine-derived tobacco carcinogen, NNK. In this study, we determined the rates of nicotine, cotinine and trans-3'-hydroxycotinine glucuronidation by UGTs, 1A3, 1A4 and 1A9, and compared these rates to those of HLM. In 15 HLM samples the rate of nicotine N-glucuronidation ranged from not detected (ND) to 450 pmol/min/mg, the rate of cotinine N-glucuronidation ranged from ND to 790 pmol/min/mg, and the rate of total trans 3'-hydroxycotinine glucuronidation ranged from ND to 50 pmol/min/mg. The rates of cotinine and nicotine glucuronidation were correlated (r=0.93, p<0.05). The rate of cotinine glucuronidation was greater than nicotine glucuronidation in all samples. In contrast, UGT1A4 catalyzed nicotine glucuronidation at 10 times the rate of cotinine glucuronidation. Both UGT 1A9 and 1A3 catalyzed the glucuronidation of nicotine to a much lesser extent than did UGT1A4, no cotinine glucuronidation was detected by either of these enzymes. These data support a role for UGT 1A4 in the catalyses of nicotine and cotinine N-glucuronidation by HLM. However, it is unclear what other UGTs may also contribute to the glucuronidation of nicotine and its metabolites.

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POS2-1  TOBACCO RESEARCH FUNDING PORTFOLIO ANALYSIS: 2000 AND 2001

Catherine Maule*, Canadian Tobacco Control Research Initiative, Cathy Backinger, Ph.D., M.P.H., National Cancer Institute and Tracy Marshall, M.P.H., Center for the Advancement of Health

The National Organization of Tobacco Use Research Funders (NOTURF), a consortium of 21 tobacco research funding organizations in the US and Canada, developed a classification scheme and web-based database to record information on the tobacco-related research they support. The intent of this effort is to understand and track changes in the landscape of tobacco research and research funding. To date, eleven member organizations—American Cancer Society, state programs (Arizona, California, Louisiana, Minnesota), National Institutes of Health (NCI, NHLBI, NICHHD, NIDCR and NIDA), and The Robert Wood Johnson Foundation—classified and entered extramural research grants for fiscal years 2000 and 2001. Analysis of the data indicates that in fiscal year 2000, 511 grants were awarded totaling ~$150 million (US); in 2001, 622 grants were awarded totaling ~$180 million (US). The percent of funding awarded was relatively constant between 2000 and 2001 for three categories of research intent: tobacco and its use (31-32%), tobacco-related disease (14-15%), and population interventions (15-16%); greater variation showed for research on individual interventions (31%; 21%) and capacity building (9%; 16%). Additional analyses will be presented to highlight applications of the system. The database will provide a resource to funders, researchers and the tobacco control community in helping to determine various types of tobacco research of interest and assist in guiding future research. This effort was conducted at the Center for the Advancement of Health.

Supported by The Robert Wood Johnson Foundation.

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POS2-2  THE EUROPEAN SMOKING PREVENTION FRAMEWORK APPROACH: RESULTS FROM FINNISH INTERVENTION PROGRAM

Ari Haukkala*, Erkki Vartiainen, Alfred McAlister, Riku Lehtovuori

This 3-year intervention program was part of the European Smoking Prevention Framework Approach (ESFA) with common targets for youth smoking prevention. However the actual intervention strategies varied between the six countries that participated into the study. The aim was to create a successful 3-year community and school-based program with attention to social influences and refusal skills training in junior high school (ages 13 to 15). 7th grade classes from Helsinki, Finland were randomized 13 experimental (1254 pupils) and 14 control schools (1475 pupils). The intervention program included: smoking prevention lessons given by the teachers trained especially for this program, visiting drama groups for role-plays for refusal skill training, community program with newsletters and cooperation with the parents. The program continued throughout the following two years. There were clear differences in number of school smoking prevention activities but no differences in home activities between control and experimental schools. Attitudes relating smoking and self-efficacy expectations changed more favorably among the pupils in the experimental schools. The intention to smoke remained similar between experimental and control schools. In second year autumn pupils at control schools had higher risk to be regular smokers after baseline differences were adjusted OR=1.33 (1.06-1.67) and this difference remain significant OR=1.29 (1.07-1.55) at third year autumn. Intervention decreased smoking initiation among experimental schools and it had also effects on some predictors for non-smoking. These differences in predictors of smoking initiation partly explained the intervention effect.

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POS2-3  ARE COMPREHENSIVE TOBACCO CONTROL PROGRAMS EFFECTIVE AT RAISING CIGARETTE TAXES?

Lan Liang*

Cigarettes and other tobacco products have long been subjected to taxation primarily for the purpose of generating revenue streams for government entities. Over the past several decades, however, tobacco control advocates have seen excise taxes on cigarettes and other tobacco products at the state level as a critical tool to reduce tobacco consumption. Numerous studies have shown that higher cigarette prices are correlated with lower smoking prevalence and consumption level, and the public is increasingly aware of the importance of environmental factors on an individual’s decision to smoke. One of the main foci of various comprehensive tobacco control programs such as ASSIST, IMPACT, and Smokeless States is to advocate for higher taxes on tobacco products. This study evaluates the effectiveness of these programs on promoting legislative changes on cigarette excise taxes. The outcome of interest is changes in state cigarette excise taxes, including both when and whether a change happens and the size of the change. The main independent variables of interests are the tobacco control spending variables. Other categories of explanatory variables include current cigarette excise tax structure, information on business cycles, importance of cigarette taxes as a source of government revenue, the economic dependence on tobacco of the states, differences on tax rates between neighboring states, and measures of political leaning of the state, and state demographic information. The study covers the time period from 1981 to 1998. Panel data estimation techniques for binary variables and continuous variables are used. A ten thousand dollar increase in the total expenditure by Smokeless States increased the probability of a legislated cigarette excise tax change by 0.3 percent and implies a 0.07 cents tax increase. Further research needs to be done before we can fully understand the dynamics behind these changes.

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POSTER SESSION 2

SRNT Poster Session 2

POS2-4  STATE AND COMMUNITY TOBACCO CONTROL PROGRAMS AND FUTURE CESSION

A. Hyland, Q. Li, J. Bauer, G. Giovino, B. Vollinger, D. Maklan, K.M. Cummings

OBJECTIVE: To evaluate the relationship between exposure to state and community tobacco control programs and future smoking cessation.

METHODS: Data analyzed in this paper come from smokers aged 25-64 years from 20 US communities in 1988 who originally participated in the Community Intervention Trial for Smoking Cessation (COMMIT), completed detailed tobacco use telephone surveys in 1988, 1993, and 2001, and lived in the same state (N=8,029) or community (N=4,636) from 1988 to 2001. Ten communities were exposed to the COMMIT intervention and six communities are in a state with a tobacco control program funded with a dedicated cigarette tax. The primary outcome examined was no smoking six months prior to the 2001 survey.

RESULTS: Subjects exposed to the COMMIT intervention had similar quit rates from 1988 to 2001 compared to those in the comparison communities. Subjects who lived in a state with a tax-financed tobacco control program had borderline statistically significant higher quit rates between 1988 and 2001 compared to other communities. Subjects who resided in Massachusetts communities had the highest quit rates by far, followed by California residents. Additional data will be reported on the relationship between these state and community programs and other indicators of cessation.

CONCLUSION: COMMIT did not have a lasting effect after it ended in 1993. Smoking in a state with a tax financed tobacco control program may have increased quitting, with the highest quit rates observed in Massachusetts and California residents.

This project was supported by a grant 5R01CA8622503 from the National Cancer Institute.

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POS2-5  TOBACCO CONTROL POLICY IN GEORGIA

G. Bakhturidze, G. Kobeshavidzer, D. Andguladze

PROBLEM: We've had a very hard situation in the field of tobacco control. We learned about this situation and made some recommendations.

MAIN RESEARCH: After liberalization of taxes (March, 2001) to local production (up to this taxes on import and local manufacture were identical). British-American Tobacco company (AAO) has decided to invest local manufacturing of its cigarette (Viceroy) and put it in 15 million American dollars. On low prices operates also high level of smuggling 75-80%. The level of smuggling in Georgia is caused by a high level corruption in customs and tax bodies (as a whole country) and weakness of administration. Under the Decree of Health Minister of Georgia in this year from March, since January, 1, 2003 the standard of the maintenance of nicotine will make 1,2 mg and pitches 12 mg; since January, 1, 2005 these components should of 1 mg and 10 mg decrease at a level. As to marks, according to active law (President decree from 28 July 1998 N 520) precautionary inscription borrow holds the only 6% of all volume of a pack of cigarettes. At the end of 2001 lobbyists of the industry has brought into the project bill about prolongation of tobacco advertisement up to 1 January 2005. After our persistent protest they have prolonged this term only up to 1 April 2003 and with the clause, that up to this period the parliament should pass the Law about Tobacco Control, which will regulate almost all the questions to this direction. On realizations preventive programs against tobacco in 2000 per capita should expense 1,1 tetri (about a half cent), but is get 40% of planned financing and this year is considered the most productive. In 2002 is planned expenses at a level of 0.09 tetri that, the 10 times less, which emphasizes the changes of politics of Ministry of Health to the worst for the last two years.

RECOMMENDATIONS: At a regional level: 1. Creation of Regional Alliance with Information the Center and the Background at support the CART, others intergovernmental organization and funds (for the organization of regional meetings, on-line conference, changing information and experience, planning and realizing joint projects etc.); 2. Creation bilateral and multilateral contracts on questions of the control above tobacco on the basis of the Frame Convention. At a local level: 1. Acceptance of the national law on the control above tobacco on principles of the Frame Convention; 2. The statement of the special tax to tobacco in the interests of public public health services and granting of legal support injured from smoking in courts of Georgia; 3. Creation and realization multidisciplinary programs under the control above tobacco; 4. Monitoring all processes of tobacco control in Georgia.

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POS2-6  THE ONTARIO TOBACCO STRATEGY AFTER 7 YEARS: PROGRESS AND CHALLENGES

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The Ontario Ministry of Health initiated a tobacco-control strategy in 1994 at the same time that tobacco taxes were severely cut in order to combat cigarette smuggling. Since that time, provincial finding, historically the highest per capita in Canada, has supported a mass media campaign aimed at changing public attitudes toward the tobacco industry as well as prevention and cessation programs delivered by a variety of health agencies and public health units. Smoke-free regulations have also been instituted by many municipalities to protect non-smokers in public places. Meanwhile, tobacco taxes have increased but remain the lowest in Canada and are still well below 1993 levels; other policy measures have been practically non-existent. With a population of 12 million, Ontario’s progress on tobacco control has a heavy influence on the overall Canadian picture. Four other provinces also substantially reduced their tobacco taxes in 1994, but did not institute other control measures as early as Ontario; five provinces maintained their taxation at a relatively high level. Only British Columbia among this latter group of provinces has had a consistent and fairly comprehensive program of tobacco control since 1994. This situation makes for a useful natural experiment in policy and program approaches to reducing smoking. We will present data from a variety of monitoring sources, principally ongoing household surveys, to chart progress in Ontario, compare it to other jurisdictions including selected US states, and offer observations on the impact of tobacco taxation and other policy measures.

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POS2-7  SOCIAL SUPPORT AND SMOKING AMONG MEDICAID PREGNANT WOMEN IN NEW HAMPSHIRE

Cecelia Carter Gaffney*, M.Ed., Sarah Goodrich, B.A., Michael S. Zens, Ph.D.

The prenatal smoking rate among women covered by Medicaid is four times higher than non-Medicaid women in New Hampshire. Why is it so difficult for low-income pregnant women to stop smoking? This is an important question since about two-thirds of the pregnant smokers in the United States are Medicaid recipients. They know that smoking is harmful to themselves and their unborn children; for this reason they often fail to disclose their smoking status. A natural history study was conducted in six NH clinics to determine quit rates, corrected for deception, among white Medicaid pregnant women and to explore aspects of their social support for quitting smoking during pregnancy. Pregnant women who lived with another adult and were smoking at their intake visit completed a baseline and three month follow-up survey. Smoking status was cotinine validated. In a shift from previous years, more non-smoking pregnant women lived with a smoking partner and had more general exposure to ETS. Pregnant smokers confidence in handling situations without smoking, stress and coping skills, depression, and partner support, both general and specific to smoking will be presented. The impact of these sociocultural factors and potential ways to modify brief counseling interventions for Medicaid pregnant women will be discussed.

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RELATIONSHIP BETWEEN SMOKING DURING PREGNANCY AND BREAST-FEEDING: TEASING APART INITIATION AND MAINTENANCE IN THE THIRD NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY

Joseph S. Baschnagel, M.A.*, Larry W. Hawk, Jr., Rocco A. Paluch, M.A., and Leonard H. Epstein, University at Buffalo; and Caryn Lerman, Ph.D., University of Pennsylvania Cancer Center

Breast-feeding provides many benefits to the developing child, yet many mothers do not breast-feed (a problem of initiation) or breast-feed only briefly (a problem of maintenance). Prior work has shown mother’s socio-economic status (SES), ethnicity, age, and smoking status during pregnancy are related to composite indices of breast-feeding. The goal of the present study was to determine whether these factors are differentially related to initiation or maintenance. The sample consisted of 6529 children, aged 6 months to 16 years, from a nationally representative sample from the NHANES III database. Logistic regression was used to assess the relationship between breast-feeding initiation (breast-feeding for even a single day) and maternal smoking status, SES, ethnicity, and age, as well as infant birth weight. To examine maintenance, a linear regression analysis focused upon the duration of exclusive breast-feeding among those who initiated. Lower income and African-American ethnicity were associated with lower rates of initiation, but were unrelated to breast-feeding maintenance among those who initiated breast-feeding. Maternal smoking during pregnancy, lower maternal age, and low birth weight were independently associated with lower rates of breast-feeding initiation, as well as lower durations of breast-feeding. These data point to the potential importance of separating initiation and maintenance and the association of maternal smoking with both processes. Implications for biobehavioral and intervention research will be discussed.

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ADVANCED MATERNAL AGE AND THE IMPACT OF SMOKING DURING PREGNANCY ON INFANT SURVIVAL

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BACKGROUND: Information is lacking on the effect of negative life-styles, such as smoking during pregnancy, on infant survival among older women.

OBJECTIVE: To estimate the impact of smoking among pregnant women aged 40+ on the survival of their infants. Methods: Singleton live births in the United States between 1995-1997 were analyzed. Study group consisted of infants born to mothers aged 40+. Two maternal age categories (20-29 and 30-39) served as control. Survival to the first birthday was computed for each maternal age stratum to compare infant mortality between smokers and non-smokers during pregnancy.

RESULTS: The overall infant mortality rate was 6.1 per 1000 live births. Although rates varied with maternal age, smoking was associated with a higher-than-expected risk for infant mortality in all maternal age categories. The highest rate of infant mortality due to smoking after adjusting for confounding characteristics was among mothers aged 20-29 (Hazard ratio (HR) = 1.49, CI = 1.28-1.75), while the lowest was among pregnant mothers in the 40+ age category (HR = 1.03, CI = 0.87-1.23). In utero fetal demise was highest among old smoking mothers (40+) and declined with decreasing age (p for trend < 0.0001).

CONCLUSIONS: Maternal smoking during pregnancy was associated with an elevated risk for infant mortality in all age cohorts although the magnitude was lowest among older pregnant women. This may reflect a “shifting phenomenon” whereby smoking-related deaths occur relatively earlier and result in higher rate of fetal demise among older smoking gravidas.

No funding is associated with this research.

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IN UTERO TOBACCO EXPOSURE AND LEVEL OF ATTRIBUTABLE RISK FOR INFANT MORTALITY BY RACE AND ETHNICITY IN THE UNITED STATES


OBJECTIVE: We investigated excess infant deaths due to maternal smoking, and their variations across racial and ethnic population groups in the United States. Methods: Retrospective cohort study on 3,004,816 singleton live births that occurred in 1997 in the United States using the US national linked birth/infant death data. Excess infant deaths due to maternal smoking were computed for each of the following race/ethnic groups: Whites, Blacks, American Indians, Hispanics and others.

RESULTS: Overall, 13.2% of pregnant women who delivered live births in 1997 smoked during pregnancy. The rate of infant mortality was 40% higher in this group as compared to non-smoking gravidas (P < 0.0001). We estimated that 5% of infant deaths in the United States were attributable to maternal smoking while pregnant, and this represents a 50% reduction in excess infant mortality due to maternal smoking when compared to a similar index of 10% documented in the previous decades. However, the proportion of infant deaths attributable to maternal smoking was still disturbingly high among American Indians at 13%, almost three times the national average. The least threat to infant survival by maternal smoking was among Hispanic infants with a population-attributable risk of 0.8%. The population-attributable risk due to maternal smoking for White and Black infants did not deviate much from the national average, 7.0% and 3.8% respectively.

CONCLUSIONS: Smoking during pregnancy is still associated with excess infant deaths in the United States, especially among American Indians.

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PARENTAL PERCEPTIONS OF ADOLESCENT SMOKING AND PARENTING PRACTICES

Molly Middlecamp Kodl, M.A.*, Robin Mermelstein, Ph.D., and Brian Flay, D.PhiL., University of Illinois-Chicago

The purpose of this study was to examine whether parents’ perceptions of adolescent smoking or concern about smoking were related to concurrently-reported parenting. Participants were 408 parent-adolescent dyads. Parents (85% white and female) reported on their family environment, anti-smoking parenting (smoking reactions, messages, rules), and their adolescent’s smoking experiences. Adolescents (56% female, 85% white) reported on their smoking history. Parent-child agreement regarding never smoking was high (85%) while fewer parents of experimenters identified their child as such (44%). Analyses controlled for grade and parent smoking. Parents who said their adolescent had never smoked were significantly more positive in describing the family environment and monitored more than parents who (1) were unsure whether their adolescent had smoked or (2) believed their adolescent had smoked. Parents who were unsure about their child’s smoking experimentation provided the fewest messages (p = .06). Parental concern about future smoking, but not concern about current smoking, was related to reactions and messages (ps less than .05). Parents who were slightly concerned reported the fewest messages and reactions, compared to parents who were very concerned and not at all concerned about their adolescent’s smoking. Overall, parental uncertainty about adolescent experimentation or indecision regarding appropriate concern were related to less positive parenting practices. It appears that parents who are unaware of their child’s smoking history may also be generally disengaged from their adolescent.

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POS2-12 MENTHOL CIGARETTES IN MINORITY YOUTH: A GATEWAY DRUG?

James C. Hersey, Ph.D., RTI; My-Charllins Vilsaint, B.S.; Jane A. Allen, M.A.; Lyndon Haviland, Dr.P.H., American Legacy Foundation

Analysis of the National Youth Tobacco Survey in 2000 and 2002 finds alarming use of menthol cigarettes among minority youth. In 2000, 75.3% of African American, 58.0% of Hispanic, and 44.8% of Asian American middle school smokers usually used menthol cigarettes. By high school, the level of menthol use remained high among all groups and increased to 62.3% among Asian American smokers. This presentation reports on the relationships, for different minority groups, between menthol use and (1) progression toward established smoking, (2) indicators of nicotine addiction, and (3) cessation. We describe beliefs and misperceptions associated with use of menthol cigarettes. We report on changes in menthol use over time following implementation of major state and national countermarketing campaigns.

James Hersey is employed by RTI. My-Charllins Vilsaint, Jane Allen, and Lyndon Haviland are employees of the American Legacy Foundation, which supported this research.

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POS2-13 THE RELATIONSHIP BETWEEN ETHNIC IDENTITY AND NICOTINE DEPENDENCE IN URBAN AFRICAN-AMERICAN SMOKERS

Andrea King, Ph.D., Katie Jorgensen, B.A., and Sarah van Orman, M.D.

The prevalence of cigarette smoking in adult African Americans, especially those in urban and low-income communities, is high compared to Caucasians and other ethnic groups. Few studies have examined the role of ethnic identity and affiliation within the African-American community to smoking-related factors. This study examined the relationship between ethnic identity and nicotine dependence in 26 African-American participants (24 females; 2 males) in a community-based smoking cessation program. Subjects completed several questionnaires at baseline, including the "Why Do You Smoke" questionnaire, the FTND, the B-QSU, and a modified version of Bowen's Ethnic Identity Scale. Nicotine dependence levels were moderate-to-high (FTND mean=5.4, range 2-9) with an average of 15.9 cigarettes smoked daily (range 4-60) for 18.9 years (range 2-50) and 93% reported smoking mentholated cigarettes. Cigarette smoking was highly prevalent in the morning hours with 88% (23/26) reporting smoking their first cigarette within the 30 minutes of waking up and 73% (19/26) preferring a cigarette in the morning compared to other times in the day. The most common cited reason for smoking was Crutch/Tension Reduction, followed by Pleasure/Relaxation and Addiction. Greater identification with African-American Society was significantly correlated with the number of cigarettes smoked per day (r=.54, p<.05) and greater African-American Friend Identity was related to smoking for Crutch/Tension Reduction (r=.45, p<.05). However, ethnic identification did not relate to craving scores or FTND. This suggests that within urban African-Americans, those who identify more strongly with their ethnic group may increase smoking in order to reduce tension. Future research on these factors and exploration of ethnic issues within African American smokers may help guide more targeted smoking cessation programs.

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POS2-14 DIMENSIONALITY OF NICOTINE DEPENDENCE AND SMOKING LEVELS

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Existing nicotine dependence scales measure one or a few aspects, but rarely the dimensionality of nicotine dependence in general. The Covey's Nicotine Dependence Scale (CNDS), a new instrument, attempts to measure various aspects of dependence. The present analysis assessed dimensionality of nicotine dependence based on CNDS and its relationship to smoking levels. Adult smokers were recruited at an inner-city health center. Subjects (n=568) were categorized into four levels based on cigarettes per day (cpd) smoked: occasional (£25 of past 30 days), light (1-10 cpd), moderate (11-19 cpd), and heavy (£20 cpd). The 22-item CNDS was used to measure nicotine dependence. Factor analysis of binary variables was conducted using Mplus. Ordinal logistic regression analyses of smoking levels using factor scores as independent variables were conducted in SAS. The sample was 39.4% females, 81.8% African Americans; the mean age was 40.6 ± 9.9 years. Seven factors were generated from the CNDS: withdrawal symptoms (6 items, loadings 0.70 - 0.97), giving up social activities (4 items, loadings 0.61 - 0.94), smoking more to get effects (4 items, loadings 0.63 - 0.90), smoking immediately after waking up (2 items, loadings 0.86 - 0.93), quit attempts (2 items, loadings 0.86 - 0.93), giving up physical activities (2 items, loadings 0.79 - 0.95), and perceived illness (2 items, loadings 0.45 - 0.98). Smoking more to get effects (p<0.01) and smoking immediately after waking up (p<0.001) were significantly related to smoking levels. Findings suggest that dimensionality of nicotine dependence exists in smokers. Smoking more to get effects and smoking immediately after waking up may differentiate smoking levels.

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POS2-15 THE PATTERN OF SMOKING UPTAKE FROM SURVEY DATA

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Cigarette smokers typically begin smoking during adolescence, become regular smokers by their early twenties, smoke most heavily during their middle years, and taper off gradually after age 60. Data from available NHSDA and NHIS surveys were utilized to develop a profile of the mean level of cigarettes per day (CPD) by age, focusing particularly on smoking uptake from ages 12 to 30 years. The pattern of increasing intensity of smoking by age is described for male and female smokers. Using regression analysis, the most significant factor in the pattern of increasing CPD among respondents of age 12-30 years is the duration of smoking, sqrt(dur)(duration) and log(dur)(duration) being the strongest variants, with additional modifiers related to age of subject and survey year. The analysis demonstrates that mean CPD for both male and female smokers continues to increase through age 30. Examining mean CPD against years of duration of smoking, there is a clear pattern of increasing mean CPD for the first 20 years of smoking for both women and men. Further, the mean CPD level among younger smokers is modified by a pattern of secular variation by calendar year of survey. In the age group 12-30 mean CPD has been declining steadily since 1975 from its plateau of the early 1970s, compared to the age group 31-70 where mean CPD increased in the 1970s, peaked about 1980 and declined thereafter.

Supported by American Legacy Foundation.

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This study compared nationally weighted estimates of the prevalence past 30-day cigarette smoking and smokeless tobacco among 12-17 year olds in school based surveys, the National Youth Tobacco Survey (NYTS) in 1999, 2000, and 2002, and in national telephone surveys, the Legacy Media Tracking Surveys (LMTS) at comparable points of time. Significantly higher prevalence of current tobacco use were reported in the school-based surveys than in the telephone surveys. Evidence suggests that these mode effects found may have been influenced by peer context cues associated with administration in a classroom setting where students might be reminded of the friends and social situations in which they used tobacco. Mode effects (approximately 9 percentage points) were statistically significant among students who reported that one or more of their friends smoked. Conversely, the mode effects were modest (<1 percentage point) among youth who indicated their friends did not smoke. Both the school-based surveys and the telephone surveys were able to detect changes over time between 1999 and 2002 in the prevalence of tobacco use and found evidence that these changes were associated with exposure to the American Legacy Foundation’s truth campaign.

This study was conducted was conducted by staff of RTI and the American Legacy Foundation, and supported by the American Legacy Foundation.

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James C. Hersey, Ph.D.*, RTI, My-Charllins Vilsaint, American Legacy Foundation, Paul Mowery, M.S., Davis, M.S., RTI, Jane Allen, MA, Peter Messeri, Ph.D., and Lyndon Haviland, Dr.PH., American Legacy Foundation

The 2002 National Youth Tobacco Survey (NYTS) was an anonymous, self-administered survey of tobacco behaviors, knowledge, attitudes, and beliefs administered in U.S. middle and high schools. The survey is funded by the American Legacy Foundation and developed by Legacy, CDC, and RTI International. The objective of this study was to develop a protocol using cotinine as a biomarker to investigate possible differences in NYTS smoking rates among students who are exposed to the “truth” national counter-marketing media campaign compared with respondents with lower exposure to the “truth” media campaign. We hypothesized that adolescent smokers who hear and see anti-tobacco ads may be more likely to misreport their actual smoking behaviors. Saliva was collected from students in selected schools and analyzed for cotinine, a primary metabolite of nicotine. The schools selected for this study were separate from the NYTS participating schools but were matched to NYTS index schools. Students in our study completed a paper instrument similar to the NYTS questionnaire prior to contributing the saliva. Using cotinine as the biomarker of tobacco use, we compare misclassification rates in self-reported tobacco use between high and low exposure to the “truth” campaign. The implications for evaluation of the “truth” campaign will be discussed.

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Scott Leatherdale

OBJECTIVE: To review the current literature to identify leverage point variables associated with youth smoking initiation that were required for performing a contextual analysis. Data Sources: Medline, Psychlit and Sociofile databases were searched to identify original research and review articles published between 1990 and 2002 examining smoking initiation.

STUDY SELECTION: Articles that examined factors associated with smoking initiation were considered eligible for assessment. Articles were excluded for: examining regular smoking behaviour instead of initiation, including smoking in a general risk taking category, providing only descriptive statistics, using qualitative data analysis, examining being susceptible to smoking, having inadequate power, combining data from youth and adults, and combining data from experimental and regular smokers.

DATA SYNTHESIS: The leverage point variables associated with smoking initiation are: friends' smoking, cigarette offers from friends, and friends' approval of smoking, parental smoking, sibling smoking, home smoking restrictions, school adjustment, school smoking ban enforcement, faculty involvement, teacher discipline, older peer smoking, school-based smoking prevention programs and activities, tobacco marketing receptivity, smoking intentions, social preference, outcome expectancies, self-regulation, rebelliousness, personal dissatisfaction, marijuana use, alcohol use, school performance, risk taking, drunk driving, ethnicity, gender, age, age relative to cohort, socioeconomic status, school grade, and place of residence.

CONCLUSIONS: Future research investigating youth smoking initiation should use a contextual approach that examines the leverage point variables identified in order to gain a more accurate understanding of this behavior.

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CONCLUSIONS: Future research investigating youth smoking initiation should use a contextual approach that examines the leverage point variables identified in order to gain a more accurate understanding of this behavior.

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Linda L. Pederson, Ph.D.*, Angela Trosclair, M.S., CDC, Office on Smoking and Health

The Office on Smoking and Health, CDC, has created a database of national and state surveys that have included tobacco-related questions on use, cessation, dependence, policy, among others. The surveys that have been included to date are the Adult Tobacco Survey, BRFSS, Current Population Survey, National Health and Nutrition Examination Survey, National Health Interview Survey, National Household Survey on Drug Abuse and PRAMS. Three surveys for youth have been coded to date: YTS, NYTS and TAPS. The questions have been coded according to categories and keywords and can be searched for use in instrument development and secondary data analysis. The website includes links to survey questionnaires, data, and documentation. The presentation will include a demonstration of the database and the search capabilities.

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FACTORS ASSOCIATED WITH ATTITUDES AND DECISIONS TO SMOKING

Lynne S. Padgett, Ph.D., Catherine M. Alfano, M.S., Susan M. Zbikowski, Ph.D., Leslie A. Robinson, Ph.D., Jean M. Keim, Ph.D.

This study examined the relationship between demographic variables, smoking risk factors and behavior, and attrition in a longitudinal study of adolescent smoking, conducted in an urban school system in the South with a primarily African American student body (n = 6967). Attrition research in adolescent populations has typically been conducted with Caucasian students resulting in a general attrition profile that cannot be confidently generalized to other adolescent populations. Logistic regression analyses revealed that students who were “lost” from the study in year four were more likely to be older than their grade peers, African American, and to report having ever used cigarettes at the baseline survey (p < .05). Annual analyses were also performed to delineate patterns of attrition over time. Having best friends who smoked was associated with attrition in the early years of the study, while ethnicity (being African American) was associated with attrition only in the later years (p < .05). These results represent the first composite portrait of attrition in a primarily African American, urban student population and provide useful information for those investigators examining factors associated with smoking onset and patterns in adolescents.

In addition, the results can be useful in planning effective retention strategies for future studies.

The study was supported by Grant HS50723 from the NHLBI and a Centers of Excellence Grant awarded by the State of Tennessee to the Department of Psychology, The University of Memphis.

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FACTORS EXPLAINING A CHILD’S DECISION TO SMOKO

Terrell W. Zollinger, Dr.PH.*, Robert M. Saywell, Jr., Ph.D., Carolyn M. Muegge, M.PH., J. Scott Woolridge, M.H.A.

The large number of children who decide to smoke at an early age is a major public health concern. This study examined the separate impacts of demographic, environmental, attitudinal and knowledge factors on a child’s decision to smoke. Data were collected on 8,056 6th grade students completing self-administered surveys during 1997-2000. Hierarchical logistic regression models were used to determine the odds ratios for each factor. Three models were used to explain smoking behavior (tried smoking versus never tried). The environmental model, resulted in a R-square estimate of 0.147, compared to 0.114 for the attitudinal model and 0.072 for the knowledge model. Combining all factors into one model, the R-square estimate was 0.212. When all factors were in the model, those having the greatest impact were: hanging out with friends who smoked (O.R. = 3.014), believing it would be difficult to indicate that environmental factors, such as peer and family smoking, better explain the effect of smoking appear to have little influence on a child’s decision to start smoking. Smoking prevention programs need to provide children with skills to resist the influence of their environment.

This study was funded in part by a grant from Marion County Health Department.

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SOCIAL CONTEXTS OF DECISIONS TO SMOKE AND NOT TO SMOKE AMONG ADOLESCENTS

Sarah Kohler, B.S.*, Robin Mermelstein, Ph.D., Brian Flay, D.Phil., University of Illinois at Chicago; Saul Shiffman, Ph.D., University of Pittsburgh

Despite the common assumption that adolescent smoking is driven largely by social or peer factors, relatively little is known about the immediate contexts in which adolescents smoke or make decisions not to smoke among adolescents early in the uptake continuum. Research to date has been based largely on qualitative and retrospective reports, with very little attention paid to the contexts of decisions not to smoke. The present study used ecological momentary assessments (EMA) to examine the immediate social contexts of smoking and nonsmoking decision times among adolescents early in the experimental stages of smoking. Participants were 85 8th and 10th graders (66% female; 62% white) who event-recorded smoke and “no smoke” episodes and responded to random prompts on hand-held computers during a 7-day baseline. The EMA asked about the presence of others, other smokers, location, activity, and feelings about the social context (pressure and friendliness of others). Compared to times when adolescents decided not to smoke, smoke events occurred significantly more often with other smokers present (67% vs. 56%), and while hanging out (64% vs. 53%), but when feeling significantly less pressured (p less than .001). No smoke decisions occurred more frequently at school when there may have been a greater probability of being “caught” (19% vs. 3%), p less than .001. Both smoke and no smoke times differed significantly from random times by the presence of others, location, and activity.

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REACTIONS TO FIRST TOBACCO EXPOSURE PREDICT PATTERNS OF LATER TOBACCO USE: FINDINGS FROM THE LIFETIME TOBACCO USE QUESTIONNAIRE

Janet Brigham, Ph.D.*, Harold Javitz, Ph.D., Cynthia S. Pomerleau, Ph.D., Karen S. Hudmon, Pharm.D., Gary E. Swan, Ph.D.

Early predictors of adult tobacco use were examined retrospectively with the Lifetime Tobacco Use Questionnaire (LTUQ), a computerized instrument developed to assess the natural history of lifetime experience with all forms of tobacco. The Web-based, self-administered LTUQ was completed by N = 1,528 members of an opt-in e-mail panel (66% female, 81% White, 40.1% at least high school education). Average age was 42.9 years. Average age of first exposure to tobacco was 15.4 years. Separate regression analyses were conducted to determine (a) whether the individual used tobacco again after initial exposure, (b) whether the individual ever used tobacco more frequently than once per month, and (c) a measure of the “ramp-up” slope to regular use. Self-reports of an enjoyable first experience with tobacco (p = .001), lightheadedness at first exposure (p = .047), and no/low nausea (p = .016) were statistically significant predictors of tobacco use beyond first exposure. Predictors of eventual use of tobacco at least once a month were lower education level (p = .001), no/low dizziness at first exposure (p = .015), and no/low irritation to lungs or throat (p = .015). Predictors of a steeper ramp-up slope to regular use were older age at first exposure (p = .001) and enjoyment of first exposure (p = .010). Overall, early experiences with cigarettes were related to subsequent tobacco use. Specifically, the subjective enjoyment of the first experience with tobacco was predictive of subsequent experimentation, regular use, and a more rapid uptake of tobacco use. Lightheadedness, nausea, dizziness, and lung or throat irritation at first exposure was associated with decreased likelihood of subsequent tobacco use.

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LIFE-TIME TOBACCO USE QUESTIONNAIRE

Sarah Kehler, B.S.*, Robin Mermelstein, Ph.D., Brian Flay, D.Phil., University of Illinois at Chicago; Saul Shiffman, Ph.D., University of Pittsburgh

Despite the common assumption that adolescent smoking is driven largely by social or peer factors, relatively little is known about the immediate contexts in which adolescents smoke or make decisions not to smoke among adolescents early in the uptake continuum. Research to date has been based largely on qualitative and retrospective reports, with very little attention paid to the contexts of decisions not to smoke. The present study used ecological momentary assessments (EMA) to examine the immediate social contexts of smoking and nonsmoking decision times among adolescents early in the experimental stages of smoking. Participants were 85 8th and 10th graders (66% female; 62% white) who event-recorded smoke and “no smoke” episodes and responded to random prompts on hand-held computers during a 7-day baseline. The EMA asked about the presence of others, other smokers, location, activity, and feelings about the social context (pressure and friendliness of others). Compared to times when adolescents decided not to smoke, smoke events occurred significantly more often with other smokers present (67% vs. 56%), and while hanging out (64% vs. 53%), but when feeling significantly less pressured (p less than .001). No smoke decisions occurred more frequently at school when there may have been a greater probability of being “caught” (19% vs. 3%), p less than .001. Both smoke and no smoke times differed significantly from random times by the presence of others, location, and activity.

Supported by grant #CA80268 from NCI and a grant from the Tobacco Etiology Research Network, funded by RWJF.

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POS2-24  SECOND CONTACT: RETROSPECTIVE ASSESSMENT OF ATTITUDES AND CIRCUMSTANCES ASSOCIATED WITH CONTINUED EXPERIMENTATION WITH TOBACCO

Janet Brigham, Ph.D.*, Cynthia S. Pomerleau, Ph.D., Karen S. Hudmon, Pharm.D., Gary E. Swan, Ph.D.

A number of biopsychosocial factors predict tobacco exposure beyond initial experimentation. Continued experimentation and exposure can result in years of tobacco dependence. This study explored how circumstances and attitudes associated with initial use of tobacco were related to continued experimentation. Tobacco use was examined retrospectively with the Lifetime Tobacco Use Questionnaire (LTUQ), a computerized instrument developed to assess the natural history of lifetime experience with all forms of tobacco. A Web-based, self-administered version of the LTUQ was completed by N = 1,528 adult members of an opt-in e-mail panel (66% female, average age 42.9 years, average age of initial experimentation, 15.4 years) who provided retrospective information about their use of tobacco. A cigarette was the first type of tobacco tried by 94.4% of respondents, with 70.3% of respondents reporting initial use of one cigarette, cigar, or dip/pinch of smokeless; 26.6% used three or more. First experimentation typically occurred at another's home (26.5%), at the respondent's home (21.9%), or at school (18.3%). Respondents reported being with a peer (70.0%) or being alone (15.5%) when tobacco was first used. First tobacco came most often from peers (50.4%), and in 62.9% of cases was given to the respondent. Tobacco was taken “without asking” by 19.3%. Logistic regression indicated an influence of their friend’s smokers.

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POS2-25  GROWTH IN ADOLESCENT SMOKING AND PERCEIVED NORMS ABOUT SMOKING: DISENTANGLING DIRECTION OF EFFECTS

C.R. Colder, R.T. Campbell, B.R. Flay, and M.A. Pentz

Perceived norms about smoking (perceptions of the prevalence of smoking) are considered an important risk factor for adolescent smoking. However, the direction of effects between smoking and perceived norms has not been examined. Moreover, perceived norms and smoking are expected to increase with age, and it is unclear if the relationship between these two constructs is best characterized by a dynamic relationship between growth processes, or cross-sectional time-specific relations. The goal of the current study was to model growth in adolescent cigarette smoking and perceived norms, and to examine the relationship between these constructs. Growth factor and time-specific correlations were considered. Findings suggested that both smoking and perceived norms escalated from grade 6 to 12. Escalation was rapid after grade 7 and it slowed after grades 10 and 11 for both constructs. On average, the growth model accounted for 59 and 67 percent of the variance of the repeated measures of smoking and perceived norms, respectively. This suggests substantial variability left over in the repeated measures after accounting for growth, and the importance of considering both time-specific and growth factor relationships. The relationship between perceived norms and smoking was best described by growth factor correlations. Early perceived norms predicted rapid escalation in smoking, but there was no evidence for early levels of smoking predicting escalation in perceived norms. Smoking and perceived norms were not related within time, and therefore, cross-sectional time-specific relations above and beyond growth were not supported. Implications of these findings for modeling growth in adolescent smoking are discussed.

This study was funded by NIDA, NIAA, and The Robert Wood Johnson Foundation.

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POS2-26  THE IMPACT OF POOR SELF-CONTROL AND GOOD SELF-CONTROL ON ADOLESCENT SMOKING

Janet Audrain-McGovern, Ph.D.*, University of Pennsylvania; Kenneth P. Tercyak, Ph.D., Georgetown University; and Howard B. Moss, M.D., University of Pennsylvania.

This study investigated the impact of exposure to others who smoke, good and poor self-control, and their interactions, on adolescent cigarette smoking. Study participants were 1,060 10th graders who completed self-report measures of family and peer smoking, good self-control, poor self-control, and cigarette smoking (ever and current). The results of multivariate logistic regression analyses indicated that smoking exposure, good self-control, and poor self-control were independent predictors of ever smoking. Smoking exposure and good self-control were also independent predictors of current smoking. There was no evidence to suggest that good self-control and poor self-control moderated the effect of smoking exposure on ever or current smoking. However, there was a significant interaction between good and poor self-control that influenced the odds of an adolescent being a current smoker. Specifically, good self-control appeared to buffer the negative effects of poor self-control, such that adolescents were 70% less likely to currently smoke. Future research should investigate the relationship between self-control variables, smoking, and other environmental influences across time. Youth smoking prevention and intervention program outcomes may potentially improve by addressing self-control behaviors.

This study was supported by NCI/NIDA grant P50 84718.

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POS2-27  THE PREVALENCE OF SMOKING AND THE SMOKING BEHAVIOR

Elena Cojocaru, C. Cojocaru

AIM: To evaluate the prevalence of smoking and the smoking behavior in a group of adolescents, in Iasi, Romania

METHODS: An anonymous questionnaire was completed by 363 subjects, 276 female and 87 male. The subjects were secondary school pupils. Their ages were between 15 and 18 years old.

RESULTS: In our group study, we found 22.8% smokers and ex-smokers female and 51.7% smokers and ex-smokers male. From smokers, 85.2% (92) smoke less than ten cigarettes daily. At least once have smoke 42% (153) by subjects. 46.3% (50) subjects have declare that they have give up of smoking from at least six months comparatively with 42% subjects (84) who didn't have succeed, but they have tried it. The most important reasons of smoking cessation have been “spontaneously”, then from friend's insistence and doctor's counseling. We found many subjects smokers in smokers families (36.6%) compared with smokers in non-smokers families (17.2%). The company has a great importance because 184 subjects (50%) have the majority of their friends smokers.

CONCLUSION: Although the questioned group had ages between 15 and 18 years old, we identified a high prevalence of smokers and ex-smokers (29.7%). Many of them declared that they give up to smoking. Only a small number of subjects would ask a doctor for smoking cessation, most of them endeavoring themselves. The company has a great influence on smoker. Key words: adolescents, smoking behavior, prevalence.

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POS2-28 RECENT TRENDS IN CIGARETTE SMOKING AMONG HIGH SCHOOL STUDENTS IN LOS ANGELES

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Adolescent cigarette smoking is particularly problematic as early smoking onset is associated with heavier use, longer duration of smoking, more difficulty quitting, and consequently, greater likelihood of health problems. The aim of this paper is to describe recent trends in cigarette use among youth and examine contributing factors. The trend data presented are based on the CDC Youth Risk Behavior Survey conducted in Los Angeles public high schools among 9th -12th grade students in 1997 (n=1,761) and 2001 (n=1,285). A test for difference between two independent proportions was used to assess the statistical significance of the trends for the total sample, gender, and race/ethnicity. Samples for 1997 and 2001 were over 60% Latino with African Americans, Whites, and Asians roughly comprising equal proportions. For the total sample, statistically significant decreases in cigarette smoking were found between 1997 and 2001 for lifetime (69.8%-60.0%), current (25.5%-14.5%) and frequent (6.4%-2.7%) use. Female and male students experienced similar and statistically significant declines. However, Latinos, Asians, and Whites but not African Americans showed statistically or marginally significant declines for lifetime and current use (sample size insufficient to assess frequent use). Overall, the dramatic reductions in cigarette smoking point to the effectiveness of a comprehensive strategy including price increases, mass media campaigns, reductions in marketing targeted at youth, reductions in youth access, and school-based interventions. However, the disparity in cigarette smoking trends found among race/ethnic groups indicates that these efforts have not impacted all population segments equally, and therefore, more culturally sensitive approaches are needed.

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POS2-29 EXAMINING THE TRAJECTORY OF SMOKING FROM ADOLESCENCE THROUGH YOUNG ADULTHOOD: THE IMPORTANCE OF GETTING MARRIED AND HAVING CHILD

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With changing norms and lifestyles over the last several decades, the period of 20 to 35 is no longer one of stability, where young adults settle down, get married and have children. Using data from an ongoing longitudinal study following individuals from adolescence (11 to 15) through young adulthood (24 to 28), we examined the trajectories of daily cigarette use over 12 annual assessments, as a function of timing of marriage and having children. The sample was divided into three groups: married by age 22, married at 23 or older and non-married and compared using multiple sample analysis. The young married group had higher initial use and higher maximum use than the other two groups. For both married groups, an inverse quadratic function fit the data, indicating that individuals who married decreased their use in the later years. A linear function fit the data for the unmarried, suggesting that these young adults continued smoking without a decrease in use. We also compared trajectories of those with and without children. Trajectories of childless individuals showed a small, but significant, increase over time. However, these individuals had a much lower rate overall than those who had children. A positive quadratic function fit the trajectories of individuals with children, showing a more rapid increase during high school and leveling off during young adulthood. These findings suggest that the design of intervention programs needs to consider the marital and parental status of the young adult.

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POS2-30 IS MARRIAGE A RISK FACTOR FOR SMOKING AMONG MALES IN RURAL EGYPT?

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Data on cigarette smoking was collected for males in two rural Egyptian villages, one in upper Egypt and the second in the Nile Delta during a 1997 survey of Hepatitis C prevalence, which included questions on smoking behavior. Of the men aged 18 and above, 46% reported currently smoking cigarettes. The prevalence of smoking continued to increase until the mid-thirties. Married men were significantly more likely to smoke than unmarried men. The difference persisted even after adjusting for age, occupation and education. The reasons for marriage as a risk factor for smoking in rural Egypt has not been clearly defined. The hypothesis that marriages in rural Egypt lead to severe stress among men leading to smoking needs to be confirmed.

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POS2-31 TOBACCO FREE YOUTH PROGRAM (TFYP) PROPOSAL FOR SOUTHEASTERN VIRGINIA HIGH SCHOOLS

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The Tobacco-Free Youth Coalition (TFYC) designed an intervention to reduce tobacco use among Norfolk's high school students. More than 80% of adult smokers tried smoking and over half of them were regular smokers before 18. Today, an estimated 4.5 million children and adolescents smoke in the U.S. The TFYP is a school-based intervention designed to reduce tobacco use among youth. This program will be facilitated through school anti-tobacco campaigns, media awareness for tobacco-free youth, youth peer groups, appeals to tobacco regulators, and school based tobacco-free youth workshops. For tobacco-cessation the stages of change model will be used. The model outlines the stages subjects may experience as they attempt to change their health behavior. For tobacco-prevention, the theory of planned behavior will be used, as it provides a means of identifying attitudes, beliefs, knowledge, and the perceived ease/difficulty of accomplishing a behavior. The evaluation model the TFYC will use is the goal attainment model. The TFYC’s mission is to decrease tobacco use among high school students in Norfolk, prevent the onset of tobacco usage, and encourage tobacco cessation to reduce the prevalence. Data will be collected in the form of a questionnaire, and will determine if the goals/objectives of the TFYP are being accomplished. Key questions will be asked at the focus groups meetings. These groups will consist of participants, teachers, health professionals, Norfolk Public High School administrators, parents, and students. The key outcomes expected of the TFYP are: one year after initiating TFYP 50% of attendees who were nonsmokers will remain tobacco free and 30% of tobacco users will have quit and remained tobacco free.

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POS2-32  TOBACCO CONTROL POLICIES RECOMMENDED FOR U.S. COLLEGES: WHAT DO STUDENTS THINK? A NATIONAL SURVEY

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Tobacco use among young adults aged 18-24 years is a growing public health concern. Smoking among U.S. college students rose 28% between 1993 and 1999. The American College Health Association and American Cancer Society have recommended similar tobacco control policies for colleges. These include: (1) smoke-free policies for all buildings including student residences and eating areas, (2) no tobacco advertising in campus publications, (3) no tobacco sponsorship of campus social events, (4) no sale of tobacco products on campus, (5) ready access to tobacco treatment and tobacco prevention programs. Students’ level of support for these tobacco control policies is not known, but concern about student opposition is cited by college administrators who are reluctant to adopt the policies. To assess student support for proposed tobacco control policies, we analyzed the 2001 Harvard College Alcohol Study (CAS), which surveyed a random sample of 10,904 undergraduate students at 119 nationally-representative four-year U.S. colleges and universities (52% response rate). Over 75% of students favored smoke-free residence halls and dining areas, and 51% supported smoke-free policies in campus bars. Over 70% supported a ban on tobacco advertising on campus and tobacco sponsorship of campus social events; 59% favored banning tobacco sales on campus. Support for all policies was significantly higher among nonsmokers than smokers. However, a majority of smokers supported prohibitions on tobacco advertising and sponsorship and smoke-free policies for campus buildings and dining areas, while 45% of smokers favored smoke-free dormitories. We conclude that student support for proposed campus tobacco control policies is strong, even among smokers. These findings should provide reassurance to college administrators who are considering adopting the policies.

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POS2-33  U.S. COLLEGE STUDENTS’ EXPOSURE TO TOBACCO PROMOTIONS AT BARS, CLUBS, AND CAMPUS EVENTS: PREVALENCE AND RELATIONSHIP TO TOBACCO

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The tobacco industry has developed new marketing strategies for young adults (18-24 years), a group in whom tobacco use is rising. A well-documented technique is to sponsor social events in bars, nightclubs, and college campuses at which free cigarettes and promotional items are distributed. No information exists about the extent of this new strategy or its effect on tobacco use. We analyzed the 2001 Harvard College Alcohol Study of 10,904 randomly-selected students attending a nationally-representative sample of 119 U.S. four-year colleges. In the first 6 months of the 2000-01 school year, 8.5% of students had attended a bar, nightclub or campus social event where free cigarettes were distributed. Exposure occurred at 99% of schools. On multivariate analysis, exposure was significantly more common in Southern schools, urban areas, and among students of legal drinking age, binge drinkers, Asian-Americans, and students who rated parties as important. Students exposed to these promotional events had a higher smoking prevalence, even after adjusting for demographic factors, alcohol use, and bar/club attendance (AOR 1.75, 95% CI 1.47-2.08). The relationship held for students who were not regular smokers before age 19 (AOR 1.72, 95% CI 1.35-2.21) but not among those who entered college as regular smokers. While a cross-sectional survey cannot prove causality, these data are consistent with a conclusion that the new marketing strategy is promoting tobacco use among young adults, especially college students who did not enter college as regular smokers. To combat this marketing, colleges should ban the free distribution of tobacco products on campus and prohibit tobacco industry sponsorship of social events. Smoke-free policies in bars and restaurants would also discourage this new marketing strategy.

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POS2-34  MASSACHUSETTS PUBLIC COLLEGE STUDENTS OVERESTIMATE THE PREVALENCE OF SMOKING ON CAMPUS

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Tobacco use rose among U.S. college students in the 1990s. It is not clear how accurately students perceive the prevalence of tobacco use on campus. Student perceptions of smoking prevalence could influence smoking behavior. To examine college student perceptions of cigarette smoking prevalence, we analyzed data from the 2001 Massachusetts College Alcohol Survey of 1,074 randomly selected college students attending 11 four-year public colleges in Massachusetts (49% response rate). The prevalence of current (past 30-day) smoking among respondents was 28%, but students’ median estimate of smoking prevalence was two-fold higher (50-59%); response options for smoking prevalence estimates were presented in ranges of 10%. 88% of students overestimated the prevalence of smoking on their campus. Nearly two-thirds (65%) of students estimated that 50% or more students smoked; 39% of students estimated that 60% or more students smoked. Contrary to expectations, smokers and non-smokers were equally likely to overestimate the prevalence of smoking on their campus (85% vs. 89%; p>0.27), as were students living in smoke-free and non-smoke-free housing (88% vs. 87%; p=0.67). In multivariate analysis, students more likely to overestimate smoking prevalence were: freshmen (AOR 2.00;95% CI 1.04-3.85), single (AOR 2.87;95% CI 1.01-8.20) and those whose parents were not college educated (proxy for socioeconomic status) (AOR 1.74; 95% CI 1.12-2.72). This study suggests that college students, both smokers and non-smokers, misperceive campus smoking norms. This may reflect a high visibility of tobacco use on college campuses. Future work should explore the effect that misperception of smoking prevalence has on smoking behavior.

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POS2-35  REDUCING SMOKING ON CANADIAN POST-SECONDARY CAMPUSES: THE EFFECTIVENESS OF A MULTI-CAMPUS INITIATIVE


Leave The Pack Behind (LTPB) is a comprehensive tobacco control program operating at nine post-secondary institutions in Ontario. LTPB includes a continuous communication campaign, and uninterrupted access to a range of smoking cessation interventions (including self-help programs, CO testing, peer education, and motiva
tional contests). To examine LTPB’s effectiveness, a convenience sample of 766 smokers was drawn from the 1,792 smokers accessing LTPB. The 350 respondents who were ultimately contacted for an 8-week follow-up were similar to those for whom there was no follow-up in terms of weekly tobacco consumption, and confidence in ability to quit. Smokers in precontemplation, however, were underrepresented in the final sample (p < .01). From baseline to 8-week follow-up, 31.3% of the 350 respondents advanced through at least one stage of change, 45.7% remained in the same stage, and 23.0% regressed by a stage or more. Forty-five respondents (12.9%) self-reported quitting and smoking no cigarettes in the past week. Their self-efficacy for quitting increased from baseline to follow-up (p < .01). Among the 305 smokers who had not quit smoking at the 8-week follow-up, 38.6% reported a sustained reduction in their tobacco consumption, 4.4% indicated that they had temporarily reduced their tobacco consumption, and 56.8% felt they were smoking about the same. Weekly tobacco consumption for this group decreased from 52.9 cigarettes at baseline to 43.0 cigarettes at follow-up (p < .001). This unique tobacco control initiative appears to be successful at reducing smoking on post-secondary campuses. Controlled studies of the effectiveness of specific LTPB programs and services are needed to confirm these initial, promising results.

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POS2-36  SMOCKING WHILE DRINKING BY COLLEGE STUDENTS: IDENTIFICATION OF CLUSTER SEGMENTS BASED ON WEEKLY PATTERNS OF BEHAVIOR

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The variability and situational specificity of college student smoking behavior needs further characterization. We received 2,276 usable surveys (94.5% response rate) gathered from a stratified sample of undergraduate classes to identify types of smoking patterns in relation to alcohol use. These patterns were compared to smoking motives and demographics to gauge their interpretability. Approximately 35% of the respondents were classified as current (past 30-day) smokers, with 11.7% reporting current daily smoking. Current smokers reported the number of cigarettes smoked with and without alcohol during the past week. Cigarette use peaked Thursdays, Fridays, and Saturdays while drinking alcohol. To define unique segments among current smokers based on these behaviors, responses were subjected to cluster analysis. Hierarchical cluster analysis results were refined using a nonhierarchical method. Six distinct clusters were identified. The largest group consisted of ‘experimental smokers’ who showed low use on all days with some increased use on Fridays and Saturdays while drinking. The next largest group also showed low use on average, but substantial increases while drinking on the weekend. The other four clusters, while smaller, demonstrated more cigarette use in general in addition to varying use patterns on weekends and with alcohol. Cluster profiling revealed significant differences in demographics and smoking motivations among the clusters. The identification of cluster subtypes has implications for tobacco use prevention and cessation strategies. Supported by the ACT Center.

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POS2-37  COMORBIDITY OF DEPRESSION WITH STAGES OF SMOKING: A TEST OF THE SHARED FAMILIAL RISK EXPLAINTION

Eric O. Johnson, Gary A. Chase, and Naomi Breslau

Comorbidity of depression and smoking is well recognized, but few studies have tested its alternative explanations. Findings from these studies have differed by the stage of smoking and/or study methods. This study tested whether shared familial risk accounted for the comorbidity between depression and different stages of smoking. Data were from an epidemiologic sample of 979 young adults. Parental smoking, depression, and alcohol abuse, based on proband report, were used to estimate the cross-transmission from parent depression or alcohol abuse to proband smoking (ever, daily, heavy, and nicotine dependent), test for shared familial liability, and assess the degree to which the liability accounts for the comorbidity. The shared familial risk hypothesis for alcohol abuse and smoking was tested as a concurrent validity check on study methods. Familial transmission within conditions was found for depression, alcohol abuse, and stages of smoking (odds ratios from 3.1 for depression to 1.4 for ever smoking). Parental depression in the absence of parental smoking was not associated with an increased risk of any stage of smoking. Additionally, the increased risk of stages of smoking associated with parental smoking in the absence of depression and the two conditions combined were similar. In contrast, cross-transmission from alcohol abuse in parents to smoking in probands was found, and shared familial liability appeared to account for their comorbidity. No evidence that shared familial liability accounts for the comorbidity of depression and stages of smoking was observed. Alternative explanations include bi-directional causal relationships and shared nonfamilial environmental causes. This work was supported in part by NIH grant 48802.

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POS2-38  PREDICTORS OF TOBACCO USE AMONG “AT RISK” WOMEN

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Based on a sample of 250 “at risk”, predominantly-minority women living in the Atlanta, Georgia metropolitan area, this research focuses on identifying the predictors of whether or not the women used tobacco. “At risk” was defined broadly as facing challenges in a variety of life domains, such as having low education, living in poverty, illegal drug use, inadequate health care and insurance, unemployment or underemployment, etc. Predictors of smoking status were examined in several domains, including demographic characteristics, background and experiences measures, psychosocial functioning, childhood maltreatment experiences, and substance use measures. Multivariate logistic regression was used to identify the significant predictors of tobacco use. Analyses identified four such variables. (1) Women with criminal histories were 2.8 times more likely to smoke than those without criminal histories (p<.01). (2) The more alcohol use women reported, the more likely they were to use tobacco (p<.05). (3) The more illegal drug-related problems women experienced, the more likely they were to use tobacco (p<.001). (4) Women who had experienced childhood neglect were 2.3 times more likely to be smokers than those who had not been neglected (p<.05).

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POS2-39  GENETIC, SHARED AND NONSHARED ENVIRONMENTAL INFLUENCES ON SELECTED SMOKING BEHAVIORS IN TWINS FROM THE MIDUS SURVEY

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Essential to the improvement in treatment efforts is an understanding of the etiology of smoking behaviors. In order to understand the heritable and environmental influences on smoking behavior, we used biometrical methods to analyze responses to smoking-related questions by twin pairs from the Midlife Development in the United States (MIDUS) epidemiological study. MIDUS is a collaborative, interdisciplinary investigation of midlife development. Respondents were drawn from a nationally representative random-digit-dial sample, aged 25-74, selected from telephone banks. Results of our biometrical analyses of monoygous (n=222) and dizygous (n=329) twins indicated that 76% of the variability in having ever smoked on a regular basis was due to additive genetic effects and 24% to nonshared environmental effects. Similarily, current regular smoking was explained by 73% additive genetic effects and 27% nonshared/unique environmental effects. These observations confirmed previous reports of the heritability of smoking behavior as approximately 70%. We also examined models for the age of the very first cigarette, which suggested a additive gene effect and effects of the nonshared/unique environment. Despite being the simplest model, the model fit was suboptimal. Similarly, a model examining the greatest number of cigarettes smoked in a smoking year was best explained by dominant genetic influences and the nonshared/unique environment, however the model fit was suboptimal. Finally, we tested a model to evaluate the variability in making a quit attempt. The best fit model explained 99% of the variability in responses as being due to the effects of the unshared/unique environment, with no influence by genetic or shared environmental factors. These findings demonstrate the importance of extrafamilial environmental factors in attempting to quit smoking. Thus, interventions, and public health efforts have the potential to have potent effects on smoking behavior. This research was supported, in part, by at TTURC Grant from NCI and NiDA P5084718.

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POS2-40  
**CIGARETTE SMOKING AND PERSONALITY: COMMON FAMILIAL INFLUENCES IN ADULT TWINS**

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Previous analyses indicate that personality does not account for the familial transmission of cigarette smoking. However, this does not preclude the possibility that personality and smoking may share familial influences. We tested for familial associations between Cloninger’s TPQ and Eysenck’s EPQ personality measures and smoking. Data obtained from a mailed-questionnaire-survey conducted in 1988/1989 of 2860 male and female Australian twin-pairs (846-MZF, 401-MZM, 541-DZF, 223-DZM, 569-DZO) were analyzed using logistic-regression and genetic analyses. The externalizing dimensionalizations of Extraversion (E) and Novelty Seeking (NS) showed the strongest familial associations with smoking behavior in women and men.

Examination of twins smoking behavior by cotwins personality traits found significant familial associations between E and Regular Smoking (RS) in women: odds ratios: OR=1.60 and Heavy Smoking (HS) in men (OR=1.71); and between NS and RS (ORs=1.51, 1.35) and NS and HS (ORs=1.72, 1.65) for women and men, respectively. The heritability of smoking severity was 83.7% (79.8%-87.5%) in women and 65.2% (53.7%-76.7%) in men. Of E was 45.3% (39.5%-51.1%) in women and 50.0% (41.5%-58.4%) in men, and that of NS was 42.1% (36.7%-47.5%) in women and 33.3% (24.5%-42.2%) in men. While small genetic correlations were found between smoking and E (women: r=.13 (.03-.23); men: r=.19 (.04-.35)), greater genetic correlations were found between smoking and NS (women: r=.33 (.24-.43); men: r=.39 (.16-.65)). These findings suggest that shared genetic factors may account, in part, for prior associations found between novelty seeking and smoking.

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POS2-41  
**IMPACT OF SEPTEMBER 11TH TRAGEDY ON SMOKING AND RELAPSE RATES**

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The September 11, 2001 terrorist attacks on the United States had widespread behavioral and emotional impacts. Although one study found an increase in smoking rates among Manhattan, New York residents following the tragedy (Vlahov et al., 2002), no studies have examined the effect on individuals trying to quit smoking at the time of the attacks. Local media in the Washington, D.C. area was used to recruit 465 smokers into a study comparing the effect of computerized-scheduled reduction to ad-lib dosing of nicotine inhalers on quit rates. The terrorist attack was temporarily associated with various stages of the study protocol. Mean smoking rates the week before September 11th were slightly lower than mean smoking rates the week after September 11th (11.8 cigarettes per day versus 12.6 cigarettes per day, respectively). Higher ratings on the Impact of Events (IES) scale, completed retrospectively after all subjects had completed the 16-week evaluation, were associated with increased cigarette use following the terrorist attacks (Pearson’s r=0.25, p<0.01). Among the 303 participants who completed the smoking diaries, 43.9% did not change smoking rates, 23.1% decreased smoking, and 34.3% increased smoking the week following the tragedy. Thirteen of the 82 subjects who had quit prior to September 11th relapsed in the week following the attacks (15.9%); IES scores among those who relapsed were moderately higher than subjects who remained quit (36.9 versus 29.8, respectively). Although the terrorist attacks were associated with increases in smoking and relapse rates, the effect was relatively small and not significant. Greater perceived impact of the events of September 11th, however, predicted moderate increases in smoking and relapse rates.

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POS2-42  
**PSYCHIATRIC DISORDERS AND STAGES OF SMOKING**

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OBJECTIVES: We examine the role of DSM-III-R psychiatric disorders in predicting the subsequent onset of daily smoking, smokers’ progression to nicotine dependence and the persistence of smoking.

METHODS: The Tobacco Supplement of the National Comorbidity Survey was administered to a representative subsample of 4,414 persons 15-54 years of age. DSM-III-R psychiatric disorders, including nicotine dependence, were ascertained by the World Health Organization’s Composite International Diagnostic Interview.

RESULTS: Active psychiatric disorders predicted an increased risk for the subsequent first onset of daily smoking and for smokers’ progression to nicotine dependence. The increased risk applied across most of the disorders examined in the study, including major depression, anxiety disorders and substance use disorders. Compared to persons with one active disorder, persons with four or more active disorders were at higher risk for daily smoking (2.1 vs 1.4, respectively) and for nicotine dependence (2.9 vs 1.4, respectively). With few exceptions, past (remitted) disorders did not predict the subsequent onset of daily smoking. Preexisting psychiatric disorders did not predict smoking persistence in the year preceding the interview.

CONCLUSIONS: The results suggest the possibility of additional and previously unrecognized public health benefits of early treatment of mental disorders, in that persons with various mental disorders whose illness had remitted were not at increased risk for daily smoking, in contrast with persons with active disorders.

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POS2-43  
**DEMOGRAPHIC DIFFERENCES IN CIGARETTE PREFERENCE**

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Cigarette companies target specific populations in their advertising campaigns (Pierce et al, 1998). Advertising may influence cigarette preference, and targeting strategies could contribute to specific health consequences among different demographic groups. This study examined demographic differences in cigarette preference. Forty-nine smokers participated in a laboratory-based investigation of adults who had no intention of quitting. Cigarette preference included mental status and brand name (Marlboro, Basic, Newport, and Pall Mall). Chi² tests examining the relationship between ethnicity and brand name were statistically significant [c²(9, N = 29) = 20.14, p <.05]. African Americans (41.4%) favored smoking Newport, whereas Caucasians (17.2%) preferred Marlboros. Only 13.8% of Caucasians smoked Newports; no African American participants smoked Marlboros. Chi² analyses also indicated that African Americans smoked more menthol cigarettes (31%) than other ethnic groups [c²(4, N = 42) = 12.73, p <.05], although this finding was not surprising given their Newport preference. A statistically significant difference was observed between age and brand name [F(3, 48) = 3.80, p <.05], however post hoc analyses indicated that a difference in age between Newport and Pall Mall smokers accounted for this finding. Finally, younger smokers preferred menthol cigarettes more frequently than older smokers did [t (1, 40) = -2.02, p <.05]. No other significant findings were observed. These findings correspond with existing data suggesting that cigarette advertisers target certain populations for specific brands and types of cigarettes. Implications for cigarette preferences among different demographic groups will be discussed in light of public health concerns.

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POS2-44 KNOWLEDGE, ATTITUDES AND PRACTICES TOWARDS TOBACCO USE AND ITS TREATMENT IN SMOKERS AND SMOKELESS TOBACCO USERS IN A NORTH INDIA

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ABSTRACT: Tobacco use is highly prevalent in Indian population both as smoking and smokeless tobacco. It is important that the users’ beliefs, attitudes, and practices are explored to design appropriate smoking cessation interventions. In a study, at a treatment setting, through a semi-structured schedule, 1) knowledge of the health consequences of tobacco use, 2) attitudes towards acceptability and reasons for use, 3) smoking practices, and 4) opinions about components of tobacco cessation programs were explored. The majority of the smokers considered health risks due to smoking a distant threat. The most common health concerns were chronic respiratory problems; only a minority mentioned cancer as a major possible health risk. Majority reported that they were ‘used to it’ and would want to ‘quit’ it only on probing. Smokers elicited the immediate benefit in form of “stress reduction” as the main reason for smoking. Only 5% had any idea of any withdrawal symptoms besides craving and only a small minority was aware of Nicotine Replacement Therapy. On being offered various treatment options, majority did not think that pharmacotherapy involving use of nicotine gums, patches, and Bupropion was essential. ‘Self Control’ was the most commonly accepted mode for quitting. Pharmaco-therapeutic treatment was also found to be costly. An acceptability of psychological intervention though was seen in majority of smokers. Smokeless tobacco was seen as a minor health concern that could be ‘crushed’ any time. No health concerns except for dental side effects were enumerated by majority of users. This information is likely to be useful in formulating an effective tobacco cessation program.

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POS2-45 THE ATTITUDE AND THE KNOWLEDGES REGARDING SMOKING

C. Cojocaru, Raluca Mihaescu, Zita Tarevici, T. Mihaescu

AIM: To evaluate the attitude and the knowledge regarding smoking in a group of adolescents, in Iasi, Romania

METHODS: An anonymous questionnaire with 21 questions was distributed to secondary school pupils. It was completed by 363 subjects, 276 female and 87 male. The ages were between 15 and 18 years old.

RESULTS: The smoke is considered very harmful by 81.5% (296) questioned subjects. However, 45.4% (49) smokers and ex-smokers consider that smoke is moderate or very attractive, compared with 3.4% (8) non-smokers. Smoking doesn’t help to emancipate in the opinion of 38% smokers and ex-smokers and 53.3% non-smokers. The level of knowledge is considered to be good or very good by 64.7% (235) subjects. The anti-smoking campaigns are considered rarely and not enough incisive by 65.8% subjects (239).

CONCLUSION: Although the smoking is considered harmful and repulsive by the majority of subjects, is registering a high percentage (29.7%) of smokers at the studying age. There is a difference between smokers and non-smokers concerning the emancipation outlook and attractively. More anti-smoking campaigns are needed; this aspect results not only from the high prevalence of smokers, but a high percentage of questioned adolescents require this actions. Key words: adolescent, cigarette smoking, knowledge.

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POS2-46 STATE AND LOCAL ENFORCEMENT OF POSSESSION, USE, AND PURCHASE LAWS AMONG U.S. STATES AND LOCAL COMMUNITIES

Cindy Tworek*, Gary A. Giovino, K. Michael Cummings, Andrew Hyland, Roswell Park Cancer Institute; Dianne C. Barker, Barbara Sasso, Public Health Institute; Erin Ruel, Sandy Slater, University of Illinois at Chicago

Despite recent increases in state-based legislation restricting minors’ possession, use, and purchase (PUP) of tobacco products, evaluation of PUP enforcement efforts at state and local levels has been minimal. In 1988, only 17 states had enacted at least one PUP law; however, by 2002, 44 states had passed PUP legislation. This study collected and descriptively analyzed state and local PUP enforcement data. State enforcement data were collected via structured interviews with key informants, and to date, interviews with tobacco control officials in 40 of 44 states have been completed (all 44 will be completed and reported on). Local enforcement data were provided by ImpactTeen researchers, and obtained from community-level key informant surveys in 336 communities. State enforcement data show that a majority (57.5%) of PUP enforcement occurs at the local level only, and 87% of states with only local PUP enforcement do not provide assistance to localities in terms of money and/ or resources. Enforcement patterns vary largely by local area, but suggest that possession/use laws are more frequently and effectively enforced than purchase laws. When a PUP violation is observed, a citation is typically issued, parents are notified, and a fine is given to the minor (often in combination with community service and/or tobacco cessation classes). States with more severe penalties, dictated by law, often indicated less PUP enforcement activity. These descriptive state and local data will subsequently be applied to study the effects of PUP enforcement on adolescent smoking behavior.

The Robert Wood Johnson Foundation provided funding for these analyses.

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POS2-47 COMMUNITY VARIATIONS IN EASE OF ACCESS TO TOBACCO PRODUCTS AND LEVELS OF YOUTH SMOKING

Erin Ruel, M.A., Deborah Harper, B.A.*, Sandy J. Slater, M.S., Frank J. Chaloupka, Ph.D., University of Illinois at Chicago; Gary Giovino Ph.D., Cindy Tworek M.A., Roswell Park Cancer Institute

Prior work has highlighted variation in the retail environment vis a vis community socio-economic differences, and the impact of the retail environment on youth smoking behavior. This study looks first at community socio-economic variation in intermediate level variables such as perceived availability, where and how youth buy cigarettes and cigarette brand identification (brand smoked and items with brand logos owned). Then we apply a model whereby these intermediate variables moderate the impact of community SES, youth related tobacco cessation and coalition efforts and aspects of the retail environment on youth smoking behavior. Data are from a nationally representative sample of 12th grade public school students, aggregated to the school (community) level (n=222), for the years 1999 and 2000. Students were administered surveys that included questions on smoking behavior. Community data were collected in areas surrounding the surveyed public schools. Results suggest there is considerable variation in perceived availability and use of tobacco brand logo-ed items, based on regional differences and levels of urbanicity. Communities with higher levels of Hispanic populations are less likely to perceive easy availability of tobacco products. Communities with high populations of youth aged 12 to 17 had a greater likelihood of owning tobacco brand logo-ed items. Preliminary results suggest that owning tobacco logo-ed products significantly impacts the prevalence of youth smoking.

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**POS2-48**  
**CIGARETTE PURCHASING PATTERNS: ARE SMOKERS SEEKING OUT CHEAPER SOURCES OF CIGARETTES?**  

**OBJECTIVE:** To examine cigarette purchasing patterns of current smokers and to determine the effects of cigarette price on use of discount cigarette sources.  

**METHODS:** Data were collected from 3,157 current smokers aged 38 to 77 years from 20 US communities who originally participated in the Community Intervention Trial for Smoking Cessation between 1988 and 1993, completed a detailed follow-up tobacco use telephone survey in the summer of 2001, and resided in the same community from 1988 to 2001. Cigarette sources examined included the regular purchase of cigarettes in the past 12 months because they were cheaper on the Internet, military bases, Indian reservations, other states, and other countries.  

**RESULTS:** The self-reported average per pack cigarette price varied from $2.51 in North Carolina (cigarette excise tax of 5 cents) to $3.53 in New York (cigarette excise tax of $1.11). One quarter (28%) of smokers in these 20 communities reported they regularly travel to another state to purchase cigarettes because they are cheaper with four communities, all near states with lower cigarette excise taxes, having rates over 50%. Overall, 11% of smokers regularly buy cigarettes on Indian reservations because they are cheaper with a high rate of 88% in one community near an Indian reservation. Relative few smokers report regularly purchasing cigarettes over the Internet because they are cheaper (1.4%), although more than half of the subjects who reported the Internet as a regular source of cigarettes lived in the four New York State communities, which had the highest cigarette excise tax at the time of the study. Purchase rates on military bases and other countries were less than 2% overall and no community had a rate greater than 7%.  

**CONCLUSIONS:** Smokers are utilizing alternative, cheaper venues to purchase cigarettes, which may mitigate the influence of increased cigarette prices on cigarette use.  

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**POS2-49**  
**WHAT IS THE RELATIONSHIP BETWEEN RETAILER PARTICIPATION IN CIGARETTE COMPANY INCENTIVE PROGRAMS AND THE AMOUNT OF CIGARETTE MARKETING MATERIALS IN RETAIL OUTLETS?**  
Ellen Feighery, M.S., R.N.; Kurt M. Ribisl, Ph.D.; Nina Schleicher, Ph.D.; Pamela I. Clark, Ph.D.  

The retail outlet is the cigarette companies’ major communication channel to reach present and future customers. Of the record $9.57 billion spent by cigarette companies to market their products in 2000, almost 90% was spent in retail outlets on retailer and consumer incentives to stimulate sales. The study reported here examines the extent of retailer participation in cigarette company incentive programs, marketing requirements stipulated by cigarette companies for those who participate, and the relationship between retailer participation in incentive programs, and the amount and placement of cigarette marketing materials and products in their stores. To answer these questions, a sub sample of 486 stores from a national sample of 1,000 stores was surveyed. This sample represents stores with complete data for retail advertising surveys and retailer incentive telephone interviews. Cigarette companies engage 65% of retailers in some type of incentive program. Nearly 80% of these retailers report cigarette company requirements to follow diagrams for the placement of marketing materials in their stores. Retailers who received over $3,000 from these programs in the past quarter averaged 19.5 cigarette marketing materials, compared to 8.2 for those who receive no money from a program. Cigarette company incentive programs ensure prominent placement of products and advertising thus ensuring that customers are exposed to pro smoking messages at stores where they shop. Just as other advertising venues are restricted from cigarette company use, policy options also should be explored to restrict this venue.  

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**POS2-50**  
**DOCUMENTING POINT-OF-PURCHASE TOBACCO ADVERTISING IN ASIAN AMERICAN NEIGHBORHOODS IN NEW YORK CITY**  
Simona Kwon, M.P.H., Columbia University, Heejung Roh, Seongho Kim, M.S.W., Korean Community Services of NY  

**OBJECTIVES:** 1. To document the use of point-of-purchase (POP) advertising by tobacco companies in predominately Asian American (AA) communities in New York City (NYC). 2. To reduce the number of POP tobacco advertisement by offering a poster exchange.  

**BACKGROUND:** Research findings have documented that tobacco advertising is more pervasive in Asian American neighborhoods than in other neighborhoods in the U.S. Previous research had been performed in AA communities in California, no data existed for NYC. Method: 161 community tobacco retailers in 10 NY neighborhoods were surveyed by members of Tobacco Not Tolerated, a Korean teen tobacco education program. The merchants were then offered a healthy living poster in exchange for one of their tobacco ads displayed in the store.  

**RESULT:** Seventy-eight percent of the surveyed stores in NYC had some exterior tobacco advertising and/or promotional items clearly visible from the street; 87% of the stores had some interior tobacco advertisement. Of the interior ads, 21% were placed near candy displays, and 23% were located at 3 feet or below (eye-level with a child). The most heavily advertised brand of cigarette was Marlboro. Thirty percent of the stores took part in the poster exchange component.  

**CONCLUSION:** More exterior and interior tobacco ads and less tobacco control ads were found in predominately AA neighborhoods in NYC than in national POP tobacco surveys, and virtually all tobacco retailers surveyed displayed some form of tobacco POP advertising. While generally merchants expressed interest in taking part in the poster exchange component, many could not due to incentives they received from tobacco companies for displaying their ads.  

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**POS2-51**  
**RECEPTIVITY TO TOBACCO ADVERTISEMENTS AMONG YOUNG ADULTS AGES 18-24**  
Paris Ponder, B.S.*, Pebbles Fagan, Ph.D, M.P.H, National Cancer Institute  

Several studies show that promotional items and advertising aimed to encourage young people to smoke. Therefore, it is important to understand the relationship between young adults’ perception of tobacco advertisements and their smoking behavior. This study describes the association between the receptivity to the distribution of free tobacco promotional items and advertising of tobacco products and smoking status, and consumptive patterns. Data were analyzed among young adults ages 18-24 using the Tobacco Use Supplement to the Current Population Survey 1998-1999. Results show that 37% of never smokers, 47% of everyday, 8% of some-day, and 9% of former smokers think distributing free samples should always be allowed. Forty-six percent of never smokers, 36% of everyday, 8% of some-day, and 10% of former smokers think advertising products should always be allowed. Of current smokers, 19% of light (<10 cpd), 30% of moderate (10-19 cpd), and 50% of heavy smokers (20+ cpd) believe samples should always be allowed, and 26% of light, 30% of moderate, and 45% of heavy smokers agree that advertising should always be allowed. Of the everyday smokers who think advertising should never be allowed, 70% made a quit attempt while 29% did not. This study suggests that smokers who smoke daily, heavy smokers, and those who have made no quit attempts are more likely to support tobacco advertising and free sample distribution.  

Future studies should investigate the support of tobacco advertising among smokers in order to determine if counter-marketing strategies are needed.  

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POS2-52  CIGARETTE ADVERTISING IN MAGAZINES: ARE THERE DIFFERENCES IN MAGAZINES WITH READERSHIP THAT VARY BY RACIAL/ETHNIC GROUP AND GENDER

Linda L. Pederson, Ph.D., Angela Troslas, M.S., Bridgette Garrett, Ph.D., Ralph Caraballo, Ph.D.

The Master Settlement Agreement in 1998 placed restrictions on cigarette advertising, including elimination of billboards and restrictions on ads in magazines with high youth readership. According to the FTC, the five largest cigarette manufacturer increased spending on magazine advertisement from $281.3 million in 1998 to $377.4 million in 1999. The purpose of this project was to assess the quantity and content of cigarette advertisement in magazines that have readership that varies by racial/ethnic group and by gender. Magazines were selected based on readership demographics and included those read predominantly by the general population, by African Americans, by Hispanic/Latinos, and by women. The content of the ads were coded by brand, type of cigarette, major theme in the ad, number of pages and use of props. Differences were noted in the use of different advertising techniques by readership and over time. This surveillance system will be used to monitor tobacco industry marketing to specific populations including children, young adults, women and racial/ethnic groups.

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POS2-53  TEACHER ATTITUDES TOWARD A NO-TOBACCO POLICY: ACADIANA COALITION OF TEENS AGAINST TOBACCO (ACTT)

Carolyn C. Johnson, Ph.D., Jocelyn Andrel, M.S.P.H., Larry S. Webber, Ph.D., Neil W. Boris, M.D., Leann Myers, Ph.D.

An objective of ACTT is to persuade schools to adopt a no-tobacco policy on campus. To approach principals, teacher/staff smoking habits and attitudes toward such a policy were surveyed. Teachers and staff (n=1075) from 21 schools in Acadiana completed the survey. Returns at school ranged from 55.3% to 100%, with a median of 83.3%. The teacher/staff sample was predominantly female (64%) and white (80%). Slightly more than half (53%) were under 45 years old. Teachers had a mean of 15.3 (±10.3) years of experience. The overall smoking prevalence was 12.5%, with 83.3% of smokers using 30-days smoking as outcome. Variables in included were gender, ethnicity, grades, spending money, college aspirations, participation in school activities and weight control. There were significant interactions between ethnicity and participation in school activities, ethnicity and college, gender and grades and ethnicity and gender. Smoking prevalence differed significantly between black females and black males, with black females smoking less (OR = 0.39), but there was no difference between white females and white males (OR = 0.83). Students who had college aspirations were half as likely to smoke (OR=0.50) as students who did not. Students who had more money were more likely to smoke, as were students whose grades were lower. Black students involved in school activities were more likely to smoke than those who were not (OR = 1.33). These data show that 9th grade 30-day prevalence in Acadiana (parishes) is higher than comparable national rates. Also much of the students’ demographic characteristics mirror those of the nation relative to smoking behavior.

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POS2-54  SMOKING HISTORY AND ASSOCIATED VARIABLES IN A BIRACIAL COHORT: ACADIANA COALITION OF TEENS AGAINST TOBACCO (ACTT)

Carolyn Johnson, Ph.D., Jocelyn Andrel, M.S.P.H., Larry Webber, Ph.D., Neil Boris, M.D., Leann Myers, Ph.D.

Following are first tobacco-use data of the 21st century for Louisiana high school students in Acadiana. Ninth graders (n=4472) who participated in baseline measurement were 67% Caucasian, 33% African-American and 51% female. Overall 30-day smoking prevalence was 25%, which did not differ by gender (26% males vs. 24% females, p=0.11), but did differ by race (32% Caucasian vs. 12% African-American, p<.0001). A demographic model was constructed by stepwise logistic regression using 30-day smoking as outcome. Variables included were gender, ethnicity, grades, spending money, college aspirations, participation in school activities and weight control. There were significant interactions between ethnicity and participation in school activities, ethnicity and college, gender and grades and ethnicity and gender. Smoking prevalence differed significantly between black females and black males, with black females smoking less (OR = 0.39), but there was no difference between white females and white males (OR = 0.83). Students who had college aspirations were half as likely to smoke (OR=0.50) as students who did not. Students who had more money were more likely to smoke, as were students whose grades were lower. Black students involved in school activities were more likely to smoke than those who were not (OR = 1.33). These data show that 9th grade 30-day prevalence in Acadiana (parishes) is higher than comparable national rates. Also much of the students’ demographic characteristics mirror those of the nation relative to smoking behavior.

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POS2-55  MEDIA CAMPAIGN OF A SCHOOL-BASED TOBACCO-USE PREVENTION PROGRAM: ACADIANA COALITION OF TEENS AGAINST TOBACCO (ACTT)

Carolyn Johnson, Ph.D., Jocelyn Andrel, M.S.P.H., Larry Webber, Ph.D., Neil Boris, M.D., Leann Myers, Ph.D.

ACTT tobacco-use prevention messages are delivered to a high school cohort through media: posters and public service announcements (PSAs). Posters from anti-smoking groups, e.g. American Cancer Society, were displayed at each school for one month and then replaced. PSAs written by ACTT staff were delivered weekly. At the end of fall 2001, a survey was administered to 10th grade students to evaluate media impact (n=1652). Students were asked to identify media messages and evaluate the media. Some 77% of students indicated they saw ACTT posters, but only 43% indicated they heard PSAs. To verify reliability of responses, some survey descriptions were bogus. There were 5 authentic poster messages derived from 3 posters plus 8 bogus poster messages. There were 6 authentic and 4 bogus PSA messages. About 96% of students who reported seeing posters correctly identified a message from at least one poster, 54% identified messages from 2 posters, and 15% identified all 3. Of those who correctly identified at least one poster, 43% incorrectly indicated seeing posters that were not there. Of students who reported hearing PSAs, 82% correctly identified at least 1 message, 57% identified half and 8% identified all. Over half (55%) of those who correctly identified at least one message incorrectly identified at least one bogus message. Student opinions about posters were “good” (65%) vs “bad” (7%). Although students liked the posters, they needed to be more prominent in the schools. PSAs were not well heard. This process is an important tool for evaluating and strengthening the ACTT media campaign.

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POS2-56  CONVEYING THE TRUTH ABOUT TOBACCO INDUSTRY PRACTICES: THE ROLE OF COUNTERINDUSTRY MEDIA IN YOUTH PREVENTION

James C. Hersey, Ph.D., Jeff Niederdeppe, Kevin Davis, Jim Nonnemaker, Ph.D., RTI; Jane A. Allen, Lyndon Haviland, Dr.PH., American Legacy Foundation

Using a series of three national telephone surveys involving more than 20,000 teenagers and young adults, this research used structural equation modeling to examine how exposure to an antismoking advertising campaign and beliefs about tobacco industry practices influenced the initiation of smoking and the progression to established smoking. The study modeled the process by which exposure to anti-smoking media campaigns, employing a counter-industry strategy, influences beliefs, attitudes, intentions, and behavior. The model suggests that industry-related beliefs, and social inoculation are important mediators of prevention efforts. The study found that exposure to the truth campaign influence beliefs about the tobacco industry, and that beliefs, in turn, influence attitudes toward the tobacco industry and reduce receptivity to tobacco advertising. This evaluation suggests that counterindustry messages are an important component of effective youth prevention efforts.

The authors are staff at RTI and the American Legacy Foundation which funded this evaluation.

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POS2-57  THE PARADOXICAL EFFECTS OF ANTI-TOBACCO MESSAGES, FROM KING JAMES TO WHO: “THE HORRIBLE STYGIAN SMOKE OF THE BOTTOMLESS PIT”

Bear Jack Gebhardt

The World Health Organization recently sponsored the Framework Convention on Tobacco Control, in Geneva, Switzerland, attended by representatives from more than 190 nations. The discussions of the problems and solutions to tobacco consumption, although presented with contemporary data, in a modern idiom, and with high ideals, directly mirrored the 400 year-history of over-simplified, politicized and potentially counter-productive “sound-bites” that have often proven ineffective in actually preventing or subverting tobacco use. This paper offers an overview of both historical and contemporary oversimplifications, exaggerations and falsifications by politicians and the media of the results of scientific research into the effects of tobacco use. This paper re-confirms the significant health hazards of tobacco use, and that there has been a long-term, apparently systemic duplicity and denial within the tobacco companies in regards to these hazards. The paper goes on to show, however, that the political and media “sound bites” which transfer these scientific and sociological findings to the public at large and to health workers in particular, have led to 1.) A false, surface understanding of the size and severity of the smoking problem; 2.) An unproductive social and cultural divisiveness between smokers and non-smokers; and 3.) Added difficulty and unnecessary complexity in the cessation efforts among smokers due to their faulty understanding of the problem. Further, and most urgently, evidence exists that such politicized sound bites may actually contribute to an increase in tobacco use among target (especially teen) populations. Implications of recent research by Sundar and Wagner (1999), and the author’s own investigations give preliminary evidence, and warning, that such “anti-tobacco sound bites” may in some cases increase curiosity, exaggerate estimation of peer involvement and solidify pro-tobacco attitudes.

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POS2-58  WHAT WORKS: A REVIEW OF THE LANDMARK DOCUMENTS IN TOBACCO CESSATION

Elizabeth W. Edsall, M.Sc., Center for Tobacco Cessation*, Linda A. Bailey, J.D., M.H.S., Center for Tobacco Cessation

Tobacco use continues to hold its position as the leading cause of preventable death in the United States. Despite successful prevention efforts aimed at reducing smoking prevalence, the prevalence of tobacco use is unlikely to decrease significantly without smoking cessation interventions. Smoking cessation is the principal means by which a current smoker can alter his or her future risk of disease. Increasing the number of successful quit attempts in the 70 percent of smokers who claim to want to quit and the 46 percent of smokers who try to quit each year will decrease the incidence of tobacco-related disease as well as decrease health care expenditures for direct medical cost attributable to smoking. But what do we know about the effective cessation programs and how the treatment of tobacco dependence should be approached in the clinical, community and workplace settings? Furthermore, has sufficient research focused specifically on cessation efforts for special populations and minority groups with above average rates of tobacco use? To assist in developing informed answers to these questions, this presentation provides a review of the landmark documents on smoking cessation. This review is guided by suggestions from leading cessation experts, two existing cessation guidelines, and literature searches. The review provides a current snapshot of what we know works in cessation and identifies the critical areas in which future research should be focused.

The Center for Tobacco Cessation is supported by the American Cancer Society and The Robert Wood Johnson Foundation.

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POS2-59  TOBACCO CESSATION AMONG A NATIONALLY REPRESENTATIVE SAMPLE OF ADULTS

Debra J. Holden, Ph.D.; M. Lyndon Haviland, Dr.PH.; Matthew Farrelly, Ph.D.

In the spring of 2002, the American Legacy Foundation (Legacy) will conduct a study to collect data from a nationally representative sample of approximately 3000 adults, ages 18 years or older. The study design includes oversamples of African American, Hispanic, and Asian Americans. The survey instrument was derived from a number of existing instruments, including CDC's Adult Tobacco Survey and the Current Population Survey Tobacco Use Supplement. Legacy's survey, the American's Smoking and Health Survey(ASHES), focuses on smoking cessation, knowledge of related health risks, attitudes about tobacco use and environmental tobacco smoke, and exposure to both pro- and anti-tobacco advertisements. ASHES includes a broad array of questions about cessation attempts in the past year and methods for quitting. In addition, the survey characterizes smoker's stage of change toward cessation, as specified by Prochaska and DiClemente (cite). ASHES is unique to the field because it provides the complete staging information, as well as detailed information on cessation attempts and barriers to quitting. In this presentation, we will present summary statistics of common successful and unsuccessful methods for quitting and characteristics of both former and current smokers. We will also highlight differences across race/ethnicity and gender and how attitudes and beliefs vary for each of these groups of respondents. Learning objectives of the presentation will include an understanding of the complexity of the cessation process among adults and how these factors vary according to different demographic variables.

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POS2-60 THE AVAILABILITY AND DISTRIBUTION OF COMMUNITY AND SCHOOL PROGRAMS FOR YOUTH SMOKING CESSATION
Sherry Emery, Dianne Barker, Ryoko Yamaguchi, Jerell Chua

BACKGROUND: As many as 90% of teen smokers express interest in quitting smoking, and nearly three-quarters have made quit attempts. Little is known, however, about the availability of services to help these young smokers quit. Methods: Key informant interviews were conducted in a nationally representative sample of communities in the U.S. in 1999, 2000, and 2001 (n=543). Officials from the community health department, tobacco control coalitions, and administrators from schools with 8th, 10th, and 12th grade students were asked about the availability and type of youth cessation services in their community, and whether their organization in particular offered such services.

RESULTS: In all three years, respondents from around four-fifths of sampled communities indicated that youth smoking cessation services were available in their community, either through community organizations or through the schools. In 2001, approximately 86% of health departments provided youth cessation services. In contrast, however, fewer than one fourth of all school administrators indicated that such services were available through their school. Group and individual counseling appeared to be the most prevalent type of service available. Preliminary analyses indicate that lower income communities and those located in the North Central and South U.S. were least likely to provide such services.

CONCLUSIONS: Smoking cessation services are available to youth in the majority of communities, but few youth have access to such services through their schools. More research is necessary to determine youth awareness and utilization of these services, and the extent to which they facilitate successful quitting.

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POS2-62 ARE COLLEGE HEALTH CENTERS MEETING THE U.S. PUBLIC HEALTH SERVICE’S RECOMMENDATIONS ON TOBACCO USE PREVENTION AND CESSATION?
Bonnie Chakravorty, Ph.D., CHES.*, Arif Ahmed, Ph.D, Georgia Southern University, Robert J. Buchanan

In this random sample survey we assessed the tobacco use prevention and cessation practices of health and wellness centers at 45 (45/56, 80% response rate) four-year American colleges and universities. Participants were asked to report on their centers’ tobacco prevention education, and general and specialized tobacco cessation programming. We also assessed the centers’ treatment offerings and marketing methods. Results showed that 84% centers offer tobacco prevention education services whereas only 60% offer cessation help. Sixty-four percent of the centers that do provide tobacco cessation assistance offer pharmacological treatments and individualized counseling as recommended by the United States Public Health Service. Only 14% report that during routine physicals students are screened for any tobacco use. These and other results are discussed with suggestions for current programming improvement and future research.

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POS2-61 HOW DO COLLEGE TOBACCO CONTROL POLICIES COMPARE WITH NATIONAL RECOMMENDATIONS? A REPORT CARD
Abigail Halperin, M.D., M.P.H.*, University of Washington; Nancy Rigotti, M.D., Massachusetts General Hospital, Harvard Medical School

Tobacco use among college students rose dramatically during the 1990s, and 39% of college students either initiate or progress to regular tobacco use during college. Smoke free campus policies are associated with decreased tobacco use among students, particularly those who were not regular smokers before college. The American Cancer Society and the American College Health Association recommend that colleges enact smoking bans in and around all campus buildings, including student housing, and prohibit the sale, advertisement, and promotion of tobacco products on campus. A minority of colleges have been shown to follow these guidelines. We interviewed key informants at 50 U.S. public universities, one from each state, in 2001-02, to compare their tobacco policies with recommended policies. The 50 schools enroll 1.3 million students, 9% of the total higher education enrollment in the U.S. Over half (52%) of the colleges prohibit smoking in all buildings, including residence halls, but 50% of them adopted the policy within the previous year. Only 30% have complete smoking bans that also restrict smoking around building entrances. One third (34%) sell tobacco on campus, 68% accept tobacco advertising, and none prohibit tobacco sponsorship of campus activities or social events. Only four schools (8%) have divested from tobacco company stocks. Universities in the South are less likely to have campus smoking bans than colleges in other regions (p=0.028), while those in the West are more likely to have them (p=0.008). Colleges in tobacco-producing states have significantly lower overall campus tobacco control policy scores (p=.019). These data indicate that colleges have made progress in adopting tobacco control policies, but still fall considerably short of national recommendations. The adoption of comprehensive tobacco control policies needs to be a higher priority on US college campuses.

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POS2-63 DEVELOPMENT OF A REPORT CARD TO ASSESS ORGANIZATIONAL ADHERENCE TO SMOKING CESSATION GUIDELINES
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The current Public Health Service smoking cessation guidelines have recommendations both for providers and health care organizations. We adapted the 6 organizational guideline statements to create a 25-item report card. We asked the smoking cessation coordinator at 16 sites enrolled in a guideline implementation study to assess their institution’s performance on these items. The sites were 10 Veterans Administration Medical Centers and 6 Ambulatory Care Centers in the Southwestern U.S. We asked 5 experts to weight each item based on its importance. We measured agreement (kappa) between the report card items and responses from 2 detailed organizational surveys (one completed by the Primary Care Manager, one by the Smoking Clinic Coordinator). We also calculated the report card’s internal consistency (Cronbach’s alpha). The possible range of scores was 0-100. Unweighted scores ranged from 20-92 (median 62, interquartile range 47-82). Internal consistency was high (alpha 0.83). Agreement with the detailed survey was poor for some items (e.g., systematically asking about smoking, kappa=0.21). Other items had agreement that was high (e.g., primary care prescribing authority, kappa=0.53) or complete (e.g., presence of a smoking cessation clinic). This report card, derived from the smoking cessation guideline organizational recommendations, is internally consistent and has high face validity. Agreement of individual items with a more detailed survey was variable. Future efforts will attempt to validate the report card with other approaches to quality assessment, such as patient report and administrative data, and to determine whether it correlates with cessation rates.

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POS2-64 TOBACCO CONTROL IN HMOs: MEETING NATIONAL RECOMMENDATIONS PROMOTES MEMBER SATISFACTION

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A substantial and growing proportion of Americans are members of HMOs and national recommendations call for clinicians and health care systems to identify, document, and treat every tobacco user seen in a health care setting. The US PHS clinical practice guideline recommends a brief sequential intervention described by the “5 As”: Ask about tobacco use, Advise smokers to quit, Assess willingness to quit, Assist with treatment and referrals, and Arrange follow-up. These tobacco services can significantly increase abstinence rates among patients who smoke. Although the 5 As model is quality, cost-effective medical care, concerns about smokers’ interest in quitting and negative reactions to tobacco services are often cited as barriers to providing treatment. We surveyed 4,207 smokers from 9 HMOs participating in the HMOs Investigating Tobacco Study conducted within the NCI-funded Cancer Research Network. We asked smokers about the 5 As tobacco services they had received in the past year, plans for quitting, and satisfaction with their HMO’s health promotion services. Smokers reported higher than expected rates of service — 90% had been “Asked”, 71% were “Advised”, 56% were “Assessed”, 49% were “Assisted”, and 10% had follow-up “Arranged”. Instead of smokers’ resistance to cessation services, we found 2/3 were planning to quit. Importantly, smokers reported significantly higher levels of member satisfaction when they received each of the 5As regardless of their plans for quitting. Results demonstrate HMOs can implement tobacco control recommendations and concurrently promote smokers’ satisfaction with care.

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POS2-65 LESSONS FROM IMPLEMENTING ENGLISH NATIONAL SMOKING CESSATION SERVICES: 1. TRAINING

Tim Coleman, M.D., M.B.Ch.B., Elspeth Pound*, M.A., Ann McNeill, Ph.D., for the English Evaluation of Smoking Cessation Services Team

Background From 1999, for the first time in the history of the National Health Service in England, smoking cessation services (SCSs) have been implemented throughout the country with an SCS manager appointed in each area. Aim To describe challenges encountered establishing national SCSs. Method Postal survey of English SCS managers conducted in April 2001. Interviews with all SCS staff working in 2 English health regions. Results Response rate was 83.2% (79/95). 28.6% had been “Asked”, 71% were “Advised”, 56% were “Assessed”, 49% were “Assisted”, and 10% had follow-up “Arranged”. Instead of smokers’ resistance to cessation services, we found 2/3 were planning to quit. Importantly, smokers reported significantly higher levels of member satisfaction when they received each of the 5As regardless of their plans for quitting. Results demonstrate HMOs can implement tobacco control recommendations and concurrently promote smokers’ satisfaction with care.

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POS2-66 LESSONS FROM IMPLEMENTING ENGLISH NATIONAL SMOKING CESSATION SERVICES: 2. SUSTAINABILITY

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Background English smoking cessation services (SCSs) were given fixed term funding from April 1999, with a view to their becoming permanently funded as part of mainstream health care services by April 2002. Transfer to mainstream services has now been postponed until April 2003. Aim To investigate the effects on SCSs of moving from fixed term funding and becoming mainstream healthcare services. Method October 2001: interviews (n = 49) with SCS staff working in 2 English health regions. April 2002: postal survey of all English SCS managers. Results At the time of interviews, SCS funding was due to expire within 6 months. There was low staff morale, uncertainty about services’ futures and fears for staff retention. SCS managers found negotiating services’ futures with health commissioning organisations difficult and arguing the case for services’ effectiveness was problematic. The survey response rate was 79% (85/108) and 41% of SCS managers had been appointed in the past 12 months. Only 14% of SCSs has secured permanent funding and of those managers who were negotiating for this, 84% found difficulty agreeing SCSs’ locations and 68% agreeing future staffing. Conclusions Fixed term funding probably contributed to a high turnover of staff within SCSs. Despite the initial start up funding, SCSs found it hard to make the case for smoking cessation to be seen as an essential part of mainstream health service delivery. The future of the SCSs remains uncertain.

Funders: Trent NHS Executive & English Department of Health (who have not yet peer reviewed this material). Location: Work conducted whilst the first two authors were based at the Universities of Nottingham and Leicester, UK.

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POS2-67 EDUCATION AND SMOKING CESSATION: POTENTIAL MEDIATORS, MODERATORS, AND CONFOUNDERS

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Education has been identified as a potent sociodemographic predictor of smoking cessation. Lower education is associated with higher smoking prevalence and less cessation. However, little is known about how or why education influences cessation. The current study prospectively examined potential mediators, moderators, and confounders of that relation in a community-based sample including demographic, environmental, job related, and tobacco related variables. Smokers (N=736) were surveyed at baseline and at a 4-year follow-up. A strong educational gradient in cessation was evident. Only 6% of smokers with less than a high school (HS) degree quit smoking by Year 4, whereas 17% of smokers with a HS degree but no college degree, and 28% of smokers with at least a college degree quit smoking. Only cigarettes/day and pros of smoking were significantly related to both education and abstinence but neither meaningfully influenced the effect of education on abstinence. There were no interactions of education with any of the predictors. Education uniquely contributed to the prediction of abstinence over and above the effects of demographic, environmental, job related, and tobacco related variables. The results clearly point to the lowest education group as a target for future interventions. Additionally, these findings suggest that further examination of how or why education influences smoking cessation is warranted.

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POS2-68  NURSE-MANAGED LAY-LED TOBACCO CESSATION INTERVENTION IN RURAL APPALACHIA

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The purpose of this study was to examine the effectiveness of a tobacco cessation intervention in two rural Appalachian counties. Adult tobacco users were recruited for a 24-month intervention study (n=499). Intervention county participants (n=232) were enrolled in a cessation protocol that was delivered by a lay educator and case-managed by a health department nurse. Control county participants (n=267) were enrolled in a blood-pressure monitoring protocol that was delivered by a lay educator and case managed by a health department nurse. Sample characteristics by group were similar for age and gender. Both intervention and control group participants smoked for an average of 23 years and consumed a similar number of cigarettes/day (mean=24). Mean number of previous quit attempts was 3.0 in the intervention county and 2.3 in the control county, while mean Fagerstrom Test of Nicotine Dependence scores were 5.2 and 4.8 for the intervention and control counties, respectively.Attrition at 12 months was 12% overall (10.9% control and 13.4% intervention). Self-reported abstinence rates at 12 months indicated that 24.5% of intervention county participants (n=57) were not using tobacco, as compared to 3.3% of control county participants (n=9) (p<.001). Preliminary 12 month cotinine-validated rates (n=30) were 17.6% and 2.0% for intervention county and control county participants, respectively. For intervention county participants who were randomly assigned to different type of NRT (n=171), abstinence rates of 26.4% and 33.3% were observed among patch-only vs. patch + gum groups at 12 months. Preliminary results suggest that a nurse-managed lay-led approach may serve as an effective tobacco cessation strategy.

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POS2-69  SHAPE OF THE RELAPSE CURVE AND LONG-TERM ABSTINENCE AMONG TOBACCO SELF-QUIETERS: A SEMI-QUANTITATIVE REVIEW

J.R. Hughes, J.P. Keely, S.Naud

To describe the shape of the relapse curve and the long-term abstinence rates among self quitters, we searched Medline, Psych Abstracts, Excerpt Medica, Dissertation Abstracts, and US Center for Disease Control databases plus bibliographies of articles and requests of scientists to locate prospective studies of self-quitters or of minimal interventions that included a no-treatment control group. Two reviewers independently extracted data in a non-blind manner. Relapse curves from two studies of self-quitters and five control groups were located. The resultant data too heterogeneous for meta-analysis and no explanation for the heterogeneity could be found. Nevertheless, all but one of the curves indicated most (> 50%) relapse occurs in the first 8 days. Long-term abstinence was estimated from a prior summary of ten self-quitting studies, two other studies of self-quitters and three no-treatment control groups. In all but one of these, 3-5% of self-quitters achieved continuous abstinence for 6-12 mo after a given quit attempt. We conclude tobacco control interventions that produce quit rates of 5-10% may be effective. Also, we conclude that despite 50+ years of tobacco research, we still do not have an accurate description of the natural history of quitting.

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POS2-70  NATIONAL RATES OF MEDICATION PRESCRIPTION FOR PATIENTS COUNSELED FOR TOBACCO: 1997-2000

Michael Steinberg, M.D., M.P.H.; Ayse Akincigil, Ph.D. (cand.); Cristine Delneo, Ph.D., M.P.H.; Stephen Crystal, Ph.D., Jeffrey Carson, M.D., UMDNJ-Robert Wood Johnson Medical School and Rutgers University

BACKGROUND: Guidelines for tobacco dependence treatment have recommend pharmacotherapy for nicotine dependent smokers interested in quitting. However, it is unclear whether prescribers have been appropriately utilizing medications in their treatment of smokers.

OBJECTIVE: Determine the rate of prescription/recommendation of pharmacotherapy for tobacco dependence treatment in ambulatory encounters Design: Data from the 1997-2000 National Ambulatory Medical Care Survey (NAMCS) were utilized. These are samples of in-person visits to office-based physicians. Starting in 1997, questions regarding tobacco use were dropped. However, data regarding visits where tobacco counseling occurred were reported. Other data utilized included demographics, medications recommended or prescribed during the encounter, and the duration of the encounter.

RESULTS: The weighted sample of 1997-2000 data represented 2,670 million visits. Using estimated tobacco prevalence rates, smokers received tobacco counseling in 16.6% of visits. Tobacco counseling visits were 1.6 minutes longer (19.9 vs. 18.3 minutes) than visits where no counseling took place (p=0.0026), but were similar to visits with nutritional (19.8) or exercise (20.3) counseling. Overall (1997-2000), medication was prescribed in 8.46% of visits where tobacco counseling was reported; bupropion products were prescribed in 5.5% (Zyban 3.03%; other bupropion 2.47%) of tobacco counseling visits, and nicotine medication was prescribed in 0.96% of tobacco counseling visits. Trends in medication prescription comparing 1997-2000 show a significant increase from 1997 to 1998 (p<0.05; Odds Ratio=3.35), but no increase from 1998-2000.

CONCLUSIONS: Data from 1997-2000 NAMCS suggest low rates of tobacco counseling among smokers, and very low rates of medication prescription/recommendation by physicians during encounters designated as tobacco counseling. Stronger efforts are needed to increase physician utilization of pharmacotherapy. Supported by a sub-award from AHRQ.

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POS2-71  POLICY PREDICTORS OF ADULT SMOKING PREVALENCE AND QUIT ATTEMPT RATES AT THE LOCAL LEVEL IN KENTUCKY

Amy L. Yoder, M.S.N., R.N.

Comprehensive programs and tobacco control policies are known to impact smoking prevalence. Little is known, however, about the independent or interactive effects of factors on smoking prevalence at the local level. Kentucky leads the nation in adult smoking prevalence (CDC, 2000). The primary purpose is to examine whether tobacco cessation treatment factors and environmental, structural and client factors predict smoking prevalence and quit attempt rates among adults in Kentucky health department service areas (HDSA). Tobacco cessation treatment factors are the financial resources and interventions implemented by local health departments that promote quitting, and include funding allocations for tobacco cessation, counter-advertising expenditures, and the nature and type of tobacco cessation treatments. The environmental, structural, and client factors are those at the local level that encourage or impede the public to quit or reduce tobacco use. The data used in this study were collected from the 2001 Behavior Risk Factor Surveillance Survey (BRFSS), the Local Health Department Tobacco Cessation Survey (cessation services and policies), the Smoke-Free Food Service Establishment Survey (percent of smoke-free restaurants), Kentucky Agricultural Statistics (pounds of burley tobacco produced), Kentucky Department for Public Health (funding for tobacco control by health department service area), and local health departments (health department format, type of coordinator position, counter-advertising funding). Fixed effects modeling and two stage least squares analysis will be used to determine any independent and/or interactive effects of these variables. Results of this study will document the link between systems interventions for tobacco cessation and tobacco policies and the outcomes of smoking prevalence and quit attempt rates. Tobacco control advocates and researchers will benefit from understanding how factors impact smoking prevalence at the local level.

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SRNT Poster Session 2

POS2-72  LONG-TERM PREDICTORS OF SMOKING CESSION AND RELAPSE
O. Li, A. Hyland, J. Bauer, G. Giovino, K.M. Cummings

OBJECTIVE: Few studies have examined long-term predictors of cessation and relapse in a prospective cohort. The goal of this study is to identify variables predictive of smoking cessation and relapse in a cohort followed for 13 years.

METHODS: Data analyzed in this paper come from 7,329 smokers aged 25-64 years in 1988 who originally participated in the Community Intervention Trial for Smoking Cessation (COMMIT) and completed detailed tobacco use telephone surveys in 1988, 1993, and 2001. Successful cessation is defined as no smoking during the six-months prior to interview. Relapse is defined as being classified as a former smoker during a survey prior to being classified as a current smoker in a later survey.

RESULTS: Among smokers in 1988, 24% had quit by 1993 (5.3% per year) and 42% quit by 2001 (4.2% per year). Statistically significant cessation predictors from 1988 to 2001 included male gender, older age, higher income, lower frequency of alcohol use, lower daily cigarette consumption, longer time to first cigarette in the morning, and stronger desire to quit. Cessation results are similar to a previously reported 5-year follow-up of the COMMIT participants. Among former smokers in 1988, 13% were classified as smokers in 1993 (2.7% per year) and 18% were smokers in 2001 (1.6% per year). Statistically significant relapse predictors from 1988 to 2001 included younger age and the existence of other smokers in the household.

CONCLUSION: Those who are more heavily dependent on nicotine have lower rates of cessation. Household smoking for former smokers may increase relapse.

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POS2-73  TOBACCO INDUSTRY EFFORTS TO UNDERMINE THE AMERICAN STOP SMOKING INTERVENTION STUDY (ASSIST)
Jenny White,* M.Sc., M.P.H., Lisa Bero, Ph.D., University of California, San Francisco

In 1991 the National Cancer Institute and the American Cancer Society (ACS) initiated the American Stop Smoking Intervention Study (ASSIST). This was a seven-year, seventeen-state project which was the largest and most comprehensive tobacco control intervention ever undertaken in the U.S. State health departments and local ACS divisions formed coalitions with health organizations and community groups to implement the program. The tobacco industry considered this initiative a major threat because of its scope, its emphasis on public and private policy change, and its creation of a local tobacco control infrastructure. Our research examines how the industry responded to the ASSIST program. We searched the tobacco industry document websites and the U.C.S.F./ Legacy Tobacco Documents Library. (http://legacy.library.ucsf.edu/) We identified and reviewed internal tobacco industry documents using search terms including “ASSIST,” “American Stop Smoking Intervention,” and “Cancerscarm.” The documents describe a range of strategies the tobacco industry planned and implemented, including a media and public relations campaign, numerous Freedom of Information and audit requests, monitoring and infiltrating ASSIST coalitions, mobilizing legislative and other allies, and attempts to pre-empt local initiatives with weaker state laws. Messages conveyed by the tobacco industry focused on allegations of “illegal lobbying” by ASSIST coalitions members but also included “waste of taxpayer dollars;” “tax grabs;” “greedy” health professionals and charities, and discrimination against low-income smokers. The tobacco industry’s aggressive efforts to defeat ASSIST could have contributed to the limited success of the program.

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POS2-74  TOBACCO INDUSTRY’S POLITICAL EFFORTS TO DERRAIL THE U.S. E.P.A. REPORT ON ETS
Monique E. Muggli, M.P.H.,* Independent Consultant; Richard D. Hurt, M.D., Mayo Clinic; and James Repace, M.S., Repace and Associates

Previously secret tobacco industry documents detail political strategies of the industry to derail the 1993 EPA risk assessment on environmental tobacco smoke (ETS). The multi-faced approach, reported by Philip Morris executive Steve Parrish, was aimed at delaying the report; an objective that was successful as the June 1990 draft was not released until January 1993. Strategies included lobbying the first Bush Administration to support an Executive Order on federal risk assessment, having the Administration transfer jurisdiction over ETS from the EPA to OSHA, and pressuring the EPA directly by alleging improper procedure and policy at EPA. Although some of the strategies failed, the political maneuvering of Congressman Thomas Billey (R-VA) was a success. Billey communicated the tobacco industry’s concern to the EPA through a series of at least 12 letters, many of which were highly technical and some were edited by Covington & Burling attorneys. Billey also criticized the external scientists who contributed to the EPA’s investigation, characterizing Dr. Stanton Glantz as “one of the most ardent and vociferous anti-smoking activities in the United States” and Dr. David Burns as having “professional and emotional bias” and being “a vocal antigovernment crusader.” On the other hand, Billey cited tobacco industry-funded research from the Oak Ridge National Laboratory or industry consultants Mark Reasor, Gis Gori, and Nathan Mantel to be worthy contributors. Billey’s aide, Jeff Schlagenhaufen, developed a comprehensive “plan of attack” in extensive meetings with industry executives, The Tobacco Institute and Covington & Burling attorneys. The documents show that the industry will expend great effort to protect itself from public health policy that would adversely affect consumption, and therefore profit. This study was conducted in Minnesota.

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POS2-75  PREDICTORS OF CHILDREN’S EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE IN THE HOME

Mothers who exposed their children under age four to a minimum of three cigarettes per day were enrolled in a randomized controlled trial. Prior to randomization, they participated in three baseline interviews concerning health behaviors. The third baseline, children were exposed to a mean of 4.3 cigarettes per day from mothers at home. Children’s urine cotinine data will be available at the time of the conference. We investigated correlates of children’s exposure at the third baseline. Significant correlates, in descending order of Beta weights, were the degree to which other adults in the home made it difficult to protect the child from ETS, home smoking policy, mother’s heaviness of smoking index (HSI), the number of smokers living in the home (negative), the number of friends, family, and others who had talked to the mother about reducing her child’s ETS exposure, the number of sources of information about ETS reported by the mother (negative), and the mother’s perceived harm of ETS exposure on children’s health (negative). These variables accounted for 57% of the variance in exposure, with a multiple R of 0.79 [F(10,77)=12.39, p < .000]. These results define risk factors for which more intensive counseling may be necessary, and indicate that families who expose their children to ETS should be encouraged to develop more stringent home smoking policies and that interventions should target social processes that will support tobacco control.

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POS2-76  CORRELATES OF CHANGE IN SHS EXPOSURE AMONG LATINO CHILDREN WITH ASTHMA


Exposure to secondhand tobacco smoke (SHS) is a risk factor for asthma development and severity. Studies have shown that moderately intensive behavioral counseling/coaching is effective at reducing SHS exposure among families for whom physician advice, community health campaigns, etc. have been ineffective. Little is known about the predictors and possible mediators or moderators of this change process. This poster focuses on the correlates of change in exposure among Latino families with asthmatic children living with at least one smoker. As part of a randomized SHS reduction trial, 193 Latino mothers were interviewed on demographics, smoking-related behaviors, use of smoking restrictions in the household, SHS-related attitudes and practices of friends and relatives, and other maternal health-related behaviors. Children’s SHS exposure (maternal-report and urine cotinine), asthma severity, medical care use, functional limitations, and use of medical care were also assessed. Multivariate analyses controlling for group assignment indicated that reported exposure reduction was greater for children whose mothers who smoked daily (p = .004), and whose mothers were less informed about SHS prior to the study (p = .011). For cotinine, exposure reduction was greater for children whose smoking mothers who smoked daily (p = .046), and whose mothers were at study outset more likely to ask other smokers living in the home to smoke outside the house (p = .005). Results for cotinine suggest that exposure reduction was greater among younger children (p = .099). Results suggest that exposure reduction is greatest for younger children whose mothers smoke. Additionally, exposure reduction may be greatest for children whose mothers are less exposed to information about SHS, or already engage in protective practices in the home.

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POS2-77  FAMILY RULES REGARDING ENVIRONMENTAL TOBACCO SMOKE

Sara A. Pyle, C. Keith Haddock, Ph.D., University of Missouri at Kansas City and Mid America Heart Institute, Norman Hymowitz, Ph.D., Joseph Schwab, M.D., New Jersey Medical School

To assess family rules regarding environmental tobacco smoke (ETS), 1662 parents (84.7% female, age 29.85 years 40% married) from 14 pediatric clinics in New York and New Jersey were assessed. Ethnic distribution included White (10.5%), African-American (40.6%), Hispanic (38.5%), Asian-American (3.9%). Results demonstrated that Asian-Americans were least likely to allow smoking in their homes but were least likely to endorse other smoking rules that limited ETS (e.g., smoking in car); Whites were most likely to indicate that they sat in non-smoking areas of trains (41.9%) and restaurants (59.3%); African Americans 27.5%, 47.5%, Hispanics 25.3%, 40.0%, Asians 23.4%, 28.1%). African-Americans (45.5%) were most likely to allow smoking in their homes when compared to Whites (37.5%), Hispanics (32.7%) and Asians (32.8%). While current smokers were least likely to prohibit smoking in their homes, they were similar to other parents in endorsing rules that limited ETS in other settings. For instance, 52.9% of smokers endorsed the rule of asking others to smoke outside, which was similar to rates reported by ex-smokers (55.4%) and non-smokers (55.9%). Thus, family rules regarding ETS vary by ethnic background and smoking status. A logistic regression model revealed that only African Americans were more likely to allow smoking in their home than whites (p = .048). In addition, lower income (p < .001) and the number of individuals in the home who smoked (p < .001) were associated with a higher likelihood of home smoking. Implication of these findings will be discussed.

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POS2-78  AMERICAN WORKPLACE SMOKING BANS: ASSESSING ADOPTIONS DURING THE 1990S

William Feigelman and Julia A. Lee

A great many American workers still remain at risk for smoking-related illnesses as they are obliged to inhale the many air pollutants emitted from their smoking coworkers and/or client populations. Drawing upon the 1992 and 1999 Current Population Surveys, Tobacco Use Supplements, we investigate the changing patterns of coverage for the American workforce in workplace smoking bans during the 1990s. With nationally representative samples of approximately 50,000 adults to each survey, we investigate the different rates of adoption whereby greater percentages of workers are now benefiting from workplace smoking bans. In this report we identify which regions of the country, states, industries, and types of workers have moved the most and least significantly to protect workers by adopting workplace smoking bans. We also investigate the last stronghold of deregulated smoking, American bars, where attempts to ban smoking have been met with the greatest resistance, where bans have not been adopted in most places. We explore the different levels of acceptance and resistance to adopting smoking bans at bars and cocktail lounges among different members of these communities: potential patrons, bartenders, waitresses and food and bar service managerial personnel. Based upon our findings, we suggest the most fruitful directions of emphasis for promoting greater coverage of American workers by smoking bans.

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POS2-79  IMPLICATIONS OF WORKPLACE SMOKING RESTRICTIONS ON SMOKING PATTERNS

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Oregon, like many states, has limited smoking in the workplace and public areas. It has been suggested that workplace restrictions reduce overall cigarette consumption. Less is known about potential shifts in smoking patterns that could result from restrictions. Pattern shifts may have implications for pharmacologic treatments. This study investigated implications of workplace restrictions on smoking patterns. We analyzed data from two groups of employed smokers, Potential cessation participants (PCP) who called the clinic to be screened for a smoking cessation trial (n = 270) and active smokers (AS) surveyed on the OHSU campus (n = 59). Smokers were asked questions about frequency of smoking and when they smoked. Data were collapsed into 2 categories: daytime (awakening until off work) and evening (off work until retiring). Most smokers could smoke at work; 93% (PCP) and 90% (AS). Mean number of cigarettes smoked per calendar day for PCP and AS who could smoke at work was 20 and 16 and for those totally restricted from smoking at work 13 and 14, respectively. Mean percent of cigarettes smoked during daytime for PCP and AS who could smoke at work was 56% and 48% and for those totally restricted from smoking at work 34% and 39%, respectively. Our data suggest that absolute restrictions on workplace smoking reduce cigarette consumption and result in a shift in smoking patterns to greater evening smoking. However, due to the small number of smokers who reported a totally restricted environment, additional study is needed.

There was no external funding for this study.

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POS2-80 Impact of Statewide Tobacco Education Program on Workplace Tobacco Use Policies: A Longitudinal Study

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Exposure to secondhand smoke at workplaces is widespread among Americans. Given the growing evidence of a link between exposure to secondhand smoke and the risk of respiratory symptoms and lung disease, public health researchers have been advocating for the importance of smokefree workplace policies. Although Arizona was the first state in the U.S. to pass a statewide clean indoor air law in 1973, the law provides little protection from ETS for workers. This law prohibits smoking in elevators, public waiting rooms, health professionals’ offices, and in school buildings, except in designated areas. This exception substantially weakens the protective effect of the law. Arizona Department of Health Services, Tobacco Education and Prevention Program (TEPP) has been implementing statewide tobacco education programs including statewide media campaigns and Local Projects since 1996. Specifically, Local Projects started to work with workplaces in their jurisdictions to encourage the adoption of smokefree policies and providing cessation services at work in 1998. Using data from a two wave longitudinal survey with workplaces, we examined the impact of the TEPP efforts on increasing smokefree workplaces between 1998 and 2001. The baseline survey was conducted in 1998 with 1,272 workplaces with at least 5 employees selected using a stratified random sampling method. A total of 1,008 workplaces were surveyed again in 2001. Results showed that there was a large increase in the proportion of Arizona workplaces that were smoke-free between 1998 and 2001. The proportion of smoke-free workplaces increased by 12.7% from 63% in 1998 to 71% in 2001. The proportion of workplaces with no policies decreased by 64.6%, and the proportion of workplaces with partial policies increased by 12.7%. Additional findings regarding policy enforcement, compliance, employee assistance programs at workplaces and perceptions regarding policy change over time will be presented. The implications of the findings will be discussed.

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POS2-81 U.S. Prevalence of Smokeless Tobacco Use in 1999

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The estimated prevalence of current smokeless tobacco use among U.S. adult males ages 18 and older was 4.0% in 1992-1993 and 3.8% in 1995-1996. [CDC, 2000] Using a nationally representative sample of the civilian, non-institutionalized U.S. population, this study reports the most recent patterns of smokeless tobacco use among adults aged 15 and older. Data from the National Cancer Institute-sponsored Tobacco Use Supplement to the Current Population Survey (TUS-CPS; 1999) was used in the study. A descriptive analysis of weighted prevalence was performed on the usage of chewing tobacco and snuff according to socio-demographic factors, i.e. gender, ethnicity, education, income level, occupation, residence, and geographic location. The national prevalence of smokeless tobacco use was 1.69% in 1999. (Chew 1.08% and Snuff 0.67%). Prevalence of smokeless tobacco use was highest among men (3.28%), adults ages 20-29 (2.53%), Native Americans (4.10%), those with 13-15 years of education (1.68%), earning between $30,000-$50,000 (2.14%), blue-collar workers (4.6%), non-metropolitan residents (3.67%), and Southerners (2.37%). Although there were more users of chewing tobacco than snuff, a portion of the population used both products. Predictors of smokeless tobacco use will be presented. The data identify sub-populations of adults with highest prevalence of smokeless tobacco use relative to other groups. The results suggest that tobacco control programs should target certain demographic groups to reduce smokeless tobacco use.

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POS2-82 Regular Smokeless Tobacco Use is Not a Predictor of Smoking Onset When Psychosocial Predictors are Included in the Model: An Analysis of the TAPS Longitudinal Survey

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Tobacco use is a complex behavior that begins at a young age, and the initial decision is often shaped by psychosocial factors. In this study, we examine whether regular smokeless tobacco (SLT) use is a predictor of smoking onset when psychosocial factors are accounted for. We analyzed data from the Tobacco Use Project (TAPS), a longitudinal survey of adolescents in the U.S. The sample included 2,072 participants who were followed from ages 12 to 18. The results showed that regular SLT users at time 1 were 3.45 (95% CI: 1.84, 6.47) times more likely to use SLT than never-users of SLT after four years. However, this analysis did not take into account any of the well-known psychosocial predictors of smoking initiation. We reanalyzed the TAPS to assess whether including psychosocial predictors of smoking affected the SLT “gateway” effect. Experimental with smoking [OR=2.07: 1.50,2.85], school performance [OR=1.65: 1.33,2.05], household members smoking [OR=1.47: 1.12,1.93], depressive symptoms [OR=1.29: 1.09,1.52], fighting [OR=1.49: 1.09,2.04], and motorcycle riding [OR=1.42: 1.06,1.91] diminish the effect of both regular [OR=1.70: 0.87,3.41] and nonregular SLT use [OR=1.40: 0.96,2.04]. Analyzing results from a sample of “true” never smokers (not a single puff), both regular [OR=3.41: 1.31,8.89] and nonregular [OR=1.77: 1.13,2.79] SLT use alone predict smoking. But, including school performance [OR=1.93: 1.50,2.48], depressive symptoms [OR=1.46: 1.20,1.76] and household members smoking [OR=1.49: 1.09,2.07] diminishes the effect the SLT effects to nonsignificant levels. Complex multivariate models are needed to evaluate recruitment to smoking. The earlier analysis does not provide a conservative estimate of gateway effects.

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POS2-83 How Frequently Are Novel Tobacco Products Sold to Minors?

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Novel tobacco products (NTP), such as bids and clove cigarettes (kreteks), are increasingly popular among youth, who are attracted by their relatively low cost, fanciful flavorings and packaging, and because of misperceptions of reduced harm compared to standard cigarettes (SC). As resources for enforcement are limited, adding NTP to compliance check programs would be reasonable only if accessibility by minors is sufficiently high. Our current knowledge of sales of NTP to minors is similar to our knowledge of sales of SC during the early 1980s; that is, we have little more than anecdotal information. We examined the rate of sales of NTP and SC in a nationally representative sample of 2103 stores. Minors aged 16 and 17 used standardized protocols to make buy attempts for SC (n=1634) or NTP (n=469). Sales were completed in 41.2% of NTP buy attempts and 35.3% of SC attempts (p=0.02). Proof of age was requested and shown in 65% of NTP and 75.8% of SC buy attempts (n=0.01); sales were completed in spite of showing valid ID in 16.7% of NTP attempts and 19.6% of SC attempts. Sales of both products were most likely when clerks appeared under age 20. Difference by store and neighborhood (Census block group) characteristics will be presented. Conclusion: The sales rate of NTP was significantly higher than that of SC and consideration should be given to including these products in age of sale enforcement programs.

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POS2-84 WATER-PIPE (GOZA) SMOKING AMONG MALES IN RURAL EGYPT

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Very little is known about community prevalence of Goza smoking in Egypt. Data on water pipe (Goza) smoking was collected on 6762 males in two rural Egyptian villages, one in Upper Egypt and the second one in the Nile Delta during a 1997 survey of Hepatitis C prevalence. Of men aged 18 and above, 22% reported ever smoking Goza. History of Goza smoking rates declined steadily with increases in education. Only 5% of Goza smokers also smoked cigarettes which seems to suggest that Goza smokers and cigarette smokers may be very different in specific characteristics. The prevalence of smoking both Goza and cigarettes was similar across age groups, marital status, and education. Studies that measure only cigarette smoking are underestimating the true prevalence of smoking in the Middle East.

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POS2-86 RISK REDUCTION BELIEFS ABOUT SMOKING

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This study examined smoking-related risk reduction beliefs among U.S. Air Force recruits (N = 36,012). The majority of participants were male (74%) with an average age of 20.1 ± 2.3 years. Ethnic minorities constituted 36% of the population (18% African American, 10% Hispanic, and 8% other). Smoking status was distributed as 32% current smoker, 8% ex-smoker, 27% former experimental smokers, and 32% never-smoker. Risk reduction strategies examined included switching to low yield cigarettes, replacing cigarettes with cigars, switching from cigarettes to smokeless tobacco, adopting a healthy diet, and engaging in regular exercise. The greatest proportion of participants endorsed diet (23% males, 17% females) and exercise (35% males, 25% females) as providing significant health risk reduction for smokers. Few participants rated switching to smokeless tobacco or providing risk reduction (8% males, 6% females). Findings were similar when data were stratified by smoking status, gender, or ethnicity. Almost 60% of smokers used at least one of the risk reduction strategies. Smokers who changed their diet or exercise as risk reduction strategies had significantly lower perceived risk of developing tobacco-related disease than smokers using other or no strategies. In addition, smokers who believed that diet or exercise reduced their tobacco-related health risks reported lower motivation to quit smoking. This study suggests that smokers rate changes in diet and exercise as offering greater risk reduction benefits than changes in smoking behavior. Thus, smokers who believe that diet and exercise lower their risks for smoking-related illnesses may require targeted interventions that challenge these beliefs.

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POS2-87 PUBLIC HEALTH ETHICS AND TOBACCO HARM REDUCTION

Mark Parascandola, Ph.D., M.P.H.

There is currently renewed interest, both positive and negative, among tobacco and nicotine researchers in the pursuit of tobacco harm reduction. Harm reduction is the idea that, in addition to promoting cessation, tobacco related morbidity and mortality may also be reduced by helping people to reduce the number of cigarettes they smoke or promoting the development and evaluation of alternative tobacco products. However, harm reduction introduces a number of novel ethical challenges to that must be addressed. In particular, while principles of bioethics have traditionally focused the relationship between doctor and patient, the ethical issues that arise in tobacco harm reduction efforts occur at the population level as well as at the level of the individual in the clinic. Thus, it is essential to use a public health ethics framework to address two primary areas of concern. First, risks and benefits must be evaluated at the population level as well as the level of the individual. Tobacco harm reduction remains experimental and uncertain as a public health intervention and may have unanticipated negative effects at the population level, as evidenced by the failure of early low tar and low nicotine products. Second, the conventional clinical notion of "informed consent" has significant limitations in its application to public health. Public health messages reach large and diverse groups of people, understanding of messages among recipients cannot be immediately tested or altered, and communication is not mediated solely through health professionals. In order to promote the right to self determination, these factors must be taken into account in evaluating harm reduction messages for the public. In sum, a public health ethics framework is an informative and indispensable tool for evaluating the promise and potential pitfalls of potential tobacco harm reduction strategies.

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POS2-88 MODELING THE DETERMINANTS OF INCIDENT LUNG CANCER

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Models for predicting lung cancer mortality using cigarette smoking intensity and duration have previously been developed using aggregated survey data from Doll and Hill’s study of British physicians and have assumed a constant age of initiation of smoking. We re-examined these models using the American Cancer Society’s Cancer Prevention Study I (CPS-I) data that includes a range of ages of initiation. An examination of the residuals of the Doll and Peto model, with parameter estimates based on the CPS-I data, suggested that a better fitting model might be obtained by including an additional term for age. An extended Poisson model, with terms for cigarettes smoked per day, duration of smoking, and attained age was found to fit statistically significantly better than did the Doll and Peto model and to fit well in an absolute sense. Finally, we found that Moolgavkar’s model also did not fit as well as the extended Poisson model, although it includes the same three terms in its non-linear incidence function. We conclude that age and intensity and duration of cigarette consumption are independent terms useful in modeling lung cancer mortality by an extension of Doll and Peto’s multiplicative power model.

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USE OF THE CURRENT POPULATION SURVEY TO CHARACTERIZE HARDCORE SMOKERS

Erik Augustson, Ph.D., M.P.H.*, Stephen Marcus, Ph.D.

The presence of "hardcore" smokers, those most likely to have substantial difficulty quitting, may have far reaching impact on how to best allocate cessation resources. It has been suggested that hardcore smokers make up only a small fraction of current smokers and therefore do not represent a significant public health problem. However, little is known, even on a basic demographic level, about the prevalence and nature of possible subgroups of smokers. Based on a national sample [1998/1999 Current Population Survey Tobacco Use Supplement (Total N=39,244; Weighted Sample Estimate=45,041,377)], we characterized groups of smokers and assessed whether those who fall into the category of Hardcore Smokers represent a unique group. Hardcore Smokers were defined as established daily smokers, consuming 15+ cigarettes/day with no reported history of quit attempts. Using SUDAAN, Hardcore Smokers were then compared to other groups of current smokers. We found that Hardcore Smokers represent 16.6% of all current smokers and 21.4% of all established smokers. Hardcore smokers are more likely to be male, unmarried, not in the work force, and have lower education. They are also more likely to have started smoking at a younger age, smoke more, were less likely to report future intent to quit, and are less likely to have had contact with smoking restrictions. This analysis suggests that Hardcore Smokers are distinct from other groups of smokers in a variety of potentially important ways. Unlike previous studies, these results also indicate that this group accounts for a substantial proportion of smokers and, as such, may represent a significant public health issue.

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WHAT DEFINES A GOOD QUALITY SERVICE FOR THE TREATMENT OF TOBACCO DEPENDENCE?

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Treatments for tobacco dependence are highly effective and cost effective and an increase in their availability, affordability and accessibility has been recognized as a key for delivering high quality services throughout countries. However, it needs to be asked to what extent do these components define a good quality service and what are the most important elements within the concepts of availability, affordability and accessibility? This paper aims to stimulate discussion around what it is that defines a good quality service for the treatment of tobacco dependence. The Centre for Quality of Care Research is involved in the implementation of a partnership project to reduce tobacco dependence in the Netherlands and is charged with developing a model that integrates the key elements that define a good quality service and with developing an assessment tool to evaluate the quality of country-based services for the treatment of tobacco dependence. This paper will present: 1) The results of a literature review on what defines a good quality service for the treatment of tobacco dependence; 2) A model integrating the identified key components that define a good quality service (e.g., who are the parties involved? what are health system and tobacco policy pre-requisites?); 3) A set of key elements within the identified components; (e.g., the key elements of affordability and availability of treatment of tobacco dependence) and the different emphases that should be attributed to each element. The operationalization of the model and its components into a tool for the assessment of the quality of available services will be discussed together with how the model and the tool can help to fill in the gaps in the quality of existing services that are currently delivered for the treatment of tobacco dependence at the country level.

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DOES MONEY MATTER? THE IMPACT OF REIMBURSING PHYSICIANS FOR SMOKING COUNSELING

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Clinical practice guidelines for tobacco treatment direct physicians to counsel smokers at every office visit, but compliance is low. Physicians often cite lack of reimbursement as a barrier, but there is little evidence that reimbursing physicians makes a difference. Massachusetts Tobacco Control Program's Tobacco Treatment Services (TTS) project reimburses funded sites fee-for-service for brief physician-delivered smoking counseling in office practice. Few TTS programs pass the fee on to the physician or physician's practice. We compared two TTS programs that differed only in whether they reimbursed physicians for counseling. Program A paid physicians' practice $5 for each documented smoking counseling episode (in addition to revenue generated by the visit). Program B did not reimburse physicians. One year later, primary care physicians' attitudes and behaviors regarding smoking counseling were assessed by mailed survey (response rate 97%, n=110). Programs A and B did not differ significantly in the percentage of physicians who reported that they often/always identified patient smoking status (97% vs 91%), advised smoking cessation (97% vs 93%), asked about interest in quitting (91% vs 91%), counseled about quitting (68% vs 57%), referred to cessation resources (30% vs 39%), or offered follow-up (17% vs 14%). While only 50% of Program A's physicians knew about the reimbursement, those aware and unaware of the benefit did not differ significantly on any self-reported behavior. Only 24% of all Program A's physicians expected that reimbursement would increase their counseling rates. This natural experiment provides no evidence that offering physicians a modest fee-for-service reimbursement for counseling smokers increases compliance with tobacco treatment guidelines. The lack of effect may be explained by the small reimbursement amount, physicians' limited awareness of the benefit, or because payment was made to practices and not directly to physicians.

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A systematic review of literature published between 1996 and 2001 has been undertaken using the criteria of the Effective Practice and Organization of Care Group (EPOC) of the Cochrane Collaboration to identify studies that evaluated different methods designed to increase doctors' behavior in providing treatment for tobacco dependence and which provided objective outcome measurements. Out of 693 titles obtained from searches of electronic databases and hand searches of journals, 59 papers were identified on the basis of abstract review. Of the 59 papers, 21 studies were identified that fit the criteria of the EPOC group. The papers are being summarized in terms of their study design, type of interventions (professional, financial, organizational and regulatory) and outcome measurements (changes in professional behavior or patient outcomes). Effect sizes of the impact of methods to change doctors' behavior will be calculated and summarized for different types of interventions. Recommendations for health care systems and policy makers will be made.

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POS4-4

IN THE MIDDLE OF TOBACCO ADDICTION: THE NURSE PRACTITIONER EXPERIENCE

Janie Heath

BACKGROUND: There is increasing evidence that health care professionals are not adequately educating patients how to break the deadly cycle of tobacco dependence. An unknown barrier to this, perhaps, is the tobacco addiction itself of health care professionals, including nurse practitioners (NPs). The purpose of the study was to explore how tobacco dependent nurse practitioners identify and describe their experiences as health professionals who smoke with health promotion and disease prevention responsibilities.

METHODS: A phenomenologic qualitative framework was used in interviewing 6 nurse practitioners. Inclusion criteria included at least 6 months post graduation from a NP program and a positive history of smoking (100 cigarettes per year) during NP program of study. A snowball sampling strategy was used by asking NP faculty to identify former students or colleagues who smoked. The research was conducted through audio-taped interviews and/or on-line chat room interviews.

RESULTS: The participants included 4 females and 2 males whose ages ranged from 27 to 49 (mean 41) years. Average smoking history was approximately 19 years (range 6 years to 30 years) with a 1 pack/day average (range 1/2 pack/day to 2.5 packs/day). The average quit attempts was 15 (range 2 attempts to 50 attempts). The analysis of the data revealed three themes: (1) inside the tobacco addiction: revealing hidden traits; (2) outside the tobacco addiction: a smoker’s impression; (3) middle of the tobacco addiction: the tug of war.

CONCLUSIONS: All of the nurse practitioners participating in this study described their struggle with tobacco addiction and how it influence their practice. Such an understanding allows healthcare providers to reduce barriers and facilitate opportunities for smoking cessation interventions. Nurse practitioners are in a prime position to intervene with tobacco dependence even if they themselves are tobacco dependent. The authors believe that more support and education is needed so that Healthy People 2010 goals are met for not only patients but healthcare providers as well.

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POS4-5

DO PSYCHOLOGISTS FOLLOW THE CLINICAL PRACTICE GUIDELINES?

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Considerable attention has been paid to evaluating and improving the degree to which clinicians intervine with their tobacco-using patients. In particular, clinicians have been instructed to execute the “5 As” (Ask; Advise; Assess; Assist; Arrange follow-up) prescribed by the US Public Health Service’s Clinical Practice Guidelines (Fiore et al., 2000), To date the bulk of the attention has focused on physician behavior. Another group of clinicians, practicing psychologists, also have the opportunity to intervene with their patients. Because of their training in behavior change and their typically extended contact with patients, and because comorbid psychopathology is prevalent among smokers, psychologists may be especially well-positioned to provide effective smoking cessation aid to their patients. However, little is known regarding the degree to which they implement the clinical practice guidelines. A survey was sent to 1000 practicing psychologists randomly selected from the membership of the American Psychological Association. The survey assessed the degree to which the subject carried out the “5 As” with regard to smoking and 5 comparison problem behaviors (illicit drug use; alcohol abuse; unsafe sex; reckless driving; problem gambling). Psychologists working with adolescents or adults returned 253 completed questionnaires. Findings indicate that psychologists rarely take advantage of their opportunities to influence their patients’ smoking behavior. For example, fewer than 50% of the sample reported usually “asking” or “advising.” They were less likely to advise quitting smoking than they were to advise changing any of the comparison problem behaviors. Specifics of the findings will be reported, along with additional results describing perceived barriers to intervention by psychologists.

Supported by the Department of Psychology, University of South Florida.

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POS4-6

SMOKING CESSATION AND COUNSELING PRACTICES AMONG PRIMARY CARE PROVIDERS IN ALABAMA

Lesa L. Woodyb*y

CONTEXT: Recent studies support the impact of physicians’ advice to patients on quitting smoking, yet indications are few that physicians are aware of, or utilize, the national guidelines on this topic.

OBJECTIVE: to conduct an assessment of smoking cessation and counseling practices among primary care physicians across Alabama.

DESIGN: a brief survey was faxed to all primary care providers (family physicians, obstetricians, internists and pediatricians). Self-rated consistencies of tobacco use assessment and counseling and knowledge of national guidelines were main outcome measures.

RESULTS: 305 physicians responded; 153 family physicians, 71 internists, 27 OB/GYNs, 54 pediatricians. 44% responded 10-20% of their patients smoke; 32% reported 30%; 24% reported more than 40%. 68% said they always ask patients if they smoke; 80% stated they always advise smokers to quit. 44% stated that they always assist smokers in quit attempts. A third stated they always arrange follow-up for patients wanting to quit, and a third stated they always provide counseling for patients wanting to quit. 27% always recommend pharmacotherapy; 52% said often. 78% were not familiar with the clinical practice guideline on smoking cessation. Only 22% had participated in a CME program on smoking cessation. 74% were willing to participate in such a program.

CONCLUSIONS: this survey indicated a strong need for CME on smoking cessation counseling among these physicians. Efforts are needed to further publicize the guidelines and educate physicians on implementation. Results suggest an interest among physicians to participate in CME programs on smoking cessation.

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POS4-7

ON THE FRONT LINE: CANADIAN PHARMACISTS’ VIEWS OF THEIR ROLE IN SMOKING CESSATION

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Nicotine replacement therapy (NRT) was previously available in Canada only on prescription, but recent regulatory changes allow provinces to permit the sale of nicotine gum and transdermal patches without prescription in pharmacies. Consequently, pharmacists are now the front line of contact with patients using NRT to quit smoking. This study assessed pharmacists’ readiness to perform this role, including their knowledge about NRT, their attitudes toward performing the role of primary contact person, and their current practices in advising patients about NRT. Barriers to and facilitators of pharmacists’ smoking cessation practices also were examined. A questionnaire was mailed to a random sample of community pharmacists practicing in Ontario, Quebec, and Saskatchewan, and to all pharmacists practicing in Prince Edward Island. Provinces were selected on the basis of smoking rates, restrictions on tobacco sales in pharmacies, and whether NRT sales in pharmacies are over the counter or behind the counter. Pharmacists agree that they have an important role in helping patients quit smoking, but they indicate a need for more education and training for optimal performance of this role. While pharmacists are actively involved in smoking cessation activities, several practice areas provide opportunities for improvement. The findings have implications for education of pharmacists and for policies to support pharmacists in their smoking cessation role.

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POS4-8  PHARMACISTS’ ROLE IN SMOKING CESSATION: VIEWS OF ONTARIO RESIDENTS

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Recent regulatory changes in Canada allow provinces to permit the sale of nicotine gum and transdermal patches without prescription in pharmacies. Consequently, pharmacists are now on the front line of contact with patients using NRT to quit smoking. In conjunction with a survey of Ontario pharmacists, information was obtained from Ontario residents about their attitudes toward the role of pharmacists in smoking cessation. Relevant questions were incorporated into an ongoing random digit dialling survey of adult Ontarians conducted by the Centre for Addiction and Mental Health. For each of pharmacists, physicians, and dentists, respondents were asked whether they thought the professional would be a good source of advice, and smokers were asked which professionals had offered cessation advice. Former smokers were asked how they quit and which professionals had helped. Ontario residents agree that pharmacists are a good source of advice on smoking cessation, but they are less likely to ask for advice from a pharmacist than from a physician. While pharmacists have recommended NRT to smokers, most smokers have not received advice from a pharmacist. The findings emphasize the credibility of pharmacists as a source of cessation advice for smokers. However, pharmacists are not advising as many smokers as they could be.

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POS4-9  WHO USES INTERNET-BASED CESSATION?

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The Arizona Smokers’ Helpline has had a client-centered Website and e-mail cessation advice since 1998. ASHLine.org visitors are triaged to self-help exercises and information tailored to their stage of readiness. Users choose from the options of thinking about quitting, ready to quit, want to stay quit, or non-tobacco user looking for information. To evaluate ASHLine.org, statistics are collected at three levels: automated collection of hits and unique users, an online triage box, and a voluntary user survey. ASHLine.org is different from many cessation Websites in that it is based upon an open communication model. Visitors are not required to register in order to use services. Supplying personal information can be a barrier to accessing self-help Websites. More than 9,000 users voluntarily clicked the choices in the readiness box since the launch of the re-designed site in Nov. 2001. 755 Website visitors filled out the voluntary survey. Comparing Website users to Helpline callers, Web users were more often Caucasian (81.5% to 75.7%). Web users had a higher education level (14 years vs. 12 years). Web users were younger (average age 38 years vs. 42 years). The age range for both services was similar (Web 12 to 78 years vs. telephone 11 to 84 years. The male to female ratio was similar (Web 41.1% male and 58% female vs. telephone 40.3% male and 59.6% female). Comparing readiness to quit, 36% of Web users said they were ready to quit compared to 50.8% of Helpline callers; thinking about quitting, Web 16.6% vs. telephone 36.5%; want to stay quit, Web 16.9% vs. telephone 11.2%; non-tobacco users looking for information source (Web 30.4% vs. telephone 10.4%).

Funding: Tobacco Education and Prevention Program, Arizona Dept. of Health Services.

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POS4-10  SMOKING CESSATION ON THE INTERNET

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Each year, over 60 million Americans use the Internet for health care information. Most Americans (56%) have access to the Internet and access among underserved groups increased dramatically. The Internet may provide an innovative method for reaching the vast majority of smokers who do not present for clinic based treatments. While many smoking cessation websites exist in a wide variety of formats and treatment intensities, no studies have examined the quality of these websites. Our goal was to apply AHRQ guidelines for smoking cessation treatment to assess the quality and intensity of treatment available on the Internet. Using defined criteria, we selected 41 smoking-related websites, which were reviewed by six Ph.D. level smoking treatment specialists for key guideline Coverage (5 pt. scale from “none” to “extensive”), Accuracy (3 pt. scale from “completely accurate” to “inaccurate-potentially dangerous”) and Interactivity (was an interactive feature provided for the topic area?). The majority of sites provided good coverage for three key treatment recommendations: assist with a quit plan (53.7%), provide counseling (58.6%) and provide social support (51.2%). Accuracy of information was high (90% of sites had no observed errors). However coverage was poor in these key areas: provide clear, strong advice to quit (30%), assess readiness to quit (36.6%), provide follow-up contact (24.4%). Only 36% of sites recommended pharmacotherapy. 63.4% of sites had at least one interactive feature. Interactivity was significantly associated with superior coverage of key guidelines (f(1,40)=45.6, p<0.01). Although there are numerous websites concerning smoking cessation, most provide inadequate treatment following national guidelines (USDHHS, 2000), Future studies are needed to test the efficacy of Internet-based smoking cessation treatment.

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POS4-11  TEEN SMOKING CESSATION WEBSITES: A SURVEY OF PREFERENCES

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In the U.S., 3,000,000 adolescents smoke. Research indicates those who smoke will most likely continue as adults. Of these teens, 75% have thought seriously of quitting, 64% report making an attempt, and 40% of daily teen smokers have tried to stop & failed. However, while teenagers are the age group most likely to use the Internet, little is known about effectiveness of web-based smoking cessation interventions, or even what cessation web site features will be viewed positively by Smoking Teens. The current study surveyed 208 local High School students, age 14-18, to explore preferences and dislikes of features common to the growing number of website interventions for teen smokers. Results indicate that teens in general have clear likes and dislikes, and that teen smokers have preferences and dislikes that are different from the general population of teens. Such evidence should guide the development of teen cessation websites, and set the stage for efficacy and effectiveness studies.

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POS4-12
A RANDOMIZED TRIAL ON THE INTERNET TO ASSESS THE IMPACT OF MESSAGES ON CONCOMITANT USE OF NICOTINE REPLACEMENT THERAPY AND CIGARETTES

Jean-François Etter, Bjorn Landfeldt

Objectives. To assess the impact on smokers’ intention to quit smoking of messages recommending concomitant use of nicotine replacement therapy (NRT) and cigarettes. Methods. Randomized trial on the internet, in 9074 current of former smokers. Participants were randomly divided in 4 groups, each receiving a unique message by email. The “Control” message said that NRT can attenuate withdrawal symptoms in smokers who want to quit smoking. The “Temporary abstinence” message added that NRT can also be used by current smokers to deal with situations where smoking is not possible. The “Reduction” message indicated that NRT can be used by smokers who do not want to quit but want to reduce their cigarette consumption. The “Side-effects” message discouraged concomitant use of NRT and cigarettes. Participants indicated whether the message influenced their motivation to quit smoking. Main Results. The email was answered by 2027 people (25% of 8124 valid addresses). Smokers who received the “Reduction” message were slightly more likely than smokers in the control group to report that this message would increase their motivation to quit smoking (65% vs. 60%, p<0.02). In contrast, smokers who received the “Side effects” message were less likely than controls to report that this message would increase their motivation to quit (45% vs. 60%, p<0.001). Conclusions. A message recommending use of NRT for “temporary abstinence” had no detectable impact on smokers’ motivation to quit smoking. In contrast, a message indicating that smokers can use NRT to decrease their cigarette consumption may slightly improve motivation to quit.

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POS4-13
INTERACTIVE HEALTH COMMUNICATIONS TO HELP PREVENT RELAPSE TO SMOKING

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Smoking cessation programs often achieve 70% initial abstinence, but produce only 10-30% long-term success. A key to efficacious relapse prevention may be to sustain treatment over the period of significant relapse risk. One means to delivering such time-sensitive treatment is via home computer. For example, during a course of smoking cessation treatment, computer-based interactive health communication (IHC) applications can provide continuous information and support, identify and intervene with users at risk of relapse, and allow them to self-tailor frequency and dose of intervention during period of need. This study reports usage data from an on-going clinical trial evaluating the internet-based Comprehensive Health Enhancement Support System (CHESS) smoking relapse prevention program. Smokers motivated to quit were randomized to either: (1) brief treatment (BT) of nine weeks open-label bupropion SR and three behavioral counseling sessions or (2) BT and 12 weeks free, in-home access to the CHESS program (BT-CHESS). CHESS tracked subject (N=32) usage throughout the intervention period. 100% of participants used the CHESS program during the first week post-quit, 53% during week 9 (concurrent with end of pharmacotherapy), and 47% during week 12. Participants accessed CHESS an average of 5.1 times per week for weeks 1 and 2 and about four times per week subsequent-ly. These preliminary data indicate smokers are using the CHESS program to assist their smoking cessation effort. This type of IHC program has benefits for users (continuous access, etc.) and health care systems (decreased personnel time, etc.).

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POS4-14
ADDRESSING PARENTAL SMOKING IN AN INNER-CITY PEDIATRIC CLINIC USING A TELEPHONE COUNSELING AND NICOTINE REPLACEMENT INTERVENTION

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OBJECTIVE: Parental smoking is associated with increased rates and severity of many childhood illnesses. No prior studies have examined the delivery of proactive telephone counseling and nicotine replacement for parental smokers identified in the outpatient pediatric setting. We evaluated the feasibility of implementing a smoking cessation intervention for parents at the time of the pediatric visit.

METHODS: We performed a prospective cohort study of smoking parents who had a child with any smoking associated illness, acute or chronic between December 2000 and March 2001. All enrollees were offered S.T.O.P. (Stop Tobacco Outreach Program) which includes an initial motivational interview, written materials, nicotine replacement therapy (NRT), phone counseling, and fax referral to parent’s primary clinician. The primary outcome was completion of all three counseling sessions. Two-month follow-up outcomes were quit attempts, cessation, NRT use, primary care visits, household smoking prohibition, and satisfaction.

RESULTS: 158 smoking parents met eligibility criteria and 100 (63%) enrolled in the study. Of the 100, 81% completed all scheduled counseling sessions and 78% accepted free nicotine replacement therapy at the time of enrollment. At two month follow-up, of the 100 initial enrollees, 56% reported making a quit attempt that lasted at least 24 hours, 18% reported not smoking a cigarette in the last 7 days, 42% received additional proactive telephone calls from a centralized Quitline, 34% reported using NRT, and 26% had a visit with their own primary clinician. The mean number of cigarettes smoked inside the home and car was reduced (home 5.1 vs. 1.4, P<.001) and (car 2.5 vs 1.4, P<.001). Parental rating of the overall usefulness of the program was 4.4 of a possible 5 (1 std deviation) on the five-point scale 1=not at all 5=great extent.

CONCLUSIONS: This study demonstrates the feasibility of engaging parents in smoking cessation interventions that include the provision of NRT and proactive referral to a quitline at the time of a child’s clinic visit. This population reports extremely low ever-use rates of cessation programs of any kind. High rates of program enrollment, use of NRT, and completion of telephone counseling in this study support the notion of a child’s clinic visit as a teachable moment to address parental smoking cessation.

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TELEPHONE QUITLINE IN HONG KONG: CHARACTERISTICS OF SMOKERS AND EFFECTIVENESS


BACKGROUND: Many telephone hotlines for smoking cessation have been established in the West in recent years. However, the feasibility and effectiveness of a smoking cessation quitline among the Chinese has not been reported. The first Quitline in Hong Kong was started by the Department of Community Medicine, the University of Hong Kong (HKU) in collaboration with the Department of Nursing Studies, HKU and the Hong Kong Council on Smoking and Health with a grant from the Health Care and Promotion Fund.

OBJECTIVES: To describe the characteristics of callers to a smoking cessation Quitline in Hong Kong and to evaluate its effectiveness. Methods: The HKU-Quitline started operation from 13 December 2000 and was publicized with a small budget through press conference, media reports, pamphlets, and posters at public and private hospitals/clinics. It operates for 38 hours per week by trained counselors. Smokers were interviewed using a structured record sheet and provided stage-matched counselling. A follow-up interview was carried out 1 month after the initial contact with a random sample of 30% (187/622) of the smokers who left their contact telephone numbers.

RESULTS: As of the end of November 2001, a total of 3,933 calls were received and 989 initial assessment was completed. The number of calls increased sharply within a few days after some publicity and then returned to a low but stable level. Of the 989 callers who completed initial assessment, 71% were male; 87% aged 20-59, 7% aged >60 and 6% aged under 20; most (81%) called to seek advice on quitting smoking; 82% were smokers (78% current and 4% quit for less than 6 months) with a thirty-day average daily consumption of 20 cigarettes and the remaining 18% were never or ex-smokers. Based on the Fagerstrom scale, 43% of the 811 smokers smoking; 82% were smokers (78% current and 4% quit for less than 6 months) with a thirty-day average daily consumption of 20 cigarettes and the remaining 18% were never or ex-smokers. Based on the Fagerstrom scale, 43% of the 811 smokers were severely dependent to tobacco. Of the 173/187 smokers successfully followed up at one month, the 7-day point prevalence cessation rate was 17% and most (94%) expressed a high level of satisfaction with the Quitline service.

CONCLUSIONS: This study demonstrates the feasibility of running a Quitline with low operation and publicity costs. The quit rate is comparable to those in the West.

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RECRUITMENT OF VETERAN SMOKERS TO A TELEPHONE QUIT LINE STUDY

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The TELESTOP Study is a randomized controlled trial to test the effectiveness of telephone service to deliver treatment for nicotine dependence to veterans. Participants are randomly assigned to telephone care (7 counseling sessions plus medication) or primary care management. The study is being conducted among patients from 5 medical centers from VA Network 13 in the upper Midwest. The purpose of this report is to describe an unconventional method to recruit participants that permits estimation of demand for smoking cessation treatment. We contacted patients from the call center rather than visit primary care clinics, where we might inadvertently modify provider behavior. There is no systematic method to identify tobacco users from the electronic medical record, therefore we mailed an invitation to 58,592 patients with primary care providers (regardless of smoking status) to be screened. 1506 (2.6%) patients called the 800 number. 840 callers were eligible and 715 (1.2%) enrolled over a 14 month period. The 1999 Large Health Survey of VHA Enrollees indicates that 29.6% (or 17,460) of veterans in Network 13 are current smokers. This suggests that at least 9% (1506/17,460) of smokers in this population are interested in accessing intensive telephone counseling and pharmacological treatment for tobacco use. This estimate is conservative since it is based on interest in a research study, requiring informed consent and agreement to randomization and data collection procedures. These results compare favorably to state quit lines that serve 1-2% of smokers and suggest that there is demand for user friendly smoking cessation treatment services in this population.

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CESSATION AMONG UNINSURED AND MEDICAID TOBACCO USERS PARTICIPATING IN A PHONE-BASED PROGRAM

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Most information about the effectiveness of cessation programs among uninsured and those on Medicaid comes from efficacy trials conducted in a research context. The present study examines the real-world experience of tobacco users participating in a comprehensive telephone-based cessation program (Free & Clear) offered through a State Quit Line and insurance plans. We identified 1334 (423 uninsured, 806 Medicaid, 105 commercially insured) tobacco users who registered in the program and followed them 12 months post-registration. We successfully contacted 648 (48.6%) at 12 months. We used logistic regression analysis. The seven-day quit rate at 12 months, assuming non-respondents were smokers, was 14.8% (95% CI=13.0-16.9). This rate was significantly higher among commercially insured participants (vs. Medicaid but not uninsured) and among participants who completed >5 calls (vs. <5 calls). The quit rate for those contacted at 12 months was 30.6% (95% CI=27.0%-34.3%) and varied, however not significantly, by insurance and number of calls. After adjustment for race and education, respondents who completed >5 calls were 60% more likely to quit tobacco (OR=1.6; 95% CI=0.9-3.1), and uninsured respondents who completed >5 calls were 70% more likely to quit tobacco (OR=1.7; 95% CI=0.9-3.5), relative to those who completed <5 calls, but the difference was not statistically significant. The observed variation in quitting tobacco for respondents by number of calls completed and by insurance merits further investigation concentrating on increasing compliance with the call schedule, particularly for the uninsured.

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A PROACTIVE CELLULAR TELEPHONE SMOKING CESSATION INTERVENTION: OUTCOMES AND BENEFITS

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To expand the reach of smoking cessation treatment and provide access to care for underserved populations, a pilot study used cellular telephones to deliver a smoking cessation intervention. Participants were provided with a free cellular telephone and received 6 proactive telephone counseling sessions following PHS guidelines over a 2-week period. A 24-hour, 7-day/week hotline was also available. Participants were low income, multi-ethnic, HIV+ smokers recruited from a large inner-city HIV/AIDS care facility for medically indigent individuals. The sample (n=20) was 80% male, 20% white, 80% Black. Mean (SD) age was 41 (7.2) years. Participants reported currently smoking a mean of 19.5 (SD=12.5) cigarettes/day with a mean CO level of 20.3 (SD=7.4), for a mean of 19 years (SD=9.6). Eighty percent of participants smoked within 30 minutes of waking, a common indicator of nicotine dependence. Smoking status was assessed by self-report. All participants reported making a quit attempt. Abstinence rates at 1 and 2 weeks post quit date were 79%. Of the 7 participants who relapsed during the course of treatment, 71% (n=5) made a second quit attempt. Cell phones provided several unique benefits, specifically, the ability to provide: 1) counseling during critical times including lapse-relapse intervention, 2) counseling in real world settings, and 3) intensive level of social support with limited participant burden. Results suggest that proactive phone counseling with cellular phones is effective. The unique benefits offered by cellular phone counseling are in need of further exploration.

This project was funded by UT M.D. Anderson Cancer Center.

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FEASIBILITY OF USING CELL PHONES FOR A SMOKING CESSATION INTERVENTION

PO4-19

Damon J. Vidrine, Dr.P.H.*, Amy B. Lazev, Ph.D., Ellen R. Gritz, Ph.D., UT M.D. Anderson Cancer Center; Center; H.Lee Moffitt Cancer Center.

Smokers of low socioeconomic status (SES) face numerous barriers impeding their access to nicotine dependence treatment. The objective of this study was to examine the feasibility of using cellular telephones to deliver a smoking cessation intervention to an underserved population. Twenty current smokers (20% white, 80% Black; 80% male); mean (SD) age 41 (7.2) were recruited from a large inner-city HIV/AIDS care facility, serving a multicultural low SES population. Participants smoked a mean (SD) of 19.5 (12.5) cigarettes/day and had smoked for a mean (SD) of 19.0 (9.6) years. Participants were given cell phones with pre-paid minutes. The intervention consisted of 6 proactive phone counseling sessions and access to a 24-hour hotline. Of the 20 participants enrolled in the study, 19 (95%) completed the intervention; all of these 19 participants received 4 or more calls, maintained contact throughout the 2-week intervention, and completed the 6th and final call. The overall contact rate was 93% (106 of 114 calls). Ninety-eight percent of calls were completed on time (within 24 hours of the selected follow-up time). All participants (100%) agreed to talk when reached for each counseling call (i.e., no participant refused a call or terminated a call prematurely). Counseling calls averaged a mean of 5.2 minutes. The hotline received 20 calls during the 26-day study period; these calls averaged 5 minutes. Results indicate that using cellular telephones to deliver a smoking cessation intervention is feasible. Cellular telephones provide a new mode of intervention delivery that increases access to care in underserved populations.

This project was funded by UT M.D. Anderson Cancer Center.

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PREVENTING SMOKING RELAPSE: THE IMPORTANCE OF CONTENT VS. CONTACT WITHIN A MINIMAL INTERVENTION

PO4-21

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Preventing relapse among former smokers remains a challenge. Although effective relapse prevention (RP) interventions have been developed, they tend to be incorporated into intensive cessation programs. However, only a small minority of smokers ever seeks such formal help. Most smokers who achieve initial cessation do so without such interventions, and thus do not benefit from the progress made in RP. Yet the relapse rate among self-quitters is even higher than among smokers who receive counseling. This study is part of a systematic research program to develop and evaluate low-cost RP interventions for recently-quit exsmokers. An earlier study (Brandon et al., 2000) found that a series of 8 empirically-based RP booklets mailed to subjects over the course of a year reduced smoking relapse by approximately two-thirds among recent quitters. The current study builds upon these findings by examining which elements of the booklets are responsible for the RP effect (i.e., the content of the booklets or the continued contact over time). A sample of 506 exsmokers was recruited and randomized to four experimental conditions that varied content and contact in a 2x2 crossed design. Subjects were followed for two years after entry into the study. It was hypothesized that both content and contact would affect outcome. Preliminary analyses indicate that relapse was reduced when subjects were sent all eight booklets (high content) compared to a single booklet (low content), but that extended contact over time was no more effective than a single contact. Outcome specifics and public health implications will be discussed.

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THE ACCEPTABILITY OF A SELF-HELP SMOKING CESSATION AID FOR YOUTH

PO4-22

Lorien Abroms, Jonathan Winicoff, Alexandra Lowell, and Allison Mobley.

Few smoking cessation programs exist which are targeted at youth. This project aimed to examine the acceptability of a self-help smoking cessation aid for adolescents and young adults. Interviews were conducted with 28 smokers who were between the ages of 18 and 22 and who were interested in quitting smoking in the next 6 months. Results indicate that participants prefer quitting with self-help materials over NRT, physician counseling, group counseling or telephone quit lines. Based on a prototype provided, 40% of participants indicated that they would be willing to buy the self-help smoking cessation aid, while an additional 40% indicated that they would buy an improved version. These results support the development of a commercially available, self-help, non-NRT smoking cessation aid targeted at youth.

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LONG-TERM CESSATION OUTCOMES FOR A SELF-HELP SMOKELESS TOBACCO INTERVENTION

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This study was the first large-scale randomized trial evaluating two levels of self-help cessation intervention with adult smokeless tobacco (SLT) users. Smokeless users (N=1069) were recruited and randomized to one of two interventions, a Manual Only (MAN) condition receiving a self-help quitting guide, and an Assisted Self-Help (ASH) condition receiving videotape and two supportive calls from phone counselors. In an additional quasi-experimental condition (MV), subjects (N=584) received the manual and videotape but no counseling. Follow-up data at 6 months showed that subjects in the ASH condition had a significantly higher point prevalence quit rate than subjects in the MAN or MV conditions (21.1% vs. 16.5% and 15.9%, p<.05), but at 12 months, abstinence rates for subjects in both the ASH and MAN conditions were similar and were better than for MV subjects. Sustained abstinence at 12 months favored the ASH condition (12.9%), but the magnitude was modest over other conditions (9.7% and 8.7%). ASH subjects reported higher use of the manual and used more of the recommended techniques for quitting, suggesting that phone counseling may be more effective in getting participants to use the recommended techniques. The study demonstrated that low-cost and low-intensity interventions done by mail and phone could help a sizable proportion of SLT users to quit SLT. Mail and phone are cost-effective ways to provide services to SLT users in diverse geographic locations without professional staff or group/individual meetings. Implications of this research are discussed in terms of dissemination and cost-effectiveness. This study was supported by NCI grant CA 60586.

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SMOKING CESSATION AMONG COMMUNITY COLLEGE STUDENTS: PROGRAM OUTCOMES

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College students are a priority group for smoking cessation interventions. Project “Look At Your Health” was conducted among culturally diverse student smokers from 14 Houston-area community colleges. Participants were 18-36 years of age (mean=22.8, SD=4.7 years); 58% were female. We employed group-randomized design. The experimental condition (EC) utilized computer-assisted, on-campus counseling with motivational interviewing and personalized health feedback including estimated “lung age,” respiratory symptoms, and alveolar CO to motivate students to quit smoking. The EC included a baseline assessment/counseling session, two follow-up sessions spaced 2 months apart, and the 10-month final assessment. The standard care (SC) condition included a self-help manual and fact-sheets. Number of contacts in both conditions was matched. We recruited 426 smokers (81% of the targeted 532). Retention was 93% in first follow-up, 80% in the second follow-up, and 77% in the final assessment. The smoking quit rate in the entire sample was 13% (n=43); 10% and 17% in the SC and EC groups, respectively. Quitting did not differ significantly by treatment group, although the effect approached significance (p=.0697). The majority of smoking cessation mediators differed significantly between groups: compared to the SC group, the EC group increased awareness of respiratory symptoms, decreased pro-smoking beliefs, increased anti-smoking beliefs, and decreased smoking temptations. This study was supported by NCI grant 1R01 CA69425-01A2 (Dr. Prokhorov, PI).

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INFORMED DEVELOPMENT OF SMOKING CESSATION INTERVENTIONS FOR COLLEGE STUDENTS: QUALITATIVE AND QUANTITATIVE FINDINGS

Elizabeth E. Lloyd-Richardson, Ph.D.*, Raymond Niaura, Ph.D., and David B. Abrams, Ph.D., Brown Medical School, The Miriam Hospital

Smoking rates among college students are on the rise. Unfortunately, while young adults are at risk for nicotine dependence, they are unlikely to make a serious quit attempt. Understanding the mechanisms behind smoking initiation and maintenance in this population is critical to the development of effective, tailored programs. Initially, qualitative research was conducted to investigate college students’ perceptions of individual and environmental influences on smoking. Fourteen focus groups were conducted (N=136; 60% female) with discussion of reasons for smoking (e.g., boredom, weight control), barriers to smoking cessation, and salient anti-smoking messages. Results will also be presented from an ongoing smoking cessation trial designed for college students. To date, 38 students (ages 18-25) have been randomized to receive either brief, individualized smoking cessation treatment + 8-weeks of nicotine replacement (SC; N=17) or motivationally enhanced group treatment + NRT (ME; N=21). The primary outcome is biochemically confirmed 7-day point prevalence abstinence at 2 and 6 months following quit day. Thirty-three percent of both groups were abstinent at 2-month follow-up. Six-month follow-up data will also be presented. While no significant baseline differences in cigarettes/day (ME=19.6; SC=18.8), at follow-up SC participants smoked fewer cigarettes than ME (5.9 vs. 9.7; p<.015). Discussion will focus on the issues and barriers faced in developing targeted college interventions, and the unique contributions of qualitative and quantitative research methods. Supported by TTURC Grant #P50CA84719, the Robert Wood Johnson Foundation Tobacco Etiology Research Network, the Rhode Island Department of Health, and the Rhode Island Cancer Council.

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POS4-27 ARE CESSION INTERVENTIONS BASED ON STAGE OF CHANGE REALLY MORE EFFECTIVE?

Paul W. McDonald, Linda Jessup, K. Stephen Brown, Rahid Ahmed and Stephanie Filsinger

RATIONALE: Use of the transtheoretical model of change to guide the development of smoking cessation interventions has proliferated since the 1980s. However, there have been few rigorous attempts to validate the model’s usefulness compared to more parsimonious behavioral models.

METHODS: 694 adult smokers recruited through newspaper ads across Ontario, Canada were assigned randomly to two treatments. Participants in one treatment received self-help booklets from the Canadian Cancer Society (CCS) correctly matched to their stage of change. In the second treatment smokers in all stages of change received the CCS booklet designed for persons in preparation/action. Hence, the material was purposely mis-matched for persons in contemplation and pre-contemplation at baseline. All participants completed surveys at baseline, 6, 12 and 18 months to measure smoking history, stage of change, self-efficacy, decisional balance, processes of change, abstinence (7 day pt prev., continuous abstinence and prolonged abstinence; biochemically verified) and program fidelity. Results. Stage matched participants were more likely to understand the materials. They were also more likely to progress and regress through the stages of change. However, none of the measures of abstinence differed between the action only and stage matched treatments at 6, 12 and 18 months post treatment.

CONCLUSIONS: Interventions tailored to stage of change may not be worth the added complexity and cost. Indeed, the model may inhibit some people from trying to quit. Results call the validity and utility of the transtheoretical model into question, although further research is required with precontemplators and other intervention formats.

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POS4-28 THE TRANSTHEORETICAL MODEL APPLIED TO DEPRESSED SMOKERS

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This study examined the smoking behaviors and readiness to quit smoking among psychiatric outpatients with depression. Smokers (N=308) were recruited from four psychiatric outpatient clinics in the San Francisco Bay Area (69% female, 68% Caucasian, mean age=42 years). The majority visited a mental health professional in the past month (89%) and reported taking antidepressants (80%). Participants reported a long smoking history (M=24 years, SD=13) and averaged 16 cigarettes/day. The stage distribution indicated greater intention to quit smoking than representative US samples (p<.001); precontemplation=20%, contemplation=56%, and preparation=24%. Individuals in preparation reported more prior quit attempts, greater desire to quit, greater expectancy of success, and were most likely to identify the goal of quitting for good. Precontemplators were least likely to identify a goal related to their smoking behavior. Theoretically expected stage by processes differences and the anticipated crossover pattern of the pros and cons of smoking were observed. Commitment to abstinence was positively associated with endorsement of the cons of smoking and processes of change use. Depressive symptom severity measured by the Beck Depression Inventory-II (M=21, SD=11) was associated with greater smoking temptation (r=.22, p<.01), but was unrelated to readiness to quit. A sizeable proportion of depressed smokers are motivated to quit. Frequent mental health contacts provide opportunities to support cessation efforts. Generalizability of the transtheoretical model warrants examination of stage-tailored interventions with depressed smokers.

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POS4-29 ASSOCIATION OF PROVISION OF SUPPORTIVE BEHAVIORS AND ADVANCEMENT IN STAGE OF CHANGE AND QUIT ATTEMPTS

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Interventions provided by concerned others in the smoker’s environment might be a means of reaching the 95% of smokers who do not seek treatment for smoking cessation. The 22-item Support Interview was constructed to assess the support provided by spouses/non-spouses to smokers in all stages of change (SOC). Six items assessed behaviors support persons conducted for their own benefit (self-items; e.g., stress management) and sixteen items measured those performed for their smoker (smoker-items, e.g., rewarded smoker). Nonsmoking adults interested in helping someone stop smoking were randomly assigned to skills-training (n=30) or control condition (n=30). The sample was predominantly female (77%), married (65%), Caucasian (100%) and the mean age was 47.0. 50% of support persons were spouses/partners, 23% children, and 10% parents of the smoker. The two groups of Support Interview items were positively associated at each follow-up assessment (r=0.66, p<.001 week-6; r=0.73, p<.001 week-12; and r=0.56, p<.001 week-24). Thus, there was evidence that behaviors performed for oneself may have assisted the participant to engage in helpful behaviors for their smoker, or vice-versa. At week-6, the relationship between total Support Interview scores and progress in SOC approached significance (r=0.25, p=0.07). Mean scores on the self-items were associated with stage progression at week-6 (r=0.29, p = 0.03), but no relationship was detected for smoker-item scores. A positive association was detected between smoker quit attempts and total Support Interview scores at week-24 (r=0.30, p=0.03) as well as smoker-scores (r=0.34, p=0.01), but not with self-scores. Results suggest that these two aspects of supportive behaviors may be important targets to develop in support interventions for smoking cessation.

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POS4-30 THE ROLE OF SOCIAL COGNITIVE PERSONALITY STRUCTURES IN REGULATING ABSTINENCE AMONG REGULAR SMOKERS

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Uncovering the personality mechanisms that contribute to individual differences in behaviors associated with smoking cessation is a critical concern for tobacco researchers. However, past and current approaches have been dominated by trait perspectives, which are conceptually limited in how they inform understanding of individual differences. These conceptual limitations may be one reason that relatively little empirical consensus exists as to what personality variables are important to study in relation to smoking cessation. The current research develops an alternative theoretical perspective, based in social-cognitive personality theory. A core assumption is that individual differences in the coherence and variability of the observed coping responses that smokers execute across diverse settings to manage high risk situations are important to an overall understanding the relapse process. Specific social-cognitive personality mechanisms, which vary idiosyncratically between smokers in their structure, content, and activation in particular settings, are hypothesized to regulate the observed coherence and variability in the coping response across those settings. In this study, a sample of 30 regular smokers completed five laboratory sessions. Sessions 1 and 2 were used to conduct assessments of abstinence-related cognitive structures (abstainer ideal possible self and abstainer ought possible self). Sessions 3 - 5 used cognitive priming procedures to activate each cognitive structure and to assess the effect of this activation on processing abstinence related information using a reaction time paradigm. Results revealed that priming different self-structures enhanced reaction times abstinence-related information (p's < .05). These results have implications for theories of personality among smokers, personality theory in general, and practical applications for smoking cessation.

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**POS4-31**

**MOTIVATIONAL INTERVIEWING PLUS PARENTAL INTERVENTION FOR ADOLESCENT SMOKERS: RESULTS FROM A RANDOMIZED CLINICAL TRIAL**

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Most research-based interventions for adolescent tobacco use cessation have relied on targeting the adolescent, either individually or in groups (Sussman, 2001). With a few exceptions (e.g., Bauman et al., 2002), intervening with parents has not been systematically researched. In this study, we examined the relative efficacy of a brief motivational interview (MI) versus brief advice to quit smoking (BA) for adolescent daily smokers. Adolescents (m = 16.1 years, 47% female, 72% white) were recruited from medical settings, schools, and the community and were randomly assigned to either MI or BA after completing assessment. For teens randomized to MI, parents also received a brief phone session focusing on ways to increase the support of their child’s goals for reducing and quitting smoking. Preliminary results are not available for 74 teens and their parents who completed 3-month follow-up. Consistent with our prior research (Colby et al., 1998), teens in both conditions significantly decreased number of cigarettes smoked/day at follow-up [F (1, 59) = 11.20, p = .001] and demonstrated reductions in exhaled carbon monoxide [F (1, 58) = 5.20, p = .026], with no between-groups differences on self-report or biochemical measures of smoking. Although parents reported high satisfaction with the project and were easily engaged in the session, results suggest that the combination of brief parental intervention plus adolescent MI does not appear to enhance individual outcomes for adolescent smokers receiving brief intervention. Further research on more effective and opportunistic intervention with parents of adolescent smokers is warranted.

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**POS4-32**

**IMPACT OF A MOTIVATIONAL INTERVIEWING INTERVENTION ON MECHANISMS OF CHANGE IN LOW-INCOME PREGNANT SMOKERS**

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Despite documented adverse fetal effects, 20-25% of women smoke throughout pregnancy. Many smoking cessation interventions have been developed and tested, however, few have evaluated the mechanisms by which treatment is reported to have its impact. Theoretically, Motivational Interviewing (MI) interventions affect change by enhancing motivation, building self-efficacy, and eliciting effective change strategies from clients. The Transtheoretical Model (TTM) provides a framework within which MI mechanisms can be assessed. This study examined TTM constructs (stage of change, self-efficacy, situational temptations, pros/cons, process of change) among low-income pregnant women in a smoking cessation pilot trial of a MI intervention. Fifty-four pregnant women attending a public clinic who were current smokers and less than 28 weeks gestation were randomly assigned to an 8-week MI or usual care (UC) condition. Results indicated that several mechanisms of change were differentially impacted by treatment condition. The MI group reported a greater increase in self-efficacy to abstain from smoking than the UC group from pre to posttreatment (p<.05). A greater decrease in temptation to smoke was also found for the MI group (p<.05). Cons of smoking decreased significantly for women in the UC condition (p<.05), while increasing slightly for the MI group. MI women reported increased use of the processes of change relative to the UC condition, although this difference was not statistically significant. Changes in Beck Depression Inventory scores by treatment condition showed greater improvement in the MI group relative to the UC condition. Thus, the MI intervention effectively impacted its purported mechanisms of change.

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**POS4-33**

**REACHING UNDERSERVED TOBACCO USERS: TOBACCO CESSATION VIA PUBLIC HEALTH DENTAL CLINICS**

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The prevalence of tobacco use is far higher in lower SES populations, yet these tobacco users are the least likely to benefit from tobacco cessation services. They may, however, utilize the services of public health dental clinics. Previous research has shown that provision of advice and brief counseling within the context of the dental visit can be effective in helping tobacco users quit. The purpose of this study was to adapt and evaluate a dental office-based tobacco cessation program for use in public health dental clinics. This study used a quasi-experimental design. Follow-up outcome and process data were collected at 6-weeks, and 3 and 6 months post-intervention. Data was collected from 368 patients at baseline. At three-month follow up (N = 176), 16% of those in the Intervention Condition, vs. 4% in Usual Care, reported no tobacco use in the past seven days (2 = 6.23, p<.05). In addition, 45% of patients in the Intervention Condition (vs. 17% in Usual Care) reported that they made an attempt to quit (2 = 17.22, p<.001). Patients in the Intervention Condition (vs. those in Usual Care) who did not quit reported a significant reduction in the number of cigarettes smoked (F = 5.62, p<.05). Six-month outcome data will also be reported. Working within the context of a public health dental clinic has required flexibility and willingness to adapt procedures. Despite the many challenges that were faced during this project, the results have been positive.

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**POS4-34**

**RISK PERCEPTION AND SMOKING BEHAVIOR AMONG OLDER, MEDICALLY ILL SMOKERS**

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No studies have investigated the relationship between risk perception and smoking among older, medically ill smokers. Participants were in a trial investigating the effect of a home health care nurse delivered smoking cessation intervention and were not required to be motivated to quit. We hypothesized that high perceived vulnerability (to smoking health risks), low optimistic bias (belief that personal risk is less than that faced by others) and high precaution effectiveness (belief that quitting would have a positive health effect) would be related to motivation to quit, smoking reduction, and abstinence among older smokers (N = 273, M age = 57.2, 54% female, 83.5% white, 41% < 12 years education, 60% at poverty level, M = 21 cigarettes/day) receiving acute and chronic medical care at home. Self-reported 7 day abstinence was bio-verified. Regression analyses indicated that participants reporting higher levels of baseline perceived vulnerability and precaution effectiveness reported greater motivation to quit at baseline and 2- and 6-month follow-ups (p<0.01). Belief that personal risk is less than risk faced by others predicted a smaller reduction in smoking at end of treatment (p<0.05). High baseline perceived vulnerability was associated with a larger percent reduction in smoking at end of treatment (p<0.05), but not at follow-up. Abstainers at the end of treatment and 2 month follow-up exhibited decreased smoking-related risk perception. Perceived risk may be important to motivate quitting in older smokers; interventions aimed at increasing their risk perception may be beneficial.

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POS4-35  DOCUMENTATION OF SMOKING HISTORY ON HOSPITALIZED PATIENTS AND ITS IMPACT ON RESPIRATORY FAILURE

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ABSTRACT: This study was conducted as a quality improvement initiative pioneered by NSUH Tobacco Control Center. We hypothesized that MD documentation of smoking history will guide treatment plans and prevent respiratory complications during hospitalization.

METHODS: A retrospective, cross-sectional chart review of 140 randomly selected hospitalized patients with and without postoperative respiratory failure. We reviewed the documentation of smoking history by physicians. Information abstracted included demographics, smoking history, mortality, and discharge disposition. Respiratory failure was defined as unexpected or prolonged intubation and mechanical ventilation. The data was analyzed using a two-tailed Z-test for proportions for all the variables except mean age. For mean age, a two-tailed t-test for independent samples was used.

RESULTS: We reviewed 66 charts of patients with respiratory failure postoperatively and 74 charts of patients without respiratory failure. Patients with respiratory failure had a higher mean age (60.4 vs. 67.8, p<0.01); higher mortality (15.2% (10/66) vs. 0%, p<0.001); higher discharge to a rehabilitation facility (33% (22/66) vs. 4% (3/74), p=0.001); and lower discharge to home (52% (34/66) vs. 93% (69/74), p<0.001) when compared to patients without respiratory failure. Forty-five percent (33/74) of smokers had respiratory failure compared to 41% (17/41) of nonsmokers. Overall, 18% (25/140) of patients did not have smoking history documented in the chart. Sub-analysis revealed patients with respiratory failure had a mean of 49 pack-years vs. 28 pack-years (p=0.05).

CONCLUSIONS: Smoking history in pack-years correlates with an increased risk of respiratory failure. One-fifth (18%) of the patients did not have documented smoking history, indicating a missed opportunity for a cost-effective intervention to prevent smoking-related complications. Considering the sizeable risk of smoking on respiratory complications, adequate documentation of smoking history has to be emphasized. Furthermore, real-time identification of hospitalized smokers can facilitate cessation interventions and other methods to optimize patients' respiratory status.

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POS4-36  OCCURRENCE OF MOUTH ULCERS AFTER SMOKING CESSATION

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Some smokers experience aphthous (mouth) ulcers when they stop smoking. Patients often attribute these to the use of medications for smoking cessation, especially the oral nicotine replacement therapies (NRT). This report examines the occurrence of mouth ulcers in a large sample of smokers, attending a smoking cessation treatment program. The ratings of occurrence of mouth ulcers were monitored from baseline throughout four weeks in patients who maintained continuous biochemically validated abstinence. There was a net increase in reports of mouth ulcers in the first week and this remained significantly elevated in comparison with baseline throughout the 4-weeks of abstinence. The relationship between the occurrence of mouth ulcers and baseline characteristics, medication used, and severity of other withdrawal symptoms will be reported.

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POS4-37  CORRELATES OF TOBACCO DEPENDENCE AMONG TEENAGE SMOKERS REQUESTING CESSATION TREATMENT

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Previous research has demonstrated the discordance of commonly-used instruments to diagnose tobacco dependence (TD) among adults and their relationship with various clinical and smoking-related variables. We analyzed data from teen smokers [N=183, mean age 15.30 ± 1.31, 71.83 % female, 25% African American (AA), FTND 6.44 ± 1.75] requesting assistance for smoking cessation. Based on findings with adult smokers, we tested whether 1) DSM-III-R and IV diagnoses of TD are associated with demographic variables, drug use, or psychiatric diagnoses and 2) high FTND scores are associated with enjoyment of smoking. More participants met DSM-IV criteria (n=74) than DSM-IIIR criteria (n = 65). There was no correlation between demographic variables or other DSM-IV diagnoses and TD (by DSM-IIIR or DSM-IV criteria). There was a trend towards current alcohol use predicting TD by DSM-IV criteria (Fisher exact p=0.09), but no association with reported marijuana use. European-Americans were more likely to be diagnosed by DSM IV criteria than other participants (Fisher exact p = .03). Contrary to our second hypothesis, there was no correlation between FTND score and current enjoyment of smoking (r = .08, p = .46). These preliminary findings suggest that the correlates of tobacco dependence should be studied in a broader population of adolescent smokers.

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POS4-38  SMOKING TRAJECTORY AND RECENT PROBLEM BEHAVIORS IN ADOLESCENTS REQUESTING CESSATION TREATMENT

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We describe associations between smoking trajectory and current psychiatric dimensions among teenagers enrolling in a smoking cessation trial. We hypothesized earlier smoking onset among “externalizers” and quicker progression among “internalizers”. Participants were 64 tobacco dependent teenagers (mean age 15.1±1.4 years, African-American 26%) who had the following smoking history: age at first puff 10.5±2.3 years, first cigarette 11.6±1.8 years, age at daily smoking 12.6±1.5; time intervals from first puff to daily smoking 2.1±2.0 years, first cigarette to daily smoking 1.0±1.2 years, number of quit attempts 2.7±1.6, Fagerstrom Test for Nicotine Dependence 6.9±1.3. Participants completed Achenbach’s Child Behavior Checklist to assess internalizing problem behaviors (IPB) and externalizing problem behaviors (EPB) within the past 6 months (mean T score IPB 55.2±10.7 EPB 61.2±10.6). While “externalizers” did not report earlier age at first puff, this group showed a trend toward earlier onset of daily smoking (Pearson’s correlation r = -.021, n=64, p=0.09). Contrary to our second hypothesis, “internalizers” did not report earlier daily smoking. In this small sample, IPB did not predict temporal characteristics of onset of smoking behavior, but EPB seems to share a relationship with the temporal pattern of smoking initiation. In the future, we will investigate the nature of this relationship.

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CORRELATES OF NICOTINE DEPENDENCE IN A BI-ETHNIC SAMPLE OF ADOLESCENT SMOKERS


The prevalence of smoking among adolescents remains unacceptably high. To date, smoking cessation programs for teens generally have met with limited success. Recently, increasing attention has been given to the role of nicotine dependence in maintaining adolescent smoking. Among adults, important differences have been observed between African American and Caucasian smokers on several measures of nicotine dependence. Little is known, however, about the role ethnicity plays in nicotine dependence among adolescent smokers. Participants were African American (n = 35) and Caucasian (n = 230) adolescent smokers enrolled in a school-based smoking cessation program. Nicotine dependence was measured using the modified Fagerstrom Test for Nicotine Dependence. Mean dependence scores were higher among Caucasian students than African Americans (p < .005). A series of multiple linear regression analyses were conducted to examine additional correlates of nicotine dependence, including interactions with ethnicity. Four separate domains were assessed including: 1) social and family-related factors; 2) beliefs about smoking; 3) mood; and 4) motivation to quit and intentions regarding future smoking. Nicotine dependence was associated with several factors including greater withdrawal during previous quit attempts, less success in previous quit attempts, greater perceived instrumental value of smoking (relaxation and concentration), greater intentions to continue smoking in the future, poorer cigarette refusal skills, and lower perceived parental pressure not to smoke (p < .05). Correlates of dependence were similar for African Americans and Caucasians. Overall, these findings indicate that ethnic differences in dependence begin early in the smoking career. Further, several potentially modifiable factors are associated with dependence, which should be considered in developing adolescent cessation programs.

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A RANDOMIZED CONTROLLED TRIAL OF A SMOKING CESSATION INTERVENTION FOR PREGNANT ADOLESCENTS

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Despite the well-known adverse health effects associated with smoking during pregnancy, 17.2% of pregnant adolescents continue to smoke throughout their pregnancies. To evaluate the short and long term effects of smoking cessation intervention strategies tailored to the pregnant adolescent to attain and maintain abstinence. A total of 142 subjects consented to participate in the intervention study were randomized to one of three groups: 1) Usual Care (n=50); 2) Teen FreshStart (TFS) (n=47); and 3) TFS with Buddy (TFS-B) (addition of peer support) (n=45). Participants in the experimental groups attended 8-week group sessions. Measures included demographic, substance use, and psychosocial questionnaires. In addition, saliva cotinine levels were also analyzed to evaluate smoking behavior. Measurement timepoints included baseline, post-intervention, 6 weeks postpartum, and 1 year post-baseline. Chi-square analysis was performed to test the efficacy of the interventions in achieving smoking cessation at post intervention, 6 weeks postpartum and one year post randomization, as well as the efficacy of the booster session at one year post randomization. The TFS-B intervention was effective in the short-term for achieving cessation as compared to usual care (p=0.008) however relapse to smoking in the postpartum was evident, and none of the interventions yielded long-term abstinence from smoking.

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SISTER TO SISTER: A FRESH START A PILOT PROJECT TO ASSIST LOW-INCOME WOMEN QUIT SMOKING

Jeanette O. Andrews, M.S.N., R.N., C.S., FNP, ACNP

PURPOSE: The primary aim of this pilot study is to evaluate the effectiveness of a lay health advisor/nurse intervention to assist low-income African American women quit smoking. The research hypotheses are that participants who receive the Sister pilot intervention will: 1) have higher smoking abstinence rates than at baseline; 2) will progress forward through the stages of change (from precontemplation and contemplation to action); and 3) will exhibit higher rates of social support and self-efficacy than at baseline. METHOD: A repeated measures design with one group will be used. Participants will receive six weekly hour-long group sessions that include stage-specific behavioral interventions delivered by the LHA and nurse. Nicotine replacement therapy will also be used. A minimum of 20 women will be recruited from a low-income, urban, minority district in Augusta, GA. Outcome measures include biochemical markers of cessation (exhaled carbon monoxide levels), stage of change, processes of change, self-efficacy, and social support. The outcome measures will be assessed at baseline, week 3, week 6, and week 12. Data will be analyzed using descriptive statistics for demographic data and logistic regression analysis for outcome measure scores. Data analysis will be completed by December, 2002.

IMPLICATIONS: Knowledge gained by this study will provide direction for further research in the development of: ethnically, culturally, and gender appropriate interventions to promote smoking cessation; procedures and instrument use for a larger quasi-experimental study with control group; and the recruitment and retention of lay health advisors in low-income African American communities.

This research is supported by the investigator’s NIH Predoctoral Fellowship (1F31-NR08065-01) and the American Cancer Society, Southeast Division.

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PSYCHOSOCIAL CHARACTERISTICS OF LOW INCOME PREGNANT SMOKERS

Ellen Dornelas, Ph.D.*, Edward Fischer, Ph.D., Cheryl Oncken, M.D., Harry Lando, Ph.D. and Jeffrey Magnavita, Ph.D.

This descriptive study examined demographic and psychosocial characteristics of 136 pregnant smokers. Participants ranged in age from 18-42 years (M=25, SD=5.6) and 69% had one or more children. The ethnic mix of the sample was Hispanic (66%), Caucasian (15%), African American (12%) and 7% identified themselves as “Other”. Participants were recruited from one prenatal clinic at a large urban tertiary care hospital. Most were unemployed (64%), 50% had less than a high school education, 65% were in the second trimester of pregnancy and 58% smoked 9 or fewer cigarettes daily (M=8.8, SD=9.4). Forty percent of participants reached the clinic by bus and 47% reported a household salary of less than $15,000/year. Four depression questions were asked assessing lifetime and past year depression. The Cronbach alpha for the depression index=.81. Approximately half of the sample (48.4%) said “no” to all four depression items and about one-fifth (19%) said “yes” to all four. Examining the data only for the Hispanic women, the results were similar to those of the overall sample. These data indicate that pregnant smokers who are treated in clinic settings often present with a constellation of psychological, economic and socioeconomic problems. It is as yet unknown whether smoking cessation treatments for pregnant women are more effective if they focus only on the circumscribed problem, or would be more effective if the treatment focus was broadened to address other concomitant sociopsychological difficulties.

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**POS4-43**

**COST ANALYSIS AND DIVERSITY OF PREGNANT SMOKERS USING TWO METHODS OF RECRUITMENT FOR A RANDOMIZED TRIAL**

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Two methods were used to recruit pregnant smokers for a RCT of smoking cessation. Cost effectiveness and diversity of eligible pregnant smokers were compared over a 12-month period. Thirty WIC and prenatal clinics distributed screening questionnaires, and study personnel contacted potentially eligible women to confirm eligibility and explain the study. Newspaper advertisements were placed in low-income areas of the county. Women who called in response to the ads were screened for eligibility and invited to enroll. Eligible women had to be English-speaking, over age 15, 18-26 weeks gestation, and have smoked at least one cigarette the preceding week. Incremental cost-effectiveness analysis (cost/eligible smoker) was conducted from the perspective of the funding agency. Costs included advertising, personnel time to identify eligible smokers, working with clinics, local travel, supplies, and copying. 316 clinic-screening forms were reviewed. 176 women were recruited into the study with 57% obtained from advertising. Eligible "advertisement" women were 34% AA, 51% White, and 14% Hispanic compared to 34% AA, 43% White, and 22% Hispanic among the clinic women. There were no differences by recruitment method in the percent of women who consented. Cost analysis showed strong dominance of advertising over clinic screening. Clinic screening is the typical method used for recruiting pregnant smokers into intervention trials, but researchers face increasing difficulty in reaching women. These results indicate the addition of advertising as a method of recruitment can increase efficiency while also obtaining a population-based sample.

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**POS4-44**

**PROMOTING SYSTEMS CHANGES TO HELP PREGNANT WOMEN QUIT SMOKING: OREGON SMOKE-FREE MOTHERS AND BABIES**

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The RWJF Smoke-Free Families National Dissemination Office is funding Oregon Smoke-Free Mothers and Babies as one of several prenatal demonstration projects to promote the adoption of the best practice smoking cessation intervention (the "5 As") into routine prenatal care. The goal is to coordinate tobacco treatment services among maternity case managers, prenatal care providers, and the Oregon Quitline. Systems level changes are being tested such as incentives to county health departments, referrals to community resources, and standardized screening forms. The evaluation team will measure the level of program implementation, changes in provider delivery of the "5 As," and cessation rates among pregnant smokers. This presentation will describe the preliminary results from three process evaluation tools: a needs assessment of case managers, a survey to assess organizational readiness to change, and a quality improvement survey to measure organizational support for tobacco screening and treatment. The needs assessment revealed that a majority of case managers are providing the recommended "5 As" protocol, but improvements need to be made in referrals to the quitline and communication with prenatal care providers. Results of the Change Manager Survey© show that the project has a high likelihood of success if current conditions remain the same. A quality improvement survey is being delivered to program stakeholders six months after project initiation, and those findings will highlight strategies to overcome barriers in adopting smoking cessation guidelines. The data will be used proactively to assist staff in making refinements to project activities, as well as retroactively to determine if program was implemented as planned.

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**POS4-45**

**ENVIRONMENTAL FACTORS AS BARRIERS TO PREGNANT SMOKERS WHO ARE MOTIVATED TO QUIT**

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Reducing tobacco use during pregnancy and after delivery is a major public health priority. Success rates of interventions are low; reasons for this are unclear. We assessed the smoking behavior and environment of 112 pregnant smokers enrolled in a telephone-delivered smoking cessation study. The majority of women were white. Mean age was 29.6 years; mean gestation at baseline was 14.5 weeks. Participants expressed a strong desire to quit and had changed their behavior since becoming pregnant: 75% cut down, and 42% made a 24-hour quit attempt. Eighty-six percent intended to quit within 30 days, but only 13% were very confident they would succeed. Social and emotional temptations to smoke were barriers to cessation. Sixty-five percent had partners who smoked, and only 39% had smoke-free homes. 42% reported most of their family and friends smoked, and only 15% were very confident they would not smoke when around others who were smoking. There was a nonsignificant trend toward confidence in ability to quit being inversely related to number of smokers among family and friends (<p> .10). The number of family and friends who are smokers significantly impacted women’s confidence to refrain from smoking when around others who are smoking and when feeling emotional (<p> .05). Among pregnant smokers who wanted and were trying to quit, environmental obstacles existed that were associated with lower self-efficacy for quitting and refraining from smoking. This is a rationale for intervention efforts to reduce pregnant women's exposure and increase their ability to cope with environmental temptations.

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**POS4-46**

**SMOKING AMONG PREGNANT AND POSTPARTUM WOMEN: RESULTS FROM A QUALITATIVE STUDY**

Kim Bercovitz, Sophie Soklaridis, Donna Stewart

**OBJECTIVES:** 1) to understand women’s experiences with smoking during and after pregnancy; 2) to examine women’s perceptions of benefits/barriers to quitting and reducing smoking; and 3) to elicit recommendations from women on tobacco control.

**METHODS:** Semi-structured interviews with 21 women were conducted at three months postpartum. Interview discussion topics included: experiences with new role as mother and caregiver, motivation for and barriers to quitting/reducing smoking, factors influencing postpartum relapse, and recommendations for smoking cessation interventions for postpartum women.

**RESULTS:** Women who smoked before pregnancy either reduced smoking during pregnancy or “suspended” smoking (quit) until the postpartum period when they relapsed. Themes associated with women's experiences with smoking throughout pregnancy included feeling stigmatized and engaging in impression management activities such as concealing smoking. Themes associated with the postpartum period included women's needs to “reclaim the body” and concerns about smoking and role modeling in front of children. Barriers to quitting included social influences, fear of weight gain, cravings and stress. Partner smoking and social networks were most the most powerful determinants of women’s smoking. Conclusion: A women’s pregnancy provides an ideal opportunity for smoking cessation. The experience of being pregnant coupled with concern for the health of the fetus provide compelling reasons to stop/reduce smoking. Tobacco control efforts may be more attractive to women if smoking is located in the broader context of maternal health and lifestyle change rather than treated as an isolated behavior. Findings help inform the development of smoking cessation and harm reduction interventions. In particular, health promotion programs and clinical interventions need to be directed at reducing partner smoking and educating postpartum couples about the harmful effects of environmental tobacco smoke exposure around infants.

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POS4-47  PREGNANCY OUTCOME AND MATERNAL CHANGES IN SMOKING HABITS WITH GESTATIONAL EXPOSURE TO BUPROPION

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OBJECTIVES: 1) To determine whether bupropion increases the risk for major malformations or other perinatal complications 2) To determine the effectiveness of bupropion in reducing the amount of smoking in pregnant women.

METHODS: This is a prospective, observational, controlled study consisting of three groups exposed to 1) bupropion, 2) other antidepressants and 3) non-teratogenic drugs. The groups will be matched for smoking, alcohol, time of exposure to drug and time of call to Motherisk. Participants are enrolled during their pregnancy and followed up after delivery. Fisher's Exact test will be used to determine statistical significance between groups.

RESULTS: Currently, 86 women are enrolled in this study, 66 of whom, have pregnancy outcomes. There are 46 live births with no birth defects, 12 miscarriages, 8 therapeutic abortions and 20 pregnancies are still pending. The mean birth weight and gestational age of the 46 women who have already delivered is 361 ± 0.56 SD kilograms and 39.3 ± 1.6 SD weeks respectively. Participants using bupropion for smoking cessation smoked an average of 14±6.6 SD cigarettes per day before pregnancy, and 6.5 ± 7.4 SD cigarettes per day during their pregnancy. In this group, 73% agreed that bupropion decreased the number of cigarettes they smoked per day and of these 40% had quit completely.

CONCLUSIONS: These are preliminary results and no definitive conclusions can be drawn.

This study is not funded by any organization.

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POS4-48  SMOKING-RELATED CORRELATES OF DEPRESSIVE SYMPTOMATOLOGY AMONG LOW-INCOME PREGNANT WOMEN

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Studies have shown that depressive symptomatology has an adverse effect on quitting smoking. Smoking cessation is associated with an increase in depressive symptoms, and smokers with a history of depression have a lower likelihood of achieving long-term abstinence. However, little is known about the mechanisms through which depression impacts smoking cessation, and how depression interacts with other factors that are related to quitting. Pregnant African American (n = 103) and Caucasian women (n = 145) who smoked prior to their pregnancy were recruited from public prenatal and WIC clinics. Current depressive symptoms were assessed using the CES-D. A series of hierarchical linear regression analyses were conducted to examine smoking-related correlates of depressive symptoms in this sample. Five separate domains were assessed including smoking history, current smoking patterns, environmental tobacco smoke exposure, other substance use, and related psychosocial variables (e.g., self-efficacy, motivation to quit). Variables from each category of smoking-related factors were tested for their relationship to depressive symptoms after adjusting for significant demographics using a backwards elimination procedure. Women who displayed higher nicotine dependence, had more exposure to others' cigarette smoking, used marijuana, and had lower self-efficacy with regard to maintaining abstinence when around other smokers demonstrated higher levels of depressive symptomatology (all p's < .05). These results suggest that several important factors may influence the relationship between depression and smoking cessation outcomes in low-income pregnant women, which, in turn, has relevant implications for program and policy development.

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POS4-49  FACTORS RELATED TO SMOKING CESSION IN A BI-ETHNIC SAMPLE OF LOW INCOME PREGNANT WOMEN

Kenneth D. Ward, Ph.D., Mark W. Vander Weg, Ph.D., Isabel C. Scarinci, Ph.D., M.P.H., and Mary Read, R.D.

Cigarette smoking during pregnancy remains a major public health problem. Prenatal smoking rates are highest among low income women, and differ substantially according to ethnicity, but little research has compared factors associated with quitting among White and African American (AA) women. White (n=145) and AA (n=103) pregnant women who smoked prior to pregnancy were recruited from public prenatal and WIC clinics. Compared to AAs, Whites started to smoke at a younger age (17 vs. 14 years), had a higher pre-pregnancy smoking rate (23 vs. 12 cigs/day), greater nicotine dependence (4.8 vs. 4.1 FTND score), and greater exposure to others' smoking (all p-values < .01). Despite these differences, whites and AAs were equally likely to have quit smoking (overall prevalence = 20.2%). In bivariate analyses, factors associated with quitting included higher levels of education and income, intending to breastfeed and having fewer prior pregnancies, a less “chronic” smoking history (fewer years smoking, prior quitting success, lower dependence), less exposure to others’ smoking, less depression, greater social support, and greater motivation to quit due to health concerns and the stigma and “hassles” of this behavior (all p-values < .05). Multivariate correlates of quitting included fewer years as a smoker (standardized odds ratio [OR]=0.54), lower FTND (OR=0.59), less exposure to others’ smoking (OR=0.58), greater perception that smoking is a “hassle” (OR=2.93), and the belief that “cutting down” is insufficient to protect the baby’s health (OR=1.60) (all p-values < .05). Factors related to quitting did not vary by ethnicity. These data indicate that similar smoking history, environmental, and motivational characteristics are associated with prenatal smoking among low income White and AA women.

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POS4-50  THE NATURAL HISTORY OF SMOKING AND RELAPSE AMONG PARENTS OF BABIES TREATED IN THE SPECIAL CARE NURSERY


Parental smoking is associated with adverse health outcomes in children. Infants born prematurely or with significant health problems are particularly vulnerable to ETS. More than 20% of parents of babies treated in the Special Care Nursery (SCN) smoke. We examined the natural history of smoking, cessation and relapse among these parents. We recruited 127 parents in the SCN. 58% were current smokers at baseline and 42% had quit smoking during the pregnancy. [Median age=27.4 years, SD=6.6. Median education = 13.5 years. Ethnicity: 79% white, 9% Hispanic, 6% African-American.] Sixty-one percent were single parents. Mothers were more likely to quit during pregnancy than fathers (47.9% vs. 24.2%: p<0.05). By the 1-month follow up 89.4% of mothers and 87.9% of fathers were smoking and at 6 months 89.4% of mothers and 90.9% of fathers were smoking. Of all parents quit at baseline, relapse rates to smoking at the 1 and 6 month follow-ups were 78.3% and 80.4%. Parents who had quit during the pregnancy had lower nicotine dependence (3.6 vs. 4.5), lower Pros of smoking (8.0 vs. 10), were less depressed (CES-D: 9.4 vs. 13.2) and reported fewer temptations to smoke (32.4 vs. 24.6, p<0.01). Smoking at six months was significantly associated with depression (r = .35; p<0.01). While many parents quit smoking during pregnancy, most resumed smoking within 3 months postpartum. Interventions are greatly needed which target cessation and relapse prevention in this vulnerable population.

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**POS4-51**

**SMOKING INCREASES RISK OF GESTATIONAL DIABETES IN NULLIPAROUS WOMEN**  
Lucinda England, Lisa Soule, Cong Qian, Kai Yu, Richard Levine for the CPEP Study Group

**OBJECTIVE:** To evaluate the effects of smoking on glucose tolerance and gestational diabetes mellitus (GDM) risk in a cohort of pregnant women. Study design: The trial of Calcium for Preeclampsia Prevention (CPEP) was a randomized study of nulliparous women conducted in 5 US medical centers from 1992-95. Smoking history was obtained at study enrollment (13-21 weeks gestation). Women were screened for GDM by measuring plasma glucose 1 hour after a 50-g oral glucose challenge; those with plasma glucose > 140 mg/dl received a 3-hour 100-g oral glucose tolerance test. Analysis of covariates was used to compare mean adjusted 1-hour plasma glucose levels of women who never smoked with women smoking at the time of study enrollment. The association between smoking and GDM was assessed using logistic regression, adjusting for maternal age, race, clinical center, body mass index, and gestational age at the time of blood collection.

**RESULTS:** Of 4589 women enrolled in CPEP, 3774 had complete information on pregnancy outcome and 1-hour glucose challenge results; 3693 also had known GDM status. Mean adjusted 1-hour glucose (mg/dl) was lowest among never-smokers (107.6 ± 0.9), followed by light (1-9 cigarettes/day) smokers (109.9 ± 1.7); moderate (10-19 cigarettes/day) smokers (114.0 ± 2.2); and heavy (> 20 cigarettes/day) smokers (117.9 ± 4.1) (P = 0.003). Findings were similar after restricting to women who did not develop GDM. Smoking was associated with a 2-fold increased risk of GDM (adjusted OR = 2.09, 95% confidence interval 1.20-3.67).

**CONCLUSION:** Smoking during pregnancy alters glucose tolerance and increases risk of gestational diabetes.

Sources of funding: The National Institute of Child Health and Human Development and the National Heart, Lung, and Blood Institute.

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**POS4-52**

**SMOKING CESSATION IN HORMONE REPLACING VS. NON-HORMONE REPLACING MID-LIFE AND OLDER SMOKERS: AN EXPLORATION OF BARRIERS AND FACILITATORS**  
Jennifer Kelly, Scott McIntosh, Ph.D., Deborah Ossip-Klein, Ph.D., University of Rochester; Cella Watt, Ph.D., State University of New York at Brockport

Smoking cessation behaviors of mid-life and older smokers are under-studied in general, and even less is known about potential mediating factors. It is projected that by 2050 21.7% of our population will be older than 65. Women in this age group are, or will soon be, menopausal or postmenopausal. Research findings indicate that women may differ from men with regard to nicotine use and/or effect and there is evidence that the intake and effect of nicotine may be affected by estrogen replacement therapy. The current poster reports on a qualitative investigation of potential facilitators and barriers to smoking cessation in women over 50 as reported by primary care physicians who treat an entire population as well as women smokers who are currently using Hormone Replacement Therapy. Data on barriers and facilitators to smoking cessation among a subsample of women age 50 and over in a larger self-help study in Western New York, six months after baseline assessment and intervention will also be presented. These data will be analyzed from a total of 658 women, of whom 99 (15%) report abstinence from smoking, and 558 who continue to smoke. Potential mediating effects of nicotine replacement therapy are examined, in addition to a variety of demographic and treatment variables.

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**POS4-53**

**GENDER AND AGE-RELATED DIFFERENCES IN THE PROCESS OF CESSATION**  

Though age and gender differences in smoking treatment have been examined in prior studies, relatively little work has been conducted evaluating age-by-gender differences in psychological processes that occur during a cessation attempt. Data from three randomized clinical trials were analyzed (N=549, 53% Female, 89% Caucasian) to evaluate gender-by-age interactions in mood change and confidence during a quit attempt. Smokers were randomly assigned to treatment conditions and assessed at baseline and after eight weeks of treatment (POMS and Treatment Confidence Questionnaire). Abstinence was measured by self-report with biological verification (CO and Cotinine). Participants were divided into three age groups (under 30, 30-50, and over 50). Analyses were conducted using Generalized Estimating Equations with a priori contrasts to test gender-by-age group comparisons. Results indicated no differences in abstinence rates as a function of age, gender, or the interaction. However, gender-by-age interactions were noted in psychological processes during cessation. Males reported greater confidence in quitting (at baseline and end-of-treatment) than females (p=0.006), and younger participants reported more confidence than all other participants (p=0.007). Age-by-gender interactions were observed, with men reporting greater confidence at baseline and end-of-treatment than women for participants over age 30, but not the under (p=0.04). Age-by-gender interactions were noted in mood change during cessation (p=0.017) with older (over 50) men reporting significantly less mood disturbance relative to older women (p=0.004) and all other age/gender groups (p=0.002). Overall, results suggest that though abstinence rates remain comparable, age and gender differences exist in smoker’s perception of their psychological states during cessation. Implications for further research and integration into tailored treatment interventions will be discussed.

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**POS4-54**

**BENEFITS AND BARRIERS TO PROVIDING SMOKING CESSATION SERVICES IN METHADONE TREATMENT CLINICS: FINDINGS FROM A NATIONAL STUDY**  
Robert Mark McCool, M.S.; Kimber Paschall Richter, Ph.D., M.P.H.; Won S. Choi, Ph.D., M.P.H.

While the prevalence of smoking among all Americans has decreased to 23%, more than 78% of patients in Methadone or other Opioid Treatment (MOT) clinics still smoke. To discover clinic leaders’ beliefs and attitudes about the provision of clinic-based smoking cessation treatment, we surveyed 697 MOT clinic leaders and received responses from 408. Of these, 84% offered qualitative responses to an open-ended item probing the benefits that clinics would accrue for providing smoking treatment. We coded responses using Excel software. Clinic leaders thought smoking cessation treatment would improve patients’ health, encourage abstinence from illicit drugs, and provide a service consistent with the treatment of other addictions. When presented with a list of barriers to providing smoking treatment, the response rate was 98%. Fifty-seven percent of all leaders said obstacles included staff short-ages, training, or commitment. Thirty-one percent said smoking cessation services weren’t a priority or reimbursable service, and 29% believed patients were uninterested in quitting smoking or that treatment was ineffective. Regardless of perceived benefits and barriers, 72% of respondents thought methadone programs should help their patients to stop smoking, and 88% thought that patients should be referred for smoking treatment. These results demonstrate that most MOT clinic leaders think smoking treatment is a clinic responsibility beneficial to their patients. However, widespread treatment implementation will likely require changes in priorities and perceptions. Future policy and research should ensure that clinic leaders have the information and resources necessary to provide smoking treatment for their patients.

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POS4-55  MOTIVATION TO QUIT SMOKING IN METHADONE-MAINTAINED CIGARETTE SMOKERS

William G. Shadel, Ph.D., University of Pittsburgh; Shaughna Bishop, Marjorie Weinstock, Jennifer Anthony, Deb Herman, Bradley Anderson, and Michael Stein, M.D., Brown University, Rhode Island Hospital

Smoking rates among persons being treated with methadone for opiate dependence are exceptionally high; some surveys place the smoking prevalence at over 90%. Thus, even though patients receiving methadone seem to be taking steps toward improving their health and functioning, the fact that the vast majority still smoke makes them susceptible to the negative health effects associated with smoking. Cessation efforts in this population have been few in number, and those that have been conducted have yielded inconsistent findings. Cessation treatments in this population may benefit from an understanding of the mechanisms that contribute to motivation to quit. The data in this presentation are taken from an ongoing clinical trial comparing the effects of a motivational intervention to a standard brief treatment for smoking cessation. A total of n = 168 (48% female) smokers receiving methadone were available for analysis in this study and the data presented are drawn from the baseline survey that all participants completed prior to randomization into treatment. In univariate analyses, participants’ level of motivation was predicted by: Age at first cigarette (p < .02), number of cigarettes smoked per day (p < .02), and self-efficacy to quit smoking (p < .0005). Motivation to quit was not significantly associated with any demographic variables nor was it associated significantly with any methadone specific variables (e.g., current dose, length at current dose). These data provide preliminary information about predictors of motivation to quit smoking and as such, offer some insight into what behavioral and psychosocial variables may be important to the process of quitting in this underserved population.

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POS4-56  CLINICAL CHARACTERISTICS OF NICOTINE DEPENDENCE IN COMPARISON WITH THOSE OF ALCOHOL, METHAMPHETAMINE, INHALANT, AND BENZODIAZEPINE DEPENDENCE

Hisatsugu Miyata*, Sadanobu Ushijima and Tomoji Yanagita

The purpose of the present study is to investigate clinical characteristics of nicotine dependence in comparison with other drugs of abuse, focusing especially on drug-induced clinically significant acute disorders and social disturbance. For that purpose, we developed a new scoring system for clinical evaluation. The form consisted of six scoring items: subjective effects, tolerance, liking, withdrawal syndrome, acute psychic and acute physical disorders, and social disturbance. Study subjects were those showing dependence on nicotine (cigarette smoking) (n=114), alcohol (n=101), methamphetamine (n=76), inhalants (n=50), and benzodiazepines (n=23), who fulfilled the DSM-IV criteria for drug dependence disregarding the state of “a maladaptive pattern of substance use, leading to clinically significant impairment or distress,” and gave written informed consent for participation in the study. Although this research was supported by Japan Tobacco Inc., the study was conducted from a scientific standpoint. Nicotine caused a mild or the least degree of subjective effects, tolerance, liking, and psychic withdrawal syndrome without any social disturbance and acute disorders. The other four drugs produced more intensive degree of subjective effects, tolerance, liking, various kinds of withdrawal syndrome and acute disorders, and social disturbance than nicotine. However, liking of the drug produced by benzodiazepines was as mild in degree as seen with nicotine. The results indicate that nicotine differed from the other drugs evaluated with respect to its inability to cause clinically significant disorders and social disturbance.

This study was supported by grants from Japan Tobacco Inc. (Tokyo, Japan).

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POS4-57  MARIJUANA USE AND TOBACCO USE FOLLOWING TREATMENT FOR ILLICIT DRUG DEPENDENCE

Kenneth Crawford, B.A., Allan Lundy, Ph.D., Jefferson Medical College, Philadelphia, Pennsylvania

Many researchers and clinicians advocate incorporating tobacco treatment into drug abuse treatment programs. However, there is some concern that smoking cessation may interfere with treatment for illicit drugs. In particular, it has been noted that marijuana and tobacco use share several characteristics, including the mode of delivery (smoke inhalation) and situational cues (e.g., use of a cigarette lighter). This raises the concern that marijuana users who have cut down or stopped their use of this illicit drug may increase their consumption of tobacco in compensation, with consequent ill effects on health. We studied 61 patients at an outpatient substance abuse clinic who had reported regular use of marijuana (usually in addition to other drugs) at admission, and on whom we had smoking data. Reported marijuana and tobacco use at admission and at a follow-up interview 6-12 months later were compared. There was no evidence of a substitution effect. On the contrary, there was some indication that those who smoked less marijuana at follow-up also smoked less tobacco. For example, among smokers only (N=48), reported reduction in smoking since intake correlated at r=.36 (p<.05) with frequency of marijuana use at follow-up. Although these results are preliminary, they suggest that smoking reduction may accompany a reduction in marijuana use.

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POS4-58  TOBACCO USE FOLLOWING TREATMENT FOR CRACK COCAINE DEPENDENCE IN MEN AND WOMEN

Allan Lundy, Ph.D., Ashwin Patkar, M.D., MRC Psych, Kenneth Crawford, BA, Jefferson Medical College, Philadelphia, Pennsylvania

Rates of tobacco smoking among abusers of illicit drugs are extremely high, and represent a serious threat to their health. However, incorporation of tobacco smoking cessation into drug abuse treatment programs continues to meet with some resistance within the therapeutic community. One concern is that crack cocaine users may tend to substitute one drug for the other since both are ingested as smoke and share similar psychopharmacological properties. If true, there is some risk that successful treatment of crack abuse may lead to an increase in tobacco smoking and consequent morbidity and mortality. We obtained data on tobacco smoking at a post-treatment follow-up interview of 136 former crack cocaine dependent patients 6-12 months after admission to a 3-month outpatient drug abuse program. For 114 of these persons, smoking information was also available from their admission. There was no indication of increased tobacco smoking following treatment for cocaine abuse. For example, increase in smoking between intake and follow-up correlated with cocaine use at follow-up at r=-.05 (N=114, ns). In fact, among women smokers at least, there is some evidence that a reduction in crack smoking may be accompanied by a reduction in tobacco smoking. For example, reported reduction in tobacco smoking since treatment was related to reduction in Addiction Severity Index drug use severity since intake (r=.39, p<.05, N=48). It appears that concerns over tobacco being substituted for crack may be unfounded in this population.

Partially supported by NIDA grant R01 DA 09787.

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POS4-59  THREE MONTH OUTCOMES FROM A SMOKING TREATMENT FOR SUBSTANCE-ABUSING ADOLESCENTS

Mark G. Myers, Ph.D.*, and Sandra A. Brown, Ph.D., V.A. San Diego Healthcare System and U.C.-San Diego

The high prevalence and persistence of cigarette smoking among substance-abusing adolescents identifies this group as an important target for treatment. The present study describes 3-month outcomes for a smoking intervention designed for adolescents in treatment for substance abuse. Participants were 34 adolescents (29% female, 88% white), on average 16.0 (1.2) years of age recruited from outpa-
tient substance abuse treatment programs. The intervention was delivered to all smokers in each treatment program, such that participants were not selected based on a desire to quit smoking. There were 17 participants in each condition. Treatment consisted of 6 group sessions focused on motivating changes in smoking behaviors. There were no differences across conditions on demographic variables or baseline smoking and substance use severity. Repeated measures ANOVAs were conducted to examine for treatment effects on smoking quantity/frequency and average ciga-
rettes per day, controlling for treatment site. Analyses revealed trends for a group by time interaction, such that participants in the treatment condition tended to show greater decreases in smoking rate. Effect sizes for the intervention were small to moderate (partial eta squared = .077, p < .12 for smoking quantity/frequency and partial eta squared = .088, p < .09 for average cigarettes). In addition, participants in the treatment condition were significantly more likely than controls to report point-abstinence (past week) at the 3-month follow-up (41% versus 6%, p < .05). Results of this study show a modest effect for a smoking intervention for adolescents in treatment for substance abuse. Funded by TRDRP grant #7R7-0135.

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POS4-60  FINDINGS FROM A TREATMENT STUDY OF HEAVY SMOKERS IN ALCOHOL RECOVERY: 24-WEEK OUTCOMES

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In this study of heavy smokers in alcohol recovery, 130 participants are being randomly assigned to receive either two 21-mg nicotine patches (NP) or one 21-mg NP and one placebo patch for 4 weeks followed by 8 weeks of dose tapering. Medication assignment is double blind for the first 4 weeks of patch treatment. Participants are also receiving 5 counseling sessions. To be eligible for the study, partic-

pants must smoke >20 cigs/day, meet DSM-IV criteria for alcohol dependence (lifetime) and have at least 2 months of abstinence from all nonprescribed drugs. Follow-up evaluations are being conducted 4, 12, 24 and 36 weeks after each partic-

ipant's scheduled quit day. Findings will be presented for 4-week (end-of-double blind), 12-week (end-of-treatment) and 24-week follow up for approximately 110 par-

ticipants. We will report (1) the percentage of participants who achieved 4- and 12-

week abstinence (7-day point prevalence and continuous) from smoking; (2) whether abstinence rate is associated with length of alcohol abstinence at the time of enroll-

ment into the study; (3) whether smoking abstinence is mediated by selected predic-
tors of treatment outcome (e.g., whether participants have smoked to cope with urges to drink during sobriety). Preliminary analyses indicate that approximately 14% of participants were smoking abstinence at 24 weeks and that length of alcohol abstu-

ence at time of enrollment is associated with smoking outcome (p < .05).

This study is being supported by NIDA Grant #R29-DA11713-01.

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POS4-61  CONCURRENT TREATMENT OF NICOTINE, ALCOHOL AND OTHER DRUG DEPENDENCE DURING RESIDENTIAL SUBSTANCE ABUSE REHABILITATION: A PILOT STUDY


BACKGROUND: Alcohol- and other drug-dependent men and women comprise a significant proportion of current smokers in the United States. We developed a choice-based program on our residential substance abuse rehabilitation service to determine whether substance abusing veterans would be able to safely quit smoking while receiving treatment for their other substance use disorders.

METHODS: We conducted a retrospective chart review on the records of the first 154 consecutive patients who volunteered to enroll in the Cincinnati VA’s Clean Break program (March 2000 - August 2001). The program consisted of once daily, 30-
minute-long behavioral therapy group sessions. Eighty-four percent of the men were prescribed transdermal nicotine replacement. Smoking abstinence was monitored using patient self-report and verified with expired breath CO levels <10 ppm.

RESULTS: Roughly 25% of all patients admitted to residential treatment during this interval volunteered to participate. The 110 male patients (71%) on whom complete data were available had a mean length of stay in Clean Break of 11.4 ± 8.6 days. Of these individuals, 24% were light smokers, and 54% abstained from smoking while they were enrolled in residential rehabilitation treatment.

CONCLUSIONS: A significant minority of substance dependent men was motivated to try to quit smoking while they received residential treatment for other drug dependencies. The majority of these men achieved at least very short-term smoking abstinence. In contrast to some other reports, light smokers comprised 24% of the sample.

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POS4-62  EFFICACY OF INTENSIVE VS. BRIEF SMOKING CESSATION TREATMENT CONCURRENT WITH INTENSIVE OUTPATIENT ALCOHOL TREATMENT

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A study was conducted to examine treatment outcome effects of delivering an intensive or brief smoking cessation intervention concurrent with partial hospital treatment for alcohol dependence. Participants were recruited from a VA substance abuse partial hospital program, and 115 were randomized to concurrent smoking cessation and alcohol treatments. Intensive smoking cessation therapy consisted of three hours of individualized behavioral counseling plus eight weeks of nicotine replacement using nicotine patches. Brief smoking cessation therapy consisted of one fifteen-minute smoking cessation advice session without nicotine replacement. Seven-day point prevalence cigarette abstinence rates were compared. The rate of self-reported smoking abstinence for Intensive vs. Brief treatment was 44.0% and 7.2% at 2 weeks (c2 (1) = 20.6, p <.001) and 20.9% and 2.3% at 6 months (c2 (1) = 7.4, p < .01). The rate of abstinence verified by breath CO less than 10 ppm was 30.0% and 5.1% at 2 weeks (c2 (1) = 12.2, p < .001) and 9.3% and 2.3% at 6 months (n.s.). Reported 14-day alcohol abstinence for Intensive vs. Brief treatment was 90.4% and 93.2% at 2 weeks (n.s.) and 63.6% and 60.9% at 6 months (n.s.). At 2 weeks and 6 months, all cigarette abstainers were also abstinent from alcohol.

Results indicate that moderately intensive smoking intervention led to higher initial smoking quit rates compared with brief intervention, but this treatment difference was not confirmed at 6 months. These results, along with other studies, suggest that more intensive smoking interventions than those employed in the present study may be needed to produce long-term smoking cessation in alcohol dependent smokers.

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THE ROLE OF MEDICATION DISCRIMINATION AND THE “PLACEBO EFFECT” IN A SMOKING TRIAL WITH NALTREXONE

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Pharmacological smoking cessation trials have rarely examined the “placebo effect” and the role of medication discrimination in participant’s compliance and outcome. Data was collected in an ongoing double-blind trial using naltrexone in smoking cessation. Early outcome analyses indicate possible efficacy of naltrexone in smoking cessation. Naltrexone was administered for 8 weeks in conjunction with nicotine patch (4 weeks) and behavioral counseling. This study examined the accuracy of participants’ discrimination of whether they were in the medication or placebo group, the subjective determinants of this discrimination, and its effect on subsequent compliance and outcome. Participants (N=84; Naltrexone=32; Placebo=32) smoked on average 23 cigarettes daily (range 12-45 cigs) with an overall duration of 23 years (range 2-43), and FTND scores= 5.8 (range 1-10). On quit day (3 days after initiating medication), 56% correctly identified they were taking naltrexone, while only 34% of the placebo subjects incorrectly thought they were taking naltrexone. Reasons cited for correctly discerning naltrexone were vague side effects (83%, 15/18) and less cigarette craving (17%, 3/18). Participants who showed the “placebo effect” (i.e., incorrectly thought they were on naltrexone) reported the same reasons. Medication discrimination did not significantly affect medication or patch compliance or drop-out rates. Finally, continuous abstinence quit rates (2 months post quit date) were moderately higher in naltrexone discriminators vs. nondiscriminators (50% vs. 36%) but there was no difference within the placebo group (43% vs 40%). In sum, during early smoking cessation, rates of medication discrimination were relatively low, which could be attributed to expectancy effects or nonspecific withdrawal. Those showing increased naltrexone sensitivity (i.e., discrimination) may show better outcome than those who do not discern being in the active treatment condition.

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POS4-64 MEDICATION COMPLIANCE DURING A SMOKING CESSATION CLINICAL TRIAL

Joy Schmitz, Shelly Sayre, Jennifer Rothfleisch, Angela Stotts, Marc Mooney

This study examined the role of Medication Event Monitoring Systems (MEMS) in assessing pill-taking behavior and enhancing compliance within a randomized trial of bupropion for smoking cessation. Female participants (N=97) in a group therapy program received MEMS bottles containing either two 150mg of bupropion-SR or placebo along with instructions to take one tablet in the morning and one tablet in the evening with at least 8 hours between doses. A randomly selected “Informed” group of participants was told about the recording device in the bottle cap and received weekly graphic feedback showing their pill-taking behavior with specific instructions for improving feedback. An “Uninformed” group did not receive feedback or further instruction. Comparisons of compliance rates between the Informed and Uninformed groups revealed significant differences (58% vs 39%). Main effects were found for number of doses taken, number of doses taken on time, and informed/uninformed status. A significant interaction between time and informed/uninformed status was also found. All results were statistically significant at p < .001. To explore potential predictors of medication compliance, regression analyses were conducted using sociodemographic, smoking history, and health belief variables. Participation in the MEMS group emerged as the strongest and most consistent predictor of compliance; suggesting significant benefit in providing simple feedback and instruction throughout a medication regimen.

Supported by NIDA grant DA-08888-06 and GlaxoSmithKline.

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POS4-65 BUPROPION SR FOR SMOKING CESSATION: IMPROVING PILL-TAKING BEHAVIOR WITH A MEMS-BASED COMPLIANCE COUNSELING INTERVENTION

Marc Mooney, Shelly Sayre, Patricia Hokanson, Angela Stotts, Joy Schmitz

Reports of poor medication compliance are nearly universal, including medications for smoking cessation (i.e., nicotine replacement therapy). In a previously presented study, a medication event monitoring system (MEMS) was used to measure bupropion-taking in a smoking cessation study for women. Compared to a usual-care condition, informing subjects about their medication-taking patterns increased compliance significantly, but left considerable room for improvement. The current study sought to enhance the simple MEMS intervention to further augment compliance. Female smokers (N = 20, Means: Age = 43, Cigarettes/Day = 17, Years Smoking = 25) in this 6-week open-study of bupropion were instructed to take 150 mg of bupropion twice daily, allowing 8-12 hours between doses. Subjects were randomly assigned to one of two treatment conditions. All subjects received weekly individual smoking cessation counseling. In the Compliance Counseling (CC) condition, subjects received MEMS feedback, and the following techniques were added: clarification of instructions, regimen tailoring, discussion of adherence barriers, and self-monitoring. In the control condition, subjects were not told the MEMS system was being used and received no feedback. Two dependent measures of compliance were analyzed, based on the proportion of days (42) when: (1) both pills were taken, and (2) both pills taken on time (i.e., 8-12 hours between doses). Preliminary data for CC and control groups suggest similar compliance rates for pill and time compliance. Future analyses will explore temporal patterns of use, employing generalized estimating equations to accommodate missing data.

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POS4-66 COST-EFFECTIVENESS OF DIFFERENT INTENSITIES OF BUPROPION SR DOSE AND BEHAVIORAL TREATMENTS IN A HEALTH CARE SETTING

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Bupropion SR administered at 300 mg/day along with minimal counseling has been shown to be a cost-effective smoking cessation intervention when compared to placebo, nicotine transdermal patch (NTP), or a combination of bupropion and NTP. This is the first economic analysis comparing the cost-effectiveness of bupropion SR at doses of 150 and 300 mg/day in combination with behavioral counseling of two intensities. Estimates of 15-month abstinence are based on 1,924 smokers randomized to 150 or 300 mg/day bupropion crossed with two behavioral interventions. Costs of treatment were derived from calculation of time and materials involved, labor reimbursement rates, and overhead rates. Monetary benefits to employers, mortality rates, and quality of life for quitters and smokers were obtained from the literature. Outcome measures calculated included costs per 12-month abstainer, lifetime abstainer, life-year saved, quality-adjusted life-year (QALY) saved, and employer return on investment (ROI). Cost per additional 12-month abstainer (above that expected for placebo) for the 150 mg dose groups averaged $895, and per additional lifetime quitter averaged $1,508. Comparable average costs for the 300 mg groups were $1,342 and $2,129. Employer ROI over 5 years ranged from an average of 31.5% per annum for the 150 mg groups to 22.9% for the 300 mg groups. Cost per life-year and QALY saved varied substantially by age and treatment. Smoking cessation treatments consisting of 150 mg bupropion combined with either of the two intensities of counseling were approximately equally cost-effective, were more cost effective than treatments using a 300 mg dose, and were more cost-effective than many other smoking cessation interventions discussed in the literature. Cost per life year and QALY saved were sufficiently low for all doses to rate any of these smoking cessation interventions as among the most cost effective of life saving medical treatments.

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**POS4-67**

**PREDICTORS OF SUCCESSFUL OUTCOME DURING ZYBAN LP TREATMENT IN SMOKERS—PRELIMINARY RESULTS OF A FRENCH MULTICENTRE STUDY**


OBJECTIVE: To identify predictors of both smoking abstinence and response to Zyban LP. Methods: 504 smokers (10 cigarettes/day or more) motivated to quit were randomized (2:1) and received in a double-blind fashion bupropion SR 150mg bid or placebo for 7 weeks with counselling. Multivariate logistic regression was used to identify predictors of 4-week continuous abstinence (Weeks 4-7). RESULTS: Predictors were: treatment, motivation to quit (Q-MAT), FTND score, current smoking-related disease. The likelihood of abstinence increased with motivation score (Adjusted OR=ORa=1.52, p=0.04). It decreased for highly nicotine dependent patients (ORa=4.6, p=0.0004) and for patients with a current smoking related disease (ORa=5.7, p=0.079). Continuous abstinence was significantly higher in the Zyban LP group compared to placebo (ORa=2.6, p=0.001). Factors such as gender, previous attempts to quit, anxiety level, history of depression or alcohol dependence were not predictors of outcome. No interaction between treatment and other factors was found. Conclusion: When adjusted on confounding factors, Zyban LP response was independent of all characteristics studied. In particular FTND score and depression history were not predictive of Zyban LP response.

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**POS4-68**

**TIME TO EVENT ANALYSIS OF BUPROPION CLINICAL TRIAL DATA**

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This paper reports an analysis of participants from two clinical trials of bupropion as an aid for smoking cessation, examining the effects of sex, drug, and several baseline survey measures on the pattern of smoking behavior during the trial and follow-up period. 1079 smokers who had passed the 6 month follow-up yielded 9556 self-reported transitions, including 3936 lapse or relapse events, and 3491 recoveries from lapses. Separate time to event models (Cox regression) were fitted for each of the transition types, assuming multiple failures and clustering on subject. The important predictors for lapses were Sex (HR 1.22, p=0.004), Treatment Phase (In treatment versus follow-up, HR 1.20, p=0.014), Drug x Treatment Phase (HR 0.80, p=0.047), and the Drug x FTND score (HR 0.73, p=0.018). Results indicate that women lapse more readily than men, and that bupropion uniformly prevents lapses across both sexes. Predictors important for recovery were Drug x Sex (HR 1.27, p=0.030), Treatment Phase (HR 1.49, p=0.000), and Drug x FTND score (HR 0.70, p=0.013). Results highlight asymmetries in factors responsible for lapse versus recovery, that bupropion differentially affects the ability of men and women to recover from lapses, while uniformly preventing lapses. Supported by NCI Grant R01 CA63562 and a Transdisciplinary Tobacco Use Research Center Grant P50 CA/DA84718, Drug and Placebo provided by Glaxo Wellcome.

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**POS4-69**

**A PLACEBO-CONTROLLED, DOUBLE-BLIND STUDY OF ZYBAN LP: AN EFFECTIVE AND WELL-TOLERATED AID TO SMOKING CESSATION—PRELIMINARY RESULTS**

Francois Lebargy, M.D., Henri-Jean Aubin, M.D., Gilbert Lagrue, M.D., Claude Bidaut-Mazel, M.D., Joumana Chemali-Hudy, M.Sc., Lydia Poulain, Ph.D., on behalf of the French Zyban LP Study Group

OBJECTIVE: To demonstrate the efficacy and safety of Zyban LP in smokers. Methods: 504 adults, motivated to quit and smoking at least 10 cigarettes/day were randomized (2:1) from 91 French centres and received bupropion SR 150mg bid or placebo for 7 weeks with twice monthly counselling.

RESULTS: Baseline characteristics were similar between treatment groups. Zyban LP treated subjects had significantly greater abstinence compared to placebo (continuous abstinence weeks 4-7: 41% vs 21%, p=0.0001, OR=2.5 and weeks 4-26: 29% vs 13%, p=0.0001, OR=2.2; point prevalence abstinence week 7: 48% vs 24%, p=0.0001, OR=3.0 and week 26: 31% vs 16%, p=0.0004, OR=2.3). Among 4-week continuous abstinence failures, week 7 point prevalence abstinence was significantly higher with Zyban LP compared to placebo (12% vs 3%, p=0.003). Among quitters, Zyban LP compared to placebo reduced weight gain (1.0kg vs 2.1kg; p=0.006). Common adverse events for both groups were sleep disorders, headache and anxiety with a higher incidence of sleep disorders in Zyban LP group. No seizure occurrence was reported.

CONCLUSION: This study confirms the very good benefit/risk ratio of Zyban LP as an aid to smoking cessation.

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**POS4-70**

**EFFECTS OF BUPROPION ON DEPRESSION SYMPTOMS IN HIGHLY DEPENDENT SMOKERS**

Bradley N. Collins1, E. Paul Wileyto1, Margaret Rukstalis2, Angela Pinto1, Larry Hawk1, Ray Niaura2, Leonard Epstein3, and Caryn Lerman1, 1University of Pennsylvania, 2Brown University, 3State University of New York at Buffalo

Depression symptoms are frequent in smokers and can increase the likelihood of smoking relapse. Bupropion, an anti-depressant, is an effective smoking cessation aid. Although initial studies failed to find an effect of bupropion on clinical depression symptoms in smokers, other studies have suggested its effects on negative affect are important for promoting abstinence. This analysis examined the effect of bupropion on non-clinical depression symptoms (using the CES-D) among 497 smokers participating in a placebo-controlled randomized trial. Linear regression models of changes in depression symptoms at the end of treatment and 6-month follow-up revealed significant treatment x dependence interaction effects (p<0.05); however, the pattern of results was different at each stage. During the treatment phase, all groups exhibited decreases in depression symptoms, but the effects of bupropion were significant only for highly dependent smokers. During the post-treatment phase, depression symptoms in all groups remained relatively unchanged, with the exception of the highly dependent smokers on bupropion who showed a significant increase in symptoms. These results suggest bupropion attenuates depression symptoms in the short-term among highly dependent smokers. Longer-term treatment may be needed for this group to address depression symptoms and prevent relapse.

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POS4-71  
**BUPROPION SR IN ADOLESCENTS WITH NICOTINE DEPENDENCE: A PILOT STUDY**

Renee Bittoun

Smokers with Chronic Obstructive Pulmonary Disease (COPD) constitute a patient group that show resilience to quitting smoking due to a multiplicity of factors including strong nicotine dependence, depression, lack of perceived self-efficacy and lack of perceived ability to improve in medical status. This survey assesses smoking cessation pharmacotherapy (Rx) for the first 100 consecutive smokers diagnosed with COPD referred to a free Smokers’ Clinic. Each subject was assessed for tobacco dependence and depression at baseline. Individual Rx for each patient was decided on suitability and history of previous quit attempts. Expired CO was measured at every presentation. Results: 79% were male, 21% female with a mean age of 60 (32-76). All had a history of multiple unsuccessful quit attempts (average > 4). 100% had past failures to quit using a single type (patch, gum, inhaler) of Nicotine Replacement Therapy (NRT) and 14% had failed using Bupropion Hydrochloride (Zyban) alone. Rx: 14% received support only, 11% were prescribed Zyban only, 75% received NRT of some sort. Of these 47% were treated with combination therapy. Combinations included: 2 X 21 mg patches (11%), 21mg patch plus 4mg gum (19%) 4mg gum plus nicotine inhaler (5%) 21mg patch plus 4mg gum plus nicotine inhaler (5%) Zyban and 21mg nicotine patch (7%) Abstinence rates: 62% confirmed abstinent for all treatments at > 6 months. Average of 6.2 visits to the Clinic. OR of success using combination Rx over single therapy was 1.75 Lost to follow-up and deaths (2), 7% (included as failures). Conclusion: Intensive treatment of this “hard-to-treat” group using tailored combination therapies can show high long-term abstinence rates.

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POS4-73  
**CLINICAL IMPLICATIONS OF LONG-TERM PHARMACOTHERAPY FOR TOBACCO DEPENDENCE**

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Recent recommendations have encouraged the use of combinations, as well as extended duration, of pharmacotherapy for reducing the harm from tobacco. However, limited clinical data exist showing the real-world impact of these practices. This study describes patients treated in a tobacco dependence clinic. Data are reported on 201 patients treated from January-December, 2001 who set a quit date and initiated a treatment plan. A one-month follow-up survey collected data from 169 patients. Pharmacotherapy use was reported in 138(81.7%) of patients; 47(34%) used one medication, 89(64%) used two or more medications, and 31(22%) used three or more medications. Medication types used included nicotine patch (64%), nicotine inhaler (59%), bupropion SR (51%), nicotine gum (44%), and nicotine nasal spray (36%). At 26 weeks, 62/201 patients (30.8%) reported not using tobacco in the past 7 days, and 54/201(26.9%) reported not using tobacco since their quit date. Additionally, 25% of patients reported still using some pharmacotherapy. Continued medication use was seen more frequently in certain sub-populations, such as females (Odds Ratio (OR)=2) and those with insurance coverage (OR=3.6). Also, those with continued medication use were 2.4 times more likely to report abstinence than those who were no longer using medications at 26 weeks. Continued medication use was not associated with initial measures of nicotine dependence (number of cigarettes per day and minutes to first morning cigarette). These findings will be outlined as a case report describing the continued use of pharmacotherapy at 26 weeks. Recommendations on long-term medication use, the harm reduction risk/benefit ratio, and guidelines for tapering pharmacotherapy will be presented. 

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POS4-72  
**COMBINATION THERAPY IN “HARD-TO-TREAT” SMOKERS**

Renee Bittoun

Smokers with Chronic Obstructive Pulmonary Disease (COPD) constitute a patient group that show resilience to quitting smoking due to a multiplicity of factors including strong nicotine dependence, depression, lack of perceived self-efficacy and lack of perceived ability to improve in medical status. This survey assesses smoking cessation pharmacotherapy (Rx) for the first 100 consecutive smokers diagnosed with COPD referred to a free Smokers’ Clinic. Each subject was assessed for tobacco dependence and depression at baseline. Individual Rx for each patient was decided on suitability and history of previous quit attempts. Expired CO was measured at every presentation. Results: 79% were male, 21% female with a mean age of 60 (32-76). All had a history of multiple unsuccessful quit attempts (average > 4). 100% had past failures to quit using a single type (patch, gum, inhaler) of Nicotine Replacement Therapy (NRT) and 14% had failed using Bupropion Hydrochloride (Zyban) alone. Rx: 14% received support only, 11% were prescribed Zyban only, 75% received NRT of some sort. Of these 47% were treated with combination therapy. Combinations included: 2 X 21 mg patches (11%), 21mg patch plus 4mg gum (19%) 4mg gum plus nicotine inhaler (5%) 21mg patch plus 4mg gum plus nicotine inhaler (5%) Zyban and 21mg nicotine patch (7%) Abstinence rates: 62% confirmed abstinent for all treatments at > 6 months. Average of 6.2 visits to the Clinic. OR of success using combination Rx over single therapy was 1.75 Lost to follow-up and deaths (2), 7% (included as failures). Conclusion: Intensive treatment of this “hard-to-treat” group using tailored combination therapies can show high long-term abstinence rates.

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POS4-74  
**TREATMENTS FOR SPIT TOBACCO USE: A QUANTITATIVE SYSTEMATIC REVIEW**


Spit tobacco use in the United States is prevalent and is associated with adverse health consequences. Health care providers have neither evidence summaries nor evidence-based guidelines to assist them in treating patients who use spit tobacco. We completed a systematic review of the literature to determine the efficacy and safety of pharmacologic and behavioral interventions for the treatment of spit tobacco use. Eligible studies were randomized controlled trials of pharmacologic or behavioral interventions for the treatment of spit tobacco use. We found 6 randomized controlled trials testing pharmacologic interventions and 8 testing behavioral interventions. Using random-effects meta-analyses, bupropion sustained-release (SR) increased point prevalence tobacco abstinence at 12 weeks [odds ratio (OR) 2.1, 95% confidence interval (CI), 1.0-4.2]. Nicotine replacement therapy with patch or gum increased point prevalence tobacco abstinence at 6 months [OR 1.3: 95% CI, 1.0-1.6]. Behavioral interventions increased long-term (> or = 6 month) point prevalence spit tobacco abstinence (OR 1.7: 95% CI, 1.1-2.9). Studies including an oral examination followed by feedback to the patient had the highest treatment effect. Bupropion SR and behavioral interventions for spit tobacco users appear to be effective for treating spit tobacco use. Nicotine replacement therapy may also be effective. This evidence from randomized controlled trials provides health care professionals with information necessary to effectively treat spit tobacco use. Research conducted at the Mayo Clinic.

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**POS4-75**

**EFFECT OF GLUCOSE ON TOBACCO WITHDRAWAL SYMPTOMS IN RECENT QUITTERS USING BUPROPION OR NICOTINE REPLACEMENT TREATMENT**

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Glucose has been shown to alleviate desire to smoke after short-term deprivation, and when used daily for a week. It has also been shown to increase one-month abstinence rates and enhance the effect of a nicotine patch. However, no effect was found in smokers not completely abstinent, or in students after overnight and morning abstinence. It is unknown whether glucose may be useful for dependent smokers quitting with the aid of bupropion. This double blind study examined the effects of a single dose of glucose in patients using nicotine replacement treatment (NRT) or bupropion, after one week of continuous biochemically verified abstinence. The sample consisted of 75 volunteers attending a smoking cessation treatment program, 31 were using bupropion and 44 were using NRT. They were randomized to chew four 3g glucose or placebo tablets after providing baseline ratings of irritability, depression, hunger, restlessness, concentration, and urges to smoke. These ratings were then repeated at five-minute intervals over 20 minutes after taking the tablets. Compared to previous studies on acutely deprived subjects, the baseline withdrawal discomfort in our sample was low and the scope for showing any effects was therefore limited. However, in patients using bupropion, glucose tablets significantly reduced irritability, hunger, restlessness, and the total withdrawal rating. In the NRT group, there were no differences between glucose and placebo on any of the ratings.

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**POS4-76**

**IMPACT OF OTC RECLASSIFICATION ON USE AND SUCCESS RATE OF THE NICOTINE SKIN PATCH AND GUM**

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OBJECTIVE: To assess the rate of use of the nicotine skin patch and gum before and after these were reclassified from prescription only to over-the-counter (OTC) availability in 1996 in a cohort of smokers.

METHODS: Data on NRT use in an attempt for cessation was collected in a study of 5,778 adults aged 25 to 64 years in 1988 who originally participated in the Community Intervention Trial for Smoking Cessation between 1988 and 1993, were smokers in 1993, and also completed a detailed tobacco use telephone survey in 2001. Subjects were asked to recall details about each use of the nicotine skin patch and gum from 1993 to 2001, and the date of cessation was determined for those who quit during this period. The annual rate of use for each product was calculated, and among product users, the annual cessation rate was also calculated.

RESULTS: The use rate for the nicotine skin patch went from 2.4% in 1993 to 3.9% in 1996 to 6.7% in 2000. The use rate for the nicotine gum went from 1.5% in 1993 to 2.2% in 1996 to 2.7% in 2000. The annualized quit rate among patch users decreased between 1993 and 1996 (23.9% in 1993 to 15.3% in 1996), but stayed almost the same between 1996 and 2000 (17.5% in 2000). Rate of success of gum decreased between 1993 and 1996 (14.1% in 1993 to 9.5% in 1996), but slightly increased between 1996 and 2000 (13.7% in 2000). Additional results on the characteristics of users before and after the OTC reclassification and the association between NRT use and other indicators of cessation will be presented.

CONCLUSION: OTC reclassification in 1996 may have increased utilization of NRT without adversely impacting cessation rates in NRT users.

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**POS4-77**

**WHERE IN THE QUIT PROCESS DOES NICOTINE PATCH HELP?**

Saul Schiffman, Ph.D., Deborah Scharf*, B.A., Elizabeth Peiayo, B.A., William Shadel, Ph.D.

Numerous studies demonstrate that nicotine replacement therapy (NRT) is effective in helping smokers achieve lasting smoking cessation. However, it has not been clear how or where this boost in success is effected: Does NRT help smokers make the initial transition from smoking to brief abstinence, i.e., to achieve initial cessation? Does it help abstinent smokers avoid lapses (first episodes of smoking)? Does it help lapse smokers avoid progressing to full relapse? In the study, we examined the effects of high-dose (35 mg) nicotine patch on each of these progressive cessation milestones early in treatment. Three hundred and twenty-four smokers were randomized to active (n=188) or placebo (n=136) patches, and used electronic diaries to monitor their smoking in real time for 7 weeks, allowing detailed examination of the cessation process. Using survival analysis, we found that active treatment significantly improved all three outcomes. Smokers on active treatment achieved 24 hour abstinence more quickly (p<0.0002). Among those who became abstinent, active treatment increased the duration of abstinence (p<0.0008). Finally, among those who lapsed, active treatment delayed progression to relapse (p<0.0001). These results suggest that NRT promotes abstinence in three different ways that may involve different mechanisms. Analysis by milestones may help develop deeper understanding of cessation treatments and their mechanism(s) of action.

This research was supported by NIDA grant SR01DA06084-09. Patches provided courtesy of GlaxoSmithKline Consumer Healthcare. Dr. Schiffman consults exclusively to GSK and has an interest in a new NRT product.

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**POS4-78**

**THE SAFETY AND EFFECTIVENESS OF THE NICOTINE INHALER FOR SMOKING CESSTATION IN AN OVER-THE-COUNTER SETTING**

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This study was designed to evaluate the safety and efficacy of the nicotine inhaler as an aid to smoking cessation in an over-the-counter simulation (with no behavioral support) in comparison to a health care provider based condition with minimal behavioral intervention. A total of 520, healthy smokers over the age of 18 were randomized in a controlled 52 week study to either Over-the-counter (OTC) or Health Care Provider (HCP) conditions. On-site follow-up visits were conducted at weeks 2, 6 and 12; telephone follow-up at weeks 26 and 52. Subjects in the OTC group only received standard package information on use of the inhaler, while subjects in the HCP condition were given smoking cessation support materials and brief behavioral intervention at the initial clinic visit and at week 2. Medication could be purchased ad lib in both groups. At most follow-up visits, rates of abstinence for the HCP group were three to four times those observed in the OTC group. CO verified Continuous abstinence across both groups, at one year, was .77% in the OTC condition vs. 3.08% in the HCP condition [p <.01]. Average daily inhaler use was low, and was not significantly different between groups (fewer than 3 per day at week 6). These findings support the role of health care providers in the smoking cessation process. Overall, the counter quit rates were significantly lower than HCP quit rates, but both groups had extremely low quit rates. Inhaler use patterns across groups suggest a need for strategies to improve medication compliance.

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PO4-79  COMPUTERIZED DOSING OF NICOTINE INHALERS: EFFECTS ON USE AND QUIT RATES
William T. Riley, Ph.D.*; Melissa Pici, B.A.; Valerie L. Forman, Ph.D.; Albert Behar, M.S.; PICS, Inc.

The purpose of this study was to develop and evaluate a computerized program to encourage adequate dosing of nicotine inhalers. Two handheld computerized dosing/promoting programs were developed. Both utilized a one week smoking baseline to determine the initial inhaler prompting schedule but differed in the length of the stable dosing period prior to tapering use (3 weeks vs. 12 weeks). These computer prompting programs were compared to an inhaler only condition in a randomized trial of 462 smokers evaluated at 9 and 18 weeks (1 yr. follow-ups pending). At 9 weeks, 32% of the computerized dosing groups had been quit for 7 days or longer (biochemically validated) compared to 20% for the inhaler only condition (chi-square = 4.69, p < .05). Continuous quit rates at 9 weeks were 21% for the computerized dosing groups and 11% for the inhaler only group (chi-square = 5.76, p < .02). At 18 weeks, 26% of the computerized dosing groups and 18% of the inhaler only group met point prevalence criteria. Continuous quit rates at 18 weeks were not significantly different (14% vs. 9%). Those in the computerized dosing conditions also reported higher doses per day in the first week of use than those in the inhaler only condition (9 vs. 7; t = 3.34, p < .001). No significant differences were found between the two computerized programs. The results of this study indicate that computerized prompting increases initial nicotine inhaler dosing and produces higher initial quit rates than typical inhaler administration.

This study was supported by NCI (R44CA80525) and by Pharmacia.

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PO4-80  THE MOOD EFFECTS OF NICOTINE: FINDINGS FROM A META-ANALYSIS OF PLACEBO-CONTROLLED STUDIES
David Kalman, Ph.D., Boston University, ENRM VAMC, Stevens Smith, M.D., University of Wisconsin at Madison

We will present findings from a meta-analysis of over 40 placebo-controlled studies investigating the mood effects of nicotine. Separate analyses are being conducted according to whether study participants were smokers or nonsmokers. Within each category of participant, studies are also grouped according to method of nicotine administration (e.g., smoked tobacco, nasal spray) and nicotine dose. The Circumplex Model of affect is being used to group conceptually similar measures of mood (e.g., tense and nervous are both categorized, “unpleasant”; fatigued and sedated are both categorized, “deactivated”). Pooled effect sizes using random effects modeling are being calculated for each quadrant of the Circumplex grid and for head rush. Preliminary findings (collapsed across doses) for the effects of nicotine via nasal spray on mood (N = 11 studies) in smokers indicate that nicotine increases activation (ES = 0.17; p<.01) but decreases pleasant (ES = -0.38; p<.01). The largest effect is seen for head rush (ES = 0.68; p<.001). We will present and compare findings for low, intermediate and high doses within each method of administration and separately for smokers and nonsmokers.

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PO4-81  FLUOXETINE MODERATES THE ASSOCIATION BETWEEN TRAIT-ANXIETY AND SMOKING STATUS FOLLOWING BEHAVIORAL TREATMENT FOR SMOKING CESATION
Amy Carrington, Neal Doran, M.A., and Bonnie Spring, Ph.D., University of Illinois-Chicago and Hines VA Hospital

When used as an adjunct for smoking cessation, fluoxetine heightens cessation rates for smokers who are more depressed (Hitsman et al., 1999). Anxiety disorders often occur comorbidly with smoking, and increased anxiety in smokers trying to quit is well-documented. Fluoxetine is used as an anxiolytic agent but, to our knowledge, its influence on cessation for anxiety-prone smokers is unknown. We hypothesized that smokers with higher levels of anxiety would be more likely to quit with fluoxetine than with placebo. Participants were regular smokers (n=256) randomly assigned in a double-blind fashion to receive fluoxetine or placebo. Additionally, all participants received group behavioral treatment delivered via 9 visits over the course of 13 weeks, after which they were followed up monthly for 4 months. Data were analyzed via logistic regression. We found that drug status moderated the relationship between trait-anxiety and smoking status two months after the quit date, such that higher trait-anxiety predicted an increased likelihood of smoking for participants on placebo [OR = 1.06, p=.05], but trait-anxiety did not predict smoking status for participants treated with fluoxetine [OR=1.07, p=.05]. Similarly, six months after the quit date, trait anxiety predicted smoking status among those in the placebo group (OR=1.07, p=0.05), but not those in the fluoxetine group. These results suggest that, for smokers higher in trait-anxiety, the administration of fluoxetine during cessation treatment may help increase the likelihood of achieving abstinence.

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PO4-82  ST. JOHN’S WORT ORAL SPRAY REDUCES WITHDRAWAL SYMPTOMS DURING QUITTING SMOKING
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St. John’s Wort (SJW) has been used successfully to treat depression. It has been suggested that its action is similar to the selective serotonin re-uptake inhibitors (SSRIs). Bupropion, which is an SSRI, is currently recommended as standard pharmacotherapy for smoking cessation. We examined the efficacy of an oral spray containing SJW to reduce symptoms of nicotine withdrawal during smoking cessation. Forty-five adult smokers (31% men; 59% white, 32% Hispanic; mean age 40.9) were randomly assigned to receive a brief counseling session, self-help manual and nicotine replacement therapy (patch) and an oral spray containing either 1) St. John’s Wort or 2) a mint flavored placebo. Subjects kept a daily diary recording the intensity of six withdrawal symptoms (rated 1-6 on a Likert scale) for two weeks after their target quit day. Mean smoking rate at baseline was 22 cigarettes/day. At 1 month, 33% of subjects were quit with no difference between SJW and placebo. All withdrawal symptoms reduced significantly over time. For both weeks, cravings were lower among SJW vs. Placebo groups (p<0.05). A repeated measures ANOVA showed that subjects using the SJW had significantly less anxiety, restlessness and sleepiness over the course of the two weeks compared to placebo. SJW oral spray reduces some withdrawal symptoms among smokers attempting to quit using nicotine replacement therapy.

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POS4-83  INCREASING SMOKING CESSATION AND REDUCTION TWO YEARS FOLLOWING A SMOKING CESSATION TRIAL IN PATIENTS WITH SCHIZOPHRENIA

A. Eden Evins, M.D., Corinne Cather, Ph.D., Donald C. Goff, M.D., Nancy A. Rigotti, M.D.

BACKGROUND: The purpose of this study was to investigate the rate of smoking cessation and reduction two years after a smoking cessation program in outpatients with schizophrenia and to evaluate the smoking status at 2 years of patients who had achieved significant reduction in tobacco use during a smoking cessation trial.

METHODS: Two years following a double-blind placebo controlled trial of bupropion SR, 150 mg/day added to cognitive behavioral therapy for smoking cessation in patients with schizophrenia, subjects were interviewed, medical charts were reviewed and carbon monoxide in expired air was measured.

RESULTS: Seventeen of eighteen subjects who completed the trial completed the follow up evaluation. More subjects (22%) were abstinent at the 2 year follow up than were abstinent at the end of the initial treatment intervention (5%). Those participants who met criteria for significant reduction during the smoking cessation trial showed significantly greater reductions in their expired air CO at the 2-year follow-up (54.6% ± 28.2%) compared to those who did not significantly reduce during the trial (22.3% ± 29.9%), t (16) = 2.17, p < .05. Seventy-five percent of the patients (6 of 8) who were significantly reduced at the end of the treatment intervention were also significantly reduced at two years. Nine of eleven (82%) of those who were significantly reduced at 2 years had achieved significant reduction during the treatment intervention.

CONCLUSIONS: These data suggest that behavior changes achieved in smoking cessation programs for patients with schizophrenia may be durable. Further work is needed to determine whether smoking reduction is associated with reduced smoking related medical morbidity and premature mortality.

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POS4-85  A PILOT FEASIBILITY STUDY OF HIGH-DOSE PATCH FOR PATIENTS WITH SCHIZOPHRENIA

Jill W. Williams, M.D.*, Douglas M. Ziedonis, M.D., M.P.H., UMDNJ-RWJAMS, Division of Addiction Psychiatry

BACKGROUND: The purpose of this study was to investigate the feasibility of high dose (42mg) versus regular dose (21mg) nicotine patch for patients with schizophrenia or schizoaffective disorder and nicotine dependence.

METHOD: We conducted a six-week, open label feasibility trial of high dose versus regular dose patch treatment in 15 subjects who wanted to quit smoking.

RESULT: The two groups did not differ in baseline demographic characteristics or tobacco use. The tolerability of high dose patch was good and no patients developed nicotine toxicity. Subjects in the high dose group reported 40% less withdrawal symptoms compared to the regular dose group at week 2 (5.86 versus 8.50; p=0.87). The high dose group had 2.5 times greater reductions in craving scores at weeks 1 and 2 (-1.44 versus -3.36; p<0.19). The small sample size did not allow for statistical significance although findings indicated a medium effect size. Continuous abstinence from smoking at 6 weeks was 25% (n=4) in the total sample and 13% (n=2) at 6 and 12 months. The probability of relapse was greater than expected on a weekend day, when presumably there were less structured activities. Almost three-fourths (72.7%) of the total sample relapsed on Friday, Saturday or Sunday (p=0.04).

CONCLUSIONS: High dose patch treatment resulted in fewer withdrawal symptoms and reductions in craving and may be more effective in treating schizophrenics but larger trials are needed. Future treatments should deal with readiness for weekend to avoid this greater time for relapse.

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POS4-86  PREFRONTAL CORTICAL NEUROPSYCHOLOGICAL DEFICITS PREDICT TREATMENT FAILURE DURING SMOKING CESSATION IN PATIENTS WITH SCHIZOPHRENIA

Sara L. Dolan, M.A.*, Angelo Termine, B.S., Kristi A. Sacco, Psy.D., Aisha A. Seyal, B.S., Melissa M. Dudas, B.S., Jennifer C. Vessichio, M.S.W., Bruce E. Wexler, M.D., and Tony P. George, M.D., Yale University School of Medicine

Patients with schizophrenia have multiple deficits in neurocognitive function, and work in this laboratory and others has documented that these cognitive deficits can be modified by cigarette smoking. It is also well-documented that schizophrenic patients have high rates of smoking and great difficulty with smoking cessation. The present study investigated whether the presence of neurocognitive deficits prior to the beginning of smoking cessation treatment predicted cessation outcomes in schizophrenic patients. Neuropsychological assessments were done at baseline, prior to the treatment intervention with bupropion SR (300 mg/day) or a placebo in combination with weekly group therapy, and included two tasks related to prefrontal cortical (PFC) function, the Wisconsin Card Sorting Test (WCST) and a visuospatial working memory task (VSWM; George et al., 2002, Neuropsychopharmacology 26, 75-85), the Stroop Color Word Test (SCWT; a measure of response inhibition), and the Continuous Performance Test (CPT; a measure of attention and concentration). In schizophrenic smokers (n=32), non-quitters at the end of the 10-week trial had: 1) poorer performance on the VSWM task (p=0.13); 2) deficits on various measures of the WCST, including Categories Completed, (p<0.05), 3) Perseverative Errors (p=0.11), and 4) Non-perseverative Errors (p<0.05), as compared to quitters. There were no differences, however, between schizophrenic quitters and non-quitters on CPT or SCWT. In non-psychiatric smokers from a separate sample (n=40), baseline neuropsychological test performance on these tasks did not predict smoking cessation treatment outcome. Collectively, these preliminary data suggest that in schizophrenic smokers the presence of PFC-dependent (versus non-PFC dependent) neurocognitive deficits is associated with smoking cessation treatment failure. Therefore, interventions that remediate PFC-dependent neurocognitive deficits may assist these patients in efforts to quit smoking.

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POS4-87  CIGARETTE SMOKING AND OLANZAPINE OR DIVALPROEX TREATMENT OF BIPOLAR MANIA

L.M. Schuh, E.B. Brown, R.W. Baker

OBJECTIVE: Bipolar disorder and cigarette smoking are highly comorbid, co-occurring in 60% of patients. Therefore, we assessed whether psychiatric medication impacts smoking behavior and whether interactions occur between cigarettes and treatment response to medications.

METHOD: This is a post-hoc analysis of a 47-week, double-blind, randomized clinical trial compared olanzapine (5-20 mg/day) and divalproex sodium (500-2500 mg/day) for bipolar mania (N=251). Within treatment groups, smoking status at baseline to endpoint (last observation carried forward, LOCF to week 47) was compared with McNemar's test. Changes in Young Mania Rating Scale (YMRS) scores (LOCF) after three weeks of treatment were analyzed by analysis of variance including therapy, investigator, baseline smoking status (smoker or not smoking) and the interaction of smoking status and therapy.

RESULTS: Interestingly, in the olanzapine group, 64% of patients were smokers at baseline compared to 58% at endpoint (p<0.034); however, in the divalproex group, 53% of patients were smokers at baseline compared to 54% at endpoint (p=0.763). As in the primary analysis (Tohen et al., 2002), olanzapine-treated patients experienced significantly greater Y-MRS improvement than divalproex-treated patients (p=0.007). A significant interaction occurred between smoking status and therapy (p=0.036); among those not smoking, divalproex-treated patients had mean Y-MRS improvement of 6.64 compared to olanzapine-treated patients 12.32 (p=0.002); smokers treated with divalproex had a mean improvement of 9.90 compared to olanzapine smokers of 10.55 (p=0.668).

CONCLUSION: Rates of cigarette smoking declined significantly among patients with bipolar mania treated with olanzapine; this was not observed within the divalproex group. The antimanic efficacy advantage of olanzapine over divalproex was most pronounced in non-smokers; further study may clarify whether this contributes to decreased smoking among patients on olanzapine.

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Adverse Childhood Events (ACE) and the Expression of Smoking and Mental Illness: A Cross-Sectional, Case-Control Study

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We examined the relationship between adverse childhood events (ACE) and the expression of smoking behavior and chronic mental illness in n=64 adults ages 18-65. We assessed each individual's psychiatric status, smoking status, and presence and severity of adverse childhood events (ACE) using structured assessments during a single two-hour interview. Psychiatric patients were recruited from a community mental health center, while controls were recruited through newspaper advertisements in the greater New Haven area. Subjects were grouped into four categories based on psychiatric status and smoking status (Psychiatric smokers (n=23); Psychiatric non-smokers (n=18); Control smokers (n=11); Control non-smokers (n=14)); only individuals with a diagnosis of a serious mental illness (current diagnosis of schizophrenia, schizoaffective disorder, bipolar disorder, or major depression) were classified as psychiatric subjects. After controlling for number of years of education using logistic regression analysis, we found that the presence of a history of various forms of physical (p<0.05) and sexual abuse (p<0.05), as well as growing up with a substance abuser in the household (p<0.05) predicted smoking in adulthood, and the expression of a serious mental illness. For psychiatric patients, significant impairments on the Addiction Severity Index (ASI) were found for psychiatric status (p<0.01), employment status (p<0.05) and family/social status (p<0.05), but these were not significantly modified by smoking status. Our results suggest a complex relationship between the experience of ACE and the expression of smoking behaviors and severe mental illness in adulthood. Our data may suggest that interventions for smokers with mental illness may require strong consideration of environmental factors such as negative childhood experiences.

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Impact of Major Depressive Disorder, Dysthymia, and “Double Depression” on Tobacco Dependence and Withdrawal

Karen K. Saules, Cynthia S. Pomerleau, Sandy M. Snedecor, and Ovide F. Pomerleau

To examine the relative impact of Major Depressive Disorder (MDD), which is episodic in nature, and dysthymia, which runs a more chronic course, on DSM-III-R tobacco dependence and withdrawal, and to determine whether interactive effects would be observed in the presence of both diagnoses, we studied 102 women daily smokers who were screened for depression using the computerized Diagnostic Interview Schedule (CDSIS). The sample included women with a history of MDD (n=40), dysthymia (n=12), “double depression” (MDD and dysthymia; n=14), and no diagnosis (normal controls; n=38). Participants had a mean age of 31.8 years, smoked a mean of 20.2 cigarettes/day and had a mean FTND score of 5.1. Despite the lack of significant group differences for age, cigarettes/day or FTND, participants with MDD scored significantly higher on DSM-III-R tobacco dependence severity (p=.004), and total number of withdrawal symptoms (p=.001). Likelihood of experiencing craving did not differ between groups. MDD women were more likely to experience irritability (p=.041), nervousness (p=.024), restlessness (p=.015), difficulty concentrating (p=.008), and depression (p=.000) upon abstinence. Women with dysthymia were at elevated risk of experiencing difficulty concentrating (p=.021) and headache (p=.021), with a trend for depression (p=.075). No interaction effects were observed for any dependence measure or withdrawal symptom. Results indicate that, despite the greater chronicity of affective symptomatology in dysthymia, the disorder was not associated with an elevation of DSM-III-R-based measures of tobacco dependence, as was observed for MDD. Findings suggest that the well-documented smoking-depression link is not simply a function of chronicity of depressed mood; future research should seek to determine if factors such as recency or severity are better predictors of this relationship.

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Evaluation of a Behavioral Group Smoking Cessation Service Targeting Adult Smokers with Chronic Disease

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Smoking remains the clear number one preventable cause of death and disability. Smoking cessation is particularly crucial for patients with smoking-related illnesses. A free smoking cessation program was developed and offered to Vancouver-area adults with respiratory problems, heart disease, diabetes and those awaiting surgery. The program consisted of individual assessment, four one-hour sessions group sessions and follow-up. Program materials were provided and activities assigned between sessions. Over the full eighteen-month operation of the clinic, 549 patients were referred to the program. Of these, 361 participated in the program attended at least one session (66% attendance). This compares favorably to the estimated 1-2% who would otherwise self-refer to such a program. 232 subjects completed the sessions (64% retention). 84 (36.2%) of these were smoke-free at the end of the sessions per NHLBI 7-day point prevalence definition of not even a puff in the preceding seven days. This compares favorably to quit rates associated with other methods (e.g., 3% for “cold turkey”, 14% for NRTs, 16-19% for Zyban). In addition, a majority (88/152 or 56%) of the non-quitting participants who completed the session indicated that they planned to quit within the next month, up from 16% before the sessions. In an arms length review of preliminary VTTC data, the Director of the Center for Clinical Epidemiology and Evaluation, VGH concluded that: “It is clear that the current results from the VTTC are impressive and that the program has the potential for making a significant impact on health care costs among all patients but especially those being targeted in high risk patient categories…From a broad public health perspective the challenge will be to bring what is clearly a cost-effective intervention to a larger number of persons.” While quitting remains a difficult challenge for even seriously ill smokers, these data suggest that primary care health provider visits offer a valuable opportunity to initiate a smoking cessation plan and for referral to smoking cessation programs.

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A Smoking Cessation Intervention Program for Cancer Patients: Comparing Enrollees to Decliners

Robert Schnoll, Ph.D.*, Randi Rothman, B.A., Fox Chase Cancer Center; Caryn Lerman, Ph.D., University of Pennsylvania; Suzanne Miller, Ph.D., John Ridge, M.D., Ph.D., Benjamin Movsas, M.D., Eric Sherman, M.D., Michael Unger, M.D., Corey Langer, M.D., Melvyn Goldberg

Despite the availability of smoking cessation interventions for cancer patients at Comprehensive Cancer Centers, many patients who smoke decline enrollment in such programs. Little is known, however, about why patients decline smoking cessation treatment and what sort of characteristics of decliners differentiates them from patients who enroll in smoking cessation interventions. Thus, we compared cancer patients who enrolled in a smoking cessation treatment program (N = 101) to those who declined enrollment (N = 122) in terms of demographic (e.g., age), medical (e.g., cancer stage, symptoms), and smoking (e.g., readiness to quit) variables. In addition, reasons for declining enrollment in the cessation program were collected from decliners. Decliners were more likely to: 1) have head and neck cancer (versus lung cancer); 2) exhibit fewer physical symptoms (e.g., shortness of breath); 3) report a lower readiness to quit smoking as measure by the Trans-theoretical model; 4) indicate that they did not intend to quit smoking in the next 30 days; and 5) smoke a fewer number of cigarettes/day in the previous 30 days (p's < .05). The most common reason given by patients for declining enrollment was that they preferred to quit on their own without professional assistance. These findings provide information useful for the development of interventions to increase the enrollment of cancer patients into smoking cessation interventions.

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We report the complete baseline data from a smoking cessation clinical trial with cancer patients. Trial acceptance was 48% (111/233). The majority of enrolled patients were Caucasian (90%), male (54%), married (56%), possessed at least a high school diploma (85%), had lung cancer (59%), and exhibited regional or metastatic disease (54%). Enrollees’ mean age was 58 years (SD = 9.8), their median income was $35,000 (SD = $18,797), and their mean illness duration was 17.4 months (SD = 7.7). On average, enrollees smoked 19 cigarettes/day (SD = 12), were in the preparation stage of motivation to quit (69%), were highly addicted to nicotine (83%), and made 2 24-hour quit attempts in the previous 3 months. The most frequent cessation method used by enrollees was cold turkey (78%), followed by the patch (47%), Zyban (39%), gum (35%), and hypnosis (28%). Lastly, 51% of enrollees showed depressive symptoms, 43% showed anxiety symptoms, 63% reported low quitting self-efficacy, 33% exhibited low perceived risk from smoking (e.g., recurrence), 45% reported low pros of quitting, and 88% reported high cons of quitting.

High quit motivation was associated with smoking fewer cigarettes/day, shorter illness duration, lower nicotine addiction, and higher risk perceptions, quitting self-efficacy, and quitting pros (p’s < .05). These findings can guide the implementation of smoking cessation programs for cancer patients.

NIH grant CA88610 supported this study.

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NEURONAL NICOTINIC RECEPTOR TRAFFICKING

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In both animal models and human subjects, prolonged exposure to nicotine results in upregulation of high affinity nicotine binding sites. It has been postulated that upregulation may be involved in the physiology of nicotine dependence. Previous studies have shown that upregulation of neuronal nicotinic acetylcholine receptors (nAChRs) does not result from increases in mRNA levels but from decreased receptor turnover, recruitment from a pre-existing pool of receptors, and/or improved efficiency of receptor translation and assembly. Many cell surface receptors, including neuronal proteins such as the glutamate and opioid receptors, are modulated by insertion and removal from the plasma membrane by exo- and endocytosis. It is likely that the nAChRs are also regulated in this manner. We have developed a heterologous cell culture system in which we are able to quantitatively examine the surface expression and membrane trafficking of α4β2 nAChRs. In this system, surface α4β2 receptors are upregulated following chronic exposure to nicotine in a manner which is consistent with the upregulation of binding sites observed in nicotine-treated animals and human smokers. Therefore, this system appears to be a useful model to study nicotinic receptor trafficking and upregulation. We have found that under constitutive conditions, functional surface-expressed α4β2 nAChRs are efficiently internalized from the plasma membrane and transported through the endosomal system. To determine the potential mechanism of upregulation, we have examined the trafficking of nAChRs following exposure to various agonists and antagonists. Furthermore, we have monitored the surface expression and trafficking patterns of nAChRs under conditions which disrupt membrane trafficking pathways. Together, our findings suggest that nAChR upregulation does not result from changes in post-endocytic membrane trafficking.

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OLANZAPINE ATTENUATES CUE-ELICITED CRAVING FOR TOBACCO

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Recent biological conceptualizations of craving and addiction have implicated mesolimbic dopamine activity as a central feature of the process of addiction. Imaging and pharmacological studies have supported a role for dopaminergic structures in cue-elicted craving for tobacco. If mesolimbic dopamine activity is associated with cue-elicted craving for tobacco, a dopamine antagonist should attenuate cue-elicted craving for tobacco. Thus, the aim of the present study was to determine whether an atypical dopamine antagonist (olanzapine, 5 mg) decreased cue-elicted craving for tobacco.

Participants were randomly assigned to 5 days of pretreatment with olanzapine (5 mg) or were randomly assigned to 5 days of a matching placebo. Approximately 8 hours after the last dose, participants were exposed to a control cue (pencil) followed by exposure to smoking cues. Participants subsequently smoked either high nicotine cigarettes or control cigarettes. Olanzapine attenuated cue-elicted craving for tobacco but did not moderate the subjective effects of smoking. The results are consistent with previous studies suggesting a role for dopamine in cue-elicted craving for tobacco.

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EVIDENCE OF GENE*GENDER INTERACTIONS IN TREATMENT RESPONSE TO BUPROPION HYDROCHLORIDE FOR SMOKING CESSION FOR AMELIORATION OF THE NICOTINE WITHDRAWAL SYNDROME


There is evidence that sustained-release bupropion hydrochloride may be differentially efficacious for women in preventing relapse to smoking cessation. However, the precise molecular mechanisms involved with why bupropion appears to be more efficacious for women have not been fully elucidated. The dopamine D2 receptor gene DRD2-Taq1A1 polymorphism is associated with increased risk of lifetime smoking and may predict treatment response to nicotine replacement therapy. Our aim was to determine whether this polymorphism would predict treatment response to bupropion. We carried out a double-blinded, randomized, placebo-controlled trial of bupropion or placebo for smoking cessation. Thirty patients were randomized to drug or placebo and interviewed on two occasions (at baseline, prior to treatment; after 14 days of treatment with bupropion or placebo) using the Minnesota Nicotine Withdrawal Symptom Scale. Significant reductions in the individual withdrawal symptoms of craving (p=0.032) and anxiety (p=0.004) were observed in the group treated with bupropion but not in the placebo group. Within the bupropion group, significant reductions in craving (p=0.045) and anxiety (p=0.001) occurred only among females. On further subgroup analysis only females who lacked the DRD2-Taq1A1 allele had significant reductions in anxiety (0.015). We conclude that, while the sample size is small, there appear to be a two-way interaction between treatment and gender for craving and anxiety and a three way (gene*gender*treatment) interaction for reduction of anxiety. These data need to be confirmed in a sufficiently powered trial.

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POS3-4  CHARACTERIZATION OF HOMER AND GROUP I METABOTROPIC GLUTAMATE RECEPTOR REGULATION BY NICOTINE

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Previously, we identified the expression level of homer-2b/VesL2.2, a cytosolic protein bind specifically to the group I metabotropic glutamate receptors (mGluRs), which is altered by nicotine. Subsequent experimentation was employed to further investigate both homo-r and mGluRs regulation under the presence of nicotine in amygdala and VTA regions. While an acute (3 days of nicotine administration) increase of homer-2 was detected by the array (49%, P<0.05) and real-time RT-PCR (77%, P<0.05), western blot analysis demonstrates a decrease of homer-1b/ca (-22%, P<0.05) and -2 (-17%, P<0.05) protein levels in the amygdala. Real time RT-PCR revealed an increase of mGluR1 (34%, P<0.05) and mGluR5 (61%, P<0.05) in the region. Western blot analysis further supported an acute increase of mGluR1 (19%, P<0.01) and mGluR5 (119%, P<0.05) at the protein level. Microarray and western analyses revealed no differential regulation of homer or mGluRs after d3, although in-situ shows 25% increase of mGluR1 in the amygdala at d14. In the VTA, microarray analysis indicates a 26% (P<0.01) decrease in homer-2 regulation at d3 but a decrease in homer-2 protein level is not observed until d7 (-21%, P<0.01). Real-time RT-PCR shows a consistent increase in mGluR1 in the VTA (46%-102% over 14 days, P<0.05) and in situ hybridization shows a trend of 25% and 16% increase in the VTA at days 7 and 14. Western analysis shows mGluR1 increase by 25% (P<0.05) in the VTA at d3 but returns to control levels thereafter. These results suggest that homer and mGluRs may play a role in neuronal sensitization to nicotine administration.

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POS3-5  LOCALIZATION, TRAFFICKING AND RESONANCE ENERGY TRANSFER IN ALPHA4 BETA2 NICOTINIC RECEPTOR-FLUORESCENT PROTEIN CHIMERS

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We made fluorescently tagged neuronal nicotinic receptor (nACHR) subunits to examine whether altered expression and trafficking of nACHRs are involved in nicotine addiction. Yellow fluorescent protein (YFP) was inserted at the N-terminus or the M3-M4 intracellular loop of alpha4, and cyan FP (CFP) at the C-terminus or the M3-M4 loop of beta2. We expressed labeled alpha4-beta2 nACHRs in HEK293T cells and cultured mesencephalic neurons, and compared their functional properties with those of unlabeled wildtype (WT) alpha4 beta2 receptors. Nearly normal ACCh sensitivity and calcium permeability was noted for receptors with YFP and CFP in alpha4 and / or beta2 M3-M4 intracellular loops; these constructs were studied further. In contrast, inserting YFP in the alpha4 N-terminus or CFP in the beta2 C-terminus dramatically inhibited nACHR function. The somatic and dendritic distribution of fluorescently tagged alpha4 and beta2 subunits was similar to that of endogenous alpha4 containing receptors. Co-expressing the alpha4-YFP and beta2-CFP subunits resulted in fluorescence resonance energy transfer (FRET) between the subunits. In midbrain neurons, dendritic alpha4 beta2 nACHRs displayed greater FRET than receptors inside the soma; and in HEK293T cells, a similar increase occurred for receptors that were translocated to the surface upon PKC stimulation. The maximal FRET efficiency between the alpha4 and beta2 subunits was 48 % (mean ± SEM), suggesting a distance of 50 angstroms between the alpha4 and beta2 M3-M4 intracellular loops, in rough agreement with higher-resolution structural studies. Thus, fluorescently tagged alpha4 and beta2 nicotinic subunits provide information about alpha4 beta2 nACHR trafficking, assembly, and localization.

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POS3-6  DEVELOPMENTAL REGULATION OF NICOTINIC ACETYLCHOLINE RECEPTOR-MEDIATED NOREPINEPHRINE RELEASE

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Nicotinic acetylcholine receptors (nAChRs) play mainly a modulatory role for other neurotransmitter systems in vertebrate brain. nAChR-mediated norepinephrine (NE) release has been demonstrated throughout the brain in regions such as the neocortex, hippocampus, and cerebellum. NE release in the hypothalamus has been shown to regulate the neurendocrine system in response to stress by stimulating the hypothalamic-pituitary-adrenal axis (HPA axis). This process may also be modulated by nAChR stimulation. We have examined nicotine-stimulated [3H]NE release from rat hypothalamic slices throughout development from postnatal day 1 (P1) through adult. nAChR-mediated NE release was developmentally regulated, with maximal effect at P1 and a gradual decrease in maximal response until P14. This was followed by a statistically significant elevation in nicotine-stimulated release at P21, and a subsequent decline to adult levels. A shift in nicotine potency was also seen across development. Throughout the first three postnatal weeks the mean EC50 value was 21 micromolar, which decreased to 65 micromolar after P21. Pharmacological characterization at P7 and adult revealed possible differences in the nAChR subtypes involved in induction of NE release in the developing versus mature brain. The endogenous nACHR ligand acetylcholine (ACH) and the agonist cytosine are both partial agonists at P7 in comparison to nicotine, while ACH is ineffective in the adult and cytosine is a full agonist. These data suggest that nAChR modulation of the noradrenergic system may differentially regulate the neurendocrine system in an age-related manner and may play a role in the development of the HPA axis.

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POS3-7  Dopamine receptor DRD2 genotype and smoking cessation outcome following treatment with Bupropion SR


Several studies have shown that the D2 dopamine receptor (DRD2) TaqI A minor (A1) allele is associated with a reduced number of dopamine binding sites in the brain, and persons with a functional deficit in the dopamine reward pathway may be more prone to nicotine dependence. In this study, we investigated the association between DRD2 TaqI A genotype and smoking status in 416 Caucasian smokers (120 males, 196 females) randomized to take either 150 or 300 mg bupropion SR in combination with adjunctive behavioral counseling. Participants were assessed at three and 12 months after their target quit date for any smoking within the previous seven days. DNA was extracted from buccal cells and genotyped for DRD2 polymorphism using the Taqman assay. The overall genotype frequencies were: A1A1, 4.6%; A1A2, 28.4%; and A2A2, 67.1%, and are in Hardy-Weinberg equilibrium. At three months, the smoking rates by genotype were: 89.5%, 68.6%, and 66.0%, respectively. After adjustment for gender, age, and bupropion dose, individuals with the A1A1 genotype were significantly more likely to have reported smoking than were those not homozygous for the A1 allele, OR 4.24, p < .03, one-tailed. This trend was not evident for smoking outcome at 12 months and no evidence was observed for gender mediation of these associations. These results indicate that the TaqI A1 polymorphism at the DRD2 gene is modestly associated with the responsiveness to pharmacologic treatment with bupropion SR for smoking cessation. 

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**POS3-8**

**BINDING OF A NOVEL NICOTINIC ACETYLCOLINE RECEPTOR LIGAND: 5-FLUOROPROPYL-A-85865**

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Novel synthesis of a nicotinic acetylcholine receptor (nAChR) ligand by the radio-pharmaceutical lab at UCI was developed that differed from published methods. Preliminary in vivo experiments showed the 18-Fluorine analog of 5-FP-A-85865 possible in Positron Emission Tomography (PET) imaging in adult rats. Preliminary PET scans showed preferential binding in thalamic areas. Binding studies were conducted for pharmacological characterization, which included dose response testing in specific neuroanatomical targets to show receptor specificity. Binding was studied for alpha 4 beta 2, alpha 3 beta 2, and alpha 3 beta 4 nAChR subtypes, and showed preferential binding to alpha 4 beta 2 regions over alpha 3 beta 2 and alpha 3 beta 4 regions. Ki values for alpha 4 beta 2 receptor subtypes were determined to be an average of 2.875 +/- 0.12 nanomolar for ventral posteriornodial nucleus of the thalamus, central grey and cerebral cortex areas.

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**POS3-10**

**ACETALDEHYDE ENHANCES NICOTINE SELF-ADMINISTRATION IN ADOLESCENT RATS**

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Tobacco has one of the highest rates of addiction and relapse of any abused drug, but paradoxically, animal models reveal nicotine to be a relatively weak reinforcer compared to other abused drugs. We report here an experiment designed to examine this paradox and determine whether ingredients in tobacco smoke other than nicotine, such as acetaldehyde, may have additive or synergistic effects on nicotine reinforcement. Adolescent (Postnatal day 27) and adult (P90) male Sprague-Dawley rats were implanted with intravenous cannulas and tested: without prior training, for five consecutive days in 3-h sessions where a nose-poke delivered a 5.6-sec, 100-ul intravenous injection of test solution followed by a 60-sec timeout. Animals (N=7-13/group) self-injected one of the following solutions: nicotine (30ug/kg), acetaldehyde (16ug/kg), nicotine + acetaldehyde (30+16ug/kg), or saline. In adult animals, acetaldehyde did not enhance nicotine self-administration. However, in adolescent animals, 5-day total responses for nicotine+acetaldehyde (122+24) were significantly higher than for nicotine (21+4), acetaldehyde (40+6) or saline (20+7) [F(3,33)=8.532, P=0.0002]. Adolescent animals that received identical non-contingent injections of the nicotine+acetaldehyde mixture showed some initial excitation, but by day 5 they responded significantly less than the contingent group (p<0.04). These results indicate that acetaldehyde, at the low concentrations found in tobacco smoke, enhances nicotine’s reinforcing actions in a difficult self-administration acquisition test where nicotine alone is weak. If acetaldehyde, and possibly other smoke components, enhance nicotine’s addictive potential, it should be possible to develop animal models that more accurately reflect the total pharmacological profile that leads to tobacco addiction in humans. Such improved animal models could accelerate the development of increasingly effective therapeutic interventions to reduce the incidence of smoking.

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**POS3-9**

**ALPHA4-CONTAINING NEURONAL NICOTINIC RECEPTORS MODULATE APPETITIVE LEARNING**


The present study characterized the role of alpha4-containing neuronal nicotinic receptors (nAChRs) in learning and memory using a four-stage appetitive signaled-nosepoke task (Logue et al., 1998) in 13 inbred mouse strains and in a strain of function alpha4 nicotinic receptor mutant (Labarca et al., 2001). In inbred mouse strains, a naturally occurring polymorphism in the alpha4 nAChR subunit gene encodes either an alanine or threonine (A/T) at position 529 (Stitzel et al., 2000). This A/T polymorphism is associated with differential receptor function and behavioral sensitivity to nicotine and ethanol in both inbred and recombinant inbred mouse strains. The first three phases of the nosepoke task consisted of training to associate an auditory cue with reinforcer availability. The last phase required that each mouse nosepoke only when the cue was presented. Inbred mouse strains with the alanine529 form of the polymorphism required a significantly greater number of days to learn to associate the auditory cue with the reward than those containing the threonine529 residue. Alpha4-/-mice mice with a leucine to serine mutation near the gate in the channel pore are hypersensitive to acetylcholine and nicotine and have several behavioral alterations. Alpha4-/-mice mice showed enhanced associative learning in the signaled nosepoke task, relative to their wild type littermates. These data suggest that nAChRs that contain the alpha4 subunit modulate appetitively-motivated associative learning.

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**POS3-11**

**NICOTINE ALLEVIATES COGNITIVE AND MOTOR DEFICITS PRODUCED BY ONTOGENIC QUINPIROLE TREATMENTS**

Russell W. Brown, Kenyatta D. Thompson, Kimberly N. Thompson, J. Jeffery Ward, Stephanie K. Thacker, Richard M. Kostrewa

Ontogenetic quinpirole (D2/D3 agonist) treatment has been shown to produce a long-term increase in dopamine D2 receptor sensitivity. In this study, female Sprague-Dawley rats were administered quinpirole (1mg/kg) or saline from postnatal days (PD) 1-21, and then raised to adulthood without any further drug treatment. Beginning on PD 60, rats were given either nicotine (0.3 mg/kg free base) or saline twice daily for 14 consecutive days. Beginning one day after nicotine treatment ceased, rats were tested on the standard and matching-to-place versions of the Morris water task (MWT) for seven consecutive days, followed by training on the Whishaw single-pellet reaching task (WRT) for 20 consecutive days. Behavioral results demonstrated that ontogenetic quinpirole treatment produced cognitive and motor deficits on both versions of the MWT as well as the WRT. Deficits observed on the MWT and WRT were completely alleviated by adulthood nicotine treatment. It should be noted that rats given quinpirole and nicotine did not perform significantly different than saline-treated controls on any of the behavioral tasks utilized, and nicotine was not present during behavioral testing. After behavioral testing was complete, brain tissue was taken to analyze choline acetyltransferase (ChAT), brain-derived neurotrophic factor (BDNF), and nerve growth factor (NGF) expression in the hippocampus, frontal cortex, and striatum. The most significant effects were observed in the hippocampus. Ontogenetic quinpirole treatment produced a 36% decrease in hippocampal ChAT expression, and a 20% decrease in hippocampal BDNF expression. Both of these decreases were completely alleviated by nicotine. Research has shown that long-term hyperfunction in the dopamine system produces neurotoxicity, and we hypothesize that nicotine may be protecting certain brain areas against dopamine-induced neurotoxicity. These results suggest that nicotine can produce long-term alleviation of behavioral deficits produced by dopamine hyperfunction, which may be mediated by changes in acetylcholinergic and neurotrophic factor expression.

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POS3-12

EXAMINATION OF CORTICOSTERONE RELEASE AND PAIN THRESHOLDS IN RATS TREATED WITH NICOTINE EXPLICITLY PAIRED AND UNPAIRED WITH A DISTINCTIVE CONTEXT

Kristina Davis, Jose Reynoso, Marika Solhan, Antonio Cepeda-Benito

Conditioned corticosterone release may be necessary for the development of associative tolerance to nicotine's analgesic effects. Therefore, we measured the concurrent development of these phenomena in two studies. Subjects were male Sprague-Dawley rats randomly assigned to one of three treatment groups. The distinctive context (DC) groups received nicotine explicitly paired with a distinctive context. The home-cage (HC) groups received nicotine explicitly paired with their home-cage environment. The saline controls (SC) received saline in both environments. All rats were exposed to the distinctive context every 72 hrs (inter-dose interval). Tail vein blood was collected for corticosterone radioimmunoassays of serum. For experiment 1 (N=120), rats in all treatment conditions received 10 distinctive context exposures. Independent groups of rats were tested with the tail flick for analgesic effects after 15 sessions. Blood samples were collected from another group of rats during the 1st, 5th, and 10th sessions. Session-dependent increments on corticosterone release were accompanied by parallel decrements on nicotine's analgesic effects in the DC rats. In experiment 2 (N=60), we took blood samples after the 10th session, and rats were injected with either saline or nicotine. Corticosterone levels were more elevated in DC rats that HC and SC only after saline. Together the results suggest that conditioned corticosterone release and conditioned analgesia are correlated but not causally related.

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POS3-13

DEVELOPMENT OF NOVEL TREATMENTS FOR NICOTINE ADDICTION: BIS-PICOLINIUM BROMIDE, A VERY POTENT AND SELECTIVE ANTAGONIST AT NICOTINIC RECEPTOR SUBTYPES MEDIATING NICOTINE-VOKEOVED RELEASE

Linda P. Dwoskin*, Sangeetha P. Sumithran, Joshua T. Ayers and Peter A. Crooks, College of Pharmacy, University of Kentucky

Despite some efficacy of current tobacco use cessation pharmacotherapies (i.e., nicotine replacement and bupropion), relapse rates continue to be high, indicating that novel medications are needed. The current research is aimed at the development of a new class of subtype-selective nicotinic receptor (nAChR) antagonists as treatments for tobacco use cessation and for nicotine addiction. Nicotine produces reward, at least in part, by inducing the release of dopamine (DA) from its presynaptic terminals in the brain. Our current research has shown that N-n-alkyl analogs of nicotine are subtype-selective nicotinic receptor antagonists. Moreover, we have recently identified a structurally related bis-quaternary ammonium compound, i.e., N,N'-dodecane-1,12-dicyl-bis-picolinium dibromide (bPBSDDB), which potently (IC50 = 5 nM) inhibits nicotine-evoked DA release from superfused rat striatal slices. Furthermore, bPBSDDB has no intrinsic activity in the DA release assay, does not inhibit DA transporter function, and does not inhibit electrically-evoked DA release, indicating selective inhibition of the effect of nicotine to release DA. Additionally, bPBSDDB has a 4-5 orders of magnitude higher affinity for nAChRs mediating nicotine-evoked DA release (alpha3alpha4beta2*-containing nAChRs) than for the alpha4beta2* and alpha7 nAChRs. Thus, bPBSDDB may be a valuable tool in determining the physiological function of the nAChR subtype mediating nicotine-evoked DA release and its contribution to the behavioral effects of nicotine. In summary, bPBSDDB may selectively reduce the reinforcing effect of nicotine and thereby may serve as a treatment for tobacco use cessation with minimal side-effects.

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POS3-14

ACUTE TOLERANCE TO NICOTINE: INDIVIDUAL DIFFERENCES EVALUATED USING DRUG DISCRIMINATION AND 86Rb+ EFFLUX

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The drug discrimination paradigm utilizes a discriminative stimulus (DS) allowing rodents to express the subjective effects of a drug. Acute tolerance was measured using a cumulative dosing paradigm. The nicotine discrimination training dose (0.4 mg/kg) was administered (i.c.v.) at 0, 90, 180 and 270 min. Male Sprague-Dawley rats were tested for 2 min. without reinforcement 5 min. after drug administration. Evaluation of the chronically treated rats (60+ doses of 0.4mg/kg nicotine) showed rats exhibited different levels of acute tolerance in the cumulative dosing method (3 replicates). Two distinct groups emerged: one exhibited acute tolerance (desensitization) and the other failed to exhibit acute tolerance (non-desensitization). A 86Rb+ efflux assay was used to evaluate nicotinic receptor function using synaptosomes from the same rats used in the drug discrimination and acute tolerance testing. Two assays were performed for each brain area using 2 different nicotine concentrations (10µM, 30µM). Significant differences in nicotine-stimulated 86Rb+ efflux were seen between rats exhibiting desensitization (DZ) and non-desensitization (NDZ). Significant differences are reported for the following brain areas and concentrations: (1) cortex 30µM, (2) hippocampus 30µM, (3) striatum 1µM, 30µM, (4) thalamus 30µM. Previous work by the author has shown differences in alpha 7 nicotinic receptor populations in these brain areas. Rats exhibiting acute tolerance have more alpha-bungarotoxin binding sites than rats not exhibiting acute tolerance. Funding provided by Philip Morris External Research Program.

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POS3-15

EVIDENCE FOR SIGNIFICANT, STEREOSELECTIVE ROLES OF HYDROXYMETABOLITES OF BUPROPION IN TREATMENT OF MOOD DISORDERS AND/OR NICOTINE DEPENDENCE

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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 enantiomeric selectivity was also observed with the (2S,3S)-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,3S)- and (2R,3R)-hydroxybupropion are less potent than bupropion as functional antagonists of alpha3beta4-αnAChR (6.6 and 11 µM IC50) and alpha4beta2-αnAChR (45 and 37 µM IC50) and show little evidence for stereoselectivity at those αnAChRs. However, (2S,3S)-hydroxybupropion has ~10-fold higher functional inhibitory potency at alpha4beta2-αnAChR 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.

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PO3-16  EFFECTS OF NICOTINE DEPRIVATION AND SMOKING ON PSYCHOPHYSIOLOGICAL MEASURES OF RESPONSE INHIBITION

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Research suggests that smoking behavior and nicotine dependence are strongly influenced by genetic factors, however, neurobehavioral mechanisms underlying genetic influences are little understood. It can be hypothesized that genetic risk for nicotine dependence is in part mediated by acute effects of smoking and smoking deprivation. Evidence suggests that deficits of inhibitory regulation at different levels of the central nervous system functioning may be involved in nicotine dependence. We examined the effects of nicotine deprivation and acute smoking in 27 regular cigarette smokers using two measures of cognitive and behavioral inhibition: event-related brain potentials in a Go-NoGo task (a modification of Continuous Performance Test) and prepulse inhibition (PPI) of acoustic startle reflex (an index of sensorimotor gating). Each participant was tested in three separate sessions: smoking non-deprived, smoking after 18h deprivation, and control non-smoking, non-deprived session. The No-Go condition in which the subjects were required to inhibit a pre-activated motor response produced a frontally localized negative N250 wave and frontally shifted F300 component. Nicotine deprivation increased the negative wave (p<0.01) and decreased P300 (p<0.05), suggesting an overall increase in cortical excitability. Smoking reversed these effects, but only partially. Effects of deprivation on startle amplitude and PPI did not reach significance, however, there was a significant interaction between smoking and session type (deprived vs. non-deprived, p<0.01): smoking reduced startle in non-deprived session, in part due to greater startle amplitude before smoking. Results also indicate substantial individual differences in the pattern of response to both deprivation and acute smoking, modification of the responses by individual differences in tobacco use/dependence, as well as correlations of psychophysiological responses with subjective effects of smoking.

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PO3-17  DOES CAFFEINE INFLUENCE NICOTINE’S EFFECTS?

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Nicotine and caffeine self-administration often co-occur, thus one stimulant may influence the effects of the other. Few well-controlled studies have examined the combined effects of these drugs in individuals who are not nicotine tolerant and/or dependent. The primary aim of this study was to determine if nicotine’s dose-related subjective, physiologic, and/or cognitive effects are influenced by concurrent administration of caffeine in non-smokers. A secondary aim was to determine if nicotine’s dose-related effects can be measured reliably across days.

Eleven never-smokers (5 women) and 2 former-smokers (1 woman) participated in this four-session, within-subject, outpatient study. The first three, 4.5-hour sessions included one of three randomly ordered, double-blind, caffeine doses (0, 75, or 150 mg, p.o.) followed by two single-blind, nicotine gum doses: 2 mg was administered 1.75-2.00 hours and 4 mg was administered 2.75-3.00 hours after caffeine administration. The fourth condition repeated the 0 mg caffeine condition. All sessions were separated by at least 48 hours and participants reported abstaining from caffeine for 12 hours. Drug effects were assessed with a variety of measures, including visual analog scales, heart rate, and blood pressure. Nicotine produced significant dose-related increases in heart rate and ratings of “bad effects”, “nausea” and “nervousness” (Ps < .05) that were independent of caffeine dose and reliable across session days (e.g., most r’s > 0.60; Ps<.05). These results suggest that, in non-smokers, nicotine effects can be measured reliably and are not influenced by concurrent intake of moderate caffeine doses.

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PO3-18  SMOKING TOPOGRAPHY IN PATIENTS WITH SCHIZOPHRENIA VS. NORMAL SMOKERS


The prevalence of smoking among persons with schizophrenia is substantially higher than in the general population. Smokers with schizophrenia may have a higher smoke intake compared to normal smokers and be at a high risk for smoking related illnesses. Two smoking topography studies were conducted to evaluate smoking behavior in smokers with schizophrenia. In the first study, thirteen male patients diagnosed with either schizophrenia or schizoaffective disorder smoked their own cigarettes over a three-hour period using the CReSS topography measurement device. Topographic data from this sample was compared with topographic data obtained from the 1988 Surgeon General’s report. The patients took significantly more puffs per cigarette (16 vs. 11) relative to the mean from the Surgeon General’s Report. The mean puff duration (in seconds) for the patient smokers was significantly shorter compared to the mean Surgeon General’s report value (1.4 vs. 1.8). In contrast, the puff volume (ml) was significantly larger for the patients with schizophrenia compared to the mean Surgeon General’s report value (82.1 vs. 43). The difference for interpuff interval was not significant. In summary, the schizophrenics: 1) took more puffs per cigarette, 2) took shorter duration puffs, 3) took larger volume puffs in comparison to the mean Surgeon General’s report values, but there was no difference for interpuff interval. Results from a second study comparing the topography of 10 smokers with schizophrenia/schizoaffective disorder with 10 normal smokers will also be presented.

Research supported VA Merit Review WO349.

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PO3-19  FEASIBILITY OF A METHOD TO INVESTIGATE THE EFFECT OF CONTROLLABILITY ON SUBJECTIVE RESPONSES TO SMOKING IN THE NATURAL ENVIRONMENT

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Behavioral pharmacology research suggests that reducing the degree of control over drug intake may reduce the rewarding effects of drug consumption. If generalizable beyond the laboratory this effect may help to improve treatment of behavioral interventions. A yoked-box or triadic design is used in laboratory research to manipulate controllability while equating for dosing, consumption pattern, and exposure to other stimuli. In this field experiment we examine the feasibility of manipulating controllability using a hand-held computer (PDA) and a within-subjects design. In the control phase smokers, engaged in usual daily activities, smoked ad-lib for 3 days, recording the time of each cigarette smoked via a PDA. In the second phase, scheduled for the same days of the week as phase one, they smoke only when prompted by the PDA (yoked phase) which is programmed to prompt them using their previously recorded ad-lib schedule. Acute responses to smoking (e.g., satisfaction) and subjective states are also assessed. To date 4 participants (mean age = 23) have completed the protocol (6 are in process and the target is 30). Participants provided favorable ratings regarding ease of adherence to the schedule and program use. Compliance with mood assessments was over 97%. Average rate of prompted cigarettes that were missed was 24.6% and the average percentage of cigarettes that were smoked off schedule was 19%. The average rate of total cigarettes smoked on the yoked days relative to the controllable days was 95.6% suggesting that overall intake of cigarettes was approximately the same across conditions. Preliminary analysis using mixed modeling revealed marginal support for the hypothesized effect on mood (F(1.5)=7.59, p=0.10) across the ad-lib vs. yoked conditions. Means for perceived reward from smoking were also in the hypothesized direction, indicating participants reported less rewarding effects during the yoked phase. Preliminary data thus support the feasibility of the method.

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POS3-20  TRANSDERMAL NICOTINE IMPROVES COGNITIVE EFFICIENCY IN SUBSTANCE ABUSERS

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Chronic substance abuse has been associated with deficits of cognitive efficiency, defined as the ability to isolate relevant information while ignoring irrelevant information within a specified time frame (Nixon & Parsons, 1991). Such deficits may be reflected in abnormalities of attention, which may be improved through nicotine administration (Levin et al., 1996). The current study examines the effect of nicotine on behavioral measures of cognitive efficiency in substance abusers and controls. Based on previous studies, we predicted that substance abusers would derive greater benefit from nicotine administration than controls. Alcoholics (n=29) and stimulant dependent individuals (n=30) were compared to community controls (n=28).

Participants received a low (7mg) or high dose (14mg or 21mg) nicotine patch approximately 2 hours prior to testing. Participants were administered an adaptation of the RVIP task (Wesnes & Warburton, 1983) and asked to respond to relevant number sequences while ignoring irrelevant stimuli. The high dose of nicotine was associated with a trend toward improved accuracy and reaction time in all groups (p<.10). Further, the high dose of nicotine significantly decreased the number of misses incurred by each group (p=.03). A group X patch interaction trend (p=.12) was also noted with respect to misses. Within the alcoholics, the high dose patch as was associated with fewer misses (p=.01); whereas, this difference was not noted within the controls or stimulant group. With respect to alcoholics, these findings are consistent with predictions that nicotine administration would differentially affect cognitive efficiency in substance abusers.

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POS3-21  ECOLOGY OF A CULTURALLY-TAILORED SMOKING CESSATION PROGRAM FOR LATINO/HISPANIC PATIENTS IN CENTRAL FALLS, RHODE ISLAND

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Culturally tailored programs have been shown to be particularly effective in Latino/Hispanic populations but long-term abstinence rates with tailored therapies are limited to about 20%. Working with a community-based Latino/Hispanic organization in Central Falls, Rhode Island we pilot-tested a multimodal program of intensive behavioral therapy with a physician and Spanish-speaking counselor, nicotine replacement therapy, telephone follow-up, community outreach, and a Spanish-speaking quit-line through the Rhode Island Department of Health. Data from the first 6 months of the program are as follows: Thirty two patients enrolled in the program and scheduled appointments in the smoking cessation clinic. Of these, 23 patients (71.9%) attended the smoking cessation clinic (71.9%); of those who attended the clinic, 13 (66.5%) remained in the program and 10 (53.5%) did not follow-up in the program and continued to smoke; of those continuing with the program, 9 (69.2%) were abstinent from smoking by self-report at 2 months. While our sample size is small and do not have a control group, these preliminary data suggest that intensive culturally-tailored therapy combined with nicotine replacement therapy is effective for smoking cessation amongst Latino/Hispanic patients in Central Falls, Rhode Island. Ongoing work will compare abstinence rates with a non-tailored control group and explore more effective means of recruiting and retaining patients in a community-based smoking cessation program.

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POS3-22  INTEGRATING CLINICAL, EXPERIMENTAL AND BASIC SCIENCE OBSERVATIONS INTO THE FIRST UNIFIED NEUROBIOLOGICAL MODEL OF NICOTINE DEPENDENCE

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BACKGROUND: The concept of Loss of Autonomy has been introduced as a replacement for traditional definitions of nicotine dependence. Recent clinical observations indicate that, contrary to widely held views, Loss of Autonomy over nicotine can appear soon after the first cigarette.

OBJECTIVE: To determine if a neurobiological model of nicotine dependence could be developed by integrating knowledge derived from clinical, experimental and neurophysiological research to explain how autonomy over nicotine can be lost so quickly.

METHODS: A literature search was conducted on the topics of acute physical dependence, animal models of dependence, behavioral sensitization, nicotine dependence in humans, theories of addiction, and the neurophysiology of nicotine and other drugs of abuse. The processes of logical deduction and trial and error were used to construct models until one was developed that was consistent with existing data.

RESULTS: The model will be presented on the poster. The model that successfully explained the existing data indicates that in the most susceptible individuals, the process of dependence begins with the first exposure to nicotine. When the Loss of Autonomy is measured using the Hooked On Nicotine Checklist, the time course for the onset of dependence agrees with that predicted by the model. This was not true of other measures of dependence.

DISCUSSION: The successful construction of a simple neurobiological model makes the assertion that nicotine dependence begins with the first cigarette biologically plausible. Of our current concepts and definitions of nicotine dependence, only the Loss of Autonomy is consistent with existing biological and experimental data and supported with a mechanistic neurobiological model.

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POS3-23  THE EFFECTS OF BRIEF ABSTINENCE ON IMPULSIVITY IN LIGHT AND HEAVY SMOKERS

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Drug-dependent individuals, including smokers, are more impulsive than controls; however, it is unknown how either intensity of smoking or abstinence from tobacco relate to impulsivity. In the present study, light (5-10 cigarettes/day; n=12) and heavy (20+ cigarettes/day; n=17) smokers participated in one session after abstaining from smoking overnight and another session after smoking as usual. During each session, participants completed the delay-discounting task and questionnaires assessing craving, withdrawal, and impulsive personality characteristics. In the delay-discounting task, participants made a series of choices between an immediate adjusting quantity and a delayed fixed quantity of either money or cigarettes. Indifference points (i.e., when the immediate and delayed reinforcers were considered equal in value) were determined at seven delays. Temporal discounting refers to the reduction in reward value that occurs with delay. Indifference points were graphed as a function of delay values and curves fit to describe the rate of temporal discounting. CO and measures of craving confirmed abstinence during the deprivation session. The rate of temporal discounting for money and cigarettes was greater in heavy compared to light smokers. Abstinence from smoking further increased temporal discounting (both money and cigarettes) in heavy, but not light smokers. Personality measures of impulsivity were not affected by either smoking intensity or abstinence. These data extend previous research by demonstrating that individual differences in temporal discounting are related to intensity of smoking. Furthermore, our data indicate that abstinence exaggerates the preference for immediate over delayed rewards, suggesting an underlying behavioral mechanism for relapse.

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A COMPARISON OF SMOKING HABITS AMONG MEDICAL AND NURSING STUDENTS

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OBJECTIVE: The approach and credibility of future physicians and nurses as treatment providers for smoking and tobacco-related diseases may be influenced by their smoking habits. We therefore compared smoking among medical and nursing students and examined whether smoking habits changed during the course of education for each cohort. Method: Over 1100 medical and nursing students from a major University were surveyed in year 2000 using a questionnaire that included the Fagerstrom's Test for Nicotine Dependence (FTND).

RESULTS: A total of 397 medical students and 126 nursing students completed the survey. Significantly fewer medical students (3.3%) smoked compared to nursing students (13.5%) (chi square = 16.62, p<.001). The severity of nicotine dependence as indicated by the total FTND score as well as scores on 5 out of 6 items on the FTND was significantly lower among medical students compared to nursing students (t= 5.73, p<.001). Smoking or quit rates did not differ across class years in both groups; however, unlike nursing students, time since quitting significantly differed across class years for medical students. Although smoking habits appear to change little during the course of education for both medical and nursing students, many smokers may have quit just prior to entering medical school but not nursing school.

CONCLUSIONS: The findings confirm the continuing decline in smoking among medical students in the United States; however, increased efforts to promote tobacco education and intervention efforts among nursing students seem necessary. Nevertheless, both groups appear to have the potential to be credible advisors to patients and public regarding smoking cessation.

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MARIJUANA USE AMONG ADOLESCENT DAILY SMOKERS: A COMPARISON OF NON-USERS, OCCASIONAL, AND FREQUENT USERS

Lisa M. Gertrudes, B.A.*, Suzanne M. Colby, Ph.D., Brown University

Adolescent tobacco smokers are more likely to use marijuana than non-smokers. There is little information available about the impact of marijuana use on tobacco cessation in adolescents. Due to the high prevalence of marijuana use among tobacco smokers, it is an issue that can not be ignored in studies dealing with tobacco (e.g., smoking cessation studies, contingency management studies). Daily cigarette smoking adolescents (Ns=159; mean age=16; 57% female; 9% Hispanic ethnicity, and 71% white, 5% black, and 20% other race) were recruited from area high schools. They were assessed on cigarette, marijuana, alcohol, and other drug use in the past 30 days, depression, motivation to quit tobacco smoking, number of past quit attempts, age of first cigarette, and smoking urges after abstaining from cigarettes for 15 hours. A large proportion of this sample of tobacco smokers were marijuana users; 72% smoked marijuana in the past 30 days. Adolescents were divided into three groups based on marijuana use: non-users, occasional (1-14 days), and frequent users (15-30 days). Marijuana users used more alcohol and smoked more cigarettes than non-users (p<.05). Frequent marijuana smokers used other drugs more than occasional and non-users (p<.05). No differences were found between occasional and non-users on drug use. Marijuana smokers were also less motivated to change their marijuana use than non-users (p<.05). A trend in the data (p=.06) suggested that marijuana smokers also reported more smoking urges as a result of abstaining from tobacco. Other comparisons were not significant. These findings suggest that marijuana use may have a negative impact on cessation outcomes, and therefore must be addressed.

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EFFECTS OF FAST BLOOD-RISE (NICODERM®) AND SLOW BLOOD-RISE (HABITROL®) NICOTINE PATCHES ON NAUSEA AND FEELING STATES IN NEVER-SMOKERS

David G. Gilbert*, Norka E. Rabinovich, and Susan R. Rosenberger, Southern Illinois University at Carbondale

When conducting research with never-smokers there are benefits and costs of fast blood-rise (e.g., Nicoderm®) versus slow blood-rise (e.g., Habitrol®) nicotine patches. Sessions can be shortened using rapid rise patches, but adverse effects due to too rapid a rise in blood nicotine may more than outweigh these benefits. To test this hypothesis we assessed the effects of nicotine patch on feeling states in never-smokers, 25 of whom were assigned to wear a 7 mg Nicoderm® nicotine patch and 35 of whom wore a 7 mg Habitrol® patch. On 0-10 point scales, the fast-rise patches produced substantial increases in mean nausea (2.80), dizziness (2.88), light-headedness (3.08), and sickness (2.80), while slow-rise patch produced no significant increases in these effects (0.00, 0.03, 0.11, and 0.11), respectively. Individuals assigned to the slow-rise patch felt much more pleasant (about 6) than did those on the rapid-rise patch (mean pleasantness about 2). There are very important implications of these findings for research on the effects of nicotine on never-smokers.

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SITUATIONAL CORRELATES OF ABSTINENCE SELF-EFFICACY

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Absistence self-efficacy (ASE) — confidence in ability to abstain from smoking — is prominently featured in social learning relapse models. Most studies have treated ASE as though it were a relatively stable individual difference, without taking account of how ASE may vary with context and cognitive or affective state. In this study, we used Ecological Momentary Assessment to assess how ASE varies with situational context. Using palm-top computers, 214 participants provided multiple momentary ratings of ASE and negative affect, urge to smoke, and data about the situational context (e.g., alcohol consumption). A pre-quit ASE questionnaire was also administered and used to calculate ASE individual differences.

ASE decreased when respondents were experiencing negative affect or stronger urges. On abstinent days (prior to the first lapse for lapsers), the relationship between urge to smoke and ASE was discontinuous — ASE was particularly high when urges were completely absent and particularly low at the maximum urge rating. The other situational variables did not exert significant independent influences on ASE. High-ASE individuals (based on baseline "trait" ASE) generally reported higher ASE in all situations, but the differences between high- and low-ASE individuals widened at higher levels of urge to smoke and negative affect, suggesting that individual differences in ASE may be most strongly expressed under challenge. These data demonstrate that ASE varies by context and state, suggesting that cognitive processes attending negative affect or high urge states may bias ASE judgments. In particular, extremely strong urges may drive these processes towards extremely low ASE and high relapse risk.

This study was supported by NIDA Grant DA06084 and conducted at the University of Pittsburgh.

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POS3-28 VALIDITY OF A 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 preliminary data on the validity of this brief version. Smoking (n = 85) completed the TCQ-12 after overnight abstinence 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 ad lib smoking condition and suggested a reasonably good model fit for the abstinence 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 suggest that the 12-item TCQ is as valid and reliable as the 47-item TCQ.

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POS3-29 ACUTE PHYSIOLOGICAL MEASURES IN TEENAGE AFRICAN AMERICAN MENTHOL SMOKERS

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Ethnoracial differences in physiological responses to smoking have been described in the literature, some of which have been attributed to ethnic preferences for menthol cigarettes. We sought to determine whether acute physiological responses to cigarettes vary by ethnicity among adolescent menthol cigarette smokers. Variables examined were: puff volume (an indicator of smoke delivery), change in heart rate and blood pressure, and carbon monoxide (CO) boost after smoking a menthol cigarette. Fifty-nine adolescents (37.3% African American (AA), age 15.2 ± 1.23(SD) years, FTND 7.00 ± 1.25, CPD 18.7 ± 7.93) participated in a single session during which one menthol cigarette was smoked (FTC yields for all brands = approximately 1.2 mg). Blood pressure, heart rate, and CO level were measured before and after smoking; mean puff volume (mL) during smoking was also determined. Analysis of covariance was used to determine whether heart rate and blood pressure after smoking one menthol cigarette varied by race, after controlling for baseline physiological measures and puff volume. Puff volume (AA 36.6 ± 2.23(SEM) vs. Caucasian 39.2 ± 1.89, p=0.39) and CO boost (AA 9.24 ± 1.08(SEM) vs. Caucasian 9.92 ± 0.66) were similar in both ethnic groups, and no statistically significant effects of race on physiological response to menthol smoking were observed (Systolic BP F(3,55)=0.08, p=0.78; Diastolic BP F(3,55)=0.09, p=0.76; HR F(3,55)=0.84, p=0.36). These findings suggest that the effects of menthol cigarettes on heart rate and blood pressure are not modified by ethnicity in this sample of adolescent smokers.

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POS3-30 EFFECT OF NICOTINE ON SALIVA CORTISOL LEVELS AND NEGATIVE AFFECT

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This study investigated the effects of smoking cigarettes on saliva cortisol levels in healthy, adult smokers. Nicotine was expected to cause an increase in cortisol when compared to placebo. Participants were 102 adults (60 male, 42 female) who habitually smoked. Participants smoked either three normal (1.1 milligrams nicotine) cigarettes (N=85) or three placebo (0 milligrams nicotine) cigarettes (N=17). Saliva samples and subjective measures were taken at the beginning of the session and after each cigarette. Cortisol was measured from the saliva samples using a competitive assay ELISA kit. A significant effect was found for nicotine, which increased saliva cortisol levels and heart rate above those of the placebo condition. No demographic variables showed any effect except ethnicity, which was influenced by a significantly greater cortisol response in the Asian participants. Significant correlations were found between cortisol levels and drowsiness, negative affect, and negative physiological symptoms of smoking. The results indicate that nicotine causes acute increases in cortisol and implicate the importance of cortisol in mediating negative subjective effects of nicotine.

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POS3-31 RISK OF INCREASED TOBACCO USE DURING MILITARY DEPLOYMENTS

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Common reasons for initiating, increasing, or resuming tobacco use include stress, separation from loved ones, peer pressure, fatigue, and decreased alertness. These factors are also common experiences of deployed military members. The purpose of this research was to evaluate tobacco use before and during deployment. Members returning from deployment completed a brief survey regarding their tobacco use before and during deployment. The hypotheses were a) smoking initiation rates would be evident, and b) those already using tobacco before deployment would increase their use. Of the 128 participants surveyed, 84% were male and 10% were female. Ages ranged from 19 to 52 years with a mean of 29. The average length of deployment was 95 days and on average each participant had been back 7 days. Prior to deployment 35% used tobacco, but the rate increased to 48% when 15 people initiated tobacco use while deployed (6 cigarettes, 6 cigars and 3 smokeless). Of the 61 people (52 males and 4 females) who used tobacco while deployed, 41 used cigarettes, 11 cigars, and 12 smokeless tobacco. Smoking rates increased significantly for those who used either cigarettes or cigars (t=2.64, df=40, p=.006; and t= 2.52, df=10, p=.015), while smokeless use did not significantly change. Smokers who increased usage did so by an average of 1/2 pack per day. Cigar users increased usage by an average of 1.5 cigars per day. These results suggest that deployments pose a significant risk for both the initiation of tobacco use and increased use among those already smoking.

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**POS3-32**

**SEX DIFFERENCES IN ARGinine-VASOPRESSIN RESPONSE IN REGULAR SMOKERS, SMOKERS DURING 24-HR ABSTINENCE, AND NON-SMOKERS**

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Arginine vasopressin (AVP), a posterior pituitary hormone, is involved in different regulatory functions, such as urine dilution/concentration, kidney function, and blood volume control. Nicotine exposure leads to an increase in plasma AVP (Rowe et al., 1980; Hunsball et al., 2001), unless this exposure occurs in a chronic fashion, in which case nicotine blunts the AVP response (Bojanowski et al., 1986). This blunted AVP response can lead to vasoconstriction and increased cardiovascular disease risk. The majority of studies examining the relationship between nicot ine exposure and AVP levels have not included females, and no study has examined AVP responses to nicotine abstinence in regular smokers. Therefore, the purpose of the present study was to examine differences in AVP responses to nicotine in male and female smokers while smoking and following 24-hr smoking abstinence, and in non-smokers. Twenty-two nonsmokers (12 males, 10 females) and 20 smokers (12 males, 8 females) participated in the study. Nonsmokers participated in one laboratory session while smokers 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 AVP assessment. Significant correlations were found with smoking status of log R-Sal and 41%, 79%, and 27% for NS, LS, and HS, respectively. Among non-smokers, males displayed significantly higher AVP levels than did females (p<0.05), a finding consistent with prior reports. Conversely, among smokers, males displayed lower serum AVP than did females, regardless of smoking condition (p<0.05). Findings suggest increased cardiovascular health risk for smoking females that continues following 24-hr smoking abstinence.

Supported by Penn State internal funds.

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**POS3-33**

**EFFECT OF SMOKE STATUS, GENDER AND PERSONALITY ON PLASMA DOPAMINE (DA), TETRAISOHYDROQUINOLINES (TIQs), AND NEUROENDOCRINE FUNCTION IN HEALTHY VOLUNTEERS**

J.H. Leu, J.A. Rosecrans, J.N. Clore, J. Venit†

**PURPOSE:** 1. To study any differences in TIQs, specifically DA condensation products (S)-salisolo (S-Sal) and (R)-salisolo (R-Sal), in neuroendocrine stress hormones or in Tridimensional Personality Questionnaire (TPQ) between individuals of differing smoking status. 2. To determine any relationship between TIQs and neuroendocrine hormones and/or TPQ.

**METHODS:** 18 healthy volunteers (age: 21-35) participated: 6 nonsmokers (NS), 6 light-smokers (LS), 6 heavy-smokers (HS), categorized by their reported smoking history and nicotine dependence (3 males and 3 females per group). Subjects completed the TPQ survey at screening. On two separate occasions, blood samples were taken. Plasma TIQs and DA were analyzed via HPLC. Plasma ACTH was analyzed via ELISA. Serum prolactin (PRL) and cortisol (CORT) were analyzed via IRMA and RIA, respectively. Intra- and inter-subject variability was assessed. Two-way ANOVA assessed the effects of smoking status and gender and their interaction. Correlation analysis was performed between TIQs and PRL, CORT and ACTH, as well as between TIQs and TPQ sub-scales.

**RESULTS:** Overall intraindividual variability in TIQs and DA was high (COV: 2-130%). Intraindividual variability in DA was 31%, 40%, and 40% in S-Sal, 33%, 52%, and 69%, and in R-Sal, 41%, 79%, and 27% for NS, LS, and HS, respectively. A smoking status by gender interaction was found for CORT (p<0.05). Smoking status was also significant for log R-Sal (p<0.05). No other significant smoking status differences were found for TPQ, TIQs or neuroendocrine hormones; however, NS consistently had lower DA, S-Sal, and R-Sal levels compared to LS and HS. TPQ Novelty Seeking and log S-Sal and R-Sal were significantly correlated (p<0.05). All R^2 values were low, thus suggesting a trend.

**CONCLUSIONS:** CORT levels were reduced, while DA and TIQs were elevated with increased smoking history. This finding is consistent with activation of central dopaminergic pathways and downstream regulation of adrenocortical pathways as a consequence of smoking.

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**POS3-34**

**CORRELATION OF COOK MEDLEY SCORES TO EFFECT OF NICOTINE ON BRAIN GLUTOSE METABOLIC RATE WHILE PERFORMING AN AGGRESSION TASK**

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The MMPI based Cook Medley hostility scale (Ho) historically has been used to investigate links between personality factors and health outcomes. Previous studies have shown the predictive nature of the scale with higher scoring individuals being more susceptible to long-term nicotine use than lower scoring individuals. We used FDG PET imaging to correlate the effect of nicotine on brain metabolism in 53 non-smokers according to their hostility scores while they performed an aggression task. By doing this we hoped to establish the relationship (if any) between the brain metabolic response to nicotine and trait hostility. We further wanted to identify the underlying neuronal systems associated with any observed difference in brain metabolic response to nicotine. There was a differential performance in the aggression task based on hostility scores. In addition the PET data showed significant positive correlations in the prefrontal areas between hostility scores and brain metabolic activity and negative correlations in the amygdala and nucleus accumbens.

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**POS3-35**

**THE EFFECTS OF NICOTINE AND MECAMYLAMINE PRETREATMENT ON COGNITIVE PERFORMANCE IN A SAMPLE OF SMOKERS**

F. Joseph McClernon, Frederique M. Behm, and Jed E. Rose

Concurrent nicotine/mecamylamine treatment for smoking cessation has shown promise, but little is known about the effects of these treatments separately and in combination on cognitive performance. 453 smokers enrolled in a smoking cessation trial were randomly assigned to one of four two-week pretreatment groups in a 2 (21 mg/24 hr nicotine vs. placebo patch) x 2 (6 mg b.i.d. mecamylamine vs. placebo capsule) matrix. Additionally, a portion of subjects were assigned to switch brands during pretreatment, though only those who continued to smoke their regular brand are considered here. Following overnight deprivation, participants completed a computerized cognitive test battery (ANAM; Reeves, Bleiberg, & Spector, 1993) consisting of simple reaction time (SRT), spatial mental rotation (SMR), delayed matching to sample (DMS), and finger tapping (FT) tasks. Separate 2 (pre-week 1 vs. pre-week 2) x 2 (nicotine vs. placebo) x 2 (nicotine vs. placebo) ANCOVAs using baseline performance as a covariate were performed. Significant Mecamylamine x Nicotine interactions were observed for the reversed log of SMR, F (1,137) = 5.52, p = .02, and DMS, F (1,128) = 4.50, p = .037, accuracy. For both measures, pretreatment with nicotine alone and mecamylamine alone were associated with greater accuracy than combined nicotine/mecamylamine pretreatment. Reaction time and motor performance were unaffected by pretreatment.

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POS3-36  REACTIVITY TO NICOTINE FOLLOWING ABSTINENCE IN DEPENDENT AND NONDEPENDENT SMOKERS

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The sensitivity model of nicotine addiction proposes that individuals destined to become dependent smokers will exhibit greater initial sensitivity to nicotine and more rapid development of tolerance than nondependent smokers. As an indirect test of this hypothesis, nicotine nasal spray was used to explore dynamic changes in hedonic and physiological reactivity to nicotine after five days’ nicotine abstinence in two groups-nicotine dependent (>9 cigarettes/day; n=24), and non-dependent (<6 cigarettes/day and minimal withdrawal discomfort during days of no smoking; n=12). Heart rate and blood pressure were collected before, during, and after nasal spray administration. Pleasurable and displeasurable responses following spray administration were also recorded. Significant differences between groups in heart rate emerged over the 40 minute session, adjusting for baseline heart rate value, with rates for dependent smokers (76.2 +/-1.15; F=4.60, p=.039) exceeding those for non-dependent smokers (71.8 +/-1.62). Similar differences were detected for systolic blood pressure, with a significant group by time interaction as well (F=2.83, p=.043). Dependent smokers reported significantly more pleasurable responses (“buzzes”; 2.21 +/-2.20) than nondependent smokers (0.42 +/-2.52; t=3.14, p=.004); no differences emerged for displeasurable responses. Thus, after five days of abstinence to allow for the dissipation of tolerance, dependent smokers evinced greater physiological and subjective reactivity to nicotine than nondependent smokers, providing support for the proposed hypothesis.

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POS3-37  MEDICAL SYMPTOMS ASSOCIATED WITH TOBACCO SMOKING WITH AND WITHOUT MARIJUANA USE AMONG CRACK COCAINE ABUSERS

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BACKGROUND: Despite widespread use of tobacco and marijuana by cocaine abusers, whether combined tobacco and marijuana smoking is more harmful than tobacco smoking alone in cocaine abusers remains unclear. Objective: We investigated the differences in medical symptoms reported among 34 crack cocaine abusers who smoked tobacco or marijuana (C), 86 crack cocaine abusers who also smoked tobacco (C+T) and 48 crack abusers who smoked both tobacco and marijuana (C+T+M).

METHODS: Tobacco, marijuana and crack use was assessed using self-reports and urine drug screens in cocaine abusers attending an outpatient treatment program. Medical symptoms were recorded using a standardized 134-item self-report instrument (MILCOM) and severity of drug use was assessed using the Addiction Severity Index (ASI).

RESULTS: The C+T+M group reported significantly more symptoms on the total scale as well as on the respiratory, gastrointestinal and nose/throat subscales than the C+T or C groups while the C+T group reported higher total and respiratory and nose/throat symptoms than the C group (F ranged from 6.06 to 3.48, <.01 to <.05). However the C group reported highest number of mood symptoms among the three groups (F=4.17, p<.01). The C+T and C+T+M groups were comparable in number of cigarettes smoked and ASI scores.

CONCLUSIONS: Although tobacco smoking may be associated with higher reports of medical problems in crack abusers, smoking both marijuana and tobacco seems to be associated with greater medical problems than smoking tobacco alone. Also marijuana smoking does not appear to be associated with reduction in tobacco smoking in crack abusers.

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POS3-38  SMOKERS WHO RUMINATE REPORT GREATER DYSHORIA AFTER SMOKING THAN NONRUMINATIVE SMOKERS

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Although nicotine administration is widely assumed to have acute antidepressant effects, surprisingly little evidence supports that premise and some disputes it. One possible explanation for such mixed findings is that nicotine administration may heighten rather than ameliorate dysphoric mood among some smokers. We examined whether nicotine’s effects on dysphoric mood would depend on whether an individual ruminates over dysphoric moods. The rationale is that nicotine’s presumed action on heightening attentional intensity and focus should exacerbate the ruminator’s ability to focus on negative thoughts, augmenting their dysphoric impact. Forty adult smokers completed baseline measures of rumination, trait anxiety, and social desirability and then participated in two experimental trials. Participants with rumination scores above the median split were designated as High Ruminators and those with scores below the median split were designated as Low Ruminators. Participants underwent a personalized dysphoric mood induction and then smoked a nicotinized cigarette in one trial and a denicotinized cigarette in the other trial. Dysphoric mood scales were measured via POMS throughout. Analysis of covariance revealed that, although both groups reported similar levels of dysphoric mood before smoking, High Ruminators reported greater anxiety than Low Ruminators after smoking the nicotinized, but not denicotinized cigarette [F (1, 39) = 5.3, p<.03] even after the effects of trait anxiety, social desirability were taken into account. There were no differences between groups on other measures of dysphoric mood (e.g., depression, anger) after smoking. Our finding contradicts the self-medication hypothesis and suggests that ruminative individuals who are already prone to dysphoric moods experience heighten ed levels of anxiety if they also smoke.

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POS3-39  NICOTINE ADMINISTRATION ELICITS GREATER REDUCTION IN AVERSIVE POTENTIATION IN NICOTINE-DEPRIVED WOMEN THAN MEN USING THE ACOUSTIC STARTELY EYEBLINK PARADIGM

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Studies suggest that women are more likely to smoke for reasons of negative affect reduction. If true, the aversive properties of negative emotional stimuli might be reduced by nicotine more so for women than men. To test this hypothesis, the acoustically elicited startle eyelink response paradigm was used to evaluate whether nicotine given to 12-hr deprived and nondeprived smokers would produce greater reduction in the aversive potentiation of the startle response in women than men. Aversive potentiation is the phenomena in which startle responses to aversive stimuli are larger than responses to neutral or positive stimuli. Forty-two smokers in a 2 (Nasal Spray: nicotine vs. placebo) x 2 (Nicotine Deprivation: 12 hr. deprived vs. nondeprived) repeated measures design viewed slides with differing affective valence (positive, aversive, neutral) during four laboratory visits. Nasal spray was administered blindly to smokers prior to slide viewing. The men and women were matched on mean cigarettes smoked, baseline carbon monoxide, FTND, and CESD scores. A significant Gender x Nasal Spray x Slide Valence interaction was found. Both men and women given placebo spray showed the typical pattern of aversive potentiation (i.e., startle greater during aversive than neutral slides). Following nicotine spray, men showed aversive potentiation, though at a reduced level, while women showed no aversive potentiation. These results suggest that the aversive qualities of negative emotional stimuli are reduced by nicotine to a significantly greater degree for women than for men.

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POS3-40

LABETALOL TREATMENT ENHANCES THE ATTENUATION OF TOBACCO WITHDRAWAL SYMPTOMS BY NICOTINE IN ABSTINENT SMOKERS

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The noradrenergic system may mediate some of the acute physiological effects of nicotine and nicotine withdrawal symptoms. This study examined the effects of labetalol, an alpha- and beta-adrenergic receptor blocker, on acute physiological and subjective effects of intravenous nicotine and on tobacco withdrawal symptoms. Five female and four male smokers participated in a double-blind, placebo-controlled, crossover study. Following an overnight abstinence from smoking, subjects were treated orally with a single 100 or 200 mg dose of labetalol, or placebo in each of 3 experimental sessions. Two hours following the medication treatment, subjects received an intravenous injection of 15 mcg/kg nicotine. Labetalol treatment attenuated the nicotine-induced increases in heart rate in a dose dependent manner. For systolic and diastolic blood pressure changes, there were no treatment effects. For the subjective effects of nicotine, treatment with both high and low dose of labetalol enhanced the ratings of “head rush” and “drug strength.” The attenuation of tobacco withdrawal symptoms following intravenous nicotine administration were significantly greater with high dose labetalol treatment, compared to placebo or low dose labetalol treatment. These results support the proposed role of adrenergic receptors in nicotine withdrawal symptoms. The utility of adrenergic blockers, in combination with nicotine replacement therapies, for smoking cessation need to be examined further in controlled clinical trials.

The study was conducted while the first author was at the University of Minnesota. Supported by a grant from National Institute on Drug Abuse (R-50 DA02659).

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POS3-41

ELECTRONIC OBSERVATION OF SMOKING CESSATION COUNSELLING BEHAVIORS BY PHYSICIANS USING A CLINICAL INFORMATION GATHERING SYSTEM (CIGS)

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There has been a significant amount of research on smoking interventions and best practices, yet physician smoking cessation counseling and treatment continues to fall short of national guidelines. With the increasing use of handheld computers by practicing physicians (currently estimated at 26%), handheld software that would assist physicians with smoking cessation counseling could have a significant impact on smoking cessation interventions throughout the United States.

In conjunction with designing, programming and evaluating a smoking cessation “toolbox” software program, we have developed a novel method, known as the Clinical Information Gathering System (CIGS) for gathering smoking cessation counseling intervention information from physicians’ handheld computers. This prototype enables investigators to assess smoking cessation interventions (i.e., date, time, type of intervention, and name of intervening physician) and patient smoking characteristics (i.e. smokers’ names, identifying data, level of addiction, and daily cigarette consumption) using handheld computer tools in a near real-time fashion. The CIGS prototype is a unique methodology for observing smoking cessation behaviors among physicians in a clinical environment. It is less expensive and time consuming compared to current methods (direct observation, video/audio recording, exit patient interviews, and chart reviews).

This new methodology can be used in large-scale intervention studies to test efficacy and effectiveness of handheld smoking cessation tools and to evaluate patient-based outcomes including frequency and success of smoking cessation attempts. The theory, architecture, and schematics for CIGS will be presented, as well as presenting and discussing our smoking cessation handheld tools in an interactive format.

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POS3-42

BRAIN METABOLIC EFFECTS OF NICOTINE PATCH IN HIGH AND LOW HOSTILITY SUBJECTS


This study investigated the effects of nicotine on regional brain metabolism in high and low hostility subjects. Hostility is an important personality trait linked to nicotine dependence susceptibility. We studied 51 non-smokers and 46 smokers between the ages of 18 and 40 with FDG PET while performing the Bushman Aggression Task. Subjects were studied following placebo, 3.5 and 21 mg (smokers only) nicotine patch. The order of administration was random and the patches were blinded. Plasma nicotine, cotinine, and mood scales were collected at baseline, and before and after the PET scan. Subjects were divided into low and high hostility based on the gender-specific median split Cook-Medley score. There were essentially no differences in brain metabolism following nicotine patch in the low hostility non-smokers. Nicotine patch dramatically increased metabolism throughout cortical and subcortical sectors in high-hostility non-smokers, suggesting that hostility personality traits predict brain metabolic response to nicotine. Similar comparisons in smokers were conducted to determine if a history of smoking interacted with hostility characteristics and nicotine patch. Low hostility smokers demonstrated essentially no differences in brain metabolism, a pattern virtually identical to the non-smokers. Furthermore, there was virtually no metabolic effect of 21 mg patch in these low-hostility smokers. The pattern in the high-hostility smokers was dramatically different. Although there was no effect of the 3.5 mg, there were dramatic metabolic decreases following the 21 mg patch. These results suggest that low-hostility personality type does not induce a brain metabolic response to nicotine regardless of smoking status. In contrast, the high-hostility subjects show robust responses to nicotine patch. The non-smokers show widespread metabolic increases to 3.5 mg while the smokers show widespread metabolic decreases to 21 mg. This suggests that smoking history alters the direction of the brain’s metabolic response to nicotine but only in, high-hostility subjects.

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POS3-43

EFFECTS OF NASAL NICOTINE SPRAY ON CNV AMPLITUDE IN NEVER-SMOCKERS


RATIONALE: Previous studies have demonstrated that I.V. administration of nicotine in regular smokers produces biphasic dose-dependent CNV amplitude curves. It is difficult to determine, without data obtained from never-smokers, whether these responses reflect direct effects of nicotine, release from short-term (usually overnight) nicotine deprivation, or both. Our goal was determine whether similar effects upon CNV amplitude could be obtained using a much less invasive (nasal spray) administration procedure in non-smokers.

METHODS: Forty-eight never-smoking subjects were randomly assigned to three groups receiving 0.5, 1.0 or 1.5 mg of nicotine. Two aerosolized nasal spray placebo or nicotine doses were administered as follows: a placebo dose followed after 45 min by a nicotine dose. Following dosing, EEG was recorded during the performance of a forewarned choiceReaction Time (RT) task. Individual RT trials consisted of an auditory warning stimulus (S1) followed by a visual imperative stimulus (S2) which required a manual button press response. Event-related Brain Potentials (ERPs) time-locked to the presentation of task stimuli were obtained.

RESULTS: Measures of early and late CNV amplitude were abstracted from EEG recorded at 19 scalp locations (standard 10-20 montage) time-locked to the RT task stimuli. CNV amplitude was largest at the frontal and central midline electrodes (Fz and Cz). Both early and late CNV amplitudes were reliably increased over placebo levels only following the administration of the 1.0 mg dose of nicotine.

CONCLUSIONS: These results are consistent with the interpretation that nicotine-induced shifts in arousal produce a biphasic (inverted U-shaped) function relating CNV amplitude to nicotine dose.

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**POS3-44**

**ATTENUATED CUE-INDUCED CIGARETTE CRAVING AND ANTERIOR CINGULATE CORTEX ACTIVATION IN BUPROPION-TREATED SMOKERS**

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**BACKGROUND:** In untreated smokers, exposure to cigarette-related cues results in increased craving levels and glucose metabolic activity in the perigenual/ventral anterior cingulate cortex (ACC). Positive correlations have also been reported between craving and metabolism in the orbitofrontal cortex (OFC), dorsolateral prefrontal cortex, and anterior insula. Given that bupropion treatment reduces overall cigarette craving levels in nicotine dependent subjects, we sought to determine if bupropion-treated smokers also have attenuated cigarette cue-induced craving and diminished brain metabolic activations in response to cigarette-related cues, and whether associations between craving and metabolism remain intact following treatment.

**METHODS:** Thirty-seven otherwise healthy smokers (20 untreated and 17 who had received open-label treatment with bupropion) underwent two 18F-fluorodeoxyglucose positron emission tomography scanning sessions in randomized order—one when presented with neutral cues and the other when presented with cigarette-related cues.

**RESULTS:** Bupropion-treated smokers had smaller cigarette cue-induced increases in Urge to Smoke (UTS) Scale scores and less activation of perigenual/ventral ACC metabolism from the neutral to the cigarette cue scans than untreated smokers. Bupropion-treated smokers had positive associations between UTS scores and OFC metabolism.

**CONCLUSIONS:** In addition to its known effects on spontaneous cigarette craving and withdrawal symptoms, bupropion diminishes cue-induced cigarette craving. Bupropion also appears to attenuate cigarette cue-induced ACC activation, which is consistent with its property of enhancing catecholaminergic neurotransmission. The correlation found here between craving and OFC metabolism in bupropion-treated subjects adds to the many reports of this association in untreated subjects with addictive disorders.

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**POS3-46**

**THE EFFECTS OF PPA AND NICOTINE GUM ON CESATION RATES AND POST CESSATION WEIGHT GAIN IN WOMEN**

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**With smoking prevalence rates beginning to decline in more mainstream smokers, studies designed to promote cessation in more challenging populations, like weight concerned smokers, warrant attention. This study assessed the efficacy of nicotine gum and phenylpropanolamine (PPA) gum and a 13-week cognitive behavioral smoking cessation program targeted for women. Participants were 439 females who met rigorous screening criteria and were randomized to one of the three treatment intervention groups (PPA gum, nicotine gum, or placebo gum). All participants attended the smoking cessation program and were given gum chewing instructions.**

**At posttest, 6- and 12-month follow-ups, body weight and point prevalence abstinence were assessed. Analyses to determine potential differences between treatment groups on weight change and cessation rates were performed. Results indicated that neither change in body weight nor cessation rates significantly differed between groups. Session attendance appeared to consistently increase the likelihood of quitting smoking at posttest and follow-ups. These results suggest that although the pharmacological interventions had no effect on cessation rates and postcessation weight gain, the behavioral component was effective in increasing the odds of quitting smoking in weight concerned women. Future efforts should focus on increasing adherence to behavioral program components, particularly session attendance.**

**This study was conducted while the first author was at University of Memphis Center for Community Health. Supported by NHLBI grant # HL 45057.**

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**POS3-47**

**SMOKING CESATION RELATED WEIGHT CONCERNS IN VETERANS**

Theodore V. Cooper, Ph.D.*, University of Mississippi Medical Center and G.V. (Sonny) Montgomery, Veterans Affairs Medical Center; Margaret Dunond, Ph.D., and Benson M. Hoffman, M.A., Veterans Affairs Western New York HealthCare System

**Despite the decline in smoking prevalence, some populations remain significant challenges to clinicians and researchers, including Veteran and weight concerned smokers. This study sought to assess cessation related weight concerns in Veterans presenting for QuitSmart(TM), an eight week, four session, empirically validated tobacco cessation program used extensively in the VA system. Assessed were prevalence rates of cessation related weight concerns, the weight at which concerned Veterans would relapse to smoking, characteristics of weight concerned Veterans, and the impact of weight concerns at cessation at the program’s end and at the one-month follow-up. Sixty-seven Veterans consented, were surveyed and weighed during orientation. Of those, 43 were eligible at this time for cessation analyses. Results suggested that 26.9% of those surveyed were concerned about postcessation weight gain, the mean and median weights tolerated before relapse were in the 10-12 pound range, and weight concerned Veterans were more likely younger with more general weight concerns than those not concerned about postcessation weight gain. At both time points, Veterans with cessation related weight concerns were .14 times as likely to quit smoking as those without such concerns, and Veterans with general weight concerns were 5.6 times more likely to quit smoking. Results suggest a significant prevalence rate of cessation related weight concerns in Veterans attempting to quit smoking, a reduced likelihood of success in doing so, and the need to identify and develop effective cessation treatments for this population.**

**This study was supported by the Department of Veterans Affairs while the first author was at the VA Western New York HealthCare System.**

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**POS3-45**

**3-MONTH SMOKING OUTCOMES ON QUITNET.COM**

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QuitNet is a smoking cessation website (www.quitnet.com) developed in accordance with AHRQ Clinical Guidelines. We conducted a 3-month evaluation to examine smoking outcomes and treatment utilization.

Follow-up surveys were emailed to 1,659 QuitNet users who registered 90 days ago. Of these, 200 (12%) were “bounced” due to invalid email addresses. Of 1,459 surveys delivered, 30% were completed (N=438). Compared to respondents, non-responders and subjects with invalid email addresses tended to be younger, and were more likely to be male, non-Caucasian, and have less than a high school education (all p values <.001). Among responders, 71.7% were female, 92.4% were Caucasian, 96.1% had a high school education or higher, and average age was 38 years (SD=11.4).

Using a conservative intention to treat analysis, 7-day point prevalence (pp) abstinence was 14.5% excluding bounced emails. Self-reported 7-day pp abstinence among the adherence sample (respondents only) was 48.2%. Among nonsmokers, 82.5% were quit for 2 months or longer. Current smokers had reduced their cigarette consumption from baseline (20.6±10.3 vs. 13.7±9.4, p<.001).

Quitters differed from continuing smokers in QuitNet utilization: they logged in more frequently and spent more total time online (p values <.0001) than smokers. In addition, quitters gave and received more support than smokers: they posted more messages, selected more buddies, sent email to and received email from more QuitNet users (all p values <.01). A logistic regression indicated that social support significantly predicted smoking status at 3-months (beta=1.29, <.001). Use of social support, unless available on many smoking cessation websites, is important to initiating and sustaining quit attempts. Results are consistent with the ARHQ Guideline findings that social support and intervention intensity and duration are key elements of cessation treatment.

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POS3-48 A NEW PARADIGM TO TREAT SMOKERS WITH SEVERE MENTAL ILLNESS (SMI)

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The prevalence of smoking in patients with severe mental illness is as high as 90%. Many smoke more than 25 cigarettes per day and find standard therapy ineffective. We designed a pilot smoking cessation program for outpatients with SMI. The program involves open-ended weekly motivational enhancement support groups with a trained therapist, individual sessions and MD visits. Patients were provided pharmacotherapy at a subsidized rate. Patients had a choice of combination therapy of bupropion SR and or nicotine patch and or ad lib nicotine gum. Nicotine replacement was titrated upwards till the patients reported no smoking confirmed by expired CO <5ppm.

RESULTS: Thirty treatment seeking outpatients with schizophrenia were enrolled in the program. The mean age of patients was 48, and 53% were male. The vast majority of the patients assessed were unemployed at the time of first assessment. There were no significant side-effects or toxicity noted. Data are being analyzed and will be presented on FTND scores, motivation to quit, duration of quit, mean dose of nicotine required to quit, frequency of smoking concurrently with NRT patch, type of neuroleptic, and adverse drug reactions. This pilot data will be used to study this intervention in a larger cohort of patients with SMI.

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POS3-49 A PLACEBO CONTROLLED TRIAL OF BUPROPION FOR SMOKING CESSATION IN SCHIZOPHRENIA

A. Eden Evins, M.D., Corinne Cather, Ph.D., Donald C. Goff, M.D., Casey Olm-Shipman, Nancy A. Rigotti, M.D.

INTRODUCTION: Patients with schizophrenia smoke with greater prevalence and die on average 10 years earlier than people in the general population, largely due to smoking attributable illness.

METHOD: Outpatients with schizophrenia who smoked more than 10 cigarettes per day were enrolled in a 12 week smoking cessation treatment trial. Subjects were randomly assigned to receive bupropion 300 mg per day or identical placebo for 12 weeks. All subjects received a weekly cognitive behavioral group intervention.

RESULTS: Sixty two subjects enrolled and 52 completed the study. Baseline measures of smoking did not differ between the two groups. Expired air carbon monoxide (CO) was reduced in the entire group from 29.7 (16.5) ppm at baseline to 11.9 (8.7) at the quit date (t=5.5, p<.0001) and to 19.2 (11.0) at week 12 (t=3.6, p<.001). The primary outcome measure was 7 day point prevalence of significant smoking reduction (>50% reduction from baseline in expired air CO) at the end of the 12 week intervention. In the bupropion group, 28% achieved significant reduction at week 12 (z=2.98, p<0.01, 95% CI 0.9-48) and in the placebo group 12% achieved significant reduction (z=1.84, p=0.06, 95% CI 0.007-24.7). Thirteen percent of the bupropion group and none in the placebo group achieved continuous abstinence from the quit date to the end of the intervention, weeks 4-12 (z=1.94, p<.05).

CONCLUSIONS: This study confirms our previous finding that bupropion SR is safe and effective for smoking cessation in patients with schizophrenia.

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POS3-50 RACIAL/ETHNIC VARIATION IN THE USE OF PHARMACOTHERAPY FOR SMOKING CESSATION BY VETERAN SMOKERS

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OBJECTIVES: Pharmacotherapy for smoking cessation is a safe and effective intervention that is available to treat tobacco dependence and assist smokers to quit smoking. The objective of this study was to assess whether there is racial/ethnic variation in the use of pharmacotherapy by veteran smokers. METHODS: We performed a cross-sectional analysis of current smokers enrolled at baseline in the Quality Improvement Trial for Smoking Cessation (QUITs), a randomized controlled trial of an organizational support intervention to improve adherence to the AH CPA Smoking Cessation Guideline. At baseline, random samples of primary care patients with three or more primary care visits in VA FY 1999 at 18 VA sites were enrolled and surveyed using computer-assisted telephone interviewing (CATI) techniques from March-December, 2000.

RESULTS: At baseline, 9924 subjects were enrolled in the study (40% of eligible subjects). 20% of subjects were identified as current smokers (n=1941). Caucasian male smokers were more likely to report having ever used the nicotine patch or gum (49%) during a quit attempt than African American (34%) and Hispanic male smokers (26%) (P<0.001). In the past 12 months, Caucasian male smokers were more likely to have used the nicotine patch (18%) during a quit attempt than African American (10%) and Hispanic male smokers (13%)(P<0.014). Only 4% of current smokers used nicotine gum during a quit attempt in the past 12 months and there were no significant differences between racial/ethnic groups.

CONCLUSIONS: This study indicates that there is racial/ethnic variation in the use of tobacco dependence medications. The VA provides coverage for certain tobacco dependence medications. It is important to determine whether race/ethnicity, sociodemographic or other characteristics explain the lower use of tobacco dependence treatment medications among racial/ethnic minority veteran smokers.

This study was supported by funding from VA HS R&D.

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POS3-51 EXTENDED NORTRIPTYLINE AND PSYCHOLOGICAL TREATMENT FOR CIGARETTE SMOKING

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BACKGROUND: Accepted treatments for cigarette smoking rarely achieve abstinence rates >35% at one year. Low rates may reflect failure to provide extended and multifocal treatment for this complex and chronic addiction. We undertook a study to determine the effects of long-term antidepressant and psychological treatment for smoking.

METHODS: Smokers of 10 cigarettes or more per day were randomly assigned to one of four treatment conditions in a 2 (drug) by 2 (duration) design: Drug was active versus placebo nor triptyline. Duration was 12 versus 52 weeks of treatment. All subjects received 8 weeks of transdermal nicotine patch and five group counseling sessions during the first 12 weeks of treatment. If they were included in the extended treatment condition they received an additional 9 monthly counseling sessions, with check-up telephone calls mid-way between each session. Subjects were assessed at baseline and at weeks 12, 24, 36 and 52. The principal outcome variables were point prevalence biochemically verified 7-day abstinence and one year continuous abstinence.

RESULTS: 160 subjects were enrolled. 52 week point-prevalence abstinence rates with missing subjects coded as smoking were: Placebo-Brief treatment=30%; Placebo extended treatment 39%; Active Brief Treatment=18%; Active Extended Treatment=50%. Continuous 52-weeks abstinence rates were: Placebo-Brief Treatment=22.5%; Placebo Extended Treatment=24.4%; Active Brief Treatment=15.4%; Active Extended Treatment=40.0%.

CONCLUSIONS: Extended drug and psychological treatment combined can produce long-term abstinence rates that are substantially higher than those produced by brief treatments. Extended psychological treatment alone also increases long-term abstinence rates.

This study was funded by RO1 DA 2538 and P50 DA 9253, both from the National Institute on Drug Abuse, and was completed at the University of California, San Francisco, USA.

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POS3-52  QUIT ATTEMPTS AMONG ADOLESCENT SMOKERS FOLLOWING BRIEF INTERVENTION

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Quitting smoking among adolescents have been examined in relation to depression, nicotine dependence, negative affect, social influences, and levels of daily smoking (Cohen et al., 2002; Niaura et al., 2002). However, less is known about differences on these variables following intervention. Teen smokers (n = 90) who had participated in a larger treatment study comparing two brief smoking cessation interventions were categorized at the end of the 6-month follow up into three groups: no reported quit attempts (Group 0) during follow-up, tried to quit 1-2 times (Group 1), and tried to quit three or more times (Group 2). Although groups showed no differences on depression or nicotine dependence levels at the beginning of follow-up, there were significant between-groups differences on mean number of cigarettes per day, F (2,87) = 6.20, p = .003; post-hoc analysis indicated that Group 2 reported significantly fewer daily cigarettes at the beginning of follow-up than Groups 0 and 1. Analysis of the social temptation score of the Temptations Questionnaire (Pallonen, 1998) indicated significant between-groups differences, F (2,84) = 6.97, p = .002; post-hoc analysis revealed Group 1 had significantly higher scores than Groups 0 and 2, with no group differences on the negative affect score of the Temptations Questionnaire. Findings suggest that teens with lower smoking rates following treatment are also more likely to make multiple quit attempts, and that assessing teens on perceived difficulty in abstaining in the face of social temptations may be an important element in helping prepare teens to quit smoking.

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POS3-53  NICOTINE REPLACEMENT THERAPY: DOES GENDER OR DEPRESSION STATUS MATTER?

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Nicotine gum (NG) is one of the first line medications for tobacco dependence treatment. Some research has suggested that women are less successful in smoking cessation, and may benefit less from nicotine replacement therapy (NRT). Similarly, depressed smokers have consistently had lower cessation rates than non-depressed, but in some studies NRT has reduced this disadvantage. We examined all three factors (NG vs. placebo, gender, and baseline depression) together as predictors of success in a 1-year study: NG (2 or 4 mg) or placebo was given to 312 women and 296 men attempting to quit smoking. Thirty-five percent of women and 29% of men were classified as depressed (CES-D>15). Survival analysis revealed significant main effects for NG and depression (P<.0001, and p=.01, respectively), but no main effect for gender (p=.82). Although interaction effects were not statistically significant in proportional hazards models, reference cell coding showed interesting differences between subgroups. For men NG resulted in significantly higher 1-year abstinence over placebo only among the depressed (16.7%-NG vs. 3.1%-PLA, p=.02). Among the non-depressed abstinence rates were similar in both groups (19.4%-NG vs. 13.6%-PLA, p=.31). Conversely, for women there was only a NG main effect; for the non-depressed the rates were 20.7%-NG and 6.8%-PLA (p=.006) and for the depressed they were 13.9%-NG and 7.9%-PLA (p=.03). The results stayed the same when controlling for the dependence level (FTND). In conclusion, it appears that when examining pharmacotherapies for tobacco dependence both gender and depression status should be taken into account concurrently.

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POS3-54  INHALED NITROUS OXIDE TO HELP ATTENUATE LONG-TERM EXPOSURE TO SMOKE

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AIMS: Animal studies have shown that nicotine releases dopamine, a neurotransmitter implicated in drug reinforcement. Pharmacologic agents that influence central dopamine have been successful in aiding smoking cessation attempts. Nitrous oxide gas is a rapid acting dopaminergic agent used in addiction medicine for withdrawal. We hypothesized that nitrous oxide would lessen cravings, increase smoking cessation rates, and reduce overall smoking amount.

METHOD: Twenty-five highly dependent smokers (11 men 14 women) participated in this pilot study. To limit confounding variables, counseling was minimal and standardized. On the designated quit-day, subjects received a 1:1 nitrous oxide and oxygen gas admixture via nasal hood for twenty minutes. Subjects maintained a smoking diary for the next three days detailing each cigarette smoked and the level of craving at that time. Subjects returned in three days to rate cravings in comparison with prior quit attempts.

RESULTS: After nitrous oxide therapy, ninety-two percent of the subjects reported decreased craving for tobacco as compared to previous quit attempts. Forty percent of the subjects quit completely during the three days, and there was an eighty-five percent reduction in the total amount of cigarettes smoked per day compared to baseline.

CONCLUSIONS: Although preliminary, the present findings suggest that nitrous oxide gas may decrease smoking and cravings during the crucial beginnings of a smoking cessation attempt. Further studies with larger sample sizes and placebo-control conditions are warranted.

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POS3-55  CHANGES IN ANXIETY LEVEL AND SMOKING STATUS IN AN OPEN TRIAL OF BUPROPION SUSTAINED-RELEASE, NICOTINE TRANSDERMAL PATCH AND COUNSELING

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We examined the relationship between changes in state anxiety and smoking status during an open trial with 300 mg bupropion sustained-release (SR) and 21 mg nicotine transdermal patches for smoking cessation. Data are from 140 patients who completed 4 weeks of treatment. Of 215 patients who had entered the study, forty-two patients dropped out prior to week 4 (adverse events (n=18), lost to follow-up (n=12), withdrew consent (n=12)) and 33 patients did not take the dosage of bupropion and/or nicotine patch as recommended. At baseline, patients smoked at least 15 cigarettes a day, did not experience a major depressive episode in 6 months prior to entry assessed with the Structured Clinical Interview for DSM IV (SCID) and had no unstable medical or psychiatric conditions measured by the Mini International Neuropsychiatric Interview (MINI). At the first visit, history of MDD was assessed using the SCID. We administered the Spielberger State Anxiety Inventory (SAI), which measures how the patient feels on the day of the visit (scores ranging from 20-60), before and after 4 weeks of treatment. We used multiple logistic regression to assess the relationship between state anxiety and smoking status. There was no difference in baseline SAI scores comparing patients who dropped out and those who completed the study (p=0.65). The groups also did not differ in terms of age (p=0.33), sex (p=0.29), education (p=0.12), history of depression (p=0.60) and Fagerstrom Questionnaire scores (p=0.60). Increased change in state anxiety (versus no change and decrease) was significantly associated with failure to quit smoking (OR=1.07, CI: 1.02-1.12, p=0.003). The nature of this association warrants further explanation.

Funding by NIDA R01 DA13490; medication support from GlaxoSmithKline.

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POS3-56 AN INTEGRATED COMPUTER-BASED SYSTEM FOR TREATING NICOTINE DEPENDENCE

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The purpose of this study is to develop, implement, and evaluate an integrated computer-based system for tobacco user identification and smoking cessation intervention for primary care patients in a medically-indigent, managed care population. A computerized telephone system collects data via a telephone keypad to screen for tobacco use prior to primary care visits. The tobacco-use data is transferred to the electronic patient record system to generate computer reminders to primary care providers for smoking cessation intervention. Content of the reminders is individually tailored based on the patient-derived data and USPHS guidelines for treatment of nicotine dependence.

A pilot test of the system is currently being conducted at two inner-city community health centers. To date, the automated telephone system has reached 1352 patients, with 739 (55%) completing the automated tobacco-use question set. Current smokers were identified in 41% of the calls. Computer-generated reminders have been placed on the encounter forms of all smokers. Corollary information about the patient's stage of change and recommendations for intervention are included.

The primary outcome of this study is patient reported rate of primary care provider advice to quit smoking. In a post-visit interview, smokers are asked to recall whether or not their providers discussed smoking and advised them to quit. Additional outcome measures include: asked to set a quit date; given a follow-up appointment; provided with printed self-help materials; offered/discussed pharmaceutical treatment for nicotine dependence; referred to a smoking cessation program. Recruitment is ongoing; preliminary results will be reported at the conference. Supported by the Robert Wood Johnson Foundation Addressing Tobacco in Managed Care Program.

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POS3-57 ATTITUDES AND KNOWLEDGE ABOUT NICOTINE REPLACEMENT THERAPY IN TREATMENT SEEKING SMOKERS: PRELIMINARY FINDINGS FROM THREE MEASURES

Marc Mooney, David Babb, Joni Jensen, Dorothy Hatsuakami

Attitudes and knowledge about medication are related to initiation of pharmacotherapy and subsequent compliance. Relatively little is known about smokers' beliefs and understanding about nicotine replacement therapy (NRT) and other pharmacotherapies for smoking cessation. The purpose of the current study was to determine the convergent and discriminant validity of three measures of attitudes and knowledge about NRT and smoking cessation treatments. A total of 98 smokers (56% Female; Means: Age = 37.3, Cigarettes/Day = 21.1, Years Smoking = 20.1) attended an orientation for a smoking cessation trial and completed the following three instruments. First, the 12-item Attitudes about Nicotine Replacement Scale (ANRT-12; Perneger & Etter, 2001) generates two subscales, ADVANTAGES and DRAWBACKS of NRT, based on both opinions and factual items. Second, the 18-item Beliefs about Medication Questionnaire (BMQ; Horne, Weinman, & Hankins, 1999) provides two subscales (OVERUSE and HARM) about medication beliefs in general and two subscales (NECESSITY and CONCERNS) for a specific treatment, in this case, smoking cessation treatment. Third, the 15-item Perceived Risks of Nicotine Replacement scale (PRNR; Hatsuakami & Mooney, Unpublished) asks subjects to report if nicotine alone causes a variety of conditions (e.g., cancers [No], hypertension [Yes]), yielding %CORRECT, %INCORRECT, and %UNCERTAIN scores. ADVANTAGES did not significantly correlate with any other subscales. DRAWBACKS correlated with CONCERNS (r=.26), HARM correlated with CONCERNS (r=.48) and OVERUSE (r=.41). Additional reliability and validity analyses are presented, and relationships among subscales to sociodemographic, smoking, and smoking cessation variables are detailed. Implications for use of the three questionnaires are considered. Supported by NIDA grant P50-DA13333.

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POS3-58 COMBINED BUPROPION, MECAMYLAMINE, AND NICOTINE PATCH: A PILOT TEST OF TOLERABILITY AND EFFECTS ON SMOKING


It is common for individuals to use some form of pharmacotherapy (e.g., nicotine replacement, bupropion HCI) when attempting to quit smoking, yet the efficacy of monotherapy is fairly low, often less than 50% at end of treatment. The complexity of the pharmacological effects of nicotine and of nicotine dependence in general suggests that a multi-modal approach might increase success rates. This open-label study tested the following combination of pharmacotherapies: bupropion 150 mg b.i.d., mecamylamine 2.5 mg b.i.d., and nicotine patch 14 mg/24 hr. The study was also designed to examine the interaction of quitting readiness on the effectiveness of the combination to reduce smoking behavior and smoking satisfaction. Participants with either a high desire to quit or a low desire to quit (r>74 and ≤26 on a 100 point scale, respectively) were recruited. Participants (n=28) were on the medications for 3 weeks. They were instructed to smoke as much as they felt like during this period. The following measures were recorded repeatedly over the three weeks: adverse event profile, daily cigarette count, daily smoking satisfaction, daily craving and withdrawal, expired carbon monoxide, saliva cotinine, and desire to quit. In general, the combination was well tolerated and there were significant changes in smoking-related measures for both groups. This study was conducted at the West Los Angeles campus of VA-GLAHS and was supported by the first author's VA Merit Review (MREP) grant.

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POS3-59 DOES A TRIAL OF ABstinence AFFEct REAL-TIME SUBJECTIVE RATINGS OF REINFoRECMEnT?

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Short-term abstinence affects many variables related to smoking and the cessation process. Few studies, however, have examined the effect such an abstinence period might have on subsequent subjective ratings of reinforcement in individuals highly motivated to quit smoking. In order to assess this relationship, we analyzed smokers’ responses to initial smoking experience after a 13-hour period of prescribed abstinence. 224 participants successfully abstinenced and responded to random assessments of their smoking behavior on a hand-held electronic diary in near real-time. Analysis of variance tests assessed whether ratings of SATISFACTION and PLEASANTNESS for the last cigarette smoked differed during a baseline period of ad-lib smoking prior to abstinence and a post-abstinence assessment. Differences in satisfaction ratings during these periods were significant (F=5.80, p=0.016): satisfaction ratings for the post-abstinence assessment (M=8.66, SE=0.13) were modestly higher than the ad-lib smoking ratings (M=8.22, SE=0.13). There was no evidence, however, of differences in pleasantness ratings during these periods (F=2.14, ns). These results suggest the need for further specification of factors and conditions that affect ratings of subjective or sensory reinforcement from smoking.

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POS3-60  RELIABILITY AND VALIDITY OF A WEB-ADMINISTERED VERSION OF THE FAGERSTROM TEST FOR NICOTINE DEPENDENCE
Mindlen B. Shadle, B.A., Karen K. Saules, Ph.D.*, David C.S. Richard, Ph.D., and Dean Lauterbach, Ph.D., Eastern Michigan University

Interest in using the Internet and computers for clinical assessment and research purposes has never been greater. While web-delivered questionnaires frequently yield results that are psychometrically equivalent to paper-pencil (PP) administration formats, this is not always the case. This study explored the psychometric equivalence of PP and Web formats of the FagerstrOn Test for Nicotine Dependence (FTND) with a sample of 20 undergraduate smokers. Participants categorized themselves as regular smokers (n=14; mean of 12 cigarettes/day), occasional smokers (n=6; mean of 1 cigarette/day). Regular smokers had a mean score of 2.21 (sd=1.89) on the PP version and 2.29 (sd=2.02) on the Web format (n.s.) Occasional smokers had modal scores of 0 on the FTND. For regular smokers and for the combined sample, FTND scores were not significantly different between the Web and PP formats. Concurrent validity was suggested by high item and scale correlations, consistent with psychometric equivalence. For regular smokers, the Web alpha coefficient (.77) was higher than the PP alpha (.67) as well as being generally higher than that reported in previous studies. Overall, FTND results across formats were psychometrically equivalent in this college sample.
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POS3-61  WEB-BASED SMOKING CESSATION. QUIT RATES OF 4655 SMOKERS
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PROBLEM/OBJECTIVE: Smoking is the leading cause of death in the United States, yet 48 million (24%) Americans continue to smoke. Web-based interventions may have considerable potential to facilitate health behavior change. The objective of the present study is to describe the demographic characteristics, cessation history, nicotine dependence and stages of change status of a large sample of an independently owned, evidence based, free to consumer web-based smoking cessation program.

METHODS: Cumulative Tobacco dependence and readiness to quit data from 4644 users of the Stop Smoking Center were analysed according to gender and place of residence.

RESULTS: The majority of participants were American (67.45%) and 65.7% were women. On average, users were 37.1 years of age, smoked 21.8 cigarettes per day and had smoked for 18.9 years. The mean FTND scores were 5.77. Users had a median of 3 previous quit attempts and 43% had at least one co-resident smoker. On September 30, 2002, 55% percent of users participating in the program were in contemplation, 16% were in the preparation stage, 9% were in the process of quitting, and 17% were in maintenance stage. 1238 set a quit date of which 59.45% were smoke free, 35.5% reported a slip and 5.41% relapsed.

DISCUSSION: The results of this study suggest that the users of the web-based program are similar to the users of other smoking cessation programs. Limitations of the data collected are discussed. Further research is needed into the efficacy of web-based behavioral health interventions.

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POS3-62  A SMOKING CESSATION PROGRAM FOR PATIENTS WITH AFFECTIVE AND ANXIETY DISORDERS
Peter Selby, M.D., Kristen Cleary, M.A., CAMH, University of Toronto

RATIONALE: The prevalence of smoking in patients with mood and anxiety disorders = 40 to 80%. However, there are no specific cessation programs for this population.

OBJECTIVES: To describe the outcomes in a special program for smokers with mood and/or anxiety disorders.

METHOD: All clients attended weekly individual and/or group sessions. Self-report of quit was verified by CO levels <10ppm.
RESULTS: n=30; 80% female; mean age = 46±10 years. They smoked 24±9 cigarettes per day at baseline and CO levels were 20±11ppm. Mean FTND scores were 7±2.63 had major depression, 20% bipolar disorder and 3% dysthymia, 3% social phobia and panic disorder, 7% OCD and 10% PTSD.37% had two and 9% had three diagnoses. 66% drank alcohol, 16% smoked marijuana, 7% used opiates, and 3% used cocaine. 76% quit for at least two consecutive days. Of those who quit, 34% quit for>2 months. The time to first quit attempt was 93 +/-91 days. The mean duration of quit was 50 days. There was a 50% reduction in CO levels from baseline (20 ppm to 9 ppm, <.002 two tailed). 3 used bupropion SR, 6 the nicotine patch, and 6 used gum. Of these, 3 used all three, 4 used nicotine patch and gum, and 1 used the patch alone. None of those who quit destabilized. Follow-up is ongoing.

CONCLUSIONS: Patients with mood and anxiety disorders are ready and able to quit smoking while attending a comprehensive clinic. Combination pharmacotherapy is often necessary. Further studies need to be done to evaluate effective tobacco interventions for this population.

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POS3-63  RETREATMENT WITH ZYBAN SR: 52-WEEK FOLLOW-UP OF A CANADIAN MULTICENTRE TRIAL
Peter Selby, M.D., Bruna Brands, Ph.D., Centre for Addiction and Mental Health, University of Toronto; Nate Steeper, Ph.D., GlaxoSmithKline, Canada

RATIONALE: Smokers often make several quit attempts. Bupropion SR (Zyban™) is an effective, non-nicotine first-line aid to smoking cessation in combination with behavioural support.

OBJECTIVES: To determine the efficacy of bupropion SR in smokers who were unsuccessful after an initial quit attempt with bupropion SR.

METHOD: This Canadian multicentre, parallel, randomized, placebo controlled trial involved 284 cigarette smokers, >18 years, who were unable to quit or relapsed after previously taking bupropion SR (B) for at least two weeks. Participants averaged 15 cigarettes per day at baseline and were randomized to either B 150 mg orally twice per day (n =141) or placebo (P) (n =143) for 12 weeks. Both groups received behavioural counselling.

RESULTS: The mean age of the B group was 43.7 years, P group was 43.8 years with 53% female in B and 50% female in P. Continuous abstinence rates as measured by end tidal CO <10ppm and self report from Week 4 through Week 7 were 29% for B versus 13% for P (p=0.002). For weeks 4 through 12, continuous abstinence rates were 26% for B versus 8% for P (p<0.001). Point prevalence abstinence at 52 weeks was 13% and 8% for B versus P respectively (ns, p=0.051). Bupropion was well-tolerated with an adverse event profile consistent with events reported in the Product Monograph.

CONCLUSIONS: Bupropion SR is effective in the re-treatment of relapsed adult smokers, regardless of previous Bupropion use. This is consistent with the growing evidence that for some smokers tobacco dependence is a chronic condition that requires several quit attempts and maintenance treatment may be indicated.

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POS3-64 MOTIVATING SMOKERS WITH SCHIZOPHRENIA TO SEEK TREATMENT FOR TOBACCO DEPENDENCE
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Three brief interventions were compared to determine how to best motivate smokers with schizophrenia to seek tobacco dependence treatment. Participants were randomly assigned to receive either a brief motivational interviewing intervention (N=31), a psychoeducational intervention (N=34), or a minimal control intervention (N=12). Each intervention included a referral to a tobacco dependence treatment program. Participants were followed at one-week and one-month to determine if they had followed through on the referral. Self-report was corroborated by treatment staff. At one-week, 25.8% of those receiving the motivational interviewing intervention and 0% of those receiving the psychoeducational or minimal control interventions followed through on the referral. At one-month, 32.3% of those receiving the motivational interviewing, 11.8% of those receiving the psychoeducational and 0% of those receiving the minimal control interventions followed through on the referral. Chi square analyses indicate that a significantly greater proportion of those receiving the motivational interviewing intervention followed through on the referral for tobacco dependence treatment than those receiving the psychoeducational intervention at one-week and one-month post-intervention. In addition, a significantly greater proportion of those receiving the motivational interviewing intervention followed through on the referral than those receiving the control intervention at one-month post-intervention. There were no differences between psychoeducational and minimal control interventions.

This study was conducted at University Behavioral Healthcare-University of Medicine & Dentistry of New Jersey. No outside funding source.

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POS3-65 NICOTINE INCREASES SEVERITY OF CHOROIDAL NEOVASCULARIZATION IN EXUDATIVE AGE-RELATED MACULAR DEGENERATION

PURPOSE: Cigarette smoking has been associated with an increased risk of age-related macular degeneration (AMD) and choroidal neovascularization (CNV). Nicotine, a major component of cigarette smoke, is a potent injury stimulus for vascular endothelium and can induce vascular endothelial proliferation. We sought to determine the effects of nicotine exposure in a mouse model of CNV, and whether age-dependent differences in susceptibility were present.

METHODS: A laser model for CNV was used to study the effects in young (4 mos) and aged (11 mos) C57BL/6 mice. Nicotine was administered in drinking water (100ug/ml) in experimental mice two days prior to laser exposure and continued for two or four weeks after laser injury. Control mice received drinking water. Experimental and control animals were then injected with fluoresceinated dextran, then the right eyes were removed and prepared for flat-mount analysis of CNV surface area. The mice were perfused and fixed with glutaraldehyde and formalin. The left eyes were removed for histopathology.

RESULTS: Older mice exposed to nicotine had larger CNV than control mice (1.8±0.2 DA vs 1.0±0.1 DA). Cellularity and vascularity also increased in nicotine-exposed older mice. In contrast, young mice were less susceptible to the effects of nicotine (1.2±0.1 DA in treated eyes vs 1.0±0.1 DA in controls). Cellularity and vascularity were not significantly different.

CONCLUSIONS: In mice, exposure to nicotine results in increased size of CNV, but the effect is more pronounced in older mice.

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POS3-66 SMOKING CESSATION AMONG DRUG ADDICTS: COPING STRATEGIES AND BARRIERS TO QUITTING
Magdalena Kulesza, B.A., Brian F. Sands, M.D., Cheryl Jones, CASAC, Woodhull Hospital; J. Lee Westmaas, Ph.D.*, State University of New York at Stony Brook

Tobacco produces far more illness and death than all other addictive drugs combined. Moreover, most users of illicit drugs; smoke; and those who enter treatment for illicit substance use continue to smoke. Many drug addicted individuals would like to quit smoking while in recovery for drug addiction; however, the rates of smoking cessation among drug abusers are low. The goal of the present study was to identify, for drug addicts, the most effective strategies for quitting smoking, and barriers to smoking cessation encountered, using standardized and open-ended measures administered in an interview format. We compared two groups of participants recruited from an out-patient chemical dependency treatment program. One group, primarily non-smokers, was able to abstain from smoking for six months or more (n=18) while a second group consisted of current smokers who were never able to quit for more than 45 days in the past (n=20). Analyses indicate that successful quitters scored significantly lower on denial of difficulty quitting, using alcohol or drugs to cope, disengagement from coping efforts, and greater acceptance of and less self-blaming of their addiction to tobacco. There was also a trend for successful quitters to score higher on use of emotional support, positive reframing, and religion, and to have lower drug and alcohol severity scores. In addition, successful quitters scored significantly lower on barriers to quitting smoking such as lack of motivation and addiction to tobacco. These data provide important information for chemical dependency professionals working with drug addicted individuals interested in quitting smoking.

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POS3-67 ADOLESCENT SMOKING CESSATION ESCAPING NICOTINE AND TOBACCO (ASCENT): OUTCOME EVALUATION PRELIMINARY FINDINGS

Over 400,000 U.S deaths occur annually from smoking-related illnesses such as various forms of cancer, cardiovascular diseases, stroke, and pulmonary illnesses. While the prevalence rates of adult smokers in the U.S. have declined, cigarette smoking among youth remains unchanged, or has even increased. Research suggests that adolescents wish to quit smoking. However, cessation programs designed specifically for adolescent smokers are limited. In response to the need for research-based youth cessation interventions, Danya International, Inc., with funding from the National Institute of Drug Abuse (NIDA) has developed a multifaceted smoking-cessation program called Adolescent Smoking Cessation Escaping Nicotine & Tobacco (ASCENT). Incorporating the theoretical model of Stages of Change, ASCENT utilizes cognitive behavioral approaches that are developmentally appropriate for ages 14 through 18 years old. The intervention includes a six-session curriculum, training manual, teen workbook, motivational video entitled The Last Drag, and facilitator’s video. Presenting quitting as a process, ASCENT enables youth to acquire the necessary knowledge and motivation to be successful in becoming abstinent. Youth involvement throughout the project period enabled the motivational video and curriculum to be specifically tailored to meet the needs of the target population. An outcome evaluation to determine the efficacy of the program in the target population is currently being conducted. Six schools from the state of Maryland were randomly assigned to either the control group (students asked to quit on their own without assistance) or the experimental group (ASCENT). End of treatment data have been collected as well as 30-day follow-up data. We are in the process of collecting 6 month and 1-year outcome data. Evaluation design, recruitment protocols and preliminary outcome data will be presented.

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POS3-68
SMOKING CESSION PROGRAM FOR LATINO YOUTH: DEVELOPMENT AND OVERVIEW

Susanna Nemes, Ph.D., Jeffrey Hoffman, Ph.D., Jennifer Weil, M.A.

The growth in the population of Hispanic/Latino students is unparalleled when compared with other demographic groups. Public health messages may be sufficiently conveyed in English to many Hispanic students, but there is a percentage of students that prefer messages conveyed in Spanish. There is a great need to reach Hispanic students with public health messages, including the dangers of smoking. However, there are limited resources to help Hispanic youth to quit smoking. In response to the need to help Latino youth quit smoking, Danya International Inc., with funding from the National Institute of Drug Abuse (NIDA) has developed a research-based multifaceted smoking-cessation program for Latino adolescents. The program is being developed in Spanish for youth who only speak Spanish or are more comfortable communicating in Spanish. The program is developed to be culturally appropriate for Latinos. The program has been adapted and translated for Latinos from the youth program titled Adolescent Smoking Cessation EscapingNicotine & Tobacco (ASCENT), which is based on cognitive learning theory and the stages of change continuum for ages 14 through 18. The complete intervention packet includes a six session curriculum, training manual, teen workbook, motivational video and facilitator’s video. Latino youth were involved in the development process, enabling the motivational video and curriculum to be specifically tailored to meet their needs. We would like to present an overview and key parts of the curriculum, and discuss the process of developing a research-based curriculum for Latino youth.

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POS3-69
UTILIZING INNOVATIVE TECHNOLOGY TO PROMOTE TOBACCO CESSION IN DENTAL OFFICE

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Under the Addressing Tobacco in Managed Care Program, Columbia University, Aetna Inc., and Deschutes Research Inc. have developed a CD-ROM-based intervention. The primary objective of the program is to use innovative technology to educate dentists to provide tobacco cessation services to their patients. The CD-ROM is the centerpiece of a program that will encourage dentists to incorporate systems-based strategies including tobacco use identification systems, education, financial incentives, and feedback. The study will determine if Managed Care Organization sponsored tobacco related systems can be created, facilitated and maintained within the dental office. The CD-ROM will be complemented and its messages reinforced via electronic detailing of dental offices utilizing e-mail updates. Computer-assisted interventions for clinicians require that they have the technical capability to view and assimilate the information presented. To participate in the study, dentists need a Windows based computer purchased in or after 1998, located either at home or at a location other than the front desk, with a minimum of 128 MB of RAM, audio and visual capabilities, an internet connection and an e-mail account. The information on the technical capabilities of the offices was obtained via surveys sent to 1508 dental offices in the Aetna network with 200 or more adult MCO patients. 500 (33%) of the dentists contacted completed the survey. 90% of these dentists had a computer. 36% (n=178) met all of the inclusion criteria to participate in the study. Every effort has been made to insure that the CD-ROM operates smoothly on different computer platforms and within the multitude of operating systems that have been released or updated since 1998. Multimedia presentations are an innovative methodology for educating and updating clinicians on tobacco cessation.

This project was supported by a grant from the Robert Wood Johnson Foundation.

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POS3-70
COMBATING THE NEGATIVE IMPACT OF TOBACCO USE ON THE VITALITY OF ARKANSAS’ MINORITY COMMUNITIES—THE MINORITY INITIATIVE AT UAPB

George T. Blevins, Jr.*, Mary Benjamin, Angela Fazarro and Calvin Johnson, University of Arkansas at Pine Bluff (UAPB)

Tobacco use in Arkansas kills more people than the other top five causes of death combined, resulting in the death of 5,200 people each year. The impact on Arkansas’ economy, in terms of tobacco-associated health care costs is appalling, at $413 million each year.

African American smokers consume 35% fewer cigarettes per day than white smokers, yet have a higher rate of developing smoking related illnesses. For African-Americans, tobacco-related cancers account for approximately 45% of all cancers in men and 25% women. The incidence of oral cavity and pharynx cancer in black men exceeds that of white men by 49.1%, while lung and bronchus cancer in black men exceeds white men by 40.7%. To a somewhat lesser degree, the same pattern is true for women. Furthermore, African-Americans have significantly higher lung cancer rates for any given level of smoking.

In November 2000, Arkansans passed Initiated Act One, dedicating a portion of Arkansas’ Master Tobacco Settlement revenue to tobacco prevention and cessation. UAPB is providing administrative oversight and program direction for the portion of these funds designed to target Arkansas’ minority populations.

The vision of UAPB’s Minority Initiative Sub-Recipient Grant Office is to positively transform the norms of Arkansas’ minority communities regarding tobacco use; the single most preventable cause of death and disease today. This poster illustrates the major tobacco use issues in the minority communities of Arkansas, as perceived by community members, and their approaches to combating tobacco use via programs funded through the Minority Initiative at UAPB.

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POS3-71
CHARACTERISTICS OF TOBACCO USE AMONG PUERTO RICAN ADOLESCENTS

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Characteristics of tobacco use and their relationship with mental health illness among a sample of Puerto Rican adolescents aged 11-17 were examined. 1,351 children were interviewed in PR for a research on service, treatment use, and outcome using three waves of probability sampling. The DIS-CIV was used to obtain psychiatric diagnoses (major depression, generalized anxiety disorder, separation anxiety disorder, panic disorder, social phobia, and PTSD)

Sixty-six percent of the sample was drawn from the community, 34% from mental health clinics. Fifty two percent were males. Age distribution was: 39% between 11-13 years, 46% between 14-16 years, and 15% between 17-18 years old. By education, 17% were in Grades 1-6, 46% in Grades 7-9, 37% in Grades 10 +.

Ever-smoking was reported by 20% (23.6% boys, 15.1% girls, X2 = 14.9; p<0.000). Thirty-seven percent smoked 2-5 cigarettes per day (cpd), 18.3% 6-8 cpd, 15% 10 to 11 cpd, and 35% smoked 11+ cpd. Mean cpd was 12.2 (S.D.=10.8). Age of smoking initiation (mean=13 years, S.D.= 2.4) was directly associated with mean number of cigarettes smoked (F linearity = 3.06, p=0.02). The proportion that met 3-criteria of nicotine dependence (DSM-IV) was 2.4%. Proportion of ever smokers was significantly higher in those with mental illness than those without (38.4% vs 18.2%, x2=29.84, p=0.000).

Observations on smoking prevalence, age of initiation, amount smoked, and the association between smoking and mental illness provide a basis for further research towards intervention approaches tailored to the needs of Puerto Rican youth.

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POSS-72 DEVELOPING SPECIALIZED TOBACCO DEPENDENCE TREATMENT CENTERS: THE NEW JERSEY STORY

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The New Jersey State Department of Health and Senior Services Clinics as part of the New Jersey Comprehensive Tobacco Control Program has provided seed funding to a 13 health care organizations to develop 15 Tobacco Dependence Treatment. These clinics, called N.J. Quitcenters, are intended to work alongside a web-based self-help program, and a telephone counseling service as components of a stepped care model to help smokers who are motivated to quit. The institutional settings selected for N.J. Quitcenters include two University settings, 11 hospital settings, a community health center, and a stand-alone addiction treatment program and the hospital settings can be subdivided into 4 behavioral health departments, 6 community health outreach departments, and an oncology department. Patients presenting for treatment are highly dependent with over 60% smoking more than 20 cigarettes per day and smoking within the first 10 minutes of waking. Average age is 45 and more females than males present for treatment.

The integration of tobacco dependence treatment into the health care system is an important public health issue. Coordination of staff training, consistent treatment provision, quality treatment, marketing, billing issues, and data collection across different institutional systems are challenges being negotiated by the New Jersey Quitcenters and described with this poster presentation.

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POSS-73 POPULATION-BASED ASSESSMENT: USE AND COST OF A NEW BENEFIT FOR SMOKING CESSATION

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Uncertainty about the use and cost of insurance coverage for smoking cessation treatment (SCT) is a barrier for health care purchasers' adoption of such coverage. Presented here are the results from the first year, of a three-year observational study designed to reduce this uncertainty for public health care purchasers.

In January 2001, the State of Wisconsin introduced SCT insurance coverage for its ~200,000 employees, retirees and dependents. Employee self-report data were collected to measure smoking status, benefit awareness and use using the Consumer Assessment of Health Plan Survey in Spring 2002. Employee/retiree households were randomly selected and stratified by health plan. A 61% response rate was achieved, and data from ~6,000 respondents were available for analysis. 2001 pharmaceutical claims data were collected from 12 of 17 health insurance carriers. 14.2% of respondents reported smoking every day or some days. 28% of smokers reported awareness of the SCT benefit. 14.2% of smokers, or 2% of all state employee health plan members, reported using the pharmaceutical benefit during the past 12 months. Claims data suggest that 9.2% of smokers and 1.3% of all members used the benefit. The benefit's PMPM cost was $0.15 during its first year.

The benefit use rate and $0.15 PMPM cost are consistent with those reported in the literature. Cost is lower than the State of Wisconsin's estimate, $0.24 PMPM. It suggests that the addition of an evidence-based SCT benefit results in modest additional costs for the purchaser.

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POSS-74 PREDICTORS OF SMOKING AND SMOKELESS TOBACCO USE AMONG COLLEGE STUDENTS

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Students enrolled in 12 Texas universities completed an online questionnaire concerning tobacco use via email (N = 10, 562). Logistic regression was used to determine the strongest predictors of smoking and smokeless tobacco (ST) use.

Preliminary analyses suggest that smoking was predicted by the percentage of friends who smoked or used ST (i.e., peer use), ethnicity, gender, having ever used ST, and having been active in intercollegiate sports. The strongest predictors were having ever used ST (OR = 9.19) and peer ST use (OR = 3.92). Smokeless tobacco use was predicted by peer smoking and peer use of ST, having ever used, ethnicity, and gender. The strongest predictors were having ever smoked (OR = 9.13) and gender (OR = 9.74). Smoking within the last 30 days was predicted by peer use of ST, having ever used ST, ethnicity, and gender. Peer smoking, having ever smoked, and gender predicted using ST within the past 30 days.

These results indicate that peer influences, gender, and ethnicity are strong predictors of tobacco use. Specifically, participants are less likely to smoke if their peers use ST, but more likely to smoke if their friends smoke. Participants are less likely to use ST if their friends either smoke or use ST. Males are more likely to use either form of tobacco, but Caucasians and Native Americans are more likely to use ST and Hispanics are more likely to smoke.

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POSS-75 INCREASED ABSTINENCE RATES IN BLACK SMOKERS USING THE NJQUITLINE

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In the 26 months since NJQuitline's inception, over 5000 smokers have called for information and/or counseling. We describe six-month tobacco abstinence outcomes among 3366 adult smokers who enrolled in NJQuitline counseling. Intention-to-treat analysis was utilized for the outcome measure, self-reported 7-day point prevalence tobacco abstinence at 6-months. Variables of interest included demographics, stage of change at intake, daily cigarette consumption, pharmacotherapy use, and nicotine dependence. The 6-month tobacco abstinence rate overall was 26.0%; higher abstinence rates were noted for black adults (27.4%), those with a college education (33.5%), higher incomes (30.3%), lower dependency (34.0%) and pharmacotherapy use (29.7%). An increasing trend in abstinence rates was noted for age, daily cigarette consumption and stage of change at intake. Logistic regression yielded significant odds ratios for abstinence for all variables except income. Interestingly, black smokers were 1.31 times more likely than non-black smokers (95% CI 1.03-1.66) to have achieved 6 month abstinence, when controlling for demographics, pharmacotherapy use, consumption, dependency, and stage of change. These findings are not surprising with the exception of the abstinence rate in black smokers. Other data in NJ support this finding; the Adult Tobacco Survey found black smokers have the highest cessation rate in the state. Also black smokers are accessing the state's Quitservices at rates higher than expected given their distribution in the population. There is limited research on black smokers. Our findings suggest that this population may uniquely benefit from this type of tobacco dependence treatment and deserves greater exploration.

Partially supported by a contract from NJDHSS, via MSA funds.

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POS3-76  ATTITUDES, KNOWLEDGE AND BEHAVIOUR OF SMOKERS FROM 9 EUROPEAN COUNTRIES

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During 2002, 2729 smokers equally from 9 countries, Denmark (DK), France (F), Germany (G), Ireland (IRE), Italy (I), The Netherlands (NL), Poland (PL), Sweden (S) and United Kindom (UK), were asked about their attitudes, knowledge and behaviour as it related to smoking. Inclusion criteria were; smoking >0 CPD, and being >17 years old.

The average CPD was 18.1: range 1 19.5 and S 13.5. Fifty-two percent smoked within 30 min. after arising out of bed; range 61% in UK and 41% in GE. Fifty-four percent wanted to quit in the future; range 88% in IRE and 44 in NL. Seventy-seven percent had made a serious attempt and average number of attempts was 5.5. The factors that best could increase motivation to give up where if my physician advised me to quit 6.1, danger for family/friends from passive smoking 6.0 and evidence of increasing health risks with smoking 5.8. The smokers did not differentiate well between the harmful effects of tobacco smoke and nicotine. On a 10 point scale of agreement, smokers agreed strongly that there should be a minimum age for buying cigarettes 8.3, women should not smoke while pregnant 8.9 and that smoking should not be allowed in public places 8.3. An anti smoking climate score was computed with the following results (the higher the better) IRE 411, UK 368, F 365, S 363, I 359, DK 350, GE 344, NL 312 and Poland 311.

The results show important differences between countries that suggests that different tobacco control activities should be undertaken.

The study and the analysis was funded by GlaxoSmithKline.

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POS3-77  THE ROLE OF CYTOCHROME P450 2A6*4 IN RELATION TO CIGARETTE SMOKING BEHAVIOR AND LUNG CANCER CASE-CONTROL STATUS

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CYP2A6 genetic variation as a contributor to individual differences in cigarette smoking may lead to a better understanding of nicotine addiction and lung cancer risk. CYP2A6 is an enzyme responsible for the inactivation of nicotine to cotinine and activation of tobacco-procarcinogens such as NNK. This study explored if the presence of CYP2A6*4, which is a deletion genotype, was associated with smoker vs. nonsmoker status, and estimated the prevalence of the deletion genotype in lung cancer cases and controls. Complete information was available for 728 participants. The prevalence of the CYP2A6*4 deletion genotype was 6.8% (n=22) in lifetime non-smokers and 2.5% (n=10) in smokers. Smokers were less likely to have the CYP2A6*4 deletion genotype than nonsmokers and this association varied by ethnicity, with a multivariable adjusted odds ratio (OR) of 0.35; 95% CI=0.07-0.8, in Caucasians. The prevalence of the deletion genotype was 5.1% (n=20) in lung cancer cases and 3.6% (n=12) in lung cancer controls. The results of this study indicate that CYP2A6*4 genotype status was associated with tobacco use, and this association varied by ethnicity. These results point to the need for further transdisciplinary research (genetic, behavioral, pharmacological, and psychological) to develop successful strategies aimed at reducing tobacco use. This study was conducted while the first author was at the University of Toronto.

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POS3-78  IS TOBACCO AS ADDICTIVE AS OTHER DRUGS? PERCEPTIONS OF UK DRUG USERS IN TREATMENT

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This study examined the prevalence of smoking, perceived relative dependence, and motivation to stop smoking among patients receiving treatment in UK addiction services.

359 patients attending 18 addiction services across the United Kingdom completed a self-report questionnaire asking them to compare tobacco with the substance bringing them for treatment in terms of perceived difficulty to quit, urge to use and pleasure derived. 93% were tobacco smokers. When rating the difficulty of giving up the problem substance, 91% of current smokers reported that it would be extremely hard or hard to quit. Participants were asked to rate how difficult it would be to quit cigarettes in comparison with their problem substance. 84% rated it at least as hard to give up their tobacco compared with their problem substance (23% much harder, 26% a little harder, and 35% about the same). Only 16% rated tobacco as easier to quit. 65% reported their urge for cigarettes was at least as strong as that for their problem substance (58.5% same, 6% stronger). In contrast, the vast majority (91%) reported that cigarettes gave less pleasure than their problem substance. 85% were interested in receiving tobacco-dependence treatment. Despite evidence that addressing tobacco use may help with (rather than hinder) recovery from other addictions, addiction services tend not to treat tobacco dependence. It is time this most deadly addiction was taken seriously by addiction services.

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POS3-79  WHO DOESN'T BELIEVE SMOKING IS HARMFUL?

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Surveys indicate that most people are aware of the risks of smoking. Nevertheless, smokers and non-smokers view these risks differently with more smokers believing that smoking does not cause lung cancer or heart disease. Even among smokers, however, only a minority fails to accept the risks of smoking. We compared those smokers who hold this inaccurate belief with those who do not. This issue is relevant because smokers who believe that smoking causes disease are more likely to report that they intend to quit smoking in the future. We used data from the State of Wisconsin Adult Tobacco Survey (2001), which collected data on smoking attitudes and behaviors from 6,135 Wisconsin adults (956 smokers). We used pairwise comparisons (chi-square) to compare smokers who believe that smokers are at above average risk for lung cancer and heart disease with those who do not. Of the 12 demographic and smoking behavior variables we examined only two were significant. 1) Smokers who reported having a smoking caused disease in a family member, friend or themselves were more likely to believe smoking causes lung cancer (p<.05) or heart disease (p<.01). 2) Smokers who reported having a higher awareness of risk generally, as measured by a belief in dying in a motor vehicle accident, were more likely to believe smoking causes lung cancer (p<.01) or heart disease (p<.05). These findings suggest that didactic health education campaigns may adequately describe the risks to different demographic groups but that experiential evidence may make this knowledge more salient to smokers.

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POS3-80  TRENDS IN U.S. HOME ENVIRONMENTAL TOBACCO SMOKE EXPOSURE

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Yearly, environmental tobacco smoke (ETS) is responsible for 300 nonsmoker lung cancer deaths, and 150,000 to 300,000 infants and children under 18 months experience lower respiratory tract infections. In order to evaluate differential progress in the Healthy People (HP) 2010 goals to reduce ETS exposure among US households and especially households with children, we have looked at trends from 1992-98 to 1999-98. We utilized data on home smoking rules from the NCI sponsored Tobacco Use Supplements to the Census Bureau’s Current Population Survey which provides data for national and state estimates. Overall, 68% of households with at least one child less than or equal to 6 years of age were smoke-free in 1999-98 indicating positive progress resulting in a decrease in potential ETS exposure from 49% in 1992-93 to 32% in 1998-99. The comparable figures for households also containing one or more smokers is 33% smoke-free in 1998-99 resulting in a decrease in ETS potential exposure to those children from 82% in 1992-93 to 67% in 1998-99. Among households with no current smokers 17% potentially still expose children to ETS in 1998-99, down from 31% in 1992-93. Overall, in 1998-99 the top four states with the highest percentage of households smoke-free and thus lowest potential exposure to children in 1998-99 were California, Utah, and Arizona.

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POS3-82  INFORMATION ABOUT CIGARETTES: WHAT TOBACCO COMPANIES PROVIDE AND WHAT SMOKERS WANT

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OBJECTIVE: The goal of this study is to determine the types of information consumers receive from tobacco companies and their desires for additional information about smoking.

METHODS: Data were collected with a 25-minute random digit dialed telephone survey conducted with a nationally representative sample of 1,048 smokers between May and September 2001. The response rate was 77%.

RESULTS: Although most (72%) have received some type of information from companies, primarily discount coupons and cigarette promotions, few reported receiving information on the dangers of smoking or how to smoke more safely. Nearly all smokers (94%) reported they were adequately informed about the health risks from smoking; however, consumers did report wanting additional specific information about a variety of tobacco related issues, including the health risks of smoking (88%), potential dangers from filter fibers (91%), and genetically modified tobacco (81%).

Four in ten smokers favored the use of graphic warning labels to communicate health information on cigarette packs. New knowledge about tobacco products would play a role in many consumers’ decisions about their smoking behavior; approximately half of smokers indicated that knowledge of filter fiber defects would make them more likely to quit and that knowledge of the presence of genetically modified tobacco in their current brand would make them switch to a different brand.

CONCLUSIONS: Tobacco companies have not met consumers’ informational needs. Cigarette manufacturers should be required to inform consumers about the potential dangers from smoking, ingesting/inhaling filter fibers during smoking, and about whether their cigarettes contain genetically modified tobacco. Consumers may use this knowledge to make informed decisions about their smoking behavior.

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POS3-81  WHO BUYS TOBACCO ONLINE? RESULTS FROM THE NEW JERSEY ADULT TOBACCO SURVEY

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Previous research has documented the steady growth of tobacco sales over the Internet. The demand for cheaper cigarettes via the Internet is likely to rise dramatically given that 18 states, including New Jersey, increased their cigarette excise taxes during 2002. This study examines the characteristics of adults who purchase tobacco via the Internet. Data were analyzed from the 2000 and 2001 New Jersey Adult Tobacco Survey (NJATS). The NJATS utilizes a random digit dialing (RDD) sampling approach, with oversampling of young adults, smokers, and recent quitters. Current tobacco users who reported having access to the Internet were asked if they had ever purchased tobacco products on the Internet. Data were available for 1,548 current tobacco users. Overall, 23% of current tobacco users reported ever purchasing tobacco products on the Internet. Characteristics associated with higher crude rates of Internet purchasing were: age >45 (4.9% vs 1.2% age less than 45), more than a high school education (3.0% vs 1.5% high school education or less), an average daily consumption of one pack or more (5.3% vs 1.9% less than a pack a day) and higher nicotine dependence (4.1% vs 1.0% lower nicotine dependence). The likelihood of purchasing tobacco over the Internet was higher among smokers over the age of 45 (adjusted OR=3.78, 95% CI 1.75-8.14), with more than a high school education (adjusted OR=2.43, 95% CI 1.07-5.52), and higher nicotine dependence (adjusted OR=3.05, 95% CI 1.12-8.31), when adjusted for all other variables. Our findings identify population characteristics related to Internet tobacco purchasing, suggesting groups which should be targeted for intervention efforts.

Partially supported by a contract from NJDHSS, via MSA funds.

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POS3-83  AGREEMENT BETWEEN PROBAND AND FAMILY MEMBERS’ REPORT OF SMOKING BEHAVIOR


Family history interviews (FHI) are often used in epidemiologic studies, but there is almost no information on the accuracy of proband-reported tobacco use by other family members. As part of a molecular genetic investigation of smoking in families, a total of 481 probands provided the following information for themselves, their parents, and siblings: gender, age, smoking status, and if a smoker, age started, cigarettes per day, and quitting status. Limiting the data to only probands and their biological parents and full siblings resulted in a total of 1,923 individuals. Members of prioritized families were invited to complete a smoking history questionnaire (SHQ), and a total of 867 (45%) were received (378 probands, 166 mothers, 127 fathers, and 196 siblings). Agreement between the FHI and SHQ was better for ever smoking (all kappa values >.70) than for ever quitting (all kappa values <.50). Corroborative analyses of continuous variables indicate that age started daily smoking for self, mother, and sibling can be reported reliably by probands (all p <0.0001) but less well for fathers (p <.03). Proband’s report of number of cigarettes smoked per day was correlated modestly but significantly with the self-report of mother, father, and sibling (all p <.01). These results indicate a number of potential sources of variation in the reliability of proband reports including nature of phenotype and family member role in many consumers’ decisions about the ir smoking behavior.

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POS3-84 INCREASED APPROVAL FOR THE CALIFORNIA SMOKEFREE-BARS LAW IS ACCOMPANYED BY CHANGES IN TOBACCO-CONTROL ATTITUDES AND BELIEFS

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BACKGROUND AND OBJECTIVE. Approval for the California Smokefree-Bars (SFB) Law in the City of Long Beach increased from 65% in 1998 (year one of the law) to 73% in 2000 (year three). Approval in year one was associated with five factors that measured attitudes and beliefs about cigarette smoking, secondhand smoke, and tobacco-control laws. The goal of the present study was to determine how the increase in approval from year one to year three was associated with those tobacco-related factors.

METHODS. Similar questionnaires were administered by telephone in English or Spanish to random samples of 1500 Long Beach residents, at least 18 years of age, at the end of years 1998 and 2000. Datafiles for the two surveys were combined, and responses for year one were compared with those for year three.

RESULTS. Scores on all five factors combined showed a significant increase in anti-tobacco attitudes from year one to year three. A significant interaction between individual factors and the survey year arose from particularly strong increases on two factors: Need for Protection from Secondhand Smoke and Effect of the SFB-Law on Business.

CONCLUSIONS. Increased approval for the California SFB-Law in Long Beach was associated most notably with increased strength of residents’ belief in the need for protection from secondhand smoke and their heightened confidence that the law would not adversely affect business.

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POS3-85 TEMPORAL, ETHNIC, AND GEOGRAPHIC SMOKING/PROSTATE CANCER DEATH ASSOCIATIONS IN THE UNITED STATES

Bruce N. Leistikow, M.D., M.S.*; Jennifer Brady, B.A.; Annie Chang

BACKGROUND: About one billion (half of all) males age 15+ use tobacco. Tobacco users have excesses of virulent or fatal prostate cancer (CaP) death in several case series and cohort studies. So we assessed temporal, ethnic, and geographic smoking/CaP ecologic associations in the US.

METHODS: We assessed annual age-adjusted death rates. We used a well known biomarker, lung cancer death (Cal) rates, as our measure of population smoke exposure. We assessed US CaL/CaP associations both before and after the 1986-1992 introduction of prostate-specific antigen (PSA) CaP-screening and across years, states, and ethnic groups.

RESULTS: US race-specific smoke exposures and CaP death rates have been consistently nearly perfectly correlated (R² = .8-.9, p<0.07) both as CaP death rates rose and later fell, States’ and ethnic groups’ smoke exposures correlate well with their CaP death rates (R² = 2-3, p<0.05) and (R² = .8, p<2), respectively.

DISCUSSION: US tobacco smoke exposures and CaP death rates are strongly, consistently, dose-response ecologically associated over time, across states, and across ethnic groups. Large portions of prostate cancer deaths may be due to smoke exposures.

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POS3-86 SMOKING HABITS OF GRADUATE STUDENTS: COMPARISON WITH UNDERGRADUATES AND IMPLICATIONS FOR CAMPUS-BASED TREATMENT

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Graduate students’ smoking habits and responsiveness to smoking treatments are largely unknown. We contacted graduate program coordinators in every academic department to assist in the distribution of a tobacco use survey to all on-campus, degree-seeking graduate students. We received 675 usable surveys (36.7% of graduate students). We also received 2,276 usable surveys (94.5% response rate) gathered from a stratified sample of undergraduate classes. Fewer graduate students reported ever having tried tobacco products (68.6% versus 75.4%), being current (past 30-day) smokers (18.4% versus 35.1%) or current daily smokers (7.1% versus 11.7%). However, the percent of current smokers who are daily smokers did not differ significantly. Smoking motives differed for weight control and smoking to satisfy an urge.

Although our graduate students were less likely than undergraduates to be current or regular cigarette users, their rate of use is considerably higher than national estimates of cigarette use among those with masters, professional or doctoral degrees (8.5%). A similar trend is apparent for undergraduate students. These findings suggest potentially strong environmental effects on use. Longitudinal studies are necessary to assess the pattern of cigarette use among post-baccalaureate degree earners once they enter the workforce. If graduate students’ smoking habits are as responsive to environmental changes as this analysis suggests, these students may also respond well to campus-based interventions and thus reduce their years of smoking exposure.

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POS3-87 EARLY CIGARETTE USE BEHAVIORS PREDICTIVE OF ESCALATION IN CIGARETTE USE IN MALE ADOLESCENT TWINS

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Although much work has been done on the onset of cigarette smoking in adolescent and adult community samples, little work has focused on the identification of initial behaviors that signal risk of escalation in cigarette use. Analyses of retrospective data obtained in an ongoing study of male adolescent twins (N=435; 15 to 20 years of age), ascertained from Missouri birth records, suggest that the interval between smoking first and second whole cigarette predicts risk of regular and heavy cigarette smoking. Boys smoking their first and second whole cigarettes on the same day were 3 times (95% CI: 1.16-8.94) more likely to report a history of smoking 100+ cigarette lifetime, and up to 46 times (95%CI: 5.97-362.18) more likely to report a history of heavy smoking (more than 10 cigarettes per day). The strength of these associations was not diminished by controlling for early cigarette use, smoking among peers, and initial reactions (i.e., experiences of dizziness and/or a buzz) with first cigarettes; each of which demonstrated strong associations with transitions to both regular and heavy smoking. Among measures of early cigarette use behaviors that did not independently predict an escalation in cigarette use were (1) time from first cigarette exposure to second, not accounting for amount used, and (2) proportion of cigarette smoked during first and second cigarette, not accounting for time between exposures. These findings suggest that the interval between first and second whole cigarette may prove to be a useful predictor of vulnerability for continued cigarette use for future research and preventive efforts.

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POS3-88  COMPARING NICOTINE DEPENDENCE AMONG BLACK AND WHITE SMOKERS

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Recent data has shown that while smoking prevalence is similar among Black and Whites, Blacks are less likely to be heavy smokers, and more likely to smoke mentholated, higher tar and nicotine brand cigarettes. Past research shows that Blacks are less likely to achieve smoking cessation than Whites. The purpose of this study was to compare pattern and characteristic of Black and White smokers. We analyzed baseline data from two quit smoking studies. Data was gathered from 128 Black (31) and White (97) men. There were no significant differences in mean age of participants (45 + .96 years), age of smoking initiation (15.1 + .33 years), and number of cigarettes smoked per day (26 + .93). However, there was a significant difference in years smoking at current rate between Black and White smokers (11.3 + 1.36 years vs. 14.9 + 11 years, p = .018). More Black than White smokers reported smoking menthol cigarettes (80.6% vs. 22.7%, p = .000) and waking up during the night to smoke (61.3% vs. 21.6%, p = .000). In the prevalence of DSM IV withdrawal symptoms, fewer Blacks reported experiencing anxiety than Whites (53.6 vs. 73,4, p = .05). Furthermore, Blacks reported a lower Fagerstom Test for Nicotine Dependence score than Whites (4.38 + .48 vs. 5.68 + .17, p = .000), yet more Blacks had their first cigarette after waking between 0 and 5 minutes than Whites (29.6% vs. 9.3%, p = .002). The results from this study suggest that ethnocultural criteria for tobacco dependence may be more beneficial for this population.

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POS3-89  WEB-BASED TRAINING FOR PHYSICIANS OF SMOKERS OVER 50: A PILOT STUDY

Scott McIntosh, Ph.D. and Deborah J. Ossip-Klein, Ph.D.

The purpose of this pilot study is to evaluate a new web-based Continuing Medical Education course designed to train physicians in PHS Guideline-based interventions with their patients over 50 who smoke. The target sample was drawn from participating members of the National Research Network of the American Academy of Family Physicians. The course, based on face-to-face training implemented in a current study, trains physicians over the internet in the 5-A Model, the Transtheoretical Model (Stages of Change), and smoking cessation issues specific to mid-life and older smokers. It also provides, for evaluation purposes, a variety of PDA (e.g., “Palm Pilot”) and web-based referral and support materials to support physicians in their 5-A intervention (particularly “Assist” behaviors) with their patients at the point-of-care. These evaluation materials and procedures include: referrals to local and national telephone quitlines and interactive cessation-oriented websites, written materials and personalized reports targeted to mid-life and older smokers, information on the use of NRT and Zyban, and a proposed procedure for e-mailing secure prescriptions (e.g., for Zyban) to patients’ own pharmacies. The information collected from participating physicians in this pilot will help the investigators evaluate the perceived effectiveness of this training, its mode of delivery, and the developed and proposed “Assist-related” materials and procedures. Findings will be used to support a subsequent application for a larger randomized clinical trial.

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POS3-90  WHAT FACTORS INCREASE MOTIVATION TO QUIT SMOKING AMONG ADOLESCENTS

Jessica L. Mullenberg, M.P.H.*, Connie Kohler, Dr.P.H., and Lucy Annang, M.P.H., University of Alabama at Birmingham

The purpose of this study is to examine the impact of different factors that may affect an adolescent’s motivation to quit smoking cigarettes. Data were collected from Alabama high school students ages 16 and older (n=218). The students answered the question “Do you want to quit smoking for good?” This question acted as the dependent variable and was analyzed with a number of independent variables that may influence motivation to quit smoking. These variables include: General health, total number of cigarettes smoked, and self identification of smoking status. These relationships were analyzed using a chi square statistic and cross tabulations. Of those students who want to quit smoking for good, 18.3% answered staying tobacco free was the most important for maintaining good health as opposed to only 5.7% of those not motivated to quit smoking (chi square (1, N=28) = .006). All of the students (100%) who have smoked 50 cigarettes or less were motivated to quit smoking. Many of the students (71.4%) who have smoked 51 to 99 cigarettes wanted to quit smoking. Only two students who smoked less than 100 cigarettes did not wish to quit smoking, and only 54.6% of students who smoked 100 cigarettes or more wanted to quit smoking (chi square (3, N=75) = .005). Self identification of smoking status was important in that 78.9% of non smokers and 71.1% of experimental smokers, wanted to quit smoking as compared to 51.9% of regular smokers (chi square (3, N=122) = .028). Adolescents who are experimental smokers may be more motivated than established smokers to quit smoking. Interventions should be in place to encourage students who are still experimenting with tobacco to stop smoking.

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POS3-91  SMOKING EXPECTANCIES AND CONTINUING TO SMOKE IN ADOLESCENT TWIN BOYS-INVESTIGATING THE MODERATING EFFECTS OF ANXIETY SENSITIVITY

Michelle L. Pergadia, Ph.D., and Pamela A.F. Madden, Ph.D., Washington University School of-Medicine, St. Louis

Evidence is accumulating in the literature supporting a moderating influence of anxiety sensitivity (AS) on the relationship between alcohol use and expectancies. However, the extent to which AS moderates the effect of smoking expectancies on cigarette use remains to be examined in adolescents. We tested whether AS would moderate the effects of smoking expectancies (negative reinforcement, positive reinforcement, negative consequences, weight control) on continuing to smoke beyond experimentation (CSMk). Participants were 675 same-sex adolescent male twins ages (11-14), ascertained from Missouri birth records, participating in an ongoing study, who were given a telephone diagnostic interview and mailed a questionnaire survey containing the Child Anxiety Sensitivity Index (CASI) and an abbreviated Smoking Consequences Questionnaire (SCQ). Multivariate logistic regression analysis of the association between cigarette use, smoking expectancies and AS in the adolescent twin boys found that amongst the expectancies, only negative reinforcement expectancies (NRE) predicted CSMk (OR=3.6). These preliminary analyses found that AS was not directly associated with experimentation or CSMk. However, the relationship between the expectancy that cigarettes would be calming (a NRE) was significantly moderated by AS (OR=4.1). Preliminary findings support a self-medication model for early cigarette use.

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POS3-92  EVALUATION OF TOBACCO ADDITIVES ON ADDICTION PROPERTIES AND HEALTH RISK

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About 600 additives are used in tobacco. The reason for using these additives is mostly unclear and its effect on the tobacco addiction and the health risk of tobacco usage is also unknown. Therefore, the EU has adopted in 2001 a directive (Directive 2001/37/EC) on regulation of the tobacco products and the additives used in those products. The directive requires the tobacco industry supply data about the additives, such as toxicological, pharmacological, pharmacokinetic data. The EU has to collect more information about the additives to evaluate the data supplied by the tobacco industry. In concordance with the EU directive, the government of The Netherlands has assigned RIVM to do research on the additives. The research project on the additives by RIVM are divided as:

(a) Literature survey on the additives
(b) Analytical method development
(c) Animal experiments
(d) International Collaboration

The following additives have been evaluated by literature survey: cocoa (caffeine, theobromine, serotonin, histamine, tryptamine, tyramine, phenylethylamine, octopamine, and andamide), aldehydes (acetaldehyde, formaldehyde, benzaldehyde, acrolein, propionaldehyde, butyraldehyde, malonaldehyde, hexanaldehyde), levulinic acid, humectants (propylene glycol, glycerol, sorbitol), pyridine, glycyrrhizine acid, ammonia.

Furthermore, a “smokers lung” on rats is being developed to investigate the effect of the additives on the nicotine absorption via cigarette smoking. The laboratory of RIVM is being certified to develop analytical methods for analyses of the additives in tobacco products. A collaboration between the EC States has to be set up to evaluate all the additives.

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POS3-93  MATERNAL SMOKING DURING PREGNANCY AND NICOTINE DEPENDENCE AMONG OFFSPRING: IMPLICATIONS OF RESEARCH GOALS, SETTINGS, AND DESIGNS

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Collaborations among various health-related disciplines are gaining in currency. Such collaborations are predicated, in part, on recognizing both the implicit assumptions in different fields and the consequences of these assumptions. In this commentary, we explain how commonly used measures such as the risk ratio, attributable fraction, or R-squared may lead to different conclusions in different studies or settings, depending on the research goals. This issue is often ignored in transdisciplinary research, but it can have serious implications regarding the interpretation of associations between variables of interest. In particular, we focus on the role of the prevalence of the exposure or risk factor of interest which can have serious implications regarding the interpretation and implementation of findings across disciplines.

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POS3-94  TOBACCO ADS IN FRONT OF PRIMARY AND SECONDARY SCHOOLS DURING 2001 AND 2002 IN SPANISH NORTHERN CITIES

Miriam Otero, Laura de la Rosa, F. Javier Ayesta, Fac. Medicine, Univ. Cantabria, Santander, Spain

INTRODUCTION AND AIMS: In the beginning of 2001 we started to take pictures of the tobacco ads which were placed just in front of some of the schools of Santander and other spanish cities. We had been asked to give a talk about “Youth, smoking and advertisement,” and we wanted to provide it with some pictures, the last week of February. These ads are changed weekly, during the night between Mondays and Tuesdays. The following pictures show what it was found between January 2001 and December 2002

RESULTS: From the end of January to June 2001, 20 out of 21 advertisements are tobacco ads. During Summer holidays, only 1 out of 11 ads was a tobacco ad. From September to November, 10 out of 12 are tobacco ads. Ads from December were for Christmas presents, From the end of January 2002 to June all the ads, except two, were of tobacco; 2 out of 12 Summer ads were of tobacco; 10 out 12 in the end of 2002 were tobacco ads.

The probability of this happening by chance is p<0.0001 (Fisher’s exact test). Obviously, chance is not the underlying reason for the over-presence of tobacco ads in front of schools. Ironically, In Spain, tobacco companies have a self-imposed auto-regulation ethic code, where they promise not to advertise closer than 200 meters of schools.

CONCLUSIONS: 1) Spanish half-hearted policies on tobacco control may be partially responsible of the increase of tobacco consumption in youngsters. 2) Since self-imposed auto-regulation ethic codes seem to be just a shield not be legislated, legislation should be implemented and enforced.

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POS3-95  DO GRAPHIC CIGARETTE WARNING LABELS AND SMOKE-FREE BYLAWS MOTIVATE SMOKERS TO QUIT? EVIDENCE FROM FORMER SMOKERS

David Hammond, Roy Cameron, Geoffrey T. Fong, Paul W. McDonald

To effectively address the health burden of tobacco use, tobacco control programs must find ways of motivating smokers to quit. The present study examined the extent to which former smokers’ motivation to quit was influenced by the introduction of a local tobacco control policy (comprehensive smoke-free bylaw) and a national level tobacco control policy (new graphic warning labels). A random digit-dial telephone survey was conducted with 191 former smokers in South-Western Ontario, Canada in October 2001. Former smokers who had quit in the previous 3 years rated the factors that influenced their decision to quit and helped them to remain abstinent. Thirty-six per cent of former smokers cited smoke-free policies as a motivation to quit smoking. Former smokers who quit following the introduction of a total smoke-free bylaw were 3.06 (CI95=1.02-9.19) times more likely to cite smoking bylaws as a motivation to quit, compared to former smokers who quit prior to the bylaw during only a partial ban. A total of 31% participants also reported that cigarette warning labels had motivated them to quit. Former smokers who quit following the introduction of the new graphic Canadian warning labels were 2.78 (CI95=1.20-9.19) times more likely to cite the cigarette warnings as a quitting influence compared to former smokers who quit prior to their introduction. Finally, 38% of all former smokers surveyed reported that smoke-free policies had them remain abstinent and 27% reported that warning labels had helped them to remain abstinent. This research indicates that both cigarette warning labels and smoke-free bylaws are an effective means of motivating smokers to quit and helping them to remain abstinent. In addition, more stringent policies had a significantly greater influence than less restrictive labelling and local bylaws.

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POS3-96  POST-MARKETING SURVEILLANCE OF A POTENTIAL REDUCED EXPOSURE PRODUCT

Candace R. Adams, Ph.D.*, Barbara K. Zedler, M.D., and Hans-Juergen Roethig, M.D., Ph.D.

In the report entitled Clearing the Smoke: Assessing the Science Base for Tobacco Harm Reduction, the Institute of Medicine (IOM) recommends requesting manufacturers of cigarette products marketed with reduced risk claims to conduct post-marketing surveillance. The IOM makes little provision for the surveillance of reduced exposure products, focusing primarily on harm reduction. Nevertheless, as a responsible marketer of potentially reduced exposure products (PREPS), Philip Morris USA does not neglect the possible risks of introducing a PREP with a reduced exposure claim and developed a Post-Marketing Surveillance plan for PREPs.

For the Post-Marketing Surveillance Plan, PM USA will continuously and systematically collect, analyze, and disseminate data regarding:
1. The impact of introducing a PREP with a reduced exposure claim on the smoking behavior of adult smokers of a PREP.
2. Exposure estimates prior to smoking of the PREP and after switching to the PREP.
3. Adverse events as an alert system for possible PREP misuse and unexpected events.

An annual Surveillance Report will be prepared and made publicly available.

Potential reductions in risk and harm to smokers of a PREP will be investigated in future clinical and epidemiological studies.

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POS3-98  EMOTIONAL BASES FOR QUITTING SMOKING: EXTENDING THE CONCEPT OF RISK TO DISCRETE EMOTIONAL CONSEQUENCES

Joseph Cappella, Anca Romanian, and Caryn Lerman (University of Pennsylvania)

This study examined the role of discrete emotions in the intention to quit smoking. Data come from an RDD sample of 450 18 to 25 year old smokers. It was hypothesized that the prediction of behavioral intention to quit smoking is explained both by perceived consequences captured by rational and deliberative factors, and by emotional consequences toward quitting (pride, hopeful, disgusted, angry, and apprehensive). Results suggest that emotional consequences of quitting add a substantial amount of unique variance to measures of intention to quit smoking, and over and above that provided by attitude toward quitting, perceived social norms, self-efficacy, sensation seeking, current smoking behavior and demographics. It is suggested that conceptualizing risk in terms of positive and negative discrete emotional consequences associated with quitting smoking can increase the amount of variance accounted for by the Integrative Theory of Behavior Change, and open routes to prevention based on appeals to specific emotional outcomes.

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POS3-97  THE EFFECTIVENESS OF A STAGE-MATCHED SMOKING CESSATION INTERVENTION TO CARDIAC PATIENTS: PRELIMINARY RESULTS OF A RANDOMIZED CONTROLLED TRIAL

Sophia S. Chan, Ph.D.*, Sabrina C. Chan, B.A. (Hons.), Department of Nursing Studies; Tai-Hing Lam, M.D., Department of Community Medicine, Chu-Pak, Lau, M.D., Department of Medicine, The University of Hong Kong.

OBJECTIVE: To evaluate the effectiveness of a nurse delivered stage-matched intervention to cardiac patients for cessation of tobacco use.

METHODS: A randomized controlled trial (RCT) was conducted in the cardiac outpatient units of six major hospitals in Hong Kong. A total of 1000 cardiac patients who were smokers were to be recruited and the eligible patients completed a cross-sectional survey. Subjects in the intervention group received stage-matched smoking cessation counseling delivered by a nurse counselor and telephone reminders at one week and one month after the intervention. Subjects in the control group received usual care and a placebo intervention on healthy diet.

RESULTS: The preliminary results were based on the first 703 subjects randomly baseline comparison showed no significant differences between the two groups. 94% of the subjects were daily smokers with an average daily consumption of 12 cigarettes; 79% had attempted to quit at least once in the past. For stage of readiness to quit smoking, 57% were in the pre-contemplation stage, 28% contemplation, 14% preparation, and 1% in the action stage. At 3 month follow up, 70 (28.7%) and 43 (21.7%) subjects quit smoking in the intervention and control group respectively (p=0.23). For stage of change in the intervention group, 43 % were in the pre-contemplation stage, 25% contemplation, 3% preparation, and 29 % in the action stage whereas the corresponding stage distribution in the control group were 51%, 22%, 5%, and 22% respectively.

CONCLUSION: There is some preliminary evidence to show that stage-matched intervention provided by nurses can help patients stop smoking and improve the stage of readiness to quit. As the vast majority of the cardiac patients were not ready to quit at baseline, this would likely result in low quit rates in the trial.

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POS3-99  TOBACCO FREE WITH THE NEW YORK CITY FIRE DEPARTMENT

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On September 11, 2001, members of the FDNY helped save over 25,000 lives. 343 members of the department were murdered that day, representing over 10% of all the deaths at the World Trade Center attack. Incredibly, over 100 FDNY firefighters lost a father, brother or son in the attack. Post Traumatic Stress Disorders, depression, anxiety, anger and tobacco addiction continue to be huge problems. Since 9/11/01, 29% of NY firefighters have increased their smoking and 23% of ex-smokers started again. Following the September 2001 attack, many firefighters presented with persistent respiratory problems including "World Trade Center cough" exacerbated by cigarette smoking. Over 2000 NY Firefighters currently smoke cigarettes. While devastating to the FDNY, September 11, provides a "teachable moment" to motivate firefighters who smoke to quit. FDNY officials are making smoking cessation an increased priority. The FDNY Smoking Cessation Program provides the tools and support needed to help smokers quit one craving at a time. The program includes Nicotine replacement therapies including transdermal nicotine patches, nicotine inhalers, nicotine nasal sprays, and bupropion. Multiple treatment options increased the chances of a successful quit attempt. The program also includes group meetings and individual support, medical evaluations, telephone help lines and email and Internet support with Pharmacia's Nicotrol Helping Hand. Group participants averaged 28 cpd, a FTND of 6.8 and urinary cotinine of 1865.6 ng/ml at intake. At the first follow-up visit, participants demonstrated an average urinary cotinine of 1265.7 ng/ml, equaling 67.8% replacement from intake. Approaching six month follow-up, initial results demonstrate a biochemically confirmed Continuous Abstinence of 61.1% with a Point Prevalence Abstinence of 67.8%.

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