SYM1A

INTERACTIONS OF ANTIDEPRESSANTS WITH NICOTINIC ACETYLCHOLINE RECEPTORS

Ronald J. Lukas*, Lincoln H. Wilkins, Jr., John D. Fryer

Nicotinic acetylcholine receptors (nAChRs) play a variety of roles in the central nervous system, including modulation of sensation, attention, cognition, and emotion, and are found in relevant brain centers. Several lines of evidence from human clinical and animal behavioral studies, suggest roles for nAChRs in depression. Conversely, clinical or subclinical mood disorders may predispose individuals to nicotine use and dependence, which may reflect self-medication to alleviate mood imbalance or other psychiatric indications. Work by us and others indicates that chronic nicotine exposure induces long-lasting inactivation of various nAChR subtypes. This persistent inactivation may contribute to nicotine dependence and some of the mood modulating effects of chronic tobacco use. We have defined interactions of antidepressants with diverse, human nAChR subtypes naturally or heterologously expressed by human cell lines. The atypical antidepressant and smoking cessation aid, bupropion (Wellbutrin, Zyban), a variety of selective serotonin reuptake inhibitors, and even some antipsychotic agents, act acutely as non-competitive inhibitors of human nAChR function at clinically-relevant doses. Among the more sensitive nAChR subtypes are alpha3* and alpha4* nAChRs. nAChR subtype selectivity of action is evident and is sensitive to metabolism of these agents, as exemplified by comparisons between effects of bupropion and its (2S,3S)hydroxymetabolites. Functional inhibitory potency also is increased and persists after chronic exposure to some of these ligands, such as fluoxetine. Collectively, with caveats about the pharmacokinetics of antidepressants and acknowledgement of their pharmacodynamic actions at other targets, these preclinical studies support the notion that nAChRs participate in control of mood and emotion and in actions of antidepressants. These findings have implications for rational design of antidepressant and nicotinic drugs and for scientifically sound strategies to facilitate smoking cessation.

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SYM1B

NICOTINIC ACETYLCHOLINE RECEPTORS ARE IMPORTANT FOR ANTIDEPRESSANT RESPONSE IN MOUSE MODELS OF DEPRESSION

Marina R. Picciotto*, Rebecca L. Rabenstein, Barbara J. Caldarone

To explore the relationship between nAChRs and depression we used male C57BL/J6 mice to determine the effect of the nicotinic antagonist mecamylamine in the tail suspension and forced swim animal models of depression. Mecamylamine (1 mg/kg) or saline was administered by i.p. injection thirty minutes prior to the onset of testing and resulted in a decrease in immobility in the tail suspension task, while only the nicotine pre-treated animals showed a decrease in depression-like behavior. We also used a mouse genetic model to determine whether the behavioral effects of antidepressants may be mediated, in part, through actions on nAChRs. Knockout mice lacking the beta2 subunit of the nAChR (beta2KO) were administered the tricyclic antidepressant amitriptyline (AMI) in their drinking water (200ug/ml in 2% saccharin) and control mice received 2% saccharin. Following antidepressant treatment, mice were tested in the learned helplessness, forced swim and tail suspension models of depression. Wild type mice showed robust antidepressant-like effects of AMI in all 3 models. In contrast, beta2KO mice treated with AMI were not different from saccharin-treated beta2KO mice in any of the 3 models. The effects of antidepressant treatment were also seen at the cellular level such that AMI increased adult neurogenesis in wild type but not beta2KO mice. These data support the idea that nicotinic receptor blockade has antidepressant-like effects and that administration of nicotinic receptor antagonists or antidepressants might aid in smoking cessation particularly in depressed subjects. In addition, these data demonstrate that beta2KO mice are insensitive to the tricyclic antidepressant AMI, suggesting that some of the therapeutically important for antidepressants may be mediated through actions at high affinity nAChRs. This work was supported by grants DA13334, DA10455, DA00436 and NARSAD.

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SYM1

NICOTINIC RECEPTOR ANTAGONISM BY ANTIDEPRESSANTS: PARsing THE LINK BETWEEN SMOKING AND DEPRESSION

Chair: Marina R. Picciotto; Presenters: Ronald J. Lukas, Marina R. Picciotto, R. Douglas Shytle, Tony P. George; Discussant: Tony P. George

Many studies have demonstrated a high co-morbidity between cigarette smoking and depression. Depressed patients also have more difficulty quitting smoking, while nicotine can improve mood in depressed patients, suggesting that smokers may be using nicotine as self-medication to relieve depressive symptoms. In this paper, we will explore the idea that inactivating nicotinic acetylcholine receptors (nAChRs), using nicotine antagonists, genetic manipulation, smoking or classical antidepressants, is a mechanism involved in antidepressant action. Dr. Ron Lukas will present evidence that the molecular level at a wide range of antidepressants act as non-competitive antagonists of nAChRs. Dr. Marina Picciotto will show work from animal studies demonstrating that mecamylamine, a nicotinic antagonist, can mimic the effects of classical antidepressants in behavioral models of depression-like behavior, and that amitriptyline, a tricyclic antidepressant is ineffective in mice lacking high-affinity nAChRs. Dr. Doug Shytle will discuss findings that mecamylamine (Inversine) can relieve anxiety and mood instability in adolescents. Finally, Dr. Tony George will present results from a placebo-controlled clinical trial using mecamylamine to augment SSRIs in antidepressant-resistant patients. Together, these studies provide further evidence that some smokers may use nicotine to self-treat depressive symptoms. Understanding the mechanism underlying these effects of nicotinic agents may lead to more effective treatments for smoking cessation in this subpopulation of smokers.

NA-Symposium.

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SYM2

Emotion and antidepressant action: implications for smoking cessation aid

Andrew P. Motche, Raman Prasad, Lincoln H. Wilkins, Jr., Ronald J. Lukas

Smoking cessation is an important public health goal and is recognized as an important strategy to lower risk for depression. Nicotine replacement therapies (NRT) are one of the primary strategies to facilitate smoking cessation. NRT was once thought of as a detrimental strategy for smokers. Evidence has shown that NRT use does not lead to any negative outcomes, but instead may improve the antidepressant response, as well as help smokers to maintain abstinence.

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SYM1C

POTENTIAL ANTIDEPRESSANT PROPERTIES OF NICOTINIC RECEPTOR ANTAGONIST, MECAMYLAMINE (INVERSINE(r)) IN CHILDREN AND ADOLESCENTS

R. Douglas Shytle*, Archie A. Silver, and Paul R. Sanberg

A growing body of evidence suggests that many established antidepressants inhibit nicotinic acetylcholine receptors at physiologically relevant concentrations and that this common pharmacological property may contribute to these drugs’ overall mechanism of action. Evidence will be presented suggesting the hyper-cholinergic neurotransmission, which is associated with depressed mood states, may be mediated through excessive neuronal nicotinic receptor activation and that the therapeutic actions of many antidepressants may be, in part, mediated through inhibition of these receptors. In support of this hypothesis, clinical observations as well as supporting evidence from a recent controlled trial suggests that mecamylamine (Inversine(r)), a nicotinic receptor antagonist, is well tolerated in doses up to 7.5 mg/day and may be useful for reducing sudden mood changes and symptoms of depression in children and adolescents with mood disorders. These preliminary controlled findings support our anecdotal observations that mecamylamine has antidepressant and mood stabilizing effects in patients with mood disorders and has formed the impetus for a series of clinical studies to further investigate the therapeutic potential of mecamylamine for the treatment of affective disorders.

Stanley Foundation.

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SYM1D

NICOTINIC ANTAGONIST AUGMENTATION OF SSRI ANTIDEPRESSANTS: PRELIMINARY RESULTS

Kristi A. Sacco, Jennifer C. Vescicchio, Andrea Weinberger, Rebekka Palmer, Melissa Dudas, Taynn Allen, Angelo Termine, Gerard Sanacora, Tony P. George*

BACKGROUND: There is increasing evidence that most antidepressant agents (SSRIs, tricyclics, bupropion) may exert their clinical effects, at least in part, by antagonism of central high-affinity nicotinic acetylcholine receptors (nAChRs). This is of clinical interest since nearly 50% of patients with major depression are cigarette smokers, and smoking is thought to have antidepressant effects. The present study is a “proof-of-concept” clinical trial that evaluates the potential of the high-affinity nAChR antagonist, mecamylamine hydrochloride (MEC; Inversine(r)), as an augmentation strategy for treatment of major depression in patients who are partial responders to serotonin-selective reuptake inhibitors (SSRIs).

METHODS: Subjects with major depression who partially responsive (based on HAM-D scores) to SSRIs (e.g., fluoxetine, sertraline, paroxetine and fluvoxamine) are being randomized to: 1) MEC (5 mg po bid) or; 2) matching placebo (PLO; 0.0 mg/day) for a total of eight weeks.

RESULTS: To date, n=11 subjects (n=6 to MEC, n=5 to placebo) have completed the trial. Four out of six (67%) subjects assigned to active MEC were classified as responders at the end of the 8-week trial, as assessed by a 50% reduction in HAM-D scores, as compared to 0/6 (0.0%) subjects assigned to PLO (Pearsons c2=5.24, df=1,p=0.02). Constipation was reported as the most common adverse event (MEC group, 4/6; 67%; PLO, 2/5; 40%; c2=0.78, df=1, p=0.38).

CONCLUSIONS: These preliminary results suggest that high-affinity nAChR antagonism may augment SSRI-treated refractory major depression.

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SYM2A

ANALYSIS OF RECRUITMENT AND RETENTION FACTORS FROM YOUTH SMOKING CESSATION STUDIES

Cathy L. Backinger*, Ph.D., M.P.H., National Cancer Institute, Paul W. McDonald, Ph.D., University of Waterloo, Eric T. Moolchan, M.D., National Institute on Drug Abuse

In order to identify potential positive and negative factors impacting recruitment and retention, literature searches were conducted through June 2004 to identify adolescent smoking cessation studies. Studies that addressed smokeless tobacco cessation or were population-based were excluded from analysis leaving 62 studies that were coded for the following factors: youngest age at enrollment, number of cigarettes smoked, intervention site, means of recruitment, sample size, and length of follow-up. Data in each factor were grouped into categories and then analyzed for trends related to percent recruited into the study, percent retained at first session, and percent retained at follow-up. Preliminary qualitative analyses found, in general, youngest age at enrollment, sample size and length of follow-up was not associated positively or negatively with recruitment or retention. Studies that recruited adolescents who smoked daily up to 5 cigarettes a day suggest a trend for higher a recruitment rate compared with weekly or monthly smoking, and smoking more than 5 cigarettes a day. Active recruitment, such as person-to-person interactions, suggest a trend for a higher rate of recruitment and retention than other methods including mass media, classroom presentations, and incentives. The computer as the intervention modality suggested a trend for a higher rate of recruitment, but not retention, compared with classroom, school and medical clinic. Additional analyses and research need to be conducted to identify successful and unsuccessful recruitment and retention methods for adolescent smoking cessation studies.

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SYM2

ADOLESCENT SMOKERS AND SMOKING CESSATION STUDIES: ISSUES IN ELIGIBILITY, ENROLLMENT, RECRUITMENT AND RETENTION

Cathy L. Backinger*, Ph.D., M.P.H., National Cancer Institute, Scott McIntosh, Ph.D., University of Rochester, Paul W. McDonald, Ph.D., University of Waterloo, Eric T. Moolchan, M.D., National Institute on Drug Abuse

With less than 100 smoking cessation studies conducted with adolescents, this symposium will explore the challenges of recruiting, enrolling, and retaining adolescents into smoking cessation studies. A review of the published smoking cessation studies will be presented examining youngest age at enrollment, number of cigarettes smoked, intervention site, means of recruitment, sample size, and length of follow-up in relation to percent recruited into the study, percent retained at first session, and percent retained at follow-up. Results from a second meta-analysis of 48 recruitment campaigns conducted in Canada in the United States will provide evidence on what type of messages, channels, sources, program and participant characteristics influence participation rates the most.

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SYM2B
PHYSICIAN OFFICE-BASED YOUTH SMOKING CESSATION STUDY RECRUITMENT AND RETENTION: A TALE OF TWO CITIES

Scott McIntosh*, Ph.D., Susan Druker, M.A., Deborah J. Ossip-Klein, Ph.D., Lori Pbert, Ph.D.

Two NCI-funded randomized clinical trials approached Teen Smoking recruitment through physician office-based settings. The project at the University of Massachusetts utilized on-site strategies to recruit 2,711 teens at 8 practices into a study after well visits and acute visits. The project at the University of Rochester used clinician office referral to a study for 8,385 teens at 101 practices after well visits. The two sites held meetings to discuss successful strategies and barriers to recruiting smokers into their respective studies. Both studies had challenges and successes with recruitment and study retention. The University of Massachusetts used a combination of onsite recruitment and proactive strategies (letters and phone calls) for engagement to a smoking prevention and cessation study. Retention was high, with 99.6% and 99.2% of 262 smokers completing the 6 month and 1 year surveys, respectively. Smokers at baseline were less likely to return questionnaire at 1 year, and the most common reason why teens stayed in the study was the financial incentive. The University of Rochester engaged all teens at well visits to a generic “health study”, with telephone screening and engagement of smokers for further follow-up. Of the 1,000 smokers who completed the baseline questionnaire, 81% were captured at the 3 month follow-up and 75% were captured at the 12 month follow-up. Project staff from both studies met during the respective recruitment periods to problem-solve, share strategies, and compile lessons learned in order to increase successful physician office-based recruitment of teen smokers to smoking cessation research studies.

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SYM2D
ADOLESCENT SMOKERS REQUESTING SMOKING CESSATION: CORRELATES OF ENROLLMENT AND TRIAL ELIGIBILITY

Eric T. Moolchan*, M.D., Miqun L. Robinson, M.D., Ph.D., Jennifer R. Schroeder, Ph.D., NIDA Intramural Research Program

We describe a screening protocol to recruit adolescent smokers for a randomized clinical trial of nicotine replacement therapy (NRT) in terms of generalizability to adolescent smokers desiring treatment by comparing (1) adolescents eligible versus ineligible for inclusion in the study, and (2) eligible adolescents who enrolled versus did not enroll in the trial. Adolescent smokers obtained the recruitment call-in number via media and other advertisements. Trained recruitment staff collected information using an internally-developed, targeted telephone screening interview. Correlates of qualification and enrollment in the study were determined. Among 1347 adolescents screened, 24.4% (329) were eligible to participate in the trial. Eligible adolescents were slightly younger (15.4 vs. 15.7 years, p=0.0014), more likely to be female (66.9% vs. 58.2%, p=0.0052), and more likely to be European American (83.5% vs. 72.2%, p=0.0003). The most common (non-mutually exclusive) reasons for exclusion were insufficient cigarette consumption (32.5%) or low tobacco dependence score by Fagerström Test for Nicotine Dependence (FTND) (24.1%), lack of parental support (14%), medical reasons (7.2%), and psychiatric reasons (7.2%). The higher exclusion rate for ethnic minorities and males was partially explained by lower cigarette consumption and FTND scores. Of those eligible to participate in the trial, 48.3% (159/329) enrolled. Enrollees were slightly younger (15.2 vs. 15.6 years, p=0.012) and started smoking earlier (11.4 vs. 11.9 years, p=0.042) than those who declined participation. Results underscore the need for treatment options also targeting adolescents who are lighter smokers, who have medical or psychiatric comorbidity, and the importance of parental support. Our findings also highlight the need for screening instruments that are measurement-invariant across ethnicities and gender.

Supported by NIDA Intramural Funds.

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SYM3
WOMEN, TOBACCO, AND CANCER: AN AGENDA FOR THE 21ST CENTURY

Ellen R. Gritz*, Ph.D., Chair, M. D. Anderson Cancer Center; Tracy Orleans*, Ph.D., Co-Chair, The Robert Wood Johnson Foundation; Carolynn M. Dresler*, M.D., M.P.A., International Agency for Research on Cancer; Gary E. Swanson, Ph.D., NCI Cancer and Tobacco Control Program, National Cancer Institute; Susan J. Curry*, Ph.D., University of Illinois at Chicago; Kay Kahler Vose*, M.A., Porter Novelli; Judith P. Wilkenfeld*, J.D., Campaign for Tobacco-Free Kids

This symposium will present and discuss the implications of the July 2004 Report and Recommendations of the Women, Tobacco and Cancer Working Group for the Working Group, a public/private partnership convened by the U.S. National Cancer Institute and supported by other U.S. federal and non-federal partners, includes many prominent members of the scientific, medical, public health, and advocacy communities from across the country and around the world. The Report unequivocably establishes tobacco use as a “women’s issue.” It provides strategies to increase science research and the translation of evidence-based knowledge into effective interventions to reduce and ultimately prevent cancers caused by tobacco in women around the world. The symposium divides the Report into five key areas: each presenter will provide an overview and describe priorities for accelerating progress in those areas. Recommendations are made to: 1. Increase our understanding of sex and gender differences across the broad range of research on women, tobacco and cancer (discovery); 2. Develop new and more effective interventions to prevent and treat tobacco use and environmental tobacco smoke (ETS) exposure among women and girls, especially in populations at greatest risk (development); and 3. Ensure the widespread delivery of effective interventions to prevent and treat tobacco use and ETS exposure among women and girls (delivery). It is our goal to implement the discovery, development and delivery recommendations through focused efforts that include partnerships and collaborations among researchers, practitioners, community advocates and policy makers and to conduct ongoing evaluation and surveillance of the success of these efforts.

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SYM3A
BIOLOGY AND CANCER
Carolyn M. Dresler*, M.D., M.P.A., International Agency for Research on Cancer
It is clearly established that cigarette smoking is the major cause of lung cancer in both men and women. However, the specific and necessary steps for the initiation and promotion of the biological process leading to lung carcinogenesis and the diversity of these mechanisms between the sexes are not fully understood. Discovery of these sex differences — involving the genetic, molecular, cellular and hormonal factors, through multidisciplinary research endeavors — is necessary to increase our understanding of the basic disease process. Present data suggest interactions among estrogen or one of its metabolites, smoking and DNA damage. For example, studies have demonstrated higher DNA adduct levels and lower DNA repair capacity in women compared to men. Development of more effective treatment programs will depend on translating the basic and applied research into sex-appropriate therapeutic regimens. Recent studies have demonstrated better outcomes of lung cancer treatments involving EGFR antagonists in women (particularly women who have never smoked), compared to men. Therapeutic protocols must be developed and tested using evidence suggestive of differential effects from hormonal influences. The delivery of effective interventions requires significant support for the necessary research and education of both medical practitioners and the general public about the emerging knowledge of the impact of sex on the biology of lung cancer. Research into pathways involved in tobacco-related lung cancer will also facilitate the development of targeted intervention and treatment strategies for other tobacco-induced diseases. By focusing attention on the discovery, development and delivery of strategies designed to elucidate the interactions between the critical factors of sex and smoking exposure, effective biomedical interventions can be developed to prevent the predicted increase in tobacco-related cancer deaths.
See Overall Abstract.
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SYM3B
ADDITION
Gary E. Swan*, Ph.D., SRI International
Women’s biological and behavioral responses to tobacco, progression to tobacco dependence, and patterns of intake differ from men’s. and women have higher rates of relapse and greater risk of smoking-related health problems. We urgently need to understand why women become and remain tobacco dependent. Further research (discovery) is needed to better understand sex and gender differences in: 1) the behavioral and biological processes involved in tobacco dependence, including the biology of brain nicotine receptors and genetic factors; and 2) the construct of addiction, both behavioral and physiological aspects. It was suggested that: 3) gender-sensitive assessment tools be developed. Of particular importance was: 4) the overwhelming gap in knowledge of the modulation of nicotine effects by the menstrual cycle, and by such hormones as estrogen and progesterone. We need to better understand: 5) the effect of oral contraceptives on smoking rates, relapse, and craving; 6) the effects of menopause and/or hormone replacement therapy on smoking; smoking rates, and relapse; and 7) whether nicotine has a disruptive effect on hormones, and whether hormones can affect craving and rates of relapse in women. Studies must examine: 8) sex and gender differences in the relationship between smoking and other disorders, e.g., depression. Finally: 9) sociocultural determinants should be factored into the equation for understanding tobacco dependence in females; and 10) we need to increase use of animal models to tease apart and test in controlled settings various environmental, behavioral, and genetic factors involved in nicotine self-administration in female animals. Innovative, effective interventions to address addiction need to be developed, based upon research findings and tested in small-scale clinical and community-based studies (development). Eventually these will be disseminated with appropriate tailoring, particularly to women and girls in populations at greater risk (delivery).
See Overall Abstract.
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SYM3C
PREVENTION AND CESSATION OF SMOKING AMONG GIRLS AND WOMEN: AN AGENDA FOR THE 21st CENTURY
Susan J. Curry*, Ph.D., University of Illinois at Chicago
A compelling agenda for prevention and cessation smoking among girls and women must take into account the exhortation in the 2001 report of Surgeon General, Women and Smoking, to “Act now: we know more than enough.” Recommendations to enhance the delivery of existing evidence-based tobacco control programs and policies focus on increasing the appeal, access, affordability, and use of effective interventions, particularly among underserved and priority populations. Targeted media campaigns, tobacco tax increases, comprehensive coverage for tobacco cessation services, and routine focus on tobacco use during health care visits can converge to decrease tobacco use initiation and increase use of proven cessation interventions. Efforts to enhance the delivery of proven interventions do not mitigate the need for continued efforts to improve the state of art in prevention and cessation. Key for new knowledge discovery is research that addresses: (1) Whether sex and gender differences exist in prevention and treatment efficacy; (2) Whether physiological, psychological, and/or behavioral factors mediate or moderate differences between men and women in responses to treatment; (3) The influence of factors unique to women (e.g. menstrual cycle, pregnancy, menopause) on tobacco use and treatment efficacy; and (4) Effective strategies for tailoring interventions to women. Development of more effective interventions can build on evidence from animal studies, pilot projects, and small-scale clinical and community-based studies. Efficient development also requires using or modifying existing infrastructures to rapidly evaluate the efficacy of promising treatments and the effectiveness and cost-effectiveness of proven small-scale interventions, programs, and policies.
See Overall Abstract.
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SYM3D
HEALTH COMMUNICATION
Kay Kahler Vose*, M.A., Porter Novelli
Communication and social marketing strategies, including mass media campaigns, are a critical component of effective national and global tobacco control efforts. Related discovery, development and delivery efforts are needed to bolster their power to prevent tobacco use and promote cessation among women and girls. Discovery-oriented basic communication and risk perception research (quantitative and qualitative) is needed to clarify common gaps in women’s knowledge of general and personal smoking health risks, identify effective gender-specific prevention and cessation messages, and shed light on advertising themes to which women are especially vulnerable (including new so-called “reduced harm” products). Findings are likely to vary substantially for women in different socio-demographic subgroups and stages of the life cycle. Research used to develop effective, gender-tailored anti-tobacco messages and campaigns should be at least as systematic, if not more so, that that used by tobacco companies. Effectively-tailored communications could substantially boost women’s advocacy for policy change (e.g., clean indoor air laws, home smoking bans, tobacco tax increases), and their interest in quitting and in cessation treatments. It is important to find ways to maximize women’s responsiveness to advice and counseling in primary care, prenatal and pediatric care settings, and promote their use of telephone quit lines. The needs are greatest for women in high-risk (e.g., low-income, racial/ethnic minority) populations. Finally, a comprehensive feedback system is recommended to help researchers hone and more rapidly disseminate the results of new communications research. The success of these delivery efforts will depend, in turn, upon our ability to understand and address the key interests of multiple audiences and stakeholder groups (i.e., the media, the public, policy-makers, women’s organizations, professional societies).
See Overall Abstract.
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WHY SHOULD INTERNATIONAL TOBACCO CONTROL FOCUS ON GENDER ISSUES: SEEING THE FRAMEWORK CONVENTION ON TOBACCO CONTROL THROUGH A WOMAN’S EYE

Judith P. Wilkenfeld*, J.D., Campaign for Tobacco-Free Kids

Worldwide, the relatively low prevalence of tobacco use among women and high prevalence among men presents a special challenge for developing countries. The FCTC presents these nations with an opportunity to work cooperatively with developed countries to address these challenges. In doing so, countries must be mindful of the various women’s issues: globalization of tobacco marketing has made women the prime target for increasing the sales of the tobacco transnationals, in many developing countries women and children suffer disproportionately from exposure to second hand smoke, and women’s subservient economic status means that the health and economic consequences of tobacco production will fall more heavily on them. Research needs to address these concerns should encompass reliable surveillance and monitoring data, including tracking the tobacco industry’s advertising and marketing expenditures and tactics, and information on the social, cultural and economic context of gender and tobacco related to the variety of tobacco used, tobacco initiation, uptake and prevention (discovery). As the FCTC is implemented in successive countries, studies should measure the impact of specific measures on women’s tobacco use (development). Tobacco control programs should conduct research to improve legal and governance structures for enforcement of tobacco control. Monitoring and evaluating existing and new laws is necessary to ensure compliance and identify reasons for non-enforcement (delivery). Improving policy-related research would contribute to earlier intervention in the tobacco epidemic curve. As with surveillance, policy-related research would arm advocates to hold governments accountable for treaty implementation. Involving women and women’s groups in this process is a particular challenge and opportunity for advocacy groups working on the ratification and implementation of the FCTC.

See Overall Abstract.

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TOBACCO INDUSTRY FUNDING OF SCIENTIFIC RESEARCH: POLICIES, PRACTICES, AND THE INTEGRITY OF PUBLIC HEALTH RESEARCH

Mark Parascandola, Mitch Zeller, Ken Warner, Jean King, Jed Rose, Jeff Collins

Tobacco and nicotine researchers are currently grappling with the promises and pitfalls of accepting research funding from the tobacco industry. In recent years, major cigarette manufacturers and smokeless tobacco companies have shown increasing interest in funding scientific research at academic institutions, including studies of new potential reduced-exposure tobacco products. At the same time, several academic institutions and tobacco-related research funding organizations have instituted formal policies restricting tobacco industry support of research. Tobacco industry documents released through the Master Settlement Agreement have provided ample evidence of past efforts of tobacco manufacturers and their trade associations to manipulate the scientific process and use sponsorship to enhance their public image. However, some scientists contend that scientific communication and financial support from industry may yield scientific gains and that appropriate funding arrangements can give researchers adequate control over their data. Currently, there is little guidance available to individual scientists and academic institutions in making decisions about accepting research funding from the tobacco industry or developing specific funding policies. This symposium will provide several different perspectives on this complex issue. One talk will address the possible motivation behind the tobacco industry’s funding of research and what scientific researchers should know about industry motives. A second presentation will analyze results from a survey of U.S. academic institutions’ policies and practices related to acceptance of tobacco industry funding. A third talk will discuss the deliberation within a major funding agency that led to development of a policy restricting grantees from accepting tobacco industry funding. A fourth presentation will come from a senior scientist who receives funding from tobacco companies for nicotine research, who will discuss how appropriate industry funding agreements can benefit public health and protect scientific integrity. A discussant will address the dilemma of industry research sponsorship in developing countries where scientific resources are scarce.

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SYM4A  IN THEIR OWN WORDS: INDUSTRY MOTIVATION BEHIND RESEARCH FUNDING
Mitch Zeller, Pinney Associates

Philip Morris has an established external research program that has been in place for several years. The ethical, legal, and policy issues raised by the offer and acceptance of tobacco industry funding for research are complex. Does the mere acceptance of industry funding automatically call into question the integrity of the investigator? Given the paucity of funding for scientific research, can we afford to stand on principle and oppose industry funding? To answer these questions requires an exploration of the motivations underlying the tobacco industry’s willingness to support research at academic and research institutions. Is the industry genuinely committed to advancing the state of scientific knowledge? Or are there other objectives that lie at the core of the industry’s offer of financial support for outside researchers? A possible answer to these questions is revealed in a review of publicly available tobacco industry documents that directly address the issue. This presentation will help to sensitize researchers who are contemplating going after industry funding. Scientists do not often think about how the tobacco industry could use their work to try to persuade audiences such as potential jurors, state legislators, and editorial writers. A review of the relevant internal industry documents will reveal some of the political, legal, and public relations motivations of the tobacco industry in offering up that money in the first place. This presentation will hopefully shed some light on important broader societal issues involved in the decision to seek and accept funding from this industry.

No Funding.

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SYM4B  TOBACCO FUNDING OF RESEARCH – THE BENEFITS ARE TOO GREAT TO IGNORE
Jed E. Rose

This talk will describe several productive research endeavors in the Duke Center for Nicotine and Smoking Cessation Research that have been sponsored by tobacco companies. The projects to be described range from brain imaging studies of nicotine effects in human smokers to clinical trials of innovative approaches designed to help smokers break their addiction to tobacco. These studies have led to tangible progress toward a greater understanding of mechanisms underlying tobacco addiction and have promoted the development of more effective smoking cessation treatments. It will be shown that the subject matter of this tobacco company-sponsored research has been indistinguishable from the type of research that is supported by NIH, and that there has been no attempt to manipulate the outcomes of these studies. Moreover, in this era of limited federal research funding, it is argued that tobacco company resources can significantly aid the development of smoking cessation treatments that will reduce disease and death from cigarette smoking. The fundamental ethical criterion used to gauge the virtue of accepting tobacco company funding should be the degree to which public health will benefit, rather than whether the source of funding is tobacco tax money, tobacco settlement money or direct, voluntary funding by a tobacco company. An equally important criterion is that the research is independent and is not subject to manipulation. Examples of tobacco company sponsorship have included supplying experimental products, providing unrestricted donations, and funding contractual research. These examples will be described in detail and will illustrate how it is possible to structure agreements with tobacco companies that preserve academic freedom and credibility, and that maintain independence from corporate influence.

Philip Morris USA Vector Tobacco Company.

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SYM4C  POLICY MECHANISMS TO ADDRESS TOBACCO INDUSTRY FUNDING OF RESEARCH
Mark Parascandola, National Cancer Institute

Several academic institutions and funding organizations have recently instituted policies restricting investigators from accepting tobacco industry funding for research. Concern over commercial sponsorship of research has grown in recent years as academic medical schools have become increasingly dependent on financial relationships with the pharmaceutical industry. However, advocates of special restrictions for tobacco industry funding argue that generic conflict of interest policies do not offer adequate protection against unwanted influences. We analyzed the content of 17 existing policies regarding tobacco industry funding (including the Harvard School of Public Health, the Arizona College of Public Health, the American Legacy Foundation, the Wellcome Trust, and others) to determine what forms of behavior are targeted, what mechanisms are used, and how the goals and mechanisms of these policies differ from existing university policies on conflicts of interest and relationships with industry. A range of different mechanisms and requirements were used, ranging from simple disclosure of funding sources to prohibition. However, only two policies actually included a list of funding sources affiliated with the tobacco industry. The primary justification offered for a tobacco-specific funding policy was the incompatibility of the tobacco industry with public health. Unlike conventional conflict of interest policies, these policies are not primarily aimed at protecting the integrity of research findings, but at preventing tobacco companies from using research sponsorship as a tool to improve their public image. Public health scientists, particularly those studying tobacco and alcohol, should be aware of mechanisms to control the potential adverse effects of research sponsorship.

No Funding.

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SYM4D  PREVENTING LUNG CANCER: ISOLATING THE TOBACCO INDUSTRY
Jean King, Cancer Research UK

Earlier this year, Cancer Research UK and Universities UK signed a joint protocol containing good practice guidance for universities on the issue of tobacco industry funding. The joint protocol acknowledges that while it is for each university to decide for itself what funds to accept, when to accept or reject an offer of funds and what work is to take place, Universities "will consider carefully" all the circumstances and whether to accept funding from any source "if to do so would be potentially detrimental to their reputation". With any donation it is important to consider what the donor expects to gain from making it. For many companies which do not produce addictive and deadly products, it generally does not matter if they advance their public relations interests through a well-placed donation. However, when a tobacco company benefits, the consequences are almost certainly negative. Cancer Research UK, the world’s largest volunteer-supported cancer research organisation with annual scientific spending of more than £213 million also enforces its own funding policy. The organization will not provide financial support to researchers who are “working in such proximity to others supported by tobacco industry funding that there is any possibility or likelihood that facilities, equipment or other resources will be shared.” The conditions of this Code, at a minimum, apply at research team level. The policy also notes that when Cancer Research UK is considering major new funding initiatives, a university’s ties with the tobacco industry will be an important factor in the decision.

No Funding.

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A central premise of nicotine and tobacco research is that nicotine drives tobacco use by acting as a primary reinforcer and by conferring secondary reinforcement properties on nicotine-associated stimuli. However, the role of nicotine in smoking is more complex than previously thought. For example, nicotine rapidly desensitizes most nicotinic receptors, including those thought to mediate reinforcement, and nicotine-maintained behavior is relatively weak in the absence of other non-drug stimuli. These data suggest that our conceptualization of how nicotine drives smoking is incomplete. Indeed, recent preclinical research indicates that nicotine may also facilitate the reinforcing properties of other stimuli through a non-associative mechanism. In this symposium, we focus on these data and their importance for understanding the function of nicotine in smoking reinforcement. Dr. Dani will discuss the relationship between nicotine exposure, nicotinic receptors, and the functional state of neural systems believed to mediate the reinforcing effects of nicotine and other stimuli. Dr. Cragg will discuss the effects of nicotine on brain reward circuits that may be important for understanding how nicotine impacts reinforced behavior. Dr. Olausson will present recent work demonstrating that nicotine can alter behaviors maintained by conditioned reinforcers. Dr. Caggiula will present data suggesting that nicotine facilitates responding for unconditioned reinforcers and that this effect may be an important determinant of nicotine self-administration. Finally, Dr. Donny will discuss how these findings from the animal laboratory might be related to tobacco use and dependence in humans.

SYM5B

NICOTINE FACILITATION OF REWARD-RELATED SIGNALING AT DOPAMINE SYNAPSES

Stephanie J. Cragg*, Margaret E. Rice, University of Oxford

The signaling of reward-related events and the subsequent learning of reward-seeking behaviors depend on mesostriatal dopamine. Dopamine neurons convey information about reinforcers and their conditioned cues by discrete phasic bursts of action potentials. It is a long-held view that the reinforcing and ultimately addictive properties of nicotine require striatal dopamine release. Yet paradoxically, nicotine at concentrations achieved by smokers desensitizes nicotinic acetylcholine receptors (nAChRs) on dopamine neurons which, as shown by Dani and colleagues, strongly suppresses striatal dopamine release evoked by single action potentials. We have explored how nicotine governs dopamine release during specific reward-related bursts of neuron activity that signal the presentation of any reinforcer. By using real-time detection of dopamine release at carbon-fiber micro-electrodes, we show that nicotine in the striatum modifies the dynamic probability of release at dopamine synapses. Nicotine, via nAChR desensitization, switches dopaminergic axons/synapses to high-pass filtering, which reduces release by tonic activity, but selectively amplifies dopamine release by phasic, reward-related bursts. Thus, these data indicate a synaptic mechanism for how nicotine acts as a primary reinforcer, and in turn provide a mechanism through which non-contingent nicotine can powerfully potentiate the reinforcing properties of other accompanying reinforcing stimuli that generate dopamine neuron bursts. Through becoming conditioned reinforcers, such stimuli could take on critical incentive properties that might facilitate nicotine addiction.

Bell Memorial Trust and Michael J Fox Foundation (SJF).

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SYM5D  DUAL-REINFORCEMENT MODEL OF NICOTINE SELF-ADMINISTRATION AND SMOKING

Anthony R. Caggiula†*, Dept. of Psychology, University of Pittsburgh

The paradigm of intravenous self-administration (SA) is being used to investigate the behavioral and neurobiological consequences of nicotine reinforcement, and aid in the development of novel pharmacotherapies for smoking cessation. With this paradigm, we have shown that a compound visual stimulus (VS) can act synergistically with nicotine to produce levels of SA that are higher, and more robust than those obtained using nicotine alone. Furthermore, this synergy results from a powerful action of nicotine in enhancing the reinforcing properties of the VS. Thus, non-contingent administration of nicotine is as effective as contingently delivered (self-administered) nicotine in maintaining high levels of responding for the VS. When animals can independently control nicotine and the VS, nicotine intake equals that of rats with only nicotine available. However, VS presentations exceed those of rats with only the VS available, and approximate that taken when both nicotine and the VS are controlled by the same lever. This suggests that the high rates of responding normally seen for nicotine SA reflect increased motivation for the VS engendered by a relatively small amount of nicotine which is sufficient to sustain both the primary reinforcing and reinforcement-enhancing effects of the drug. We hypothesize that nicotine can function as both a primary reinforcer when experienced contingently, and as an enhancer of the reinforcing properties of other stimuli, which does not require a contingent relationship between drug delivery and reinforced operant behavior. Understanding the independent and combined contribution of these two factors will help resolve paradoxes and contradictions in the literature regarding the role of nicotine reinforcement in nicotine self-administration and smoking.

Supported by NIDA (DA10464).

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SYM6A  WHAT IS THE EFFECT OF REDUCED SMOKING ON MOTIVATION TO QUIT IN SMOKERS NOT INTERESTED IN QUITTING

Karl Fagerstrom†*, Ph.D., Smoker’s Information Centre

Advocating reduced smoking as an alternative to abrupt quitting has largely been criticised. The main argument has been that it would lessen the interest in quitting abruptly and quitting altogether. However most investigators interested in reduced smoking have advocated it for those not interested in to quitting abruptly. Rather reducing smoking has been seen as an alternative for those not able or interested in trying to give up abruptly. Whether motivation to quit completely as a function of participating in a reduction programme is suffering or not is an empirical question and initial results are emerging. In a study over the Internet Etter and co-workers asked smokers (N=2027) about several messages impact on their motivation to quit. The reduction message, that NRT can be used by smokers who do not want to quit but want to smoke less had a positive effect on the smokers motivation to quit. In recent, usually randomized placebo controlled studies, with smokers not interested in quitting motivation to give up has been assessed. Generally, in contrast to commonly held beliefs, the motivation to give up has not decreased but in most studies increased. These results will be discussed more in detail in the symposium. In a clinical setting there seem to be no risk in offering and recommending reduced smoking for those unwilling or unable to quit. Quitting actually occurs, which will be discussed in another talk in this symposium. Weather reduced smoking should be recommended to smokers not interested in quitting on a population level need more investigation.

No funding.

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SYM6B  CAN MEDICATIONS OR BEHAVIORAL TREATMENT REDUCE SMOKING IN SMOKERS NOT TRYING TO QUIT? A REVIEW

John R. Hughes*, University of Vermont and Matthew J. Carpenter, Medical University of South Carolina

We conducted a systematic update of a prior review on the efficacy of interventions to reduce smoking in smokers not actively trying to quit (Addiction 95: S3-7, 2000). We located 20 trials of medications (19 on NRT, 1 on bupropion) and 5 of behavioral therapies (2 prior to 1985 and 3 after 2001). Half of the studies had follow-up data at 6 mo or longer. Due to heterogeneous methods and results, a meta-analysis could not be done. To illustrate magnitude, we present the inter-quartile range (25th-75th percentile) across studies. All 19 studies found NRT reduced smoking more than placebo or no-treatment. The reduction in cigs/day (CPD) with NRT was 25%-56% or 8-23 CPD and was 1.2-10.7 times greater than that in the control condition. The reduction in carbon monoxide (CO) was 14-29% with NRT; i.e. about 1/2-2/3 that of the reduction in CPD. The single bupropion study did not show greater reduction in CPD but did show greater reduction in cotinine compared to placebo (14% vs 4%). None of the 5 behavioral treatment studies had a true control group comparison. The reduction in CPD in these studies was 21-41% or 6-12 CPD compared to baseline smoking. The reduction in CO was 10-25%; i.e. about half that of CPD. Reductions with medications and behavioral treatments appeared to persist through 6-30 mo follow-ups. Adverse events from using NRT or bupropion and smoking concurrently were very rare. We conclude that, in smokers not trying to quit, 1) NRT consistently reduces CPD more than placebo or no-treatment, 2) behavioral treatments appear to reduce CPD but RCTs are needed, 3) some compensation occurs but significant reductions in CO still occur and 4) concurrent use of medications and reducing CPD is safe.

Supported by grant DA11557 (JH) and Senior Scientist Award 00490 (JH) from US NIDA.

CORRESPONDING AUTHOR: John R Hughes, M.D., Department of Psychiatry, University of Vermont, 38 Fletcher Place, Burlington, VT 05401-1419, USA.
Smoking reduction (decreasing cigarettes per day) may lead to subsequent cessation among unmotivated smokers and promote public health. Alternatively, smokers may view reduced smoking as a substitute for cessation and public health may be undermined. As an update of a prior review on smoking reduction among smokers uninterested in quitting, we located 17 studies with both indirect and direct evidence to address this question. Four of the six studies of smokers who self-selected to reduce vs. not reduce showed greater rates of cessation among smokers who reduced (ORs 1.2 2.2) vs. those who did not reduce. In addition, all studies of NRT-assisted reduction (8 studies) demonstrated greater cessation (ORs 1.1 6.5) among those receiving active medication, and who had reduced more, than placebo or no treatment groups. Direct tests of smoking reduction come from 3 studies that compared interventions to reduce vs. to quit. In each, smoking reduction was equally effective in inducing cessation as active cessation interventions. Two of these three studies included a no-treatment comparison group. In both, the reduction intervention significantly increased cessation more so than did no treatment (ORs 3.3 4.5). We conclude that, among smokers uninterested in quitting, smoking reduction does not undermine cessation when compared to other active cessation interventions, and promotes cessation among smokers who would otherwise receive no treatment.

This review was supported by NIDA grant DA 11557, and NIDA Senior Scientist Award DA 00490 (JRH).

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**SYM6D**

**CAN REDUCED SMOKING IN A CLINICAL SETTING REDUCE HARM IN HEALTHY AND DISEASED SMOKERS?**

Stephen I. Rennard*, M.D., University of Nebraska Medical Center, Omaha, NE, USA

The risks associated with smoking are related to the amount and the duration of smoking. It is plausible, therefore, that reduction of smoking should reduce risks. The reduction of heart disease and cancer among Swedish men who switch to snus supports this concept. However, cross sectional studies of current and former smokers with COPD suggest that lower respiratory tract inflammation is similar in the two groups. While smoking cessation is an overall health benefit, it may be that selected disorders, once initiated in a smoker, may persist despite cessation. Reduction would be of little benefit in such individuals. Smokers at risk but in whom disease has not developed may respond differently. Thus, benefits of reduction need to be objectively assessed in each specific clinical setting. Two issues are found such testing. First, smoke induced disease usually develops and progresses over time frames of many years. Second, while a major contributor to risk, only a minority suffer a specific disorder. These factors can result in clinical trials of long duration that require very large numbers of subjects particularly if reduction in disease risk is the major parameter. There are other approaches. Reduction in smoking can have more rapid effects and acute events can be endpoints. Alternatively, markers of disease may be used as surrogates, although their validation is often problematic. Similarly post hoc analysis of clinical trials have suggested reduced angina pectoris is associated with smoking reduction. Whether such benefits would otherwise receive no treatment.

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**SYM6C**

**CAN SMOKING REDUCTION LEAD TO CESSION AMONG UNMOTIVATED SMOKERS?**

Matthew J. Carpenter*, Ph.D., Medical University of South Carolina, John R. Hughes, University of Vermont

Smoking reduction may lead to subsequent cessation among unmotivated smokers and promote public health. Alternatively, smokers may view reduced smoking as a substitute for cessation and public health may be undermined. As an update of a prior review on smoking reduction among smokers uninterested in quitting, we located 17 studies with both indirect and direct evidence to address this question. Four of the six studies of smokers who self-selected to reduce vs. not reduce showed greater rates of cessation among smokers who reduced (ORs 1.2 2.2) vs. those who did not reduce. In addition, all studies of NRT-assisted reduction (8 studies) demonstrated greater cessation (ORs 1.1 6.5) among those receiving active medication, and who had reduced more, than placebo or no treatment groups. Direct tests of smoking reduction come from 3 studies that compared interventions to reduce vs. to quit. In each, smoking reduction was equally effective in inducing cessation as active cessation interventions. Two of these three studies included a no-treatment comparison group. In both, the reduction intervention significantly increased cessation more so than did no treatment (ORs 3.3 4.5). We conclude that, among smokers uninterested in quitting, smoking reduction does not undermine cessation when compared to other active cessation interventions, and promotes cessation among smokers who would otherwise receive no treatment.

This review was supported by NIDA grant DA 11557, and NIDA Senior Scientist Award DA 00490 (JRH).

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**SYM7**

**EVALUATING TOBACCO CONTROL POLICIES OF THE FRAMEWORK CONVENTION ON TOBACCO CONTROL: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION PROJECT**

Bob Vollinger, Gerard Hastings, Ron Borland, David Hammond, Andrew Hyland, Geoffrey T. Fong, Derek Yach

The recent adoption of the Framework Convention on Tobacco Control (FCTC) highlights the urgent need to conduct rigorous evaluation of national-level tobacco control policies; such efforts can serve both to evaluate policies and to provide an evidence base for policymakers in downstream countries to implement policies of demonstrated effectiveness. This symposium consists of 5 presentations from the International Tobacco Control Policy Evaluation Project, a set of transdisciplinary studies focusing on the interrelationships among policies, smoker behavior, and cigarette product characteristics in the international context. The ITC 4-Country Survey is a random-digt-dialed phone survey of a cohort of over 8,000 adult smokers across four countries—Canada, United States, United Kingdom, and Australia—which is designed to evaluate major national-level tobacco control policies listed in the FCTC, and to understand how and why those policies achieve (or fail to achieve) their effects. Gerard Hastings presents findings on the February 2003 U.K. tobacco promotion ban, which led to significant declines of awareness of tobacco promotion among U.K. smokers in controlled channels but continued awareness in open-open channels. Ron Borland presents findings on smoke-free homes, a “private” policy that is increasing in prevalence: despite differences in prevalence, the factors predicting smoke-free homes are the same across the four countries. David Hammond presents findings whose specific pattern verifies that the warning labels constitute a powerful mechanism for increased awareness of the health effects of smoking. Andrew Hyland presents findings on purchasing of low-price or untaxed cigarettes across the four countries—prevalence and factors relating to such purchases, which highlight the importance of understanding how taxation affects cigarette purchase patterns as well as smoking behavior. Geoffrey Fong presents findings from the ITC-Ireland/U.K. Survey, a RPD cohort phone survey of 1,000 Irish and 600 U.K. smokers, designed to evaluate the March 2004 smoke-free workplace law in Ireland. Bob Vollinger, National Cancer Institute (U.S.), will be the Moderator, and Derek Yach, Yale School of Public Health and former Executive Director of Non-Communicable Diseases and Mental Health at the WHO, will be the Discussant.

AX-Symposium

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**SYM7A**

**PATTERNS OF AWARENESS OF TOBACCO MARKETING ACROSS FOUR COUNTRIES: FINDINGS FROM THE ITC 4-COUNTRY SURVEY**


Policymakers have responded to the public health threat posed by tobacco marketing by introducing regulatory policies to control the industry’s advertising and promotional activities. In February 2003, the United Kingdom joined countries such as Canada, Australia, and New Zealand by introducing a comprehensive ban on tobacco promotion. The UK-legislation outlawed mass media advertising and direct mail and introduced transitional regulation on point-of-sale, brand-sharing and sponsorship. The Framework Convention on Tobacco Control (FCTC) will also introduce global restrictions on tobacco marketing. Despite advertising and promotion restrictions, the tobacco industry continues to market their products in these countries using innovative and carefully planned strategies. We evaluated this phenomenon via the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4), a random digit dialed telephone survey of a cohort of over 8,000 adult smokers across four countries—Canada, United States, United Kingdom, and Australia—who’s primary goal is to evaluate the psychosocial and behavioural impact of tobacco control policies of the FCTC. The baseline wave began in October 2002 and the second wave began in May 2003. The data show that increased regulation of marketing leads to significant declines in awareness of the controlled channels. It is also clear that, in the UK at least, this has caused a decline in the overall prevalence of pro-smoking cues. The data also demonstrate how the industry is using the channels that remain open and how this varies across the four countries. These findings reinforce the importance of comprehensive bans on tobacco advertising and promotion.

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SYM7B      PREVALENCE AND PREDICTORS OF SMOKE-FREE HOMES IN FOUR COUNTRIES: FINDINGS FROM THE ITC 4-COUNTRY SURVEY
Ron Borland*, Hua-Hie Yong, Geoffrey T. Fong, K. Michael Cummings, Andrew Hyland, and Susan Anderson for the ITC Research Team

Although there have been a considerable number of studies on smoke-free public environments, few have examined the correlates and predictors of smoke-free homes. This paper reports on prevalence and determinants of smoke-free homes in four countries and examines how this private ‘policy’ relates to quitting from analyses of the first two waves of the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4), a cohort telephone survey of over 8,000 adult smokers across four countries: Canada, the United States, the United Kingdom, and Australia. Wave 1 was conducted in Oct-Dec 2002 and Wave 2 was conducted in May-Sep 2003 (retention rate = 75%). Cross-sectional analyses revealed that Australian smokers were most likely and U.K. smokers least likely to live in smoke-free homes. Levels of smoke-free homes increased between waves. The main independent predictors of smokers reporting smoke-free homes, or implementation of smoke-free between waves, included household factors such as having a child, particularly a young child; and having non-smoking adults in the household. Individual factors included being male, younger, reporting having total bans in cars, and being less addicted. Quitting activity (including sustained cessation) was associated with smoke-free homes, but the effects did not persist in multivariate analyses. Smoke-free homes are becoming more prevalent and, despite differences across the four countries in smoking prevalence, intensity of tobacco control policies, and prevalence of public smoking bans, the factors that predict whether a smoker’s home will be smoke-free are the same in each country. Strategies to encourage smoke-free homes thus can be translated across, at least, the four countries studied here.


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SYM7C      THE EFFECTS OF WARNING LABELS ON KNOWLEDGE ABOUT THE HEALTH RISKS OF SMOKING: FINDINGS FROM THE ITC 4-COUNTRY SURVEY

Cigarette warning labels figure prominently in the Framework Convention on Tobacco Control (FCTC). There is a need for research that can help policymakers to choose the size and strength of health warnings from within the recommendations provided in the FCTC. We report data from the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4), a cohort telephone survey of a representative sample of 9,058 adult smokers from 4 countries—Canada, the United States, the United Kingdom, and Australia—to examine knowledge of the health effects of smoking, toxic constituents in cigarette smoke, and the impact of tobacco labeling policies in October-December 2002. The results indicate that smokers in the four countries exhibit significant gaps in their knowledge of the risks of smoking. The findings also indicate that health warnings on cigarette packages are a prominent source of health information: 65% of all smokers cite warning labels as a source of health information, second only to television. Smokers who reported noticing health warnings were significantly more likely than non-smokers to recognize the health risks of smoking such as lung cancer and heart disease. In all five knowledge domains where labeling policies differed among countries, smokers in countries with warnings targeting that domain reported greater health knowledge. For example, in Canada, where packages warn about the risks of impotence, smokers were 2.70 (2.43-3.00) times more likely to agree that smoking causes impotence relative to Canada, where labeling policies differed among countries, smokers in countries with warning labels are more effective in communicating the health risks of smoking.

Canadian Institutes for Health Research, Strategic Training Program in Tobacco Research (CIHR), Robert Wood Johnson Foundation, Cancer Research U.K., Canadian Tobacco Control Research Initiative, National Health and Medical Research Council of Australia, Australia Commonwealth Department of Health and Ageing.

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SYM7D      FACTORS ASSOCIATED WITH THE PURCHASE OF LOWER PRICED AND UNTAXED CIGARETTES ACROSS FOUR COUNTRIES: FINDINGS FROM THE ITC 4-COUNTRY SURVEY
Andrew Hyland*, Fritz L. Laux, Cheryl Higbee, Hana Ross, Frank J. Chaloupka, Geoffrey T. Fong, and K. Michael Cummings for the ITC Research Team

Tobacco taxation is a fundamental public policy instrument for tobacco control. The possibility that taxation effectiveness may be diminished by tax avoidance activities is thus an important concern. We present data from the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4), a random digit dialed cohort telephone survey of over 8,000 adult smokers across four countries—Canada, United States, United Kingdom, and Australia. These results extend previous results by incorporating more specific questions about less expensive purchase options and testing for between country interactions. Smokers were classified as having bought low/untaxed cigarettes if in the last 6 months they bought cigarettes from the Internet, by phone, by mail order, from people selling them independently, or from ‘any other special effort to buy cigarettes that are less expensive than you can get from the local store?’. At baseline (Oct 2002), the four countries varied in the prevalence of purchasing low/untaxed cigarettes, with U.K. the highest (39%) and Australia the lowest (21%); prevalence of those sources varied across countries. The likelihood of purchasing cigarettes from a low/untaxed source increased with higher indications of nicotine dependence, regardless of country. Purchasing low/untaxed cigarettes at baseline did not significantly predict smoking cessation 6-10 months later, although relative risks were less than 1 for each country. These findings highlight the importance of understanding how taxation affects cigarette purchase patterns as well as smoking behavior.


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SYM7E      CHANGES IN KNOWLEDGE, ATTITUDES, AND BEHAVIOR FOLLOWING THE IRISH SMOKE-FREE LAW: FINDINGS FROM THE ITC-IRELAND/U.K. SURVEY

Ireland became the first nation to implement comprehensive smoke-free workplace regulation, including restaurants and pubs, on March 29, 2004. No data exists at a national-level on how smokers react to and adjust to comprehensive smoke-free regulations. We present data from the ITC-Ireland/U.K. Survey, a random digit dialed telephone survey of a cohort of 1,000 Irish and 600 United Kingdom adult smokers interviewed in December 2003, before the Irish law, and again in October 2004, six months after the law. At baseline, compared to U.K. smokers, Irish smokers reported significantly higher levels of support for smoke-free worksites (42% vs. 36%), restaurants (46% vs. 34%), and pubs (13% vs. 7%). Support for smoking restrictions in places that are already generally smoke-free in both countries was comparable between Irish and U.K. smokers. Irish smokers were significantly more likely to nominate smoking restrictions at work (19% vs. 13%) and in cafes and pubs (31% vs. 14%) as reasons for quitting compared to U.K. smokers; however, other reasons for quitting such as the price of cigarettes and advice from a doctor were comparable between the two countries. These baseline data provide specificity of effects and suggest that the extensive media and educational campaign that took place in Ireland prior to the law may have affected smokers’ beliefs and attitudes about smoking and smoke-free air. Follow-up data will be presented to assess trends in these measures and behavioral outcomes in Ireland and the U.K.

National Cancer Institute/NIH, GlaxoSmithKline, Pfizer.

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Although numerous investigations are currently underway to determine the genetic basis for nicotine dependence, results from candidate gene or linkage studies have been difficult to replicate. One reason may be imprecision in the assessment of nicotine dependence. The most widely used assessment strategies include the Fagerström Test for Nicotine Dependence and a structured interview format to assess features of nicotine dependence as a psychiatric disorder. While the two approaches purport to assess the same construct they are, in fact, poorly correlated. In this symposium, we will revisit the issue of nicotine dependence as a phenotype for inclusion in genetic studies from several perspectives: Dr. Swan will describe a framework with which to classify nicotine dependence phenotypes and endophenotypes, and will discuss results involving nicotine metabolic endophenotypes in twins; Dr. Brigham will review the reliable and valid assessment of lifetime tobacco use trajectories and milestones as well as review recent evidence for the dimensionality of nicotine dependence; Dr. Lerman will review new evidence supporting the use of another endophenotype—the relative reinforcing value of nicotine—in genetics research; Dr. McCaffery will address the importance of incorporating measured environmental phenotypes in genetically informative designs and will review new methods of incorporating environmental variables into twin designs and association studies. Dr. Wilhelmsen will discuss the above papers and provide further insight from the perspective of a parallel field, alcoholism, into the pursuit of measured endophenotypes that best represent the consequences of specific genes.

NA-Symposium.

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SYM8D

EDUCATION LEVEL MODERATES THE HERITABILITY LIABILITY TO NICOTINE DEPENDENCE AMONG MALE VIETNAM-ERA TWINS

Jeanne McCaffery, Ph.D.*, George Papandonatos, Ph.D., Michael Lyons, Ph.D., Shaun Purcell, Ph.D., Karestan Koenen, Ph.D., BrianHitsman, Ph.D. and Raymond Niaura, Ph.D.

Dr. McCaffery will address the importance of incorporating measured environmental variables in genetically informative designs to determine the extent to which environmental factors may moderate genetic effects, potentially resulting in reduced phenotypic penetrance in specific contexts. She will introduce data from the 2045 monozygotic and 1956 dizygotic male-male Vietnam-era Twin pairs and examine the extent to which education serves as a moderator of the heritability of nicotine dependence. Consistent with prior results, education had a main effect on the mean of nicotine dependence, such that lower levels of education were associated with a greater number of nicotine dependence symptoms. In addition, a significant moderation of total variance in nicotine dependence was observed, driven by a significant moderation of genetic variance. Specifically, lower levels of education were associated with smaller total and genetic variance than higher education levels, in which both overall variability and genetic variability were more profound. For example, heritability (%genetic variance/total variance) increased as a function of education level, ranging from approximately .20 among persons who did not complete high school to approximately .60 among those with a minimum of a college degree. These results demonstrate that heritability of nicotine dependence can vary as a function of environmental factors, including education level, potentially resulting in reduced penetrance of phenotypes in molecular genetic studies. These results will be used to review methods to detect gene x environment interaction and motivate a program of research to systematically incorporate socioeconomic variables into the study of genetic influences on smoking behavior and other health behaviors relevant to cardiovascular disease among Vietnam-era Twins.

Research supported by the National Heart, Lung, and Blood Institute (HL72819).

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SYM9

GENETIC VARIATION IN SMOKING CONSUMPTION AND CESSATION

Dieter W Wildenauer*, Rachel F Tyndale*, Caryn Lerman*, Rob Walton*

Genetic variation has been shown to alter the amount smoked by individuals as well as their ability to quit smoking. This symposium will start by describing some genetic loci and candidate genes that were identified in an inbred mouse strain study of nicotine consumption, using mapping quantitative trait loci methodology. One such linked locus contains the gene for mouse CYP2A and the second presentation will continue this theme, describing data which suggests that genetic variation in CYP2A-mediated nicotine inactivation in humans alters the amount smoked per day and how long they smoke for before stopping. The third and fourth speakers will focus on recent genetic findings from smoking cessation studies using a variety of nicotine replacement therapies or bupropion. For example the third speaker will show data indicating that functional genetic variation in the dopamine (D2) receptor (DRD2) predicts therapeutic response to bupropion treatment and NRT. The final speaker will talk about a number of studies where genetic variation has altered quitting outcomes. He will conclude by describing the potential advantages of using genetic testing in the future to Personalize Medicine by optimizing treatment according to the genetics of each individual or subgroup of smokers.

NA-Symposium.

CORRESPONDING AUTHOR: Rachel F. Tyndale*, Ph.D., Edward M. Sellers, M.D., Ph.D., Ewa B. Hoffmann, M.Sc., Yushu Rao, M.Sc., Kerri A. Schoedel, Ph.D., CAMH and University of Toronto

GENETICALLY VARIABLE CYP2A6-MEDIATED NICOTINE INACTIVATION ALTERS AMOUNT CONSUMED AND DURATION OF SMOKING

Rachel F. Tyndale*, Ph.D., Edward M. Sellers, M.D., Ph.D., Ewa B. Hoffmann, M.Sc., Yushu Rao, M.Sc., Kerri A. Schoedel, Ph.D., CAMH and University of Toronto

Genetically variable CYP2A6 is the primary enzyme that inactivates nicotine to cotinine. We investigated the relationship between genetically slow nicotine metabolism and smoking status, cigarette consumption and duration of smoking. Adult Caucasian non-smokers (N=224) (1-99 cigarettes/lifetime) and smokers (N=375) (more than 100 cigarettes/lifetime) were genotyped for CYP2A6 alleles associated with decreased nicotine metabolism (CYP2A6*2, CYP2A6*4, CYP2A6*9, CYP2A6*12). We found that the proportion of Caucasian slow nicotine inactivators was significantly lower in current, DSM-IV dependent smokers compared to non-smokers (7.0% and 12.5%, respectively, p=0.03, OR=0.52 [95% CI; 0.29-0.95]); non-dependent smokers showed similar results. Daily cigarette consumption (cigarettes/day) was significantly (p=0.003) lower for slow (21.3 [95% CI; 17.4-25.2]) compared to the normal inactivators (28.2 [95% CI; 26.4-29.9]); this was observed only in DSM-IV dependent smokers. Consistent with studies on increased quitting in slow metabolizers (Gu et al., 2000) we found a trend towards slow metabolizers smoking for shorter durations. Ethnic variation in the frequency of CYP2A6 alleles (CYP2A6*1B-12.1%;12%) results in the slow metabolism genotype being significantly more common in Chinese and Japanese, relative to Canadian Native Indians, African North Americans and Caucasians. This study demonstrates that CYP2A6 slow nicotine inactivators who are smokers consume less nicotine per day as evidenced by smoking fewer cigarettes per day and trended towards quitting smoking sooner consistent with their lower levels of smoking. The ethnic differences in the frequency of slow metabolizers may alter treatment outcomes.

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SYM9C
ROLE OF FUNCTIONAL GENETIC VARIATION IN THE DOPAMINE D2 RECEPTOR (DRD2) IN RESPONSE TO BUPROPION AND NRT
C. Lerman*, C. Jepson, E.P. Wileyto, L. Epstein, M. Ruksatalis, F. Patterson, V. Kaufmann, L. Hawk, S. Restine, R. Niaura, and W. Berrettini, University of Pennsylvania, SUNY Buffalo, and Brown University

Although bupropion and nicotine replacement therapy (NRT) are effective smoking cessation treatments, there is substantial inter-individual variability in therapeutic response. We investigated the roles of two functional genetic variants in the dopamine D2 receptor (DRD2) gene in response to pharmacotherapy for tobacco dependence. Two randomized clinical trials were conducted: a double blind placebo-controlled trial of bupropion and an open label trial of transdermal nicotine versus nicotine nasal spray. Participants were treatment-seeking smokers of European ancestry (n=414 for bupropion trial, n=368 for NRT trial). Demographic characteristics, smoking history, and genotype for two single nucleotide polymorphisms (SNPs) in DRD2 (−141C Ins/Del and C957T) were measured at baseline. Smoking practices were biochemically verified. At the end of the treatment phase, a statistically significant (p=.01) interaction between the DRD2 −141C Ins/Del genotype and treatment indicated a more favorable response to bupropion among smokers homozygous for the Ins C allele, compared to those carrying a Del C allele. By contrast, smokers carrying the Del C allele had statistically significantly (p=.006) higher quit rates on NRT compared to those homozygous for the Ins C allele, independent of NRT type. Bupropion may be the treatment of choice for smokers homozygous for the DRD2 −141C Ins C allele, while NRT may be more beneficial for those who carry the Del C allele. Study findings require confirmation in additional large studies.

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SYM9D
GENETIC EFFECTS ON OUTCOME OF TREATMENT FOR TOBACCO DEPENDENCE – HOPE FOR PERSONALISED MEDICINE?
Robert Walton*, M.D., Marcus Munafò, Ph.D., Elaine Johnstone, Ph.D., Sean David, M.D., Mike Murphy, University of Oxford and Brown University, Rhode Island, USA

Several genes affecting smoking behaviour have now been identified. These fall into two broad groups: those that influence monoamine neurotransmission and those that affect nicotine metabolism. Both types of gene may also affect the likelihood of success in treatment for tobacco dependence. There may also be interactions between genes and between groups of genes that determine treatment outcome to some extent, however current studies have been too small to demonstrate these effects. A review of all investigations to date evaluating genetic effects on treatment outcomes will be presented focussing on genes potentially affecting dopamine (DRD2/ANKK1), noradrenaline (DBH) and serotonin (5HTT) transmission and those that help to determine the rate of nicotine metabolism (CYP2A6, CYP2B6). Implications for categorising smokers into groups who might respond well to specific treatments will be discussed.

This work was funded by Cancer Research UK. Dr Robert Walton works as a consultant for G-Nostics Ltd.

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SYM10
NEW MEDICATIONS FOR SMOKING CESSATION: BEYOND NRT AND BUPROPION
David J. McCann*, Ph.D., Department of Health and Human Services/National Institutes of Health/National Institute on Drug Abuse, Bethesda, MD, USA

Despite the availability of nicotine replacement therapy, bupropion, and effective behavioral therapies, millions of smokers fail to successfully quit smoking each year. Even with the existing therapies, it is estimated that one billion people will die from smoking-related illnesses during this century. Clearly, more effective medications - or medications that are effective in subpopulations who are refractory to current treatments - may save the lives of millions. At least four new medications are under clinical evaluation for smoking cessation: selegeline (a MAO-B inhibitor), BP 897 (a D3 receptor partial agonist), varenicline (a nicotine receptor partial agonist), and rimonabant (a CB-1 receptor blocker). Each of these four compounds will be reviewed in separate presentations. Speakers have been asked to share details of discovery, to address the theoretical rationale for efficacy in smoking cessation, to summarize data from animal models relevant to smoking cessation, to present data from smoking cessation trials completed to date, and to update meeting attendees on the current status of each compound in development, as appropriate.

Finally, the symposium’s discussant will consider other biological targets (other receptors, enzymes, and ion channels) that hold promise for future medications discovery and development efforts related to smoking cessation, giving meeting attendees a glimpse of what may be further back in the drug development pipeline.

NA-Symposium.

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SYM10A
DEVELOPMENT OF SELEGILINE FOR SMOKING CESSATION
Tony P. George*, M.D., Jennifer C. Vessicchio, L.C.S.W., and Andrea H. Weinberger, Ph.D., Division of Substance Abuse, Department of Psychiatry, Yale University School of Medicine, New Haven, CT, USA

Dopamine (DA) plays a critical role in the reinforcing effects of nicotine, but no approved anti-smoking pharmacotherapy to date has exploited a selective DA mechanism. Furthermore, it has been shown that non-nicotine components of cigarette smoke (e.g. harman alkaloids) are potent inhibitors of the enzyme monoamine oxidase B (MAO-B), which selectively catalyzes the oxidative degradation of DA. A selective and irreversible inhibitor of MAO-B, selegeline hydrochloride (Eldepryl(r); Deprenyl) is available and is approved for the treatment of Parkinson’s disease. Accordingly, we have studied the potential of this MAO-B inhibitor as a potential pharmacotherapy for the treatment of nicotine dependence. Our preliminary data in n=40 nicotine dependent smokers suggests that selegeline is well-tolerated and efficacious for smoking cessation, and reduces symptoms of tobacco craving and withdrawal (George, T.P. et al., Biol. Psychiatry 53: 136-143, 2003). Larger NIDA-funded trials evaluating the potential of this agent for smoking cessation are in progress at our site at Yale University and elsewhere in the United States. Our findings also provide the first direct evidence in humans that a selective dopaminergic agent has potential for the treatment of nicotine dependence, and is a viable strategy for medications development for nicotine dependence.

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SYM10B

BP 897, A Dopamine D3 Receptor Partial Agonist, as a Persuading Tool for Smoking Cessation

Bernard Le Foll, M.D., Ph.D.*, Steven R. Goldberg, Ph.D.*, Jean-Charles Schwartz, Pharm.D., Ph.D., and Pierre Sokoloff, Ph.D., NIDA IRP, Baltimore, MD, USA, and CNRS, Paris, France

Environmental stimuli previously paired with drug taking appear to play a critical role in nicotine dependence. Converging anatomical, pharmacological, and behavioral evidence implicates dopamine D3 receptors (D3R) in the mechanisms underlying stimulus-controlled drug-seeking behavior. Moreover, the density of dopamine D3 receptors is elevated in the nucleus accumbens of nicotine-sensitized and nicotine-conditioned animals. BP 897, a D3R partial agonist, has been shown to be effective in decreasing cue-induced cocaine-seeking behavior in rats. BP 897 has also been studied in various animal models related to nicotine dependence. BP 897 disrupts nicotine-conditioning and nicotine-induced conditioned place preferences (CPP) at doses which are selective for D3R and which do not affect locomotor activity. BP 897 was also studied in rats trained to discriminate nicotine from saline under a fixed-ratio schedule of food delivery. In contrast to nicotine replacement therapy and bupropion, BP 897 did not have nicotinic-like discriminative effects and did not alter the dose-response curve for nicotine discrimination. Involvement of antidepressant actions in the effects of BP 897 is unlikely, since BP 897 had no effect in a forced swimming test, used as a behavioral test for antidepressant activity. These experiments suggest that BP 897 reduces the motivational effects of nicotine by a mechanism distinct from those of nicotine replacement therapy and bupropion, the two currently used aids for smoking cessation in humans. These findings support the use of BP 897 as an aid for smoking cessation and indicate that its effects would be selective for those rewarding and reinforcing effects of nicotine that contribute to the maintenance of tobacco smoking behavior, without affecting subjective responses to nicotine or producing antidepressant-like effects.

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SYM10D

Using Rimonabant (A CB1 Receptor Blocker) as an Aid to Smoking Cessation: The STRATUS Program

Raymond Niaura, Ph.D., Department of Psychiatry & Human Behavior, Butler Hospital, Providence, RI

Preclinical studies have demonstrated that rimonabant, the first selective CB1 receptor blocker, reduces nicotine self-administration and decreases food consumption and body weight. Rimonabant is currently in development for the treatment of cigarette smoking and obesity and metabolic risk factors. These conditions represent major risk factors for cardiovascular and other diseases. Clinical phase II studies demonstrated the efficacy of rimonabant in increasing smoking abstinence and reducing weight. Phase III studies have been undertaken to confirm the efficacy and safety of rimonabant for smoking cessation and maintenance of abstinence (STRATUS - Studies of Rimonabant as an Aid to treat Tobacco Use - program) and the treatment of obesity and metabolic risk factors (RIO — Rimonabant In Obesity — program) in a large patient population. The STRATUS program has enrolled over 6500 patients in three phase III trials worldwide. The studies were designed to provide evidence supporting efficacy of rimonabant in initiating smoking cessation, maintaining long-term smoking abstinence and preventing weight gain upon abstinence from smoking. STRATUS-US (10 weeks of treatment, 42 weeks of follow-up) has demonstrated that rimonabant 20mg/d was well tolerated and approximately doubled the chance of smoking abstinence at the end of treatment compared to placebo. In addition, in abstinent subjects, a significantly lower weight gain from baseline was observed with rimonabant 20 mg/d. As many cigarette smokers express concern about the potential weight gain associated with smoking cessation, this concern may keep them from trying to stop or lead to early relapse. The unique dual action of rimonabant — increasing the likelihood of smoking abstinence and reducing weight gain associated with smoking abstinence — makes it a very promising agent for the treatment of tobacco dependence.

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SYM10C

A New Therapy for Smoking Cessation: Varenicline, a Selective Nicotinic Receptor Partial Agonist

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Varenicline is an orally bioavailable, selective nicotinic receptor partial agonist, which binds to the alpha-4-beta-2 receptor subtype with nanomolar affinity. In alpha-4-beta-2 receptor expressing cocytes, varenicline activates the receptor with an EC50 of 2.3 microM, and maximal efficacy of ~25%. As activation of mesolimbic dopamine (DA) pathways is a key mechanism underlying the reinforcing effect of nicotine, we used DA turnover (DATO) and dialysis in the nucleus accumbens as measures of mesolimbic DA system activation. Varenicline has maximal efficacy of ~40% relative to nicotine, with an ED50 of 0.05 mg/kg po, and also inhibited the nicotine response with an ID50 of 0.07 mg/kg sc (DATO), further confirming its partial agonist character. Similarly in dialysis, varenicline elicited DA release with an ED50 of 0.02 mg/kg, and blocked the nicotine-induced DA release with an ID50 of 0.15 mg/kg po. Varenicline is active in drug discrimination (DD) and i.v. self-administration (SA) models that assess its ability to modify the dependence-related behavioral effects of nicotine. Effects of varenicline pretreatment on rates of nicotine self-administration were studied under a fixed-ratio schedule; reinforcing effects of varenicline were studied under fixed- and progressive-ratio schedules. In DD, varenicline partially substitutes (~65%) for the nicotine stimulus at doses up to and including those producing response rate suppression. Varenicline dose-dependently suppressed nicotine SA at doses having little effect in another group of rats working for food. Finally, i.v. varenicline maintained behavior to a lesser extent than nicotine, measured by fixed-ratio or progressive-ratio methods. These data suggest that varenicline may be a useful therapeutic aid for smoking cessation.

Supported by Pfizer Global Research and Development.

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SYM10E

New Medications for Smoking Cessation: Beyond NRT and Bupropion Discussant Synopsis

John F. Cryan*, Ph.D., Neuroscience Research, Novartis Institutes for BioMedical Research, Basel, Switzerland

Two types of pharmacological therapies have been approved for smoking cessation by the FDA. The first is nicotine replacement therapy, that allow the smoker to substitute nicotine from safer nicotine formulations for the nicotine from cigarettes. The second therapy is bupropion, an atypical antidepressant. The use of the latter has raised much debate as to how a non-nicotine-based agent can aid in smoking cessation. The four presenters in this symposium will focus on novel pharmacotherapies in late stage development that may show better efficacy as facilitators of smoking cessation. These strategies largely focus on altering reward processes in the brain by modulating cannabinoid, nicotinic, or dopamine D3 receptors or by inhibiting monoamine oxidase. Subsequent to the presentations, a number of other promising strategies emerging from preclinical and early clinical studies will be discussed; these new strategies give much hope for the future development of anti-smoking therapies. They include gamma-vaso-cGABA (GIV or vigabatin), which increases GABA neurotransmission, as well as GABA-B receptor agonists, such as backofen, which have shown some promise in preclinical models of nicotine dependence and in clinical trials related to cocaine and alcohol addiction. Additionally, antagonism of the metabolotropic-glutamate-5 (mGlu5) receptor has emerged as a potential novel mechanism for altering reward processes. Finally, since stress is a major factor in the relapse rate of smokers, anti-stress agents such as corticotropin releasing factor-1 (CRF-1) receptor antagonists are also being evaluated. Given the promising preclinical data for many of these strategies, it is likely that they will result in therapies that will improve long-term smoking quit rates and become important tools in the struggle to extinguish smoking behaviour and maintain smoking abstinence.

Supported by Novartis Institutes for BioMedical Research.

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SYM11B WHY DON'T MORE SMOKERS USE NRT WHEN THEY QUIT?

K. Michael Cummings*, Ph.D., Maansi Bansal, M.S., Andrew Hyland, Ph.D., Cheryl Higbee, Department of Health Behavior, Roswell Park Cancer Institute

This paper examines factors that contribute to the low utilization of nicotine medications with a particular focus on smokers’ misperceptions about nicotine and concerns about the safety and efficacy of NRT. Data come from two US nationally representative sample telephone surveys of adult (18 years of age and older) current cigarette smokers. The first survey conducted in 2001 includes 1,047 smokers; the second cohort study includes 2,400 smokers interviewed in 2002 and again in 2003. In both studies, smokers were questioned about their use of stop smoking medications, beliefs about nicotine and the safety/efficacy of nicotine medications. Nearly all adult smokers in our survey had heard of nicotine patches and gum, with lower levels of awareness reported for the nicotine inhaler, and nasal spray. About 40% of smokers had previously used nicotine medications, but among those who reporting making a quit attempt between 2002 and 2003, fewer than 1 in 10 reported using the NRT. The data reveal that most smokers are misinformed about the health risks of nicotine and the safety/efficacy of nicotine medications. Smokers who were more knowledgeable about the health risks of nicotine and safety and efficacy of nicotine medications were more likely to report past use of nicotine medications.

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SYM11D  PERCEIVED SAFETY OF NICOTINE REPLACEMENT THERAPY AMONG SMOKERS AND EX-SMOKERS: IMPACT ON USAGE AND COMPLIANCE

Saul Shiffman*, Ph.D., Stuart Ferguson, Ph.D., University of Pittsburgh and Pinney Associates; Jeffrey Rohay, M.S., Joe Gitchell, B.A., Pinney Associates

Nicotine Replacement Therapy (NRT) is effective for smoking cessation, but most smokers try to quit without using NRT. We hypothesized that misperceptions of NRT safety might limit its use by smokers. In a national mail survey of 3,663 current and former US smokers, 26% of respondents agreed that Stop-smoking products with nicotine are just as harmful as cigarettes. These respondents were less likely to have used NRT in the past (31% versus 49%; OR= 0.47, p<.001) and (among current smokers) were less likely to consider using NRT during future quit attempts (34% versus 53%; OR= 0.46, p<.001). Of the respondents who had used nicotine gum in the past 12 months (n=407), those who believed that NRT was harmful reported using fewer pieces of gum per day during treatment (6 versus 8; p<.05), and were more likely to report that they used the gum for only 4 weeks or less (75% versus 53%; OR= 2.66, p<.01). Observed trends in compliance with nicotine patches were similar. These findings suggest that many smokers are misinformed about the health risks of NRT and that these misperceptions impede adoption of NRT and compliance during treatment, likely reducing success in quitting. Misperception of NRT safety is one barrier to effective use of NRT.

The study was sponsored by GlaxoSmithKline Consumer Healthcare, for whom the authors provide consulting services excluding services in smoking control. SS and JG have an interest in a smoking cessation product under development.

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SYM12A  A TWIN REGISTRY STUDY OF PTSD AND SMOKING

Karestan C. Koenen, Ph.D., Harvard School of Public Health

Background: Epidemiological and clinical studies have consistently reported associations between smoking and posttraumatic stress disorder (PTSD). This study was undertaken to clarify the relationship between PTSD and smoking and to examine whether this relationship depended on genetic risk for smoking. Methods: Analysis of diagnostic interview data on 6,744 members of the Vietnam Era Twin Registry, a national registry of all male-male twin pairs who served in the military during the Vietnam Era interviewed in 1991-1992. Survival analysis with time dependent covariates was used to estimate the hazard ratio (HR) between trauma/PTSD and the risk of smoking. Results: Smoking prevalence was elevated among veterans with PTSD (67%) compared to the trauma-exposed who did not develop PTSD (55%) and those unexposed to trauma (50%). Trauma without PTSD predicted onset of daily smoking (adjusted HR=1.3; 95% CI=1.2, 1.5). Preexisting (active) PTSD that had not remitted increased risk of onset of daily smoking (adjusted HR=2.7; 95% CI=2.1, 3.5) and, among smokers, heavy smoking (adjusted OR=1.9; 95% CI=1.1, 3.2). PTSD with onset after daily smoking increased risk of heavy smoking (adjusted OR=1.6; 95% CI=1.2, 2.1) and smoking persistence (adjusted OR=1.4; 95% CI=1.1, 1.9). Remitted PTSD was not associated with smoking onset or persistence. Active PTSD was more strongly associated with smoking at lower levels of genetic risk. Conclusions: Veterans whose PTSD had remitted were not at increased risk for daily smoking, in contrast with those who had active PTSD. Prevention and successful treatment of PTSD may decrease onset of daily smoking and improve cessation efforts.

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SYM12B  DYSTHYMIA, MAJOR DEPRESSION AND STAGES OF SMOKING

Brian Hitsman*, Ph.D., Michael Lyons, Ph.D., Richard Rende, Ph.D., Seth Eisen, M.D., M.S., Ming T. Tsuang, M.D., Ph.D.; Brown Medical School; “Boston University; Virginia Commonwealth University; Harvard University

Using data from the Vietnam Era Twin Registry (N=6744), this study examined the associations among stages of smoking and the following DSM-III-R mood disorders: dysthymia, mild, chronic depression; n=30), major depressive disorder (MDD; n=500), and double depression (overlapping major depression and dysthymia; n=111). These groups were compared with controls that had no prior history of mood disorder (n=6,098). Results showed that dysthymia, MDD, and double depression were each related to lifetime risk of regular smoking [dysthymia odds ratio=5.0, MDD OR=4.0, double depression OR=4.9, all p<.01]. MDD and double depression were associated with increased risk of making the transition from regular smoking to nicotine dependence [MDD OR=3.2, double depression OR=5.2, p<.01], whereas dysthymia was not. Among the three mood disorders, dysthymia showed the strongest association with self-reported inability to stop smoking [OR=3.3, p<.01]. The discussion will highlight the implications of these findings for understanding the possible psychobiological mechanisms underlying co-occurring nicotine dependence and mood disorders. Supported in part by NIH grant DA48604 to M.T. Tsuang, by the United States Department of Veterans Affairs, and by the National Cancer Institute, Transdisciplinary Tobacco Use Research Center Grant, P50 CA84719.

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SYM12  PSYCHIATRIC COMORBIDITY AND THE NICOTINE DEPENDENCE PHENOTYPE

Jeanne M. McCaffrey, Ph.D.*, Brian Hitsman, Ph.D., and Raymond Niaura, Brown Medical School; Karestan C. Koenen, Ph.D., Harvard School of Public Health; George P. Papandonatos, Ph.D., Brown University; Marcus R. Munafò, Ph.D., University of Bristol; Michael J. Lyons, Ph.D., Boston University

Although twin studies suggest that nicotine dependence is a highly heritable trait, it often co-occurs with other psychiatric disorders, such as anxiety, mood or substance abuse disorders. In this symposium, we will dissect the nicotine dependence phenotype by further characterizing comorbidity with psychiatric disorders, including PTSD, dysthymia, depression and alcohol use, and estimating genetic and environmental influences on this co-morbidity. In addition, we will examine the influence of comorbidity in genetic association studies and make recommendations to methodology for candidate gene studies. Expanding upon knowledge of comorbidity will refine the nicotine dependence phenotypes and assist in defining smoking-related constructs that will serve as the best targets for molecular genetic analyses. Dr. Koenen will review the evidence for the co-morbidity of PTSD with smoking behavior and present data addressing the extent to which the experience of trauma and the development of PTSD influence the likelihood and extent of daily smoking. Dr. Hitsman will present data on the relative contributions of dysthymia, major depression and double depression to smoking behavior and use this as a platform to introduce potential psychobiological mechanisms that may underlie the co-occurrence of smoking and mood disorders. Dr. Papandonatos will report on the relative contribution of genetic and environmental factors on the relationship between depressive symptoms and stage of smoking initiation in adolescent twins. Finally, Dr. Munafò will consider the effects of genetic pleiotropy (i.e. genetic association with multiple behavioural traits) in the context of genetic association studies of substance abuse and will illustrate his points using data on smoking, alcohol use and polymorphic variation in the serotonin transporter gene. Discussion will involve assessment of the current status of psychiatric co-morbidity with smoking behavior and identification of implications for molecular genetic studies as well as unanswerable research questions in the area of comorbidity.

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COVARIATION OF STAGE OF SMOKING INITIATION AND DEPRESSIVE SYMPTOMS AMONG ADOLESCENT TWINS

George D. Papandonatos, Ph.D., Jeanne M. McCaffery, Ph.D., Elizabeth Richardson, Ph.D., Cassandra Stanton, Ph.D., Raymond Niaura, Ph.D.

Depressive symptoms are associated with an increased likelihood of cigarette smoking initiation in adolescence; however, the nature of this relationship remains unclear. For example, the possibility that genetic or unmeasured early environmental factors account for the observed association remains to be tested among adolescents. In this study, we examined the extent to which additive genetic or shared environmental variance contributed to the covariation of depressive symptoms and stage of smoking initiation among 284 monozygotic and 447 dizygotic twin pairs, ages 12-20, who participated in the first wave of the Adolescent Health Study. Depressive symptoms were characterized from the Feelings Scale (mean=11.05, range 0-44). Smoking stages included never smokers (N=656), puffers (N=216), light smokers (N=166), occasional smokers (N=242) and established daily smokers (N=119). The level of depressive symptoms correlated positively with stage of smoking (r=.21, p < .01) In ordinal (five smoking stages) by ordinal (Feelings Scale divided into 6 categories) bivariate twin structural equation modeling, the correlation between depressive symptoms and smoking stage was attributable to common additive genetic factors (rg = .13, p < .001) and common nonshared environmental factors (re = .08, p = .002) but not common shared environmental factors. Overall, these results suggest that covariation among depressive symptoms and stage of smoking initiation among adolescents is, in part, attributable to common additive genetic factors and that family history of smoking and depression should be considered in the conceptualization of teens who initiate cigarette smoking.

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GENETIC PLEITROPY IN THE STUDY OF HUMAN BEHAVIORAL PHENOTYPES: THE CASE OF THE SEROTONIN TRANSPORTER

Marcus R. Munafò*, Ph.D., University of Bristol, Elaine C. Johnstone, Ph.D., University of Oxford

The proliferation of candidate gene studies brings advantages and disadvantages. Among the disadvantages is a tendency to focus on the usual suspects of dopaminergic and serotonergic genes. Given that individual genes will demonstrate genetic pleitropy (i.e. association with multiple behavioural traits) the study of individual phenotypes will be of limited value. For example, the serotonin transporter (5HTT) gene has been reported to be associated with anxiety-related personality traits, alcohol consumption and smoking behaviour. Given that these are themselves correlated, it may be that these reported associations are partially or fully confounded by other behaviours. We report data on cigarette consumption, alcohol consumption and 5HTT genotype in 750 smokers enrolled in a pharmacogenetic study of the nicotine patch. One-way ANOVA of cigarette consumption with 5HTT genotype as a between-subjects factor (SS/SL vs LL) and age as a covariate indicated a significant effect of genotype on cigarette consumption (F[1, 508] = 6.09, p = 0.014). When alcohol consumption was included as a further covariate the association between 5HTT genotype and cigarette consumption remained significant (p = 0.009). When this analysis was re-performed with alcohol consumption as the dependent variable, 5HTT genotype was associated with alcohol consumption when cigarette consumption was included as a covariate. Genetic variants may confer unique and shared risk for substance-use behaviours. Future candidate gene studies should be adequately powered, and collect sufficient data, to enable mediating influences of inter-related behaviours to be investigated.

This research was supported by Cancer Research UK.

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NEW INVESTIGATORS

**NI-1**

**ABSTINENCE-INDUCED CHANGES IN SELF-REPORTED CRAVING ARE CORRELATED WITH CHANGES IN BRAIN RESPONSES TO SMOKING CUES: AN EVENT-RELATED FMRI STUDY**

F. Joseph McClernon*, Ph.D., F. Berry Hott, B.S., Scott A. Huettel, Ph.D., and Jed E. Rose, Ph.D., Duke University Medical Center

Correlations between self-reported craving and brain responses to drug cues have been observed across addiction types and imaging modalities in brain regions including prefrontal cortex, anterior cingulate gyrus (ACG), insular cortex, and amygdalae regions subserving processes related to emotion, motivation, attention, and response inhibition/initiation. We investigated how the relation between craving and brain responses in these regions is influenced by overnight abstinence and smoking satiation in a sample (n = 13) of dependent smokers. During each scanning session, participants viewed 60 pictorial smoking cues (e.g., lit cigarettes, people smoking) and 60 control cues (e.g., keys, people using the phone); and provided self-reports of craving for cigarettes. Averaged event-related hemodynamic responses (HDRs) were calculated for cortical and subcortical regions of interest (ROIs). Pearson's correlation coefficients were calculated between abstinence-induced changes in craving (abstinent day vs. satiated day) and changes in HDR amplitudes in response to smoking and control cues. Significant positive correlations between changes in craving and HDRs were observed for smoking but not control cues in left hemisphere inferior frontal gyrus (.611*), superior frontal gyrus (.577*), ventral ACG (719**), and thalamus (.575*); bilateral middle frontal gyrus (right = .858***, left = .818***); and right hemisphere dorsal ACG (.638*). These results indicate that frontal cortical circuits, particularly those in the left hemisphere, mediate relations between drug craving and cue reactivity. * p < .05, ** p < .01, *** p < .001 (ps two-tailed).

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**NI-2**

**CIGARETTE SMOKING IN CHINESE MALE TWINS: THE QINGDAO TWIN REGISTRY**

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The world's largest concentration of tobacco users (300 million) is found in China but the extent to which genetic factors play a role in tobacco use etiology is unknown. Cigarette smoking was assessed in Chinese twins from Qingdao city aged 24 or older. Nearly all female twins were non-smokers (99.2%; n=524 twins), while 58% of the male twins (n=486) were current smokers, and 8.4% reported having quit for one month or more. Among male lifetime smokers, 46.4% smoked 20 or more cigarettes per day. Because of low smoking prevalence in females, analysis of the relative contribution of genetic and environmental influences on cigarette smoking was limited to male data (n=130 monzygotic (MZ) and 72 dizygotic (DZ) complete pairs for current smoking; n=103 MZ and 62 DZ complete pairs for heavy smoking). The best-fitting univariate model for current smoking indicated that 75.1% (95% CI: 56.7-87.5) of the phenotypic variance was explained by genetic effects with no evidence for a significant contribution from shared environment. For heavy smoking, there was a relatively larger contribution from genes (66.2%, 95% CI: 0-86.4) than from shared environment (8.7%, 95% CI: 0-71.0). These results support findings from twins of Western origin and encourage further work in tobacco use in Chinese twins.

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**NI-3**

**ROLE OF CLOSE FRIENDS’ VERSUS PARENTS’ AND OLDER SIBLINGS’ SMOKING IN CHILDREN’S 12TH GRADE SMOKING: A PROSPECTIVE STUDY**

Jonathan B. Bricker, Ph.D., Arthur V. Peterson, Ph.D., K. Bharat Rajan, M.S., Brian G. Lenox, Ph.D., and M. Robyn Anderson, Ph.D.

AIMS: To use a novel “social epidemic” probability model to conduct one of the few longitudinal studies of the relative influence of close friends’ smoking versus parents’ and older siblings’ smoking in the prediction of youth smoking. Design: Close friends’ smoking status was assessed when children were in 5th grade while parents’ and older siblings’ smoking status was assessed when children were in 3rd grade. Children’s daily smoking status was assessed in 12th grade. Setting: Forty Washington State school districts participated in the long-term Hutchinson Smoking Prevention Project.

PARTICIPANTS & MEASUREMENTS: Participants were the 4689 families for whom friends’, parents’, and older siblings’ smoking status as well as children’s smoking status were available. Questionnaire data were gathered on friends, parents, older siblings, and children who were 49% female and 91% Caucasian.

FINDINGS: Results from this new social epidemic statistical model show that the probability that one close friend smoking influenced the child to smoke daily was 9% (95% CI: 6%, 12%), whereas the probability that one parent smoking influenced the child to smoke daily was 11% (95% CI: 9%, 14%), and for one older sibling smoking the probability was 7% (95% CI: 1%, 12%).

CONCLUSIONS: These results suggest that an early exposure to a close friend’s smoking has a similar influence as parents’ as well as older siblings’ smoking. Thus, the role of early exposure to close friends’ smoking may not be as strong as previously thought. Public health interventions targeting family smoking, as well as close friends’ smoking, would be valuable.

Tobacco Use and Dependence, Way, Wang2, Liming Lee4, Weihua Cao4, and C. Anderson Johnson3; 1Center for Health Sciences, 333 Ravenswood Ave, Menlo Park, CA 94025, USA.
AN EVOLUTION IN LOW TAR ADVERTISING:
LESSONS FOR THE FUTURE

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OBJECTIVE: To explore the evolution from cigarette product attributes to psychosocial needs unrelated to smoking in advertising campaigns for low tar cigarettes.

METHODS: Analysis of previously secret tobacco industry documents and public advertising collections. RESULTS: Lorillard Kent, RJ Reynolds Vantage, and Philip Morris Merit brands targeted smokers who were concerned about the health hazards of smoking; these brands competed in the moderation segment from the late 1950s through the 1980s. Their advertising first emphasized product characteristics (filtration, low tar) that implied health benefits. Over time, advertising emphasis shifted to salient psychosocial needs of the brands target markets. Kent advertising presented its users sophistication and confidence; Vantage campaigns created images of upward-striving people who had achieved personal success; Merit ads depicted individualistic people enjoying leisurely sailing. The minimal product information retained in advertising for these brands was relegated to the small print.

DISCUSSION: These examples illustrate one strategy to appeal to concerned smokers by not describing the product itself (which may remind smokers of the problems associated with smoking) but instead using evocative imagery to distract smokers from these problems. Current advertising for potential reduced emissions products (PREPs) emphasizes product characteristics, but these products have yet to deliver on the promise of a healthier alternative cigarette. Our results suggest that the public health community should be on the alert for a shift in advertising focus for PREPs to the image of the user, not the cigarette. Advertising bans that prohibit all tobacco advertising user imagery could preempt a psychosocial needs-based advertising strategy for PREPs and maintain public attention on the health hazards of smoking.

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PAPER SESSIONS

PA1-1 ATTENTIONAL BIAS AND SELF-REFERENT ASSOCIATIONS TO POSITIVE AND NEGATIVE AFFECTIVE CUES IN CURRENT AND FORMER SMOKERS

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Nicotine, like other drugs, can be used to modulate affect. Affective stimuli may thus acquire incentive salience as discriminative cues for, and consequences of, smoking. To investigate this issue, the present study assessed the effects of acute (overnight) and chronic abstinence from smoking on measures of attentional bias (salience) and self-referent associations to positive and negative affective cues. Salience was assessed with a modified Stroop task and self-referent affective associations were assessed with the Implicit Association Test (IAT). Only current smokers were required to smoke. There were 4 smoker groups (6 males, 6 females/group): heavy (>10 cigarettes/day); light (<10 cigarettes/day); short-term abstinent (<6 months); and long-term abstinent (> 12 months). On the Stroop task, male smokers displayed interference to negative but not positive words before and after smoking. Female smokers displayed interference to both types of words before, but not after, smoking. On the IAT, the typical positive self-referent association was found before and after smoking in all smoker sub-groups except female light smokers who had a sharp decline in this positive self-referent association following smoking (p<0.04). In former smokers, duration of abstinence was directly correlated with interference to positive words (r=0.54, p<0.03) and inversely correlated with interference to negative words (r=0.512, p<0.04) on the Stroop task. Duration of chronic abstinence was also directly correlated with the strength of positive self-referent associations on the IAT (r=0.37, p<0.05). In sum, negative affective stimuli are generally more salient in current smokers, and smoking can negate positive self-referent associations in female light smokers. Conversely, positive stimuli become more salient and positive self-referent associations get stronger with increasing chronic abstinence. Cognitive factors may mediate the association between smoking and depressive states and this linkage recovers slowly but consistently with continued abstinence.

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PA1-2 SEVERITY OF NICOTINE DEPENDENCE MODULATES CUE-INDUCED BRAIN ACTIVITY IN REGIONS INVOLVED IN MOTOR PREPARATION AND IMAGERY

Mira Bühler, Sabine Klein, Ulrich Zimmermann, Karl Mann, Andreas Heinz, Dieter F. Braus and Michael N. Smolka*

BACKGROUND: In nicotine dependent subjects, cues related to smoking elicit brain activity in regions linked to attention, emotion and motivation. Neuronal cue reactivity is associated with self-reported craving but further correlates are widely unknown. We therefore investigated whether severity of nicotine dependence correlates with brain activation elicited by visual smoking cues and whether this is related to craving intensity.

METHODS: Ten healthy male smokers without nicotine deprivation were investigated. Smoking cues and neutral visual stimuli were presented in a block design during functional magnetic resonance imaging (fMRI). The blood oxygen level dependent (BOLD) response to smoking cues was correlated with severity of nicotine dependence assessed with the Fagerström Test of Nicotine Dependence (FTND) and with self-reported cue-induced craving.

RESULTS: Significant positive correlations between the BOLD activity and FTND scores were found in brain areas related to visuospatial attention (anterior cingulate cortex, parietal cortex, parahippocampal gyrus and cuneus) and in regions involved in motor preparation and imagery (premotor cortex and supplementary motor area). Intensity of cue-induced craving was significantly associated with greater neuronal activation in mesocorticolimbic areas engaged in incentive motivation and in areas related to episodic memory. In conclusion, our study suggests that severity of nicotine dependence and intensity of craving are independently associated with cue-induced brain activation in separate neuronal networks.

CONCLUSIONS: The observed association of severity of nicotine dependence with neuronal cue-reactivity in regions involved in allocation of attention, automated motor preparation and imagery could be clinically relevant in terms of facilitating cue-induced relapse.

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PA1-3 SEROTONIN TRANSPORTER GENOTYPE AND ATTENTIONAL BIAS TOWARDS SMOKING-RELATED CUES IN CIGARETTE SMOKERS

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The modified Stroop task has been used to demonstrate attentional bias for smoking-related cues among cigarette smokers. The serotonin transporter gene has been reported to be associated with both increased levels of cigarette consumption and anxiety-related personality traits. We therefore investigated whether 5HTT genotype moderated the association between smoking status and attentional bias. A sample of 34 current smokers and 21 ex-smokers performed a modified Stroop task to assess attentional bias. Participants were also genotyped for 5HTT genotype, which has been independently reported to be associated with smoking-related cues among ex-smokers, and may offer clues to the mechanisms subserving the role of the 5HTT gene in smoking behaviour and smoking relapse.

5HTT genotype moderated the association between smoking status and attentional bias towards smoking-related cues. Ex-smokers as a group had a significantly worse attentional bias towards smoking-related cues than current smokers (x2=13.94; p<0.001). However, attentional bias for smoking-related cues was significantly affected by 5HTT genotype: the short allele of the 5HTT gene was associated with increased attentional bias towards smoking-related cues in current smokers (r=0.53, p<0.05) and ex-smokers (r=0.62, p<0.01). In sum, 5HTT genotype moderated the association between smoking status and attentional bias towards smoking-related cues. These results may explain inconsistent findings with respect to attentional bias for smoking-related cues among ex-smokers, and may offer clues to the mechanisms subserving the role of the 5HTT gene in smoking behaviour and smoking relapse.

This research was supported by Cancer Research UK.

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PA1-4  
**SEROTONERGIC INVOLVEMENT IN THE ATTENTIONAL SALIENCE OF CIGARETTE CUES**

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The purpose of this study was to examine the effects of serotonergic challenge on the attentional salience of cues associated with cigarettes. We hypothesized that cigarette-related and negative affect word cues would be more distracting following tryptophan depletion challenge than after placebo challenge. We also hypothesized that smokers vulnerable to depression would show greater attentional bias towards these cues than those without depressive diathesis. Thirty-four smokers diagnosed as having (n = 15) or lacking (n = 19) a history of recurrent major depression (DSM-IV) drank tryptophan-depleting (TD) and placebo mixtures (PBO) double-blind in counterbalanced order one week apart. Five hours after consumption, subjects completed a modified Stroop task to measure attentional bias to neutral, positive affect, negative affect, and cigarette-related word cues. Stroop interference was calculated as a difference score between latencies for motivationally salient and neutral cues. Univariate repeated measures ANOVAs showed that interference was significantly greater during the TD condition than during the PBO condition for cigarette-related cues (F [1, 32] = 7.49, p = 0.01), but not for negative affect (F [1, 32] = 3.86, p = 0.06) or positive affect cues (F [1, 32] = 3.98, p = 0.06), although the latter two effects approached significance. Compared to those without a history of depression, smokers with a history of depression had nearly twice the delay in response times for both the cigarette-related and negative affect word cues during the TD condition, but these differences failed to reach statistical significance. Findings suggest that compromising central serotonergic neurotransmission via acute tryptophan depletion influences attentional processes associated with cigarette craving.

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PA1-5  
**EFFECTS OF OLANZAPINE ON URGE TO SMOKE, WITHDRAWAL AND REINFORCEMENT DURING SMOKING DEPRIVATION**

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RATIONALE: Olanzapine (OLAN), an atypical antipsychotic medication with mixed 5-HT2/5D antagonist properties, should affect biobehavioral mechanisms linked to smoking relapse. After 10 hours smoking deprivation, OLAN should dose dependently 1) decrease urge to smoke and withdrawal prior to and after smoking cue exposure, 2) decrease choices for cigarette puffs over money.

METHOD: The 24 community smokers participated in a double-blind placebo-controlled within-subjects randomized trial comparing: (1) PLA, (2) 2.5 mg OLAN, and (3) 5.0 mg OLAN, one dose each a week a week apart, in counterbalanced order. UG to smoke, withdrawal, and cigarette reinforcement were assessed using cue reactivity and behavioral choice procedures.

RESULTS: A significant OLAN effect was seen on tobacco withdrawal prior to cue exposure. During smoking cue exposure, effects on withdrawal were no longer significant. OLAN produced a significant effect urge to smoke prior to and during smoking cue exposure. Less urge to smoke and less withdrawal were reported on 2.5 mg OLAN than when on placebo; the 5.0 mg dose was not significantly different from placebo. Medication did not affect choices for cigarette puffs. Significance. The results indicate a beneficial effect of only the 2.5 mg dose of OLAN on tobacco withdrawal and urge to smoke. This is one of only two studies to demonstrate an effect of olanzapine on smoking-related variables among smokers without a diagnosis of psychosis and indicates that combined 5HT/DA antagonists should be considered for future development of pharmacotherapies for smoking cessation.

Funding: Merit Review and CAREER Research Scientist Awards from the Department of Veterans Affairs.

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PA1-6  
**EFFECTS OF WEIGHT-RELATED CUES ON SMOKING MOTIVATION**

Elena Lopez*, M.A., David Drobes, Ph.D., and Thomas Brandon, Ph.D.

Previous research has established that among women smokers, weight concerns and negative body image are associated with tobacco smoking, smoking cessation, and relapse. Existing research has been correlational and quasi-experimental. A causal relationship between body image and smoking motivation has not yet been demonstrated. The aim of the present study was to examine this relationship using a cue-reactivity paradigm, and to test whether an experimental manipulation designed to challenge women’s body image produces changes in their motivation to smoke. The study employed a 2 X 2 crossed, factorial within-subjects design (body image cues X smoking cues) with 62 female college smokers. The body image manipulation included a photo of a thin model or a neutral object; the smoking manipulation displayed a photo of a smoking cue or a neutral object. Both factors were displayed simultaneously. Dependent measures were self-reported urge to smoke, heart rate response, and skin conductance response. As hypothesized, both smoking and thin model images increased reported urges to smoke. Additionally, as expected, trait body dissatisfaction moderated the effect of the body image manipulation such that those women with greater body dissatisfaction reported greater reactivity to the thin model image (when smoking cues were not present). Preliminary analyses of the psychophysiological data appear consistent with the urge findings. In summary, the results indicate that among young women, the viewing of images of thin women can increase smoking urges, which is consistent with a causal influence of state body dissatisfaction. Clinical implications will be discussed.

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PAPER SESSION 2

PA2-1  
**PATTERNS AND PREDICTORS OF CONTINUED ABSTINENCE IN NEWLY DIAGNOSED CANCER PATIENTS**

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Tobacco dependent cancer patients face unique challenges in smoking cessation including psychological distress, extensive history of heavy tobacco use, low quitting self-efficacy, and uncertain health benefits. However, strong quitting advice and perceived vulnerability to the risks of continued smoking likely facilitate quitting. We examined psychosocial, disease/treatment, and tobacco use variables proposed to be theoretically or empirically related to smoking in cancer patients in a longitudinal, descriptive study of recently diagnosed lung (65%) and head/neck (35%) cancer patients assessed at baseline, 3 and 12 months follow-up. Of the 188 patients enrolled at baseline, 150 (80%) completed the 12 month follow-up. Participants were older (M = 61 years), 51% female, 92% white, and 59% had > high school education. Most patients had a good prognosis for long-term survival. They were heavy, long-standing smokers (M = 31 cigarettes per day; M = 66 pack-years). At the 12 month follow-up, 69% reported continuous abstinence. Biochemical verification of point abstinence was conducted at the 12 month follow-up and misreporting was 10%. Guided by the Health Belief Model, we examined the relative contributions of cues to action (physician advice, physical symptoms, treatment intensity) and perceived risk of recurrence in predicting continuous abstinence and found that baseline quitting self-efficacy was the major determinant (OR=2.2, p <.001). Subsequent analyses will examine the role of illness-related distress as an additional determinant of continuous abstinence. We will discuss these analyses in the context of an ongoing clinical trial designed to improve quitting self-efficacy among newly diagnosed cancer patients.

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PA2-2 PRELIMINARY RESULTS FROM A RANDOMIZED TRIAL OF BUPROPION FOR SMOKING CESSATION AMONG CANCER PATIENTS

Robert Schnoll, Ph.D., Amy Lazev, Ph.D., Melissa Sobel, B.A., Kristina Tatum, B.A., Daniel Butler, B.A., Fox Chase Cancer Center; and Caryn Lerman, Ph.D., University of Pennsylvania

Few smoking intervention trials have been conducted with smokers diagnosed with cancer. In this ongoing placebo-controlled trial, cancer patients who smoke are randomized to 9-weeks of bupropion, nicotine patch, and behavioral counseling or 9-weeks of placebo, nicotine patch, and behavioral counseling. Assessment of biochemically-confirmed smoking status occurs at 2-, 6-, and 12-months post quit-date. One study aim is to examine if the presence of depressive symptoms (CES-D) and self-medicating behavior (a 10-item measure of the degree to which nicotine is used to alleviate emotional distress) affects responsiveness to bupropion. Analyses with 99 subjects at 2-months post quit-date indicate that: 1) in the bupropion condition, depressed subjects exhibit higher quit rates than non-depressed subjects (50% vs. 29%), whereas in the placebo condition depressed subjects exhibit higher quit rates than depressed subjects (60% vs. 37%); and 2) in the bupropion condition, subjects who exhibit high levels of self-medicating behavior report higher quit rates than subjects who exhibit low levels of self-medicating behavior (38% vs. 31%), whereas in the placebo condition subjects who exhibit high levels of self-medicating behavior show lower quit rates than subjects who exhibit low levels of self-medicating behavior (46% vs. 60%). These findings suggest that the psychological profile of a cancer patient who smokes may be important to consider when selecting methods of nicotine addiction treatment. Findings concerning the role of changes in depressive symptoms as a mediator of bupropion effect on quit rates will also be discussed.

NIH grant CA65678 supports this study.

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PA2-3 SAFETY AND EFFICACY OF BUPROPION FOR SMOKERS HOSPITALIZED WITH ACUTE CARDIOVASCULAR DISEASE (CVD)

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BACKGROUND: Smokers who stop smoking after myocardial infarction (MI) reduce their CVD mortality by 50%. Hospitalization for acute CVD (MI or unstable angina) provides an opportunity for smoking intervention. Cessation rates produced by counseling alone need improvement. Concern about safety has limited the use of nicotine replacement or bupropion in this setting. We tested bupropion’s safety and efficacy in smokers hospitalized with acute CVD.

METHODS: Randomized, double-blind, placebo-controlled trial of 12 weeks of bupropion SR (150mg bid) starting in hospital in 248 smokers with acute CVD. All subjects received validated smoking cessation counseling in hospital and at 5 telephone calls post-discharge. Smoking status (verified by cotinine or CO) and cardiac endpoints were assessed at 3 and 12 months. Analysis was intention-to-treat. Subjects lost to follow-up were considered smokers.

RESULTS: Biochemically-verified 7-day abstinence rates in bupropion and placebo groups were 37% vs 26% (p<.06) at 12 weeks (end of treatment) and 25% vs 21% (p=.48) at 12 months. There was no significant difference in the number of drug and placebo patients who reached a combined CV endpoint at 3 months (n=20 vs 18, p=.72) or 12 months (n=32 vs 22, p=.13). Hypertension incidence (>160 systolic or >100 diastolic) was similar in both groups (N=10 vs 9, p=.81).

CONCLUSION: Bupropion SR is safe to use in smokers hospitalized with acute CVD. The end-of-treatment results suggest a small benefit of bupropion plus counseling over alone but this disappeared by 1 year. Further improvement in cessation strategies for high-risk CVD patients is needed.

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PA2-4 A RANDOMIZED CONTROLLED TRIAL OF BUPROPION REDUCTION IN HEART DISEASE PATIENTS

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BACKGROUND: The ROSCAP Study is a randomized controlled trial in heart disease patients to test the effect of a smoking reduction intervention on cigarettes per day (cpd) and biochemical and clinical indicators of tobacco exposure.

METHODS: 152 subjects with heart disease who did not intend to stop smoking were randomly assigned to smoking reduction (SR) or usual care (UC). SR received counseling and nicotine replacement therapy to encourage at least 50% reduction in cpd.

RESULTS: Subjects smoked an average of 27.4 cpd at baseline. At 6 months SR participants reduced cpd by 39%, compared with 25% in UC (difference NS). 6/78 SR participants quit smoking, compared to 5/74 UC participants. There were no significant differences between treatment groups in changes in 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanol and its glucuronides (total NNAL), nicotine, cotinine, carbon monoxide (CO), F2-isoprostanes or hs-C-reactive protein (hs-CRP) levels. The 6 minute walk test distance decreased by 138 feet in the SR group compared to 249 feet in UC (difference NS). 10 SR participants sustained serious adverse events (7 cardiac) compared to 13 UC participants (9 cardiac). Since there was significant reduction in both groups we compared all subjects biomarker levels at 6 months to baseline. There was no significant change in total NNAL, nicotine, cotinine, F2-isoprostanes and hs-CRP. CO decreased by 6.0 ppm (p=0.0007).

CONCLUSIONS: The SR intervention did not significantly reduce cpd or toxin exposure, or improve smoking cessation or clinical outcomes compared to UC. There was some evidence of compensation in the SR group as total NNAL levels increased.

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PA2-5 BRIEF SMOKING CESSATION INTERVENTION WITH TUBERCULOSIS PATIENTS IN SUDAN

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Tuberculosis kills about half of those infected who do not get treatment. Tobacco use may play a role in unfavourable treatment outcomes and subsequent recurrence of disease even after treatment, but tobacco control is not systematically included in the comprehensive care of tuberculosis patients, particularly in low-income countries where the greatest majority of tuberculosis patients live. A controlled trial of brief smoking cessation was included as part of a feasibility study of adding tobacco cessation advice to tuberculosis case management in health care facilities in Sudan. A sample of 531 newly diagnosed male tuberculosis patients in 24 health care centres was recruited into the trial. Over 80% of the intervention patients used either cigarettes or snuff. The smoking cessation intervention consisted of four brief sessions over the 8 months of tuberculosis treatment. Final 12-month self-reported results indicated that a significantly greater number of patients in the intervention group (54%) than in the control group (10.6%) had stopped tobacco use during tuberculosis treatment and maintained abstinence from all tobacco use. Baseline motivation and confidence scores were significant higher among those who had stopped by the second visit, as were second visit scores on later cessation. The TB patients enrolled in the study had lower default rates and lower death rates than the total population of newly detected male TB patients receiving treatment during the intervention trial period.

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Effect of Nicotine Replacement Therapy on Stress and Smoking Behavior in Surgical Patients

David Warner*, M.D., Christi Patt, Ph.D., Steven Ames, Ph.D., Darrell Schroeder, M.S., and Kenneth Offord, M.S., Mayo Clinic, Rochester, and M.N.

The forced abstinence from cigarettes accompanying surgery in smoke-free facilities may increase psychological stress postoperatively by removing a coping strategy and via nicotine withdrawal. We hypothesized that periperaoperative nicotine replacement therapy (NRT) would decrease psychological stress and nicotine withdrawal in smokers undergoing elective surgery. Further we determined if the application of NRT to these subjects for up to 30 days after surgery affects postoperative smoking behavior, even if not specifically prescribed to promote abstinence. We examined perceived stress (assessed by the Perceived Stress Scale (PSS)) and nicotine withdrawal (assessed by the Hughes Hsuakami nicotine withdrawal score (NWS)) in 116 cigarette smokers (mean±SD smoking rate of 23.2±9.2 cpd) randomized to receive either placebo (N=60) or nicotine-containing (N=56) patches beginning the morning of surgery and continuing for up to 30 days. Baseline assessments did not differ between groups. PSS and NWS did not change significantly over the immediate postoperative period and did not differ between study groups (all p>0.19). The percentage of placebo vs active patch subjects reporting current (30% vs 39%, p=0.29) abstinence at 30 days postoperatively did not differ significantly between groups. At 30 days postoperatively, subjects in both groups had significantly reduced their cigarette consumption. However, those receiving active patches reported a greater decrease in cigarettes smoked per day compared with preoperative rates (a decrease of 7.7±7.0 vs 12.5±6.7 cpd in placebo and active groups, p=0.008). Although routine patch NRT is not indicated to manage stress and nicotine withdrawal in surgical patients, it may modify postoperative smoking behavior, even when not applied specifically to promote cessation.


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Translating Tobacco Use Clinical Practice Guidelines into a PDA Program for Use in Routine Care

Myra A. Crawford*, Ph.D., T. Michael Harrington, M.D., Toya V. Russell, Ph.D., and Brenda K. Baumann, M.D.

The national clinical practice guidelines 5-A model was used to develop a PDA-based tobacco use assessment and counseling tool that was tested at the point of care by 21 family physicians of the Alabama Practice Based Research Network (APBRN). The objective was to test the feasibility of using the PDA protocol to prompt and guide evidence-based interventions for tobacco use as a means of integrating guidelines into routine care and translating research into practice. A system of electronic data collection and transfer from remote sites was established. The PDA program was written using Pendragon i-forms. PDAs were furnished to participants who were asked to deliver the 5-A intervention to 50 patients who smoke. Data were transmitted to the APBRN Coordinating Center by means of a secure web-based server. Of the 21 physicians enrolled, 16 (76%) completed the study; 639 smokers received the intervention which took, on average, 3.5 minutes to deliver. The most common problem encountered was physicians forgetting to sync the PDA. In response to participant feedback, information related to addiction, risks, resistance to change, and pharmacotherapy was subsequently added, resulting in a more refined and comprehensive protocol. PDA programs are cost-effective and easy-to-use tools for promoting healthy behaviors that can be easily integrated into routine office visits. Technical and logistical challenges involved in conducting this multisite practice-based research study and lessons learned are described.

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IS PHYSICIAN EDUCATION RELATED TO CONFIDENCE AND KNOWLEDGE IN TREATING PATIENTS WHO SMOK? •

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Physicians play a key role in smoking cessation, but few studies have examined the relationship between tobacco-related education and physician knowledge and confidence in advising and treating patients who smoke. We surveyed 1600 Canadian family physicians and paediatricians (response rate = 65%, n=926) using a mailed questionnaire on tobacco-related training and practice. We examined physicians' confidence in their tobacco-related skills, and their knowledge of the effects of second-hand smoke (SHS) according to their previous tobacco training. Cochran-Mantel-Haenszel Chi-Square tests were used, controlling for tobacco control advocacy. Physicians reporting no training were significantly more likely to report being not very confident in advising patients about: the effects of smoking (p<0.010), the use of NRT (p<0.001), the use of bupropion (p<0.001), and strategies for quitting (p<0.001), the effects of SHS on adults health (p<0.001), and referring patients to quilities (p=0.021) and follow up on patients quit progress (p<0.001). Furthermore, physicians without specific tobacco training were more likely to report that SHS is not a cause of ear problems in children, or they did not know if it was a cause (OR=2.5, p<0.003). Physicians who had taken a seminar, workshop, or continuing education were consistently more likely to report confidence in their tobacco-related skills than physicians with other forms of training. Canadian physicians exposed to tobacco education appear to be benefiting from this education.

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Dissemination of Tobacco Dependence Counseling Through Public Health Maternity Clinics

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This presentation will focus on the translation of effectiveness research into public health policy and practice. A research collaboration spanning twenty years between the University of Alabama at Birmingham and the Alabama Department of Public Health has resulted in the establishment of an infrastructure to sustain a tobacco dependence patient education protocol within public health maternity care services. Over 30,000 pregnant women receive care annually through this public health service, of which approximately 30% are smokers. Using the health planning model, PRECEDE-PROCEED, a best practices program to disseminate tobacco dependence counseling through public health maternity clinics across Alabama, USA, will be described. Process and outcome indicators will be summarized.

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FROM PRESCRIPTIONS TO PAMPHLETS: HOW DENTAL HYGIENISTS HELP PATIENTS WHO USE TOBACCO

Janet Brigham* and Gaye Courtney

Dental hygienists often provide both formal and informal stop-smoking advice to their patients who use tobacco. Of more than 600 hygienists responding to an online-and telephone interview survey, 51% reported either providing advice or tobacco dependence treatment to their patients who use tobacco. This assistance involved (in order of frequency) discussing options, providing materials, providing support from within the dental office staff, recommending specific treatment, referring to a physician, and intervention from the dentist. Of the specific treatments mentioned, nicotine replacement products were recommended by 21% of respondents to the survey, followed by referral to treatment program or quinoline (14%), prescription medication (10%), reading materials (9%), cutting back (5%), quitting cold turkey (5%), hypnosis (3%), and nonnicotine gum (3%). Behavioral interventions, alternative medicines, acupuncture, exercise, and caffeine reduction were each mentioned by up to 1% of respondents. One hygienist reported advising patients against nicotine gum because of damage to oral mucosa. Previous research has indicated that dental hygienists report high interest in learning about nicotine and tobacco, so that they can provide better information to their patients and enhance their own skills. The present findings reflect the importance of providing current, comprehensive information to target groups of health professionals such as dental hygienists, to assist them in advising their patients who use tobacco.

SRI International

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

Belinda Borrelli*, Ph.D., Elizabeth McQuaid, Ph.D., Bruce Becker, M.D., Jacki Hecht, M.S.N., Gregory Fritz, M.D., David Abrams, Ph.D., George Papandonatos, Ph.D., Brown University; and S. Katharine Hammond, University of California, Berkeley

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

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THE EFFECTIVENESS OF A NURSE-DELIVERED SMOKING CESSATION INTERVENTION FOR CARDIAC PATIENTS: A RANDOMISED CONTROLLED TRIAL

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OBJECTIVES: To study the effectiveness of the staged matched intervention provided by nurses in motivating Chinese cardiac patients to quit smoking.

METHODS: A multi-site randomised controlled trial was conducted in Chinese cardiac patients at the cardiac outpatient clinics of six major hospitals in Hong Kong. The intervention group received a staged-matched smoking cessation intervention by trained nurse counselors and a telephone reminder at 1 week and 1 month, while the control group received usual care and a placebo intervention on healthy diet education. Telephone follow up was carried out on all subjects at 3 months and 6 months to measure the quit-rate, cigarette consumption, and stages of readiness to quit.

RESULTS: A total of 1039 completed 6-month follow up by August 2004. About 91.1% were males, 48.2% over 60 years of age, and 50.4% suffered from coronary heart disease. Sixty-five percent (542/1039) are smokers, of whom 52.2% (542/1039) into control group. At baseline, 40.4% smoked over 10 cigarettes daily in the past 30 days and 31.5% had moderate to severe nicotine dependence (FTND). At 6 months, 21.4% (116/542) of intervention group vs. 15.1% (75/497) of control group did not smoke in the past 3 months (p < .01). For those who have not quit, 46.9% (200/426) of intervention group vs. 32.9% of control group (p < .001) reduced their daily cigarette intake by 50%. More contemplators and preparators in the intervention group (49.5%) moved into the action stage as compared with the control group (34.9%) (p < .01).

CONCLUSION: The nurse-delivered stage-matched smoking cessation intervention is effective in helping cardiac patients stop smoking. Patients who received the intervention achieved significantly higher quit rate and smoking reduction rate than the controls. The intervention has also motivated patients to reach a higher stage of readiness to quit.

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BRITISH AMERICAN TOBACCO’S STRATEGY TO MARKET TO YOUNG PEOPLE VIA “LIGHT” CIGARETTES

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New internal corporate documents produced by British American Tobacco (BAT) in ongoing litigation in the U.S. reveal that despite the public pronouncement of adult choice and its development of Youth Smoking Prevention (YSP) programs, the company remains committed to reaching young people through light cigarettes. BATs marketing department found that the consumer psychology of the term lights was far superior to that of low tar. BATs corporate marketing vision of globalizing its low delivery brands targeting young people is in direct conflict with the compa- ny’s YSP programs and its public support for eliminating underage smoking world-wide via the WHO’s Framework Convention on Tobacco Control. To increase profits and compete with the globalization of Philip Morris Marlboro, BATs marketing department pushed for additional market research and development of low delivery cigarettes in 1998. Through its lights segment the company sought to attract younger smokers and while recognizing that there is a higher propensity for younger smokers to start with Light offers, that youth saw lights as a separation from the adult world, and that peer pressure amongst youth plays a very important role to use lights. BATs consumer research concentrated on sensory and behavior aspects of smoking so called lights and ultra lights products. Reported findings indicated that for behavioral adjustment is a per stick phenomenon rather than per day and smoking is to optimum not maximum delivery. Also noted was that switching adjustment takes up to 1 month and that physiological intolerance of [full flavor] developing.

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Tobacco transnational companies (TTCs) need innovative ways to communicate with potential customers where regulations on cigarette advertising are gradually becoming more pervasive and restrictive. Contemporary music is increasingly employed by TTCs to target youth in key regional markets. This presentation will illustrate two case studies using previously secret internal industry documents: a Benson and Hedges Golden Tones campaign which began in Nigeria in 1993 and the launch of Lucky Strike in South Africa in 2000. In 2001, BAT invested $150 million in Nigeria, representing the largest amount of foreign direct investment since the return to civilian rule in 1999. The investment brought with it a tremendous rise in advertising and sponsorships, endorsed by the company’s Proudly Nigerian campaign. In attempts to reconcile international and local appeal, BAT used the success of Benson and Hedges association with music events across Nigeria in key area markets. This has clear implications for targeting young people in a continent, where the global tobacco industry is showing an escalating interest. South Africa is often regarded as a role model for tobacco control policy, having banned cigarette advertising and sponsorship in April 2001. BAT, which has more than 90 percent of the local market, developed a host of alternative ways to market its products in order to undermine legislation. Viral marketing of the brand Lucky Strike, denoted by a campaign entitled Incognito was used as a strategy where consumers word of mouth was the brands biggest media. The paper concludes by highlighting the implications for public health of these campaigns as new vehicles of tobacco marketing.

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PA4-3

RED MAN IS OWNED BY THE WHITE MAN: PERCEPTIONS OF TOBACCO USE AND THE TOBACCO INDUSTRY AMONG THE AMERICAN INDIAN ADOLESCENTS IN CALIFORNIA

Jennifer B. Unger*, Ph.D., Claradina Soto, M.P.H., and Lourdes Baezconde-Garbanati, Ph.D.

American Indian adolescents have the highest tobacco use prevalence of all ethnic groups in the United States. Although much has been written about the role of tobacco in traditional Native cultures, little is known about the modern-day perceptions of tobacco among American Indian adolescents. This study conducted focus groups of 40 American Indian adolescents in Southern California. Most had been introduced to traditional ceremonial tobacco use at an early age. Smoking is viewed as a sign of respect for the elders, but there are acceptable ways for adolescents to participate in ceremonies without inhaling smoke. Commercial cigarettes are often used ceremonially when homegrown tobacco is not available. Traditional tobacco was perceived as less dangerous than commercial tobacco because it does not contain chemical additives. However, respondents still perceived that smoking traditional tobacco and breathing environmental tobacco smoke conferred health hazards. Respondents found the use of American Indian imagery in tobacco advertising offensive and stereotypical. Indian casinos were mentioned as places where smoking occurred, and the respondents believed that casinos probably would not ban smoking because customers go there specifically to gamble and smoke. Continued health education efforts are needed to reduce the habitual use of commercial tobacco products and exposure to secondhand smoke among American Indian youth. Further research is needed to identify ways that American Indian youth can participate in their cultural traditions while also mini-

mizing their risk of tobacco-related disease.

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PA4-5

TOBACCO INDUSTRY CONSUMER RESEARCH TO DEVELOP MORE SOCIALLY ACCEPTABLE CIGARETTES

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OBJECTIVE: Describe tobacco industry consumer research studies conducted to inform the development of more socially acceptable cigarette products during the 1980s and 1990s.

METHODS: Analysis of previously secret tobacco industry documents.

RESULTS: Twenty-four projects to develop more socially acceptable cigarettes were identified from Philip Morris, RJ Reynolds, British American Tobacco, and Lorillard tobacco companies. Qualitative consumer research and concept testing consistently demonstrated that many smokers feel strong social pressure not to smoke, and this pressure increased with exposure to smoking restrictions. Tobacco market researchers described this consumer need for more socially acceptable products, and tobacco companies attempted to develop more socially acceptable cigarettes (such as those with less visible or sidestream smoke, or less odor). When presented in theory, these product concepts were very attractive to important segments of the smoking population. However, almost every product developed has been unacceptable to smokers either in actual product tests or in test markets. Smokers reported that the elimination of secondhand smoke was necessary to satisfy nonsmokers. Smokers have also been generally unwilling to sacrifice their own smoking satisfaction for the benefit of others.

CONCLUSIONS: Clean indoor air policies have a powerful effect on the social acceptability of smoking. Historically, the tobacco industry has had little success countering these effects by developing more socially acceptable cigarettes. These data suggest that clean indoor air policies are a point of strength for public health and weakness for the tobacco industry, and that every effort should be made to enact them.

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PA4-6

TOBACCO INDUSTRY SPEAKERS SANG THE DARKEST THINGS

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This presentation will introduce the audience to three new tobacco industry documents that can now be accessed online at: www.tobaccodocuments.org. With the closure of The Tobacco Institute (TI) and Council for Tobacco Research (CTR) following the 1998 Master Settlement Agreement and lawsuit with New York State, all TI/CTR documents were to be handed over to the New York State Attorney General's office and subsequently were sent to Roswell Park Cancer Institute where the documents were indexed and scanned for online access. More recently, documents from the US Smokeless Tobacco Company have been made available to Roswell Park for scanning. Combined these three collections include about 16 million pages of material plus over 3000 audio and videotapes mainly from the TI. Most all of the material in these collections is unique and has not previously been posted online. The collections reveal how US tobacco manufacturers conspired and worked together to block public health efforts to reduce tobacco use. This presentation will show excerpts of industry spokespeople commenting on topics such as nicotine addiction, the health risks of secondhand smoke exposure and the proposals to limit tobacco product marketing. The audience will receive an overview of the content of each of the three collections and learn how they can access the material for their own online research.

National Cancer Institute, American Legacy Foundation, Flight Attendant Medical Research Foundation.

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PA5-2

CYSP2B6 AND CYP2A6 POLYMORPHISMS: GENE-GENE INTERACTION AND NICOTINE METABOLISM

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CYP2B6 metabolizes nicotine and many therapeutic drugs. In this study, we have investigated four CYP2B6 amino acid changing polymorphisms (R22C, Q172H, K262R and R487C) in 212 healthy Caucasian adult twin volunteers (mean age 41.3 years, 72.2% female) in an in vivo nicotine metabolism study of adult twins. We observed that the variant genotype at CYP2B6 K262R was associated with significantly faster nicotine clearance (R/R=65%; R/K=93%; K/K=98%) and that, compared with 262 K/K subjects, individuals carrying one or two variant 262R alleles showed faster cotinine clearance (p<0.005) and shorter cotinine half-life (p<0.007). These differences remained significant after adjusting for non-independence between twins in a pair using a bootstrap procedure. Furthermore, we observed statistically significant gene-gene interactions between CYP2B6 polymorphisms at sites Q172H and K262R and CYP2A6 genotypes. We found that among the slower CYP2A6 metabolizers, the CYP2B6 variant genotypes were associated with shorter cotinine half-life (p<0.01) and faster nicotine (p<0.005) and cotinine (p<0.022) clearance, whereas no difference was seen among individuals with normal CYP2A6 activity. These results strongly indicate that genetic variation at CYP2B6 plays an important role in the in vivo metabolism of nicotine and cotinine but only among individuals with reduced CYP2A6 activity. This is the first investigation of CYP2B6 genotype and nicotine metabolism in vivo. Our results suggest that variants at CYP2B6, along with CYP2A6, should be further investigated for their potential role in mediating individual susceptibility to nicotine dependence.

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PA5-1

EFFECT OF NITRIC OXIDE SYNTHASE INHIBITORS IN NICOTINE DEPENDENT RATS

Raka Jain*,1 K. Mukherjee, and D. Mohan

The study examined the effects of nitric oxide synthase (NOS) inhibitors namely L-NG-nitroarginine (L-NNA), L-NG-nitroarginine methyl ester (L-NAME) and L-NG-nomonethylarginine (L-NMMA) on mecamylamine precipitated nicotine withdrawal signs. Male Wistar rats were rendered dependent on nicotine by subcutaneously infusion of nicotine via 7 day osmotic pump, whereas control rats received saline via osmotic pumps. Test doses (1, 3, 10, 30, mg/kg, IP) of each NOS inhibitor was administered 1 hr prior to mecamylamine (1mg/kg) challenge in both nicotine and saline treated rats on the 7th day. Somatic signs of withdrawal were scored for 20 mins. by using the global Geller- Holtzman rating scale. Comparison of the NOS inhibitors showed that L-NAME was most potent inhibitor than L-NNA and L-NMMA in attenuating individual behavioral signs viz. ptosis, abnormal posture, erection with increasing doses. Individual signs like diarrhea and escape attempts were completely suppressed by the NOS inhibitors except diarrhea at low doses of L-NMMA. Irritability was significantly reduced at high doses whereas no reduction in face fasciculation was observed. Weight loss was not observed at all doses of NOS inhibitors. Animals treated with all the NOS inhibitors showed decrease on the global withdrawal scores as compared to control rats in dose dependent manner. The decrease was 68%, 84%, 100%, 98% for L-NAME, 55%, 67%, 71%, 93% for L-NNA and 54%, 59%, 59%, 65% for L-NMMA at doses 1, 3, 10, 30 mg/kg respectively. These results indicate that NO plays an important role in the expression of behavioral signs of nicotine withdrawal syndrome and suggest the potential use of NOS inhibitors as aids in tobacco smoking cessation.

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PA5-3

FREQUENCIES OF ALLELIC VARIANTS OF CYSP2B6, AN ENZYME WHICH INACTIVATES NICOTINE AND ACTIVATES BUPROPION, AMONG DIFFERENT ETHNIC GROUPS

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The human enzyme CYSP2B6 metabolizes numerous drugs; for example it is involved in the metabolic inactivation of nicotine with CYP2A6. CYSP2B6 also metabolically inactivates propofol and efavirenz and metabolically activates bupropion. Genetic variation in CYSP2B6 is predicted to alter the metabolism of these drugs and their resulting pharmacological actions. It has been shown that smokers in a bupropion smoking cessation trial with the genetic polymorphism in exon9 (C1459T; R478C) experienced greater increases in cravings for cigarettes and were more likely to relapse (Lerman et al. 2002). We developed a genotyping assay for this variant and found that the genotype frequency differed between two ethnic groups. In Caucasians (N=281) the genotype frequencies were 75.8% (CC), 22.8% (CT) and 1.4% (TT) while in African Americans smokers (N=115) the T allele frequency was lower (p<0.001) resulting in differing genotype frequencies (p<0.001) of 94.7% (CC), 5.3% (CT) and 0% (TT). In addition it has been found that the allelic variant CYSP2B6*6, resulting from changes in exons (G316T; Q172H) and exon5 (A785G; K262R), is associated with lower hepatic protein levels. HIV patients homozygous for CYSP2B6*6 had higher efavirenz plasma concentrations (Tsuchiya et al. 2004). We have successfully developed a genotyping assay for the two variants in CYSP2B6*6 and will use this to determine its frequency among different ethnic groups and its impact on nicotine metabolism and smoking behaviours.

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PA5-4  NICOtINE METABOLITES: MARKERS OF CYP2A6 GENOTYPE AND SMOKING LEVELS IN CURRENT SMOKERS

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In humans CYP2A6 inactivates the majority of nicotine to cotinine. Cotinine is subsequently converted to 3-hydroxycotinine specifically by CYP2A6. We investigated which nicotine and metabolite plasma measurements were most closely related to CYP2A6 genotype and levels of smoking. We assessed demographic and smoking histories in 155 Caucasian smokers, measured carbon monoxide (CO) levels and determined plasma nicotine, cotinine and 3-hydroxycotinine by HPLC and CYP2A6 genotypes by PCR. The 3-hydroxycotinine/cotinine ratio is reported to be a good marker of CYP2A6 activity. Similarly we found the log 3-hydroxycotinine/(nicotine+cotinine) ratio was most correlated with CYP2A6 genotype (r=0.34, p<0.001). Inclusion of the new CYP2A6*12 allele strengthened the correlation (r=0.43, p<0.001) suggesting that the identification of novel alleles will continue to improve this relationship. Cigarettes/day was most closely related to CO (r=0.60, p<0.001) followed by plasma cotinine (r=0.53, p<0.001) while plasma cotinine was most strongly correlated with CO levels (r=0.74, p<0.001) confirming that cotinine is a good indicator of smoking levels. Nicotine metabolism is also slower in smokers and we have shown that CYP2A6 is down-regulated by nicotine in monkeys. We were interested in whether higher levels of plasma nicotine would increasingly reduce CYP2A6. Plasma nicotine levels were inversely correlated with log 3-hydroxycotinine/(nicotine+cotinine) (r=-0.38, p<0.001) suggesting that as plasma nicotine in smokers increases it results in a greater reduction in CYP2A6 activity. These findings suggest that the log 3-hydroxycotinine/(nicotine+cotinine) ratio has utility as a marker of CYP2A6 genotype and activity, and that nicotine may inhibit or down-regulate its own metabolism in current smokers. CIHR-MOP53248, CRiChar(RPT), OGS(SQ), CIHR-STPVR(VM).

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PA5-5  ADOLESCENT NICOtINE METABOLISM: ETHNIC DIFFERENCES AMONG CESSATION TREATMENT SEEKERS

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Variations in nicotine metabolism are thought to contribute to reported differences in cigarette consumption between African Americans and European Americans. To investigate the potential mechanism of previously documented lower tobacco consumption among African American teenage smokers seeking cessation treatment, we measured nicotine metabolite ratios as markers of the metabolic disposition of nicotine, which is generally considered to be under the influence of CYP 2A6. Plasma ratios of 3 hydroxycotinine (SHC) to cotinine were examined at baseline (prior to treatment randomization) in a three-arm clinical trial investigating the efficacy of the nicotine patch and gum versus placebo. Ninety-two treatment seeking adolescents (mean age 15.2 SD 1.3, 70% female, 31% African American, mean Fagerström Test for Nicotine Dependence 6.5, SD 1.6, mean years smoked 2.6 SD 1.6) were analyzed. The groups were similar in age and gender distribution, as well as mean FTND score (p>0.128). Analysis using independent t-tests revealed significantly lower number of cigarettes per day (CPD) (14.8 SD 7.7 vs. 19.6 SD 7.9; p=0.008) and nicotine metabolite ratios (0.27 SD 0.15 vs. 0.35 SD 0.16; p=0.035) in African American, compared to European American, adolescent smokers. While our findings require confirmation in a larger multiethnic sample of adolescent smokers, they offer a putative mechanism for previously reported ethnic differences in cigarette consumption. Our results further underscore the need for measures independent of CPD to compare degree of nicotine dependence across ethnicity, even among youths. Supported by NIDA Intramural Funds.

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PA5-6  DETERMINANTS OF RATE OF NICOTINE METABOLISM AND EFFECTS ON SMOKING BEHAVIOUR

Elaine Johnstone*, Ph.D., Neal Benowitz, M.D., Anna Carrigl, M.Sc., Patricia Yudkin, Ph.D., Robyn Jacob, B.Sc., Lesley Hinks, FIMLS, Ian Day, Ph.D., Mike Murphy, M.Sc., and Robert Walton, M.D., University of Oxford, University of Southampton and University of California, San Francisco

Evidence from genotypic studies on cytochrome P450 2A6 (CYP2A6) suggests rate of nicotine metabolism affects cigarette consumption. However, known alleles of CYP2A6 associated with fast or slow metabolism are relatively rare in the population, whilst there remains considerable variation in metabolic activity amongst those with wild type CYP2A6 alleles, suggesting that other factors are involved. We investigated determinants of rate of nicotine metabolism and its effects on smoking behaviour in a UK cohort who participated in a trial of smoking cessation using nicotine replacement therapy. Those who continued to smoke at 8-year follow up formed our study group (n=502). A ratio of the nicotine metabolites 3-hydroxycotinine/cotinine was used as an index of CYP2A6 activity, and thus a marker of rate of nicotine metabolism. Nicotine metabolic ratio was associated with gender (p<0.0001), CYP2A6 genotype (*2 or *4 vs. *1) (p<0.001), CYP2B6 haplotype (*4 dominant vs. all others) (p<0.008) and plasma nicotine (p<0.001), but unaffected by age (p=0.1) and dependence score (p=0.2). The rate predicted number of cigarettes smoked per day after controlling for age and sex (F [1, 493] = 4.76, p = 0.029), and also predicted serum cotinine (F [1, 493] = 58.3, p=0.0001) and cotinine per cigarette (F [1, 484] = 17.32, p=0.001). The rate of nicotine metabolism is related to gender. CYP2A6 and CYP2B6 genotype, and affects level of tobacco consumption, intensity of smoking and hence nicotine intake.

This study was funded by Cancer Research UK and USPHS grant DA02277 from the National Institute on Drug Abuse.

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PA5-7  EFFECTS OF MENTHOL ON NICOTINE’S PHARMACOLOGICAL ACTIONS AND ELIMINATION IN MICE

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Some cigarettes brands contain menthol as a flavoring agent. However, the effect of menthol on nicotine actions and pharmacokinetic properties are unknown. Recently, MacDougall et al (2003) reported that (-)-menthol inhibits microsomal nicotine oxidation. In this study we evaluated the pharmacological interaction between (-)-menthol and nicotine in several in vivo tests. Male ICR mice received (-)-menthol (s.c.) at different doses 30 min before treatment with nicotine (2.5 mg/kg, s.c.). The antinociceptive (tail-flick and hot-plate tests) and hypothermic effects were measured at different times after nicotine. (-)-Menthol extended the duration of nicotine’s effects (180 min after nicotine injection) compared to control group (45 min) in all tests. This enhancement in nicotine’s effects was dose-dependent and was blocked by a pretreatment with mecamylamine, a nicotinic antagonist. In addition, the shift in pharmacological activity of nicotine correlated with a parallel shift/increase in nicotine plasma levels. Surprisingly, no significant changes in cotinine levels were observed. Furthermore, (-)-menthol and (+)-neomenthol, two inhibitors of in vitro nicotine metabolism with higher potency than (-)-menthol, did not enhance nicotine’s pharmacological effects. These results suggest that in vivo inhibition of CYP2A enzymes by (-)-menthol does not fully account for the increase of nicotine plasma levels and its pharmacological effects in mice. Our studies can further aid in the development of new strategies in smoking cessation.

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Bernard Le Foll* and Steven R. Goldberg
Sharon Miksys*, Ph.D., and Rachel F. Tyndale, Ph.D., CAMH, University of Toronto
digans and support the proposed use of Rimonabant for smoking cessation.
These findings suggest that biased procedures may be more suitable than unbi-
cannabinoid CB1 receptor antagonist) blocked the expression of nicotine-induced
preferred side. Acute administration of 1 or 3 mg/kg SR141716 (Rimonabant, a
compartments. A final test trial with no injection assessed final place preference.
we first developed a conditioned place preference (CPP) procedure. CPP occurs when
the ability of that environment to elicit approach behavior and increased time con-
ting regime that induces brain but not liver CYP2B1. C8-xanthate showed a 2-fold reduction in 3H-metabolite,
demonstrating the selectivity of 8-MOP for CYP2B1. This is the first demonstration that constitutive and induced brain CYPs are functional in vivo.
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PAPER SESSION 6

PA6-1

Nicotine Conditioned Place Preferences in Rats: Influence of Nicotine Dose, Stimulus Assignment Procedure and Cannabinoid CB1 Receptors

Bernard Le Foll* and Steven R. Goldberg

Since cannabinoid CB1 receptors are expressed in brain reward areas, CB1 lig-
ands may be useful for smoking cessation. To validate this hypothesis, we have
first developed a conditioned place preference (CPP) procedure. CPP occurs when
repeated exposure to the effects of a drug in one particular environment results in
the ability of that environment to elicit approach behavior and increased time con-
tact (place preference) in the absence of the previously administered drug. We first
assessed the influence of nicotine dose and stimulus-assignment procedure on
development of nicotine-induced CPP. Initial preferences for one side of a two-
compartment apparatus were first determined in Sprague-Dawley rats. In subsequent conditioning trials, the compartment paired with nicotine was the ini-
tially preferred side for half of the rats, and the initially non-preferred side for the
other half. Rats received either an injection of nicotine (0.01-2 mg/kg s.c.) before
being placed in one compartment (3 trials) or saline before being placed in the
other compartment (3 trials). Control rats had saline injections associated with both
compartment. A final test trial with no injection assessed final place preference.
Significant CPP were induced by 0.1 to 1.4 mg/kg doses of nicotine. Nicotine-
induced CPP were only apparent when nicotine was paired with the initially non-
preferred side. Acute administration of 1 or 3 mg/kg SR141716 (rimonabant, a
cannabinoid CB1 receptor antagonist) blocked the expression of nicotine-induced
CPP (P<0.05), without affecting locomotor activity of cannabinoid-conditioned rats.
These findings suggest that biased procedures may be more suitable than unbi-
assembled procedures for evaluation of rewarding effects of nicotine using CPP para-
digms and support the proposed use of rimonabant for smoking cessation.

NIDA-IRP, NIH, DHHS.

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PA6-2

Allelic Variants Within the GabaR Receptor Subunit 2 (GABAB2) Gene Are Significantly Associated with Nicotine Dependence

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We tested 12 single nucleotide polymorphisms (SNPs) in the GABAB receptor subunit 2 (GABAB2) gene for association with nicotine dependence (ND) in 1400 smokers and non-smokers representing approximately 600 nuclear families of African-American or Caucasian-American origin. The GABAB2 gene is a subunit of the GABAB receptor for GABA, a primary inhibitory neurotransmitter, involved in the regulation of many physiological and psychological processes in the brain. The gene is located within a region on chromosome 9q22 that showed significant link-

age in our previous genome-wide screening for ND. Association analysis for indi-
vidual SNPs using the PBAT-GEE program indicated five African-American and three Caucasian-American SNPs within the GABAB2 gene were significantly associated with ND. Interestingly, the exonic SNP rs3750344 showed highly sig-
ificant association with smoking-related phenotypes across Caucasian- (P = 0.000015) and African-American samples (P = 0.0178). Subsequent haplotype analysis using FBAT revealed an ethnic-specific haplotype that was positively or negatively associated with smoking-related phenotypes in the African- or Caucasian-American samples, respectively. The GABAB2 gene appears to play a significant role in the etiology of ND and represents a critical biological candidate for further investigation of smoking behavior.

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PA6-3

Performance of Alpha7 Nicotinic Null Mutants is Impaired in Appetitive Learning

Jeanne M. Wehner*, Ph.D., Jason Keller, B.S., Ashleigh. Keller, B.S., and Barbara J. Bowers, Ph.D., University of Colorado

Nicotine enhances learning and memory measured in a variety of paradigms across a number of species. Little is known concerning which nicotinic cholinergic receptors (nAChRs) participate in the regulation of learning and memory. The most highly expressed nAChRs in mammalian brain are alpha4beta2* and alpha7 recep-
tors. A role of for beta2-containing nAChRs in regulating some forms of learning has been established in the laboratories of Changeux, Picciotto, and Stoleraman using null mutants. The role for alpha7-containing nAChRs in some forms of learn-
ing has been less clear. Our previous work indicated that alpha7 receptors were not necessary for contextual learning, but there are multiple forms of memory. We examined appetitive learning using a signaled nose poke task in alpha5, alpha7, beta2, beta3, or beta null mutant mouse lines. All mutant mice performed normally in early stages of training. As task complexity increased, the alpha7 mutants were impaired compared to wild types when the auditory cue was delivered on a vari-
able schedule. Mutants lacking alpha5, beta2, beta3, or beta4 subunit expression performed normally. Although a7 mutant performance eventually equaled that of wild types by 10 days of training, mutants continued to show increased impulsivity in that they were less efficient that wild types in learning to withhold their respons-
es until the presentation of the auditory cue to receive a reward. These results agree with the recent results of Young et al. (Neuropsychopharmac. 2004; 29: 891-
900) and demonstrate that alpha7 receptors are important learning tasks that have
a large attentional component.

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PA6-4
SUBCHRONIC NICOTINE EXPOSURE ENHANCES REWARD-RELATED LEARNING, POTENTIALLY VIA DESSENSITIZATION OF THE HIGH AFFINITY BETA-2-SUBUNIT CONTAINING ACETYLCHOLINE RECEPTORS

Darlene H. Brunzell*, Jessica R. Chang, Brandon Schneider, Peter Olausson, Jane R. Taylor, and Marina R. Picciotto

Repeated exposure to nicotine results in neuronal plasticity that is thought to support behaviors that are related to addiction. Studies in rats have indicated that subchronic nicotine exposure potentiates the reinforcing properties of conditioned stimuli associated with reward. The current work utilized knockout mice (b2KO) lacking the high affinity, beta 2 subunit-containing nicotinic acetylcholine receptors (b2nAChR) to determine a role for these receptors in nicotine-dependent neural plasticity that supports reward-related learning. Animals were tested on Pavlovian conditioned approach, instrumental learning and conditioned reinforcement. b2KO mice and their wild type controls (WT) received 2 weeks exposure to 200 μg/mL nicotine plus 2% saccharin (NIC) or 2% saccharin alone (SAC) in their drinking water. Five days following treatment, subjects were trained on Pavlovian conditioned approach task and subsequently tested in an instrumental learning task. Although animals did not differ in terms of Pavlovian conditioned approach behavior, prior nicotine exposure in WT mice enhanced responding in the active nosepoke during the test of conditioned reinforcement. b2KO mice also showed facilitated responding for the CS in comparison to WT b2nAChR subjects. Nicotine treatment did not further enhance conditioned reinforcement in b2KO mice suggesting that the absence of the receptor was sufficient to produce this effect. There was no effect of treatment or genotype on instrumental learning. These data suggest that desensitization of the b2nAChRs may contribute to nicotine-dependent enhancement of conditioned reinforcement processes.

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PA6-5
POLYMORPHISMS OF THE GENES CODING FOR THE ALPHA-4 AND BETA-2 SUBUNITS OF NICOTINIC RECEPTORS AND SMOKING BEHAVIOR, DEPRESSION AND ANXIETY

Jean-Francois Etter*, Elisabeth Neidhart, Alain Malafosse, Catherine Buresi, Sonia Bertrand, and Daniel Bertrand

AIM: To assess whether smoking behavior was associated with polymorphisms of the genes coding for the alpha-4 and beta-2 subunits of nicotinic receptors (CHRNA4 and CHRNA2), and whether these associations were modulated by depression, Neuroticism (from Eysenck’s Personality Questionnaire) and Novelty Seeking (from Cloninger’s Temperament and Character Inventory).

METHODS: Internet survey and collection of saliva by mail for analysis of DNA and cotinine, in Switzerland in 2003.

RESULTS: Questionnaires were answered by 392 current (58%), former (38%) and never smokers (4%), and 315 participants (80% of 392) provided saliva samples. We conducted DNA analyses in 235 participants and cotinine analysis in 141 daily smokers. Polymorphisms of the CHRNA4 and CHRNA2 genes were not associated with smoking behavior, cotinine levels, Neuroticism, Novelty Seeking and CES-D depression scores. However, participants with the CC genotype of the exon 5 C856T polymorphism of CHRNA4 were more likely than participants with the CT genotype to “often feel sad or depressed” (which is a screening question for depression, 23.2% vs 8.6%, p=0.05), and they had higher scores on the Depression/Anxiety subscale of the Cigarette Withdrawal Scale (mean=1.82 vs 1.35 on a 1-5 scale, p=0.004). These associations were statistically significant in current smokers, but not in never and former smokers.

CONCLUSIONS: Compared to the CT genotype of CHRNA4, the CC genotype was associated with more symptoms of depression and anxiety, and there was a possible interaction with smoking status.

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PA6-6
PHARMACOLOGY OF THE BIS-PICOLINIUM ANALOG, bPiDDB: A LEAD COMPOUND IN THE DEVELOPMENT OF NOVEL SUBTYPE-SELECTIVE NICOTINIC RECEPTOR ANTAGONISTS AS TREATMENTS FOR SMOKING CESSATION

Linda P. Dwoskin*, Ph.D., Sangeetha P. Sumilhan, Ph.D., Nichole M. Neubauer, B.S., Guangrong Zhou, Ph.D., Gabi Dendara, B.S., Peter A. Crooks, Ph.D., and Michael T. Bardo, Ph.D., University of Kentucky

Based on the structure of the classical nicotinic receptor (nAChR) antagonists, decamethonium and hexamethonium, we have synthesized and began to evaluate the neuropharmacology and behavioral pharmacology of a series of bis-quaternary picolinium analogs with varying n-alkyl chains as linkers. Thus far, the most potent and selective nAChR antagonist was the C12 analog, N,N-dodecane-1,12-diyil bis-3-picolinium dibromide (bPiDDB). Using superfused rat striatal slices, bPiDDB inhibited nicotine-evoked [3H]dopamine release (rC50 = 2 nM, Imax = ~65%), while producing no effect on dopamine release on its own (i.e., no intrinsic activity). Furthermore, the inhibitory effect of bPiDDB was not due to either a partial agonist effect or to the ability of the analog to desensitize the receptor prior to nicotine exposure. Also, bPiDDB appears to be selective for the nAChR subtype mediating nicotine-evoked dopamine release, as bPiDDB did not inhibit field stimulation-evoked dopamine release, dopamine transporter function, nor the binding of either [3H]nicotine or [3H]methyllycaconitine to rat brain membrane preparations. Preliminary results from our assessment of the behavioral pharmacology of bPiDDB showed that administration of bPiDDB decreased nicotine-stimulated locomotor activity and decreased i.v. nicotine self-administration in rats across a 60 min session. The decrease in nicotine self-administration was obtained at a dose of bPiDDB (3 mg/kg) that did not alter sucrose-reinforced responding, suggesting that bPiDDB selectively decreases nicotine reward.

This study was conducted while the first author was at the University of Kentucky. Supported by NIH grant DA 017548.

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PA6-7
AGRAIN AND DEVELOPMENTAL PLASTICITY: ACUTE AND CHRONIC EFFECTS ON cFOS EXPRESSION IN HIPPOCAMPAL AND CORTICAL NEURONS

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Agrin is a proteoglycan similar to extracellular matrix and secreted proteins. It is known that agrin induces changes of nicotinic acetylcholine receptors (nAChRs) such as aggregation and stabilization on membranes at both neuromuscular and CNS levels. The mechanisms through which agrin induces its CNS effects are not completely elucidated yet. The aim of this study is to investigate acute and chronic agrin effects on cFos expression in embryonic hippocampal and cortical neurons. Hippocampal and cortical cultures were prepared from 16-day rat embryos and treated with agrin: i) acute, one application at 0.5 (only hippocampal), 5, 50 or 500 μM; ii) chronic, four once-a-day applications at same concentrations as in i). Two hours after last application, cultures were processed for cFos and MAP-2 (neurotubulin marker) double immunofluorescence staining and examined for quantification at confocal microscopy. Acute agrin induced a small but not-significant effect on cFos expression in both neuronal and glial cells. Chronic agrin induced a significant increase of cFos expression in cortical, but not in hippocampal neurons, after the 4-day 500 μM/day treatment regime. Since cFos is a marker of metabolic and transcription factor activations, we hypothesize that agrin may regulate neuronal plasticity during development. It is speculated that these agrin effects may be mediated in the CNS, as it is in the muscle, through nAChRs expressed on neuronal membranes. Different nAChRs expression patterns on hippocampal and cortical neurons may explain for the different chronic effects of agrin on cFos expression.

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PA7-1

ALCOHOL USE AND SMOKING OUTCOMES AMONG HEAVY DRINKERS IN SMOKING CESSATION TREATMENT

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Although heavy alcohol use commonly co-occurs with smoking and is associat-ed with low rates of smoking cessation in community samples, little work has been conducted to examine, among smokers who drink heavily, how alcohol use changes during smoking cessation treatment and what relation alcohol use has to smoking relapse risk. Methods. We analyzed outcomes of 67 adults, who were heavy drinkers but were not alcohol dependent, in a smoking cessation trial involving combined counseling and nicotine patch. Results. Biochemically-confirmed 7-day point-prevalence smoking abstinence at posttreatment (8 weeks) was 40%. Higher alcohol use at baseline was associated with lower smoking abstinence. Conclusion: Lower alcohol use at baseline was associated with greater smoking abstinence.

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PA7-2

MOTIVATIONAL AND CONTINGENCY INTERVENTIONS FOR UNMOTIVATED SMOKERS IN SUBSTANCE ABUSE TREATMENT

Damaris Rohsenow*, Ph.D., Rosemarie Martin, Ph.D., Jennifer Tidy, Ph.D., Peter Monti, Ph.D., and Robert Swift, M.D., Ph.D., Brown University Medical School

RATIONALE: Substance abusers in treatment are largely not motivated for smoking cessation. Motivational Interviewing (MI), Brief Advice (BA) and contingency management for smoking abstinence (CM) are all methods that might increase willingness to quit smoking. Two studies were conducted to investigate these interventions with alcoholics and with substance abusers.

METHODS: Patients in residential treatment were recruited to receive information about smoking, without needing to quit to participate, then were randomized to MI or BA (1 to 4 sessions based on study). Substance abusers were also randomized to CM or NR for 19 days. CM used a 5-day reduction phase plus a 14-day abstinence phase, with 2/day CO monitoring. Follow ups were at 1, 3, 6 and 12 months with CO or cotinine confirmation.

RESULTS: Alcoholics (n = 175): Smoking abstinence (confirmed 7-day point prevalence) was nonsignificantly better at 1, 3, and 6 months and significantly better at 12 months for BA versus MI. Substance abusers (n = 187): Quit rates were only 2% at 1 month compared to 15% for the alcoholics. Only 15% had 90% of readings abstinent, and this only occurred for those who used the reduction period to cut down by > 75%. No interventions harmed substance use outcomes.

SIGNIFICANCE: BA is a cost-effective way to increase smoking quit attempts among alcoholics relative to historical controls. CM needs to be modified for these hard-to-treat patients so more patients contact the interviewer, especially during the reduction phase.

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PA7-3

AN RCT OF A SMOKING CESSATION INTERVENTION AMONG THE METHADONE-MAINTAINED

Michael D. Stein*, M.D., Marjorie C. Weinstock, Ph.D., Erin E. Richard, Bradley J. Anderson, Ph.D., and Raymond Niaura, Ph.D., Brown Medical School

OBJECTIVE: To test, in combination with the nicotine patch, the incremental effi-ciency of a maximal, tailored behavioral treatment over a minimal treatment.

METHODS: Between 100/1 and 5/04, smokers were enrolled at 5 methadone maintenance programs. Smokers were randomly assigned to nicotine patch (8-12 weeks) plus either, 1) a baseline tailored motivational intervention, a quit date behavioral skills counseling session, and skills follow-up session (up to 3 visits), or 2) brief advice (NCIs 4 As model). An intent-to-treat analysis was performed with those lost to follow-up assumed to smoke was used. Primary outcome was confirmed 7-day point smoking cessation prevalence at 8 weeks.

RESULTS: The 381 smokers included a range of 40 years, were 53% male, 78% Caucasian, smoked 26.5 cigarettes/day and had a mean methadone dose of 95.5mg. At 1, 2, and 3 months, 31% (83%) were re-interviewed; 14.7% of the maximal group and 6.1% of the minimal group were lost to follow-up (p = .338). The 7-day point prevalence estimate of cessation was 5.8% in the maximal group, and 8.4% in the minimal group (p = .325). In a logistic model with treatment condition, age, gender, race, FTND and COGIDS as covariates only gender was significant; males were more likely to be abstinent (OR 3.74; p = .010). The first-order gender by treatment interaction effect was marginally significant (p = .074) and suggested that treatment was more beneficial to females.

CONCLUSION: A tailored behavioral intervention did not increase quit rates over patch and minimal treatment. The quit rates in this population are low. Although men had greater success, women responded more favorably to the maximal intervention.

National Cancer Institute.

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PA7-4  ECOLOGICAL MOMENTARY ASSESSMENT OF ALCOHOL-TOBACCO INTERACTIONS AFTER CONCURRENT ALCOHOL-TOBACCO TREATMENT
Ned Cooney*, David Pilkey, Howard Steinberg, Judith Cooney, Mark Litt, and Cheryl Oncken, Yale University, University of Connecticut, and VA Connecticut Healthcare System

The primary aim of these analyses was to examine alcohol-tobacco interactions among participants in a trial of concurrent alcohol and tobacco treatment.

METHODS: Alcohol dependent smokers enrolled in a substance abuse day treatment program were randomized to one of two concurrent smoking treatment conditions: intensive behavioral counseling plus nicotine patch, or brief smoking cessation advice. For 14 days after discharge from treatment, participants completed Ecological Momentary Assessments (EMA) of mood, self-efficacy, urges to drink or smoke, and drinking and smoking behavior using a hand-held computer that signaled them for assessment at quasi-random intervals. They also completed assessments on the hand-held computer before and after smoking episodes.

RESULTS: Among continuing smokers, EMA data revealed a modest increase in alcohol urge from pre to post smoking episodes. This finding was consistent with laboratory studies of cross substance cue reactivity in which smoking cues were found to elicit urges to drink in alcohol dependent smokers. Proximal predictors of alcohol and tobacco relapse episodes were examined using EMA assessments obtained in the hours prior to the reported first use. Drinking relapse episodes were predicted by high ratings of self-efficacy to resist drinking and, surprisingly, high ratings of urge to smoke. Smoking relapse episodes were predicted by high urge to smoke and high ratings of negative, high arousal mood.

CONCLUSIONS: Cigarette cravings may be a useful marker of imminent vulnerability to smoking or drinking relapse and may be an important target for intervention.

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PA7-5  CROSS-SECTIONAL COMPARISON OF NEUROCOGNITIVE FUNCTION IN SMOKERS AND NON-SMOKERS WITH SERIOUS MENTAL ILLNESS
Kristi A. Sacco, Aneteto Termine, Melissa Dudas, Taryn Allen, Rebekka S. Simonsen, Andrea H. Weisberger, Jennifer C. Vessicchio, and Tony P. George*

Numerous studies have suggested higher rates of cigarette smoking in persons with serious mental illnesses (SMIs) such as schizophrenia, bipolar disorder and major depression compared to the general population. One potential factor that may predispose SMIs to smoking are neurocognitive deficits, which constitute an endophenotype associated with these illnesses, and in the case of schizophrenia may be altered by smoking. The present study sought to characterize neurocognitive performance amongst smokers and non-smokers with SMIs matched on key brain domains.

METHODS: A dataset of 114 patients with schizophrenia who participated one of two trials of bupropion for smoking cessation was used. A univariate screen was used to select variables strongly associated with smoking cessation in this sample. A stepwise forward selection was run on the variables significantly associated with outcome on univariate screen using a cutoff of significance of p=0.01 for selection. A bootstrap analysis was then used to validate the analysis.

RESULTS: Bupropion, Positive and Negative Symptom Scale total score, cognitive symptom subscale and positive symptom subscale scores and Schedule for Assessment of Negative Symptoms alogia subscale score were significantly associated with abstinence on univariate analysis. In the multivariable model, controlling for bupropion treatment, the cognitive symptom subscale score was significantly associated with abstinence such that for every one point increase (worsening) in the score, the odds ratio for achieving abstinence was 0.6 (95% CI: 0.42-0.86), p=0.005. The odds ratio of abstinence for those on bupropion, controlling for cognitive compared to those on placebo was 5.8 (9.94-36.4), p=0.006.

CONCLUSION: Cognitive disorganization decreased the odds of abstinence controlling for bupropion treatment. Treatments that reduce cognitive symptoms in patients with schizophrenia may improve smoking cessation rates.

NARSAD Young Investigator Award NIDA K23.

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PA7-6  PREDICTORS OF SMOKING CESSION IN PATIENTS WITH SCHIZOPHRENIA
A. Eden Evins, M.D., Coni Cathcer, Ph.D., Melissa Culhane, M.P.H., Don Golf, M.D., and Nancy Rigotti, M.D.

BACKGROUND: The smoking cessation rate in patients with schizophrenia is low. The aim of this analysis was to create a model that will identify factors associated with tobacco abstinence in patients with schizophrenia. It is hoped that this information will be useful to clinicians who are attempting to optimize clinical treatment prior to recommending a smoking cessation attempt.

METHODS: A dataset of 114 patients with schizophrenia who participated one of two trials of bupropion for smoking cessation was used. A univariate screen was used to select variables strongly associated with smoking cessation in this sample. A stepwise forward selection was run on the variables significantly associated with outcome on univariate screen using a cutoff of significance of p=0.01 for selection. A bootstrap analysis was then used to validate the analysis.

RESULTS: Bupropion, Positive and Negative Symptom Scale total score, cognitive symptom subscale and positive symptom subscale scores and Schedule for Assessment of Negative Symptoms alogia subscale score were significantly associated with abstinence on univariate analysis. In the multivariable model, controlling for bupropion treatment, the cognitive symptom subscale score was significantly associated with abstinence such that for every one point increase (worsening) in the score, the odds ratio for achieving abstinence was 0.6 (95% CI: 0.42-0.86), p=0.005. The odds ratio of abstinence for those on bupropion, controlling for cognitive compared to those on placebo was 5.8 (9.94-36.4), p=0.006.

CONCLUSION: Cognitive disorganization decreased the odds of abstinence controlling for bupropion treatment. Treatments that reduce cognitive symptoms in patients with schizophrenia may improve smoking cessation rates.

NARSAD Young Investigator Award NIDA K23.

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PA7-7  THE EFFECTS OF NICOTINE UPON BRAIN ACTIVITY AND NEUROCOGNITION IN SCHIZOPHRENIC SMOKERS
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Approximately 90% of schizophrenics (SC) smoke compared with rates of less than 25% in the general population in the United States. The rate of smoking in SC is much higher than that in other severe mental illnesses, and neither substance abuse, institutionalism nor antipsychotic use can account for this high rate. We hypothesize that nicotine compensates for a deficit in frontal lobe function and hypometabolism in SC. In this study we examined the neuronal circuitry involved in the effects of nicotine and of nicotine withdrawal via Fluorodeoxyglucose (FDG) Positron Emission Tomography (PET). Comprehensive neurocognitive evaluations and mood ratings were also obtained. Subjects were scanned twice following overnight abstinence from nicotine while wearing a 21 mg nicotine patch, and once while wearing a placebo patch. The CPT was used as the activation task. Thus far 10 SC smokers and 19 normal controls (NC) smokers have been assessed. In the withdrawal condition the SCs demonstrated broad bilateral reductions as compared to the NCs, consistent with the well-established pattern of hypoactivity in SC. Following nicotine administration, there were no significant changes in brain activity for the NCs. Conversely, SCs reacted dramatically to the nicotine significantly enhanced memory in the SCs. By elucidating the specific brain mechanisms involved in nicotine and schizophrenia, it is hoped that new treatments may be developed to aid smoking cessation in SC.

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**PA8-1**

**CURRENT CIGARETTE SMOKING AMONG NON-HISPANIC BLACKS AND WHITES—UNITED STATES, 1965-2001**

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While current smoking rates are similar among blacks (22.4%) and whites (23.6%) in the U.S., lung cancer incidence and death rates are consistently higher among black males. To assess trends in cigarette smoking among blacks and whites, National Health Interview Survey (NHIS) data were analyzed by age cohort and decade for the years 1965-2001. NHIS is a cross-sectional household, self-reported telephone interview survey of the U.S. non-institutionalized civilian population aged 18 and older. Sample sizes ranged from 89,345 in 1965 to 33,326 in 2001; median response rate was 87%. From the period 1965 to 2001, current smoking prevalence declined for all age cohorts for both blacks and whites. However, blacks (-50.4%) showed a greater overall decline compared to whites (-42.9%). A statistically significant prevalence decline occurred among blacks aged 18-24 years (from 46.6% in 1965 to 16.3% in 2001) compared to whites (from 40.0% in 1965 to 31.6% in 2001). Greatest contraction decline among blacks was within the younger strata; 45.0% for blacks aged 18-24 and 57.1% for blacks aged 25-44. Greatest decline among whites was within the older strata; 44.9% for whites aged 45+ and 48.1% for whites aged 45-64. Factors associated with these dramatic declines included culturally targeted prevention initiatives.

Dr. Morano conducted this study while at the Centers for Disease Control and Prevention, Atlanta, GA (May 2003) as an epidemiology elective student.

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PA8-4

EPIDEMIOLOGY OF SMOKING AMONG ADULTS IN ALEPPO-SYRIA: THE 1ST POPULATION-BASED ESTIMATES

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BACKGROUND: Despite the spread of smoking in Syria, population-based estimates of popular forms of smoking are still lacking. The Aleppo Houseold Survey (AHS) was conducted in 2004 in Aleppo among a representative sample of adults (18-65 years).

METHODS: A two-stage, stratified, cluster sampling was applied with probability proportional to size used for the selection of residential neighborhoods (PPS), and random sampling for the selection of households and adults within households. Overall, 2038 participated in the survey (45.2% men, mean age 35.3 yrs, response rate 94%). Participants were asked about tobacco use in the previous month categorized into cigarettes, waterpipe, daily and occasional.

RESULTS: Cigarette smoking was reported by 60% and 23.4% of men and women, respectively, while waterpipe smoking was reported by 19.7% and 6% of men and women, respectively. Other forms of smoking (cigar, pipe) were infrequent and reported by 1.1% of respondents. Frequency of smoking analysis shows the predominance of daily smoking for cigarettes (32.9% daily, 7.1% occasional), but the opposite for waterpipe (0.9% daily, 11.3% occasional). The age-related stratiﬁed analysis (18-29 yrs; 30-45 yrs; 46-65 yrs) shows that cigarette smoking was most common among the middle age group (65.3% for men and 32.3% for men and women, respectively), while waterpipe smoking was most common among the younger age group for men (28.3%) and younger and middle age groups for women (6%).

CONCLUSIONS: The presented ﬁgures point at the dramatic situation with smoking in Syria and highlight groups most likely affected to guide intervention efforts.

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PA8-5

NON DAILY MALE SMOKERS COMPARED TO DAILY SMOKERS

Dina Kamel*, Maged El-Setouhy, Mostafa Mohamed, Fatma Abdel-Aziz, Nabil Mikhail and Ebenezer Israel, Egyptian Smoking Prevention Research Institute

This study compares the epidemiology of smoking between daily smokers (DS) and non daily smokers (NDS) among males in rural Egypt. Household interview surveys were carried out in 9 villages in rural Egypt. NDS was defined as a person who had ever smoked 100 cigarettes and smoked fewer than 30 days within the past 30 days prior to the survey. Results: Among 4994 males interviewed, 1976 (38%) were current smokers and 975 (5.4%) of them were NDS and they were signiﬁcantly more likely to be younger and unmarried (p<0.05). The average age of trying to smoke and smoking a whole cigarette for DS was a year younger than for the NDS. On average, NDS smoked 15 days/month and smoked 7.8 cigarettes/day on the days they smoked for the past 6 years. In contrast DS smoked on average of 20.4 cigarettes/day for 11 years (P<.001). NDS are more likely to smoke water-pipe (51.1% versus 35.0% p<0.01) or quit in the next 12 months and find it easier not to smoke in public places where smoking is not allowed(p<.001). As regards rules of smoking at worksite, 17.8% of NDS versus 6.8% of DS reported a total ban. Conclusion: NDS differ signiﬁcantly from DS and may be more responsive to environmental tobacco control such as worksite restrictions. Longitudinal studies are needed to study the smoking patterns of NDS in depth.

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PA8-6

SMOKING IN CONTEXT – A MULTILEVEL MODEL OF SMOKERS AMONG PUBLIC SECTOR WORKERS IN Helsingi

Sakari Karvonen*, STAKES (National Research & Development Centre for Welfare & Health); Mikko Laaksonen, Pekka Martikainen, Ossi Rahkonen, and Petteri Sipiälä, University of Helsinki

Smoking appears to associate with disadvantage. As disadvantage tends to cluster spatially so that people with lower social status reside in less privileged areas, the extent of contextual influences to smoking remain unclear. The aims of this study were to describe the spatial patterning of daily smoking within the city of Helsinki, and to analyse by means of multilevel modelling whether there is contextual level variation, which spatial factors explain smoking patterns, and how these factors are associated with individual disadvantage. The Helsinki Health Study data were collected among municipal employees (age 40-60). The response rate was 68%. As almost 4/5 of the employees are females the analyses were restricted to 5028 women. Measures included smoking status, socio-demographic characteristics (age, social status, education, income, type of residence, family, marital status) and published oﬃcial statistical data describing areas. There was large area variation in smoking with current smoking rates varying between 14% and 39%. Unemployment level of the area and smoking were signiﬁcantly associated even after individual level composition was adjusted for. High unemployment of the area increased the risk of smoking by approximately 34%. The large variation in smoking rates between areas appears mainly result from variation in the characteristics of residents between areas. Yet, living in an area with a high level of unemployment appears to be an additional risk of smoking that cannot be fully accounted for by individual level characteristics. This study was supported by the Academy of Finland.

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PA8-7

SMOKING CESSION AND SMOKING REDUCTION IN A POPULATION-BASED COHORT

Montse Garcia*, Estève Schiaffino, Merce Peris, Jorge Twose, and Josep Maria Borras

OBJECTIVE: To study the incidence and determinants of smoking cessation as well as the predictors of smoking reduction in a population-based cohort from the North-East of Spain.

METHODS: We used data from the Cornell Health Interview Survey Follow-up Study (n=2,500). We analyzed subjects who declared they were daily smokers at baseline (1994) and had complete follow-up, with information on smoking status in 2002. The relative risks (RR) and 95% confidence intervals (CI) of smoking cessation were computed by means of Cox's regression. We considered as operational definition of reduction to reduce 10 cigarettes/day. We calculated the RR of smoking reduction vs. maintain or increase tobacco consumption and 95% CI by means of Breslow-Coxs regression.

RESULTS: The incidence quitting rate was higher in men (42.3/1,000 person-years) than in women (34.9/1,000 person-years) with a RR of quitting of 1.89 (95%CI:1.02-2.79). Age and educational level were associated with a higher RR of quitting in men. Smoking reduction was associated with being a smoker >20 cigarettes/day (RR=3.25; 95%CI:1.69-5.25) and individuals who declared having a suboptimal perceived health showed a threefold risk of reducing smoking (RR=3.93; 95%CI:1.52-9.43).

CONCLUSION: The main determinants of smoking cessation in this study were sociodemographic variables (sex, age, and educational level). Heavy smokers and smokers with poor health are those smokers more likely to reduce their tobacco consumption. Further follow-up of the cohort warrants the study of the potential impact of smoking reduction on cessation.

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**PA8-8**

**ACCUMULATION AND CLUSTERING OF HEALTH RISK BEHAVIOURS ACCORDING TO SMOKING STATUS**

Arnaud Chioler*, M.D., Vincent Wielibach, B.A., Christiane Ruffieux, Ph.D., Fred. Paccoud, M.D., M.P.H., and Jacques Cornuz, M.D., M.P.H., University Institute of Social and Preventive Medicine, Lausanne.

We examined accumulation and clustering of health risk behaviours according to smoking status in a general adult population. We used the data from the population-based Swiss Health Survey 2002, with 18617 participants aged 15 years old or more (8111 males, 10506 females). Cigarette smoking was categorised as light (1-9 cig/day), moderate (10-19 cig/day) or heavy (20 cig/day). The following self-reported health risk behaviours were considered: low physical activity (defined as no vigorous physical activity during leisure time), low fruits/vegetables intake (no daily intake), and high alcohol consumption (≥20 g/day for females and ≥40 g/day for males). For both sexes, the prevalence of low physical activity, low fruits/vegetables intake and high alcohol consumption were the lowest in non-smokers and ex-smokers and, among smokers, increased steadily across categories of cigarettes smoking. The odds ratio (OR) of cumulating at least two risk behaviours (adjusted for age, nationality and educational level) were 1.1 (95%CI: 1.0-1.3) for ex-smokers, 1.1 (0.9-1.4) for light smokers, 1.8 (1.4-2.2) for moderate smokers and 3.3 (2.8-3.8) for heavy-smokers compared to non-smokers in males. Similar OR were found in females, with corresponding figures of 1.1 (0.9-1.3), 1.3 (1.0-1.6), 1.7 (1.4-2.0), and 2.9 (2.5-3.5) respectively. The accumulation of risk behaviours appeared more frequently than expected (assuming behaviours as independent one from the other) indicating a clustering of risk behaviours. We concluded that counselling and intervention toward smokers should take into account the accumulation and clustering of health risk behaviours associated with number of cigarettes daily smoked.

The Swiss Health Survey is funded by the Federal Office of Statistics.

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**PA9-2**

**REPEATED EXPOSURE TO SMOKING WITHOUT NICOTINE**

Eric C. Donny*, Ph.D., Elizabeth Houtsrull, Ph.D., and Maxine L. Stitzer, Ph.D., Johns Hopkins University

Current evidence suggests that nicotine-associated stimuli may be a major determinant of smoking; however, virtually all research has focused on the acute effects of smoking stimuli and their role in short bouts of smoking. Here, we provide a detailed assessment of the effects of repeatedly smoking cigarettes without nicotine while participants resided on a residential research unit for thirteen days. After two days of preferred brand smoking, participants were randomly assigned to one of three smoking conditions for the remainder of the study: 1) No smoking, 2) Nicotine-free cigarettes (Quest 3; <0.05 mg nicotine), 3) Low-yield, nicotine-containing cigarettes (Quest 1; 0.6 mg nicotine). Multiple measures of the subjective, cognitive, physiological, and reinforcing effects of smoking/withdrawal were assessed during both naturalistic smoking and controlled laboratory assessments. Over the course of the study, participants smoking nicotine-free cigarettes reduced their daily smoking and showed a concurrent decline in their motivation to smoke as measured by an operant procedure (progressive ratio). Measures of puff topography in the nicotine free condition remained largely unchanged relative to baseline. In contrast, compensatory increases in smoking intensity (i.e., puff volume) and frequency (cigarettes/day) were observed and maintained throughout the study in the low-yield condition, while measures of the motivation to smoke remained stable. These changes were accompanied by a stable expired CO in the nicotine-containing group compared to a decreasing CO in the nicotine-free condition. Group differences were also observed in subjective, physiological and cognitive measures. This evidence suggests that nicotine-free cigarettes partially maintain smoking behavior, but that their reinforcing efficacy may decrease with repeated use (i.e., extinction).

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**PA9-3**

**NICOTINE REWARD AND WITHDRAWAL IN MALE AND FEMALE ADOLESCENT MICE**

Billy R. Martin* and M. Imad Damaj, Department of Pharmacology and Toxicology, Virginia Commonwealth University, Richmond VA

Recent evidence suggest that adolescence and adult vulnerability to nicotine may be significantly different. The purpose of this study was to: (1) compare nicotine withdrawal following chronic nicotine exposure in adolescent and adult male and female mice and (2) determine whether the acute rewarding effect of nicotine differ between adolescent mice and their adult counterparts using the conditioned place preference procedure (CPP). Withdrawal signs (somatic signs, hyperalgesia and hyperactivity) were measured in male and female ICR mice of different ages (30, 55 and 70 days of age). Mice were continuously infused with 24 mg/kg/day of nicotine using surgically implanted osmotic mini-pumps for 7 days. Mini-pumps were removed at day 7, and withdrawal data were collected at 24-h intervals for three days following withdrawal of nicotine. Adult and adolescent mice receiving chronic nicotine did not differ in the intensity of somatic signs. In contrast, adolescent male showed a higher degree of hyperalgesia than adult males. Furthermore, our results revealed a robust hyperactivity in adult male mice receiving nicotine relative to animals receiving saline. However, no significant hyperactivity was observed in adolescent mice. The results with nicotine reward using CPP will also be presented. These results indicate that nicotine dependence features differ depending on age and that these factors may be involved in the vulnerability to nicotine associated with particular developmental stages.

Supported by grant from The Virginia Youth Tobacco Project.

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**PAPER SESSION 9**

**PA9-1**

**NICOTINE ENHANCES RESPONSEING FOR A VISUAL REINFORER IN A NOVEL SELF-ADMINISTRATION PARADIGM**

Matthew Palmatier, F. Fay Evans-Martlin, Alycia Hoffman, Anthony R. Caggiula*, Nadia Chaudhri, and Alan F. Sved, Department of Psychology and Department of Neuroscience, University of Pittsburgh

Previous studies from our laboratory have demonstrated that nicotine (NIC) enhances responding for delivery of a discrete visual stimulus (VS). One shortcoming of these studies is that delivery of both the VS and NIC depends on the same behavior (i.e., pressing a single, active lever). The present experiments examined whether making each outcome contingent on separate levers would alter the reinforcing efficacy of NIC, VS, or both. Four groups of rats (2-Lever, NIC+VS, NIC-Only, or VS-Only) were surgically implanted with jugular catheters. Self-administration training began after a short recovery period (4-7d). For the 2-Lever group, pressing one lever resulted in VS presentation, whereas pressing the other lever produced a NIC infusion (0.06 mg/kg, free base). For the remaining groups the appropriate outcome (NIC+VS, NIC-only, or VS-only) was delivered as a result of responding on the randomly assigned active lever. Across daily 1 hr self-administration sessions, the NIC-VS group received more NIC relative to the NIC-Only group. In contrast, the 2-Lever and NIC-Only groups self-administered similar amounts of NIC. Notably, VS presentations for the 2-Lever and NIC+VS groups did not differ across training. However, both of these groups received more VS-delivers than the VS-Only group. For the NIC+VS group, this pattern replicates the previously described synergistic increase in responding induced by co-delivery of NIC and VS. The results from the 2-Lever condition suggest that high rates of responding normally seen for NIC self-administration reflect increased motivation for the VS engendered by a relatively small amount of NIC that is sufficient to sustain both the primary reinforcing and reinforcement-enhancing effects of the drug.

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PA9-4

VOLUNTARY NICOTINE CONSUMPTION IS DEPENDENT ON SEX AND AGE IN MICE
Laura Cousine Klein*, Ph.D., Michele McClellan Sline, Ph.D., David Vandenberghe, Ph.D., and Courtney Whetzel, B.S., Penn State University

Adult mouse models of nicotine exposure demonstrate nicotine’s effects in reward-relevant brain regions, as well as behavioral effects of nicotine. Voluntary oral nicotine consumption models have been adapted for use with adolescent mice given the ease of administration, continuous nicotine exposure, and production of acceptable levels of nicotine bioavailability (e.g., Klein, 2004). The few studies to test voluntary nicotine consumption in adolescent mice suggest that this model can be a valuable approach to understanding adolescent nicotine intake behavior (e.g., Adriani et al. 2002; Klein et al. 2003; Robinson et al. 1996). The present experiment builds on these reports to evaluate age-related differences in nicotine intake. Forty-two adolescent (32 days old) and forty adult (68 days old) male and female C57BL/6J mice were tested for voluntary nicotine intake by providing 24-hr access to both water-only and 25 µg(-)-nicotine-containing solutions in the home cage for 21 days. Cotinine levels confirmed nicotine consumption. Adolescent mice consumed more nicotine than did adult mice, even when consumption was adjusted for body weight (mg/kg) (p<0.05). Although males and females drank similar volumes (ml) of nicotine, female mice consumed more nicotine adjusted for body weight and as a percentage of total fluid intake than did male mice, regardless of age (ps<0.05). Age and sex differences in consumption suggest that on-going brain development may significantly contribute to nicotine’s effects. To the extent that this oral intake model predicts nicotine consumption by adolescent and adult humans, it could be used to understand biological contributions to adolescent smoking behavior.

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PA9-5

THE EFFECTS OF EARLY METHYLPHENIDATE TREATMENT ON NICOTINE CONSUMPTION IN ADOLESCENT C57BL/6J MALE MICE
Michele McClellan Sline*, Ph.D., and Laura Cousine Klein, Ph.D.

Attention deficit hyperactivity disorder (ADHD), the most commonly diagnosed childhood psychological disorder, is associated with cigarette smoking (Lambert & Hartsook, 1998). ADHD commonly is treated with methylphenidate (MPH), and epidemiological evidence suggests that childhood MPH treatment may be linked to later tobacco use (Lambert & Hartsook, 1998). The current study examined the causal effects of early MPH treatment on nicotine consumption during adolescence using a mouse model of oral nicotine consumption. Forty-six young, male C57BL/6J mice were exposed to one of four MPH dosages [0 (SAL), 2.5 (LOW), 5 (MOD), or 10 (HIGH) mg/kg] via intraperitoneal injection for 7 days. After a 2-day washout period, adolescent mice were given 24-HR choice access to three bottles, one that contained a 25 µg(-)-nicotine solution dissolved in tap water, a second that contained 50 µg/ml nicotine solution, and a third that contained only tap water. Adolescent mice previously exposed to MOD or HIGH MPH displayed elevated initial experimentation with nicotine, followed by a dramatic decrease in overall nicotine consumption across the testing period. In contrast, LOW MPH mice displayed little change in nicotine consumption behavior, suggesting a vulnerability to continued nicotine consumption throughout adolescence. These findings suggest that early and aggressive treatment for ADHD at higher, rather than lower, MPH doses may pose less of a risk for later nicotine use during adolescence. Implications of these findings and future directions for research are discussed.

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PA9-6

EFFECTS OF MANIPULATING NICOTINE DEPENDENCE ON BRAIN FUNCTION ASSESSED WITH PET
J.E. Rose*, F.M. Behm, A.N. Salley, and J.E. Bates

Fifteen smokers (6 males, 9 females; mean FTND score 6.9) participated in a study designed to investigate the neuroanatomical substrates of nicotine dependence. Dependence was manipulated by having subjects switch to smoking low nicotine content cigarettes while wearing nicotine skin patches; this manipulation, which reduces exposure to inhaled nicotine, has previously been shown to reduce indices of nicotine dependence. Participants were assessed using positron emission tomography (PET) to measure changes in regional cerebral metabolic rate for glucose (rCMRglc) and regional cerebral blood flow (rCBF). Subjects were scanned during three sessions conducted after overnight abstinence from smoking: 1) at baseline; 2) after two weeks of low nicotine content cigarettes (<0.1 mg nicotine delivery) + nicotine patches (21 mg/24 h, removed the night before test sessions); and 3) two weeks after returning to smoking their usual brands of cigarettes (mean nicotine delivery 0.8 mg). Craving for cigarettes decreased significantly at the second session (after 2 weeks exposure to low nicotine containing cigarettes + nicotine patches) relative to the first and last sessions (p<0.05). FTND score (assessed at each session) also decreased at the second session (p<0.06). The right hemisphere anterior cingulate cortex similarly showed a significant decrease in activation (based on rCMRglc measures) at the second session (p<0.002). These results confirm previous findings that exposure to reduced nicotine content cigarettes plus nicotine patches can lead to a reduction in nicotine dependence, and offer additional support for the view that activation of the anterior cingulate cortex is a neural correlate of drug craving.

Research supported by Philip Morris USA Inc.

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PA9-7

EEG CONSEQUENCES OF NICOTINE PATCH ACROSS 45 DAYS OF SMOKING ABSTINENCE: A FOCUS ON INFLUENCES OF DEPRESSIVE TRAITS ON EEG HEMISPHERIC ASYMMETRY, INDICES OF AFFECT-MOTIVATION AND DEGREE OF EEG DEACTIVATION

Changes in EEG activation associated with smoking abstinence were assessed in 148 individuals who quit smoking for 45 days and a randomly assigned control group of 61 continuing smokers. As previously reported in preliminary work, relative to individuals randomly assigned to a placebo patch (N = 67) and a continuing to smoke control group, individuals assigned to a nicotine patch (N = 81) maintained pre-quit levels of EEG activation, while they were on the 21 mg patch, but not after going off of the patch. A more complete analysis of the data presented showed that in the placebo patch group, the relative degree of left minus right frontal (F3-F4 and FC3-FC4) EEG slowing correlated positively with MMPI trait depression scores. These findings suggest that, without nicotine patch, individuals vulnerable to depression experience a greater degree of left frontal slowing than do individuals not so disposed. Since decreased left frontal-lobe activity is associated with reduced positive affect and decreased approach behavior, greater slowing in depression vulnerable individuals may reflect an index of vulnerability to depression.

National Institute on Drug Abuse grant DA12289.

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PA9-8  BRAIN 1H MAGING RESONANCE SPECTROSCOPY, COGNITIVE FUNCTIONING AND THE RELATIONSHIP TO TREATMENT OUTCOME IN PATIENTS WITH TOBACCO DEPENDENCE

Christian G. Schütz*, Olaf Eichler, Wolfgang Block, Frank Träber, Friedenike Schülsberg, Gisela Bopp, Michael Wagner, Hans Schuld, and Wolfgang Maier

Our clinic offers a standardized behaviour-therapy based group therapy in combination with nicotine patches to treat tobacco dependence over a period of six months. This allows us to objectively relapse on an almost weekly base within this period. 1H Magneton Resonance Spectroscopy (MRS) provides a measure of brain chemistry. Our current study aims to determine degree and specificity of neuronal integrity and membrane turnover in tobacco dependent patients, as determined by MRS and characterize its relationship to degree of substance use, degree of dependency, neuro-cognitive functioning (attention, memory, executive functioning), therapeutic outcome and changes in functioning over time. Intermediate analysis based on 40 smokers and so far 31 controls indicate: Shortly after stopping to smoke tobacco dependent patients and controls did not show significant differences. Lower Cho/P(Cr) (indicator cellular turnover) (1.44 ± 0.15 vs. 1.33 ± 0.13 p=0.07) and to a lesser degree NAA/P(Cr) (indicator neuronal integrity) (2.83 ± 0.21 vs. 1.68 ± 0.18 p=0.10) in the frontal region of smokers though did predict relapse. Lower frontal Cho/P(Cr) was associated with increased Fagerström values, not with amount of tobacco used. Furthermore we found lower scores in complex memory tasks to predict relapse. To our knowledge this is the first study to systematically study nicotine dependence using 1H Magneton Resonance Spectroscopy.
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PA10-2  RANDOMIZED PLACEBO CONTROLLED TRIAL OF NICOTINE NASAL SPRAY IN GENERAL PRACTICE

Gay Sutherland*, B.A., M.Phil., John A. Stapleton, B.Sc., M.Sc., and Michael A.H. Russell, FRC Psych., Institute of Psychiatry, Kings College London University

AIM: To date the nicotine nasal spray has been tested in specialist smokers clinical settings combined with intensive behavioural support. 24% of active patients were continuously abstinent for 12 months compared to 12% of placebos (Cochrane). We aimed to evaluate if the nicotine spray is also effective when given with only brief advice and support by general practitioners and nurses in primary care.

METHODS: A randomized placebo controlled trial with 12 week follow up was conducted in 27 general practices (761 smokers) in England. All participants received GP advice, a booklet and either active nicotine nasal spray or placebo for up to 12 weeks, with brief support and follow up at 1, 2, 3, 6 and 12 weeks after stopping.

RESULTS: Nicotine spray compared to placebo more than doubled the number who were continuously abstinent between week 3 and week 12 (15.4% vs 6.7%, odds ratio = 2.6, 95% CI = 1.5 to 4.4). Of those participants who had not stopped by the end of the first week (417), only 1 (0.2%) was classified as abstinent during weeks 3 to 12.

CONCLUSIONS: When given with brief GP or nurse advice and support, nicotine nasal spray is an effective aid to stopping smoking. In this setting the effectiveness of the spray was similar to that previously demonstrated for the nicotine patch, but overall success rates were lower than with specialist support. There was no evidence that continued treatment of those initially failing was effective.

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PA10-3  A META-ANALYSIS OF THE LONG-TERM EFFECTS OF NICOTINE REPLACEMENT THERAPY ON SMOKING CESSION

Jean-Francois Etter* and John Stapleton

AIM: To assess whether the effect of a single treatment episode with nicotine replacement therapy (NRT) is maintained in the long-term.

METHODS: Meta-analysis of all published, placebo-controlled studies of NRT with 2 or more years of follow-up. Pooled odds ratios were used to assess the effect of NRT on long-term cessation and on relapse after 1 year of abstinence. Both fixed and random-effect models were fitted to the pooled study results but there was little evidence of heterogeneity and the difference between the model estimates was negligible.

RESULTS: We found 12 studies (2408 active participants, 2384 placebo participants) with longest follow-ups ranging between 2 and 8 years. For all studies the common active: placebo odds ratio (OR) at final follow-up was 1.85 (95% CI 1.54 to 2.32). At twelve months the OR had been 1.98. There was no evidence of a difference in the relapse rate between active and placebo conditions after 1 year of abstinence (OR=1.11, 95% CI 0.78 to 1.59). In the 4 studies with a final follow-up greater than 4 years, the OR at final follow-up was 1.80 (1.31 to 2.47). At 1 year the OR had been 1.97 (1.52 - 2.55) and there was again no evidence of an effect of NRT on relapse between 1 year and final follow-up (OR=1.30, 95% CI, 0.77 to 2.20). For both active and placebo groups combined the odds for relapse was 0.55, giving an absolute relapse rate of 35.5% after 1 year of abstinence.

CONCLUSIONS: There is good evidence that the efficacy of NRT was maintained beyond 1 year and no evidence of a difference in the relapse rate between active and placebo groups beyond 1 year. However, it is estimated that 35.5% of those abstaining from smoking at 12 months will relapse by 4-8 years, and that the number of successes attributable to NRT therefore decreases substantially over time.

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PA10-4
THE EFFECTIVENESS AND COSTS OF DIFFERENT BENEFIT DESIGNS FOR TREATING TOBACCO DEPENDENCE. RESULTS FROM A RANDOMIZED TRIAL
Helen Ann Halpin*, Sara B. Mcmenamin, Jeffrey Rideout, and Gifford Boyce-Smith

This study assessed the costs and effects of adding coverage for proactive telephone counseling to pharmacotherapy benefits. The two research questions are:
1) Is the effect of coverage for pharmacotherapy enhanced if counseling is also covered, and
2) What is the effect of limiting access to pharmacotherapy to smokers who enroll in counseling? The study was an 8-month randomized trial conducted in 2001 comparing three benefit designs: 1) Drugs Only - coverage for Zyban, NRT patch and NRT nasal spray; 2) Drugs And Counseling - coverage for drugs and proactive telephone counseling; 3) Drugs If Counseling - coverage for drugs conditional on enrollment in covered proactive telephone counseling. The sample included 391 randomized adult smokers enrolled in Blue Shield of California’s Preferred Provider Organization Plan. No statistically significant differences were observed across treatment groups for any of the quitting outcomes. Quit attempt rates averaged 59% (p=0.1), quit rates during the study averaged 38% (p=0.2), and sustained quit rates averaged 20% (p=0.3). The results of the logistic regression models find that neither of the treatment groups with coverage for proactive telephone counseling reported higher rates for any quitting outcomes compared to the drugs only group. The cost per sustained quit were $406 for the drugs only group compared $770 and $689 for the drugs if counseling and drugs and counseling groups, respectively. We conclude that, if pharmacotherapy for treating tobacco dependence is covered (Zyban and NRT), it is not cost-effective to also cover proactive telephone counseling, regardless of benefit design.

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PA10-5
TELESTOP: A RANDOMIZED TRIAL OF INCREASED ACCESS TO BEHAVIORAL AND PHARMACOTHERAPY FOR SMOKING CESSATION
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Brief health care provider intervention is recommended for all tobacco users. The U.S. National Action Plan for Tobacco Cessation also endorses telephone counseling that includes access to pharmacotherapy. The benefit of telephone counseling compared to primary care initiated intervention has not been examined previously. We performed a randomized-controlled trial of telephone vs. standard care at 5 Veterans Administration medical centers. 383 smokers were recruited via direct mail. 420 were randomized to standard care (tobacco treatment as part of routine health care). 418 were randomized to telephone care and received counseling (adapted from the California Helpline protocol) with pharmacological therapy (NRT and/or bupropion SR) mailed directly to appropriate subjects. There were no baseline differences between study groups on demographic or smoking characteristics (91% male, age 57±11 years, 26±12 cigarettes per day). During the study, 90% of standard care subjects visited their health care provider. 98% discussed tobacco (92% advised to quit, 50% offered pharmacological therapy). Standard care discussions were brief (75% reporting ≤5 minutes). Telephone care subjects completed a median of 7 calls (total phone contact 123±71 minutes). Telephone care increased use of any behavioral counseling programs (85% vs. 24%, p=0.001) and pharmacological therapy (80% vs. 52%, p=0.001). At the 12-month follow-up telephone care was superior to standard care in terms of 30-day abstinence (19.2% vs. 13.3%, OR 1.55 [1.06-2.25], p=0.03) and 6-month sustained abstinence (13.1% vs. 4.1%, OR=3.50 [1.98-6.15], p=0.001). Telephone care decreases the use of behavioral counseling and pharmacological therapy and leads to substantially higher rates of sustained abstinence compared to standard care.

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PA10-6
COMPARING NICOTINE INHALER, BUPROPION, AND NICOTINE INHALER PLUS BUPROPION IN TREATING TOBACCO DEPENDENCE
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This study had 2 purposes: to determine whether combined use of nicotine inhaler and bupropion will improve smoking abstinence compared to either alone and to examine relapse prevention after abstinence is achieved. This study recruited 1700 smokers in 19 sites throughout the United States. In phase I, smokers were randomized to nicotine inhaler, bupropion, or combination for 12 weeks. In phase II, those who were abstinent were randomized to bupropion, nicotine inhaler, combination or placebo for 40 weeks and followed for 12-weeks post-medication (phase III). Those smoking at the end of the phase I entered phase II for continued treatment on alternative therapy. At the end of phase I, 14%, 26% and 34% (nicotine inhaler, bupropion, combination, respectively) were abstinent. Of the 432 smokers at the end of phase I, 0.7% were abstinent at week 24. Of the 430 who were abstinent at the end of phase I, 23-54% were abstinent at the end of phase II and 7-29% were abstinent at end of phase III. In conclusion, smokers on combined therapy have a higher probability of abstinence than either alone. Those failing to be abstinent at the end of 12 weeks of tobacco dependence therapy, should seek alternate therapy. Finally, although combined therapy can help smokers achieve abstinence, continued therapy on the same combined medication does not appear to prevent relapse.

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PA10-7
A CONTROLLED TRIAL OF NORTRIPTYLINE, BUPROPION SR AND PLACEBO FOR SMOKING CESSATION - PRELIMINARY RESULTS
Fabio M. Haggstrom, Jose M. Chatkin, and Carlos F. Fritscher

BACKGROUND AND METHODS: Several studies have shown that bupropion helps to stop smoking and few studies have shown that nortriptyline is also useful for smoking cessation being better than placebo. However, there are no studies comparing the efficacy of bupropion and nortriptyline. We conducted a double-blind, double-dummy, placebo-controlled in a 3-arm trial during nine weeks. Patients were randomized to receive placebo, nortriptyline5mg/day or bupropion300 mg day. All smokers also received the same intensive CBT. The target day for quitting smoking was usually day 10. Intense counseling was provided at baseline, weekly during treatment, and at 10, 13, 16, 20 and 26 weeks. Self-reported abstinence was confirmed by CO concentration in expired air of<10ppm.

RESULTS: The abstinence rates at 6 mo were: 21.6% in the placebo group, 30.8% in the nortriptyline group and 52 subjects; 41.5% in the bupropion group (53 subjects); p=0.05. The chance of succeed was not statistically different among those using nortriptyline or bupropion (OR 1.60; 95%CI 0.66-3.86;p=0.35). The most common adverse events were dry mouth and drowsiness in the nortriptyline group and dry mouth and insomnia in the bupropion group. CONCLUSIONS: Treatment with CBT + bupropion resulted in a better 6-month rate of smoking cessation compared to CBT + nortriptyline or CBT + placebo. Abstinence rate in the nortriptyline group was not statistically different of the bupropion group. A larger sample is necessary to have final conclusions.

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INTRODUCTION: Nicotine is a small molecule that does not elicit an immune response. Nabi Biopharmaceuticals has developed NicVAX, a conjugate vaccine consisting of 3'-aminomethylnicotine bound to recombinant P. aeruginosa exoprotein A, a non-toxic carrier protein. In animal models, NicVAX-induced, nicotine-specific antibody reversibly binds to plasma nicotine, preventing bound nicotine from crossing the blood-brain barrier. Therefore, CNS nicotine levels are decreased and nicotine effects may be minimized.

METHODS: 68 healthy smoking volunteers were randomized to receive either 50, 100, or 200 microgram of vaccine or alum placebo (n=22, 56, and 102).

RESULTS: The vaccine was well tolerated. Local reactions were consistent with what was observed in previous studies and what has been observed with other Hpai vaccines. By far, the most frequent injection site reactions were transient ache or tenderness. Injection site reactions did not differ between the treatment groups. Almost all of the patients reported at least one systemic reaction of which headache, malaise or myalgia were most frequently reported. However, the event rates were very similar between treatment groups. Both local and systemic reactions did not increase after subsequent injections. Most events were mild and self-limiting, resolving within a few days. None required medical intervention. In the highest dose group, GM anti-nicotine antibody levels reached 32 microgram/mL and were three to seven times greater than in the lowest dose group.

CONCLUSION: Multiple doses of up to 200 microgram of NicVAX are safe and well tolerated, and induce significant levels of anti-nicotine antibody.

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PA11-4 EXAMINATION OF A PROCESS MODEL OF ADOLESCENT SMOKING CESSATION EFFORTS IN RELATION TO GENDER
Laura MacPherson*, M.S., Brown University and Mark G. Myers, Ph.D., U.C. San Diego/Veterans Medical Research Foundation

Little is known regarding adolescent efforts to change smoking behavior, especially in regards to gender. The present study investigated the role of gender in the relationship of motivation and cognitive variables with adolescent smoking quit efforts. Baseline smoking cessation motives, cessation self-efficacy, intentions to quit, and smoking outcome expectancies were modeled in relation to volitional quit attempts assessed at a 6-month follow-up, separately by gender. Cognitive variables were expected to partially mediate and moderate the relationship between motives and quit attempts. Social influence motives were expected to be stronger predictors of change efforts for girls and short-term consequence motives to be stronger predictors for boys. Participants were 98 adolescents, on average 16.8 (1.0) years old, 55% female, and 71% White. 86% of participants were daily smokers and 44% made at least one quit attempt between baseline and follow-up. Logistic regressions and multigroup path analyses were conducted. Patterns of predictors to prospective quit attempts differed by gender with intention to quit (OR = 7.06) predictive of quit attempts for males, and social influence motives related to intentions to quit (OR = 2.31) and to quit attempts (OR = 1.93) among females. Hypothesized mediating and moderating relationships were not supported within gender. However, intention to quit mediated the relationship between social influence motives and quit attempts for the full sample. The present results highlight the importance of social influences in motivating quit efforts among adolescent girl smokers. Further elucidation of adolescent smoking cessation processes can serve to inform intervention design.

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PA11-5 GENDER AND AGE DIFFERENCES IN SMOKING CESSATION AMONG CHINESE YOUNG SMOKERS WHO ATTENDED A CESSATION CLINIC
Abu Saleh M Abdullah*, T.H. Lam, S. Chan, and A.J. Hedley

OBJECTIVE: The purposes of this study are to evaluate the effectiveness of a smoking cessation service and to assess the gender and age differences in smoking cessation among the Chinese youth.

METHODS: The Hong Kong Smoking Cessation Health Centre (SCHC) was the first in Hong Kong to provide clinic-based smoking cessation service on a regular basis. The clinic operated 3 days a week, from 6-9pm. Participants made appointments through the SCHC hotline. All services including one week supply of nicotine replacement therapy were free. We used structured questionnaires at baseline and at 1, 3 and 12 months.

RESULTS: Of the 1,203 clients who attended the clinic during the 17 month operation period, 129 were young smokers (aged 24 or below). Of the young attenders (n=129), 70% were male with a mean age of 19 (range 12 to 24). The 30 day average daily consumption was 12 cigarettes and the mean Fagerstrom score was 3.6; 85% reported the presence of one or more withdrawal symptoms. At 12 month follow up, the 7 day point prevalence quit rate (abstinence from tobacco smoking during the 7 days preceding the follow up) was 19% (25/129) among all the attenders. The quit rate among those who were successfully followed up was 36% (25/69). There was no significant gender or age differences in the quitting outcome but females and the older youth reported more withdrawal symptoms. Not reporting any withdrawal symptoms at 3 months follow up and adherence to use nicotine replacement therapy (NRT) for at least 4 weeks were significant predictors of quitting.

CONCLUSION: A clinic-based smoking cessation service is effective in promoting smoking cessation among Chinese young smokers. Future smoking cessation program should address withdrawal symptoms and adherence to NRT use to more effectively help young smokers quit smoking.

Funding for this study was provided by the “Hong Kong Council on Smoking and Health.”

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PA11-6 MENTAL HEALTH AND ENVIRONMENTAL FACTORS ASSOCIATED WITH TOBACCO USE IN AMERICAN INDIAN YOUTH
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American Indian and Alaska Native adolescents have the highest lifetime tobacco use rates among all ethnic groups in the U.S. The present study merged problem behavior and social ecological theories to examine how mental health and environmental factors, including culture, were associated with American Indian youth tobacco use. The present study merged problem behavior and social ecological theories to examine how mental health and environmental factors, including culture, were associated with American Indian youth tobacco use. A stratified random sample of 205 reservation and 196 urban American Indian youth (13 through 19 years), living in a Western state was interviewed in 2001. Data were from the American Indian Multisector Help Inquiry (AIM-HI), a NIDA-funded study. The instrument consisted of scales measuring mental health problems (conduct disorder, depression, alcohol and substance abuse/dependence), familial environment (family mental health problems and family life stressful events), social environment (peer misbehavior and neighborhood/school problems) and cultural environment (cultural activities and cultural pride/spirituality) as well as tobacco use. Two-thirds of the reservation youth and half of the urban youth in this sample reported lifetime tobacco use. Multiplicative logistic regression showed that, when controlling for age and location, a mental health factor (substance abuse/dependence) and environmental factors (e.g., family members mental health problems and peer misbehavior) were significant predictors of American Indian adolescent tobacco use. Cultural factors and location (reservation vs. urban) were not significant predictors of their tobacco use. Environmental and mental health factors should be assessed for and incorporated into tobacco use intervention and prevention plans for American Indian youth in both reservation and urban areas.

This study was supported by National Institute on Drug Abuse grant R01 DA13227.

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PA11-7 SMOKING PREVALENCE AND TOBACCO USE DETERMINANTS AMONG STUDENTS FROM 10 MEXICAN CITIES

OBJECTIVE: Cross-sectional data from the Global Youth Tobacco Survey Mexico 2003 (19,502 students enrolled in 225 schools) were used to estimate the prevalence and determinants of tobacco use among adolescents enrolled in Mexican secondary schools.

METHODS: School-based survey with two stage cluster sampling design. Estimates adjust for the study health and sampling weights.

RESULTS: One-fifth of students (19.9%) had smoked in the last month, 90% of whom thought could quit smoking if they wanted to. One-fourth (25.2%) of never smokers were susceptible to initiating smoking the following year. Smokers mostly bought their own cigarettes (37%) or borrowed them from friends (32.2%). Multivariable analysis showed that having pocket money to spend per month, friends smoking (OR 1.81, 95%CI 1.50-2.18), age (OR 1.40, 95%CI 1.31-1.50), belief that it is safe to smoke for 1-2 years if quit after that (OR 1.72, 95%CI 1.34-2.21), knowledge that cigarette smoking is harmful to their health (OR 0.47, 95%CI 0.34-0.64), that tobacco is a drug (OR 0.56, 95%CI 0.47 0.67), belief that he/she is too young to smoke (OR 0.61, 95%CI 0.45-0.82) and observance of an item with a cigarette brand logo on it (OR 1.85, 95%CI 1.48 2.32), were factors significantly associated with current smoking, adjusted by gender, parents smoking and discussion with a family member about the harmful effects of smoking.

CONCLUSION: In Mexico tobacco control activities need to be strengthened to combat tobacco use among adolescents.


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PA11-8
WESTERN MEDIA’S INFLUENCE ON EGYPTIAN ADOLESCENTS’ SMOKELESS BEHAVIOR: THE MEDIATING EFFECT OF POSITIVE BELIEFS ABOUT SMOKING
Sondos M. Islam*, Ph.D., and Carl A. Johnson, Ph.D., University of Southern California (USC)

Western media has been implicated as an adolescent smoking risk factor in numerous western studies, but there is a scarcity of research investigating that influence on adolescents from developing Arab countries, who may be especially vulnerable to the glamorous western life-style portrayed in the western media. One such Arab country, which has the highest rate of tobacco consumption in the Arab world, is Egypt. It is estimated that 33.5% of Egyptians are daily tobacco users, of which 19.6% are under the age of 15. This study investigates the influences of exposure and receptivity to western media on Egyptian adolescents smoking behavior, and the possible underlying mechanisms. A school-based cross-sectional survey of 1,930 Egyptian adolescents in 7th, 9th and 12th grades, from randomly selected schools, in the city of Alexandria Egypt, was conducted to assess self-reported smoking behavior, psychosocial smoking risk factors, demographics, and exposure and receptivity to western and pro-tobacco media. Controlling for known smoking risk factors, including exposure and receptivity to pro-tobacco media, exposure/receptivity to western media remained positively and significant-ly associated with ever-smoking and 30-day smoking behavior. Positive beliefs about smoking partially mediated this influence for ever-smoking, and completely mediated it for 30-day smoking behavior. Exposure/receptivity to western media increases Egyptian adolescents positive beliefs about smoking and consequently their smoking behavior.

This study was conducted in Alexandria, Egypt while Sondos Islam was still enrolled at USC. Supported by the USC Transdisciplinary Tobacco Use Research Center Grant # P50-CA 84735-03.

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PA12-2
CARBOXYHEMOGLOBIN IN WATERPIPE SMOKERS COMPARED TO CIGARETTE SMOKERS
Ghada Radwan*, Christopher Loffredo, Ebenezer Israel, Ghada Hamada, Fatma Abdel-Aziz, Nabiel Mikhail and Mostafa K. Mohamed, Egyptian Smoking Prevention Research Institute

OBJECTIVE: Determine the concentration of carboxyhemoglobin for waterpipe (shisha) smokers as compared to cigarette smokers and non-smokers in adult males in rural Egypt.

METHODS: Breath carbon monoxide (CO) measurement was performed on 84 shisha smokers, 359 cigarette smokers and 36 non-smokers living in rural Egypt. Carboxyhemoglobin (COHb) levels were computed from measured CO levels. Fagerstrom score was used for nicotine addiction. Linear regression was performed to control for variables affecting COHb levels.

RESULTS: Mean COHb level was 3.75% for waterpipe smokers, 4.41% for cigarette smokers, and 0.96% for controls (p<0.01). In the first 2 hrs after smoking, a significantly higher level of carboxyhemoglobin was observed among waterpipe smokers compared to cigarette smokers (6.1% vs. 4.6%, p<0.01). Among cigarette smokers, the mean COHb% was higher among addicted smokers (Fagerstrom score>6, p<0.05). Mean COHb% increased significantly with increasing number of cigarettes smoked per day and the number of cigarette smoked during the past 2 days (p<0.01). The mean COHb% was significantly lower among cigarette smokers with reduced FEV1% and FVC%. Cigarette smokers with chronic bronchitis had a significantly lower mean of COHb% compared to healthy cigarette smokers (4.7% vs 3.4% p<0.01). Mean COHb% levels were significantly higher in waterpipe smokers who smoked more than 25 hagars per week. Waterpipe smokers with COPD had a lower mean COHb% as compared to healthy waterpipe smokers (p<0.05). Logistic regression identified time since last smoking, pul-monary symptoms, and impaired lung functions as independent factors that affect-ed the COHb levels, but the type of smoking (waterpipe vs. cigarettes) had no sig-nificant impact on COHb.

CONCLUSION: The COHb% levels are similar in waterpipe smokers and ciga-rette smokers when adjusted for time since last smoking, pulmonary symptoms and impaired lung functions.

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PAPER SESSION 12

PA12-1
ORAL SNUFF EXPERIMENTATION, SMOKING BEHAVIOR, AND ADDICTION AMONG FINNISH MIDDLE SCHOOL STUDENTS
Ari Haukkala*, Ph.D., University of Helsinki; Erkki Varilaaren, M.D., National Public Health Institute; and Hein de Vries, Ph.D., University of Maastricht

This study examines the progression of oral moist snuff use among adolescent and relation to smoking behaviour and nicotine addiction among boys in prospective setting. 3-year smoking prevention study (ESFA) in the middle school Helsinki, Finland from 7th grade autumn 1998 to 9th grade spring semester 2001. Pupils (n=2745) from control and experimental schools filled out questionnaires four times (T1, T2, T3, T4), including information on smoking behavior, snuff experiments and nicotine addiction (FTQ). Prevalence of snuff experimentation rose among boys from 7 % to 43% 3 years later, and with girls from 2% to 13%. Among boys baseline smoking experimentation predicted snuff use in all assessments and snuff experimentation predicted transition to weekly smoking. Among those boys who participated active sports smoking was less common while there was no such difference in snuff use. Combined use was common, in the end of follow-up. Nicotine dependence scores increased linearly with snuff use experimentation among weekly smokers. Despite EU selling ban of oral snuff products since 1995, in Finland snuff use is common among boys. Furthermore, combined use with cig-arettes seems to increase rather than diminish tobacco addiction among adolescent boys.

ESFA study was supported by European Commission, Tobacco Information Fund, Contract 96/I.T./13 and Ministry of Social Affairs and Health, Finland.

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PA12-3
SMOKELESS TOBACCO VS. MEDICINAL NICOTINE: A COMPARISON OF SUBJECTIVE AND BEHAVIORAL EFFECTS IN SMOKERS
Mary Mendoza-Baumgart*, M.D., Oziem Tulunay, M.D., Joni Jensen, M.P.H., and Dorothy K. Hatsu, Ph.D., University of Minnesota

BACKGROUND: Although smokeless tobacco has the potential to be used as a harm reduction method for cigarette smokers, it still contains toxins and is conse-quently not harmless. Thus, it is important to further examine health effects, risks and benefits of these products, and compare them with existing medicinal nicotine products.

METHODS: Fifty nine cigarette smokers who were asked to continue smoking their own brand of cigarettes for at least 1 week, were randomly assigned to quit smoking and use either Exalt tobacco packets or Commit nicotine lozenges for 2 weeks, then crossed over to use the other product for two weeks. At the end of this sampling phase, subjects underwent a product choice week. Assessments were made weekly during baseline cigarette use and 5 weeks of treatment. Outcome measures included subjective and behavioral responses. Bodily samples were obtained to examine biochemical markers of tobacco exposure.

RESULTS: To date, data has been analyzed on 30 participants who met the inclusion criteria and completed the study. Weekly ratings on drug liking and on withdrawal symptoms showed no significant differences between Exalt and Commit. Participants perceived the first product to which they were assigned as affording more relief from withdrawal and urges to smoke and as easier and more satisfying to use. During choice week, Commit was preferred more than Exalt in subjects assigned to Commit initially; and equal preferences for the two products were observed in subjects assigned to Exalt initially.

CONCLUSION: Both Exalt and nicotine lozenges produced similar subjective effects. Preference for the two products tended to be based on what product was assigned initially to them.

PA11-9
FOREGO, DE VRIES
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PA12-4  HOW MIGHT FDA APPLY PRINCIPLES OF RISK MANAGEMENT TO DEFEND HEALTH CLAIMS FOR SMOKELESS TOBACCO AS PART OF A HARM REDUCTION STRATEGY

Jack Henningfield*, Reginald Fant, Mitch Zeller, Joe Gitchell and John Pinney

Health claims for smokeless tobacco (SLT) raise profound public health concerns. Given the historical marketing practices of SLT manufacturers, new health claims should not be allowed prior to regulatory scrutiny of the science behind such claims, as well as the risks and benefits of permitting claims. One precedent is the Food and Drug Administration (FDA) evaluation of over-the-counter (OTC) marketing for nicotine gum and patches in the mid 1990s in which the concerns included the following: abuse by youth leading to the development of addiction in nontobacco users, inappropriate use such as for weight control, and use to enable smoking and delay cessation by addressing nonsmoking situations. FDA applications required the sponsors to study the risks and how they would be minimized, conduct real-world simulation trials, commit to marketing and packaging to minimize the risks, and implement post-marketing surveillance to detect youth abuse. Since the 1990s, FDA has devised a systematic approach termed Risk Management to guide the evaluation of products which pose credible risks (www.fda.gov/cder/guidance/5766df.pdf). Risk Management has been applied to medications with high risk of birth defects, addiction, and other unintended consequences. Key components include the following: thorough evaluation of potential risks and benefits, provision of relevant epidemiological and survey data, and development of a risk minimization action plan (RiskMAP) to enable realization of anticipated benefits. In some cases, post-marketing surveillance is required to detect potential unintended consequences and guide corrective actions by the Sponsor and Agency. Strategic application of risk management principles provides a basis for determining appropriability by evaluating the risk/benefit ratio and a strategy for minimizing risk. This presentation will discuss the rationale and elements of risk management and describe how the strategy might be applied to an evaluation of new health claims for SLT products prior to marketing.

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PA12-5  INTEREST IN TRYING A “LESS HARMFUL CIGARETTE” AMONG A NATIONAL POPULATION SAMPLE

Mark Parascandola*, Stephen Marcus, and Erik Augustson

In recent years, there has been a proliferation of new potential reduced-exposure tobacco products (PREPs) marketed with claims that they are less harmful or less addictive compared with conventional cigarettes. Yet so far these products have not been widely used among the smoking population and little data is available on smokers’ interest in trying them. To explore smokers’ interest in PREPs, we used data from the Health Information National Trends Survey (HINTS), a nationally representative sample of adults 18 years and older questioned about health communication and associated beliefs and behaviors. Our study population included 1237 current smokers and 174 ex-smokers (quit within the past year). More than half (54%) of the respondents were either very interested (26%) or somewhat interested (28%) in trying a cigarette advertised as less harmful. However, less than 5% reported ever having tried a cigarette claiming to have fewer harmful chemicals or carcinogens (Eclipse, Accord, Advance and Omnip were cited as examples by the interviewer). Interest in trying a cigarette advertised as less harmful was lowest (26%) among the youngest age group (18-34). Smokers of light or ultra light cigarette brands were more likely (65%) to be interested than smokers of full flavor brands. Those who were interested in trying a cigarette advertised as less harmful were more likely to describe their cancer risk as high or very high. These results suggest that there is a substantial level of interest among current and recent smokers in cigarettes marketed with claims of reduced exposure or harm. Of particular concern is that smokers who view their cancer risk as high may view such products as an alternative to smoking cessation.

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PA12-6  UK SMOKERS AND EX-SMOKERS REACTIONS TO CIGARETTES CLAIMING REDUCED RISK

Saul Shiffman*, Ph.D., University of Pittsburgh and Pinney Associates; Martin Jarvis, Ph.D., University College, London; Janine Pillitteri, Ph.D. and Michael Di Marino, M.S., Pinney Associates

Modified tobacco products claiming to reduce the risk of smoking (potential reduced exposure products or PREPs) are being introduced by the tobacco industry to address smokers health concerns. The validity of risk reduction claims aside, the unintended consequences of introducing such products, arising from public perceptions of them, may be important. A random-digit-dialed survey of 462 smokers and 106 ex-smokers in the United Kingdom assessed perceptions of a PREP cigarette (PREP-C), purchase intent, and the impact of PREP-C claims on interest in quitting or resuming smoking. The interviewer very briefly introduced the PREP-C concept by reading a three-sentence description. Among smokers, a substantial number (76.5%) were interested in purchasing PREP-C; women and those with lower education were more likely to be interested. 90.6% thought PREP-C was safer than regular cigarettes (an average of 50% safer); 60.1% believed PREP-C would be as safe as or safer than nicotine patches; and 5.4% believed it carried no health risks. Most smokers did not report a change in interest in quitting following this brief exposure to PREP-C claims. Among ex-smokers, 71.1% expressed purchase interest, 63% believed PREP-C was as safe or safer than nicotine patches, and 5.6% believed it carried no health risks. Smokers and ex-smokers over-interpreted reduced-risk claims for modified tobacco products. More research is needed to test whether aggressive marketing of these products may deter smokers from quitting and encourage resumption of smoking among ex-smokers.

The study was sponsored by GlaxoSmithKline Consumer Healthcare, for whom the authors provide consulting and research services.

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PA12-7  ATTRIBUTES OF ROLL-YOUR-OWN SMOKERS IN 4 COUNTRIES: FINDINGS FROM THE ITC 4-COUNTRY SURVEY

David Young*, Hua Yong, and Ron Borland, for the ITC Research Team

There has been little research on Roll-Your-Own (YRO) smokers even though they are an interesting and important sub-group. This study compares the attributes of smokers who smoke RYO cigarettes exclusively with those who smoke Factory-Made cigarettes exclusively, and those who smoke both. The data was collected from Waves 1 and 2 of the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4), a random-digit dialed telephone survey of over 8000 adult smokers from Canada, the US, the UK and Australia. We hypothesized that RYO smokers would fall into 2 groups; low income, older, males, with high self-exempting beliefs, low concern with the effects of smoking and low motivation to quit, and younger smokers who believe RYO tobacco is more “natural” and, hence, safer, who are ambivalent about smoking, and have higher intention to quit. The results indicate that there is a strong country effect, with the proportion of ‘YRO only’ smokers ranging from 1.5% in the US, to 19% in the UK. The hypotheses were supported, but only with respect to the differences between ‘YRO only’ and ‘Mixed RYO and FM’ smokers. Smoking RYO tobacco, exclusively, is associated with high levels of addiction, low intention to quit, and provides the core of a cluster of attributes that are consistent with those of a “hardened smoker”. Overall, RYO smokers emerge as a vulnerable group and more attention needs to be focused on the development of appropriate cessation strategies.

Supported by grants from the Canadian Institutes for Health Research, Robert Wood Johnson Foundation, Cancer Research UK, Canadian Tobacco Control Research Initiative, Australian Commonwealth Department of Health and Ageing, National Health and Medical Research Council of Australia.

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EVALUATING POTENTIAL REDUCED EXPOSURE PRODUCTS (PREPs) FOR SMOKERS

Alison B. Breland*, M.S., Bethea A. Kleykamp, M.A., Amy J. Opilla, B.S., and Thomas Eissenberg, Ph.D.

In the U.S., the tobacco industry markets potential reduced exposure products (PREPs) to smokers. For example, Eclipse primarily heats tobacco and is marketed to reduce polycyclic aromatic hydrocarbons (PAHs) while Advance, made with specially cured tobacco, is marketed to reduce nitrosamines such as NNK. There are few accepted methods for determining if PREPs reduce exposure to these and other smoke toxicants. This study’s purpose is to examine if clinical laboratory methods can be used to measure PREP users toxicant exposure. Twenty-four smokers (18 men, >15 cigarettes/day) have completed this four-condition, within-subject, outpatient study (anticipated N = 36). Participants complete four, Latin-square ordered, five-day conditions in which they smoke only Advance, Eclipse, own brand, or no cigarettes. Compliance is reinforced monetarily and monitored daily. Preliminary analyses reveal that mean urine NNK metabolite levels (i.e., NNAL) were reduced significantly after 5 days of no smoking (0.56 pmol/ml), Advance use (0.72 pmol/ml) or Eclipse use (0.82 pmol/ml), relative to own brand cigarettes (1.26 pmol/ml). Mean expired air carbon monoxide levels were reduced significantly after 5 days of no smoking (2 parts/million) and Advance use (14 parts/million), but increased after Eclipse use (24 parts/million), compared to own brand (19 parts/million). Mean PAH metabolite levels were significantly reduced only in the no smoking condition. On average, participants used significantly fewer Eclipse (15 cigarettes/day), but not Advance (21 cigarettes/day), compared to their own brand (21 cigarettes/day). These findings suggest that PREP evaluation is complex, and highlight the need for continued objective and comprehensive PREP testing strategies that include clinical laboratory methods.

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Murray J. Kaiserman*, Ph.D., and Julie Fillion, M.P.A., Health Canada

Health Canada has been monitoring tobacco smoke of cigarettes sold in Canada for over 30 years. Since 2000, however, the level of monitoring increased with the addition of almost 40 chemicals to the original list of tar, nicotine and carbon monoxide. The Health Canada list includes particulate and gaseous species such as tobacco-specific nitrosamines (TSNA), heavy metals, bifurhyns, oxides of nitrogen and formaldehyde and acetaldehyde. TSNA and heavy metals, such as lead, cadmium and mercury provide excellent clues to not only whether the tobacco used in the cigarette is homogeneous or a blend but also as to agronomic and curing practices. Beginning in 2000, Health Canada has conducted an independent, annual test of five brands of cigarettes sold in Canada, along with a Canadian reference cigarette, the Canadian Monitor cigarette. During this period, the smoke of two brands, Canadian Classics King Size and Players Special Blend Regular Size, was collected and analyzed. Results indicate that in 2000, the Monitor and the Classics brand were similar and probably containing a Virginia flue-cured tobacco, while the Players brand was a blend. By 2003, the Classics brand was still similar to the Canadian Monitor, but, since the amount of cadmium found in the smoke has decreased by 50% (133 ng/cig vs 66 ng/cig), it would seem that the manufacturer may be using tobacco from a different source. Finally, the results confirm the Canadian tobacco industry’s policy of reducing TSNA, with the Players blend seeing a decrease of 37% in TSNA (183 ng vs 122 ng). The importance of these and other results will be discussed during this presentation.

This study was conducted by the Government of Canada.

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POS1-002 UNDERSTANDING CIGARETTES: WHAT THE CHEMISTRY OF TOBACCO SMOKE TELLS US

Murray J. Kaiserman*, Ph.D., and Julie Fillion, M.P.A., Health Canada

Tar is not a single compound found in tobacco smoke, but, rather, a mixture of diverse chemical products that form particles. Indeed, current tobacco industry practice is to refer to tar as total particulate matter. Included among particulate products are such heavy metals as lead, cadmium and mercury, as well as benz[a]pyrene, 3- and 4- amino-phenyl and benzene, phenol, tobacco specific nitrosamines (TSNA). In 2003, the tobacco smoke of 3 brands with nominal tar yields of 15 mg was collected and analyzed under both standard and modified Canadian smoking conditions. The brands, Smoking King Size, Players Special Blend Regular Size, and Baileys Regular Size, are manufactured by different companies. The results indicate that, while each brand is labelled as containing 15 mg of tar, the measured deliveries were 15.8 mg, 13.1 mg and 13.0 mg, respectively. With respect to the aminobiphenyls, the Players brand delivers almost 1 ng more than the Baileys brand (4.24 ng vs 3.38 ng), with the Smoking brand being in the middle. On the other hand, the Smoking Brand delivers 14.1 ng of BaP compared to 8.87 ng for the Baileys brand and 8.18 ng for the Players brand. Finally, the Smoking brand delivers 222.1 ng of TSNA, the Baileys brand contains 155.6 ng and the Players brand contains 102.3 ng. While the amount of tobacco used in each brand could account for some of the differences, the fact that the relative rankings and relative differences among the brands also changes suggests that the observed differences may be due to such items as the tobaccos used in the blends, engineering of the cigarettes and filters. The impact of each of these factors on delivery of smoke will be discussed.

This study was conducted by the Government of Canada.

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**POS1-004**

**INHALATION VOLUMES IN SMOKERS OF DIFFERENT TAR YIELD CIGARETTES**

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The purpose of this study was to measure the post-puff inhalation depth and duration for smokers of different FTC tar delivery brands. The study was conducted with 75 established smokers of 1-17mg FTC tar products. The subjects were participating in a clinical biomarker study for 5 days during which time they were allowed to smoke their own brand of cigarette whenever they wished. On two separate days, the subjects breathing pattern was measured with a Respiracure 204 respiratory inductive plethysmograph while they smoked one cigarette. This enabled the measurement of the post-puff inhalation volume, exhalation volume, inhalation time, and exhalation time for each puff on two of their own brand of cigarettes. The subjects were grouped according to the FTC tar delivery of their product: 1-3mg (15 subjects); 4-6mg; 7-13mg; 14+mg (20 subjects each). The post-puff inhalation volume for the 4-6mg group was significantly lower than both the 7-13mg and 14+mg groups and their exhalation volume was significantly lower than the 14+mg group (p<0.05). No other differences were found at the 95% confidence level. When tidal volume was taken into account (as an indicator of stature) there were no differences between the groups for any of the respiratory measures.

This project was undertaken as part of the Brown & Williamson Tobacco/British American Tobacco research programme.

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**POS1-005**

**A COMPARISON OF HUMAN NICOTINE DOSE ESTIMATES FROM FILTER ANALYSIS WITH NICOTINE METABOLITES ANALYSIS**

F.K. St. Charles*, G. Krautter, S. Appleton, Brown & Williamson Tobacco, Macon, GA; and D.C. Mariner, British American Tobacco, Southampton, UK

Human nicotine intake during smoking has been estimated by either analyzing the metabolites of nicotine in body fluids or by analyzing filters from smoked cigarettes. However, no comparison of the filter analysis method with body fluid analysis methods has been published. Consequently, an in-patient study was conducted with 75 smokers of 1-17mg FTC tar products smoking their own brands. The subjects stayed in a clinic for 5 days and were allowed to smoke in a smoking room whenever they wished. Each smoked cigarette had to be returned to a clinician before another cigarette was issued. The filters were analyzed to estimate the daily mouth intake of nicotine. 24-hour urine samples were collected and analyzed for nicotine, cotinine, 3-OH cotinine and their respective glucuronide conjugates. Saliva samples were collected at 18.30 each day for cotinine analyses. On the fourth day, additional saliva samples were collected 08.30 at 13.30 to assess any diurnal variations in saliva cotinine levels. Each method correlated significantly (p<0.01) with the other two, but the best correlation was between nicotine mouth intake and urinary nicotine metabolites. Averaging the results over 5 days improved the mouth intake / urinary nicotine correlation even further but had little effect on the saliva cotinine correlations. Multiple regression analysis implies that urinary output is an amalgam of the nicotine input from multiple days.

This project was undertaken as part of the Brown & Williamson Tobacco/British American Tobacco research programme.

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**POS1-006**

**A DIGITAL IMAGE ANALYSIS SYSTEM FOR IDENTIFYING FILTER VENT BLOCKING ON ULTRA-LIGHT CIGARETTES**


Filter ventilation is the dominant design feature on modern cigarettes, diluting the mainstream smoke with air and reducing tar and nicotine yields in the standard assay. Smokers are generally unaware of vent holes, and often cover them with lips or fingers while smoking, reducing or eliminating the air dilution effect and increasing intake of tar and nicotine, particularly on ultra-low tar brands. A digital imaging and analysis system for the detection of vent blocking was developed. The system evaluates the color characteristics of the tar stain at the center of a spent cigarette butt and around the edges, and uses the ratio of edge to center color as a blocking index. Two studies were designed to evaluate the effectiveness of three color measures (hue, saturation, and value) at discriminating whether at least 50% blocking had occurred. In Study 1, saturation showed perfect discrimination between unblocked Carlton butts and butts with at least 50% of the vents blocked during syringe smoking. In Study 2, saturation showed 95% accuracy at identifying Marlboro Ultra Light butts with at least four puffs blocked by smokers lips. The results indicate that the pattern of color saturation is related to vent blocking. Implications for tobacco control research and policy are discussed.

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

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**POS1-007**

**CONSUMER REACTIONS TO REDUCED IGNITION PROPENSITY CIGARETTES IN NEW YORK STATE**


On June 28, 2004, the State of New York became the first government to regulate the ignition propensity of cigarettes. Canada will enact a similar law in 2005. Examining industry documents, we found that consumer complaints about cigarettes using banding paper to reduce ignition propensity clustered around cigarettes going out while smoking, coal drop-off, and off-taste. We examined data from Wave 3 of the International Tobacco Control Policy Evaluation Survey (ITCPES), which was in the field during the implementation of the law. These data showed that smokers living in NY (n=65) were more likely than smokers living in the rest of the U.S. (n=847) to report noticing a change in their usual brands taste within the past 12 months (23.1% vs. 12.6%, p<0.03). NY smokers were also slightly more likely to report their cigarettes went out between puffs (41.5% vs. 33.9%, p<0.03). Brief interviews with 29 callers to the NY State Smokers Quitline were conducted in August 2004. Here, 92.8% (n=24) reported their cigarettes went out more frequently than they used to and 69.0% (n=20) reported having to puff more to keep the cigarette lit. Seventeen smokers (53.8%) were aware of the LIP law, but awareness of the law was not significantly related to noticing changes (p>0.11). Early reports indicate that NY smokers have perceived a change in the performance of their usual cigarette brand, especially as it relates to their cigarettes going out easier and the need for more frequent puffing to keep them lit.

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POS1-008
VALIDATION OF CIGARETTE FILTER ANALYSIS METHODS FOR ESTIMATING TAR AND NICO-
TINE YIELDS TO SMOKERS

Mike Dixon*, Ph.D., Jim Shepperson, B.Sc., British American Tobacco; and Kelley St. Charles, Ph.D., Brown and Williamson

Methods based on the analyses of spent cigarette filters have been used to estimate tar and nicotine yields to smokers. These methods rely on the measurement of filtration efficiencies (FEs) of the filters and the amounts of tar or nicotine retained in the filters after smoking. However FEs may be influenced by both cigarette design features e.g., type of filter and levels of filter ventilation, and human smoking behaviour factors such as puff flow-rates and cigarette butt lengths. Two filter analysis methods are considered in our study. One is based on the analysis of whole filters using average values of FEs obtained from a range of machine smoke puffing regimes. The other, a part filter method, analyses a 10mm section from the mouth end of the filter where the FE remains relatively constant irrespective of puff flow rates and butt lengths. Human puffing behaviour records were obtained from 10 smokers each smoking 6 commercial cigarettes ranging from 1mg to 12mg tar yields (ISO values). These records were used to drive a human smoke duplicator and the resulting tar and nicotine yields obtained from duplication were compared with the estimates obtained from whole and part filter analysis. The results indicated that whilst both filter methods gave good correlations with nicotine and tar yields obtained from smoke duplication, the part filter method was less susceptible to the effect of nicotine condensation and gave a more accurate assessment of yields than the whole filter method.

The work was conducted and funded as part of the British American Tobacco research program.

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POS1-009
PHARMACOLOGICAL AND CHEMICAL EFFECTS OF CIGARETTE ADDITIVES

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OBJECTIVE: To investigate the pharmacological and other chemical effects of tobacco additives.

METHODS: A “snowball” sampling method of the University of California at San Francisco Legacy Tobacco Documents Library, in conjunction with searching PubMed, the University of Indiana list of cigarette additives, review of tobacco related and reference textbooks, including the Physicians Desk Reference for Herbal Medicines, and the United States Department of Agriculture Dr. Duke Phytochemical Database, the Memorial Sloan Kettering, the United States Patent and Trademark and other internet websites.

RESULTS: Over 200 of 599 documented cigarette additives were found to have possible pharmacological or chemical effects that could potentially affect human health.

CONCLUSIONS: While the tobacco industry has stated that many of the additives were added specifically for improving the flavoring and customer acceptance, the data suggests that there may have been other or multiple intended actions of many additives. Our results suggest the possibility that over 200 of 599 documented cigarette additives may have pharmacological actions that can enhance or maintain nicotine delivery, increase the addictiveness of cigarettes, mask or treat symptoms and illnesses associated with smoking behavior, and have chemical effects to camouflage environmental tobacco smoke emitted from cigarettes. Whether such uses were intended for all or many of the agents is unknown. The results provide a clear rationale for regulatory control of the use of tobacco additives.

This project was supported by a pilot grant from the NIMH NRSA training grant MH 14585.

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POS1-010
CARCINOGEN EXPOSURE WHEN SWITCHING TO LIGHT CIGARETTES

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Light cigarettes are perceived by many smokers as less hazardous than higher yield cigarettes. We assessed a battery of biomarkers of tobacco smoke exposure, including the carcinogens NNAL and polycyclic aromatic hydrocarbons (PAHs), and examined the behavioral nature of compensation in smokers switched from regular to light cigarettes. Sixteen healthy smokers participated in a 3 week crossover study in which they smoked their usual cigarettes for weeks 1 and 3 and smoked light cigarettes during week 2. The FTC nicotine yield of the light cigarette was selected to be 50% of the smokers usual brand. Blood cotinine concentrations indicated that compensation averaged 78%. Compensation was accomplished by smoking cigarettes more intensively (accounting for 74% of the compensation) and by smoking more cigarettes per day (26% of the compensation). Urinary excretion of NNAL and PAHs (metabolites of pyrene, naphthal, fluorene and phenanthrene) was similar comparing light and regular cigarette smoking. Thus, short-term switching resulted in no significant reduction in carcinogen exposure. Our assessment, based on a more complete battery of biomarkers than has previously been reported, supports the idea that switching to light cigarettes is unlikely to reduce the cancer risks of smoking.

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POS1-011
GENETIC AND ENVIRONMENTAL INFLUENCES ON MULTIPLE SMOKING OUTCOMES: FINDINGS FROM THE VIETNAM ERA TWINS

Michael Lyons*, Matthew Panizzon, Michael Grant, Seth Eisen, and Ming Tsuang

Smoking is not a unitary construct; rather, it is a multifaceted phenomenon. To capture this complexity, we examined data on a range of smoking behaviors: 1) ever a regular smoker; 2) age of smoking initiation; 3) number of cigarettes smoked during heaviest regular use; 4) lifetime DSM-III-R nicotine dependence; and 5) current smoking (circa age 42). Participants were members of the Vietnam Era Twin Registry, a national sample of male twin pairs in which both served in the military during the Vietnam era (1965-1975). The mean age of the 6,744 participating twins was 42 (range 33-53). Information about smoking was derived from a telephone administration of the Diagnostic Interview Schedule. Data were analyzed using biometrical modeling. Regular smoking was the only outcome significantly influenced by the family environment. All five smoking variables reflected a moderate degree of genetic influence, with heritabilities ranging from 0.43 to 0.61. We also fitted a multivariate model that included regular smoking, lifetime nicotine dependence, and current smoking. We found that 67% of the genetic variance in regular smoking is shared with nicotine dependence and 31% is shared with current smoking. While 29% of the genetic variance in nicotine dependence is shared with current smoking. The extent to which environmental variance was shared among these variables was considerably less. Our results indicate that there is substantial overlap among these smoking variables in terms of genetic influences, while aspects of the environment that influence each outcome tend to be specific to that outcome.

National Institute on Drug Abuse.

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GENETICS OF NICOTINE ADDICTION: A FINNISH FAMILY STUDY

Anu Loukola1, Heidi Maunu, Katri H. Heikkinä, Aki Salo, Elisabeth Widen, Ulla Broms, Matti Siivola, Kauko Heikkinä, Pamela A.F. Madden, Leena Peltonen, and Jaakko Kaprio

Finding genes contributing to smoking and nicotine addiction has proven to be challenging. Although a high heritability of nicotine dependence has been clearly demonstrated, very few studies have revealed either linkage to specific loci or identified alleles associated with the phenotype. As part of an international consortium, we utilize the unique population of Finland, specifically a large twin cohort with extensive phenotypic profiles, to address these issues. The study sample consists of families ascertained for heavy smoking in at least two sibs. Data on cigarette use and nicotine dependence defined using DSM-IV and Fagerström criteria, obtained by diagnostic telephone interview, and samples of DNA have been collected from 1625 individuals. As the genetic predisposition to nicotine dependence is expected to result from the interplay of several genes, each with a small to moderate effect, we have taken two complementary approaches: (A) a positional approach by performing a genome-wide scan, and (B) a functional approach by analyzing genes with relevant known functions. We have performed a genome-wide scan at 10 cm resolution in 156 families with 522 individuals. Potentially interesting loci were identified at chromosomes 7, 10, 11, 14 and 22, and we are currently fine mapping the regions as well as identifying plausible candidate genes. In our functional candidate gene approach we have analyzed the allelic spectrum of six genes: CHRNA4, CHRNA5, CHRNA7, CHRNB1, CYP1A2 and CYP2A6 in 720 individuals, and have found interesting initial evidence for association. Detailed linkage and allelhaplotype association analyses are ongoing.

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GENETIC VULNERABILITY TO NICOTINE WITHDRAWAL: AUSTRALIAN FAMILIES

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Despite the public health significance of smoking, and evidence from adult twin studies for a strong genetic influence on smoking behavior (heritability estimates as high as 70%), there has been limited research designed specifically to identify genes that contribute to risk of addiction to nicotine in humans. As part of an international consortium, families have been ascertained through panels of adult Australian and Finnish twins, and a sample of spouses of Australian twins, who have been identified as having a history of heavy smoking in earlier surveys. Diagnostic telephone interviews on index cases, full siblings and parents were completed to identify sibships with at least one affected sibpair (ASP) concordant for heavy smoking (target 400 Australian and 400 Finnish families with approximately 600 ASPs from each). A 10Mb genome-wide scan has been conducted on samples of DNA obtained from 100 Australian families, including 493 individuals. Quantitative trait locus analyses have been conducted for quantitative measures of nicotine dependence including the Fagerström Test for Nicotine Dependence (FTND: Heatherton et al., 1991) and the two-item Heavy Smoking Index (HSI: Heatherton et al., 1989). Results for the HSI were more significant than for the FTND. Suggestive linkage (p<0.001) was found for HSI on chromosomes 15 (lod: 2.73). This finding is preliminary, being based on a small subset of families. Similar phenotypes are being examined in data obtained from families in Finland.

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A TWIN STUDY OF NICOTINE DEPENDENCE BASED ON THE NDSS SCALE

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Twin and family studies have indicated a major contribution of genetic factors to interindividual differences in degree of nicotine dependence among smokers. Estimates of heritability may vary with operationalization of the phenotype. Using DSM and Fagerström-based measures, estimates of heritability in adult twin samples range from 60 to 75%. The Nicotine Dependence Syndrome Scale (NDSS; Shiffman et al. NTR 2004;6:327-48) is a multidimensional measure of nicotine dependence including the Fagerström Test for Nicotine Dependence (FTND: Heatherton et al., 1991) and the two-item Heavy Smoking Index (HSI: Heatherton et al., 1989). Results for the HSI were more significant than for the FTND. Suggestive linkage (p<0.001) was found for HSI on chromosomes 15 (lod: 2.73). This finding is preliminary, being based on a small subset of families. Similar phenotypes are being examined in data obtained from families in Finland.

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POS1-016  GENETIC FACTORS AND DSM-IV NICOTINE WITHDRAWAL IN U.S. ADOLESCENT AND YOUNG ADULT TWINS

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Genetic influences on nicotine withdrawal have not been reported in adolescents and young adults. This study examined whether genetic factors contribute to nicotine withdrawal in adolescent and young adult smokers. Data were obtained by telephone diagnostic interview in 3790 individual Missouri female and male twins (including 556 MZF pairs, 419 DZF pairs, 363 MZM pairs, 236 DZM pairs; age 14-21). A two-stage genetic model was fitted to take account of the fact that genetic risk of withdrawal cannot be assessed in those who have never progressed beyond experimentation. Substantial genetic contributions were found both for progression (smoking 20 or more cigarettes lifetime; Additive Genetic Influence (A): 55% (95% Confidence Interval: 39%-79%)) and for nicotine withdrawal (defined only for those who had smoked 20 or more times; A: 64% (95%CI: 30%-77%)). In contrast, a significant shared environmental influence (C) was found only for progression (C: 24%; 95% CI: 10%-48%), but not for withdrawal (C: 0%; 95%CI: 0%-30%). Findings suggest substantial genetic variance on nicotine withdrawal in adolescents and young adults, and unlike earlier stages of smoking, environmental effects appear to have less influence on nicotine withdrawal.

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POS1-018  CORRELATES OF DAILY POSITIVE SMOKING OUTCOME EXPECTANCIES

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According to social learning models, increases in positive smoking outcome expectancies (PSOE; e.g., expectations that smoking will improve mood) during a quit attempt may promote relapse. We previously showed that daily increases in PSOE are associated with an increased risk of experiencing a first lapse to smoking on the following day. Therefore, it is important to identify factors associated with daily changes in PSOE. Here, 262 smokers used palm-top computers to record their quit experience during a randomized controlled trial of NRT (24-hour, 35 mg patch). PSOE (aggregate of 7 items) and depression (CES-D) were assessed daily. Craving, affect, arousal, exposure to smoking cues, and cigarette availability were assessed multiple times each day at random times (prompted by the computer) or when the participant reported being tempted to smoke. Daily PSOE during abstinence were associated with more intense craving and with depressive symptoms. Subjects on active NRT had lower levels of PSOE, but the association with craving and depression was similar for the two groups. Knowledge of the relationship between craving and depression and PSOE may be useful in the design of cessation interventions.

his study was conducted while the first author was at the University of Pittsburgh. Supported by NIDA grant DA06084. Dra. Shiffman and Paty are co-founders of invivodata, inc. which provides electronic diaries for clinical trials.

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POS1-017  MENTAL HEALTH: CHARACTERISTICS OF SMOKERS AND NON-SMOKERS

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The Canadian Community Health Survey (CCHS) is a cross-sectional survey of approximately 130,000 persons aged 12 and older. Between 200 and 2001 data on a number of health issues and their determinants were collected. Differences in various mental health characteristics between smokers and non-smokers in Canada were examined. The prevalence of current smokers was 26%, with the highest smoking rate among those aged 20-29 (34%) and the lowest was for those over 65 (6%). Of males, 28% were smokers while 23.8% of females were smokers. In terms of self-perceived stress, non-smokers were more likely than smokers to feel that most days were not at all stressful. Of those who reported that most days were quite a bit stressful were 18.1% of non-smokers and 22.8% of smokers. For the most stressed, 39% were smokers, far more than the 26% of the population they represent. Of those classified as happy and interested in life were 78% of non-smokers but only 69% of smokers. On the mastery scale, 13.7% of non-smokers but only 6.9% of smokers fell within the lowest 15 categories. Smokers also reported lower levels of affection than non-smokers. On the depression scale, 92% of non-smokers but only 84% of smokers scored a zero (the lowest score). In fact, although smokers were only 26% of the sample, they represented 40% of those with a score above zero on the depression scale. Smokers score lower than non-smokers but only 84% of smokers scored a zero (the lowest score).

Results: 71 patients (48 Males and 23 Females), mean-age(year)=57.6 (57 M, 59 F); cig/day=21.01 (23.16 M, 15.2 F); FTND=5.6 (5.58 M, 4 F); joined the study. Overall 61 (85.9%) suffered from an active disease, 51 (71.8%) had acute (#18=35.2%) or chronic (#33=64.7%) respiratory diseases. Prochaska model. Overall 61 (85.9%) suffered from an active disease, 51 (71.8%) had acute (#18=35.2%) or chronic (#33=64.7%) respiratory diseases. 27/31 (87.1%) had attempted to quit at least once (18 M 66.6%, and 8 F 33.3%). As for the outcomes, 12/31 (16.0%) left the treatment after the first visit, 36 completed the treatment. Among them- after the first month- sustained smokers were 25 (42.3% vs. 52% M, 48% F). Quitters were 32 (54.23% vs. 87.5% M, 12.5% F), while reducers (at least -50%) were 2 males (3.38%). Conclusions: Present preliminary data show that it is possible to include in a treatment, patients non motivated to quit with a successful outcome in the short-term, without a high rate of dropouts. A follow-up will continue until one year. In our opinion a pro-active approach can be effective in non motivated smokers, even if suffering from acute or chronic diseases.

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The variable of readiness to quit smoking is frequently assessed in tobacco research, and the most common instrument for measuring readiness to quit is the stage of change algorithm. Nevertheless, the validity of the stage of change algorithm has received little scrutiny. The current study assessed the construct of readiness to quit using a variety of questionnaire items in addition to the stage of change algorithm. Questionnaire items were designed to measure different dimensions of readiness to quit. Two hundred twenty smokers were recruited via newspaper advertisements. These participants smoked a mean of 19.1 cigs/day. The stage distribution of the sample was: Precontemplation = 31%, Contemplation = 48%, and Preparation = 21%. These data reveal a fairly representative sample of smokers in terms of cigarette consumption and readiness to quit as measured by the stages of change. The results revealed large and surprising differences between the stages of change and other questionnaire items measuring readiness to quit. These differences were most pronounced for participants in the Precontemplation stage. For example, only 31% of Precontemplators indicated that they did not want to quit smoking, and just 12% of Precontemplators indicated that they were not interested in quitting some day. These results and many others suggest that most Precontemplators are in fact contemplating quitting smoking. More generally, these results show that the measurement of readiness to quit is very sensitive to changes in the wording and format of questionnaire items. Additional analyses explore other related constructs to help explain the differences between the stages of change and the other questionnaire items measuring readiness to quit. Supported by NIDA R03 DA16667.

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POS1-024  BEHAVIORAL, DEMOGRAPHIC AND SOCIOECONOMIC VARIABLES AS POTENTIAL PREDICTORS OF SUCCESSFUL SMOKING CESSATION, VIS-À-VIS A CLINICAL TRIAL


Smoking cessation data generated both in the United States and Europe have indicated a semi-consistently positive association with socioeconomic status and successful smoking cessation outcomes. We statistically analyzed data from 253 patients recently enrolled in and completing one of several double-blind smoking cessation clinical trials. We analyzed a number of previously reported predictive variables, including Education, Marital Status, the Age one Began Smoking, the Number of Cigarettes one Smokes Per Day (at time of study entry), their self-reported Motivational level [to quit smoking], and Cohabitation with a Smoker. In contrast with some previously reported data [both by us and others], these new results indicate that neither socioeconomic status nor marital status was as strongly associated with successful cessation effort outcomes. The Age at which one Began Smoking (<p<0.0005), the Number of Cigarettes smoked per day (p<0.05) and Cohabitation with a Smoker (p<0.01), were all highly significant in terms of a correlation with successful versus unsuccessful smoking cessation efforts. Although somewhat in contrast with several previously reported predictors, our results provide one with useful insights pertaining to patients behavioral, demographic and socioeconomic characteristics as potential indicators of successful smoking cessation efforts, particularly within the context of a double-blind clinical trial.

Funding for this retrospective study, including all of the statistical analyses, was provided [internally] by Pharmacology Research Institute.

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POS1-025  DO PERSONALITY FACTORS SUCH AS TIME PERSPECTIVE AND SENSATION-SEEKING PREDICT QUITTING ACTIVITY AMONG SMOKERS? FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

Hua H. Yong*, Ron Boland, Mohammad Siahpush, Peter A. Hall, and Geoffrey T. Fong for the ITC Research Team

Personality factors such as time perspective and sensation-seeking have been shown to predict smoking uptake. However, little is known about the role of these factors in influencing quitting among smokers. This study examined prospectively the predictive ability of personality factors such as time perspective and sensation-seeking on quitting activity of adult smokers using the first two waves of the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4), a random digit dialed telephone survey of a cohort of over 8,000 adult smokers from UK, US, Canada, and Australia, with follow-up rate ~ 75%. It was hypothesized that future time perspective would enhance, while sensation-seeking would inhibit, quitting among smokers. Future time perspective (measured by a single item from the Fong and Hall (2003) Time Perspective Questionnaire) but not sensation seeking was a significant predictor of quit attempts even after adjusting for socio-demographic variables and for factors known to enhance quitting (e.g., intention to quit, perceived benefit of quitting, concerns about health effects of smoking); and those known to inhibit quitting (e.g., perceived addiction, enjoy smoking, perceived value of smoking). The predictive ability of time perspective was similar across countries. These findings have important implications for developing strategies for encouraging quitting among smokers with low future time perspective.

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POS1-026  DECOMPOSING THE EFFECT OF DEPRESSIVE INDEX AS A PREDICTOR OF SMOKING CESSATION IN CANADA

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BACKGROUND: Depressed mood has been found to be associated with inability to quit smoking. However, the specific pathways by which this relationship occurs are unknown. In an attempt to understand factors leading to depressed mood, this study investigated the respective contribution of personality traits, which are genetically affected factors, and coping, which is clinically modifiable, in determining level of depressed mood.

METHODS: Data from 600 smokers of >15 cigarettes/day without current depression who participated in a smoking cessation study were analyzed. The main outcome measure was sustained biologically-confirmed abstinence during the last 4 weeks of the 3-months trial. Mood was assessed by the Beck Depression Inventory (BDI), personality traits were assessed by the Revised NEO Personality Inventory (NEO-PI-R), and coping by the Revised Ways of Coping Checklist (RWCC).

RESULTS: 14.7% (88/600) (intent to treat analysis) were sustained abstainers. Baseline BDI >10 predicted failure to quit (OR: 5.59; 95% CI: 1.31-23.9). Coping was a modest direct predictor of smoking cessation (p=0.07) but personality traits were not. Logistic regression analysis showed that the BDI 10 was predicted positively by Neuroticism (p<0.001) and inversely by Openness (p<0.018) and among RWCC factors, positively by wishful thinking (p<0.001) and inversely by seeking for social support (p<0.02) and problem focusing (p<0.03).

CONCLUSIONS: The observed relationships between mood and both personality traits and coping suggest a theoretical model involving an indirect effect of certain personality traits and coping on smoking cessation through mediation by mood. Targeted and intensive interventions that increase coping skills or affect level of neuroticism conducted prior to or in conjunction with a smoking cessation attempt may be necessary to improve the generally poor outcomes associated with smoking cessation among addicted smokers.

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POS1-027  THE EFFECTIVENESS OF THE HEAVINESS OF SMOKING INDEX AS A PREDICTOR OF SMOKING CESSATION IN CANADA

Michael Chaiton*

Nicotine addiction is a major impediment for many people in quitting smoking. Using the National Population Health Survey, the relationship between Heaviness of Smoking Index (HSI) at baseline in Cycle 2 (1996-97) and successful smoking cessation at Cycle 3 (1998-99) and Cycle 4 (2000-01) was examined in 2938 Canadian adult smokers. A logistic regression model was developed for HSI as a predictor of smoking cessation, and then tested for effect modification and confounding. The odds ratio of not smoking in cycle 3 was 2.08 (95% CI: 1.51, 2.86; p<0.001) for high HSI (>4), both compared to moderate HSI. When the period of follow-up was extended, individuals with high HSI scores were more likely (OR 2.16; 95% CI: 1.11, 4.21; p=0.02) to report not smoking at both cycle 3 and cycle 4 than those with moderate HSI scores. On a population basis, the quit rate of moderate smokers was disappointingly low. When considering nicotine dependence in a population, other models, such as the effect of cognitive and affective factors, should be considered when approaching smoking cessation.

Canadian Institute for Health Research Strategic Training Program in Tobacco Research.

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SMOKING FOR PLEASURE VERSUS SMOKING TO COPE: RELATIONSHIP TO DEPENDENCE AND TREATMENT OUTCOME

Zoë Juniper*, Peter Hajek and Hayden McRobbie

Most smokers smoke for a mixture of perceived positive effects, such as pleasure and stimulation (‘peak seekers’) in MAH Russell’s terminology), and negative reinforcement effects, such as withdrawal relief and stress management (‘tough maintainers’). We examined one possible way of categorizing smokers into the positive and negative reinforcement categories via a questionnaire item: Do you mainly smoke for pleasure, or because it helps you cope? Mainly to cope, About equal, Mainly for pleasure, Neither. In 3,037 smokers treated at the East London Smokers Clinic who provided complete data, 24% responded that they smoke mainly for pleasure, 25% to cope, 49% ‘about equal’ and 2% neither. Patients who reported that they smoke in order to cope had significantly higher Fagerstrom Test for Nicotine Dependence (FTND) scores than those who reported smoking for pleasure (p<0.001). However, there was no significant difference between the two groups in terms of treatment outcome at one-month or one-year follow. FTND predicted outcome at one month and at one year. Adding the item to FTND did not improve its predictive power. The differences between individuals who smoke primarily for positive reinforcement, and those who smoke primarily for negative reinforcement, warrant further study.

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CATECHOLAMINERGIC AND CARDIOVASCULAR REACTIVITY IN NICOTINE DEPRIVED AND NONDEPRIVED SMOKERS DURING A PSYCHOLOGICAL STRESS TASK

Jason D. Robinson*, Paul M. Cinciripini, Brian L. Carter, and Cho Y. Lam, University of Texas M.D. Anderson Cancer Center

Smoker’s higher risk of cardiovascular disease may be linked to exaggerated cardiovascular responses to psychological stress. We examined whether nicotine interacted with stress to produce acute increases in sympathetic activation, as measured by catecholamine (epinephrine and norepinephrine) and cardiovascular activity. Fifteen smokers participated in two 120-minute laboratory assessment sessions, once following overnight nicotine abstinence and once following ad libitum smoking. During both sessions, participants cardiovascular responses were measured during a 10-min baseline and a 40-min challenge task (computerized reaction time game with a monetary reward). Plasma catecholamines were measured immediately following both tasks. Analyses of covariance were conducted that examined the main effect of abstinence on post-challenge task catecholamines, while covarying the baseline measures. Significant main effects of abstinence were found for epinephrine and norepinephrine such that participants produced larger post-challenge task values following smoking compared to abstinent sessions. For the cardiovascular measures, analyses indicated that smoking increased heart rate, mean arterial pressure, and heart rate product, and decreased pre-ejection period, relative to abstinence during the challenge task. These results suggest that the acute effects of nicotine increase cardiovascular response to a psychological stressor in cigarette smokers, most likely by enhancing sympathetic activation.

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SEX DIFFERENCES IN THE EFFECTS OF SMOKING STATUS ON SALIVARY ALPHA-AMYLASE LEVELS: A MARKER OF CATECHOLAMINE ACTIVITY

Courtney A. Whetzel*, B.S., Penn State; Elizabeth J. Corwin, Ph.D., Ohio State; Douglas Granger, Ph.D., and Laura Cousino Klein, Ph.D., Penn State

Alpha-amyrase, an enzyme secreted by the salivary glands, is correlated with central catecholamine levels. For example, catecholamines and alpha-amyrase respond similarly to stress. New assay methods allow reliable detection of alpha-amyrase in saliva, which provides an opportunity to measure catecholamine correllates in the laboratory without the difficulty of invasive blood drawing procedures. The present study examined whether alpha-amyrase could be measured in the saliva of smokers and non-smokers. Differences in alpha-amyrase levels among male and female smokers while smoking and following 24-hr smoking abstinence, and in non-smokers, were tested. Twenty-two non-smokers (12 males, 10 females) participated in one laboratory session; twenty smokers (12 males, 8 females) participated in two sessions: while smoking ad lib and following 24-hr smoking abstinence. Saliva was collected at the end of each session and assayed for alpha-amyrase by enzyme immunoassay. Salivary cotinine levels confirmed smoking status. Overall, alpha-amyrase levels among non-smokers did not differ from smokers while smoking or following 24-hr abstinence. However, gender interacted with smoking status such that, among non-smokers, females displayed lower alpha-amyrase levels than did males (p<0.05). In contrast, among smokers, females displayed higher alpha-amyrase levels than did males, regardless of smoking condition (p<0.05). These findings are consistent with Staley et al’s (2001) findings using SPECT imaging of catecholamine activity and suggest that salivary alpha-amyrase may be a useful, less expensive and non-invasive tool to approximate central catecholamine activity in smokers.

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ALTED STRESS RESPONSE AND VULNERABILITY FOR SMOKING RELAPSE

Mustafa al’Absi*, Dorothy Hatuskami, and Gary L. Davis

Research has demonstrated that psychosocial stressors increase smoking and risk for smoking relapse. Alterations in biological systems involved in the stress response caused by chronic smoking may contribute to early relapse. This study was designed to examine the extent to which hypothalamic-pituitary-adrenocortical and cardiovascular responses to stress following the first 24 hours of a quit attempt predict early relapse. Seventy-two smokers interested in cessation attended a laboratory stress session 24 hours after the beginning of their cessation attempt. Adrenocorticotropic (ACTH), plasma and salivary cortisol concentrations, systolic and diastolic blood pressure (BP), heart rate (HR), and mood reports were obtained during rest and in response to acute psychological stressors (public speaking and cognitive challenges). Participants attended four weekly follow-up sessions to measure smoking status and verify abstinence. Those who relapsed within four weeks showed attenuated hormonal and cardiovascular responses to stress, exaggerated withdrawal symptoms, and mood deterioration after quitting. A series of regression analyses to predict number of days until relapse confirmed these results with attenuated responses to stress predicting shorter time to relapse, especially in men. Among women, withdrawal symptoms and mood changes consistently predicted time to relapse. These results suggest that altered stress response may indicate increased vulnerability for smoking relapse.

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POS1-032  EFFECTS OF PROLONGED NICOTINE INFUSION TO RATS ON RESPONSES TO RESTRAINT AND COLD STRESS

Shu-Yuan Cheng, Dina Glazkova, Lidia Serova, and Esther L. Sabban*

There is a paradoxical relationship between nicotine and stress. Although nicotine triggers some of the physiological effects observed with stress, including the increase synthesis of catecholamines, smokers claim that cigarette smoking relaxes them. Here, we study whether nicotine infusion can modulate effects of stress. Nicotine (1.5, 5 or 8 mg/kg/day) or saline (control) were delivered with osmotic pump for 7 or 14 days and then rats were exposed to restraint or cold stress. Plasma corticosterone and mRNA levels of NE biosynthetic enzymes, TH and DBH, in adrenal medulla (AM) and locus coeruleus (LC) were examined. Nicotine attenuated several responses to stress. Plasma corticosterone was less elevated in nicotine treated compared to untreated rats. In AM, the highest dose of nicotine significantly ameliorated the restraint stress elicited increase TH mRNA. Nicotine did not alter the cold triggered changes in TH mRNA. All the doses of nicotine attenuated rise in DBH mRNA to restraint or cold stress. In LC, nicotine did not alter the rise in TH mRNA with cold or restraint stress. However, it attenuated rise in DBH mRNA to repeated restraint stress. Interestingly, with cold stress, the response of the animals was split, in about half the animals nicotine prevented cold stress induced rise in DBH mRNA, while in the others it was ineffective. Involvement of alpha 7 nicotinic acetylcholine receptor subtypes was examined with the methyllycaconitine (MLA) Rats were injected ip with saline or 6.2 mol/kg MLA, 25 min before stress. MLA injections prevented the cold stress triggered rise in TH and DBH mRNA in LC, but not in AM. The results indicate that nicotine infusion, or selective blockers of alpha 7 nicotinic acetylcholine receptor, can attenuate some, but not all of the stress responses, and demonstrate region and stressor specificity. Supported by N00014-02-1-0325 from Office of Naval Research and NS 28869 from NIH.

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POS1-033  DIFFERENCES IN RETROSPECTIVE REPORTS OF DIZZINESS AND NAUSEA UPON INITIAL EXPERIMENTATION WITH SMOKING IN NEVERSMOKERS BASED ON FAMILY HISTORY OF SMOKING AND PROBLEM DRINKING

Raphaela Ninowski*, M.A., Cynthia S. Pomerleau, Ph.D., Sandy M. Sneeden, M.S., Ann M. Mehringer, M.S. and Ovide F. Pomerleau, Ph.D., University of Michigan Nicotine Research Laboratory

We studied 139 nicotine-exposed never-smokers to investigate the contribution of family history of smoking and family history of alcohol use to differences in sensitivity to nicotine in never-smokers. Data were obtained on 1) parental smoking status (FHS; 0 vs. 2 eversmoking parents); 2) parental alcohol status (FHA; 0 vs. at least one parent with a history of problem drinking); and 3) early experiences with smoking (retrospective reports of pleasurable and displeasurable sensations, dizziness, nausea, buzz, and relaxation upon initial experimentation with smoking, rated on a scale of 1-4). There were no significant main or interaction effects of FHS and FHA on age, gender distribution, or race distribution. No differences were found based on FHS. For FHA, significant group differences were detected for dizziness (FHA+: 1.78 ±0.76, p=.030); nausea (FHA+: 1.78 ±0.76, p=.030); and dizziness, nausea and urge to smoke in response to nicotine self-administration. Objective measures of dizziness such as body sway and tremor may further elucidate the impact of a genetic predisposition to addiction dependence, over and above a genetic predisposition to nicotine dependence, upon sensitivity to nicotine. Funded by DA021259 to the last author.

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POS1-034  THE ACUTE EFFECTS OF NICOTINE ON POSITIVE AND NEGATIVE AFFECT IN ADOLESCENT SMOKERS

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Although anecdotal and retrospective self-report data suggest that adolescents attribute their smoking to its ability to reduce negative affect, few controlled investigations have assessed the acute effects of smoking and/or nicotine on emotion in adolescent smokers. We examined changes in both positive and negative affect in 45 adolescent smokers (mean age=17.8; 81.5% female) who smoked either a high-yield (HY; 1.14 mg/nic; 17.9 mg/tar) or low-yield (LY; .06 mg/nic; 15.9 mg/tar) nicotine cigarette (Ultradeck, Inc.) in an ad libitum fashion. Participants smoked, on average, 5.6 days a week and 3.6 cigarettes a day. Serving as a control group, 27 adolescent non-smokers (NS; mean age=17.6; 82% female) also participated in the study. All three experimental groups completed the Positive and Negative Affective Schedule (PANAS; Watson et al, 1988) immediately before (Time 1) and after (Time 2) the smoking period. Non-smokers were asked to relax during this 6-min period. Two separate 3 (Group: HY, LY, NS) X 2 (Time 1, Time 2 PANAS, repeated measures) ANOVAs on negative (NA) and positive (PA) affect resulted in significant interaction effects (ps <.001). Whereas those in both the HY and LY nicotine conditions experienced significant decreases in NA, PA was significantly reduced in the HY group, but not the LY group. The NSs experienced no significant change in either PA or NA. Implications of the differential findings on PA and NA will be discussed.

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POS1-035  DOSE-RELATED EFFECTS OF NICOTINE NASAL SPRAY ON COGNITIVE PROCESSING

Stephen J. Heishman*, Ph.D., Carol S. Myers, Ph.D., Richard C. Taylor, M.A., and Eric T. Mochian, M.D., NIDA/IRP

We examined the effect of nicotine nasal spray (Nicolotrol) on three cognitive tests: continuous performance (sustained attention), N-back (working memory), and arithmetic (computational skills). Participants were 20 (of 24 planned) adult smokers (13 men, 7 women). Participants took part in one training and two experimental sessions. At one experimental session, participants were tobacco deprived for 12 hours and smoked ad libitum before the other session; order of sessions was counterbalanced. In each experimental session, 3 doses of nicotine nasal spray (0, 1 and 2 mg) were administered 90 minutes apart in randomized order. A battery of physiological, subjective, and cognitive measures was assessed before each dose and was repeated for 40 minutes after dosing. Physiological measures and nicotine plasma concentration will be reported elsewhere. Nicotine dose-dependently increased subjective ratings of alert, head rush, and stimulated, and decreased ratings of relaxed, urge to smoke, and drowsy. Performance on the arithmetic test (single digit addition and subtraction) was enhanced by nicotine in a dose-related manner. Percent correct responding was increased and reaction time to all problems and correctly answered problems was decreased. Subjective data are consistent with previous reports and indicate that psychoactive doses of nicotine were delivered. To our knowledge, this is the first study to demonstrate the dose-related enhancing effect of nicotine on computational abilities.

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POS1-036  PET IMAGING WITH [BETA-11C]-L-DOPA TO QUANTIFY BRAIN NICOTINE ABSTINENCE

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The hypothesis for this research was that brain dopamine (DA) utilization would decrease during abstinence from repeated nicotine administration. Six young Macaca mulatta monkeys were given 0.9% NaCl or nicotine in doses of 32 µg/kg (low) or 100 µg/kg (high) i.m. bid for 9 days. On the 10th day, PET measurements were repeated before and after nicotine administration. The PET studies were done in habituated, trained, and fully conscious animals. Compared to the control condition, the binding potential (Kd/K1) of [11C]raclopride in dorsal or ventral striatum did not change with either dose following acute, repeated nicotine, or in the nicotine abstinent state. These negative data in unanesthetized monkeys are similar to what we previously reported for single acute doses of nicotine. The effects of nicotine on monkey brain DA are apparently too small to be detected by [11C]raclopride. Compared to control, acute nicotine in either dose did not affect the DA utilization rate constant (K5) in dorsal or ventral striatum. However, in monkeys given nicotine repeatedly, after overnight nicotine abstinence, DA utilization was reduced significantly. A subsequent nicotine dose increased DA utilization to slightly above control levels. The ventral striatum showed greater changes than the dorsal striatum. The reduced rate of DA synthesis as assayed with [beta-11C]L-DOPA during nicotine abstinence and its reversal by nicotine provides an important PET measure of brain nicotine dependence and withdrawal.

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POS1-037  DOES TRANSDERMAL NICOTINE REDUCE THE EFFECTS OF A CONCURRENTLY ADMINISTERED CIGARETTE?

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Transdermal nicotine (TN) is an efficacious smoking cessation pharmacotherapy. TN is thought to work, at least in part, by suppressing withdrawal symptoms in abstinent smokers, and laboratory studies demonstrate this effect. Differential withdrawal suppression in men and women may underlie reports of differential efficacy. The purpose of this acute laboratory study is to examine if smokers gender influences TN-induced withdrawal suppression. Overnight-abstinent smokers (50 women; 75 men) completed four, double-blind, randomized, 6.5-hour laboratory sessions in which further cigarette administration. Withdrawal, heart rate, and cognitive performance were assessed hourly and heart rate was recorded continuously. Results demonstrate TN-induced withdrawal symptom suppression on most measures (e.g., individual symptom ratings and both factors of the questionnaire of smoking urges or GSU) and suggest that on some measures this suppression is dose-related. For example, for GSU Factor 2, at four hours after TN administration (when peak nicotine blood levels are expected), mean scores were 60.6 for placebo, 55.6 for 7 mg, 51.1 for 21 mg, and 47.7 for 42 mg. Heart rate increased in a TN dose-related manner. There was little evidence of a differential effect between men and women (i.e., a dose by time by gender interaction was observed on two withdrawal measures: irritability/frustration/anger and GSU Factor 2). Results from this laboratory study confirm TN-induced withdrawal suppression, and suggest that it does not depend upon smokers gender.

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POS1-038  ABSTINENCE-INDUCED WITHDRAWAL SUPPRESSION IN SYRIAN SMOKERS

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Transdermal nicotine (TN) is a proven smoking cessation pharmacotherapy, though there are suggestions of lower efficacy in women. TN is thought to work, at least in part, by suppressing withdrawal symptoms in abstinent smokers, and laboratory studies demonstrate this effect. Differential withdrawal suppression in men and women may underlie reports of differential efficacy. The purpose of this acute laboratory study is to examine if smokers gender influences TN-induced withdrawal suppression. Overnight-abstinent smokers (50 women; 75 men) completed four, double-blind, randomized, 6.5-hour laboratory sessions in which further cigarette administration. Withdrawal, heart rate, and cognitive performance were assessed hourly and heart rate was recorded continuously. Results demonstrate TN-induced withdrawal symptom suppression on most measures (e.g., individual symptom ratings and both factors of the questionnaire of smoking urges or GSU) and suggest that on some measures this suppression is dose-related. For example, for GSU Factor 2, at four hours after TN administration (when peak nicotine blood levels are expected), mean scores were 60.6 for placebo, 55.6 for 7 mg, 51.1 for 21 mg, and 47.7 for 42 mg. Heart rate increased in a TN dose-related manner. There was little evidence of a differential effect between men and women (i.e., a dose by time by gender interaction was observed on two withdrawal measures: irritability/frustration/anger and GSU Factor 2). Results from this laboratory study confirm TN-induced withdrawal suppression, and suggest that it does not depend upon smokers gender.

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POS1-040  SEX DIFFERENCES IN THE INFLUENCE OF NICOTINE AND DOSE INSTRUCTIONS ON SMOKING BEHAVIOR

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Some research suggests that women may be more responsive than men to non-nicotine influences on smoking, perhaps including verbal information (i.e., instructions), and less responsive to nicotine dose. Smokers (n=60 men, 60 women) abstained from smoking overnight prior to one session, in which they were randomly assigned to one of four groups. Half of the subjects received nicotine cigarettes (Quest 1, yield of 0.6 mg), and the other half received denicotinized cigarettes (Quest 3, yield of 0.05 mg). Within each subsample, half the subjects were accurately instructed they were receiving a regular nicotine cigarette or a no nicotine cigarette, while the other half received no instructions about the nicotine content of the cigarette. Subjects took 2 puffs from the cigarette, rated it on subjective measures, and then smoked more of that same brand ad lib over the next 30 mins. Results showed an interaction of sex x instructions dose for several responses, including liking (p<.001), puff number (p<.05), and latency to first puff during the ad lib period (p<.005). As expected, dose effects in women were larger among those given instructions versus no instructions, while dose effects in men were less influenced by instructions or sometimes opposite of those for women. These findings are generally consistent with the notion that women are more responsive than men to verbal information about nicotine dose in cigarettes.

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POS1-041  DO SEX DIFFERENCES INFLUENCE RESPONSE TO NATLEXERONE FOR SMOKING CESSATION?

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Several studies suggest that women may be less responsive to nicotine patch suggesting that new methods to augment treatment for female smokers are needed. Employing a method for using naltrexone in combination with transdermal nicotine replacement (TNR), three doses of naltrexone (25, 50, 100 mg daily) were compared to placebo over a six week double-blind study of 400 smokers stratified by gender (200 men, 185 women served as the basis of the analyses). Analyses of continuous abstinence (not even a puff since the quit date) confirmed the poorer response to nicotine patch for women compared to men (34% vs 43.5%) seen in prior research. With the addition of the 100 mg naltrexone dose, women (53.2%) achieved quit rates similar to those of men treated with the 100 mg dose (50%). With regard to reduction in weight gain, men showed a reduction in weight gain at each dose of naltrexone, whereas the reduction in weight gain in women was seen only at the two lower doses. As hypothesized, naltrexone reduced hazardous drinking in the subset of smokers who drank heavily at baseline, and this effect did not vary by gender. Differences between males and females in drug plasma levels, body weight, adverse events, and medication compliance are discussed as potential factors influencing the outcome of naltrexone treatment for smoking cessation.

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POS1-042  A SOCIAL MARKETING CAMPAIGN TO REDUCE TOBACCO USE AMONG WOMEN

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Alabama Tobacco Free Families (ATOFF) sampled responses to its four-year community-based program of media and policy change promoting reduction of tobacco use among women of childbearing age. The primary objective was to reduce smoking prevalence among pregnant females in Medicaid-supported maternity care, and all women age 14-44. An intensive, award-winning media campaign was supported by program presence at community events. A healthcare provider education component used evidence-based methods for tobacco use assessment and counseling. The social marketing program promoting the media campaign enlisted the help of community organizations and individuals to reinforce change in social norms. The media / social marketing campaign carried the message for females to remain tobacco-free prior to and during pregnancy. Maintenance of a tobacco-free home for the protection of all family members, especially children, was emphasized. Semi-annual community telephone surveys (10,000+) and Medicaid clinic surveys (2,000+) were conducted to assess the level of exposure to the campaign. Cotinine-confirmed smoking prevalence declined among the target population (29% to 21%). Rates among whites were three times higher than among blacks. Baseline clinic data indicated that 36% (n= 381) had heard or seen messages about the dangers of smoking within the last 30 days; about 1/3 (128) reported seeing a television advertisement. After implementation, exposure to television messages increased over time to 88%. Awareness of the ATOFF campaign increased from 33% to 51%. Elements of an effective social marketing campaign include media penetration, community involvement, professional education and partnerships. Sound evaluation methods and mechanisms are essential.

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POS1-043  SEX DIFFERENCES IN CIGARETTE SMOKING BEHAVIOURS: PLASMA Cotinine, LEVEL OF DEPENDENCE AND CIGARETTE CONSUMPTION


Self-report measures of dependence and consumption may only capture a fraction of variance due to individual differences in nicotine consumption. We explored factors influencing plasma cotinine in a cohort of smokers (n = 203) recruited into a pharmacogenetic smoking cessation study. Baseline data on plasma cotinine (ng/ml), plasma nicotine (ng/ml), nicotine dependence (FTND) and cigarette consumption (cig/day) were entered into a linear regression analysis. Plasma cotinine was significantly predicted by plasma nicotine (p < 0.001). Cigarette consumption significantly improved the model further (p = 0.010), rendering consumption non-significant (p = 0.343). Finally, the addition of sex significantly improved the model again (p = 0.005). The final model accounted for 58% of the variance in plasma cotinine (F [4, 199] = 70.20, p < 0.001). Plasma nicotine (p < 0.001), dependence (p = 0.005) and sex (p = 0.005) remained significant in the final model, while cigarette consumption was non-significant (p = 0.510). Plasma cotinine levels were higher in men than women, and positively associated with plasma nicotine and nicotine dependence. Implications for measuring nicotine and cigarette consumption are discussed. The higher cotinine levels in men than women is consistent with evidence that there are sex differences in smoking behaviour beyond cigarette consumption or dependence. That this difference exists when plasma nicotine is controlled for, however, is intriguing and requires further investigation.

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POS1-044  SMOKING TOPOGRAPHY: THE INFLUENCE OF STRESS, WITHDRAWAL, AND GENDER
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The present study assessed smoking topography among continuing and withdrawn smokers in the context of a lab stressor paradigm. All participants first completed self-report measures of personality, trait emotionality, and smoking behavior in a screening session. Dependent smokers, as verified by self-report measures and carbon monoxide readings, were then randomly assigned to either a continuing smoking group (no change in smoking behavior) or a 24-hour withdrawal group for a subsequent laboratory session. In this session participants completed an instructed fear conditioning procedure involving the administration of a series of electric shocks. Continuing smokers smoked one cigarette during an initial baseline period and all participants smoked a cigarette midway through the fear conditioning procedure. Smoking topography was measured for each cigarette using a CRESS micro portable topography device. The topography measures collected included puff volume, duration, inter-puff-interval, average flow, and peak flow. Results indicated that stress significantly altered smoking topography in non-withdrawn, continuing smokers. In addition, significant interactive effects of withdrawal status and gender on smoking topography were also observed during the fear conditioning procedure. Finally, individual differences in trait negative affectivity also predicted smoking topography during the fear conditioning procedure. The results indicate that smoking topography measures may be influenced by such factors as gender, withdrawal, stress, and trait emotionality.

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POS1-045  TRANSDERMAL NICOTINE FOR SMOKING CESSATION IN POSTMENOPAUSAL WOMEN
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Nicotine replacement therapy (NRT) may be less beneficial in women than men. In addition, a history of depression or use of exogenous hormones, such as estrogen replacement therapy (ERT), may negatively influence smoking cessation rates in post-menopausal women. We examined whether the rate of smoking cessation in post-menopausal women given NRT was affected either by history of depression or current ERT. Postmenopausal women (N=152) who smoked > 10 cigarettes daily and not currently depressed participated. Participants received intensive smoking cessation therapy and were randomized to either 21-mg nicotine patch for 3 months with a 1 month taper, or matching placebo. All were followed for one year. Participants randomized to NRT were significantly more likely to remain abstinent from smoking during the study’s treatment phase compared to those randomized to placebo, but not at one-year follow-up. Additionally, a history of depression indicated a worse linear trend for smoking abstinence throughout the study than did a depressive history. ERT was not associated with smoking cessation outcomes. There were no interactive effects on smoking outcomes of NRT for women with either a history of depression or with ERT use. Research on subgroups of smokers, such as postmenopausal women, is needed to understand possible differential response to smoking cessation therapies and, thus, improve long-term success rates. In particular, new data are needed to improve smoking outcomes in women with a history of depression for whom affect regulation may prove to be an important component of cessation.

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POS1-046  SMOKING CESSTATION WITH VARENICLINE, A SELECTIVE NICOTINIC RECEPTOR PARTIAL AGONIST: RESULTS FROM A PHASE 2 STUDY
Cheryl Oncken*, University of Connecticut School of Medicine, Farmington, CT, USA; Eric Watsky, Karen Reeves, and Rich Anziano, Pfizer Global Research and Development, Groton/New London, CT, USA and the Varenicline Study Group

BACKGROUND: Smoking is the leading cause of preventable deaths worldwide. The selective nicotinic receptor partial agonist varenicline represents a new class of agent for smoking cessation.

OBJECTIVE: To evaluate the efficacy and safety of 4 varenicline dose regimens (2 titrated, 2 nontitrated) for promoting smoking cessation.

METHODS: This was a phase 2 multicenter, randomized, double-blind, placebo-controlled study, which included healthy smokers (18-65 years). Subjects were randomly assigned to varenicline 0.5 mg twice daily nontitrated (n=129); 0.5 mg twice daily nontitrated (n=130); 1.0 mg twice daily nontitrated (n=129); 1.0 mg twice daily titrated (n=130), or placebo (n=129) for 12 weeks. Dose titration was conducted over the first week.

RESULTS: The carbon monoxide-confirmed 4-week continuous quit rates (CQRs; Week 9-12 analysis) were higher for the pooled 1.0 mg twice daily varenicline group (50.6%) than for the pooled 0.5 mg twice daily varenicline group (45.1%). The Week 9-12 CQRs were significantly higher for each varenicline group versus placebo (12.4%; P<0.0001). Efficacy was similar for the titrated and nontitrated groups. Varenicline also significantly reduced craving, smoking satisfaction, and psychological reward versus placebo. Varenicline was safe and well tolerated. The incidence of nausea, which was generally mild to moderate and self-limiting, was higher with varenicline versus placebo, but for each dose, titration reduced the overall frequency.

CONCLUSION: Varenicline 0.5 mg and 1.0 mg twice daily promoted smoking cessation, reduced craving and smoking satisfaction, and was well-tolerated. Initial dose titration diminished the incidence of nausea. Varenicline appears to be an effective treatment for smoking cessation.

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POS1-047  VARENICLINE IS EFFICACIOUS AND WELL TOLERATED IN PROMOTING SMOKING CESSTATION: RESULTS FROM A 7-WEEK, RANDOMIZED, PLACEBO- AND BUPROPION-CONTROLLED TRIAL
Cheryl Oncken*, University of Connecticut School of Medicine, Farmington, CT, USA; Eric Watsky, Karen Reeves, and Rich Anziano, Pfizer Global Research and Development, Groton/New London, CT, USA, and the Varenicline Study Group

BACKGROUND: Currently available smoking cessation aids are associated with poor success rates. Varenicline is a novel selective nicotinic receptor partial agonist developed specifically for smoking cessation. Objective: To evaluate the efficacy, tolerability, and safety of 3 varenicline doses for smoking cessation.

METHODS: This was a phase 2 multicenter, randomized, double-blind, placebo-controlled study. Included were healthy smokers (18-65 years). Subjects were randomized to 0.3 mg once daily (n=128), 1.0 mg once daily (n=128) or 1.0 mg twice daily (n=127) for 7 weeks.

RESULTS: The 4-week floating window (any 28-day period) continuous quit rates were significantly higher for varenicline 1.0 mg once daily (37.3%) and 1.0 mg twice daily groups (48.0%) versus placebo (17.1%; P<0.0003 and P<0.0001, respectively), and for bupropion (33.3%) versus placebo (P=0.0022). The response rate for varenicline increased with greater dose. Varenicline 1.0 mg twice daily significantly reduced both craving and smoking satisfaction versus placebo. Varenicline was safe and well tolerated at all 3 doses. Discontinuation due to adverse events was highest with bupropion (15.9%) and lowest with placebo (9.8%). There was no dose-related increase in discontinuation rate for varenicline (11.2-14.3%).

CONCLUSION: Efficacy of varenicline improved with increasing dose. Varenicline 1.0 mg twice daily was well-tolerated, significantly reduced craving and smoking satisfaction, and was associated with a higher smoking quit rate than bupropion. Varenicline could offer an advance over existing prescription smoking cessation treatments.

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POS1-048

METABOLISM AND DISPOSITION OF VARENICLINE, A SELECTIVE NICOTINIC RECEPTOR PARTIAL AGONIST, IN HUMANS AND ANIMALS

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OBJECTIVE: To determine the metabolism and disposition of varenicline in rats, mice, monkeys, and humans after oral administration of [14C]varenicline.

METHODS: Animals and human subjects were orally administered [14C]varenicline followed by blood sampling and quantitative collection of excreta. Samples were analyzed for radioactivity and were profiled by HPLC-MS to identify metabolites.

RESULTS: Recovery of total drug-related material was high in all four species, ranging from 88% to 94%. Of the recovered radioactive material, most was excreted in the urine (75-88% in animals; 99% in humans), with little observed in the feces. Varenicline was cleared primarily as unmetabolized drug. In animals, 86 to 95% of recovered dose was as unchanged varenicline. In humans, 92% of the recovered material was excreted as unchanged varenicline, 4% as the N-carbamoyl glucuronide conjugate, and 2% as 2-hydroxyvarenicline. The plasma half-life of varenicline and total radioactivity were similar to each other in all 4 species. In circulation, the majority of total drug-related material comprised unmetabolized varenicline. In humans, varenicline comprised 91% of total drug-related material and the metabolites in circulation included the N-carbamoyl glucuronide conjugate (4%), an N-glucuronide conjugate (4%), and an N-formyl conjugate (1%), and a putative lactam metabolite (1%). In humans, a comparison of these pharmacokinetic and metabolism data revealed no apparent difference between smokers and nonsmokers.

CONCLUSION: Overall, the disposition of varenicline is simple, with a large portion excreted as unchanged drug in the urine, few metabolites, and similar metabolite profiles in animal species and human smokers and nonsmokers.

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POS1-049

VARENICLINE (CP-526,555): A NOVEL, POTENT, AND SELECTIVE NICOTINIC RECEPTOR PARTIAL AGONIST (SNRPA) FOR THE TREATMENT OF SMOKING CESSATION

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More effective therapeutic approaches for smoking cessation are needed. We hypothesized that a selective nicotinic receptor partial agonist (SNRPA) of the neuronal alpha-4-beta-2 nicotinic acetylcholine receptor would provide sufficient dopaminergic tone to overcome craving and withdrawal while blocking the reinforcing actions of nicotine. Theoretically, this would prevent relapse in cases when the intent is to achieve greater reward via inhaled nicotine. Using as a structural starting point (-)-cytisine, a natural SNRPA with poor bioavailability and limited brain penetration, we sought to identify SNRPA with improved physicochemical properties. Initial synthetic efforts revealed that substitutions at C-3 of cytisine were beneficial, prompting a study of pyridone replacements. Although these exhibited poor brain penetration, we sought to identify SNRPA with improved physicochemical profiles from which varenicline was identified (CP-526,555, IC50nM=0.1) as the most promising. In vivo studies examining dopamine with excellent physicochemical profiles from which varenicline was identified (CP-526,555, IC50nM=0.1) as the most promising. In vivo studies examining dopamine and serotonin revealed no apparent difference between smokers and nonsmokers.

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POS1-050

SAFETY, TOLERABILITY, AND MULTIPLE-DOSE PHARMACOKINETICS OF VARENICLINE AND DIGOXIN OR WARFARIN

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BACKGROUND: Varenicline, a selective partial agonist at the alpha-4/beta-2 nicotinic receptor, is a new non-nicotine-based treatment for smoking cessation. Many smokers use digoxin or warfarin for chronic diseases, and the effects of varenicline coadministration warrant assessment.

OBJECTIVE: To establish the safety, tolerability, and pharmacokinetics (PK) of coadministration of varenicline and either digoxin, or warfarin.

METHODS: Two separate phase 1 studies were performed in healthy adult smokers: (i) a crossover study (n=18) assessing the effect of varenicline (1 mg twice daily) on the PK of digoxin (Lanoxin®) 0.2 mg once for two 14-day periods with a 7-day intervening washout; (ii) a crossover study (n=24) assessing the PK and pharmacodynamics (as assessed by prothrombin time, reported as International Normalized Ratios [INR]) of single-dose racemic warfarin 25 mg in the absence and presence of steady-state varenicline 1 mg twice daily.

RESULTS: (i) Varenicline 1 mg twice daily had no effect on steady-state plasma digoxin concentrations. The 90% confidence intervals for the ratios of AUC(0-24) and Cmin values based on log transformation were completely contained within the established bioequivalence limits of 80-125%. (ii) steady-state varenicline 1 mg twice daily had no effect on the PK of the (R)- and (S)-enantiomers of single dose warfarin, or on the pharmacodynamics of racemic warfarin, as measured by the prothrombin time (INR). There were no safety issues, and no clinically significant changes in vital signs or laboratory values, in either study.

CONCLUSIONS: Coadministration of varenicline had no effect on the PK of digoxin, or on the single-dose PK and pharmacodynamics of warfarin, in healthy smokers.

Supported by Pfizer Global Research and Development.

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POS1-051

SAFETY, TOLERABILITY, AND MULTIPLE-DOSE PHARMACOKINETICS OF VARENICLINE IN ELDERLY SMOKERS

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BACKGROUND: Varenicline is a selective nicotinic receptor partial agonist that blocks smoking reward. It is currently in development as a novel treatment for smoking cessation.

OBJECTIVE: To investigate the safety, tolerability, and multiple-dose pharmacokinetics of varenicline doses, given once or twice daily to elderly (≥65 years) smokers. Methods: This phase 1, randomized, double-blind study included 24 male and female smokers aged 65-75 years (mean 69.4). Subjects received either: (i) varenicline 1 mg (n=8) or placebo (n=4) twice daily for 6 days with a single dose on Day 7. Safety and tolerability of varenicline were assessed. Pharmacokinetic parameters (Cmax, Tmax, AUC(0-T)) for varenicline were determined on Days 1 and 7. The terminal phase half-life was obtained following Day 7 dosing. Accumulation was evaluated using the ratios of AUC(0-7) and Cmax values based on log transformation were completely contained within the established bioequivalence limits of 80-125%. (ii) steady-state varenicline 1 mg twice daily had no effect on the PK of the (R)- and (S)-enantiomers of single dose warfarin, or on the pharmacodynamics of racemic warfarin, as measured by the prothrombin time (INR). There were no safety issues, and no clinically significant changes in vital signs or laboratory values, in either study.

RESULTS: No clinically significant changes in vital signs and no serious adverse events (AEs), or withdrawals due to AEs were reported. There was no evidence of concentration- or time-dependent changes in the pharmacokinetics of varenicline upon repeat dosing. Consistent with a mean half-life of approximately 28 hours, steady state appeared to be reached within 4 days of repeat administration. Consistent with a mean half-life of approximately 28 hours, steady state appeared to be reached within 4 days of repeat administration. Once achieved, daily dosing resulted, on average, in an approximate 2- and 3-fold increase in systemic exposure, respectively.

CONCLUSIONS: Following repeat administration of varenicline 1 mg once or twice daily, systemic exposure in elderly smokers was comparable to that previously observed in younger smokers. Varenicline was well tolerated, and may be administered without dose adjustment to elderly smokers.

Supported by Pfizer Global Research and Development.

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POS1-052 NIDA'S ADDICTION TREATMENT DISCOVERY PROGRAM: PRECLINICAL TESTING CAPABILITIES FOR SMOKING CESSATION MEDICATIONS

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NIDAs Division of Pharmacotherapies and Medical Consequences of Drug Abuse has recently added a nicotine focus to its preclinical Addiction Treatment Discovery Program, which has historically included screening and profiling capabilities for potential medications to treat cocaine, opioid, and methamphetamine dependence. Although nicotine replacement therapies are effective in treating early withdrawal, relapse estimates have ranged as high as 89%, and medication strategies that target more general addictive or rewarding properties of nicotine have been stimulated, at least in part, by the success of bupropion. Although the exact mechanism underlying the effectiveness of bupropion to treat smoking cessation is unknown, bupropion is believed to ameliorate the affective elements of smoking withdrawal that may be related to reward processes. Similarly, NIDA wishes to identify clinical candidate compounds targeting more generalized neurobiological processes underlying addiction. Of high priority are compounds that may be effective treatments for cocaine as well as nicotine dependence, such as AMPA antagonists, CRF antagonists, dopamine D3 antagonists, and mGluR5 antagonists. The behavioral models that NIDA will use for this purpose include rat drug discrimination (blockade of nicotine substitution for mephaprametamine), nicotine self-administration in rats, and rat relapse/re reinstatement. The reinstatement models will include assessment of blockade of nicotine priming, conditioned cues, and stress as triggers for relapse. Details of these evaluations and predictive safety profiling will be presented. Compounds will be evaluated confidentially (sites are blinded) at no charge to compound submitters, who retain rights to all data.

The authors are employees of the National Institute on Drug Abuse.

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POS1-053 THE 2004 UPDATE OF THE COCHRANE REVIEW OF THE EFFICACY OF ANTIDEPRESSANTS FOR SMOKING CESSATION

John R. Hughes*, University of VT, USA; Lindsay Stead and Timothy Lancaster, University of Oxford, UK

We searched the Cochrane Tobacco Addiction Group trials register for RCTs comparing antidepressant medications to placebo or an alternative therapy or across doses for smoking cessation, recycling, reduction or relapse. A fixed-effects meta-analysis examined the OR at > 6 mo. flu. The one trial of the MAO inhibitor moclobemide and of the atypical antidepressant venlafaxine did not detect a statistically significant long-term benefit. The five trials of SSRIs evidenced no significant benefit when results were pooled. When used as the sole pharmacotherapy, bupropion (19 trials) resulted in an OR of 2.1 (95% CI 1.8-2.4) and nortriptyline (4 trials) an OR of 2.8 (1.7-4.6). In comparison, ORs in the Cochrane meta-analysis of NRTs are 1.7-2.4. Bupropion + nicotine patch produced slightly higher quit rates than patch alone in one study but not in a replication test. Bupropion did not statistically prevent relapse in two trials of extended therapy. The risk of seizures with bupropion is about 1 in 1000. There was insufficient evidence to link bupropion use with increased suicide or mortality. Although data are limited, AEs with nortriptyline did not appear greater than those with bupropion. We conclude bupropion and nortriptyline aid long term smoking cessation but SSRIs do not and that these treatments are generally safe. The fact that only some classes of antidepressants aid cessation and that they do so regardless of effect on depressive symptoms strongly suggests that their mode of action is independent of their anti-depressant effect.

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POS1-054 LONG-TERM TREATMENT WITH RIMONABANT FOR SMOKING CESSATION AND THE MAINTENANCE OF ABSTINENCE: RESULTS FROM STRATUS-WORLDWIDE TRIAL

Raymond Niaura

BACKGROUND: Smoking is currently the leading cause of death worldwide, with smokers experiencing a 2 to 3 fold increased risk of death from cardiovascular and cancer-related diseases. The STRATUS-WORLDWIDE (WW) trial was designed to assess the long-term efficacy and safety of rimonabant, the first selective cannabinoid type 1 (CB1) receptor blocker, for maintenance of abstinence in successful quitters.

METHODS: STRATUS-WW is a multiple-center, multicenter, randomized, double-blind, 5-arm, placebo-controlled 2-year clinical trial. A total of 5055 cigarette smokers (greater than or equal to 10 cigarettes/day) motivated to quit were randomized to two treatment groups: 5mg or 20mg rimonabant. At Week 10, 1672 successful quitters were re-randomized to either placebo or 5mg (for those already receiving 5mg) and placebo, 5mg or 20mg (for those already receiving 20mg). Active treatment continued for 42 weeks followed by a 50-week off-drug period. The primary endpoint was the efficacy of rimonabant in the maintenance of abstinence from cigarette smoking at Week 32 (6 months post-re-randomization). Secondary endpoints included body weight, tobacco craving, quality-of-life, safety and tolerability.

CONCLUSIONS: Rimonabant has been recently shown to enhance short-term cigarette smoking reinition and reduce post-cessation weight gain. The 6-month efficacy and safety data will be presented.

This study was supported by Sanofi-Aventis.

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POS1-055 TARGETING COTININE TO AID SMOKING CESSATION

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In the quest to find better and improved smoking cessation treatments, immunotherapy is a new approach that is currently being investigated, and several anti-nicotine vaccines are presently undergoing human clinical trials. A possible alternative target for immunotherapy is cotinine, the main metabolite of nicotine. Pre-treatment with cotinine has been shown to inhibit nicotine-induced dopamine release in the rat nucleus accumbens, and in human trials cotinine appears to antagonise the effects of the nicotine patch in alleviating nicotine withdrawal symptoms. By targeting cotinine with an anti-cotinine vaccine it is hoped that the antagonistic effects of cotinine against nicotine can be reduced thus prolonging the actions of nicotine. This may make treatments like nicotine replacement therapy more effective and may also assist in a reduce to quit approach to smoking cessation. In an immunisation study 40 male Sprague-Dawley rats received 5 immunisations of trans-4-thiol cotinine or cysteine (control) conjugated to tetanus toxoid over 18 weeks on days 0, 21, 35, 63 & 110. After the final booster on day 110 serum anti-cotinine antibody levels measured by ELISA were 7247 (± 1907). The anti-cotinine antibodies were detected in control sera. Based on these promising data a second trial has been initiated to examine the impact on nicotine-induced responses, namely conditioned locomotor activity and nicotinic receptor levels.

This study was supported by Sanofi-Aventis.

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**POS1-056**

**TIAGABINE TREATMENT ATTENUATES THE SUBJECTIVE NICOTINE EFFECTS IN ABSTINENT SMOKERS**

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

Preclinical studies suggest that medications which enhance the brain GABA system attenuate the rewarding effects of stimulants including nicotine. In this study, we examined the effects of a GABA enhancing agent, tiagabine, on acute physiological and subjective effects of inhaled (IV) nicotine and on tobacco withdrawal symptoms in overnight abstinent smokers. The proposed mechanism of action for tiagabine is selective inhibition of GABA-transporter type 1, which leads increases synaptic GABA levels. Eight male and 4 female smokers participated in a double-blind, placebo-controlled, crossover study. In each of 3 experimental sessions, subjects were treated orally with a single 4 or 8 mg dose of tiagabine or placebo. Two hours following the medication treatment, subjects received IV saline, followed 30 minutes later by 1.5 mg/70 kg IV nicotine. Tiagabine treatment did not affect the heart rate or blood pressure changes induced by nicotine. For the subjective effects of nicotine, there was a significant treatment effect, such that 8 mg tiagabine, compared to placebo, attenuated the ratings of good effects and drug liking. Among tobacco withdrawal symptoms, tiagabine treatment attenuated the craving for cigarettes. These results support the proposed role of GABA enhancing medications in reducing the rewarding effects of nicotine. The utility of GABA medications, alone or in combination with nicotine replacement therapies, for smoking cessation needs to be examined further in controlled clinical trials.

**CONCLUSION:** To obtain systematic data on abstinence rates and side effects with tiagabine as a manipulation in a prelude to undertaking a randomized trial. Method: 342 patients of the Smoking Cessation Walk-in Clinic were interviewed by telephone 12 weeks after their baseline visit; data collection is about to begin on 12-month abstinence rates with claims of abstinence checked by expired-air CO. For the patients were given tabax at a baseline visit but most received little or no further behavioral support apart from a self-help booklet. Abstinence was assessed by asking clients to report any smoking.

**RESULTS:** Self-reported continuous drug abstinence from the quit date to 12 weeks was 35%. Data will be available on CO verified abstinence at 12 months. Abstinence for 12 weeks was lower in patients with higher FTND scores, lower educational levels, patients who had not quit before and patients who scored lower on the Spooner preparedness to quit scale. There were no serious side effects but 19 (6%) clients reported gastric disturbance of whom 11 (3,5%) stopped taking the medication as a result.

**CONCLUSIONS:** The self-reported 12-week success rates are high. Even with a substantial level of misreporting at 12 weeks, it is likely that 12-month continuous abstinence rates will be 15%-25%.

**No Funding.**

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**POS1-057**

**SOCIAL INTERACTION IN MICE AFTER ACUTE TREATMENT WITH BUPROPION AND NICOTINE**

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Studies examining acute effects of bupropion on animal models of anxiety are not conclusive. In rodents, social interactions have been applied for evaluating anxiolytic effects of drugs and an increase in this behavior has been considered to reflect less anxiety. The present study aimed to evaluate acute effects of bupropion administration during social encounters in mice and to extend this evaluation to the interaction between bupropion and nicotine. Group-housed GF1 mice received bupropion (40 and 10 mg/kg), (-)-nicotine hydrogen tartrate salt (1 and 0.5 mg/kg) and saline or a combination of these treatments before a social interaction test (10 min) which took place in a neutral cage. Ten behavioral categories were recorded: body care; digging; non social exploration; explore from a distance; social investigation; threat; attack; avoidance/flight; defense/submission; immobility. Kruskal-Wallis analysis showed that there were significant variance in body care (p < 0.001), digging (p < 0.001), non social exploration (p < 0.002) and explore from a distance (p < 0.002). Post-hoc tests revealed that time spent in non social exploration and explore from a distance increased in mice treated with bupropion (40 mg/kg) alone or combined with nicotine (p < 0.02). The combination bupropion (10 mg/kg) +nicotine (0.5 mg/kg) increased non social exploration (p < 0.02) and bupropion (10 mg/kg) +nicotine (1 mg/kg) increased explore from a distance (p < 0.02). These findings suggest that bupropion, administered alone or in interaction with nicotine, did not induce a clear anxiolytic profile in the social interaction test in group-housed GF1 mice, since a non significant increase in social investigation was observed.

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**POS1-058**

**AN OPEN LABEL OBSERVATIONAL STUDY OF HERBAL CYTISINE (TABEX) AS AN AID TO SMOKING CESSATION**


**INTRODUCTION:** In many parts of the world, the tobacco dependence treatment medicines are expensive, however one very inexpensive medicine has been licensed in Eastern Europe for some 30 years and has gone largely unnoticed by the West. This is herbal cytisine (Tabex). Cytisine is a nicotinic agonist that was discovered as part of Soviet investigations. There is little published information on this drug although unpublished information and anecdotal reports from users suggest that it may be effective.

**OBJECTIVE:** To obtain systematic data on abstinence rates and side effects with Tabex in clinical use as a prelude to undertaking a randomised trial.

Method: 342 patients of the Smoking Cessation Walk-in Clinic were interviewed by telephone 12 weeks after their baseline visit; data collection is about to begin on 12-month abstinence rates with claims of abstinence checked by expired-air CO. All patients were given Tabax at a baseline visit but most received little or no further behavioural support apart from a self-help booklet. Abstinence was assessed by asking clients to report any smoking.

**RESULTS:** Self-reported continuous drug abstinence from the quit date to 12 weeks was 35%. Data will be available on CO verified abstinence at 12 months. Abstinence for 12 weeks was lower in patients with higher FTND scores, lower educational levels, patients who had not quit before and patients who scored lower on the Schneider preparedness to quit scale. There were no serious side effects but 19 (6%) clients reported gastric disturbance of whom 11 (3,5%) stopped taking the medication as a result.

**CONCLUSIONS:** The self-reported 12-week success rates are high. Even with a substantial level of misreporting at 12 weeks, it is likely that 12-month continuous abstinence rates will be 15%-25%.

**No Funding.**

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**POS1-059**

**ST. JOHN’S WORT FOR SMOKING CESSATION: TWELVE MONTHS POST CESSATION**

Silvana Lawvere*, Ph.D., Martin C. Mahoney, M.D., Ph.D., K. Michael Cummings, Ph.D., and Andrew J. Hyland, Ph.D.

**BACKGROUND:** Smoking prevalence worldwide remains unacceptable high. Therapies for smoking cessation are not utilized as frequently as possible due to 1) limited access to treatments (due to cost or lack of access to medical care); 2) fear of withdrawal symptoms, and 3) side effects from the therapies. This study evaluates the use of St. John’s Wort (SJW) as a cheaper, more widely accessible smoking cessation medication. SJW slows the release of dopamine, serotonin and norepinephrine, which are reduced during nicotine withdrawal. In various clinical trials, SJW has been a successful anti-depressant. SJW also has several advantages over bupropion: 1) it is available over-the-counter; 2) it is 1/10th the cost; and 3) it has minimal side effects.

**METHODS:** 37 (age 18-65, healthy) smokers were given 400 mg daily of SJW for 3 months in addition to a behavioral intervention with a case manager. These subjects came to Roswell Park Cancer Institute four times during the study and received 9 telephone calls during the study period. Subjects completed a brief baseline questionnaire asking smoking history, depression and anxiety, and sociodemographics.

**RESULTS:** The point-prevalence intention-to-treat cessation rate was 24% (9/37) at three months, 19% (7/37) at six months and 11% (4/37) at 12 months post cessation. There was a non-significant weight gain among subjects that were not smoking. Five (19%) had gastrointestinal problems and one stopped after 7 weeks because he started a medically contra-indicated drug.

**CONCLUSION:** If SJW proves to be effective in larger controlled studies, it could provide a cheaper, safer, more accessible alternative to bupropion. This study demonstrates the need for future research including clinical trials comparing SJW to placebo, nicotine replacement therapy and bupropion.

**Funding for this project was provided, in part, by an Innovators’ Combating Substance Abuse award to Dr. Giovanni from the Robert Wood Johnson Foundation.**

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Efficacy of the Pharmacological Treatment to Quit

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BACKGROUND: The objective of the study has been to value the compared effectiveness of the pharmacological treatment of the tobacco dependence according to the criteria established for the SEPAR recommendations.

MATERIAL AND METHODS: longitudinal, prospective and multicentre study. Smokers aged more than 18 attended to five smokers’ clinics and received nicotine replacement therapy (NRT), bupropion or both. The punctual and continuous abstinence was studied at the 15, 30, 60, 90 and 180 days with each of the one treatments proposed. Effective results are generally defined as the intention to treat.

RESULTS: 904 smokers were included, 476 males and 428 females, mean age 42.51 (10.09). Of the 904 persons who began the treatment, 820, 776, 687, 719 and 679 were present at the follow-up sessions at 15, 30, 60, 90 and 180 days respectively. The punctual global abstinence to the 15 and 180 days was of 65.6% and of 43.1% and the continuous one was of 57.4% and of 38.8% to the two and six months respectively. Significant differences were not observed neither in the punctual or continuous abstinence among the patients treated with TSN, bupropion or both.

CONCLUSIONS: the pharmacological treatment of the tobacco dependence used in way individualized according to the recommendations of the clinical guides effectiveness of the pharmacological treatment of the tobacco dependence accord-

Poster Session 1

Internet-Based Spit Tobacco (ST) Cessation Study

S. Gala, S. Dobbs, J. Murray, F. Pesek, C. Kavanagh, J. Ellison and M. Walsh*

After developing an interactive website for ST users, we hosted it on the Internet. We recruited 31 individuals to beta test it for usability and acceptability. Based on feedback from structured telephone interviews of 17 subjects who completed the web-based program (55%), we refined the website and recruited 4 additional college baseball athletes who use ST to test the program for acceptability and further refinement. Currently, we are evaluating the final interactive website for feasibility, acceptability and short-term effects on ST use behavior and attitudes toward quitting among 60 ST-using college baseball athletes in California. California colleges with baseball teams are being recruited to participate in the plot. After obtaining informed consent, baseball team members complete a baseline questionnaire on patterns and correlates of ST use. COLleges and are then assigned to either the interactive website group or a usual care (control) group. Baseball athletes in the website group who use ST are referred to their athletic trainers to the website for help with stopping ST use, using either college library or personal computers. Baseball athletes in the control group are not referred to the website. At 1-month post baseline assessment, ST users are reassessed on patterns and correlates of ST use by a mailed questionnaire and a structured telephone interview. To date, six colleges (3 in the website group and 3 in the in the control group) and 24 subjects (13 in the website group and 15 in the control group) are enrolled in the study. Preliminary results indicate that the website is acceptable and feasible to implement and short-term results for behavior and attitudes are promising.

Conclusions: the treatment is acceptable and feasible to implement and short-term results for behavior and attitudes are promising. Tobacco-related Disease Research Program of the State of California.

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Poster Session 1

Poster Session 1

Evaluation of a Web-Based Computer-Tailored Smoking Cessation Program Among Nicotine Patch Users

Victor Strecher*, Saul Shiffman, and Robert West

Primary Objective: To assess the direct and moderating effects of on-line tailored behavioral smoking cessation materials compared to untailored on-line behavioral support materials among nicotine patch users.

Methods: Individuals in the United Kingdom or Ireland who purchased a qualified nicotine replacement product and enrolled in the offered free behavioral support program were invited to enroll in a research study. At enrollment, subjects were asked questions via the web about their demographics, smoking history and environment, motives for quitting, perceived barriers, and their attributions for previous failed quit attempts. Over 3,500 enrollees were randomly assigned to either: (1) a web-based computer-tailored smoking cessation program (Committed Quitters Program (CQP)) or (2) web-based untailored behavioral support materials (Control Group.) In the CQP condition, characteristics collected at enrollment were used to generate individually-tailored materials. Outcome and process data were collected via the web after 6 weeks and 12 weeks.

Results: In both intent-to-treat and per-protocol analyses at 6- and 12-week assessments, participants in the tailored CQP reported clinically and statistically significantly higher 28-day continuous abstinence rates than participants in the Control program. Proper adherence with the nicotine patch and satisfaction with the program were significantly higher in the CQP than in the Control program. Moreover, significantly higher abstinence in the CQP versus Control Group was found among individuals with willpower-based attributions given to previous failed cessation attempts and the presence of children in the household. These issues were targets of the tailored smoking cessation materials. 

Conclusions: This study demonstrate a benefit of the web-based tailored cessation program and important sub-groups of smokers who may benefit particularly from the tailored materials.

GlaxoSmithKline

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Poster Session 1

User Characteristics for Smokeless Tobacco Cessation on the Internet

Herbert H. Severson*, Ph.D., Judith S. Gordon, Ph.D., Laura Akers, B.S., and Shawn M. Boles, Ph.D.

ChewFree.com is the first comprehensive smokeless tobacco (ST) cessation program offered via the Internet. We are currently enrolling an average of 120 subjects per month, with anticipated enrollment of 2,400 subjects. Adult participants are being randomized to one of two websites: Basic and Interactive. The Basic site features a conventional text-based quitting program, resource information on quitting aids, and links to other websites. The Interactive site provides similar information and also uses an interactive Personal Quitting Assistant (PQA), two social support forums (peer-to-peer and ask-an-expert), and e-mails to retain engagement and offer support. Within the PQA, users create a personalized quit plan and, when abstinence or relapse is reported, a staying quit plan. Participants are encouraged to return to the site regularly before and after their quit date. Follow-up assessments are conducted at 6 weeks, 3 months, and 6 months post-enrollment. Baseline data on the first 1,000 participants and preliminary (6-week) outcome data from approximately 500 participants will be presented. Demographics, tobacco use patterns, psychosocial factors, and health behaviors were collected on all subjects at baseline. Descriptive data will compare subjects with older and clinical cessation studies of ST users.

Funded by the National Cancer Institute R01-CA84225-04.

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POS1-064

**CHEWFREE.COM: DEVELOPMENT, RECRUITMENT, AND USER ENGAGEMENT**

Judith S. Gordon*, Ph.D., Herbert H. Severson, Ph.D., Laura Akers, B.S., and Shawn M. Boles, Ph.D.

ChewFree.com is part of a randomized clinical trial comparing the effectiveness of two smokeless tobacco (ST) cessation programs (Basic vs. Interactive) delivered via the Internet. The Basic site is a randomly accessible, text-based quitting program, which provides a written guide to smokeless cessation, information on quitting aids, and links to other websites. The Interactive site uses an interactive Personal Quitting Assistant (PQA) to help participants develop a plan for quitting and preventing relapse. The site offers two social support forums (Talk with Others and Ask the Expert), and tailored e-mails designed to retain engagement and offer support. Recruitment to the site consists of targeted mailings to ST users, tobacco control personnel and health professionals, and press releases to print and broadcast media across the United States. We are enrolling an average of 120 participants each month, with an anticipated total enrollment of 2,400 ST users. Follow-up assessments are conducted at 6 weeks, 3 months, and 6 months post-enrollment. Data collected on-line include process and usability statistics (e.g., frequency and duration of use, consumer satisfaction, etc.). Details on the development of the two ChewFree.com websites, results of recruitment methods, usage patterns of the two sites, and data on user engagement will be presented.

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POS1-066

**INITIAL DEVELOPMENT OF A BRIEF COMPUTERIZED INTERVENTION TO ENHANCE SMOKERS QUIT MOTIVATION**

Pattie B. Sherman*, B.A., Thaddeus A. Herzog, Ph.D., Thomas H. Brandon, Ph.D., and David J. Drobes, Ph.D., Moffitt Cancer Center at the University of South Florida

Despite the deleterious health effects of smoking, most smokers do not report high levels of motivation to quit. Several interventions have been developed to promote smoking cessation attempts among low-motivated smokers; however, no major impact on smoking rates has resulted from these innovations. The purpose of this overall project is to better understand the impact of a brief motivational intervention on cognitive and affective processes that may precede quit attempts and/or directly reduce smoking behavior. This report describes the first phase of this project, consisting of the development of a brief computerized intervention. The intervention incorporates tenets of Motivational Interviewing into a 12-minute slide presentation combining text, graphics, and tailored components. Twenty pre-contemplative smokers (17.4 cig/day) rated each slide for clarity and motivational effectiveness, and provided comments. Three iterations of the presentation were made based on ratings and participant feedback. Readiness to quit was assessed before and after the presentation using the Stages of Change (SOC) algorithm (DiClemente et al., 1991) and the Contemplation Ladder (Bienen & Abrams, 1991). Analyses indicate significant stage movement in the SOC (z = 3.07, p < .01). Specifically, 11 participants reported movement of at least one stage. In addition, Contemplation Ladder scores increased from 4.45 to 6.30, (t(19) = 4.72, p < .001). The next phase of this research will examine the impact of this motivational intervention on cognitive and emotional reactivity to smoking cues, as well as acute changes in smoking behavior.

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POS1-065

**PROJECT ASPIRE: OUTCOMES FROM A COMPUTER-BASED SMOKING PREVENTION & CESSATION CURRICULUM**

Alexander A. Prokhorov, Steven H. Kelder, Ross Shegog, Paul M. Cinciripini, Ronald Peters, Jr., and Carolyn Agurcia-Parker

ASPIRE is a theory-guided, CD-ROM-based smoking prevention/cessation curriculum for high-school students. The program provided 6 educational paths tailored to student needs. ASPIRE was evaluated in 16 urban high schools comprised of 1,608 mostly ethnic minority students (mean age 15.7 ± 9 years; 59% female). The efficacy of the program was evaluated 18 months after the intervention. A total of 1,160 participants completed the survey, 610 in the intervention group (IG) and 550 in the control group (CG). Because the study suffered from high attrition of smokers, only smoking prevention outcomes are presented here. There were significantly fewer students who initiated smoking in the IG compared to the CG (2% vs. 6%, p < .05). Males had higher initiation rates than females in both groups but the IG significantly reduced initiation rates in males compared to controls (2% vs. 8%, p < .05). Among ethnic groups, only Hispanics initiated smoking in the IG. Differences were found between IG and CG in the Minnesota Smoking Index (0.2 vs. 1.1, p < .05), temptations to smoke (12.6 vs. 14.1, p < .05), and decisional balance (1.0 vs. -0.6, p < .05). Differences in smoking initiation were found between IG and CG among teens who were not susceptible (1% vs. 5%, p < .05) and susceptible (7% vs. 14%, p < .05) to smoking at baseline. ASPIRE program prevents smoking behaviors and affects its key determinants.

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POS1-067

**USABILITY OF A PDA-BASED 5A MODEL OF NICOTINE DEPENDENCE COUNSELING**

Scott McIntosh, Ph.D., Deborah J. Osip-Klein, Ph.D., Stephanie Hanslik, B.S., and James Galliher, Ph.D.

Personal Digital Assistants (PDAs) offer practicing physicians mobile access to reference materials, decreased incidences of medical errors, and a point-of-service tool to practice evidence-based medicine. They allow specialty expertise to be brought to the point of care and customized to a particular patient. They allow the implementation of the relatively straightforward model of behavioral change used in office-based intervention (The “5-A Model”) with the added benefits of data storage, clinical decision making prompts, and the tailoring of referral and medical chart information. A growing feature with such PDA models is e-scribing, or prescribing medications with an electronic prescription (e.g., Zyban), sent by e-mail to a pharmacy. A recent demographic report by the American Academy of Family Physicians National Research Network reveals that member physicians display high levels of internet connectivity in the practice (89.4%), individual use of this (87.3%), access to e-mail (92.5%), and willingness to collect and/or submit research study data to the AAFP network office (92.5%). High response rates to such technology-related items indicate that physicians in this population are among the early adopters of practicing physicians who use internet-based technology in their practice, and who might benefit from an increase in PDA/internet-based applications. The term usability is used to apply to all aspects of a system with which a human might interact (e.g., a PDA-based clinical intervention). A highly usable system is: 1) easy to learn, 2) efficient to use, 3) easy to remember, 4) subjectively pleasing, and 5) causes users to make few errors. This presentation will describe such usability data from practicing physicians who examined a PDA model for SA intervention with smokers.

The model was based on a paper-and-pencil checklist intervention implemented in over 50 Family Medicine and Pediatric practices in Western New York. Physicians from the AAFP Network were recruited for a thinking aloud protocol which involved continually verbalize their thought processes while using the software. Results and proposed model improvements will be presented. Perceived strengths, weaknesses, and future applications of the PDA model will be presented and discussed.

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A RANDOMIZED TRIAL OF A PROACTIVE CELLULAR TELEPHONE CESSATION INTERVENTION FOR SMOKERS LIVING WITH HIV/AIDS: PRELIMINARY FINDINGS

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Telephone counseling has proven to be an effective way of increasing cessation success, roughly doubling the likelihood that at least one year of abstinence will be achieved. But only a small fraction of smokers choose to make use of this service, even when it is freely available and well publicized. Average participation rates in a defined population of smokers are 1% per year or lower in most published reports. Medications to aid quitting, e.g., nicotine replacement therapy (NRT) can also boost quitting success but most smokers making quit attempts, even with telephone counseling, do not use them because of barriers in cost and access. Recognizing the need for incentives for counseling participation and the need to increase medication use, the South Dakota Department of Health began a promotional campaign in 2002 in which medication was offered at no cost to tobacco users who used the American Cancer Society’s telephone counseling service. In the first 12 months, 11,236 tobacco users contacted the Quitline. 11,013 were smokers, representing approximately 9% of the estimated 123,140 adult smokers in South Dakota and 223 were smokeless tobacco users. 91% (10,203) of the tobacco users requested telephone counseling and 72% (7314) of those completed at least 1 counseling session and 31% (3156) completed at least 4 counseling sessions. This report will describe the promotional campaign, estimate its cost-effectiveness, detail medication use, and present six-month cessation rates.

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POS1-072  SERVING QUITTERS: EVALUATION OF NATIONAL QUILINE IN FINLAND AND DEVELOPMENT OF TAILORED INTERNET SERVICES

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INTRODUCTION: Smoking cessation Quitline was introduced in Finland in April 2002 and followed by a tailored internet service for adult quitters and adolescents in 2004. The number of Quitline was printed on cigarette packages in September 2002.

MATERIAL AND METHODS: First evaluation survey sample consists of data collected from callers between April 2002–May 2003 by the cessation counsellors with 38173 call trials and 3045 cessation calls. Items included e.g. nicotine dependence level, number of quit attempts and motivation to quit. Questionnaire was based on national monitoring study carried out by National Public Health Institute providing an opportunity to compare callers to general population. Callers were classified as daily smokers (78,1%), occasional smokers (1,7%), recent quitters (9,3%) or supporters (1%). Uncompleted data rate was 9,9%

RESULTS: Six out of ten callers were men (age range 9-82 years). Among daily smokers 75% had high or very high nicotine dependence level. Among occasional smokers 37,8% of men and 30,5% of women had never tried to quit smoking. 22,6% of callers were retired and of whom 52,9% had previous quit attempts.

CONCLUSION: Quitline reached well its target group smokers that have never tried to quit, but were willing to. Anonymous and cost free service seems to fit for youth and older male smokers. Persons under 18 formed an important and new group for Quitline, which lead quickly to the development of internet services aimed at adults and adolescents. Linkage of services has proven to be an effective way to develop both services.

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POS1-073  ATTRIBUTES OF AN OPTIMAL SMOKING CESSATION QUILINE

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Telephone counselling to support people trying to quit smoking is a fairly new intervention in tobacco control. Internationally quitlines vary dramatically in both operations and outcomes. Quitlines can be effective in reducing smoking rates but there has been little research to determine what combination of service, dosage, timing, resources and other elements creates the most effective or optimal quitline.

The intent of this study was to describe the components and characteristics of quitlines that identify core attributes and provide recommendations on what constitutes an optimal quitline. Data were gathered through a survey of, and interviews with, 14 international quitlines, as well as from online information searches and review of published and unpublished literature. Core quitline attributes include counselling services, smoker access points, marketing strategies, operational processes and protocols, staffing, integration with health systems, technology, research and evaluation, and funding. In trying to identify the characteristics of an optimal quitline it became apparent research is needed to examine the relationship between quitline characteristics and outcomes. Instead we found that quitlines are evolutionary in nature and develop over time. The greater the extent to which each of these attributes is developed, implemented and integrated with other features of the quitline, the more mature the quitline. With appropriate and stable resources (financial, staffing and materials), access to research expertise and well structured evaluation, the more mature the quitline.

POS1-074  STAGES OF CHANGE AND CESSATION OUTCOMES IN A TELEPHONE QUILT LINE SETTING


Telephonic cessation programs have proven to be an effective means of treating tobacco dependence by providing an efficient and accessible format for delivering tailored services to smokers trying to quit. As cessation resources are often modest, health plans and public tobacco control programs attempt to limit service access to those who are most ready to quit. The most common tool used to determine readiness to quit is the Transtheoretical Model, which classifies smokers into stages of pre-contemplation, contemplation, preparation, action and maintenance. However, there is little evidence linking stages of change to cessation outcomes in the context of telephonic cessation programs. In this study, quit rates of participants in Free & Clear, an intensive, telephonic cessation program serving health plans, employers and state quit lines, were examined and correlated with readiness to quit at enrollment, as determined by a stated plan to quit within the next 30 days. The analysis included all enrollees who completed the Free & Clear program during a 12-month period. Participants (n=5,588) consisted of those covered through their health plan (60,2%), through an employer group (17,7%), or through a state tobacco quit line (22,1%). All groups were eligible for the same number of calls (five) and had access to NRT and/or bupropion at minimal or no cost. Sixty-four percent were female and the mean age was 44.4 years. Seven-day abstinence rate was determined by self-report at the final call, nine or 12 months after enrollment. We found that while those in the preparation stage had the highest abstinence rates (34,5%), more than a quarter of contemplators (25,5%) were also abstinent at follow-up. These results show that smokers seeking quitline services who are in the contemplation stage benefit from access to an intensive telephonic program, thus eligibility for participation should not be limited to those who fail in the preparation or action stages.

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POS1-075  SMOKING PATTERNS AMONG YOUTH IN A TOBACCO-GROWING REGION OF ARGENTINA

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OBJECTIVE: to contribute to the knowledge on youth smoking patterns and risk factors in tobacco growing regions of Third World countries.

METHODS: we report on preliminary data from a survey of all 8th graders (N=492) enrolled in a school from a tobacco growing region of Argentina. The survey was validated for cultural appropriateness among the local population and included questions on smoking behavior, socioeconomic, cultural and psychosocial factors.

RESULTS: the mean age of the sample was 13 years (s.d. 1.31), 62% were boys, 56% had parents with primary school or lower educational level, 64% self-identified as indigenous, 47% witnessed discrimination against their ethnic background always or often; 35% had worked in tobacco production. 48% had smoked at least a puff and 31% were current smokers with no significant differences between boys and girls. In multivariate logistic regression, current smokers were more likely to be older than 15 years (Adjusted OR 4.36; 95% CI 2.68-7.09), and to work in the informal economy (OR 2.33; 95% 1.10-4.86). Although slightly increased, the risk of ever smoking among youth who worked in tobacco production did not reach statistical significance (OR 1.71; 95% 0.97-3.03).

CONCLUSION: one third of youth living in this tobacco growing region are smokers. Working in the tobacco production did not seem to increase their risk of smoking.
POS1-076  SMOKING BEHAVIOR OF SCHOOLCHILDREN RELATED TO THE TYPE OF SCHOOL IN RUSSIA

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The aim of the study is to assess health-related knowledge, attitudes and behavior regarding smoking in schoolchildren related to different types of schools in Russia.

METHOD: A survey with anonymous standardized questionnaires was conducted among 704 schoolchildren: 302 boys and 402 girls aged 14-16, from comprehensive (349), vocational (258) and boarding (97) schools in four regions of Russia.

RESULTS: Smoking was considered as a hazardous habit by 90.7% of respondents (88.1% of boys and 91.7% of girls). 2.4% considered smoking not very harmful for health (4.0% of boys and 0.5% of girls) and 0.6% thought smoking is not harmful at all (0.7% of boys and 0.5% of girls). In comprehensive schools only 2.8% of boys and 1.9% of girls considered smoking as not harmful or not very harmful habit, while in the boarding and vocational schools these proportions were 6.3% of boys and 1.6% of girls respectively. 16.1% of respondents (26.3% of boys and 8.5% of girls) reported regular smoking. 43.1% of boys and 23.5% of girls were regarded as smoking more or less constantly (p<0.001). Smoking was significantly more frequent both in boys and girls in boarding and vocational schools (34% of boys and 34% of girls), compared with comprehensive schools (23.4% of boys and 13.6% of girls; p<0.001).

CONCLUSIONS: Schoolchildren from boarding and vocational schools demonstrate lower health-related knowledge concerning smoking and higher smoking rates compared to those from comprehensive schools, which may be important for designing school-based preventive programs.

Data collection - conducted in the framework of EU-funded Taico project.

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POS1-077  SMOKING BEHAVIORS IN CHINESE- AND KOREAN-AMERICAN COLLEGE STUDENTS

Susan E. Luczak*, Ph.D., Tamara. L. Wall, Ph.D., and Mark. G. Myers, Ph.D., University of California, San Diego and the Veterans Medical Research Foundation

There is a lack of research on ethnic differences in smoking behaviors of college students. The purpose of this project was to examine rates of smoking behaviors across Chinese- and Korean-American male and female college students. We hypothesized that, consistent with prior research, rates of smoking and nicotine dependence would be lower in Chinese compared with Koreans and in Asian women compared with Asian men. Participants were 221 Chinese (52% female) and 187 Korean (53% female) first-year college students. All participants were assessed for current and lifetime cigarette use and DSM-IV nicotine dependence. Chinese were less likely than Koreans to have ever used cigarettes (31% vs. 43%, ch2-square = 5.5, p < .019), to have smoked at least 100 cigarettes (13% vs. 26%, ch2-square = 11.2, p = .001), and to be daily smokers (6% vs. 12%, ch2-square = 4.5, p < .035). Across gender, women were less likely to have ever used cigarettes (25% vs. 49%, ch2-square = 25.0, p = .000), to have smoked at least 100 cigarettes (10% vs. 28%, ch2-square = 21.0, p = .000), and to be daily smokers (5% vs. 12%, ch2-square = 6.6, p = .010). These gender differences were consistent across ethnic groups. Rates of nicotine dependence and total number of cigarettes smoked in past month by smokers did not significantly differ across ethnicity or gender. These findings represent an important first step in a longitudinal investigation to determine vulnerability factors in the initiation and escalation of tobacco use in Chinese- and Korean-American college students.

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POS1-079  IS EXPERIMENTAL SMOKING A STEPPING STONE TO CURRENT SMOKING?

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BACKGROUND: Some people smoke only a few cigarettes in all their lives. It is not clear why they stopped at this stage while others continued to smoke.

OBJECTIVES: To identify the prevalence of experimental smokers and compare between current and experimental smokers. Methods: An interview survey for 4984 adult males was performed in 9 Egyptian villages. Current smokers were defined as those who smoked 100 cigarettes and smoked with in the 30 days of the survey. Experimental smokers are those who smoked < 100 cigarettes in the past.

RESULTS: A total of 105 past experimental smokers and 1796 current smokers were identified. Past experimental smokers are younger, better educated and less likely to be married (p<0.001). Current smokers had more friends who smoke and more susceptible to peer pressure and use their friends house more often as a common place to smoke than past experimental smokers (P < 0.001). Significantly more experimental smokers believe that smokers have shorter lives than non-smokers (p <0.001). The past experimental smokers perceived their health status as excellent in 49% Vs 25% for current smokers (p <0.001).

CONCLUSION: Having smoker friends and being less educated are important factors in the transition from experimental to current smoking. This knowledge will encourage more work in the school age to prevent youth from becoming regular smokers as adults.

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POS1-080  SMOKING AMONG MALE YOUTH SCHOOL DROP OUTS

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This study assesses cigarette and waterpipe smoking among youth school drop outs compared to students of similar age in rural Egypt. An interview questionnaire survey was carried out in nine villages in rural Egypt as part of a 5 year cohort study on smoking. This study was limited only to males since there were no female out of school smokers reported. The prevalence of smoking among school dropout youth was 22.1% for cigarettes and 4.4% for waterpipe as compared to 7.6% and 2.5%(p<0.001) respectively for students with no difference in age of initiation. Reasons for smoking such as peer pressure, and accessibility to cigarettes did not differ significantly. School drop outs youth attempted to quit less often (32.7%) as compared to students (48.5%(p<0.001) and less exposed to religious books or religious radio programs (71.1% versus 94.8%) and less aware about the religious order(fatwa) prohibiting smoking (58.2% versus 73.1%(p<0.001). School dropouts reported significantly less access to any health education programs from the mosques and other sources. Our focus group analysis shows that youth clubs are a popular place for these kids to meet.

CONCLUSION: School drop outs have significantly higher prevalence of cigarette and waterpipe smoking. Youth clubs may offer a venue to reach these kids who report less access to health education programs.

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POS1-081 CHARACTERISTICS OF SOCIAL SMOKING AMONG COLLEGE STUDENTS
Kimberly J. Waters, Ph.D., Alex C. Waigandt, Ph.D., University of Missouri-Columbia; and Kari J. Harris*, Ph.D., M.P.H., The University of Montana

Social smoking is a newly identified phenomenon in the young adult population that is poorly understood. We investigated differences in social smoking (smoking most commonly while partying or socializing) and other smoking within a convenience sample of college smokers (n = 353) from a large Midwestern university. Results revealed that 71% of 353 current (past 30-day) smokers reported social smoking. More social smokers than other smokers were members of either a social fraternity or sorority. Social smokers smoked fewer days and smoked fewer cigarettes on those days than other smokers. Furthermore, social smokers were more confident that they could quit if they wanted to, though no difference was found in motivation to quit between smoking groups. More social smokers than expected did not perceive themselves as smokers. Logistic regression analysis revealed that lower physical dependence and psychological dependence, and higher social support scores predicted social smoking.

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POS1-082 YOUNG RISK TAKERS, FROM TOBACCO TO ALCOHOL AND ILLICIT DRUGS, THE CANADIAN EXPERIENCE
Judy Snider*, M.Sc., and Murray J. Kaiserman, Ph.D., Tobacco Control Programme, Health Canada

According to the 2002 Youth Smoking Survey (YSS), 25% of Canadian youth in grades 5 to 9, reported ever trying any tobacco products. Twenty-three percent of youth who had ever tried tobacco products reported smoking cigarettes. The mean age of smoking a whole cigarette for the first time was 11 years old. Youth in grades 7-9 were also asked about alcohol and illicit drug use with 54% having tried alcohol and 18% having tried smoking marijuana. The average age of first use for each of these substances was about 11 and a half years old and 12 and a half years respectively. Previous research has shown an association between cigarette smoking and use of alcohol and marijuana. In Canada, among youth who had ever tried smoking cigarettes, 86% had tried alcohol, compared to 40% of never smokers who had tried alcohol. Similarly, 50% of youth who had ever tried cigarette smoking had tried marijuana, compared to only 4% of never smokers who had ever tried marijuana. There has been a decrease of approximately 50% in the reported use or experimentation with tobacco products since the 1994 YSS was conducted. Nevertheless, the mean age at experimentation reaffirms the allure of these products to youth when they reach this age. While the reductions in the tobacco experimentation seem to indicate that current efforts are working; the fact that the mean age hasn’t changed may indicate the innate susceptibility of a small but significant fraction of youth.

The study was funded by Health Canada.

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POS1-083 USING PSYCHOGRAPHICS TO DESIGN EFFECTIVE MESSAGING FOR YOUTH AND YOUNG ADULTS
Judy Snider*, M.Sc., Murray J. Kaiserman, Ph.D., Tobacco Control Programme, Health Canada, and Donna Dasko, Ph.D., Environics Research Group Limited

Psychographic analysis is a form of social group analysis that studies how people react to the world around them according to their values and lifestyles. It has been used by marketers, including the tobacco industry, for many years (e.g., smokers identify with the cigarette brands they smoke by brand imagery). Profiling youth and young adults based primarily upon their apparent values and lifestyles can be used to help design and create more effective communication tools. Data collected from 919 youths (15-24 years) in 2001 and 2003 in Canada was reanalyzed. The population was segmented based on the differentiation provided by the latent values dimensions: stress and dread; and impulse restraint vs. expression. Based on this, a four-segment classification was chosen: ‘questing experiencers’ (high anxiety/low restraint); ‘invincible rebels’ (low anxiety/low restraint); ‘fearful connecteds’ (high anxiety/high restraint); and ‘risk-averse ratio-nals’ (low anxiety/high restraint). Smoking prevalence rates were determined for each of the groups: 37%, 31%, 25% and 15% respectively. The amount smoked was measured with 11+ cigarettes per day classified as heavy smoking. Among the smokers in each of these groups, heavy smoking followed the same pattern as prevalence with reported levels of 59%, 58%, 45% and 41% respectively. One of the goals of this project was to identify social value targets to assist in the development of a framework for communication for tobacco control interventions. Hard and a soft sell messaging are two key pieces of information derived from this analysis, which will be incorporated into future prevention and cessation communication strategies.

The study was funded by Health Canada.

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POS1-085 PREDICTING EDUCATIONAL AND ECONOMIC OUTCOMES IN YOUNG ADULTHOOD FROM SUBSTANCE USE LATENT CLASSES AT ADOLESCENCE
Nicholas E. Perrine*, Faiza Vesel, and Lisa C. Dierker, Wesleyan University

Items from the National Longitudinal Study of Adolescent Health were used to assess both lifetime experience and current use of various substances among 16 to 18 year olds. Participants reported lifetime and current use of alcohol, tobacco, marijuana, and other illicit substances. Latent class analysis was used to determine the ability of these items to measure different typologies of substance users (McCutcheon, 1987). Results suggested that a 5 class structure provided the best fitting model to the data, likelihood ratio chi-square = 526.46, df = 529, p = .52. The resulting latent classes (LC1=low use, LC2=alcohol use only, LC3=alcohol/tobacco use, LC4=high risk use, and LC5=tobacco use only) were used to predict several social, educational and economic variables five years later when participants were between the ages of 21 and 23. MANCOVA was used to determine the ability of latent class assignments to prospectively explain several important variables collected from 1384 participants in young adulthood, after controlling for socioeconomic status; F(28, 4948.23) = 3.17, p<.05. Results suggested that participants from the tobacco use only group (LC5) and from the high risk group (LC4) were significantly more likely to have obtained a high school diploma and were significantly more likely to have used public assistance as young adults. Participants from the tobacco use only group (LC5) were significantly less likely to have health insurance as young adults. Overall, outcomes in young adulthood were poorest among participants from LC5 and LC4, representing 10% and 20% of the sample respectively. Results point to the need to direct services to adolescents who are only using tobacco as well as to high risk adolescents in an attempt to mitigate deleterious outcomes in young adulthood. Additional research is needed to further elucidate the etiology of this tobacco use only class of substance use.

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POS1-086  STRESS AND SMOKING ACROSS FRESHMAN YEAR: THE UP-TERN STUDY

Laura Stroud*, Ph.D., Brown Medical School; Craig Colder, Ph.D., University of Buffalo; and Richard Clayton, Ph.D. University of Kentucky

Starting college represents a transition to stressful new academic and social contexts; however, few studies have examined links between stress and smoking across freshman year. Further, no studies have examined the time-varying effects of stress on smoking during this stressful transition. We investigated associations between perceived stress, stressful events, and smoking within the Tobacco Etiology Research Network University Project (UP-TERN), an intensive, 35-week longitudinal study of smoking in college freshmen. Participants were 912 freshmen (54% male) at a large Midwestern university. Daily smoking and perceived stress were assessed weekly and stressful events monthly using a novel, web-based assessment system. Significant, small magnitude associations emerged between perceived stress and smoking across 43% of weeks (r’s = .08-.16, p’s<.05). Associations were stronger for females than males (p’s<.05 for 40% vs. 3% of weeks), were more consistent for weekday compared to weekend smoking (p’s<.05 for 43% vs. 29% weeks) and emerged more clearly later in the year (p’s<.05 for 56% of second semester weeks vs. 19% first semester). Logistic regressions revealed significant associations between number of stressful events and smoking (OR’s>1.11; p’s<.05 for 3/9 months), with more consistent associations between females than males (p’s<.05 for 6/9 vs. 4/9 months). Social stressors better predicted smoking during first semester while academic stressors better predicted smoking during second semester. Results reveal consistent associations between stress and smoking over freshman year as well as important moderators of these associations including gender, type of stress, and time of year.

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POS1-088  TRAJECTORIES OF SMOKING COMPARED WITH ALCOHOL AND MARIJUANA USE FROM AGES 13 TO 23

Phyllis L. Elickson*, Ph.D., Joan S. Tucker, Ph.D., Maria Orlando, Ph.D., and Steven C. Martino, Ph.D., RAND

Smoking initiation typically occurs in adolescence and steadily increases over time throughout adolescence and emerging adulthood. Considering the addictive nature of smoking and associated risk of developing nicotine dependence, a better understanding of the heterogeneity in the developmental course of smoking may uncover critical periods for intervention. This study uses latent growth mixture modeling to identify six distinct developmental trajectories of smoking behavior from ages 13-23 among 5,914 individuals: Non-smokers (28%); Stable Higns (6%); Early Increasers (10%); Late Increasers (10%); Decreasers (6%); and Triers (40%). Trajectory group mean values at ages 13, 15, and 18 on smoking-related social influences, attitudes, and problem behaviors reflect levels of smoking. By age 23, the smoking trajectories merged into two distinct groups of low and high frequency and their standing on age 23 outcome variables largely reflect this grouping, with the high frequency smokers showing risk for nicotine dependence as well as a generally negative profile on several health- and social-related measures. Comparisons with trajectories for marijuana and binge drinking show that early smokers who reduce use during adolescence are at comparatively lower risk for future drug problems and poor educational outcomes than those who reduce their drinking and marijuana use. For all three substances, two distinct periods of vulnerability emerged early adolescence and the transition to emerging adulthood. Awareness of the demographic and age-specific correlates of trajectory group membership identified in this study can help to distinguish at-risk individuals before their smoking behavior becomes too problematic, providing a window of opportunity for intervention and possible prevention of nicotine dependence.

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POS1-087  TRAJECTORIES OF CIGARETTE USE FROM ADOLESCENCE TO ADULTHOOD

David W. Brook*, M.D., Judith S. Brook, Ed.D., and Chenshu Zhang, Ph.D., New York University School of Medicine

Introduction: This study was designed to identify distinct trajectories of cigarette smoking from age 14 to age 32, and to examine adolescent personality factors which distinguish different trajectories of smoking behavior. Methods: 975 randomly selected subjects were followed prospectively since 1975. Follow-up data on cigarette use and personality attributes were collected at six points in time, using structured interviews given in private by trained interviewers. 612 of these subjects comprised the cohort used in this study. Results: Growth mixture modeling identified three trajectory groups: non-smokers/experimental smokers, occasional/ moderate smokers, and heavy/continuous smokers. Adolescent personality risk factors reflecting unconventionality, including sensation seeking, low ego integration, higher externalizing behavior, and lower educational aspirations significantly distinguished the three trajectory groups. No significant gender differences were noted. Conclusions: The findings supported the hypotheses indicating three distinct trajectories of smoking extending from adolescence to adulthood. From a developmental perspective, a decrease in adolescent risk factors may change the course of smoking over time. Therefore, to be most effective, smoking prevention programs should target personality and behavioral risk factors, particularly characteristics reflecting externalizing behavior and sensation seeking in early adolescence. The implications for future research were discussed.

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POS1-089  ROLE OF PARENTS' AND OLDER SIBLINGS' SMOKING IN CHILDREN'S SMOKING TRANSITIONS: A PROSPECTIVE STUDY

Jonathan B. Bricker, Ph.D., Arthur V. Peterson, Ph.D., M. Robyn Andersen, Ph.D., K. Bharat Rajan, M.S., and Brian G. Leroux, Ph.D.

AIMS: To use a novel “social epidemic” probability model to investigate longitudinally the extent to which parents' and older siblings' smoking predicts children's smoking transitions.

DESIGN: Parents' and older siblings' smoking status was assessed when children were in 3rd grade. Whether children tried smoking, progressed to monthly smoking, or progressed to daily smoking were assessed using data collected at 5th, 7th, 8th, and 12th grades. Setting: Forty Washington State school districts participated in the long-term Hutchinson Smoking Prevention Project.

PARTICIPANTS & MEASUREMENTS: Participants were the 5520 families for whom both parents' and older siblings' baseline (3rd grade) smoking status as well as children's smoking status at each of the three smoking transitions were available. Questionnaire data were gathered on parents, older siblings, and children who were 49% female and 91% Caucasian.

FINDINGS: Results from this new social epidemic statistical model show that the probability that one parent smoking influenced their child to make the transition to trying smoking was 32% (95% CI: 27%, 36%); to make the transition from trying to monthly smoking, 21% (95% CI: 18%, 24%); to make the transition from monthly to daily smoking, 16% (95% CI: 14%, 19%). The corresponding probabilities for smoking from one older sibling was 29% (95% CI: 17%, 39%), 9% (95% CI: 1%, 16%), & 8% (95% CI: 3%, 14%).

CONCLUSIONS: Parents and siblings have similarly large influences on children's smoking and also have appreciable influences on children making the transitions to monthly and daily smoking. Parents’ smoking, and perhaps also siblings' smoking, appear to be important social environments to target in helping prevent adolescents from smoking.

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POS1-090  START SMART: ENCOURAGING YOUTH TO ADVOCATE AGAINST SMOKING

During the past decade, research has shown that drug abuse prevention programs are effective, producing reductions in substance use that are meaningful and lasting. Findings from the 2000 Surgeon Generals Report: Reducing Tobacco Use, indicate that multi-session educational curricula based on the theoretical concept of social influences achieve significant effects in delaying smoking onset. Curricula modeled from Social Influence theory emphasize techniques that enable youth to feel comfortable in not lighting up and maintain acceptance by their peer group. Although there are numerous tobacco prevention programs available for school settings, few programs meet current recommendations suggested by the Center for Disease Control (CDC). In fact, in a recent study conducted by Wenter et al. (2002), only 4% of middle schools across the nation met all seven recommendations. In response to the need for comprehensive programs that meet the CDC criteria, Danya International, Inc., with funding from the National Institute of Drug Abuse (NIDA) has designed a multifaceted school based smoking-prevention package entitled Start Students Making Advertisements to Reduce Tobacco (SMART). Start SMART is a hierarchal approach that transition children from observing anti-tobacco messages, to learning the skills to both identify and resist tobacco use, culminating in student participation in developing smoking prevention advertisements. During phase I of the project period, Danya project staff developed the eight-session curriculum, youth workbook, and video. A pilot study was conducted to examine the feasibility and the acceptability of the program. Fifteen students from a middle school in Montgomery County, Maryland participated in this pilot study. Results of the pilot study, a full scale evaluation plan and development plan for the supplemental website will be presented.

Fast Track Small Business Innovative Research grant from the National Institute on Drug Abuse.

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POS1-092  TOBACCO USE AMONG AFRICAN AMERICAN YOUTH: CAN SPIRITUALITY PLAY A PROTECTIVE ROLE?
Kathy Goggin*, Kimberly Metcalf and Delwyn Catley, University of Missouri, Kansas City

African American adolescents smoke less than their white peers, however tobacco use still presents a serious health risk. Although protective factors that may inoculate AA youth have been identified, the potentially protective role of spirituality has received less attention. Research suggests that a belief that God directly controls risk behaviors is more predictive of these behaviors than global spirituality, however no published studies have explored the relationship of God control beliefs and tobacco use. The Sexual risk behavior and Alcohol-related God Locus of Control scales for Adolescents (Sex-GLOC-A and AGLOC-A) were administered to 396 African American youth (average age 14.7). Because alcohol, sexual risk and tobacco use behaviors are known to co-occur among adolescents, we explored the association between SexGLOC-A and AGLOC-A scores and tobacco use. While these measures were specifically developed to predict other risk behaviors, they both demonstrated some promise in explaining tobacco use. Specifically, scores on the SexGLOC-A were negatively related to tobacco use (r = - .14, p = .006) indicating that those youth who believed that God had a direct impact on their sexual risk behaviors tended to smoke less. Additionally, scores on the AGLOC-A demonstrated a negative trend with tobacco use (r = -.09, p = .07). Therefore, God control beliefs appear to offer some protection against smoking behavior, though a tobacco use specific measure is needed to fully explore this relationship.

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POS1-093  TOBACCO PREVENTION PROGRAM FOR 2ND-6TH GRADERS: PRELIMINARY FINDINGS FROM A LONGITUDINAL STUDY
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The Wise Mind study is an environmentally based, ongoing longitudinal study designed to promote healthy lifestyles in children attending 2nd-6th grades. Schools were randomly assigned to receive either a tobacco prevention program or an obesity prevention program. The tobacco prevention program targets children’s attitudes and behaviors using the school, home, and internet contexts. Children participate in a variety of didactic and interactive activities at school, online, and at home involving their peers, teachers, and parents. Participants initially recruited in the first year of the study were 743 students from 5 schools within the Baton Rouge community Catholic Diocese. They ranged in age from 7 to 12 years of age and were attending grades 2 through 6. Year one of the study has been completed. The data comprises baseline information collected from students in the fall of 2003 and the first follow-up assessment conducted in spring of 2004. Preliminary analyses revealed that children in the tobacco prevention program significantly increased their scores on the Negative Consequences scale of the Smoking Consequences Questionnaire-Child (SCQ-C); F (1, 689) = 13.61, p < .001, and decreased their scores on the Positive Reinforcement scale of the SCQ-C, F (1, 689) = 12.03, p < .01, as compared with children receiving the obesity prevention program. There was a trend (p = .08) for fewer children in the tobacco prevention program (1.7%) to try an initial cigarette during the time period assessed, as compared to those in the obesity prevention program (3.3%). This study was funded by the National Institutes of Health grant #R01DK063453.

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PROTECTING YOUTH FROM TOBACCO USE
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Factors which protect young people from tobacco use were investigated among a national sample of New Zealand secondary school students. Data were obtained from the 2002 “Youth Lifestyle Study” (YLS), a biennial survey of youth tobacco smoking and related beliefs, attitudes, and behaviours administered by the Health Sponsorship Council of New Zealand (HSC). Participants were selected using multi-stage cluster sampling procedures and data were weighted to ensure that the results could be generalised to the New Zealand student population. Full data were available for 3,434 (mean age 15.0 years). Significant protective and risk variables from multivariable analyses were included in stepwise logistic regression (1,000 repetitions). Variables which occurred most commonly in the stepwise models were included in multivariable analyses of risk and protective factors. After adjusting for risk and protective factors, students who regularly visited a place of worship were less likely to smoke daily (OR 0.6, CI 0.4, 0.9). Attachment to school and parents were also protective (OR 0.6, CI 0.4, 0.9; OR 0.6, CI 0.5, 0.9; respectively). However, having a best friend who smoked increased the risk of daily smoking by 7.5 times (OR 7.5, CI 4.9, 11.4). Similarly, exposure to SHS at home remained a risk factor for daily smoking (OR 2.1, CI 1.5, 3.0). Currently interventions to prevent youth tobacco use in New Zealand (NZ) are primarily based on education about tobacco harm. We suggest that attention to positive health objectives, such as improving attachment to school, may provide greater health benefits, including the prevention of tobacco use, than existing educational interventions.

This study was conducted while the first author was the recipient of University of Otago and Health Sponsorship Council postgraduate scholarships.

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ENGAGING YOUTH IN SMOKING PREVENTION AND HEALTH PROMOTION IN THE MIDDLE EAST
Harvey Skinner*, Russell Bader, Sami Hamdan, and Alan Apter

This study examined ways to engage youth in health promotion including smoking prevention among Bedouin communities in the Middle East. Using low-end technologies (photovoice) and high-end Internet-based technologies, the youth documented the strengths and weaknesses of their communities, and identified priority issues for action. This participatory action research is guided by a six phase model (EIPARS): 1) Engagement, 2) Issue Identification, 3) Planning, 4) Action, 5) Research and Reflection and 6) Sustainability. Initial attention was given to 20 grade nine Bedouin youth in two communities: 1) Tuba, northern Israel 2) Segev Shalom in the Negev, southern Israel (10 at each community; half boys, half girls). This study focused on the Engagement/Issue Identification phases, where youth in each setting identified personal and community health issues. Their photo-essays were then uploaded to the Global Youth Voices website (www.GlobalYouthVoices.org). A key finding was that similar issues were identified in each community. Smoking was identified as an important concern, but in the context of other issues such as: friendships, violence, pollution, sports, animal abuse. In addition, unique issues were identified for each community: suicide at Tuba and industrial pollution at Segev Shalom. Youth from each community were then brought to Tel Aviv University in May 2004 for a joint session discussing issues and action steps. The youth at Segev Shalom want to carry out a smoking prevention/education program at their high school in the fall of 2004. This initial study helped establish relationships between these two Bedouin communities and provided a basis for projects aimed at youth driven community health promotion in the Middle East. Our work draws on the potential of Internet technology to allow young people from diverse communities to create innovative models for community health promotion, including smoking prevention. Building on this initial work, future cross-border studies are being carried out with Israeli, Jordanian and Palestinian youth in 2005.

This study was supported by grants from the Canadian Institutes of Health Research and the Peter A. Silverman Centre for International Health, Mount Sinai Hospital, Toronto. 

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WEBSITE INTERVENTION FOR YOUTH SMOKING PREVENTION: FINDINGS FROM SCHOOL-BASED RANDOMIZED CONTROLLED TRIAL
Harvey Skinner*, Cameron Norman Oonagh Maley

The TeenNet Research Program at the University of Toronto (www.TeenNetProject.org) has developed a web-based smoking prevention and cessation program called the Smoking Zine (www.smokingzine.org). This five-stage interactive website features self-assessment quizzes, games and peer-to-peer components designed to strengthen resistance to smoking and decision-making about using cigarettes. To assess the impact of the Smoking Zine, a randomized controlled trial was conducted in 14 Toronto-area high schools involving 1402 students in grades 9, 10 and 11. Students were randomly assigned to complete either the Smoking Zine or a control website, and they also participated in a short motivational discussion group. The intervention was completed in one classroom session (typically 60-70 minutes). The impact on smoking initiation and smoking behaviour was examined immediately following the intervention as well as at 3 and 6-month follow-ups using hierarchical linear modelling. For non-smokers: boys in all grades and grade 10 girls who completed the Smoking Zine lowered their intention to smoke throughout the entire six-month study, compared with those in the control group. For smokers: Grade 9 boys who completed the Smoking Zine lowered their intention to smoke immediately afterwards, but did not maintain this relative to the control group at follow-up. Thus, the Smoking Zine in this study was more effective as a prevention tool for non-smokers than as a cessation resource for smokers. However, because of constraining use of the Smoking Zine to one class session, most smokers did not have time to complete the fifth phase of the intervention that involves developing a quit plan. Future plans include studying ways to use the Smoking Zine to engage smokers in cessation, to support school and community programs in tobacco control, and cultural adaptations of the website for global health research with partners in China, South America and the Middle East.

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SMOKING REDUCTION: A REVIEW OF CURRENT LITERATURE
Matthew Carpenter* and John R. Hughes

The reluctance of many smokers to stop smoking has led many clinicians and researchers to consider harm reduction strategies as another public health approach. Smoking reduction, i.e., a decrease in number of cigarettes/day (CPD), is one such harm reduction strategy. As an update to a prior review of smoking reduction (Hughes, 2000), we sought to determine the extent to which 1) smokers spontaneously reduce their smoking, 2) pharmacological and psychosocial interventions help smokers not interested in quitting to reduce CPD, 3) compensation occurs but substantial reductions in toxin exposure still occur, 4) reduction does not undermine but increases future cessation, and 5) reduced smoking decreases the risks of smoking. We located 5 new studies on the first aim, 25 on the second, 15 on the third, 17 on the fourth and 10 on the fifth aim. The results strengthened and extended the conclusions of the prior review that 1) little spontaneous reduction in CPD among daily smokers occurs, 2) nicotine replacement and perhaps psychosocial treatments can aid in smoking reduction, 3) compensation occurs but substantial reductions in toxin exposure still occur, 4) reduction does not undermine but increases future cessation, and 5) there is insufficient evidence to determine whether reduction decreases the health risks of smoking. Cessation remains the ultimate goal for all smokers. For those who are unable or unwilling to quit, smoking reduction is a viable treatment option to motivate them towards eventual cessation. Nicotine replacement and/or psychosocial interventions should be considered as aids to reduction efforts. Smokers and clinicians should be made aware that the impact of reduction on health status is currently unknown.

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POS1-098

INTERMITTENT SMOKING: AN EMERGING PATTERN

Saul Shiffman*, Ph.D., Jeffrey Rohay, M.S., M.S.I.S., and Stuart Ferguson, Ph.D., University of Pittsburgh and Pinney Associates

Intermittent smoking (ITS), smoking less than daily, is becoming an important smoking pattern. Data from the Behavioral Risk Factor Surveillance Survey indicate that ITS is increasing sharply (~40% between 1996 and 2001), and now accounts for 24% of US smokers. ITS is highest in states with the lowest smoking prevalence (n=0.61). Data from the 2000 National Health Interview Survey show that the majority of intermittent smokers (53%) smoke >15 days per month. Intermittent smokers average 5.1 cigarettes on the days they do smoke, but 17% smoke 10 or more cigarettes per day. The data contradict the notion that ITS is concentrated in new initiates: Intermittent smokers were only slightly younger (39 years 0.47) than daily smokers (41.0/22) and had been smoking for an average of 20 (0.48) years. Also, surprisingly, ITS was equally common among men and women, but much more common in Hispanic (36%) than in other ethnic populations (White 14%; OR=3.5; Black 21%; OR=2.2; Other 20%; OR=2.2). Surprisingly, intermittent smokers and daily smokers were equally likely to work in a smoking restricted workplace. Intermittent smokers were more likely than daily smokers to have tried to quit smoking in the past year (21% vs. 13%; OR=1.8), but less likely to have used pharmacological aids (11% vs. 19%, OR=0.56). Finally, intermittent smokers were more likely to report engaging in vigorous exercise at least once a week (22% vs. 14%; OR=1.7), suggesting that they are more health-conscious. ITS patterns are hard to explain based on classical nicotine dependence, and challenge our understanding of smoking behavior and motives.

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POS1-099

SMOKERS OF LOW YIELD CIGARETTES LESS LIKELY TO QUIT

Hilary Tindle*, Nancy Rigotti, Roger Davis, Saul Shiffman, and Ichiro Kawachi

BACKGROUND: Many smokers erroneously believe that low-nicotine/low-tar cigarettes, also called low yield cigarettes (LYC), reduce health risks and are a rational alternative to cessation. We determined the prevalence and characteristics of ever (current or past) smokers who switched to LYC and assessed the association between switching to LYC and smoking cessation.

METHODS: Analysis of 32,374 respondents to the U.S. 2000 National Health Interview Survey who provided information on sociodemographic factors and health conditions and behaviors. Ever-smokers were asked, Did you ever switch to a lower tar and nicotine cigarette to reduce your health risk? and Do you now smoke cigarettes everyday, some days, or not at all? Those answering not at all were considered currently abstinent. Multivariable logistic regression identified determinants of LYC use and cessation. All analyses used SUDAAN and were weighted to reflect national estimates.

RESULTS: Of 12,285 ever-smokers, 37% (N=4414) reported switching to LYC to reduce health risks. Independent correlates of switching to LYC included longer smoking history, white race, younger age, female gender, higher education level, and lung or vascular disease. Current abstinence was less frequent among ever-smokers who had previously switched to LYC than those who had never switched (37% vs. 53%, p<.01). Ever-smokers who had switched to LYC were significantly less likely to have quit smoking than those who had never switched (AOR =0.60 [95% CI: 0.53-0.67]).

CONCLUSIONS: Over one-third of U.S. smokers report having switched to LYC to reduce their health risk. A history of switching to LYC was associated with lower odds of current tobacco abstinence, supporting the hypothesis that use of LYC may hinder cessation.

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POS1-100

SCOUTS JOIN THE FIGHT TO PREVENT SMOKING!

Aisha Aboul-Fotouh*, Mohamed Abdel-Latif, Mostafa Mohamed, Maged El-Selouchy, Mohamed Hosni, Shahnaz Gadalla and Ebenezer Israel, Egyptian Smoking Prevention Research Institute

Scouts are ideally positioned to play a major role in tobacco prevention in Egypt. Scouts have a large base of motivated young girls and boys (100 000 registered and many more affiliated) who are keen to serve the community and are influential leaders among their peers. They have a network of Scouts offices in all parts of the country with an excellent communication system. We estimate that Scouts in Egypt may be able to reach as many as 5 million Egyptians of all ages and the cost is negligible. In addition, our outreach will strengthen the resolve of all the Scouts to abstain from tobacco. The Egyptian Smoking Prevention Research Institute (ESPRI) created a training program for Scouts to carry out smoking prevention among Scouts, their friends, family and the community. In addition, merit badge on smoking has been developed to allow interested Scouts to learn more about smoking. This badge will be given to the scout who can help one ore more of his friends for quitting. Health education workshops for Scout leaders (training of trainers) have been carried out. Six regional training programs have been carried out. Arab League of Scouts is training Scouts in other neighboring countries and has pledged to introduce merit badge in other Arab countries. So far, the ESPRI has trained 47 Scout leaders from other countries and more training sessions have been scheduled.

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POS1-101

SOCIOECONOMIC PREDICTORS OF SMOKING BEHAVIOR

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To characterize the relationship between socioeconomic indicators and cigarette smoking. A household smoking health survey was carried out in rural Egypt. Four measures of socioeconomic status (SES) were used: four quartiles for income and material wealth, five groups of educational attainment and three occupational categories. Fagerstrom index was used to calculate dependency. Out of 4994 of adult male smokers, 36% were current smokers and 3.7% were highly dependent on nicotine. There is clear gradient in smoking behavior across various dimensions of SES. Current smokers were significantly more likely to have low job status, income and literacy and nicotine dependency (p< 0.01). Quit attempts are associated with high income and education as well as with high working status (p<0.01). Smokers of high working status are more likely to believe that smoking decreases life expectancy (p<0.003), affects fetuses (p< 0.000), more likely to be exposed to anti-smoking messages (p< 0.04), less likely to have current chest problems (p< 0.000), and are more knowledgeable about the dangers of passive smoking (p< 0.000). Material wealth in this study was found to be irrelevant to the smoking behavior.

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POS1-102

A COMPARISON OF TWO DIFFERENT MEASURES OF PER CAPITA CIGARETTE CONSUMPTION OVER 1992-2002 AND BY STATE
Anne M. Hartman*, M.S., M.A., Risk Factor Monitoring and Methods Branch, DCCPS, National Cancer Institute; and James T. Gibson, B.S., Information Management Services, Inc.

One of the important markers of progress in tobacco control is a measure of per capita cigarette consumption. Traditionally it has been assessed in two different ways with different potential biases. Historically, studies have suggested a lower estimate with use of self-reported data than with use of sales data. It is important to re-evaluate this relationship for the last decade in which a surge of tobacco control activity and changing norms have taken place. We compare here aggregate cigarette consumption information from sales (wholesale warehouse removal) and from self-report on national surveys (Tobacco Use Supplements to the Current Population Survey) nationally and by state over the period 1992-2002. We found nationally for the period 1992 to 2002 self reported estimates declined from 6.2 to 4.7 per capita packs of cigarettes per month (PCC) compared with a decline from 10.4 to 7.8 PCC for sales estimates. This resulted in a stable national ratio (expressed as percent) of self-report estimate to sales estimate of about 60% over the whole period resulting in a 40% lower estimate by self-report compared with historical reports of 50% lower estimates with self-report. The states and DC show more variability over time likely due to their smaller sample sizes. For the states averaging over the entire period the PCC ratio varied from 38% for New Hampshire to 84% for Hawaii. For the 50 states and DC the ratio declined from 1992/93 to 2001/02, with California reporting an 18% decline from 1999-2002. CPS young adult smoking prevalence (>100 cigarettes in lifetime) was constant in the rest of the US with the exception of California where smoking prevalence was about 0.45.

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POS1-103

DECLINE IN ADOLESCENT SMOKING: CALIFORNIA 1990–2002
John P. Pierce, Ph.D., and Elizabeth A. Gilpin*, M.S., University of California, San Diego

California’s comprehensive Tobacco Control Program was 13 years old in 2002: by then, children who entered adolescence while the Program began were young adults. We examined whether adolescent smoking behavior declined over this period, whether the decline carried through to young adulthood, and whether any young adult decline was specific to California. Data were from successive biennial (1990-2002) population surveys in California (California Tobacco Surveys [CTS]; adolescents [12-17 years, >5000/survey], young adults [18-24 years, >1000/survey], and nationwide [1993/94-2001/02 Current Population Surveys [CPS]; young adults [18-24 years, >15000/survey]). CTS data showed that over the 13-year period, California adolescent ever puffing declined steadily by 70% in 12- to 13-year-olds, by 53% in 14- to 15-year-olds from 1993-2002, and by 34% in 16- to 17-year-olds from 1996-2002. As noted the decline commenced progressively later in older groups. Similar patterns were observed from smoking a whole cigarette, and established smoking (>100 cigarettes in lifetime). Compared to 1980, the percentage of young adults who ever smoked (>10 cigarettes) declined by 14%, half the decline from 1999-2002. CPS young adult smoking prevalence (>100 cigarettes in lifetime and now smoke everyday or some days) was constant in the rest of the US (~22%) from 1992/93 to 2001/02, with California showing an 18% decline from 1998/99 (18.9%) to 2001/02 (15.5%). We conclude that any influences of smoking a whole cigarette, and established smoking (ever but not now), and current smokers consumption levels. Census data provided demographic group population totals. In Period 1, most of the decline in total consumption was from reduced consumption in continuing smokers, followed by fewer ever smokers. Very little of the decline was from smokers quitting. In Period 2, the decline in average consumption still accounted for over half the total; however, there was an appreciable amount contributed from smokers quitting, mostly in women and in older age groups. Survey data were not available before the 1989 excise tax ($0.25/pack) increase. Smokefree workplaces diffused rapidly with the start of California Tobacco Control Program and were legislatively mandated in 1995. They probably were the most important influence on consumption during Period 1. During Period 2, cigarette prices, which had been stable earlier, increased by ~$1.20/pack. Other tobacco control measures were ongoing during both periods. We conclude that tobacco control reduced cigarette consumption more from lower consumption levels by continuing smokers than by smokers quitting.

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POS1-104

WHAT LED TO THE MAJOR DECLINE IN CIGARETTE CONSUMPTION IN CALIFORNIA?
Elizabeth A. Gilpin*, M.S., and John P. Pierce, Ph.D., University of California San Diego

From 1989-2002, Californias per capita cigarette consumption declined consistently and dramatically by 60%. This decline could have resulted from: (1) changes in population characteristics, (2) change in the population percentage who had ever smoked, (3) change in quitting among ever smokers, and (4) change in continuing smokers average consumption. Using differential calculus, we partitioned change in self-reported total cigarette consumption (which showed a similar decline to per capita consumption) into these four components in two study periods (Period 1:1990-1996, Period 2: 1996-2002). Data were from the 1990, 1996, and 2002 California Tobacco Surveys (large, cross-sectional, population-based). We estimated percentages of ever smokers (100+ cigarettes in lifetime), quitters (ever but not now), and current smokers consumption levels. Census data provided demographic group population totals. In Period 1, most of the decline in total consumption was from reduced consumption in continuing smokers, followed by fewer ever smokers. Very little of the decline was from smokers quitting. In Period 2, the decline in average consumption still accounted for over half the total; however, there was an appreciable amount contributed from smokers quitting, mostly in women and in older age groups. Survey data were not available before the 1989 excise tax ($0.25/pack) increase. Smokefree workplaces diffused rapidly with the start of California Tobacco Control Program and were legislatively mandated in 1995. They probably were the most important influence on consumption during Period 1. During Period 2, cigarette prices, which had been stable earlier, increased by ~$1.20/pack. Other tobacco control measures were ongoing during both periods. We conclude that tobacco control reduced cigarette consumption more from lower consumption levels by continuing smokers than from smokers quitting.

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POS1-106

M ASS MEDIA INTERVENTIONS FOR SMOKING CESSATION IN ADULTS: A SYSTEMATIC REVIEW

Malgorzata Bala* and Lukasz Strzeszynski

Much of the literature is focused on the effects of mass media interventions on young people, but there are also a number of evaluations of campaigns targeting adult smokers, which show mixed results. Objective of this study was to carry out a systematic review to assess the effectiveness of mass media interventions compared with no intervention or mass media campaigns in conjunction with tobacco control programmes compared with no intervention or with tobacco programmes alone, in reducing the prevalence of smoking among adults. Randomized, quasi-randomized controlled trials, controlled trials without randomization and interrupted time series were considered for inclusion if they included adults, 25 years or older who regularly smoked cigarettes. Studies targeted at pregnant women, adolescents and 18-25 years old only were excluded. Mass media interventions primarily used to encourage smokers to quit were defined as channels of communication intended to reach large numbers of people, without person to person contact. The following smoking-related primary endpoints were considered: cessation rates, point prevalence, prolonged abstinence and sustained abstinence, for a minimum of six months from the start of the intervention, irrespective of biochemical validation. Intermediate measures included: attitudes to smoking, knowledge about smoking—including smoking norms and effects of tobacco on health, adverse side-effects. Mass media campaigns that have only been reported in terms of intermediate outcomes or process measures were excluded. The Cochrane Tobacco Addiction Group search strategy was applied in a number of databases. Relevant studies were assessed for inclusion by two reviewers and their quality was evaluated. Results will be presented at the conference.

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POS1-108

INTERNATIONAL BEST PRACTICES FOR COMPREHENSIVE TOBACCO CONTROL

Terry F. Pechacek*, Samira Asma

The development of tobacco control program efforts around the world should be guided by the best practices and efficacy data. In the United States, the 1999 CDC Best Practices for Comprehensive Tobacco Control provide programmatic and budgetary guidelines for states and territories based upon the both evidence-based reviews and best practice experience of multiple states. The application of these guidelines in the planning of new program efforts across the United States over the last three years has confirmed the overall utility of this recommendation format. Program evaluation data have continued to support both the importance of recommended funding levels as well as individual program components. Specifically, multivariate, time-series analyses of both per capita cigarette consumption and adult prevalence trends 1990-2001 for all 50 states and the District of Columbia have shown highly significant effects for level of annual state tobacco control investments controlling for price and tax changes, demographic patterns, and other potential confounding factors. However, the 1999 CDC Best Practices recommended funding levels of $5-$7 (U.S.) per capita per year greatly exceeds the available resources of many countries. Therefore, based upon the scientific foundations of the U.S. Best Practices recommendations, key recommendations for an International Best Practices for Comprehensive Tobacco Control will be provided. The scientific foundations and best practice models for each of the nine component areas of the U.S. Best Practices will be reviewed from the international dissemination perspective. Components such as community-based and school programs likely can be implemented internationally with lower direct funding support. Other components such as counter-marketing and cessation pose greater challenges. Partnerships are a critical component when applying best practices in a global context. Available scientific data and international examples supportive of possible application of the U.S. comprehensive model at lower funding levels will be presented along with cautions where such data are either lacking or suggestive of the importance of adequately funded interventions.

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POS1-107

DETERMINING AVAILABILITY OF RELIABLE DATA FOR USE IN DECISION MAKING ON THE EXAMPLE OF COST-EFFECTIVENESS ANALYSIS OF METHODS USED IN SMOKING CESSATION IN POLAND

Malgorzata Bala*, M.D.

Background Recent reports on Polish Health care system concluded that the evidence from systematic reviews and cost-effectiveness analyses is not sufficiently used in decision-making. Objective To determine the possibility of reliable cost and other data collection in Poland to inform cost-effectiveness analysis of smoking cessation methods used Poland. Methods Markov model was to be built to estimate long-term effects of smoking cessation. Costs of the following smoking-related diseases were sought: chronic obstructive pulmonary disease, coronary heart disease, lung cancer and stroke. Systematic search in databases and hand-searching of adequate journals were done. Experts and institutions responsible for treatment and data collection in Poland were contacted. Results No cost-of-illness study regarding analyzed smoking-related diseases was found. Therefore an attempt was made to obtain cost data from National Insurance Fund, but most of the branches and central refused to give any data because of their lack. Tobacco addiction treatment costs were obtained from published sources and interviews with health care providers. Mortality data were obtained from National Office of Statistics. Lung cancer incidence and mortality were obtained from national registries. No registries systematically and routinely collecting incidence and prevalence data for other diseases were localized. No studies exploring utilities of Polish population in the analyzed health states were found, therefore data from Harvard Centre for Risk Analysis Database were used. Conclusions Lack of disease registries, except for cancer, and a unified system of collecting cost data makes developing cost-effectiveness analyses, which could inform decisions in health care in Poland, very difficult.

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POS1-109

SMOKING CESSATION AND PREVENTION IN THE UK: HOW MANY LIVES COULD BE SAVED?

Sarah A Lewis*, Ph.D., Deborah Arnott, M.B.A., Christine Godfrey, B.A., and John Britton, M.D.

To provide a perspective on the likely benefits of implementing effective smoking prevention policy, we have attempted to quantify the numbers of deaths that could be avoided in the UK if smoking prevalence was reduced by 1% per annum from now until 2020 compared to 12% per annum (the current Government Department of Health target). We used the 2003 Omnibus survey in combination with mortality rates in smokers and ex-smokers from the UK Doctors Study (Doll R et al, BMJ 2004; 328: 1519) to estimate gender-specific current mortality rates in smokers and ex-smokers in 10 year-age bands from UK mortality rates for 2001. The UK Doctors study only provides mortality rates in ages between 35 and 74, so we limited our analyses to deaths in that age range. We used the 2001 UK census to estimate numbers of female and male smokers at each year of age. We estimated the number of expected deaths attributable to smoking for the next 7 years assuming no change in smoking prevalence, and then presuming a 1% and then a 12% reduction in prevalence per annum. The mortality rate in those stopping smoking was assumed to change to that of an ex-smoker who had stopped in the previous decade. We estimate that reducing smoking prevalence by 1% per annum in all age and sex categories would prevent 1029 deaths in the next year, and a cumulative total of approximately 28,553 deaths over the next 7 years. Implementing comprehensive tobacco control policies to reduce smoking prevalence from the current 24% by 1% per year to 17% by 2010 would prevent over 28,000 deaths by 2010.

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SRNT ◆ Poster Session 1

POS1-110  SMOKE-FREE HOSPITALS IN EUROPE

The European Network for Smoke-Free Hospitals is a partnership involving more than 800 hospitals from 17 countries, including 1 million HCW. The activities of the network are based on the ten pointed «European Code for Smoke-Free Hospitals». In 2003, two major changes have been made to the ENSH Code, outlining the importance of the health promotion aspect within our smoke-free strategy and setting that hospitals should become safe and healthy workplace. Many tools have been implemented: A questionnaire for surveying the smoking habit of HCW applied now to more than 80 000 HCW. A self audit questionnaire to assessed implementation of smoke free hospital, now applied to near 1000 hospitals. A protocol to implement CO measurement in maternity services to pregnant women. Module for training HCW in 9 European languages. Module for implementation smoke free hospital The results of the barometer study highlighted different features in hospital smoking habits in various countries. The smoking prevalence in health staff is higher in the Mediterranean countries than in the Nordic countries. The audit survey showed that very important variation is observed in hospitals in the same country. According to the results of the last survey, it appears that there are important differences between hospitals concerning tobacco-related issues.

CONCLUSION: As organisation of health at hospitals remains of national responsibility, urges differences exist between European countries. Networking between smoke-free hospitals helps to outline differences and exchange experiences as common tools to improve health in Europe.

UE (DG SANTER).

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POS1-112  QUIT ATTEMPTS AND QUITTING BEHAVIOR OF “LIGHT” VERSUS “REGULAR” CIGARETTE SMOKERS: FINDINGS FROM THE ITC 4-COUNTRY SURVEY
Tara E. Elton Marshall*, B.A., Geoffrey T. Fong, Ph.D., Mark P. Zanna, Ph.D., University of Waterloo; Ron Borland, Ph.D., The Cancer Council Victoria; Andrew Hyland, Ph.D., Roswell Park Cancer Institute; and Ann McNeill, Ph.D., University College London

There has been much debate in the literature about whether “light” cigarettes keep smokers from quitting. To address this debate, we report data from the first two waves of the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4), a telephone survey of a representative cohort of over 8,000 adult smokers across Canada, the United States, the United Kingdom, and Australia. Although “light” smokers were significantly more likely to have tried to quit (39% of “light” smokers compared to 33% of “regular” smokers), they were no more likely to have quit 6 months later (25% of “light” smokers compared to 23% of “regular” smokers had quit). Among “light” smokers, those who believed that “light” cigarettes make quitting easier were no more likely to try to quit or to successfully quit. A strong predictor of quitting attempts among “light” smokers was quitting intentions (OR 4.68, CI 4.52-5.44) but intentions had no significant impact on actual quitting 6 months later (OR 1.02, CI 0.79-1.32). Those “light” smokers who smoked fewer cigarettes per day were significantly more likely to quit (OR 1.47, CI 1.23-1.75). These findings suggest that “light” cigarettes do not facilitate successful quitting even among those “light” smokers who believe that “light” cigarettes confer such an advantage. Further, the findings support the contention that the use of “light” as a brand descriptor is deceptive, and that, under the Framework Convention on Tobacco Control, such brand descriptors should be prohibited.

Canadian Institutes for Health Research, Strategic Training Program in Tobacco Research (CIHR), Robert Wood Johnson Foundation, Cancer Research U.K., Canadian Tobacco Control Research Initiative, National Health and Medical Research Council of Australia, Australia Commonwealth Department of Health and Ageing.

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POS1-111  NICOTINIC SUBSTITUTION IN COMPANY: AN EFFECTIVENESS PRESERVED FOR MOST DEPENDENT SMOKERS

Methods of counselling and coaching used in company have not demonstrated their effectiveness to help to stop to smoke for the most dependent smokers. OFT, a French NGO, organizes free of charge smoking cessation at workplace in the same conditions than in smoking clinics with 6 face-to-face counseling, individual help with weaning, nicotinic substitution with adapted doses, CO monitoring.

RESULTS: On 511 smokers (42.1±9.3 years, expired CO: 25.1±14.4 ppm, 21.3±10.4 cig./j, initial Fagerström score: 4.9±2.5), 30% had a very strong dependance on cigarettes, 45% a strong dependance, 25% a slight dependance. Nicotinic substitution helped to quit smoking over time, but considerable variability between smokers. Smokers who were switched to a low-yield brand for Trial 3. The results of this study show that: smokers who were switched to a low-yield cigarette increased their total smoke intake per cigarette by 40% (p<0.007), with no significant change in their in salivary cotinine levels. Cigarettes smoked per day and nicotine yield were only weakly associated with salivary cotinine levels; however, salivary cotinine was strongly associated with a composite measure that included cigarettes per day, brand elasticity, and puffing behaviour (r = .61, p<.001). These findings provide strong evidence of behavioural compensation to low-yield cigarettes from in vivo measures of smoking behaviour. These findings demonstrate the importance of brand elasticity and smoking topography in predicting nicotine uptake and smoke exposure.

American Cancer Society, Health Canada, the Robert Wood Johnson Foundation, the National Cancer Institute (CA16056), and the Canadian Tobacco Control Research Initiative.

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POS1-113  SMOKING TOPOGRAPHY, BRAND SWITCHING, AND NICOTINE DELIVERY: RESULTS FROM AN INVIVO STUDY
David Hammond*, M.Sc., Geoffrey T. Fong, Ph.D., University of Waterloo; K. Michael Cummings, Ph.D., and Andrew Hyland, Ph.D., Roswell Park Cancer Institute

Exposure to toxins in tobacco smoke is influenced by how a cigarette is smoked. Cigarettes have been designed to allow for a range of puffing behaviour and to provide different, non-linear tar and nicotine yields in response to different puffing profiles. However, puffing behaviour and its influence upon risk-exposure has yet to be addressed outside the laboratory, in smoke pro-natural environment. Fifty-nine adult smokers used a portable device to measure smoking topography over the course of 3-one week trials. Participants were asked to smoke their usual regular yield brand through the device for Trial 1 and again, 6 weeks later, at Trial 2. Half the subjects were then randomly assigned to switch to a low-yield brand for Trial 3. The findings show a high degree of stability in puffing behaviour within the same subject over time, but considerable variability between smokers. Smokers who were switched to a low-yield cigarette increased their total smoke intake per cigarette by 40% (p<0.007), with no significant change in their in salivary cotinine levels. Cigarettes smoked per day and nicotine yield were only weakly associated with salivary cotinine levels; however, salivary cotinine was strongly associated with a composite measure that included cigarettes per day, brand elasticity, and puffing behaviour (r = .61, p<.001). These findings provide strong evidence of behavioural compensation to low-yield cigarettes from in vivo measures of smoking behaviour. These findings demonstrate the importance of brand elasticity and smoking topography in predicting nicotine uptake and smoke exposure.
Commonwealth Department of Health and Ageing.
Initiative, National Health and Medical Research Council of Australia, Australia
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Smokers can choose from hundreds of cigarette varieties, although little data exists on this behavior. We report data on 2,994 smokers who completed Waves 1 and 2 (8-10 months apart) of the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4) and who resided in the United States or Canada. Brand switchers were those who reported smoking their current brand in Wave 2 for less than 6 months. By Wave 2, 8% of smokers had quit in the US, and 19% had switched to a different cigarette brand family, while in Canada 11% had quit and 21% had switched brand families. Brand switchers were more likely to have lower incomes and to have plans to quit within the next six months. The most common reasons given for switching cigarette brands were for lower price (US=69%, Canada=53%), product quality (US=57%, Canada=43%), and to help quit (US=32%, Canada=22%). Brand switching was higher in the US states that increased cigarette excise taxes between survey waves (28%) compared to those who lived in a state that did not increase taxes (18%). There appears to be a fair amount of volatility in the cigarette market in the US and Canada with between 20%-30% of smokers either quitting or switching cigarette brands over an 18 month period. The increasing cost of cigarettes appears to be one of the main factors contributing to this volatility.

K. Michael Cummings, Andrew Hyland*, Cheryl Higbee, Frank Chaloupka, and Geoffrey T. Fong

POS1-114 DECEPTIVE STANDARDS? CIGARETTE TESTING PROTOCOLS, CONSTITUENT YIELDS, AND HUMAN SMOKING BEHAVIOUR

Andrew Hyland*, Melanie Wakefield, Cheryl Higbee, Glen Szczypka, Bob Vollinger, and Michael Cummings

OBJECTIVE: To assess the relationship between exposure to tobacco control and pharmaceutical company advertising on cessation and use of stop smoking medications.

METHODS: Data come from 2,061 smokers who originally participated in the Community Intervention Trial for Smoking Cessation between 1988 and 1993 and completed a follow-up survey in 2001, and from media exposure data from Nielsen Media Research for the top 75 media markets in the US. Outcomes included the percentage of smokers in 1999 and 2000 used stop smoking medications or quit by 2001, which were correlated with levels of state tobacco control media exposure and pharmaceutical company media exposure as measured by Gross Rating Points (GRPs).

RESULTS: For 1999 and 2000 combined, GRPs for state tobacco control media ranged from 41 (Greensboro, NC) to 17,500 (Fitchburg, MA). Total GRPs for all pharmaceutical company advertising was high and far less variable (community range: 26,400 to 32,900 GRPs). Cessation rates were 10% higher for every 5,000 GRPs of exposure to state anti-tobacco advertising per year among all subjects and 20% higher among those who noticed an increase in media coverage about the dangers of smoking and who may be more likely to be have seen media from other sources. Exposure to advertisements for stop smoking medications were not associated with greater levels of utilization of these products (R=+1.11, 95% CI = 0.84 1.46), although there was little variability in media exposure across markets.

CONCLUSIONS: Exposure to state tobacco control anti-tobacco advertising increases adult smoking cessation, and pharmaceutical company advertising for stop smoking medications may increase their utilization.

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POS1-115 PREDICTORS OF BRAND SWITCHING AMONG SMOKERS IN THE UNITED STATES AND CANADA: FINDINGS FROM THE ITC-4 COUNTRY SURVEY

POS1-116 TOBACCO RELATED MEDIA EXPOSURE, SMOKING, USE OF STOP SMOKING MEDICATIONS IN ADULTS

Andrew Hyland*, K. Michael Cummings, Cheryl Higbee, Ann McNeill, Paul McDonald, and Geoffrey T. Fong

OBJECTIVE: To identify the predictors of smoking cessation in a cohort of cigarette smokers in four countries.

METHODS: Data are reported on 6,682 persons who resided in Canada, United States (US), United Kingdom (UK), and Australia, who were current smokers in Wave 1 of the International Tobacco Control Policy Evaluation 4-Country Survey (ITC-4) and completed detailed tobacco use telephone surveys in the Wave 2 follow-up. Subjects making a quit attempt between Waves 1 and 2 nominated reasons and methods for doing so.

RESULTS: The most frequently cited reason for quitting smoking in each country was concerns about health. Only 33% of smokers reported using stop-smoking medications to help them quit between surveys Wave 1 and 2. Use of stop smoking medications was highest in the UK (36%) and lowest in the US (25%), most likely reflecting the government policy to provide insurance coverage for these medications. Among smokers who made a quit attempt between Waves 1 and 2, cessation rates were highest in the UK (30%) followed by Canada (24%), Australia (23%), and the US (23%). Cessation rates were inversely associated with measures of nicotine dependence.

CONCLUSION: Nicotine dependence is a major factor predicting long-term cessation in smokers in each of the four countries. The higher quit rate observed among smokers in the UK is consistent with the hypothesis that access to stop smoking medications increases overall quit rates in the population.


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POS1-117 REASONS, METHODS, AND PREDICTORS OF QUITTING: FINDINGS FROM THE ITC-4 COUNTRY SURVEY
**POS1-118**

**NON-RESPONSE BIAS IN A WEB-BASED SURVEY**

Eric O. Johnson*, Ph.D., and Scott Crawford, M.A.

Web-based survey administration is appealing due to ease of implementation and potential cost saving. However, response rates, which are continuing to fall for all survey forms, may be problematic. This study assessed non-response bias in a Web-based survey on smoking among college students, examined implications for generalizing results to this population and for characterizing smokers within it. Use of multiple imputation to address the effects of non-response bias is presented.

METHODS: Data come from a survey of undergraduates at a Midwestern urban university. After Web-based data collection, non-responder recruitment was attempted by telephone. We used a regression-based multiple imputation method to re-estimate smoking prevalence adjusting for non-response bias.

RESULTS: Of the 2500 students, 913 responded to the Web-survey (response rate = 36.5), and 434 of the 1,587 non-responders responded by telephone (RR = 27.3); overall RR = 53.9. Indicating potential non-response biases, we found statistically significant differences between non-responders and responders, as well as between Web-based and telephone responders, on demographic and student status characteristics. Prevalence estimates of current smoking and nicotine dependence based on multiple imputation of data missing among non-respondents were higher than crude estimates (crude current smoking and nicotine dependence = 20.9% and 4.5%; MI estimates = 26.2% +/- 3.8% and 5.9 +/- 2.2%, respectively). However, no differences in smoking characteristics between Web-based vs. telephone responding smokers was found (e.g. number of cigarettes smoked per day, number of quit attempts, family history).

CONCLUSIONS: Non-response bias can be a significant problem for generalizing from surveys with the low response rates typically achieved today. Use of multiple imputation is an important and accessible tool to address this problem. However, non-response bias effects on population estimates may not significantly bias analyses of subgroups identified through such surveys.

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**POS1-119**

**RELATIONSHIPS AMONG THE SMOKING BEHAVIOR OF COLLEGE STUDENTS AND SIGNIFICANT OTHERS**

Mary Jane S. Hanson*, Ph.D., CRNP

Recent studies have revealed an increase in smoking on college campuses. It has been demonstrated in some populations that family and friends may play a role in smoking behavior. The present study was conducted to investigate relationships between the smoking behavior of college students, and family members and friends. Questionnaires were distributed to 149 consenting (70 male and 79 female) college students, aged 18-22 years, at a university in the mid-Atlantic region of the United States. Forty-seven percent of the males, and 41% of the females were smokers. Chi-square analysis was used to investigate the relationship between smoking status (current smoker or nonsmoker) of respondents and smoking status of significant others: mother, father, best friend, most of my friends. There was a significant relationship (p<.05) between the smoking status of the respondents and their best friends, and the respondents and most of their friends for males. For males, however, no significant relationships were identified between the smoking behavior of the respondents and any of the significant others investigated. Smoking behavior between respondents and their parents was not significant for either males or females. It is not surprising that parental smoking behavior exerted no significant influence on the smoking behavior of male and female respondents currently living on a college campus. It is of interest that the findings varied by gender with regard to the influence of the smoking behavior of friends. However, the relationships identified in smoking behavior between females and their friends are consistent with previous research that has shown females as more likely than males to engage in smoking in social situations. These findings may have implications for smoking prevention/cessation programs on college campuses. However, additional study in larger university populations is warranted.

The University of Scranton, Sigma Theta Tau Theta Rho Chapter.

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**POS1-120**

**INCREASING CONSUMER DEMAND FOR TOBACCO DEPENDENCE TREATMENTS: REVIEW OF AVAILABLE EVIDENCE**


Several evidence-based treatments are available to aid smoking cessation, including medications and interactive counseling. Yet, most cessation attempts are undertaken without the benefit of treatment. The purpose of this study was to identify barriers to accessing treatment, potential strategies for overcoming these barriers, and research needs. A review of available published studies was conducted examining barriers to quitting and barriers to utilization of effective treatments. In addition, one-on-one semi-structured telephone interviews were conducted with 19 tobacco control experts from the following areas: foundations and government agencies (4 interviews), the communications field (3 interviews), academic research/clinical practice (5 interviews), state tobacco control programs (3 interviews), telephone quit lines (1 interview), the pharmaceutical industry (2 interviews), and payors of health benefits (1 interview). Experts made observations about consumer perceptions about treatment, mechanisms for delivering messages, access to services, the role of public policy and payors, and the impact of reduced risk products. The collective observations of this sample of experts and the findings from the literature review suggest that the public health community has a significant evidence base to implement several strategies in the short-term. Unanswered questions suggest a future research agenda.

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**POS1-121**

**SMOKING AND FINANCIAL PROBLEMS AMONG JUNIOR ENLISTED IN THE UNITED STATES MILITARY**

Sara A. Pyle*, M.A., C. Keith Haddock, Ph.D., Walker S.C. Poston, Ph.D., and Megan M. Pinkston, M.A., University of Missouri, Kansas City

Tobacco use has a serious negative impact on the health of US military personnel. Negative consequences also include the financial burden users incur. The average of the standard monthly base salary for junior enlisted personnel (E1-E3) is $1,260.53USD/month and $15,126.30USD/year. A one pack per day habit would cost young enlisted $1,430.80/year (range = $1,171.65 to $2,117.00 depending on location) which exceeds their gross monthly income. Using data from junior enlisted personnel who participated in the 2002 Department of Defense World Wide Survey (N = 2,262), we examined the relationship between smoking status and (1) reported financial problems over the past 12 months and (2) perceived stress related to financial problems. Smoking status classifications were never or experimental users, former users, current users (reported cigarette use in the past 30 days) and poly users (reported using both cigarettes and chewing tobacco in the past 30 days). Current (OR=1.98, 95% CI=1.63-2.41, p<.001) and poly users (OR=2.00, 95% CI=1.53-2.62, p<.001) were twice as likely as never users to report having one or more instances of financial burden in the previous 12 months. Similarly, current (OR=1.63, 95% CI=1.25-2.12, p<.001) and poly users (OR=1.70, 95% CI=1.20-2.42, p=.003) were more likely to report experiencing stress related to financial problems. Tobacco use and financial problems are strongly related for young military personnel.

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POS1-122
SMOKING AND STRESS AMONG MILITARY MEMBERS
Walker S.C. Poston*, Ph.D., Sara A. Pyle, M.A., C. Keith Haddock, Ph.D., and Kevin Hoffman, B.A., University of Missouri, Kansas City

Many smokers in the military suggest that smoking helps them cope with the unique stresses of military life. However, previous research among civilian populations suggests that smoking itself is a primary source of stress among smokers due to nicotine withdrawal and the financial burden of purchasing cigarettes. Also, by using tobacco for stress coping smokers are less likely than nonsmokers to use effective coping strategies. The purpose of this study was to examine perceived levels of stress among US military personnel. Data were from the 2002 Department of Defense World Wide Survey (N = 12,149; 24.7% Female) conducted within the four active duty services. Smoking status was categorized as never regular use, ex-smoker, current smoker, and polypster (i.e., uses cigarettes and chew). Perceived stress over the past 12 months was rated on a four point scale from none to a lot for the following categories: military duty, family life, deployment, co-worker relationships, dealing with supervisor, performance ratings, being away from family, personal life, and finances. For all potential stressors, current smokers and polypsters reported more perceived stress than never or ex-smokers; often dramatically more. For instance, the proportion of polypsters experiencing a lot of stress from deployment, dealing with supervisors, and financial problems was more than double of that for never smokers. When asked whether stress interfered with their military duties, current smokers (OR=1.60, p<0.001) and polypsters (OR=2.28, p<0.001) reported greater interference than never smokers. Thus, smokers in the military report significantly higher levels of stress and more interference in their military duties than nonsmokers.

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POS1-123
USING PROVIDER VS. PATIENT SURVEYS TO ASSESS THE EFFECT OF AN ON-CALL COUNSELOR INTERVENTION
Scott Sherman*, M.D., M.P.H., and Maribel Estrada, VA Center for Study of Healthcare Provider Behavior, Sepulveda, CA

To assess the effect of smoking cessation interventions, provider surveys are often used as surrogates for more costly patient surveys. We used both methods to assess the effect of access to an on-call smoking cessation counselor. We randomly assigned one Veterans Administration primary care team to usual care and another team to intervention, which consisted of access for 1 year to an on-call counselor, weekly provider-specific audit and feedback, educational outreach, and financial incentives for providers. We surveyed primary care providers at baseline (n=62) and 1 year (n=43), covering smoking cessation skills, attitudes, and behaviors. We surveyed a population-based sample of patients at baseline and near the end of the intervention, covering smoking history and behaviors and smoking cessation services received. At both baseline and follow-up, there were no significant differences between teams in providers’ smoking cessation skills, attitudes, and behaviors. Among patients, there were no significant differences on the baseline survey between the intervention team and control team in smoking history or prior cessation services received. On the follow-up survey, patients on both teams were equally likely to report a quit attempt or to have used nicotine patches or buproprion in the past 6 months. Patients on the intervention team were more likely to report being counseled about cessation (68% vs. 56%, p=0.05) or to have been referred to a cessation program (38% vs. 23%, p=0.01). They were somewhat more likely to have attended a smoking cessation program (14% vs. 7%, p=0.057). Provider surveys suggest the intervention had no effect, while the population-based patient survey suggested smokers on the intervention team were more likely to be counseled and referred. Provider surveys may fit better as part of a multi-modal outcome assessment rather than as the only approach used.

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POS1-124
A SYSTEMATIC REVIEW OF BEST PRACTICES FOR TOBACCO CONTROL WITHIN THE VETERANS HEALTH ADMINISTRATION
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Despite high screening and counseling rates, the prevalence of smoking remains high within the Veterans Administration (VA), due in large part to low rates of smoking cessation treatment. We systematically reviewed the literature for programs that increased treatment rates within VA. We searched the following four databases: Medline; recent NIH or VA grants; abstract presentations for 5 different societies/meetings; and Intranet-based repositories of VA best practices. Both authors independently reviewed all programs identified. In addition, we surveyed the smoking cessation lead clinician at each VA (response rate 122/131 - 90%) and also identified programs based on expert opinion. We separated the programs based on which level they primarily acted upon—patient, provider/clinic, or system. At the patient level, the most effective strategy was unsolicited mass mailings, with two studies sending letters to over 90,000 patients and achieving excellent enrollment rates. Dynamically tailored Internet-based health information and web-assisted tobacco interventions remain promising but unproven strategies. At the provider/clinic level, one program found financial incentives effective in a smoking cessation clinic. Another site embedded a sophisticated clinician support system within the electronic medical record and increased treatment rates 400%. Telephone counseling was another effective strategy, with one study testing a VA-run Outline and another testing a system for increasing referrals to a state Quitline. Several system-level programs were identified (either done or in progress), including mandating primary care availability of smoking cessation medications, removing treatment co-payments, and changing national performance measures. Our systematic review identified many programs that are or should be increasing treatment rates. We also identified areas where there are few programs, despite the availability of effective programs outside the VA. Funded by VA Public Health Strategic Healthcare Group.

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POS1-125
EFFECTIVENESS OF A VA PROGRAM TO INCREASE QUITLINE REFERRALS
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Three main approaches exist to help primary care patients quit smoking—primary care-based treatment, smoking cessation program referral and referral to telephone counseling (Quitline). We tested the effectiveness of a system to increase Quitline referrals. We randomly allocated 10/18 Veterans Administration (VA) sites in California to receive the Telephone Care Coordination Program, which included simple (2-click) referral, proactive care coordination, medication management (transdermal nicotine and/or bupropion), and follow-up (2, 4, 6, and 8 weeks; 6 months). The VA care coordinator initiated a 3-way call to the California Smokers’ Helpline, which subsequently provided a standard 30-45 minute counseling call. At baseline and the end of the 10-month intervention, we asked providers how many patients they had referred to telephone counseling within the last month. In 10 months, we received 2,965 referrals. We were unable to reach 1,156 (39%) despite 3+ attempts. We excluded 73 patients (2%) and 391 (13%) were not interested in quitting. We connected the remaining 1,345 (45%) patients to the Helpline. At 6-month follow-up, 335 patients (25%) were abstinent (30-day point prevalence). When we compared the change in average number of reported telephone counseling referrals from baseline to the end of the study, there was a large increase among intervention site providers (baseline–1.5/month, follow-up–1.5/month) and no change at control sites (baseline–2.2/month, follow-up–2.2/month) (p=0.01). The Telephone Care Coordination Program generated a large number of referrals from primary care, nearly half of whom were connected with the Helpline. Providers at intervention sites reported referring many more patients to telephone counseling than providers at control sites. Long-term abstinence among patients referred was excellent (25% at 6 months).

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In the UK, smoking prevalence is over 50% among deprived populations. The Health Secretary recently suggested that for poorer people, smoking was one of their few pleasures. We profiled smokers in an urban area of the north-west of England using indicators of social, physical and mental health. Data was collected in June 2001 for a health survey in the boroughs of Wigan and Bolton. Over 15,000 (71%) adults responded. We compared the prevalence of health indicators among smokers and non-smokers adjusted for borough, age, and the deprivation score of their place of residence. Smokers were less likely to report their current health as good and reported a significantly higher prevalence of arthritis, bronchitis, backache and respiratory symptoms. Smokers had more mobility problems (relative prevalence in men 1.34 [1.20, 1.49]; women 1.21 [1.12, 1.30]), and severe pain in the preceding 4 weeks (men 1.51 [1.26, 1.82]; women 1.21 [1.13, 1.50]). Smokers had less healthy lifestyles across many behaviours, e.g. smokers took less regular exercise (men 0.81 [0.75, 0.84]; women 0.93 [0.87, 0.98]) and exhibited more problem drinking (men 1.66 [1.46, 1.88]; women 2.40 [2.06, 2.80]). Depression or nervous trouble in the previous year (men 1.64 [1.43, 1.88]; women 1.61 [1.47, 1.77]), and a high psychiatric morbidity score (men 1.23 [1.09, 1.39]; women 1.26 [1.15, 1.38]) were more common among smokers. More women smokers reported a lack of social support (1.20 [0.98, 1.46]), and smokers more often reported financial difficulties (men 1.55 [1.30, 1.85]; women 1.77 [1.49, 2.10]). Differences were exaggerated by comparing heavy smokers and non-smokers. Independent of the level of deprivation of their place of residence, smokers have poorer physical, social and mental health. Smokers suffer more pain and experience less pleasure. Wigan and Bolton Health Authority.

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Smoking prevalence in the UK is higher among people of lower socio-economic status (SES). There are national targets for reducing smoking in these groups. National Health Service (NHS) smoking cessation services were introduced between 1999 and 2001. We aimed to describe variations by SES in motivation to quit, and quit rates. The data derive from surveys conducted among the employees of the City of Derbyshire, Central England with a population of 550,000. Subjects (8328) were participants in a regional Health Survey and were a random, stratified sample of 25-44 and 65-74 year olds, with over-sampling from disadvantaged areas. Over half of 25-44 year old smokers and 30-40% of smokers aged 65-74 years wished to quit. This varied little by SES. Quit rates were generally less among low SES smokers e.g. 3.2% low SES vs 8.3% high SES (age adjusted rate ratio 0.34 [0.19, 0.60]) for male smokers, and 4.7% vs 8.4% (0.48 [0.25, 1.07]) for females aged 25-44 years. Awareness and use of NHS cessation services in the previous year was about 30% and 5% respectively among smokers and recent quitters. Awareness varied little by SES but use was generally higher among low SES smokers. We conclude that cessation services were unsuccessful at reducing inequalities in smoking prevalence by SES. A programme of broader tobacco control interventions targeting the social and environmental contexts which create and maintain socio-economic differentials in smoking is required.

The survey was funded solely by the five participating NHS Primary Care Trusts.

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**POS1-130**

**HOW MUCH DOES SMOKING CONTRIBUTE TO SOCIOECONOMIC DISPARITIES IN HEALTH IN THE U.S.?**

Paula Lantz*, James House, and Richard Mero

**BACKGROUND:** Prior research demonstrates that health status over the life course differs significantly by socioeconomic status (SES). However, the degree to which higher rates of smoking among people of low SES contribute to health disparities needs further investigation.

**METHODS:** Data from the 4 waves of the Americans’ Changing Lives survey (n=3,617, representative of U.S. adult population in 1986) were analyzed: 1) to investigate trajectories in smoking between 1986 and 2001; and 2) to identify the degree to which smoking at baseline explained subsequent SES disparities in mortality and health status change (measured as physical functioning and self-rated health), using Cox proportional hazard models and multinomial logistic regression.

**RESULTS:** As expected, smoking rates were significantly higher among people of low SES at all four survey waves. Among survivors at Wave 4, 41% of smokers were still smoking, 50% had quit, while 9% had quit and resumed again, with SES differences in trajectories. Mortality was significantly higher among those with low income (RR=2.33), smokers (RR=1.78) and former smokers (RR=1.45). In addition, both current and former smokers had significantly higher rates of health status decline over the 15-year study period. The health risks of smoking were less than the risks of low income in all models; and only a small proportion of the impact of low income and education on health outcomes was explained by smoking behavior.

**CONCLUSIONS:** Low SES has a greater negative impact on health change and mortality than tobacco use. Although reducing smoking in low SES populations is a critical public health goal, it will currently do little to reduce socioeconomic disparities in major health outcomes.

NIA.

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**POS1-131**

**MULTIPLE DIMENSIONS OF SOCIOECONOMIC POSITION AND SMOKING**

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**BACKGROUND AND AIMS:** Socioeconomic differences in smoking are well-known but the reasons behind these differences are not clear. Possible explanations include differences in knowledge, material resources and psychosocial stress between socioeconomic groups. These explanations may relate differently to the various indicators that have been used to measure socioeconomic position. Therefore, we examined socioeconomic differences in smoking by using several indicators that reflect different dimensions of socioeconomic position.

**DATA AND METHODS:** Data derive from Helsinki Health Study baseline surveys conducted among the employees of the City of Helsinki in 2000 and 2001. The data include 6,243 respondents aged 40-60 years (response rate 68%). Six socioeconomic indicators were used: education, occupational status, household income per consumption unit, housing tenure, economic difficulties and economic satisfaction. Their associations with current smoking were examined by fitting sequential logistic regression models.

**RESULTS:** All socioeconomic indicators were strongly associated with smoking among both men and women. When the indicators were examined simultaneously their associations with smoking attenuated, especially when education and occupational status were considered together, and when income and housing tenure were introduced in the models already containing education and occupational status. After mutual adjustment for all socioeconomic indicators, housing tenure and economic satisfaction remained associated with smoking in men. In women, all indicators except income and economic difficulties were inversely associated with smoking after adjustments.

**CONCLUSIONS:** Smoking was associated with structural, material as well as perceived dimensions of socioeconomic disadvantage. Attempts to reduce smoking among the socioeconomic disadvantaged need to target several dimensions of socioeconomic position.

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**POS1-132**

**SOCIOECONOMIC DISPARITIES IN SMOKING AMONG WOMEN WORKING WITHIN DIFFERENT EMPLOYMENT SECTORS**

E. Lahelma*, M. Laaksonen, A. Aittomäki, and O. Rahkonen

Socioeconomic disparities in smoking are widely found, but it is not well established whether their pattern and magnitude vary across subpopulations, such as employment sectors. Therefore, this study aimed, firstly, to test whether differences in smoking by occupational class are found among women working within four employment sectors; and secondly, to examine whether working conditions explain these differences. The data derive from the Helsinki Health Study baseline questionnaire surveys in 2000-2002, and include female employees of the City of Helsinki, ages 40-60 (n=7026, response rate 67%). Employment sectors were health care, education, social welfare, and administration. Four occupational classes were managers/professionals, semi-professionals, routine non-manuals, and manual workers. Working conditions were assessed by physical and mental work load, and Karaseks job-demand-control inventory. Smoking status was measured by a question asking Do you currently smoke cigarettes, cigars or pipe on a regular basis?, with response alternatives yes and no. Prevalence percentages, odds ratios and inequality indices from logistic regression analysis were calculated. The prevalence for current smoking varied from 13% (education) to 26% (administration). Occupational class differences in smoking were found within all four employment sectors, with smoking being least prevalent among managers and professionals, and most prevalent among manual workers (OR 2.7-13.1). Interaction between sector and occupational class suggested that differences in smoking were emphasised within health care and social welfare. The studied working conditions did not explain the found differences. Similar socioeconomic disparities in smoking as among general populations were equally found within four employment sectors. The disparities could not be attributed to working conditions. These findings reconfirm that socioeconomic disparities in smoking are deep-rooted and likely to be universal across employment sectors.

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**POS1-133**

**CHANGES IN QUALITY OF LIFE AFTER SMOKING CESSATION AMONG OLDER ADULTS**

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Smoking cessation among older adults is thought to produce substantial quality of life (QOL) benefits but little prospective data are available. A total of 296 adults, 60 years, were randomized to receive one of three smoking cessation interventions consisting of usual care (MD advice plus one behavioral counseling session), standard behavioral counseling (4 sessions) + nicotine patch, or 4 sessions of behavioral counseling targeted to older adults + patch. Health-related QOL was assessed at baseline and 6 & 12 months follow-up using the SF-36. Biochemically confirmed point prevalent abstinence rates at 12 months were 26.6%, 21.6%, and 31.2% for the three groups, respectively. Using a mixed model approach, 6 of 8 QOL indices (physical functioning, emotional well-being, social functioning, body pain, general health, and energy/fatigue) worsened over 12 months regardless of treatment condition or smoking outcome (p-values <.05). A significant time by smoking status interaction was observed for energy/fatigue indicating that non-quiters worsened substantially over time while quitters experienced no change. Collapsing across assessment periods (baseline, 6 month, 12 month), QOL was greater in quitters compared to non-quiters for emotional well-being and role limitations due to emotional problems. The results indicate that QOL generally worsens over the course of a year in older smokers, even after quitting. However, cessation may preserve QOL in terms of energy/fatigue level.

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POS1-134

BARRIERS AND FACILITATORS TO GIVING CESSATION ADVICE IN LONG-TERM CARE FACILITIES

Celia A. Watt*, Ph.D., and Jill W. Lassiter, M.S.Ed., SUNY Brockport; and Deborah J. Ossip-Klein, Ph.D., University of Rochester

Although the majority of healthcare facilities are smoke-free, nursing homes are an exception. Healthcare workers are generally encouraged to help tobacco users quit, however previous reports from residents in a single long-term care setting found that fewer than half of the residents who smoked reported receiving cessation advice from nurses (35.7%) and 40% received advice from a physician. This study reports findings from a nationwide survey examining long-term healthcare facilities (N = 646) advising practices in nursing homes. Overall, physicians advised more smokers who smoked than nurses, who advised more than nursing assistants; no healthcare staff endorsed the belief that physicians are the only staff who should give cessation advice and all agreed that smoking is harmful to residents’ health and that quitting would improve residents’ health. The strongest impetus to advise was driven by safety concerns or a belief that residents’ health was compromised by smoking. Only one barrier (“the current smoking policy allows residents to smoke”) was identified by nursing staff. Resident disinterest in quitting, skills/time necessary for advising, and numerous other barriers presented were not considered obstacles to advising. Residents in long-term care facilities interact daily with health care providers and are in a prime position to receive cessation advice and encouragement. Close living proximity, restricted mobility, safety concerns, and needs for assisting smoking present risks for all residents and staff. These findings, combined with future research examining the residents’ views regarding cessation, will assist in the development of effective training programs to influence staff’s advising behaviors and ultimately impact residents’ smoking.

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POS1-135

SMOKERS AGE 50 AND OLDER: WHO IS MORE LIKELY TO COMPLETE FOLLOW UP IN A SMOKING CESSATION INTERVENTION?

Leslie Hazel-Fernandez*, Ph.D., Deborah Ossip-Klein, Ph.D., Joseph Guido, M.S., Scott McIntosh, Ph.D., Jean Spada, M.P.H., and Kathi Burton

While research is available on smoking cessation research participants who relapse, little work exists on participants who drop out of treatment or are lost to follow up. Concurrently, a dearth of research exists on smoking cessation among older smokers. Previous research suggests that baseline measures such as younger age and poorer health may predict subsequent attrition among adult smokers. The present study assessed predictors of non-completion of six-month follow up among mid-life and older smokers (N=1855) who enrolled in a smoking cessation trial. Participants were randomized at baseline to brief telephone counseling/quit line, to receive mailings, or to receive the usual care resources. Subsequently, 325 of those 1805 participants were non-completers at 6 months. Completers were defined as individuals who completed a follow-up survey within the 6-month time window. A logistic regression analysis was performed to examine the association between participants attributes at baseline and the probability of them not completing follow up at 6 months. Significant predictors of non-completion were male gender, assignment to the usual care group, younger age, and their perception of inferior ability to take care of themselves as compared to their same-age peers. Midlife and older males appeared to be especially vulnerable to being lost to follow up or dropping out. Consideration of these predictors may be instrumental to reducing the likelihood of dropout or attrition from smoking cessation studies targeting older smokers.

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POS1-136

SMOKING AND ITS ASSOCIATIONS WITH HEALTH BEHAVIOUR AND BODY MASS INDEX AMONG ELDERLY PEOPLE

Tommi Sulander*, M.Sc., National Public Health Institute; Ossi Rahkonen, Ph.D., University of Helsinki; Aulikki Nissinen, M.D., Ph.D., and Antti Utela, Ph.D., National Public Health Institute

This study examined whether daily smoking associates with alcohol consumption, diet, physical activity and body mass index among the Finnish population aged 65-79 years. Furthermore associations between heavy smoking and unhealthy behaviour were studied. Nationally representative monitoring surveys conducted biennially from 1985 to 2001 were pooled into a single database after testing that no major changes in associations of smoking with other health behaviour and body mass index had occurred over time. Those elderly smoking 20 or more cigarettes (inc. pipe and cigars) per day were assessed as heavy smokers. Total number of respondents were 11 793. Average response rate was 82 %.

£ender, age, previous occupation, marital status, time period, health behaviours and body mass index were simultaneously adjusted in logistic regression analyses. Poorer diet, higher alcohol use, inactivity and normal weight were associated with daily smoking. Furthermore higher alcohol use, poorer diet and obesity were related with heavy smoking. Smoking among elderly people associated with other unhealthy behaviours. However the association with BMI was more complex, as the findings suggest highest number of daily smokers among normal weight elderly but heavier smoking among obese elderly.

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POS1-137

SMOKING CESSATION AND ITS DETERMINANTS AMONG OLDER AMERICAN INDIAN: THE STRONG HEART STUDY

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OBJECTIVE: To examine the relation between sociodemographic, clinical and smoking history factors and smoking cessation among older American Indians. Design: Nested cohort study of cigarette smokers in the Strong Heart Study, a longitudal study of cardiovascular disease among American Indians. Setting: 13 American Indian tribes from Arizona, Oklahoma, and North and South Dakota. PARTICIPANTS: American Indian men and women (n = 998), ages 45-74 years, who identified themselves as smokers at the initial Strong Heart Study examination.

MEASUREMENTS AND MAIN RESULTS: Twenty-one percent of smokers quit during the 4 year follow-up period. Multivariate logistic regression was used to assess the relation between baseline sociodemographic, clinical, and smoking history factors and smoking cessation. Factors associated with smoking cessation included age 65-74 years old (odds ratio (OR) 2.1, 95% confidence interval (CI) 1.3 to 3.3), Arizona regional center (OR 2.2, 95% CI 1.3, 3.7), Nondaily smokers (OR 5.4; 95% CI 1.3, 18.5), daily cigarette consumption of less than six cigarettes (OR 2.8; 95% CI 1.3, 4.7), fewer years of smoking cigarettes (OR 2.0; 95% CI 1.0, 3.9), older age of smoking initiation (17 years or older, OR 1.6; 95% CI 1.1,2.4), and history of diabetes (OR 1.7; 95% CI 1.2, 2.3). Factors not associated with smoking cessation include sex, level of education, childhood exposure to tobacco smoking, and a history of cardiovascular diseases, cancer, or respiratory diseases.

CONCLUSION: Several determinants of smoking cessation among older American Indians identified in this study may have important implications for designing appropriate interventions in this special population.

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POS1-138  CORRELATES OF SMOKING BETWEEN THE SOUTHWEST AND NORTHERN PLAINS TRIBES: THE AI-SUPERPFP STUDY

Patricia Nez Henderson, M.D., M.P.H., Clemma Jacobsen, M.S., and Janette Beals, Ph.D. and the AI-SUPERPFP Team

Objective: Describe the prevalence and correlates of cigarette smoking in two American Indian tribes. Methods: Multinomial logistic regression on data from a population-based, cross-sectional study of Southwest and Northern Plains American Indians aged 15-54. Results: 19% of Southwest men, 10% of Southwest women, 45% of Northern Plains men and 51% of Northern Plains women were current smokers. Marriage and less time spent on a reservation were associated with higher odds of current smoking in Northern Plains men and women, respectively. Younger Southwest participants had higher odds of smoking than their elders. Alcohol use was strongly associated with smoking in both tribes. Conclusions: Cigarette smoking is a major public health issue among American Indians. Comprehensive, culturally appropriate interventions are needed.

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POS1-140  RACIAL DIFFERENCES AMONG HARDCORE SMOKERS: ANY LINK TO HEALTH DISPARITIES?

Patricia L. Mabry, Pebbles Fagan, Deirdre Lawrence, Stephen E. Marcus, Glen D. Morgan, Scott J. Leischow, and Erik M. Augustson*

We recently demonstrated that hardcore smoking prevalence (13.7%) is higher than previously reported (5%). It is unclear if hardcore smoking explains differences in smoking prevalence and access to treatment services among racial and ethnic groups. We analyzed data from the 1998-1999 Tobacco Use Supplement to the Current Population Survey. Hardcore (HC) smokers were defined as daily smokers over age 25, smoking 15 cigarettes per day with a 5-year smoking history, no previous quit attempts and no intent to quit in the next six months. Prevalence rates for HC varied by race: 14.4% White, 10.2% black, 8.7% Hispanic, 9.7% Asian, and 13.3% Native American. These rates compare to an overall population rate of 13.7%. Differences on demographic and environmental variables between minority and White HCs are reported, as are comparisons between HCs and non-HCs within specific racial/ethnic groups. Results include, 1) compared to White HCs: a greater percentage of Black, Asian and Hispanic HCs were male; Blacks, Hispanics, and Native American HCs were less likely to have had contact with a health care provider, and Hispanic HCs were less likely to receive advice to quit; 2) compared to other smokers of the same race: Black and Hispanic HCs were less likely to have had contact with a health care provider, and to have been given advice to quit; Blacks and Asian HCs were less likely to have had access to an employer cessation program. Thus, a sizeable subset of minority hardcore smokers exists and may be harder to reach with interventions than other minority/other hardcore smokers.

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POS1-139  OPERATIONALIZING ETHNICITY IN THE ANALYSIS OF SMOKING IN BARS

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The authors discuss the ways in which the concept of “ethnicity” has been operationalized in on-going investigations of smoking behaviors and tobacco control policy in bars. The researchers’ preliminary studies found patron homogeneity to be a significant predictor of smoking inside some California bars, where smoking has been prohibited by state law. While smoking was frequently observed in bars serving primarily Asian and Irish patrons, it was rarely observed in bars serving Latino and LGBT patrons. Yet ethnicity was observed to be operationalized by some bars as a means of establishing a bar identity without necessarily resulting in an ethnically-specific clientele. The paper describes the means by which the researchers have differentiated between ethnicity as a descriptor of bar patrons and ethnicity as a cultural representation as these relate to smoking behaviors and tobacco control policy enforcement in bars.

Data gathering for this project was supported by the University of California Office of President’s Tobacco-Related Disease Research Program grant 1RT-0276 and analysis was supported by National Cancer Institute grant TR01-CA10072 and TRDRP 12RT-0116.

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POS1-141  CAN EXPECTANCIES ABOUT TAILORED SMOKING-CESSATION MATERIALS BE PRIMED TO ENHANCE OUTCOME?

Monica Webb*, M.A., Peter Hendrickx, M.A., and Thomas Brandon, Ph.D., H. Lee Moffitt Cancer Center and the University of South Florida

Designing effective tailored interventions for smokers has been the focus of stage-based research. Our previous research indicated that high levels of content personalization and individuals trait expectancies about tailored interventions contribute to the impact of tailored messages. That is, smokers who held strong expectancies about the value of tailored materials showed the greatest change when they received a highly personalized intervention. This study attempted to replicate and extend this research by testing whether tailoring-related expectancies could be influenced via a brief priming intervention, and whether this would then enhance the impact of the cessation materials. A 2x2 factorial design manipulated personalization level and expectancy priming on evaluation of the intervention content, readiness to quit smoking, cessation self-efficacy, cognitive processing, and behavioral changes. 205 smokers were randomized to one of four cells. Participants in the priming conditions received a pre-intervention letter to enhance their expectations for either generic or tailored interventions. Post-priming expectancies were assessed 7-10 days later, and tobacco intervention booklets were subsequently mailed. Results replicated and extended previous work, finding main effects of personalization on content evaluation, readiness to quit, cognitive processing, and behavioral change. That is, smokers who received the personalized (placebo tailored) booklets reported greater change than those who received the standard booklets. A priming by personalization interaction indicated that the expectancy manipulation was effective, and priming main effects were found for content evaluation and cognitive processing. Thus, enhancing smokers expectancies about their materials improved outcomes. Theoretical and applied implications will be discussed.

Supported by the University of South Florida.

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POSTER SESSION 2

POS2-001 INTERACTION OF NICOTINIC ACETYLCHOLINE RECEPTOR (nAChR) WITH GLUTAMATERGIC AND GABAERGIC AFFERENTS: EFFECTS OF CHRONIC NICOTINE AND ITS WITHDRAWAL

S. Wonnacott, Ph.D., and J. Barik*, M.Phil., Biology & Biochemistry Dept., Bath University, Bath

nAChR could participate in nicotine addiction due to their presynaptic modulation of neurotransmitter release. In this study, we characterised the modulation by nAChR of striatal [3H]-dopamine (DA) and hippocampal [3H]-noradrenaline (NA) release. We also examined the effects of a 14 days nicotine treatment (4 mg/kg/day) and its 3 days withdrawal period in rats. In naïve animals, nAChR activation by anatoxin-a (AnTx) induced a biphasic DA release, consistent with nAChR diversity; AnTx-evoked NA release best fitted a single site model. Choline 1 mM induced DA and NA release in respective regions, indicating the presence of an alpha7 component. Direct stimulation of glutamate receptors with AMPA, kainate and glutamate released catecholamine in both regions. Choline- (1 mM) mediated release was blocked by DNQX, indicating the presence of nAChR on glutamatergic afferents. GABA selectively stimulated NA release. Bicuculline inhibited choline-evoked NA release, but was ineffective in the striatum, indicative of nAChR localisation on hippocampal gabaergic afferents. Following 14 days of continuous nicotine administration, nicotine plasma levels reached 35 ng/ml and both AnTx- (1 microM) and choline- (1 mM) evoked release gave a non-significant trend towards a decrease. However, after 3 days withdrawal, choline responses were significantly enhanced, but blockade by DNQX was unchanged indicating a lack of effect of the nicotine treatment at non NMDA glutamate receptors. Brain [3H]-epibatidine binding sites were upregulated by 47% only at 14 days nicotine treatment; [3H]-MLA binding sites were upregulated by 33.7±8.8% following 14 days continuous nicotine treatment and remained elevated after 3 days withdrawal (33.8±6.0%). However, subcutaneous injections of nicotine produced no significant changes in [3H]epibatidine binding. There was a trend towards an increase in cortical [3H]-MLA (alpha7 nAChR) binding following infused nicotine at the two time points (nicotine: 38.5±5.3 and 40.3±4.9 fmol/mg, control: 31.0±3.9 and 32.7±4.0 fmol/mg) but the means did not differ significantly. Interestingly, cortical alpha7 nAChR was significantly upregulated (30.1±2.9%) after repeated nicotine injections, but returned to control levels after 3 days withdrawal. In parallel, we assessed the functional activity of nAChR for the presynaptic modulation of [3H]-dopamine (DA) release from striatal slices. DA release evoked by nicotine 1 and 50 microM and choline 1 mM was compared. The nicotine dosing regimens used differentially influenced nAChR properties. It remains to be determined whether the difference can be explained by the amount rather than the route of administration.

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POS2-002 COMPARISON OF CHRONICALLY INJECTED AND INFUSED NICOTINE ON NICOTINIC ACETYLCHOLINE RECEPTOR (nAChR) NUMBERS AND FUNCTION

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Post-mortem binding studies on human brain tissues from smokers show upregulation of nAChR. Smoking is a complex phenomenon accompanied by stable - neurochemical changes in the central nervous system. In this study in mice, we compared two modes of nicotine delivery: repeated nicotine administration via subcutaneous injections twice daily (1.2 mg/kg, a dose producing tolerance) or continuous infusion via osmotic minipumps (6.3 mg/kg/day). Male C57BL/6 mice (n=8) were exposed to nicotine or saline for 14 days with or without 3 days withdrawal before neurochemical analysis. Cortical [3H]-epibatidine binding sites were upregulated by 33.7±8.8% following 14 days continuous nicotine treatment and remained elevated after 3 days withdrawal (33.8±6.0%). However, subcutaneous injections of nicotine produced no significant changes in [3H]epibatidine binding.

There was a trend towards an increase in cortical [3H]-MLA (alpha7 nAChR) binding following infused nicotine at the two time points (nicotine: 38.5±5.3 and 40.3±4.9 fmol/mg, control: 31.0±3.9 and 32.7±4.0 fmol/mg) but the means did not differ significantly. Interestingly, cortical alpha7 nAChR was significantly upregulated (30.1±2.9%) after repeated nicotine injections, but returned to control levels after 3 days withdrawal. In parallel, we assessed the functional activity of nAChR for the presynaptic modulation of [3H]-dopamine (DA) release from striatal slices. DA release evoked by nicotine 1 and 50 microM and choline 1 mM was compared. The nicotine dosing regimens used differentially influenced nAChR properties. It remains to be determined whether the difference can be explained by the amount rather than the route of administration.

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POS2-003 IMAGING SEX DIFFERENCES IN BETA2 NICOTINIC ACETYLCHOLINE RECEPTOR EXPRESSION IN NONSMOKERS USING [I-123]IA SPECT

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Women appear to be less sensitive and more tolerant to the pharmacological effects of nicotine and exhibit a poorer response to nicotine replacement therapies (NRT) than men. We hypothesize that these sex differences are due, at least in part, to differential expression of nicotinic acetylcholine receptors (nAChR) – the initial site of nicotine’s actions in the central nervous system – between women and men. In this study, the high affinity nicotinic agonist binding site on beta2-nicotinic acetylcholine receptors (beta2-nAChR) was imaged in women and men nonsmokers using the nicotinic agonist radiotracer [I-123]IA and SPECT. To date, 6 men (age 27.5± 5.7 y), 6 women in the follicular phase (age 28.9 ± 7.8 y) and 5 women in the luteal phase (29.3 ± 7.0 y) have been imaged. Analyses suggest that [I-123]IA uptake in the thalamus, parietal, temporal and occipital cortices is higher in women versus men. When menstrual cycle phase was evaluated, [I-123]IA uptake was notably higher throughout the brain during the follicular phase compared to the luteal phase. [I-123]IA uptake was similar between women in the luteal phase and men. These findings, while preliminary, suggest that beta2-nAChR expression differs between men and women, and over the course of the menstrual cycle. Such differences likely contribute to gender-specific pharmacological effects of nicotine and response to NRT, and serve to inform the development of more effective, gender-specific cessation pharmacotherapies.

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POS2-004  TOLERANCE TO NICOTINE IN MICE LACKING ALPHA7 NICOTINIC RECEPTORS (nAChR)
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The development of tolerance to nicotine indicates intriguing neurochemical changes that eventually converge to produce dependence. The aim of the present study is to assess the role of alpha7 nAChR in the development of tolerance to nicotine after chronic exposure. In previous studies, nicotine produced an acute depressant effect on schedule-controlled behaviour to which tolerance developed after repeated injections of nicotine. In the present study, groups of alpha7 knockout mice were trained to press levers under an FR2-20 schedule of food reinforcement. Therefore, the acute response rate-depressant effects of nicotine (0.1-1.2 mg/kg s.c.) were assessed in both genotypes. Mice were then divided into subgroups and treated daily until the end of the experiment with either the lowest dose of nicotine that produced maximal acute rate-depressant effects (1.2 mg/kg/day) or saline. After 39 days, dose-response curves were redetermined (0-2.0 mg/kg s.c. of nicotine). Mice lacking alpha7 nAChR failed to show any difference in rates of lever-pressing under undrugged conditions and after acute injections of nicotine. Similarly, the development of tolerance to nicotine (as shown by an approximately 2.5-fold shift to the right of dose-response curves) was similar in both genotypes. The present results suggest that under the conditions used alpha7 nAChR do not play a permissive role in the response curves) was similar in both genotypes. The present results suggest that under the conditions used alpha7 nAChR do not play a permissive role in the development of tolerance to those effects.

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POS2-005  A GENETIC ASSOCIATION STUDY OF THE NICOTINIC RECEPTORS AND HABITUAL SMOKING IN FAMILIES OF ALCOHOLICS

Smoking is a leading cause of morbidity and mortality. Evidence from twin studies demonstrates that habitual smoking is strongly heritable and correlated at the genetic level with alcohol dependence. This is a report of a genetic association study of nicotinic receptors on chromosome 15 and habitual smoking (smoking at least 20 cigarettes daily for 6 months or more) in families of alcoholics. Subjects were part of the Collaborative Study on the Genetics of Alcoholism (COGA). Individuals who met criteria for both DSM-III-R alcohol dependence and Feighner definitive alcoholism were identified in substance abuse treatment settings, and their relatives were recruited as a sample at high risk for substance dependence. All subjects were interviewed using a semi-structured interview (SSAGA) that evaluated alcohol and substance dependence, habitual smoking, and other psychiatric disorders. 64% of male probands and 55% of female probands were habitual smokers. There was significant familial aggregation of habitual smoking, and relatives of probands with habitual smoking were also at higher risk for smoking. There was evidence for linkage to chromosome 15 for habitual smoking, near the family of nicotinic receptors. Preliminary family based association studies (262 families and over 2200 individuals) of the alpha 3, alpha 5, alpha 7, and beta 4 nicotinic receptors provided no evidence of association of these genes with habitual smoking. Additional investigation of other smoking characteristics is underway.

This national collaborative study is supported by the NIH Grant U10AA08403 from the National Institute on Alcohol Abuse and Alcoholism (NIAAA).

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POS2-006  IS THERE AN ASSOCIATION BETWEEN GENDER SMOKING BEHAVIOR AND G223A POLYMORPHISM OF THE LEPTIN RECEPTOR GENE?
Jose M. Chatkin*, Adriana R. Santos, Leni A. Leite, Maristela Tauffer, and Ivana B.M. Cruz

BACKGROUND: Leptin is a hormone involved in body weight and hunger regulation, and may contribute to the inverse relationship between cigarette smoking and body weight. Association among gender and leptin levels, body mass indices, hunger ratings and smoking behavior have already been shown, being this association different between genders. However, there are few studies looking for an association between leptin genetic polymorphism and smoking addition. Recently, lower leptin binding capacity to the soluble form of its receptor (LEPR) has been shown in carriers of the Arg223-encoding allele of the Gin223Arg polymorphism of the LEPR.
AIM: To look for an association between G223A polymorphism of the LEPR gene and smoking addition.

METHODS: 492 Caucasian volunteers participants were included. Genotyping was performed by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP).
RESULTS: A223G genotype frequencies were GG=26.9%, GA=51.3%, AA=12.5%. Subjects were classified according to the smoking behavior: smokers 10%; never smokers 73.0%; and former smokers 16.9%. There was a statistically significant difference of A223G polymorphism frequencies and smoking habit between genders. In males, such genotype was associated with smoking habit (p=0.001): Smokers: GG=48.0%, GA=50.0%, AA=2.0%; Former smokers: GG=11.1%, GA=85.9%, AA=3.0% and Never-smokers: GG=47.1%, GA=20.1%, AA=25.8%. In females, the A223G genotype frequencies were also associated with smoking habit (p=0.004), but with a different profile: Smokers: GG=2.0%, GA=89.7%, AA=8.3%; Former smokers: GG=25.0%, GA=43.8%, AA=31.3%; Never smokers: GG=30.6%, GA=57.6%, AA=11.8.
CONCLUSIONS: These results suggest that AA and GG genotypes could be a protector and risk factor, respectively, to smoking initiation in males. By contrast, the GG genotype could protect the female for smoking persistence since the former smokers and the never smokers present similar GG frequencies. These results are preliminary and need sample enlargement to clear up the relationship among smoking addiction, leptin metabolism and gender.

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POS2-007  EFFECT OF GENETIC VARIATION AND CHRONIC NICOTINE EXPOSURE ON NICOTINE (CYP2A5) AND ETHANOL (CYP2E1) METABOLIZING ENZYMES IN MICE
Eric C.K. Siu*, M. Sc., Amir Boutrous, Sharon Miksys, Ph.D., Dieter B. Wildenauer, Ph.D., and Rachel F. Tyndale, Ph.D., University of Toronto and University of Western Australia

CYP2A5 is the mouse homologue of human CYP2A6; they are responsible for the majority of the metabolic inactivation of nicotine. Variation in human CYP2A6 can alter the amount of smoked. Data from a mouse QTL study suggested that CYP2A5 may be involved in differential nicotine consumption. Preliminary data indicated that in F2 mice, high consumers (n=30) had 21% higher CYP2A5 compared to low consumers (n=30). We examined the pharmacokinetics of subcutaneous nicotine (2.5mg/kg) in two mouse strains, C57Bl6 and DBA2, which demonstrated differing nicotine consumption. C57Bl6 mice expressed less CYP2A5 protein but appeared to metabolize nicotine faster than DBA2 mice. Cigarette smoking reduces nicotine clearance in humans and chronic nicotine treatment in vivo down-regulates hepatic CYP2A6 mRNA, protein and nicotine metabolism in monkeys. CYP2E1 metabolizes ethanol and is implicated in alcoholic liver disease. Smoking increases CYP2E1-mediated chloroxazone metabolism in humans and nicotine treatment induces rat and monkey hepatic CYP2E1. The effect of nicotine on mouse CYP2A5 and CYP2E1 is unknown. DBA2 mice were treated chronically (7 days) with nicotine (2.5mg/kg, s.c.) or saline. Chronic nicotine in DBA2 mice significantly reduced clearance of nicotine but CYP2A5 protein levels were not affected. A slight increase in CYP2E1 expression was detected. These results suggest that CYP2A5 differs in structure and/or regulation between mouse strains altering the rates of nicotine inactivation.

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**POS2-008**

**CHRONIC NICOTINE INCREASES CYP2E1, AN ENZYME ASSOCIATED WITH ALCOHOL AND NICOTINE DEPENDENCE, IN MONKEY BRAIN**

Meenal Joshi*, Ph.D., Sharon Miksys, Ph.D., and Rachel F. Tyndale, Ph.D., CAMH and University of Toronto

We found that CYP2E1 increases after chronic nicotine treatment in monkey brain in a region- and cell-specific manner. CYP2E1 can metabolically inactivate drugs (ethanol, acetaminophen) and bioactivate procarcinogenic tobacco-specific nitrosamines and neurotoxins; it can also metabolize endogenous substrates (arachidonic acid). Nicotine, obtained while smoking, is also used to treat smoking and neurological diseases such as Alzheimer’s disease. We have shown that CYP2E1 is increased by nicotine in rat brain and is higher in smoker’s brains. CYP2E1 expression patterns differ between rat and human brain probably due to species (rat vs. human) and/or inducer (cigarette smoke vs. nicotine) differences. Therefore we developed a model whereby African green monkeys were treated for 22 days bid s.c. with saline or nicotine (0.3 mg/kg). In saline treated monkeys, the immunostaining patterns were more similar to human non-alcoholic non-smokers than to rats (e.g. the cerebellar Purkinje cells and frontal cortex pyramidal neurons were stained strongly). Staining was also seen in CA1, CA2 regions of hippocampus, substantia nigra, subthalamic nuclei and caudate. Brain CYP2E1 increased after chronic nicotine in a region- and cell-specific manner (e.g. cerebellar Purkinje cells, CA3 region of hippocampus, subthalamic nuclei and substantia nigra). Immunoblotting showed increased CYP2E1 (p<0.05) in cerebellum (1.4-fold) and frontal cortex (1.5-fold) but no overall change in hippocampus. In monkey brain, basal expression of CYP2E1 and the increases in immunoreactivity after nicotine treatment appear more like human than rat brain. This indicates that species differences likely contribute to the variation between rat and human data.

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**POS2-009**

**CYP2B6, AN ENZYME THAT INACTIVATES NICOTINE AND ACTIVATES BUPROPION, IS INCREASED IN MONKEY BRAIN FOLLOWING CHRONIC NICOTINE**

Anna M. Lee*, Sharon Miksys, Ph.D., and Rachel F. Tyndale, Ph.D., CAMH and University of Toronto

CYP2B6 is differentially expressed in monkey brain regions and is induced by chronic nicotine treatment. CYP2B6, expressed in brain and liver, can inactivate nicotine and activate bupropion, a smoking cessation drug. CYP2B6 is differentially expressed among human brain regions and smokers have higher brain CYP2B6 protein compared to non-smokers. We have shown that nicotine increases CYP2B6 in rat brain; however, monkeys are better models of human neuroanatomy and enzyme regulation. Nicotine intake in smokers is ~0.5 mg/kg/day (Benowitz et al., 1984), therefore monkeys (n=6/group), with slightly faster nicotine metabolism, were treated for 22 days with nicotine (0.3 mg/kg bid) or saline. In control monkey brain CYP2B6 is expressed at variable levels in different regions and cell types (by immunoblotting and immunocytochemistry). For example, cerebellar Purkinje cells and cortical pyramidal cells have strong CYP2B6 immunoreactivity relative to other cell types. Basal CYP2B6 levels are more detectable in the frontal cortex and cerebellum compared to the hippocampus. The differing levels of basal CYP2B6 in brain may affect localizednicotine inactivation and subsequent cravings in smokers. Chronic nicotine treatment resulted in differential induction of CYP2B6 in monkey brain. For example, CYP2B6 in chronic nicotine treated monkeys was increased 1.89-fold (p=0.002) in the frontal cortex compared to controls while CYP2B6 was unchanged in the cerebellum (p=0.6). Our study suggests that nicotine induces its own inactivation in brain by inducing CYP2B6 protein. This increase in brain CYP2B6 may affect nicotine craving and bupropion treatment outcomes.

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**POS2-010**

**CYP2A6 GENETIC VARIATION IN TWO ASIANAMERICAN POPULATIONS**

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CYP2A6 is the human hepatic enzyme responsible for the majority of nicotine inactivation to cotinine. Genetic variation in the CYP2A6 gene contributes to interindividual and interethnic variability in nicotine metabolising activity. In this study of Chinese (N=221) and Korean (N=207) American college students we investigated the frequencies of five variant alleles commonly found in Asian populations. We found the CYP2A6*7 genotype frequency was intermediate between those observed in Chinese (5.7%) and Koreans (9.3%), with no other allele observed at a significantly different frequency. In summary, we observed significant differences in CYP2A6 allele frequencies between the Chinese and Koreans, improved the CYP2A6*7 assay reliably detects in Hardy-Weinburg Equilibrium homozygous variant, homozygous wild-type and heterozygous genotypes. A CYP2A6*10 haplotyping assay was developed to identify when CYP2A6*7 and CYP2A6*8 co-occur on the same allele. This assay, in concert with the improved CYP2A6*7 assay, revealed in these populations that CYP2A6*8 occurred only as a part of the CYP2A6*10 haplotype.

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**POS2-011**

**BIOMETRIC ANALYSES OF NICOTINE METABOLISM: THE IMPACT OF CYP2A6 GENOTYPE ON ESTIMATES OF ADDITIVE GENETIC INFLUENCE**

Gary E. Swan*, Ph.D., Neal Benowitz, M.D., Christina N. Lessov, Ph.D., Rachel F. Tyndale, Ph.D., Kirk Wilhelmsen, M.D., Ph.D., and Peyton Jacob III, Ph.D.

This paper describes a pharmacogenetic investigation of nicotine metabolism in twins. One hundred thirty-nine twin pairs (110 monozygotic [MZ] and 29 dizygotic [DZ]) underwent a 30-minute infusion of stable isotope-labeled nicotine and its major metabolite, cotinine, followed by an 8-hour in-hospital stay. Blood and urine samples were taken at regular intervals for analysis of nicotine, cotinine, and metabolites by gas chromatography-mass spectrometry or liquid chromatography-mass spectrometry and subsequent characterization of pharmacokinetic phenotypes. DNA was genotyped to confirm zygosity and for variation in the gene for the primary enzyme involved in nicotine metabolism, CYP2A6. Univariate biometric analyses quantified genetic and environmental influences on each pharmacokinetic measure in the presence and absence of covariates, including measured CYP2A6 genotype. The best fitting model identified a substantial amount of variation in the weight-adjusted rate of total clearance of nicotine attributable to additive genetic influences (59.4%, 95% CI = 44.7%-70.7%). The majority of variation in the clearance of nicotine via the cotinine pathway was similarly influenced (60.6%, 95% CI = 46.9%-71.5%). The influence of measured CYP2A6 genotype on the observed twin pair covariance for nicotine clearance was relatively modest. Heritability estimates were reduced (54.2% and 51.8%, respectively) but remained significant after taking into account the effect of variation in CYP2A6 genotype, thereby suggesting the involvement of additional genetic factors that remain to be identified.

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POS2-012  CANDIDATE GENES ASSOCIATED WITH NICOTINE DEPENDENCE: OPRK1 AND ADCY2
Kirk Wilhelmsen, M.D., Ph.D.1; Gary E. Swain, Ph.D., Christina N. Lessov, Ph.D., Huijun Z. Ring, Ph.D., Karen S. Hudmon, Dr.P.H., Hyman Hops, Ph.D., Judy Andrews, Ph.D., Elizabeth Tildenley, Ph.D., Neal Benowitz, M.D., and Li Cheng, Ph.D.

There have been a number of reports of significant associations between candidate genes in the dopaminergic, serotonergic, and metabolic pathways and tobacco use. Most or all of these studies relied upon the use of the case-control design, an approach subject to potential confounding due to stratification. The present study utilized a family-based test for association to minimize the effects of stratification in families from the SMOFAM study from the Oregon Research Institute (H. Hops, PI, NIDA DA03706). The Fagerström Test for Nicotine Dependence (FTND) was administered to 607 members of 158 nuclear families consisting of at least three ever smokers. DNA from whole blood was genotyped for variation in the following two candidate genes: OPRK1 (kappa-opioid receptor 1, 8q11.2) and ADCY2 (adenylate cyclase type II, 5p15.3). Using Family Based Association Tests software (FBAT) and adjusting for population admixture, nominally significant associations were observed between scores on the FTND and OPRK1 (Z= -3.03, p=0.002) and ADCY2 (Z= 2.91, p=0.004) genotypes. OPRK1 plays a role in arousal and regulation of autonomic and neuroendocrine function while ADCY2 encodes an enzyme that catalyzes the formation of the second messenger cyclic adenosine monophosphate (cAMP) and is expressed in the brain. This is the first report of a family-based association between the FTND and the genes in these pathways.

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POS2-013  UDP-GLUCURONOSYLTRANSFERASE 2B7 HlSl268TYR POLYMORPHISM AND IN VIVO NICOTINE AND Cotinine Glucuronidation Rate
Huijun Z. Ring1*, Ana M. Valdés1, Denise Katsuysoshi1, Peyton Jacob, III2, Gary E. Swain1 and Neal L. Benowitz1*; SRI International, University of California, San Francisco

Glucuronidation plays a major role in the detoxification of nicotine and other tobacco toxins and is carried out by UDP-glucuronosyltransferase enzymes (UGTs). We investigated the relationship between the UGT2B7 Hs1268Tyr polymorphism and rate of nicotine and cotinine glucuronidation in 244 Caucasian and Hispanic participants (mean age 41.9 years, 61.9% female) in an in vivo nicotine metabolism study of adult twins. We found that, compared to UGT2B7-268 His carriers, individuals who are homozygous for the UGT2B7-268 Tyr allele (representing 34% of our population) had a lower cotinine glucuronide to total cotinine ratio (0.21 ±0.02 vs 0.26 ±0.01, p<0.003 for log-transformed values) and lower nicotine glucuronide to total nicotine ratio (0.29±0.02 vs 0.33±0.01, p=0.053 for log-transformed values). The difference in cotinine glucuronidation ratio remained statistically significant after adjusting for the non-independence between twins in a pair using a bootstrap procedure. This is the first investigation of UGT2B7 genotype and nicotine and cotinine glucuronidation in vivo. Our result is consistent with published data indicating a significantly lower glucuronidation rate among UGT2B7-268 Tyr-Tyr homozygotes for tobacco-specific nitrosamines (NNAL) in liver microsomes. A genetically slower rate of glucuronidation may result in the accumulation of tobacco toxins in the body and lead to an elevated risk of cancer. Additional studies are needed to further examine the potential role of UGT2B7 genotype in susceptibility to tobacco-related cancers.

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POS2-014  NEUROTROPHIC TYROSINE KINASE RECEPTOR 2 (NTKR2) GENE: A NOVEL CANDIDATE GENE FOR NICOTINE DEPENDENCE BASED ON ASSOCIATION ANALYSES
J. Beuten1*, J.Z. Ma1, T.J. Payne2, K.M. Crews3, and M.D. Li* University of Texas Health Science Center at San Antonio and University of Mississippi Medical Center

In this study, we tested 9 single nucleotide polymorphisms (SNPs) in the NTKR2 gene for association with nicotine dependence (ND) in an extensively phenotyped cohort of approximately 600 nuclear families of African-American or Caucasian-American origin, comprising 1400 smokers and non-smokers. The NTKR2 gene is located within a region on chromosome 9q22 that shows a significant linkage with ND and encodes the receptor for brain-derived neurotrophic factor, which has been suggested to play a role in the regulation of the stress response and in the biology of many physiological and psychological processes in the brain. Association analysis for individual SNPs using the FBAT-GEE program indicated that in the African-American samples four and in the Caucasian-American samples two SNPs within the NTKR2 gene were significantly associated with ND. Furthermore, association analysis for multiple SNPs using FBAT indicated significant association of a common haplotype (16.4%) formed by rs993315-rs736744-rs920770-rs4075274-rs729560 with a protective effect for smoking-related phenotypes in the African-Americans (Z = -3.204, P = 0.001) but not in the Caucasian-Americans. In summary, our study provides evidence for a significant association of NTKR2 variants with ND.

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POS2-015  MAPPING SUSCEPTIBILITY LOCI FOR NICOTINE DEPENDENCE IN A MID-SOUTH TOBACCO FAMILY COHORT
University of Mississippi Medical Center (JJP, KMC); University of Memphis (RTD); University of Tennessee Health Science Center (NJW); and Case Western Reserve University (RCE)

We report the linkage analysis results of genotyping approximately 1,000 DNA samples from a Mid-South Tobacco Family (MSTF) cohort with 405 evenly distributed microsatellite markers. Individuals and/or families with incorrect pedigree structure or marker inconsistencies according to Mendelian inheritance were excluded from further statistical analyses. Our cleaned genotyping data file consisted of 1,199 individuals representing 273 nuclear families with an average sibship size of 2.39. Preliminary linkage analyses using various methods implemented in GeneHunter and S.A.G.E. indicated 7 different regions on chromosomes 1, 9, 11, 12, 13, 14, and 17 with LOD scores of 2.0 or greater. Of these loci, the genomic regions on chromosomes 1, 9, 11, and 17 have been identified in the Framingham Heart Study cohort by our group, thus providing an independent replication of these 4 regions across two separate samples. The other three regions on chromosomes 12, 13, and 14 represent newly identified loci that to date show linkage only in the MSTF cohort. Genotyping of an additional 800 samples is underway for the MSTF cohort. Thus, our preliminary results suggest these 7 genomic regions may harbor susceptibility loci for nicotine dependence.

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POS2-016  FURTHER MAPPING OF SUSCEPTIBILITY LOCI FOR SMOKING QUANTITY USING PERMUTATION LINKAGE ANALYSIS

Daolong Wang, Jennie Z. Ma, and Ming D. Li*: Program in Genomics and Bioinformatics on Drug Addiction, University of Texas Health Science Center at San Antonio, TX

Epidemiological studies demonstrated that genetics accounts for at least 50% of the liability to nicotine dependence (ND). However, very limited linkage studies have been reported. In this study, we conducted a genome-wide permutation linkage analysis on the smoking data of the Framingham Heart Study (FHS) collected between 1970 and 1972 to account for the abnormality associated with smoking quantity (as defined as the number of cigarettes smoked per day). We used empirical thresholds obtained from permutation tests to determine the significance of each genomic region. The variance component method implemented in SOLAR and GeneHunter was used for the analysis. Under the empirical genome-wide thresholds determined specifically for the FHS smoking data, we found two highly or near-highly significant linkages for ND on chromosomes 1 and 4 (P < 0.001), and eight significant linkages for ND (P < 0.05) on chromosomes 3, 7, 8, 9, 11, 16, 17, and 20 respectively. These findings indicate that some of these regions might harbor susceptibility loci for nicotine dependence. Further investigation of these positive regions by fine mapping and/or association analysis is warranted.

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POS2-018  SMOKING, PSYCHIATRIC COMORBIDITY AND PERSONALITY FACTORS

Christopher Kahler*, Ph.D., David Abrams, Ph.D., Julie Boergers, Ph.D., Stephen Buka, Sc.D., Melissa Clark, Ph.D., Suzanne Colby, Ph.D., Johanna Lewis-Esquerre, Ph.D., Raymond Niaura, Ph.D., and Susan Ramsey, Ph.D., Brown Medical School and Harvard School of Public Health

That smokers have relatively high levels of psychopathology, negative emotionality and behavioral undercontrol has been well documented, but the extent to which psychiatric comorbidity and personality traits have unique or overlapping associations with smoking remains unclear. To address this gap, we examined psychiatric diagnoses and personality traits in 1,074 participants in the New England Family Study, ages 34 to 44. Using an alpha level of .01 and controlling for gender, education, and minority status, those who never smoked regularly and former smokers did not differ significantly on any of the personality traits examined. Current smokers scored higher than former smokers on the Stress Reaction, Aggression, and Alienation scales of the Multidimensional Personality Questionnaire but not on Control or Harm Avoidance. Differences in rates of lifetime major depression and externalizing disorder diagnoses largely accounted for differences between former and current smokers in Stress Reaction and Aggression but did not account for differences in Alienation. However, current smokers meeting criteria for tobacco dependence reported significantly higher Stress Reaction than nondepressed smokers, and this effect was not accounted for by lifetime psychiatric comorbidity. Results indicate that Alienation has a unique relation to persistent smoking above and beyond its substantial overlap with psychiatric conditions, whereas Stress Reaction has a unique relation with the expression of dependence among individuals whose smoking persists into middle adulthood.

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POS2-017  EPIDEMIOLOGY OF NICOTINE DEPENDENCE AMONG INDIVIDUALS WITH SMI

Eric O. Johnson*, Ph.D., and Ivan D. Montoya, M.D., M.P.H.

It has long been observed that smoking is highly prevalent among psychiatric patients. Epidemiologic studies show increased risk of smoking and nicotine dependence associated with an array of mental illnesses. Smokers with mental illnesses also appear less likely to quit. This study examines risk of smoking and nicotine dependence, level of dependence, and the persistence of smoking among those with current episodes of mental illness (MI) and serious mental illness (SMI). Method: Data come from the 2002 National Household Survey on Drug Use and Health (NHSDUH), a national probability sample of US households. NHSDUH included assessment of probable past 12-month diagnosis of mental disorders, a screener for SMI, and the Nicotine Dependence Syndrome Scale (NDSS). Results: In this adult population, 6.8% had a SMI in the past 12 months, 17.0% had a MI of less severity, 19.1% were daily smokers and 10.5% were nicotine dependent. Both those with MI and those with SMI had significant increased risk of daily smoking (OR=2.0; OR=2.7) and dependence (OR=2.3; OR=3.6) relative to those without MI. Individuals with SMI were 26% more likely to be daily smokers and 52% more likely to be nicotine dependent, compared to those with MI. Level of nicotine dependence and scores on the NDSS subscales were significantly higher among smokers with SMI relative to MI and non-MI smokers (all p < 0.001). 41.1% of ever-smokers with SMI were currently daily smokers, compared to 34.9% of those with MI, and 24.1% of non-MI ever-smokers (p < 0.001). Conclusions: Individuals with SMI appear to be at higher risk of smoking and nicotine dependence; they have higher levels of dependence across multiple dimensions, and were more likely to persist in smoking than other smokers. No funding.

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POS2-019  SMOKERS AND NONSMOKERS WITH ANXIETY DISORDERS: ARE THEY DIFFERENT?

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Epidemiological data suggest that early smoking increases risk for the emergence of certain anxiety disorders (e.g., panic disorder, generalized anxiety disorder), and that presence of social anxiety increases the risk for later development of nicotine dependence. Together with the high prevalence of smoking found among those with anxiety disorders, these data raise the question as to whether smokers with anxiety disorders are different from their nonsmoking counterparts. The current study examined differences between smokers and nonsmokers with anxiety disorders (N = 453) on multiple measures of theoretical and clinical interest. Compared to nonsmokers, smokers with anxiety disorders reported greater anxiety sensitivity, anxiety symptoms, agoraphobic avoidance, negative affect, stress, and life interference. No significant differences were observed between smokers and nonsmokers regarding social anxiety, worry, obsessive-compulsive symptomatology, depression, positive affect, or behavioral activation/inhibition.

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POS2-020  

ADHD AND SMOKING IN A SAMPLE OF MIDDLE AGED VETERANS

Mark Schultz, Keren Rabi and Michael Lyons*, Boston University; Stephen Fanone, Harvard Medical School; and William Kremen, University of California-San Diego

Attention-deficit hyperactivity disorder (ADHD) is known to confer vulnerability to substance abuse. Among adults, it is strongly associated with earlier smoking initiation, higher risk of nicotine dependence and longer persistence of smoking even when confounding factors like socioeconomic status, IQ and psychiatric comorbidity are controlled. Data collected from 346 pairs of DZ and MZ male twins from the Vietnam Era Twin Registry using the K-SADS-E assessed fourteen ADHD symptoms during childhood. Smoking information (initiation, duration) was collected via the Diagnostic Interview Schedule Version 3 Revised (DIS-3R). Lifetime nicotine dependence diagnoses were obtained by applying standard DSM-III-R algorithms. ADHD individuals initiated smoking earlier (p < 0.015), were more likely to become nicotine dependent (p < 0.01), had more lifetime symptoms of nicotine dependence (p < 0.01), and smoked for a greater duration (p < 0.01). Genetic analysis of the data showed smoking initiation was primarily influenced by different genetic factors than ADHD and by the common family environment, whereas the same genetic factors that influenced ADHD also influenced nicotine dependence and duration of smoking. An ADHD diagnosis in childhood was highly predictive of several dimensions of adult smoking behavior. Since nicotine is an indirect dopamine agonist, and shares its mechanism of action with current treatments for ADHD, this finding suggests smoking may be motivated by self-medication. Our results are consistent with data from clinical samples that indicate ADHD symptoms persist into adulthood and may cause a generalized liability for substance-use disorders. Potential limitations of our data include the fact that childhood symptoms were reported retrospectively by our middle-aged participants and our results may not generalize to females or non-veteran males.

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POS2-021  

TREATMENT OF COMORBID ADHD AND NICOTINE DEPENDENCE

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It has been hypothesized that treating the psychiatric symptoms may help to protect against the increased risk of tobacco use in patients with severe mental disorders. We conducted this study to examine the relationship between current Attention Deficit Hyperactivity Disorder (ADHD) symptoms, medication treatment and tobacco use patterns among college students. Method: Three hundred and thirty four students at a local college were surveyed for current ADHD symptoms and psychopharmacological treatment. The survey was conducted in conjunction with an annual national survey that probes students about their substance use patterns and attitudes. Results: Individuals with ADHD had higher last year tobacco use vs. controls. Among participants with ADHD, those with current symptoms were more likely to have higher level of tobacco use in the past year. Last month low to moderate frequency marijuana use was higher among participants with current ADHD symptoms. Last year and last month other drug use was higher among participants with current ADHD symptoms vs. controls. Among those prescribed medications for ADHD, 25% reported ever using their medication to get high and almost 29% reported ever giving or selling their medication to someone else. Conclusions: Results indicate that ADHD symptom control may be important to protect against increased risk of tobacco and substance use among college age students with ADHD.

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POS2-022  

CIGARETTE SMOKING AND SCRIPT-DRIVEN IMAGERY IN SMOKERS WITH AND WITHOUT POST-TRAUMATIC STRESS DISORDER

Jean C. Beckham*, Michelle E. Feldman, Scott R. Vrana, and F. Joseph McLemore

The present study investigated the association between recalling neutral, stressful and traumatic events with craving, affect and posttraumatic stress disorder (PTSD) symptoms in smokers with and without PTSD. Using laboratory methods, 137 smokers (87 PTSD and 50 non-PTSD) completed eight sessions. The first was a diagnostic session and the second was a script procedure to generate personal- ized trauma, stress and neutral scripts. In the remainder of the sessions, the effect of script type X nicotine condition (nicotinized or denicotinized cigarette) on craving, affect and PTSD symptoms was evaluated. There was a main effect of script type across both groups for smoking craving, negative affect and PTSD symptoms, with increased symptoms in trauma and stressful conditions. Responses were significantly higher in PTSD smokers. Smoking either a nicotinized or denicotinized cigarette resulted in decreased craving, negative affect and PTSD symptoms in both groups. A second script presentation elicited similar responses, suggesting that the ameliorative effect of having smoked a cigarette was short-lived.

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POS2-023  

PSYCHOMETRIC STUDIES ON THE EVALUATION OF SMOKING BEHAVIOR AMONG INDIVIDUALS WITH POSTTRAUMATIC STRESS DISORDER

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Both clinical and epidemiological studies show that the rate of smoking among individuals diagnosed with Posttraumatic Stress Disorder is 45% or greater, a rate twice that seen in the general population. Despite the magnitude of this public health issue, very little research has been conducted to examine the mechanisms that account for the high comorbidity of smoking behavior in this psychiatric group. A prerequisite to good empirical investigations on this topic is psychometrically sound instruments for assessing smoking behavior in psychiatric populations. At the present time, there are no psychometric data available for many commonly used smoking behavior instruments as applied to psychiatric populations. This paper will present data from two investigations: one in which the psychometric properties of the Smoking Consequences Questionnaire-Adult were examined in a large group of PTSD smokers, and second, a study in which the psychometric properties of the Fagerstrom Test for Nicotine Dependence were evaluated in a large group of PTSD smokers. Results revealed that both instruments perform as well from a psychometric perspective with psychiatric smokers as they do among non-psychiatric smokers. A series of factor analyses also revealed that the factor structure of both instruments in this population was consistent with the factor structures proposed in the extant literature, suggesting that these instruments are sensitive to multiple aspects of smoking behavior in psychiatric smokers. This work was supported in part by grants from the National Institute on Drug Abuse: K01-DA016273-01, & R03 DA15113-01 (awarded to the first author), NIDA grant K23 DA16138 (awarded to the second author), and a VA REAP award to Dr. Ronald Goldstein.

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Increased Nicotine and Cotinine Levels in Schizophrenia and Schizoaffective Disorder Not a Metabolic Effect


It has been proposed that smokers with schizophrenia absorb more nicotine per cigarette than smokers without this disorder. This study examines this phenomenon by comparing the serum nicotine and cotinine levels in smokers with schizophrenia and schizoaffective disorder to those without mental illness. The cotinine and nicotine levels of smokers with schizophrenia and schizoaffective disorder were 1.3 times higher than control smokers (cotinine 291 versus 227 ng/mL; p=0.0115; nicotine 28 versus 21 ng/mL; p<0.001). Despite smoking a similar number of cigarettes per day, cotinine:nicotine ratios in both groups were higher than those in control smokers. This difference was not due to differences in the capacity to metabolize nicotine or cotinine. By examining nicotine and 3-OH cotinine: cotinine ratios in addition to cotinine, this study expands upon previous research that relied on cotinine as an indirect indicator for increased nicotine intake. These data suggest that the increased serum nicotine and cotinine levels observed were attributable to an increased nicotine intake per cigarette in smokers with schizophrenia as compared to those without mental illness.

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Smoking Topography in Schizophrenics, Reliabilities and Correlations Among Measures

Jennifer Tidey*, Ph.D., Damaris Rohsenow, Ph.D., Gary Kaplan, M.D., and Robert Swift, M.D., Ph.D., Brown University Center for Alcohol & Addiction Studies and Providence VAMC

Previously, we reported preliminary findings of differences in smoking behavior between smokers with schizophrenia (SCZ) and non-psychiatric controls (CON). In this presentation we update these findings and present test-retest reliabilities and correlations among topography variables. SCZ (n = 20) and CON (n = 20) were assessed, using a CRESS automated system, during 90-min sessions. Sixteen participants in each group were tested twice under identical conditions. Participants smoked a cigarette 30 min before assessments. Results indicate that SCZ participants smoked significantly more cigarettes per session, puffs per session and puffs per cigarette, had larger CO boosts and faster puff duration than controls. The groups did not differ in maximum puff velocity, average puff volume or duration, or CO boost per puff. These findings are consistent with differences seen in other domains, such as serum nicotine and cotinine levels, suggesting that topography measures are reliable in SCZ smokers, relationships among topography variables are largely similar in SCZ and CON, and important differences in smoking behavior persist in this larger sample of smokers.

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Smoking Ursogens and Topography in Schizophrenics Who Take Typical vs Atypical Antipsychotics

Jennifer Tidey*, Ph.D., Damaris Rohsenow, Ph.D., Gary Kaplan, M.D., and Robert Swift, M.D., Ph.D., Brown University Center for Alcohol & Addiction Studies and Providence VAMC

There is a high prevalence of smoking among schizophrenics (60-90%). Recently, researchers have noted that schizophrenics who take atypical antipsychotic medications have more success in smoking treatments than patients who take typical, neuroleptic antipsychotics. In this study, we evaluated whether schizophrenics who take atypical antipsychotics (ATYP, n = 10) differ from those who take typical antipsychotics (TYP, n = 7) with regard to smoking urges and smoking behavior. Participants underwent 90-min smoking topography assessments using a CRESS automated system. Participants smoked a cigarette 30 min before the session. TYP participants had higher pre-session QSU urine levels (TYP: 4.9 ± 0.9, ATYP: 3.7 ± 1.1, p = .05), smoked more cigarettes during the session (TYP: 5.4 ± 1.3, ATYP: 3.4 ± 1.7, p < .05), had greater session CO boosts (TYP: 9.1 ± 3.2 ppm, ATYP: 2.3 ± 4.1 ppm, p < .01) and had greater CO boost per cigarette ratios (TYP: 1.9 ± 0.7 ppm/cig, ATYP: 0.5 ± 1.4 ppm/cig, p < .05). In addition, effect sizes were larger for total puffs smoked (TYP: 90.1 ± 52.1, ATYP: 46.7 ± 42.3) and average puff volume (TYP: 41.3 ± 19.3 ml, ATYP: 25.2 ± 17.0 ml). These findings indicate that schizophrenic smokers who take atypical antipsychotics smoke more intensely, according to several measures, than those who take typical antipsychotics. This may help to explain why schizophrenics who take typical antipsychotics are less successful during smoking treatments.

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Relationships Between Self-Reported Cigarette and Marijuana Smoking and Expired Air Carbon Monoxide Levels in Adolescents

Suzanne M. Colby*, Ph.D., Brown University Center for Alcohol & Addiction Studies, John J. Colby, Ph.D., and Carl Baer, Ph.D., Providence College

Many adolescent cigarette smokers also smoke marijuana. Despite the fact that marijuana use is dose-related to expired air carbon monoxide (CO) levels, and CO is used to validate cigarette smoking outcome data, few cessation trials assess marijuana use. For this presentation, data from 339 adolescents (125 from a cessation trial; 214 from laboratory studies) were used to examine the relationship between self-reported cigarette smoking, marijuana use, and CO levels. Participants were 12 to 20 years old (M=16.1, SD=1.5); 62% female; 60% White, 17% Hispanic, 7% Black/African American. Most (83%) smoked cigarettes and 55% smoked marijuana. Marijuana use was assessed in terms of cigarettes/day (CPD, M=10.5, SD=6.4), marijuana use in terms of number of days smoked in the past 30 (M=5.9, SD=9.0). In hierarchical regression analyses including all participants and entering CPD first, CPD accounted for significant variance in CO (γ20, Beta=.44, p<.0001). MJ was also significant but accounted for a small amount of variance (γ01, Beta=.15, p<.05). When restricting the sample to cigarette smokers only, the same analyses showed CPD still significant but accounting for less variance in CO (γ07, Beta=.23, p<.001) and MJ significant and accounting for more variance in CO (γ03, Beta=.20, p<.01). Predictably, MJ and CPD were more highly correlated in the total sample (r=.28) than in the smoker-only sample (r=.18). Results confirm that marijuana use accounts for significant variance in expired air CO and may influence the relationship between cigarette self-reports and CO levels, particularly in samples comprised of cigarette smokers. Cessation trials should consider marijuana use frequency when evaluating CO data.

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POS2-029  CIGARETTE SMOKING AT INTAKE IMPACTS DRUG TREATMENT OUTCOMES

Michelle Tuten*, Hendrée Jones and Maxine Stitzer

INTRODUCTION: Rate of cigarette smoking prior to drug treatment enrollment may predict relapse to cocaine and heroin at 1-month follow-up.

METHODS: Participants (N=121) receiving outpatient reinforcement based therapy (RBT), a therapy applying the principles of the Community Reinforcement Approach and contingency management in the form of rent payments were categorized into 2 groups: 1) "low rate smokers" (LRS; n=40) who reported smoking <10 cigarettes per day (past month) and 2) "high rate smokers" (HRS;n=81), those who reported smoking >=10 cigarettes per day (past month). The groups were compared on frequency and amount of pre-enrollment drug and alcohol use (lifetime and past month), and treatment outcomes (% positive for cocaine and heroin) at 1 month.

RESULTS: Demographically, the two groups were similar on age, race, marital status, and pre-treatment drug/alcohol use. However, the LRS group had more education than the HRS group (12 vs. 11 years). Although the two groups had similar histories of heroin, cocaine, and alcohol use (including months of use, amount of use, age of 1st use, and use in the past month), the HRS group had significantly higher relapse rates for both cocaine and heroin at 1 month compared to the LRS group (p<0.05).

CONCLUSION: It appears that pre-treatment rate of cigarette smoking plays a role in drug treatment outcomes. Nicotine dependence and rate of cigarette smoking at follow-up intervals, along with treatment outcomes at 3 and 6 months will be examined.

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POS2-030  IMPACT OF DSM-IV ALCOHOL ABUSE AND DEPENDENCE DIAGNOSES ON SMOKING-RELATED VARIABLES

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In DSM-IV, an alcohol dependence diagnosis preempts a diagnosis of alcohol abuse. As noted in a recent report, however, this scheme may mask heterogeneity in the alcohol dependence phenotype based on presence or absence of alcohol abuse (Hasin & Grant, 2004). To explore the independent and combined impact of these two alcohol use diagnoses on smoking-related variables, we studied 580 participants (308 current smokers and 272 never-smokers) with and without lifetime alcohol dependence (LAD); and (regardless of whether or not criteria for LAD were met) with and without lifetime alcohol abuse (LAA), assessed via the CID. Among never-smokers, 78.4% had no diagnosis of either LAD or LAA, vs. 53.8% of current smokers (p=0.001). Among current smokers, no group differences based on age or race were detected, but individuals with LAA were significantly more likely to be male than those who were not LAA (p<0.001). In a binary logistic regression, a significantly elevated risk of having a DSM-IV diagnosis of nicotine dependence (p<0.001) was detected for LAD, but not LAA. By contrast, significant mean differences in FTND score, when tested via ANCOVA, were found for LAA (p<0.05), but not LAD. Individuals with LAA scored significantly higher on a measure of negative reinforcement smoking than those with no LAA diagnosis (p=0.05). This pattern of results persisted when sex was included in the model. Possible reasons for the differential impact of the two alcohol-use diagnoses (or symptom clusters) on differing measures of nicotine dependence (DSM-IV vs. FTND) will be discussed.

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POS2-033

Cigarette smoking is 2-4 times more prevalent among illicit drug users than among non-users. Illicit drug users who continue to smoke experience higher rates of all cause morbidity, mortality, and disability than their nonsmoking counterparts. Interest in quitting among persons in drug treatment is high one study found that 40% of persons were interested in quitting smoking upon admission and another found that 80% were somewhat/very interested in quitting smoking at some point in treatment. Illicit drug users are undoubtedly able to quit smoking. Secondary data analysis of the National Household Survey on Drug Abuse found that 21% of current illicit drug users were former cigarette smokers. A regional survey of methadone patients found that 11% had successfully quit. However, these quit rates translate into quit ratios of 23%, and 12% - far lower than the proportion of successful quitters in the general population. Several issues bar improvement on these low ambient quit rates. Few controlled trials have been conducted in this population. The one completed trial achieved good during-treatment quit rates (36%) and found that tobacco abstinence correlated with drug abstinence, but nearly all participants relapsed at the end of treatment. Two other controlled trials are underway. Drug treatment facilities are a natural venue for reaching this population, however, national and regional surveys have found that few facilities offer formal nicotine dependence services. To reduce deaths due to tobacco within this highly vulnerable population, more research is needed to identify effective inter-ventions as well as effective ways to disseminate tried and true programs.

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POS2-034

Smokers exposed to cigarette stimuli respond with enhanced approach motivation and positive mood as measured by startle response and self-reports, respectively. The startle (eye blink) response occurs during the presentation of an unexpected auditory stimulus (probe). Response strength is measured by the electromyographic changes in the eyes orbicularis oculi region. Blink magnitude is enhanced when subjects view unpleasant emotional pictures and attenuated when viewing pleasant pictures. The strength of the startle response in the presence of emotional stimuli is thought to reflect the activation of underlying neurological mechanisms governing motivation and emotion. Negative affect typically activates the brains defensive system (avoidance) while positive affect stimulates the appet-itive (approach) system. Smokers (n=115) completed four laboratory sessions either deprived (12-hours) or non-deprived while receiving either placebo or nico-tine nasal spray. Participants viewed pictures (positive, negative, neutral, cigarette) while startle probes and self-reports of mood were administered. Comparing positive pictures with cigarette revealed no main effects of nicotine spray or picture valence on startle response or self reports of positive mood. However, when smokers were deprived, startle responses to cigarette pictures were significantly lower than when non-deprived. In contrast, startle responses and mood self-reports to positive pictures did not vary by deprivation. These findings suggest deprived smokers experience greater activation of the approach system when exposed to cigarette stimuli compared to positive stimuli, and mood self-reports are not sensi-tive enough to detect this activation.

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POS2-035

Reactivity to stimuli previously paired with smoking is often associated with relapse. Improving our understanding of individual differences influencing cue reactivity and extinction could enhance relapse prevention procedures based on associative learning models. This analysis examined gender differences in cue reactivity change during experimentally-controlled smoking cue extinction training. One hour after 14mg patch application, 33 abstinent smokers completed 14 expo-sure trials over 5 hours. Each 5-minute trial involved lighting, handling, and ashing a cigarette. Audio-taped instructions prompted motor behaviors and attention to sensory cues. Overall, urge decreased from first exposure trial (2.63, sd=.38) to last (2.5, sd = .88; t=2.82, p<.03) with no difference between neutral cue and last exposure trials. Similar differences occurred with HR, but the difference between first and last exposure trials was nonsignificant (t = 2.9, p = .10). GEE models revealed significant gender x time interactions for urge (p = .04) and HR (p = .001). Males showed greater reactivity than women across trials. Reductions in HR were greater for males than females. Males showed a greater and sustained increase in smoking urge during the first few exposure trials, with a steady decrease in urge thereafter, whereas females urge initially declined, then increased during later exposure trials. These results suggest that male and female smokers may respond differently to cue extinction training while on the nicotine patch. Influences of instrumen-tal set, negative affect, and trial preparation (e.g., massed vs. spaced) are discussed. Future research should examine more externally valid procedures to better inform development of cue exposure treatment components.

Study supported by ACS IRG #5 (Collins) and TTURC Grant F50 CAD94718 (Caryn Lemon, Ph.D.).

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CUE REACTIVITY AMONG ADOLESCENTS

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Though extensively studied among adults, cue reactivity is relatively unexplored in adolescents. In this study, subjective urge and affect reactivity to in vivo smoking cues were measured using the Questionnaire on Smoking Urges and Positive and Negative Affect Scale. Neutral and smoking cues were presented to 14 to 19 year old (M age=16.4, 59% female) daily smokers (N=69) and nonsmokers (N=23). Cue reactivity was assessed using group (smoker v. nonsmoker) by cue (neutral v. smoking) ANCOVA, controlling for responses during a relaxation period. Significant interaction effects were found for urge (p<.001) and positive affect (r<.05). Simple effects tests showed smokers reported greater urge in response to smoking cues (p<.001) than nonsmokers; groups responses to neutral cues did not differ. Simple effects tests for positive affect were nonsignificant. Cue reactivity did not differ significantly by gender. Among smokers, correlates of reactivity were evaluated using partial correlations between baseline smoking and reactivity to smoking cues, partialling variance due to responses to neutral cues. Greater urge reactivity was associated with earlier age of daily smoking initiation (p<.01), greater number of months smoking daily (p<.05), and greater dependence scores (on Modified Fagerstrom Tolerance Questionnaire, p<.01) but not with average cigarettes per day. Positive affect reactivity was associated with earlier initiation (p<.05), negative affect reactivity was associated with greater mFTO scores (p<.05). Among smokers and nonsmokers, urge and negative affect reactivity were significantly associated with the Adolescent Smoking Consequences Questionnaire expectancy subscale for negative affect reduction (p<.05). Results support the validity of smoking cue reactivity assessment for adolescents.

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DIFFERENCES IN BRAIN ACTIVATION BETWEEN AFRICAN AMERICANS (AA) AND CAUCASIANS DURING CIGARETTE CRAVING

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Previous neuroimaging studies have explored effects of drug-related stimuli, such as smoking cues, on brain activity. Current evidence suggests that clinical interventions for smoking may be less effective in AA populations, but mechanisms for these differences are not well known. The current study used fMRI to examine brain activation in AA and Caucasian smokers in response to smoking cues. 20 smokers (10 AA, 10 Caucasians) underwent fMRI scanning after overnight abstinence. During scanning, participants viewed pictures of AA and Caucasians smoking (smoking condition) and engaging in everyday activities (control) interspersed with a fixation baseline period. To date, data have been collected from 8 Caucasian smokers. Significant (p 0.01, corrected for multiple comparisons) changes relative to baseline were observed in a priori regions of interest in the smoking condition. Bilateral increases were found in the amygdala (Talairach coordinates: 17, -5, -9; -16, -5, -15), while a decrease was observed in the right medial-frontal cortex (BA 10; 8, 49, 9). Further analyses indicated that images of Caucasian smokers produced a right medial-frontal gyrus decrease, but no amygdala increase. Conversely, images of African-American smokers generated bilateral amygdala increase, but no medial-frontal gyrus decrease. Preliminary results indicate that smoking cues with Caucasian models modulate activity in the medial prefrontal cortex, while smoking cues with AA models modulate activity in the amygdala. We are currently analyzing data in AA participants.

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DEPRESSIVE AND WITHDRAWAL SYMPTOMS EFFECT ON SMOKING RELAPSE IN WOMEN

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Depression is twice as common among women compared to men, and four times more common among smokers as non-smokers. Smokers with a history of depression are at greater risk for relapse. Depressive symptoms, although prevalent in female smokers have been less studied. Efforts to characterize and understand depressive symptoms are needed. In this study, relapse, withdrawal and depressive symptoms were measured in 129 female smokers, ages 18-40, to determine if there is a relationship between depressive symptoms and relapse. Depressive symptoms were measured using the Center for Epidemiological Studies–Depression (CES-D). Higher scores reflect increased symptoms. Withdrawal symptoms were measured using the Minnesota Nicotine Withdrawal Scale (MMWS). Subjects were asked to quit smoking with behavioral counseling and followed for 6 months. Subjects (N=129) were an average of 30 years old (SD + 6.5), smoked 18 cigarettes/day (SD + 4.4) and had mean Fagerstrom scores of 4 (SD + 2.1). Half of the subjects were able to quit for at least one day. We looked at depressive symptoms as they related to relapse in the 63 women who quit for more than one day. A CES-D score of ≥ 16 was positively associated with total withdrawal scores (r=0.32, p=0.030) on quit day and negatively associated with number of days to relapse (r=-0.312, p=0.027). A high CES-D score was also positively associated with total withdrawal scores (r=0.285, p=0.006) when looking at all 129 subjects, however, number of days to relapse showed a trend (r=-0.184, p=0.055). The results of this study show that depressive symptoms might play an important role in relapse and should be taken into account in smoking cessation efforts.

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POS2-041  A SELF-HELP QUIT KIT TO MOTIVATE SMOKERS TO UNDERGO TREATMENT: A RANDOMISED CONTROLLED TRIAL

Marc C. Willemsen*, Ph.D., Marieke A. Wiebing, M.P.H., Andréé J. van Ernst, M.A., and Grietje Zeeman, M.A., STIVORO

Nowadays, smokers who want to quit smoking can choose from various efficacious pharmaceutical and psychological treatments. Various strategies have been proposed to increase usage of smoking cessation treatment methods (SCTs). We examined a novel strategy: a Quit Kit containing detailed information on SCTs. This approach is less costly than reimbursement, less time consuming than physician’s consultations and more direct compared to a mass media approach. The Quit Kit is a 2.5 (H) x 9(x) x 9 (w) inch carton box, containing: 1. A booklet with factual information (availability, cost, etc.) on all SCTs available in the Netherlands. A distinction was made between category ‘A’ (proven efficacious according to clinical guidelines) and category ‘B’ SCT’s (other). 2. A video portraying ex-smokers who describe how they successfully quit smoking with SCTs and a tobacco control expert talking about the usefulness of SCTs. 3. Additional brochures on pharmaceutical SCTs (NRT, Zyban), STIVORO’s telephone quit line, and computerized expert talking about the usefulness of SCTs alone (OR = 3.64, p = .0003), while analyses of open-ended responses showed a significantly higher proportion of lapses (OR = 3.53, p < .0001) for the group who intended to quit smoking within 6 months were randomised to the experimental and control group. Group and individual treatment attendance and continuous abstinence at 4 weeks were significantly higher in the experimental group (31% versus 22%; OR = 1.50; 95% CI = 1.13-1.99) and higher 7 day point prevalence abstinence (20% versus 14%; OR = 1.46; 95% CI = 1.04 - 2.05). Surprisingly, the two groups did not differ on usage of specific SCT’s. Furthermore, smokers who received the Quit Kit visited their family physician less often for help with quitting (4% versus 9%; p<.10). Conclusion: provision of a Quit Kit successfully increases quitting behaviour without improving the usage of efficacious smoking cessation treatment.

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POS2-042  CHANGE IN PERCEIVED STRESS, PARTNER SUPPORT, DECISIONAL BALANCE, AND SELF-EFFICACY FOLLOWING TREATMENT IN A MULTIDISCIPLINARY RESIDENTIAL TOBACCO CESSATION PROGRAM

Steven C. Ames*, Ph.D., Ivana T. Croghan, Ph.D., Matthew M. Clark, Ph.D., Christi A. Patten, Ph.D., Garrison D. Lloyd, Darrell R. Schroeder, M.S., Susanna R. Stevens, Kay M. Eberman, M.S., J. Taylor Hays, M.D., and Richard D. Hurt, M.D.

Residential treatment of nicotine dependence has been reported to produce outcomes of 45% tobacco abstinence at 12 months. This study examined how treatment at Mayo Clinics 8-day Residential Treatment Program (RTP) impacted perceived stress, partner support, decisional balance for smoking, and self-efficacy. These psychosocial variables have been found important to tobacco abstinence in outpatient tobacco cessation programs of longer duration. However, the impact of a residential treatment approach on these variables is unknown. We evaluated 200 adults who were treated at the RTP between August 2000 and June 2004. The current findings are restricted to 147 participants (M=55 years, SD=11; 75 male, 72 female; 94% White) who voluntarily completed >2 of the 4 study measures at both the beginning and end of the 8-day program. Most (98%) participants used cigarettes exclusively in the 30 days prior to treatment with a mean use of 30 cigarettes per day (SD=16). The following self-report measures were administered on the first and last (8th) day of RTP treatment by a study assistant not associated with treatment delivery or the RTP: Perceived Stress Scale-14 item version (PSS), Partner Interaction Questionnaire (PIQ), Pro Scale (PS) and Con Scale (CS) of Smoking, Confidence Inventory-Revised (CI), Wilcoxon rank sum tests were used to examine changes in the psychosocial variables over the course of RTP treatment. All psychosocial variables significantly (P<0.007) changed in a favorable direction over the course of treatment with the exception of CS. The failure of the CS to change is likely associated with the nature of the patient population; individuals seeking intensive residential treatment would be anticipated to be aware of the negative aspects of smoking. The results indicate intensive forms of treatment such as the RTP can produce substantial changes in psychosocial factors important for tobacco abstinence. These findings have important treatment implications.

Supported by Mayo Clinic.

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POS2-043  GROUP VERSUS INDIVIDUAL THERAP—WHICH IS BEST?

Andy McEwen*, M.Sc., R.M.N., Robert West, Ph.D., University College London, and Hayden McRobbie, M.B., Ch.B., Barts and The London School of Medicine

Treatment for cigarette dependence is expanding worldwide. National Smoking Cessation Services launched in 1998 in the UK can provide a unique resource that could guide the development of services in other countries and help to set the research agenda globally. This presentation reports on data collected from over 3,000 smokers going through treatment at London NHS Smoking Cessation Services. Treatment at these services follows a widely used model, combining pharmacotherapy with group or individual support, as recommended in the English Smoking Cessation Guidelines and similar to that used in the countries such as the US. The model, incorporating both clinic (group) based and community (individual) based treatments, has formed the basis for smoking treatment across the UK and abroad. The balance between the provision of both types of service, group and individual, is an important one that Smoking Cessation Services need to strike. Data will be presented on the source of client referral to the Smoking Cessation Services and whether they chose/ were offered group or individual treatment. Group and individual treatment attendance and continuous abstinence at 4 weeks post-quit date will be detailed. Both will be further analysed by demographic characteristics, level of dependence and withdrawal symptoms. The data will be able to make a direct comparison in a clinical setting between the effectiveness of individual and group treatment.

No funding.

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POS2-044  RAPID SMOKING: REKINDLING AN OLD FLAME

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Rapid smoking was once a common smoking cessation procedure, and although now not widely used, the existing results show indications of promise. One of its likely effects is on reducing urges to smoke, a prominent withdrawal symptom in abstaining smokers. To test this hypothesis we randomised 100 smokers attending treatment at a large UK stop smoking clinic to a single session of rapid smoking, or to watching a health promotion video, immediately prior to quitting. Those allocated to the rapid smoking procedure were asked to smoke 3 cigarettes, inhaling every 6 seconds. Rapid smoking had a significant effect on post-cessation urges to smoke over the first 24 hours and over the first week of abstinence. The procedure deserves further evaluation.

The Royal London Hospital Smokers Clinic receives funding from the UK National Health Service.

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POS2-045  EXERCISE INTERVENTION FOR WOMEN WITH DEPRESSIVE SYMPTOMS INTERESTED IN SMOKING CESSATION

Kristin S. Vickers*, Ph.D., Christi A. Patten, Ph.D., Matthew M. Clark, Ph.D., Jon O. Ebbert, M.D., Ivana T. Croghan, Ph.D., Julie C. Hathaway, M.S., Mayo Clinic; and Beth A. Lewis, Brown University

Depressive symptoms are a barrier to smoking abstinence, and depressed women attempting smoking cessation may be particularly vulnerable to relapse related to negative affect. Exercise has been shown to decrease depressive symptoms and to aid in smoking cessation, but has not been studied in depressed smokers. The purpose of this pilot project was to investigate the feasibility of an exercise intervention for depressed smokers as compared to a health education intervention. Sixty adult (Mean age = 41, SD = 13) female cigarette smokers (Mean cigarettes per day = 20) with depressive symptoms (Mean CES-D score = 31, SD = 9) were randomly assigned to a 10-week individual program of: 1) individually-tailored exercise (experimental group; n = 30) or 2) health education (control group; n = 30). All participants received nicotine patch and nicotine dependence counseling. Exercise intervention was associated with higher exercise stage of change at week 10. Biochemically confirmed 7-day point-prevalence smoking abstinence rate was 20% overall, with no significant difference between intervention groups. At week 10, neither depressive symptom severity nor study completion rate was significantly different between the treatment conditions. The majority of participants required clinical management of depression during the trial. Our findings suggest that an exercise intervention for female smokers with depressive symptoms is feasible, and that an individually-tailored exercise program is associated with increased exercise compared to a control condition. A larger efficacy trial appears warranted.

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POS2-046  AEROBIC EXERCISE AS A BEHAVIORAL ADJUNCT TO NICOTINE REPLACEMENT THERAPY AMONG FEMALE SMOKERS

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We investigated the effects of an aerobic exercise intervention as an adjunct to NRT among sedentary female smokers. 182 participants (78 % white) were followed from 3 weeks precessation to 1-year postcessation. The mean age was 38.5 (9.6), and daily cigarette consumption was 18.5 (8.6). Everyone was provided with standard care (nicotine gum treatment and brief counseling) and randomly assigned to one of three conditions. Exercise intervention condition (Exercise, n= 92.) consisted of two supervised exercise sessions per week from 3 weeks precessation through 2 weeks postcessation, and one session a week through 16 weeks postcessation. Participants were asked to exercise additional 2-3 times per week on their own. The equal contact control condition (Wellness; n=56) included wellness lectures and discussions for a time period equal to the exercise intervention. The standard care control condition (SC, n=34) received no additional treatment beyond NRT and counseling. Results indicated relapse to smoking was rapid and adherence to exercise low. 1-week post cessation abstinence rates were 59.8 % for Exercise, 53.6% for Wellness, and 38.2 % for SC groups. End of treatment (16 weeks post cessation) rates were 25.2% for Exercise, 23.2 % for Wellness, and 14.7 % for SC, while the 1-year rates were 9.8 %, 12.5 %, and 5.8 %, respectively. Both the Exercise and Wellness groups had higher success rates (p <.05, survival analysis) than SC. Four-month abstainers in the Exercise group reported a decrease in depression and increase in positive affect, while those in SC showed an increase in negative affect. Exercise should be considered as an adjunct to NRT, however, adherence to the treatment regimen needs to be increased.

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**POS2-048**  
**ACUTE EFFECT OF ISOMETRIC EXERCISE ON DESIRE TO SMOKE AND TOBACCO WITHDRAWAL SYMPTOMS**

Michael Ussher*, Ph.D., St. Georges Hospital Medical School and Robert West, Ph.D., University College London

Brief bouts of supervised cardiovascular exercise (e.g. stationary bicycle) have been found to have an acute effect on moderating desire to smoke and tobacco withdrawal symptoms in abstaining smokers. However, cardiovascular exercise is not a practical strategy in many situations. It is also of theoretical interest to determine whether the effect of exercise arises from aerobic activity or whether muscle exertion is sufficient. We investigated whether isometric exercise reduces desire to smoke and tobacco withdrawal symptoms in 60 temporarily abstinent smokers (mean age=32, mean cigarettes per day=19, 27 females). Following overnight abstinence smokers were randomised to five-minutes of: seated isometric exercise (involved repeated static muscular contractions using five different exercises, e.g. flat clenching, pushing hands together, N=20), muscle focusing (involved focusing attention for a fixed period on five different muscle groups, N=20, control), or sitting passively (N=20, control). Desire to smoke and tobacco withdrawal symptoms (‘Irritable’, ‘depressed’, ‘stressed’, ‘tense’, ‘restless’, ‘poor concentration’) were rated at baseline, immediately post-intervention, and five, 10, 15 and 20-minutes post-intervention. Isometric exercise produced a greater reduction in desire to smoke versus passive control at immediate post-intervention and five-minutes post-intervention, relative to baseline (p<.05). Most withdrawal symptoms were moderated by exercise versus controls at between 5 to 20-minutes post-intervention, relative to baseline (p<.05). These findings suggest that the effect of exercise on desire to smoke and withdrawal symptoms is not limited to cardiovascular parameters, although the effects observed for isometric exercise were more modest than has been reported for cardiovascular exercise. Where cardiovascular exercise is not possible, brief isometric exercise may be useful for immediate relief from a desire to smoke.

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**POS2-049**  
**BARRIERS AND BENEFITS TO ATTENDING A STOP SMOKING CLINIC DURING PREGNANCY**

Michael Ussher*, Ph.D., St. Georges Hospital Medical School; Jean-Francois Etter, Ph.D., University of Geneva; and Robert West, Ph.D., University College London

Few pregnant smokers attend smoking cessation clinics and little is known about the perceived barriers to, and benefits of, attending such clinics. This study examined the perceived barriers and benefits of attending such clinics during pregnancy among current smokers (n=398, mean cigarettes/day=10.3) and recent ex-smokers (≤6months abstinence, n=89). An internet-based questionnaire was used to survey pregnant smokers accessing websites related to pregnancy, women’s health and smoking cessation. Of the 487 women completing the questionnaire (mean age=27.9, mean weeks gestation=10.6) most (79%) resided in the USA or the UK. The vast majority (92%) of current smokers reported thinking about stopping smoking and 49% had made a serious attempt to quit during their pregnancy. 61% said they would be interested in receiving help with stopping smoking from a trained counsellor (typically involving up to six individual weekly appointments of about 40 minutes each), although only 5% reported having received such help during their current, or any previous, pregnancy. The most frequently reported barriers to attendance were: fear of disappointing myself (52%), not having access to a course (40%), not intending to seek help for this sort of thing (41%), not having time to attend (38%) and afraid that the counsellor would judge me for smoking (37%). The most frequently reported benefits of clinic attendance were: advice about cigarette cravings (74%), praise and encouragement for quitting (70%), advice about medications (64%), progress being monitored (64%), sharing concerns about quitting (62%) and learning about the harm to my baby (60%). Stop smoking clinics targeting pregnant smokers need to address the reported barriers to attendance and to promote the benefits of attendance.

No Funding.

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**POS2-050**  
**NICOTINE REPLACEMENT THERAPY (NRT) FOR PREGNANT SMOKERS: AN EXPERT PANEL CONSENSUS REPORT ON INTERVENTION STRUCTURE, PROCESS AND CONTENT**


Annual national household surveys by the Substance Abuse and Mental Health Administration of smoking prevalence during pregnancy, multiple meta-analyses, the AHRQ Guideline(2000) and recent peer reviewed reports on NRT in pregnancy confirm: 1) limited progress has been made in reducing smoking during pregnancy, especially among Medicaid eligible patients, 2) “Best Practice” counseling methods “Assist” only an additional 5% to 10% to quit, almost all are light to moderate smokers, and 3) multiple efficacy, process and qualitative evaluation research are needed, especially for pregnant, heavy smokers, to document the frequency, duration, periodicity, timing, and content of intervention methods by type of provider. No rigorous evaluation of NRT use in pregnancy has been conducted in the US and several reports of unsuccessful NRT intervention delivery have been published. To initiate an NRT-RCT for pregnant smokers which has a high probability of implementation of the intervention with fidelity, it is essential to reach a consensus on core intervention ingredients. Qualitative judgements about intervention characteristics from three audiences, NRT experts, regular maternity care providers and patients, are needed. This report presents insight derived from group one. Using AHRQ Guidelines and a recommended 10wk Transdermal NRT regimen, we established an international expert panel of 10 physicians and 10 behavioral scientists to participate in a two phase Delphi process. In Phase 1 they reviewed a draft protocol, giving specific ratings on a scale of 1 to 10 of the following structural and process issues and characteristics of the NRT+Behavioral Intervention: dosage by baseline biochemical values/patient, the frequency, periodicity, duration, content for each contact and type of intervention procedures. A synthesis of the results of Phase 1 was prepared. This report was sent to the Panel for their “final” Phase 2 rating of the salience and appropriateness of the intervention procedures. The results of the Phase 1 & 2 Delphi Panel review will be presented. The Expert Panel results will be used in a second Delphi process with a sample of maternity care providers and with a third study, a series of focus group sessions with NRT eligible patients.

**National Institute for Child Health and Development, NIH.**

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**POS2-051**  
**A PROCESS EVALUATION MODEL FOR NRT-BEHAVIORAL INTERVENTIONS FOR PREGNANT SMOKERS**

Richard Windsor, Rick Boyd and Ayman El-Mohandes

Multiple meta-analyses of evaluations of behavioral interventions for pregnant smokers, recent pilot studies of NRT+Behavioral interventions with pregnant smokers and evidence from the only RCT to evaluate the efficacy of NRT+Behavioral methods with pregnant smokers have ALL documented serious implementation problems. This presentation will: 1) describe a “Process Evaluation Model”, using empirical evidence of the successful delivery of interventions from multiple evaluation studies with pregnant smokers, 2) present a synthesis of the process evaluation data from published studies that document unsuccessful delivery of the NRT interventions for pregnant smokers, and 3) present the Process Evaluation Model, defining specific procedures and methods that will be implemented in the recently funded NIH NRT+B Behavioral Intervention for pregnant smokers. The direct relationship between the NRT+B behavioral intervention and process evaluation, which documents delivery of procedures and materials by staff and their translation into a Cost Analysis, will also be presented.

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POS2-052 EVALUATING THE NATIONAL PARTNERSHIP TO HELP PREGNANT SMOKERS QUIT
Leah Ranney*, Ph.D., Cathy Melvin, Ph.D., M.P.H., and Catherine Rohweder, Dr.P.H. from the Cecil G. Sheps Center for Health Services Research and Smoke-Free Families National Dissemination Office, University of North Carolina at Chapel Hill, NC

The purpose of this study was to evaluate the collaborative efforts used by the National Partnership to Help Pregnant Smokers Quit (National Partnership). Launched in May 2002 the National Partnership is a diverse coalition of over 60 leading philanthropic, health, business and government organizations dedicated to getting pregnant women the help they want and the support they need to quit smoking and stay smoke-free. The National Partnership adopted, and is implementing, an Action Plan to provide proven clinical and community-based interventions to every pregnant smoker in the United States. Proven intervention strategies in six focus areas (healthcare, media, policy, research, communities/worksites, and state outreach) are being implemented by working groups of representatives from partner organizations. Representatives identified a core set of objectives, and established benchmarks to gauge their progress. They accomplish their work through monthly teleconferences and develop and implement activities aimed at achieving the benchmarks. This session includes a description of the database developed to track and record critical elements in creating and maintaining a national coalition, including all communications, strategies, decisions, actions, and products generated by the Partner organizations to meet National Partnership goals. Dates, organizations, representatives, and minutes from the teleconferences are entered into the database and the data extracted by query. Data on select benchmarks will illustrate the National Partnership’s progress on a range of activities designed to increase the accessibility of prenatal smoking cessation services, including provider training materials, and Medicaid coverage and community/worksite tool kits. These results illustrate how partners from health service and community organizations are working together to accomplish shared goals.

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POS2-054 TAILORING CHRONIC CARE IMPROVEMENT MODELS FOR PRENATAL TOBACCO TREATMENT
Catherine Rohweder*, Dr.P.H., Cathy Melvin, Ph.D., M.P.H., Smoke-Free Families National Dissemination Office; and Dianne Barker, M.H.S., Barker Bi-Coastal Health Associates

BACKGROUND: The Smoke-Free Families Prenatal Demonstration Projects are a collaborative effort between staff at the National Dissemination Office and three grantee organizations in Oregon, Maine, and Oklahoma. The projects are using systems-level interventions and quality improvement methods to incorporate smoking cessation services into prenatal care services.

METHODS: In order to measure progress in establishing systems to support prenatal tobacco treatment, a standardized scale used in the chronic care field was modified and delivered to the advisory committees, project staff, and practice teams in each of the sites. The scale included domains such as delivery system design, information systems, and community linkages. Qualitative information was also gathered through open-ended questions.

RESULTS: The results of the midstream process evaluation data collected between 2003 and 2004 varied by site, but a majority of the factors assessed by the scale received a score of good or full support, indicating that the demonstration projects had all made substantial progress in facilitating the delivery of prenatal smoking cessation services. Newly developed systems included proactive fax referrals to quitlines, standardized tobacco treatment forms, reminders to deliver the “5 As”, and performance feedback to providers. Respondents also provided insight into structural and environmental barriers, such as state budget crises and competition with other collaboratives, and contributed many recommendations for program improvement.

DISCUSSION: The process evaluation provides a road map for other organizations to disseminate tobacco treatment guidelines across large provider networks. This study demonstrates how an improvement model from the field of chronic illness care can be successfully tailored to prenatal smoking cessation services.

The Robert Wood Johnson Foundation.

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POS2-053 PARTNERS’ PERCEPTIONS OF THEIR ROLE, INVOLVEMENT AND SUCCESS IN A NATIONAL SMOKING CESSATION INITIATIVE
Leah Ranney*, Ph.D., Cathy Melvin, Ph.D., M.P.H., and Catherine Rohweder, Dr.P.H. from the Cecil G. Sheps Center for Health Services Research and Smoke-Free Families National Dissemination Office, University of North Carolina at Chapel Hill, NC

The purpose of this study was to evaluate the collaborative efforts and methods used by the National Partnership to Help Pregnant Smokers Quit. Launched in May 2002 the National Partnership is a diverse coalition of over 60 leading philanthropic, health, business and government organizations dedicated to getting pregnant women the help they want and the support they need to quit smoking and stay smoke-free. The National Partnership adopted, and is implementing, an Action Plan to provide proven clinical and community-based interventions to every pregnant smoker in the United States. Volunteer representatives from partner organizations formed five working groups to implement evidence-based strategies to help pregnant women quit smoking. These representatives convened, identified a core set of objectives and established benchmarks to gauge their progress. On monthly conference calls, these representatives work to develop, implement, and support activities to move toward the benchmarks. Telephone interviews were conducted with the co-chairs (i.e., facilitators) of the working groups to evaluate working group process by capturing the experiences of each co-chair. The telephone interviews were recorded, transcribed, and analyzed using the qualitative software Atlas/ti. Data will be presented on how the co-chairs 1) perceived their role, 2) evaluated the progress used to develop benchmarks, strategies and products, 3) rated the groups’ progress towards the benchmarks, 4) assessed the benefits and costs of being a Partner of the National Partnership, and 5) defined success for the National Partnership. The findings will illustrate how partners understand and evaluate their role in a national coalition and how partnerships between health services and community organizations can work to accomplish shared goals.

Project funded by The Robert Wood Johnson Foundation.

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POS2-055 THE ELUSIVE PREGNANT EX-SMOKER: LESSONS FROM RECRUITMENT FOR A CLINICAL TRIAL
Elena Lopez*, M.A., Vani Simons, Ph.D., Cathy Meade, R.N., Ph.D., Gwendolyn Quinn, Ph.D., Jennifer Pedraza, B.A., and Thomas Brandon, Ph.D.

Smoking relapse is a particularly serious problem among pregnant and postpartum women. Although national surveys indicate that up to 50% of women smokers now quit smoking during pregnancy, approximately 70% resume smoking within 6 months of delivery. To date, relapse-prevention interventions with these women have been ineffective. An ongoing clinical trial is testing the efficacy of a self-help relapse-prevention program adapted especially for pregnant ex-smokers and continuing into the postpartum period. The trial requires the recruitment of pregnant women who have already quit smoking. However, despite survey findings that indicate a relatively large population of these women, recruitment has been extremely challenging. Recruitment strategies attempted thus far include: collaboration with a statewide system of childbirth educators, local newspaper ads, a national ad in a high-circulation magazine for pregnant women, and mailings to obstetricians and gynecologists. Each of these approaches has produced limited success to date, and we are continuing to implement additional strategies. This poster will describe the various approaches attempted and present cost-per-participant data for each approach. In addition to discussing recruitment difficulties, we hope to be able to report on one or more successful recruitment strategies by conference time. The poster will also discuss the implications of our recruitment challenges, with regard to: (1) practical advice for future studies; (2) inferences about the nature of the target population; and (3) implications for public health interventions with this population.

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POS2-056  NOVEL METHODS FOR SMOKING CESSION IN PREGNANT WOMEN

Vladimir Bokarius, M.D., Ph.D. and William Huang*, M.D.

Cigarette smoking is a common problem during pregnancy. Not only does it affect a smoking mother, but it has damaging effects on the fetus. Although currently available pharmacological treatment of nicotine addiction has shown certain success in smoking cessation in the general population, its use in pregnant women is limited, if not forbidden due to side effects that affect the fetus. Non-pharmacological approaches such as different types of psychotherapy, although being harmless to both maternal and fetal organs, have relatively low efficacy, or require professional intervention which increase the cost of the treatment. Acupuncture (AP) is a relatively new methodology that induces a regulative response of the organism. To date, the majority of the clinical research has shown AP working in alleviating pain and has suggested AP to be useful as an adjunct treatment in addiction. At the same time, reported side effects of AP are extremely rare and mostly reflect an unprofessional use of the method. Thus, AP might be a potentially important, non-harmful for mother and fetus strategy to treat nicotine addiction in pregnant women. Virtual reality has existed for years and it is now affordable and easily adaptable for therapeutic uses. It has been studied in treating phobias and lately nicotine addiction. It is an extremely safe method since no medication or physical manipulations are involved. There is no teratogenic effect or risk of physiological disturbances, which offers an innovative modality to safely help pregnant women stop smoking. The goal of this presentation is to provide the audience with the critical review of evidence-based treatment of nicotine addiction in pregnant women and provide rationale for using two new nonpharmacological approaches for smoking cessation in this population. Two cases will be presented to illustrate clinical use of new modalities as well as the demonstration of virtual reality.

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POS2-057  PATTERNS AND PREDICTORS OF TOBACCO SMOKING CESSATION IN PREGNANT LEBANESE WOMEN

Hala Tamim*, Ph.D., American University of Beirut; Hind Beydoun, M.P.H., University of Iowa; Pascale Nakad, B.S., Mustafa Khogali, M.D., and Khalid Yunis, M.D., American University of Beirut

INTRODUCTION: Pregnant women who consume tobacco products are at increased risk for perinatal mortality and morbidity. Various smoking cessation strategies were found to be effective means for altering tobacco use during the period of pregnancy thereby reducing its negative impact on the newborn. Although there is extensive literature on determinants of cigarette smoking cessation and their effects on pregnancy outcome, no similar studies on narghile have been identified.

OBJECTIVES: To describe patterns of cigarette and narghile (hubble-bubble) smoking before and during pregnancy and identify predictors of successful smoking cessation.

METHODS: A survey was conducted, through the database project of the National Collaborative Perinatal Neonatal Network, on 4660 pregnant women who presented as current smokers at first prenatal visit. Sixteen percent presented as current smokers at first prenatal visit.

RESULTS: Among cigarette smokers, consistent users (10.2%) were more prevalent than successful quitters (3.5%), whereas successful quitters (5.5%) were more common than consistent users (3.1%) in the hubble-bubble group. High maternal education (OR=2.03, 95% CI: 0.99-4.15), adequate prenatal care (OR=1.72, 95% CI: 1.02-2.91) and mild smoking at baseline (OR=2.35, 95% CI: 1.36-4.0) were main determinants of successful cigarette smoking cessation, whereas successful quitters of hubble-bubble use were more likely to be nulliparous (OR=1.60, 95% CI: 1.08-2.49) or to have a non-smoking partner (OR=7.57, 95% CI: 2.31-24.78).

CONCLUSIONS: Different populations should be targeted when designing smoking cessation interventions for cigarette and hubble-bubble users.

This work was partially supported by funds from the World Health Organization (WHO), Abbott Laboratories, the Lebanese National Council for Scientific Research (LNCSR), the Medical Practice Plan (MPP), the University Research Board (URB) and the Chairmans fund at the Pediatrics Department of the American University of Beirut.

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POS2-058  INNOVATIVE PROGRAM OFFERS ON-SITE ALTERNATIVE FOR ACHIEVING PRACTICE-WIDE CHANGE TO IMPROVE SMOKING CESSATION COUNSELING

Cecelia A. Gaffney, Dartmouth Medical School; C. Tracy Orleans, Robert Wood Johnson Foundation; and Cathy L. Melvin, University of North Carolina

Moderate increases in likelihood of successful implementation of evidence-based interventions (EBI) have resulted from on-site training such academic detailing. These models require simultaneous participation of clinicians and office staff. While moderately effective, these approaches are expensive. We have designed a multi-media training program to reduce the cost of the on-site model while replicating its essential elements. Smoking Cessation for Pregnancy and Beyond: Learn Proven Strategies to Help Your Patients Quit, available on the web or CD, offers many learning tools including case simulations and discussions, mini-lectures, patient interviews, tools for changing office systems and web resources. The tools accommodate different learning styles. Topics presented assure that information needed by all staff to perform different roles is provided. Individual learning occurs at each persons convenience and pace rather than requiring the entire staff to meet as a group. Participants can earn continuing education credits. Six rural primary care practices in New England participated in a study of the impact of completing the program on clinician skills and office system changes. Chart audits, patient exit interviews and clinician surveys were collected prior to viewing the program. Patient reported smoking status assessment (82%), counseling (64%) and successful quit (22%) consistent with clinician self-reported behavior. Chart review found documentation in the visit notes (48%) the most common method, followed by the problem list (28%). Three-quarters of staff clinicians found the program contained enough information to implement the EBI. Findings from three-month follow-up data show how well practice-based changes have been implemented.

Robert Wood Johnson Foundation.

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POS2-059  COUNSELING BY HOME VISITORS INCREASES QUIT RATE AMONG LOW-INCOME PREGNANT SMOKERS

Cecelia A. Gaffney*, Michael S. Zens, Dartmouth Medical School; and Lorraine V. Krieman, Brandeis University

Smokefree Connections project studied the impact of innovative, home-based smoking cessation counseling on the quit rates of low-income pregnant smokers. Home visitors were employed by home visiting agencies and provided routine, prenatal home care under state contracts. Two 15 minute counseling sessions were delivered at separate visits during the first trimester in addition to an office-based best practice intervention. Topics covered in home visits extended beyond the usual content of office-based counseling focusing on partner support and communication, and stress management. Among this low-income, Medicaid pregnant population, 56% presented as current smokers at first prenatal visit. Sixteen percent of self-reported non-smokers had cotinine levels indicating smoking. Of the 82 women enrolled in this feasibility study, only 52% received at least one home visit. Intent to treat analysis found non-significant 50% increase in cotinine validated quit rates. However, treatment analysis found quit rates increased from 8% to 19% (p=0.08) and 50% reduction in smoking more than doubled to 45% (p=0.006). Multiple regressions identified different factors significantly related to quitting and reduction. Confidence that could quit and number of smokers in household were significantly related to both reduction and quitting. Partner support specific to quitting significantly increased quitting among these pregnant women. Costs savings was $2.5:1 for the office-based counseling only and $2.8:1 for the combined intervention. Multiple regressions identified different factors significantly related to quitting and reduction. Confidence that could quit and number of smokers in household were significantly related to both reduction and quitting. Partner support specific to quitting significantly increased quitting among these pregnant women. Costs savings was $2.5:1 for the office-based counseling only and $2.8:1 for the combined intervention. Smokefree Connections project studied the impact of innovative, home-based smoking cessation counseling on the quit rates of low-income pregnant smokers. Home visitors were employed by home visiting agencies and provided routine, prenatal home care under state contracts. Two 15 minute counseling sessions were delivered at separate visits during the first trimester in addition to an office-based best practice intervention. Topics covered in home visits extended beyond the usual content of office-based counseling focusing on partner support and communication, and stress management. Among this low-income, Medicaid pregnant population, 56% presented as current smokers at first prenatal visit. Sixteen percent of self-reported non-smokers had cotinine levels indicating smoking. Of the 82 women enrolled in this feasibility study, only 52% received at least one home visit. Intent to treat analysis found non-significant 50% increase in cotinine validated quit rates. However, treatment analysis found quit rates increased from 8% to 19% (p=0.08) and 50% reduction in smoking more than doubled to 45% (p=0.006). Multiple regressions identified different factors significantly related to quitting and reduction. Confidence that could quit and number of smokers in household were significantly related to both reduction and quitting. Partner support specific to quitting significantly increased quitting among these pregnant women. Costs savings was $2.5:1 for the office-based counseling only and $2.8:1 for the combined intervention. Multiple regressions identified different factors significantly related to quitting and reduction. Confidence that could quit and number of smokers in household were significantly related to both reduction and quitting. Partner support specific to quitting significantly increased quitting among these pregnant women. Costs savings was $2.5:1 for the office-based counseling only and $2.8:1 for the combined intervention.
**POS2-060**

**IS ADVICE TO STOP SMOKING FROM A MIDSIFE STRESSFUL FOR PREGNANT WOMEN WHO SMOKE? DATA FROM A RANDOMIZED CONTROLLED TRIAL**

Paul Aveyard*, Terry Lawrence, Emma Croghan, Olga Evans and K.K. Cheng

**BACKGROUND:** There are no randomized trials examining whether intensive advice to pregnant smokers is more stressful than standard care.

**METHOD:** 918 UK women currently smoking on commencing antenatal care were randomized into three arms. Women in Arm A received one episode of brief advice to stop smoking. Women in Arm B were assessed for stage of change and worked through an exercise in self-help manuals on three occasions. Women in Arm C used a 20-minute interactive computer program three times in addition to the intervention women in Arm B received. Stress was assessed by the change in score on the Perceived Stress Scale (PSS) from baseline to 30 weeks gestation, the month prior to delivery, and 10 days postpartum.

**RESULTS:** There were small and not significant differences in the changes in PSS between the arms at all outcome times. There was no evidence that the importance women attached to pleasing their midwife by stopping, having failed to quit, or nulliparity modified the effect of intensive advice on change in stress levels.

**CONCLUSIONS:** Intensive advice to stop smoking was not associated with increases in stress. Advice and support for pregnant women to stop smoking should be given without fear of causing stress.

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**POS2-061**

**DOES STAGE-BASED SMOKING CESSATION ADVICE IN PREGNANCY RESULT IN LONG-TERM QUITTERS? 18-MONTH POSTPARTUM FOLLOW UP OF A RANDOMISED CONTROLLED TRIAL**

Terry Lawrence, Paul Aveyard*, K.K. Cheng, Carl Griffin, Carol Johnson, and Emma Croghan

**AIMS:** To evaluate the effect on quitting smoking at 18 months postpartum of smoking cessation interventions based on the Transtheoretical Model (TTM) delivered in pregnancy compared to current standard care. It has been claimed that TTM-based interventions will continue to create quitters after the end of the intervention period.

**DESIGN:** Cluster randomised trial. Setting: Antenatal clinics in general practices in the West Midlands, UK. Participants: 918 pregnant smokers originally enrolled in the trial, of which 393 women were followed up at 18 months postpartum.

Interventions: 100 general practices were randomised into the three trial arms. Midwives in the perceived practices delivered three interventions: A (standard care), B (TTM-based self-help manuals), and C (TTM-based self-help manuals plus sessions with an interactive computer programme giving individualised smoking cessation advice). Measurements: Self-reported continuous and point prevalence abstinence since pregnancy.

**FINDINGS:** When combined together, there was a slight and not significant benefit for both TTM arms compared to the control, with an odds ratio (OR) 95% confidence interval (CI) of 1.20 (0.99-1.48) for continuous abstinence. For point prevalence abstinence, the OR (95%CI) was 1.15 (0.66-2.03). Seven of the 54 (13%) women who were quit at the end of pregnancy were still quit 18 months later, and there was no evidence that the TTM-based interventions were superior in preventing relapse.

**CONCLUSIONS:** The TTM-based interventions may have shown some evidence of a short-term benefit for quitting in pregnancy but no benefit relative to standard care when followed up in the longer-term.

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**POS2-062**

**AN EXAMINATION OF EARLY SMOKING EXPERIENCES AND SMOKE STATUS IN A NATIONAL CROSS-SECTIONAL SAMPLE**

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This study extends previous work showing lightheadedness from and liking for smoking to be predictors of continued smoking while controlling for demographics and social influences that can also contribute to progression to established smoking. As part of a random digit dialing telephone survey in continental United States, 3363 never smokers, nonsmokers, former smokers, and current smokers were interviewed. Demographic information (sex, race, age, education level), smoking history, reactions to early experiences with smoking (lightheadiness, liking), whether parents, siblings, or friends smoked when respondent was a teenager were assessed in the interview. Lightheadedness and liking interacted to predict having ever smoked at least 100 cigarettes. Those who liked smoking (regardless of lightheadedness) were very likely to progress to established smoking [OR liking/no lighthead = 31.2; OR liking/lighthead = 24.2], while non-likers who experienced lightheadedness were more likely than non-smokers who did not experience lightheadedness to progress [OR = 3.1]. These results held even after adjusting for demographic (sex, age, race, education) and social influences (parents, siblings, and friends smoking) on progression to established smoking. This study supports the literature suggesting that early experiences particularly liking smoking but also lightheadedness are influential in becoming a regular smoker.

This work was supported by a grant from the National Cancer Institute to L.T.K. (CA81639).

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**POS2-066**

**STRESSFUL LIFE EVENTS, SMOKING AND ALCOHOL USE AMONG CHINESE ADOLESCENTS: THE ROLE OF DEPRESSIVE SYMPTOMS AS A MEDIATOR**

Cara L. Booker*, M.P.H., Jennifer B. Unger, Ph.D., Ping Sun, Ph.D., and C. Anderson Johnson, Ph.D., Institute for Health Promotion and Disease Prevention Research, University of Southern California

The purpose of this longitudinal study was to look at the possible mediating properties of depression on the relationship between stressful life events and adolescent smoking in a sample of Mainland Chinese adolescents. Beginning in 1998, a longitudinal and randomized smoking prevention trial, was carried out cooperatively by the University of Southern California and Wuhan Public Health and Anti-epidemic Station. A stressful life events survey and a smoking survey were administered at baseline to 5000 7th grade students. These students were followed through the 9th grade and administered the smoking survey annually. The risk and protective factor profiles for male and female students showed marked differences. Among males, negative peer-, health-, and violence-related events were associated with smoking, alcohol use and depressive symptoms. Positive peer-related events and negative family-, peer-related events were associated with smoking, alcohol use and depressive symptoms among female students. Mediation analysis showed that negative peer-related events may lead to smoking and depressive symptoms among Chinese male adolescents. There was no mediation of depressive symptoms on stressful life events and substance use observed among Chinese adolescent females. Results showed that depressive symptoms mediated the relationship between negative peer-related events and smoking among Chinese male adolescents. Implications of the findings and for future studies are addressed.

This research was supported by the National Cancer Institute/National Institute of Drug Abuse Transdisciplinary Tobacco Use Research Center (grant #1 P50 CA84735-01). Support for the Wuhan Smoking Prevention Trial was supported by the Wuhan Public Health and Anti-Epidemic Station, the Wuhan Public Health Bureau, and the University of Southern California.

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POS2-067  FAMILY- AND PEER-RELATED RISK AND PROTECTIVE FACTORS FOR TOBACCO USE AMONG AMERICAN INDIAN ADOLESCENTS IN CALIFORNIA

Jennifer B. Unger*, Ph.D., Lourdes Baeezonde-Garbanati, Ph.D., and Claradina Toya, M.P.H.

American Indian adolescents have the highest smoking prevalence of all ethnic groups in the U.S., yet few representative, population-based studies have examined their risk and protective factors for smoking. This study used data from statewide samples of California adolescents in 1999 and 2002 to evaluate several potential explanations for the high prevalence of smoking among American Indian adolescents. The prevalence of lifetime and past-month cigarette smoking was higher among American Indian adolescents than among non-Indians. American Indian adolescents were more likely than non-Indian adolescents to have friends or parents who smoke. They were less likely to say that their parents had expressed a desire for them not to smoke, to have a complete smoking ban in the home, and to believe that occasional smoking is harmful. Among the American Indian adolescents, friends smoking, parents smoking, no smoking ban in the home, and the belief that occasional smoking is not harmful were risk factors for lifetime smoking. Friends smoking and the belief that occasional smoking is not harmful also were risk factors for past-month smoking. Results indicate that health education efforts are needed throughout American Indian communities to prevent nicotine dependence among adolescents. Some promising strategies include encouraging American Indian parents to implement home smoking bans, counteracting peer influences, and teaching American Indian adolescents that even occasional smoking is harmful. However, smoking prevention in American Indian communities should be conducted in a culturally appropriate manner, recognizing the important role of sacred tobacco in American Indian cultures.

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POS2-069  NIGHT REST AND TOBACCO CONSUMPTION IN 13-14 YEAR OLD ADOLESCENTS

Laura de la Rosa, Javier Santamaría, Miriam Otero, and F. Javier Ayesta

582 adolescents, 13-14 year old boys and girls, were asked to answer how much did they sleep, at what time did they used to go bed and if they considered that they had a sleep “deficit”. The main results obtained were: 1) 24% of non smokers and 48% of smokers (p<0.001) referred an sleep “deficit” 2) Smokers refer that they regularly sleep one hour less than non smokers (7’6 vs. 8’6, p<0.001). Smoker girls were those who slept less (7’0) 3) Smokers refer going to bed later than non smokers: both in working days (12h10’ vs. 11h05’) and during the weekend (02h25’ vs. 12h40’). These results form a coherent picture which shows how at 13-14 y/o smokers already have different nocturnal habits. Besides the importance of different life-styles, this may explain indirectly their higher consumption of psychoactive substance, like nicotine itself and those beverages containing caffeine.

No funding.

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POS2-068  SOURCES OF INFLUENCE ON ADOLESCENT TOBACCO USE: PEERS, PARENTS, AND DEPRESSED MOOD

Anamara Ritt-Olson*, Jennifer Unger, Tom Valente, Mitchell Earleywine, Chih-Ping Chou, C. Anderson Johnson and Elahe Nezami

This study explored three possible sources of influence on tobacco among young adolescents: peers, depressed mood and parents. We also consider social skills as a mediator between peers and depression. We investigated the relative contribution of each factor to tobacco via structural equation modeling. The model tested the relative impact of peers, depressed mood, parental communication, and social skills on an index of smoking behavior. Adequate model fit was achieved (CFI= 0.985 and chi-square = 106.7, p = 0.07). Only the peer factor and social skills factor were predictive of smoking. Structural equation modeling with multiple group approach was employed to explore gender differences (CFI= 0.99 and chi-square = 231.6, p = 0.06). Peers themselves were the only factor to predict tobacco use, and were more strongly related to smoking than personality or parental factors. Gender differences were found in the smoking, peers, parental communication and depression. Both depression and parental communication were found to be distally related smoking through peers. Support was also found for Lewinsohns contention that depressed adolescents have trouble negotiating their peer environment because of impaired social skills. These findings suggest that further research is warranted that explore factors that influence peer influences.

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POS2-070  FAMILY ATTITUDES AND ADOLESCENT TOBACCO CONSUMPTION

Carlos Cortijo*, Ana Bedialauneta, Elisa Sáez, and F. Javier Ayesta

The aim of this work was to analyze the influence that tobacco parental consumption and parental attitudes towards smoking may exert on adolescent tobacco consumption. 7103 adolescents, boys and girls, from 13 to 18 years old, were asked: a) whether their father and/or their mother smoked; b) what would their parents think if he/she were a smoker. The aim results found were: 1) a smoking mother does not increase the chances of the sons being smokers. Odds ratios for 13-14, 15-16 & 17-18 y/o, respectively, were: 1’3 (n.s.), 1’2 (n.s.) & 1’2 (n.s.) 2) a smoking father does not influence the O.R. of the y/o boys (1’2; n.s.), but it increases them at older ages (OR: 1’5; p<0.01 & 1’6; p<0.001). 3) a smoking mother influences her daughter consumption (OR: 2’6, 2’0 & 1’7; p<0.001). 4) a smoking father also influences his daughter consumption (OR: 2’2, 1’5 & 1’5; p<0.001). 5) adolescents with perception that his/her mother "wouldn’t mind" or "wouldn’t care" if he/she smoked present high risks of being themselves smokers. OR are 7’6, 7’7 & 4’2 in boys (p<0.001) and 26’2, 9’9 & 6’2 in girls (p<0.001). 6) Although in a lesser the degree, this perception about the father also increases the chances of being smokers: 3’8, 3’3 y 4’6 for boys (p<0.001) and 11’4, 8’0 y 4’9 for girls (p<0.001).

No funding.

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POS2-071  
SMOKERS ADOLESCENTS: EXPECTATIONS ABOUT QUITTING  
Fernando Martin, Carlos Cortijo, L. Pablo Corral, and F. Javier Ayesta  

2,364 smoker adolescents, boys and girls, from 13 to 18 years old, were asked whether: 1) they had ever thought about quitting; 2) they would like to quit; 3) they believed they were going to be smokers in a five years period; 4) they had made any quit attempts; 5) how many; and 6) how much time they had remained abstinent. Results were analyzed by age, gender, and tobacco consumption degree. The main results were: 76% of smoker girls and 64% of smoker boys (p<0.001) refer having thought about quitting, 70% and 60% (p<0.001) respectively refer the would like to quit. There is an inverse relationship between the number of cigarettes smoked and the belief of remaining smoker five years later (p<0.0001 for trend). Of those who are actual smokers, 67% of the girls and only 47% of the boys (p<0.001) refer they have ever made at least a quit attempt. 30% of the girls and 15% of the boys (p<0.001) say the have made at least three quit attempts. 34% of smokers boys and 25% of smoker girls (p<0.01) refer that they have remained at least four weeks without smoking. These results show that boys and girls perceive themselves in a different way and behave differently in those aspects related to quitting.  
No funding.  
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POS2-072  
SELF-ESTEEM AND ANXIETY IN 13-14 YEAR OLD ADOLESCENTS: RELATIONSHIP WITH TOBACCO CONSUMPTION  
Miriam Otero*, Laura de la Rosa, Javier Santamaría, and F. Javier Ayesta  

582 13-14 year old boys and girls who participated in a broader study were asked to answer: 1) how much they like the way they are (from 0 to 5); to the STAIC (State-Trait Anxiety Inventory for Children; 40 sentences). The main results found were: 1) Whereas there are no differences between non smoker boys and non smoker girls (7.8±1.8 vs. 7.8±1.8), smoker girls were much less happy with themselves: 6.0±2.8 (p<0.001). 2) The degree of agreement with the sentence "I like the way I am" was again similar in non smokers (5.0±0.9 vs. 2.9±0.9), but lower in smoker girls: 2.5 (p<0.01). 3) In relationship with trait-anxiety no differences were found either between smoker and non smoker boys, nor between non smoker boys and girls (15.9±5.8 vs. 17.0±7.1). Nevertheless, smoker girls scored much higher: 26.0 (p<0.001). 4) The same was observed in state-anxiety: no differences between groups (18.8±7.3 vs. 18.9±5.9), except in the smoker girls, which were much higher (28.7; p<0.001). These results point out that, in a different way to their male counterparts, those girls who start to smoke earlier (when they are at least 14), have less self-esteem and a higher degree of anxiety.  
No funding.  
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POS2-073  
DIFFERENCES IN ASSERTIVENESS BETWEEN SMOKER AND NONSMOKER ADOLESCENTS  
Sergio Veiga, Blanca Benito, Carlos Cortijo, and F. Javier Ayesta  

The aim of this study was to analyze the differences in assertiveness that might be found in adolescents depending on their smoking status. 7103 adolescents, boys and girls, from 13 to 18 years old (included in a broader study), were asked to answer to Rathus Assertiveness Inventory (1973). It has 30 sentences and they have to say if they consider the sentence characteristic or uncharacteristic of themselves, and how much (self-evaluation goes from -3 to +3 in each of the sentences. The results clearly show that smokers identify themselves more with some sentences than non smokers do: 1) they look for quarrels more frequently (p<0.001 both in boys and girls); 2) they are more afraid of losing their temper (p<0.001 in girls and p<0.01 in boys); they are prone to 'talk' to somebody who has said bad about them (p<0.01 in girls and p<0.01 in boys); they express their opinion more easily (p<0.01 for both boys and girls). In contrast, non smokers consider more suitable to them the fact of trying to be at the top (p<0.01 both in boys and girls), Although there are no differences in most of the questions, a third of the sentences reflect a pattern of behavior that is at least slightly different between smokers and non smokers.  
No funding.  
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POS2-074  
EARLY INITIATION AND FUTURE BEHAVIORAL PROBLEMS: GENDER DIFFERENCES  
Robert Stephens* and Anna Krivelyova  

This study explores the relationship between early initiation and severity of behavioral and emotional symptoms among children receiving mental health services. The participants included 4,220 children between the ages of 11 and 18 enrolled in the national evaluation of the Comprehensive Community Mental Health Services for Children and Their Families Program who had data for the analysis. Overall, 33.4% of children reported smoking at least one cigarette in the past 30 days. Smoking was significantly more prevalent among boys (38.0%) than girls (30.9%). Analysis of age of initiation showed that 36.7% of children started to smoke before the age of 11. Early initiation was more prevalent among girls (41.1%) than boys (35.7%). No relationship between the severity of behavioral and emotional symptoms and early initiation was examined using both bivariate and multivariate frameworks. Analysis of internalizing and externalizing problems revealed a differential relationship between early initiation and the severity of symptoms among boys and girls. Girls who initiated early were significantly more likely to have severe internalizing problems, yet no statistically significant relationship between early initiation and severe internalizing problems among girls was found. The relationships were reversed for boys. Boys who initiated early were significantly more likely to have severe internalizing problems, while no statistically significant relationship between early initiation and severe externalizing problems was found among boys. These relationships remained statistically significant after introduction of other predictors of behavioral problems into the models. Other predictors included such mental health risk factors as indicators of physical and sexual abuse, history of drug abuse in the family, and total numbers of child and family risk factors.  
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POS2-075

**NICOTINE DEPENDENCE AND PROBLEM BEHAVIORS AMONG URBAN SOUTH AFRICAN ADOLESCENTS**


**INTRODUCTION:** This study examined the relationship between dependence on cigarettes as assessed by the Fagerström Test for Nicotine Dependence (FTND) and adolescent problem behaviors (e.g., illegal drug use) in a multi-racial/ethnic sample of urban South African adolescents.

**METHODS:** A community sample (N=736) consisting of White, Black, “Coloured,” and Indian youths aged 12-17 was drawn from the Johannesburg metropolitan area. Structured interviews were administered by trained interviewers. Data on nicotine dependence and problem behaviors were analyzed using multiple logistic regression analyses.

**RESULTS:** The analyses showed that higher levels of nicotine dependence, as assessed by the FTND, predicted elevated levels of violent acts, deviant behavior, marijuana and other illegal drug use, binge drinking, and sexual intercourse, controlling for the adolescents’ demographic factors. Moreover, nicotine dependence was related to these outcomes above and beyond peer deviance, an established predictor of adolescent problem behaviors. Neither gender nor race/ethnicity moderated the relationship between nicotine dependence and any of the other problem behavior outcomes.

**CONCLUSIONS:** The effects of nicotine dependence on comorbid problem behaviors in this cohort of South African adolescents indicates the need for incorporation of smoking education and cessation efforts in prevention and intervention programs for adolescents.

This study was funded by Grant Number TW05391 awarded by the Fogarty International Center and Grant Number DA00244 awarded by the National Institute on Drug Abuse of the National Institutes of Health to Dr. David W. Brook and Dr. Judith S. Brook, respectively.

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POS2-076

**ADOLESCENTS’ SENSE OF COHERENCE AND TOBACCO ADDICTION LIABILITY IN A SOUTH AFRICAN POPULATION SAMPLE**

O.A. Ayo-Yussuf and H.H. Severson

**BACKGROUND:** South African (SA) adolescents are faced with potentially stressful social environment from both the ongoing integration of previously separated cultures and the increasing risk of becoming an orphan—a result of the HIV epidemic. Only limited information is available on the determinants of tobacco use in SA. Based on the salutogenic construct, this study sought to test the hypothesis that adolescents with strong Sense of Coherence (SOC) are able to cope better with stressors, thus are less likely to use tobacco or other drugs.

**DESIGN:** Logistic regression analysis of cross-sectional baseline data from 586 eighth-graders (mean age, 14.4 years) from 3 public schools (17 classes) participating in the university of Pretoria’s Telematic-education project. Self-reported tobacco use (ever and past month use of cigarettes and/or snuff) was the main outcome measure. SOC was measured using Antonovsky’s 13-item scale (Cronbach’s alpha=0.66) on a self-administered questionnaire.

**RESULTS:** Prevalence of current cigarette and snuff use was 14.9% and 7.9% respectively. Of the adolescents, 33.7% could be categorized as having strong SOC (mean SOC >4.66 on a 7-point scale), without any gender predilection. Adolescents’ social class, perceived exposure to parent or teacher smoking was not associated with cigarette use. Significant association was observed between cigarette smoking and strong SOC (Odds ratio [OR] = 0.43; 95% confidence-interval, 0.21-0.87), being male (OR=3.91; 2.15-7.11), having friends that most/all smoke (OR=3.18; 1.82-5.53) and current use of snuff (OR=4.82; 2.27-10.22) — all explaining 25.2% of the variance in smoking status.

**CONCLUSIONS:** Within the study’s limitations, results showed SOC as a potential salutogenic factor in adolescents’ propensity to use tobacco, and suggests life-skills training and snuff-use prevention as appropriate interventions for the studied population.

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POS2-077

**SOCIAL AND ENVIRONMENTAL FACTORS PREDICTING SMOKING IN COLLEGE STUDENTS**

Kari Jo Harris*, Ph.D., M.P.H.; The University of Montana, Niaman Nazir, M.M.B.S., M.P.H., Sandra Hall, Ph.D., and Won S. Choi, Ph.D., M.P.H., The University of Kansas Medical Center

Although tobacco smoking is increasing among college students, little in-depth information is available about their smoking. Undergraduate students (n=634, 51% female, 78% freshman, 89% white) completed a paper survey. Eleven social and environmental factors specific to college students were analyzed as potential predictors of smoking level across three categories (no smoking, non-daily smoking, daily smoking). Univariate analyses identified factors that increased levels of smoking. These included having a roommate who smoked (p<0.0001), no rules about residential smoking (p=0.0003), a health care provider ask about smoking (p=0.0003), best friends who smoked (p=0.0001), a father who smoked daily (p=0.0006), off-campus housing (p=0.003), no Greek-letter affiliation (p=0.04), not attended religious services often (p=0.0001). Having a mother who smoked and being very involved in student groups did not differ significantly by level of smoking. Logistic regression (controlling for age, gender and college GPA) identified four significant independent predictors of smoking category. Those with a roommate who smoked were more likely to be in a higher smoking category (OR=1.72; 95% CI=1.18-2.53), as were those who had a sibling who smoked (OR=1.53; 95% CI=1.05-2.23). An increase in one best friend who smoked doubled the odds (OR=2.11; 95% CI=1.84-2.42) of students being in a higher smoking category. Having some rules about residential smoking reduced the odds (OR=0.99; 95% CI=0.95-1.01) of being in a higher smoking category. Interventions for college students should address smoking among friends, roommates and siblings, as well as rules about residential smoking.

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POS2-078

**ADOLESCENTS’ SMOKING BEHAVIOR AND ATTITUDES: THE IMPACT OF MOTHERS’ SMOKING COMMUNICATION, BEHAVIOR AND ATTITUDES**

Diane Herbert

This study investigated perceptual similarities and differences between adolescents and parents regarding smoking behavior, attitudes towards smoking, and smoking communication. Instruments were developed to measure multi-dimensional smoking communication messages and smoking attitudes in 140 mother-adolescent dyads. Results indicated that adolescent perceptions of mothers smoking related inquiries predicted adolescent smoking behavior; adolescent smoking attitudes also predicted smoking behavior. Adolescent perceptions of consistent and credible anti-smoking messages, smoking related inquiries, and mothers smoking attitudes predicted adolescent smoking attitudes. Mothers smoking behavior predicted adolescent perceptions of mothers anti-smoking messages. Mothers smoking behavior and attitudes predicted predicted adolescent perceptions of mothers smoking rules and mothers reports of anti-smoking involvement and smoking rules. Mothers smoking attitudes predicted their reports of pro-smoking messages. The present research suggests that the adolescent-mother smoking communication process is an important area to further explore in understanding adolescents smoking behavior.

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Community-based youth organizations such as the Boy Scouts of America (BSA) have tremendous potential for smoking prevention efforts because of their considerable reach and emphasis on health promotion. We examined factors protecting against initiation of smoking among a sample of 560 scouts, 10-19 years of age, in the Mid-South. Potential protective factors were selected based on problem behavior theory which hypothesizes that health risk behaviors such as smoking are part of a constellation of problem behaviors and a tendency toward psychosocial non-conformity. Examined variables included demographics, age, school performance, educational aspirations, religious participation, other substance use, sexual activity, rebelliousness, use of safety equipment (e.g., bike helmets, seatbelts), and family characteristics (number of parents in household and involvement in school and scouting). A total of 24.1% of scouts had ever smoked a cigarette and 10.3% had smoked in the past month. Ever use of other substances also was substantial, including alcohol (44.8%), marijuana (12.6%), and inhalants (10%). In a multiple logistic regression model, several variables were protective against having ever smoked a cigarette, initiating being younger, living with two parents, having good grades in school, lack of rebelliousness (not enjoying doing things that others say you shouldn’t do), and not having ever used alcohol, marijuana, or inhalants. Results generally support the utility of problem behavior theory in describing factors protective against smoking in children and adolescents. A substantial proportion of scouts have smoked, and this behavior tracks with use of other substances. Prevention efforts that target use of multiple substances are warranted in youth organizations such as the BSA.

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POS2-080 ADOLESCENT DEFINITIONS OF CHANGE IN SMOKING BEHAVIOR: A QUALITATIVE INVESTIGATION
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Although adolescent smoking cessation has received increased research attention, little information exists as to how adolescents define change efforts for smoking behaviors. This issue is of particular importance as surveys routinely incorporate items assessing smoking cessation, yet how adolescents interpret such items is unclear. To address this issue, the present study investigated definitions of smoking behavior change efforts among adolescents. Ninety adolescent smokers, on average 16.7 (1.0) years old, 57% female, and 72% White were asked to define the terms quit smoking, stop smoking and cut-down on smoking. Responses to the three questions were categorized using content analysis. Definitions of quit and stop were categorized as a) stop permanently, b) stop temporarily, c) stop except in certain situations, and d) reduce smoking. Definitions of cut down were categorized as a) reduce number of cigarettes, b) smoke less for a certain period of time, c) reduce situations, and d) reduce smoking. Three trained raters sorted adolescents responses into each of the categories. Average interrater agreement was 83%. Definitions of quit and stop were most frequently categorized in the stop permanently category (86% & 75% respectively). Definitions of cut down were distributed across categories, with 51% categorized as smoke less and 25% as smoking less in a time frame. Different definitions were not related to gender, length of smoking history, nicotine dependence level, nor lifetime quit history for any of the 3 terms investigated. Findings highlight the importance of clearly defined questionnaire items when assessing adolescent smoking change efforts.

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POS2-081 SELF-GENERATED SMOKING OUTCOME EXPECTANCIES PARTIALLY MEDiate THE RELATIONSHIP BETWEEN GENDER AND SMOKING BEHAVIOR IN ADOLESCENTS
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Expectancies serve key roles in smoking initiation. Because gender differences exist in adolescent smoking, the current study examined whether self-generated smoking outcome expectancies mediated the relationship between gender and smoking behavior among 350 female and 315 male high school students. Students were classified as nonsusceptible nonsmokers, susceptible smokers, experimenters, and current smokers. Analyses examined the associations between gender and smoking; gender and expectancies; and, expectancies and smoking; as well as whether expectancies mediated the gender-smoking relationship. All analyses controlled for grade, race/ethnicity, and peer smoking. Ordinal logistic regression analyses indicated that boys were more likely to be current smokers and less likely to be nonsusceptible nonsmokers (OR=1.69, p=.0005). Boys were more likely to associate smoking with buzz, pleasure, taste/smell impairment) and five negative (negative social, causes negative mood, cost, endangers/disturbs others, taste/smell impairment) expectancies, the strength of the gender-smoking relationship declined (OR=1.38, p=.04). Findings indicate that self-generated expected outcomes for smoking partially mediate the relationship between gender and smoking behavior among high school students. The findings suggest that boys and girls have different motivators for initiating smoking, and prevention interventions might benefit from tailoring based on these differences.

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POS2-082 DIFFERENCES BETWEEN WEEKLY AND MONTHLY SMOKERS IN NICOTINE DEPENDENCE AND WITHDRAWAL SYMPTOMS AMONG SOUTH AFRICAN ADOLESCENTS
Saadhna Panday*, M.P.H., Hein de Vries, Ph.D., Robert A.C. Ruiter, Ph.D., Maastricht University, The Netherlands; Priscilla, S. Reddy, Ph.D., Medical Research Council, South Africa; and Erik Bergström, Ph.D., Umeå University, Sweden

The study describes the prevalence of and differences in nicotine dependence, withdrawal symptoms, and risk behaviour in a sample of male and female weekly and monthly smokers in South Africa. A cross-sectional study was conducted among a sample of 554 Grade 9 to 11 weekly and monthly smokers in the Southern Cape-Karoo Region. School selection was stratified by race and class. School selection was stratified by grade. The self-administered questionnaire assessed smoking behaviour, nicotine dependence using the FTQ, withdrawal symptoms using DSMIV criteria, depressive mood and risk behaviour. Differences between the gender groups and smoking status were analysed using covariance analyses. Weekly smokers displayed substantial levels of nicotine dependence with almost 11.6% of weekly smokers classified as highly dependent. Over one in two smokers reported two or more withdrawal symptoms. Although dependency levels and withdrawal symptoms were higher among weekly smokers, the levels were not negligible among monthly smokers. Weekly smokers reported higher levels of dependence and risk behaviour than monthly smokers. Females reported higher levels of nicotine dependence, withdrawal symptoms, depression and lower levels of risk behaviour than males. No gender differences were found on the number of cigarettes smoked in the past week. Cognitive-behavioural smoking cessation programmes must also focus on nicotine dependence, withdrawal symptoms and consider pharmacotherapy for highly dependent adolescent smokers. Prevention programmes must provide non-daily smokers skills to identify and cope with withdrawal symptoms. The higher levels of dependence and withdrawal symptoms reported by females may require a gender-sensitive approach. Furthermore, findings on nicotine dependence from a six European country smoking study (ESFA) will be also discussed.

This study was completed while the first author was at the Medical Research Council (MRC), South Africa. The study was funded by the MRC. The ESFA project was financed by a grant from the European Commission (The Tobacco Research and Information Fund; 96/IT/13-B96Soc96201157).

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POS2-083  MENTHOL ADOLESCENT CIGARETTE SMOKERS: TIME TO FIRST CIGARETTE

Charles C. Collins*, B.A. and Eric T. Moochian M.D.

TATRC, NIDA IRP, NIH, DHHS; Baltimore, MD Menthol smoking is thought to contribute to the addictiveness of smoking. Given the high prevalence of menthol smoking among youth, the aim of the current analysis was to examine the time to first cigarette of the day (TTF), a commonly used clinical marker among both menthol and non-menthol adolescent smokers. Data for the current analysis were collected from a telephone screen used to recruit adolescent smokers for a cessation treatment study. Of 572 adolescent smokers (mean age 15.8 SD:1.8; 55.1% female; 46.9% African American, 48.2% European American, 4.9% other), 531 smoked menthol cigarette and 41 smoked non-menthol as their usual brand. Independent t tests revealed a significantly shorter TTF of the day (Mean ± SD) 26.5 ± 23.3 vs. 32.9 ± 22.2 pc 0.043), but no significant difference in cigarettes per day (CPD) (12.2 ± 8.5 vs. 11.4 ± 8.8 pc 0.28) or FTND scores (3.4 ± 1.4 vs. 3.2 ± 1.3 pc 0.22) in the menthol compared to the non-menthol smokers. While preliminary, this dissociation suggests that adolescent menthol cigarette smokers show greater dependence on nicotine than non-menthol smokers not captured by CPD and FTND. Further study in a larger adolescent sample is warranted to elucidate the mechanisms (e.g., decreased harm perception, higher puff volume, higher nicotine content, decreased nicotine metabolism) underlining the effects of menthol smoking for youth. Supported by NIDA intramural funds.

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POS2-084  THE RELATIONS BETWEEN PARENTS’ SMOKING, GENERAL AND SMOKING-SPECIFIC PARENTING PRACTICES, AND ADOLESCENTS’ SMOKING


The present study examined whether the associations between general parenting practices (i.e., support, strict control and psychological control) and parental smoking on the one hand and older and younger siblings smoking on the other hand were mediated by smoking-specific parenting practices, i.e., the frequency of parent-child communication and the quality of communication concerning smoking-related issues. Parent-child communication usually the only risk factor of many diseases that can be at the same time easily eliminated.

POSTER SESSION 2

CONCLUSION: The School of Public Health has developed a graduate certificate program for masters and doctoral public health students that focuses on tobacco prevention and control.

METHODS: 1. Development and implementation of a 28-unit curriculum at Loma Linda University School of Public Health comprised of the following: a. Adaptation of six public health core course to reflect the new discipline; b. Development of three new, sequential specialized courses emphasizing principles and practice; 2. Conversion of all courses into an online format to facilitate distance learning. Results: To date, in this 3-year program (June 2002-May 2005), six existing courses have been adapted to integrate tobacco content and converted into an online format. The three new courses are presently being converted into an online format. The certificate program will be formally offered beginning Fall 2004.

CONCLUSION: The School of Public Health has developed a graduate certificate in tobacco prevention and control methods which will be offered both on-campus and online. Graduate education in this discipline could serve as a model and springboard for tobacco prevention education in USA and globally.

Emmanuel Rudatsikira*, Jayakaran Job, Linda Ferry, Floyd Petersen, Pramil Singh, and Synnove Knutsen

INTRODUCTION: According to the World Health Organization, tobacco use is the second major cause of mortality in the world. It is currently responsible for the death of one in ten adults worldwide (about 5 million deaths each year) and over 400,000 deaths in the USA alone. To date, there is no formal graduate level program in tobacco prevention and control methods in this country.

PURPOSE: To develop a graduate level certificate program for masters and doctoral public health students that focuses on tobacco prevention and control.

METHODS: 1. Development and implementation of a 28-unit curriculum at Loma Linda University School of Public Health comprised of the following: a. Adaptation of six public health core course to reflect the new discipline; b. Development of three new, sequential specialized courses emphasizing principles and practice; 2. Conversion of all courses into an online format to facilitate distance learning. Results: To date, in this 3-year program (June 2002-May 2005), six existing courses have been adapted to integrate tobacco content and converted into an online format. The three new courses are presently being converted into an online format. The certificate program will be formally offered beginning Fall 2004.

CONCLUSION: The School of Public Health has developed a graduate certificate in tobacco prevention and control methods which will be offered both on-campus and online. Graduate education in this discipline could serve as a model and springboard for tobacco prevention education in USA and globally.

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POS2-088  CERTIFICATE OF TOBACCO PREVENTION AND CONTROL: A NEW APPROACH TO EDUCATE HEALTH PROFESSIONALS

Emmanuel Rudatsikira*, Jayakaran Job, Linda Ferry, Floyd Petersen, Pramil Singh, and Synnove Knutsen

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POS2-087

AMBODIAN MEDICAL STUDENT BELIEFS ABOUT TOBACCO USE

Sovann Sin*, Bunty Chengi, Ohordaphe A Chhea, Bunty Chiv, Limiy Heng, Cheng Sour Ou, Vittant Sung, Chourn Thou, Tanrathy Tuy, and Suzanne Montgomery

Tobacco use is increasing in Cambodia. Cambodian health professional schools provide limited prevention and tobacco-related training. Evidence suggests that support from health professionals is crucial for implementing successful tobacco control. Understanding health-professional trainees tobacco-related attitudes is seen as an important step toward changing the future of tobacco control in Cambodia. Focus group discussions were conducted with 10 female and 14 male students from pharmacy, dentistry and medicine by tobacco leadership trainees. Using standard focus group methodology, open-ended questions based on the Theory of Planned Behavior guided free-flowing discussions. Responses were audiotaped, transcribed verbatim and analyzed for emerging themes using Grounded Theory methodology. None of the participants currently smoke and they expressed negative feelings toward tobacco use. Six themes emerged: 1) the existence of traditional cultural beliefs around smoking, i.e. using tobacco for mosquito control; 2) strong cultural and peer pressure on males to smoke; 3) increasing presence and influence of tobacco advertising; 4) sentiments that health care providers are important role models with unique opportunities to encourage tobacco-free lives; 5) need for tobacco-related training curricula in health professions; 6) lack of smoke-free regulations in health care facilities. Students were enthusiastic to become part of a movement toward tobacco prevention and intervention. It was recommended that successful tobacco control programs should foster collaboration between relevant sectors, lobby for a ban of tobacco advertising, promotions and sponsorships, and work toward policies and laws enforcing tobacco control. A need for more training of healthcare professionals in communicating tobacco control messages to their patients was expressed.

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POS2-089

AN EXPLORATION OF CAMBODIAN HEALTH PROFESSIONAL’S TOBACCO CONTROL ATTITUDES

Anothay Kongsayasak*, Sovann Sin, Jason Oh, Linda Ferry, Synnove Knutsen, Pramil Singh, Jayakaron Job, Emmanuel Rudatsikira, and Floyd Petersen

BACKGROUND: From 1999-2003, Frank et al. implemented a Healthy Doc–Healthy Patient study (HDHP) of 17 U.S. medical schools to study the association between medical students’ lifestyle practices (including tobacco use) and their preventive counseling beliefs. METHODS: A similar protocol was used for students in Cambodian and Laotian medical schools. A modified version of the HDHP that explored tobacco use and prevention counseling issues was created using input from a focus group of 24 Cambodian medical students. Included were items similar to the Global Health Professional’s Survey planned for 2004-5 by WHO. The instrument was translated into Cambodian (Khmer) and Laotian and pre-tested with health professionals from both countries. The 87-item questionnaire will be completed by 360 Cambodian and 480 Laotian medical students in their third through sixth years during the fall of 2004. Self-reported tobacco use will be confirmed with carbon monoxide testing, and the third year class will repeat the questionnaire both in 2006 and prior to graduation in 2008.

RESULTS: Cambodian medical student focus groups indicate they have strong views about health professionals as non-smoking role models. None of the medical students or pre-test subjects were current smokers, possibly due to self-selection bias. Cross-sectional prevalence of student tobacco use and its relationship to prevention counseling beliefs will be presented by country, class and gender.

DISCUSSION: This is the first study to compare tobacco use and other lifestyle practices of health professional students in the Western Pacific Rim. Initial results indicate that smoking is viewed negatively by medical students and health-care professionals in these countries and they desire curricular changes to provide better tobacco intervention skills.

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POS2-090

MEETING THE NEEDS OF SMOKING CESSATION IN MAINLAND CHINA: A STUDY OF THE NURSES KNOWLEDGE, ATTITUDES AND CLINICAL PRACTICE

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OBJECTIVES: To study the first known data of tobacco control knowledge, attitudes, and practice (KAP) of nurses in Mainland China, and examine factors associated with their smoking cessation counseling practice in the work setting.

METHODS: A cross-sectional survey was conducted in four major cities (Beijing, Shanghai, Guangzhou and Chongqing) in Mainland China from Nov to Dec 2003. All registered nurses working in the affiliated hospitals of five university Schools of Nursing were invited to complete a self-administered questionnaire.

RESULTS: A total of 2179 out of 2239 returned (97.3%) and 1690 completed the entire questionnaire. About 99.1% were females, 76.2% aged from 21 to 30 years old, 42.6% married, and 8.2% had received training in smoking cessation counseling interventions. Of 31 items, the mean knowledge score is 19.12, SD=3.89. Most (71.5 96.9%) agreed nurses have an important role in conducting smoking cessation interventions to patients. Among the 5 As, nurses practised smoking advice (28.3 53.6%) more frequently than ASK (12.5 26.3%), ASSESS (18.3 20.6%), ASSIST (9.7 27.4%), and ARRANGE (4.6 20.4%) in the past 12 months. Nurses who received training in smoking cessation were more likely to perform smoking cessation interventions to patients. Among the 5 As, nurses practised smoking advice (28.3 53.6%) more frequently than ASK (12.5 26.3%), ASSESS (18.3 20.6%), ASSIST (9.7 27.4%), and ARRANGE (4.6 20.4%) in the past 12 months. Nurses who received training in smoking cessation were more likely to perform smoking cessation interventions to patients. Nurses with more experience were more likely to perform smoking advice (28.3 53.6%) more frequently than ASK (12.5 26.3%), ASSESS (18.3 20.6%), ASSIST (9.7 27.4%), and ARRANGE (4.6 20.4%) in the past 12 months. Nurses who received training in smoking cessation were more likely to perform smoking cessation interventions to patients. Among the 5 As, nurses practised smoking advice (28.3 53.6%) more frequently than ASK (12.5 26.3%), ASSESS (18.3 20.6%), ASSIST (9.7 27.4%), and ARRANGE (4.6 20.4%) in the past 12 months.

CONCLUSION: Nurses have some knowledge in, and positive attitudes towards, smoking cessation. The proportion of nurses practising smoking cessation interventions varies in the 5 As, and training in smoking cessation counseling for nurses so as to influence practice, are much needed in Mainland China.

CORRQR Sami Project Fund, The University of Hong Kong.

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POS2-091  CHINESE PHYSICIAN KNOWLEDGE, ATTITUDES, AND PRACTICES REGARDING SMOKING

Yuan Jiang*, M.D. M.P.H., Michael Ong, M.D. Ph.D., and Teh-wei Hu, Ph.D.

BACKGROUND: China has the highest number of smokers in the world. Physician recommendations against smoking are a mainstay of smoking cessation. There is no national data regarding Chinese physicians on the knowledge level of smoking harms, attitudes towards smoking behavior, and approach towards patients who smoke.

METHODS: We surveyed 3000 Chinese physicians from six cities on their knowledge, attitudes, and practices regarding smoking. The survey is based on the World Health Organization/United States Centers for Disease Control Global Health Professionals Survey, and modified to reflect Chinese culture and customs. Physicians were selected based on their hospital practice; hospitals in each city were stratified by size, and were randomly selected within size cohorts. All physicians within two of the selected hospital’s departments were surveyed.

RESULTS: Pilot study results from Shanghai physicians (all male) show that 30% currently smoke, and 65% ask patients about smoking status and advise cessation/reduction. Among physicians advising cessation/reduction, 27% set quit dates, 32% have never heard of nicotine replacement therapy (NRT) and only 2% prescribe NRT. Among those who know about NRT, only 50% believe it is effective. While 93% believe that secondhand smoke is a health hazard, only 45% believe that low tar/nicotine cigarettes reduce health risks. Full survey results will be presented.

CONCLUSIONS: Chinese physicians smoke less than the general population, and do ask and advise their patients about smoking behavior. Chinese physicians recognize secondhand smoke harms, but need more education regarding low tar/nicotine cigarettes and on approaches to help patients quit smoking.

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POS2-092  PDAS AND PRACTICE EXTENDERS: INTEGRATION OF 5-A TOBACCO USE INTERVENTION

Myra A. Crawford*, Ph.D., T. Michael Harrington, M.D., Toya V. Russell, Ph.D., and Brenda K. Baumann, M.D.

Using the national clinical practice guidelines 5-A model, a PDA-based tobacco use assessment and counseling tool was developed to prompt physicians to follow best practices at the point of care. The objectives were to: 1) integrate an evidence-based brief tobacco use intervention into daily clinical practice; 2) test the feasibility of using PDAs as both a data collection and referral mechanism; and 3) assess the utility of using practice extenders to support physicians in making physician-recommended behavior changes (i.e., quit smoking). A system of electronic data collection and transfer from remote sites was established. Following pilot testing, the PDA protocol was refined and a referral component added to augment the assist and arrange steps. Information related to addiction, risks, resistance to change, and pharmacotherapy was also added. Stage of change and consent were documented electronically. Of patients indicating readiness to change at the assess step, most (54%) chose the assistance of a practice extender who made initial telephone contact and followed up one week and one month post quit date (30% completion). PDA protocols may be cost-effective, easy-to-use tools for promoting healthy behaviors that can be easily integrated into routine care. In communities where cessation programs are not readily available, practice extenders may fill the void. The technical and logistical challenges involved in conducting this practice-based study and implementing this multicomponent system are described.

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POS2-093  SMOKING CESSATION PRACTICES AND SMOKING BEHAVIOUR OF DUTCH GENERAL PRACTITIONERS, CARDIOLOGISTS AND LUNG PHYSICIANS: A COMPARISON BASED ON NATIONAL SURVEYS

Daniel Kotz*, M.Sc. and Edwin J. Wagen, M.Sc., Maastricht University

The objective of this study was to assess the smoking cessation practices of Dutch physicians as well as their smoking behaviour. From May 2002 through January 2003, we conducted three national questionnaire surveys among a random sample of 2,000 general practitioners (GPs), all 584 cardiologists and all 375 lung physicians in the Netherlands. 758 GPs (response rate=37.9%), 299 cardiologists (50.3%) and 258 lung physicians (68.8%) filled out and returned the questionnaire. The proportion of physicians who reported to currently smoke cigarettes was twice as high in GPs (8.9%) than in cardiologists (4.3%) and lung physicians (3.5%). Lung physicians had advised more patients to stop smoking (M=39.8, SD=40.9) compared to cardiologists (M=24.3, SD=30.0, p<0.001). Cardiologists again had advised more patients compared to GPs (M=8.2, SD=8.4, p<0.001). One possible explanation for these differences is that physicians are more likely to give smoking cessation advice in patients who present themselves with smoking related diseases. Of the existing aids for smoking cessation, bupropion was by far the most popular among Dutch physicians: 67% of the lung physicians, 66% of the GPs and 32% of the cardiologists had prescribed bupropion during the preceding four weeks. The most frequently used behavioural intervention was providing self-help material (42%, 49% and 50% respectively). Low intensity counselling had only been provided by 27%, 32% and 25% of the physicians. These results suggest that Dutch lung physicians, GPs and cardiologists prefer smoking cessation interven- tions that are easy to use and are not time-consuming. This explanation is sup- ported by the finding that 69% of the lung physicians, 11% of the GPs and 25% of the cardiologists refer a smoker to a practice nurse or pulmonary nurse for further assistance during a quit attempt. Additionally to these results, we will present sub- group-analyses comparing the smoking cessation practices of smoking versus non-smoking physicians at the SRNT conference.

This study was supported by a grant from the Dutch “Partnership Stop-met-Roken”.

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POS2-094  DO AMERICAN PHYSICIANS ADVISE THEIR SMOKING PATIENTS TO QUIT?

William Feigelman

OBJECTIVES: With the elevated mortality rates among smokers and former smokers it would seem almost axiomatic for physicians to advise their smoking patients to quit, whenever opportunities are presented to discourage smoking per- sistence. Yet, it is not known whether American physicians regularly offer such advice to their smoking patients and whether there are differences in offering this advice varying with patient characteristics.

METHODS: In a cross-sectional trend study with data from the January 1996 and February 2002 Current Population Surveys, Tobacco Use Supplements, I ana- lyzed reports on current smokers being advised to quit by physicians and dentists and the patterns of getting such advice by race, gender, socio-economic and other differences (total n= 17,340).

RESULTS: By 2002, only 63 percent of physicians had advised their smoking patients to quit during their past years medical visits, and for dentists even fewer (32 percent) had offered similar advice to current smoking patients. Offering such quitting advice was also found to vary with a respondents age, gender, race and smoking frequencies.

CONCLUSIONS: Based on the evidence of past research, showing modest but unmistakable benefits from physician advice to quit smoking, it appears that American health care providers may be failing to take full advantage of the fertile opportunities they have to promote smoking cessation with their patients.

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ARE SMOKE-FREE BYLAWS RELATED TO PHYSICIAN PRACTICES REGARDING TOBACCO?

J. Charles Victor, M.Sc., Joan M. Brewster, Ph.D., Roberta Ferrence, Ph.D., Mary Jane Ashley, M.D., Michéle Tremblay, M.D., Joanna Cohen, Ph.D., and Peter Selby, M.D., Ontario Tobacco Research Unit, and Institut National de Santé Publique du Québec

Primary care providers have opportunities to improve child health by intervening with families of their child patients. We examined the association between smoke free policy environments and the professional practices of family physicians and pediatricians towards pediatric patients. A questionnaire on tobacco-related practices was mailed to 1600 Canadian family physicians and pediatricians (corrected response rate = 65%, n=926). Practices were compared between physicians in communities with strong smoke-free policies ( bans on smoking in restaurants and workplaces) and those in communities with weaker policies (no bans, or only in workplaces or restaurants). Logistic regression was conducted, controlling for specialty, practice years, sex, and community size. Regarding children with respiratory disease, the odds of asking smoking status of all or most parents were 1.61 times greater among physicians practicing in communities with strong bylaws (p=0.002). These physicians were also more likely to assist all or most smoking parents (OR: 1.45, p=0.036), and more likely to recommend the use of NRT to all or most smoking parents (OR: 1.92, p=0.006). However, they were not more likely to ask the smoking status of their general patient population (p=0.05). Nor were there differences in practice with parents of children without respiratory illness, or with smokers generally. Physicians practicing in communities with more comprehensive smoke-free legislation are more likely to address smoking among parents of their child patients with respiratory disease. This study was funded by the Hospital for Sick Childrens Foundation, Toronto, Ontario.

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SMOKING CESSATION IN PRAGUE CLINIC

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BACKGROUND: The prevalence of smoking is about 30% in the adult (15+) Czech population (10,000,000). Our smoking cessation clinic works in the frame of the faculty hospital in Prague, being not advertised publicly. We offer classic intensive treatment (psychobehavioural support + pharmacotherapy) according to recent guidelines.

METHODS: Between 1996-2003 we monitored 968 screening visits: 55.4% men (536/968), 44.6% women (432/968), aged 14 to 85 years, mean average age of the whole sample 48.3 years, SD±3.56. For more than one visit (second visit considered as baseline) came 539 patients. In this sample smoking status and level of nicotine dependence was assessed, as well as kind of pharmaceutical treatment and one year abstinence validated by CO in expired air.

RESULTS: Among our patients: mean age of the first cigarette was 17.5 years (SD±4.83). Mean age of regular smoking was 18.9 years (SD±5.64). Mean number of daily smoked cigarettes was 25.2 (SD±11.41). Mean FTND was 6.74 (SD±2.23). CO in expired air during baseline visit was 21.0 ppm (SD±11.02). Our patients used nicotine gum in 28 % (157/539), nicotine inhaler in 9 % (49/539), nicotine patch in 43 % (232/539), bupropion in 10 % (51/539), combination of 2 or more medication had 12 % (62/539) of them. After one year, 32.84 % (177/539) patients came, 23 % (124/539) were abstinent with CO in expired air 9 ppm or less. According to gender, abstinence rates were 26 % (79/309) for men and 20 % for woman (70/350). Mean number of visits was 4.59 during the year.

CONCLUSION: In our smoking cessation clinic, the abstinence rate was 23 % after one year - 26 % in men and 20 % in women.


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DOCTORS, MEDICAL FACULTIES, SMOKING CESSATION AND EPIDEMIOLOGY

Eva Kralikova*, M.D., Ph.D., Jiri Rames, RND, Patr Nesnidal, Charles University, First Faculty of Medicine

BACKGROUND: Doctors play key role in treatment availability and quality. Concerning tobacco dependence this role might be even bigger if this treatment is not included into the health care system in most countries.

METHODS: Continuing education in medical consequences and treatment of tobacco use on medical faculties, using assessment of smoking prevalence among health professionals as part of epidemiology training. Free choice of asking medical staff or patients different questions, sufficient numbers of respondents (in hundreds each year) for evaluation and comparisons. Collaboration of all 7 medical faculties in the country.

RESULTS: E.g. smoking prevalence (daily + occasional): among all health professionals decreased within 10 years, but is still high, even if lower than in the general population. Smokers (1994 and 2004) among doctors: male from 34 % to 30 %, female from 28 % to 19 %, nurses from 49 % to 39 %, medical students (5th year of study) from 20 % to 18 %. Data for continuous years are available.

CONCLUSIONS: Confrontation with doctors’ opinions and knowledge helps to motivate medical students to pay more attention to presented treatment guidelines during their study and later to tobacco use in their patients. Also, it is a possibility to follow constantly certain data (prevalence, knowledge, opinions) without financial resources.


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PHYSICIAN PROVISION OF INSTRUCTION AND COUNSELING WHEN PRESCRIBING NICOTINE REPLACEMENT THERAPY

Saul Shiffman, Ph.D., Stuart Ferguson*, Ph.D., University of Pittsburgh and Pinney Associates; and Stephen Hellebusch, Ph.D., Hellebusch Research & Consulting

Nicotine replacement therapy (NRT) medications are available without a prescription (OTC) in many countries. Some have expressed concern that OTC access to NRT may deprive smokers of instruction and counseling they might otherwise receive from a physician. To assess the value of physician involvement, we measured physician actions when prescribing NRT, using interviews with 939 smokers who had filled prescriptions for nicotine patch (n=669) or gum (n=324) in 1994, before gum and patch became available OTC. The smokers were ascertained from pharmacy records and interviewed about physician behavior either 6 weeks or 6 months after filling their initial prescription. According to reports from respondents, 86% actually saw the physician (patch: 85%; gum: 77%). However, substantial fractions of patients were prescribed the wrong dose of patch (24%) or gum (33%), and many patients did not receive physician guidance: Only 67% received instruction in use of NRT (patch: 72%; gum: 58%); only 50% were told about side effects (patch: 56%; gum: 37%); only 26% were given advice on how to quit smoking (patch: 31%; gum: 22%); only 23% had a follow-up conversation (patch: 25%; gum: 20%); and only 20% were advised to join a smoking cessation program (patch: 19%; gum: 21%). Only 3% (patch: 3%; gum: 3%) received all these elements. Only 3% of smokers (patch: 3%; gum: 3%) actually used counseling. These findings suggest that physicians did not typically perform the helpful behaviors often expected of or attributed to them.

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POS2-099  IMPROVING PHYSICIAN SMOKING CESSATION COUNSELING
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Despite widely available guidelines detailing evidence-based interventions for smoking cessation, physicians continue to fall short in delivering smoking cessation counseling to their patients. Goldstein et al found that a majority of community-based primary care physicians reported asking (67%) and advising (74%) their patients about smoking, but they consistently fell short in assisting (35%) or arranging (8%) follow-up with their smoking patients. Several studies have confirmed these low rates of ideal physician smoking cessation counseling and it demonstrates the need for innovative, dynamic, and accessible methods to translate and disseminate smoking cessation counseling information for use in physicians' offices. To address these deficiencies and attempt to improve them, we designed and created the Modular Lifestyle Intervention Tool (MLIT), a novel software program for handheld computers. We hypothesize that the MLIT will improve clinicians' ability to provide patient tailored counseling at the point of care. The MLIT's theoretical underpinning is the Transtheoretical Model (TTM) of health behavior change. The MLIT guides the identification of the patient's current stage and assists clinicians with staged-based smoking cessation counseling. Each stage is linked to scripted motivational interviewing (MI) and stage relevant clinical content. The tool also contains local and national resources for smoking cessation follow-up (i.e. National Cancer Institute's smoking quitline telephone number). The tool is being evaluated in a sample of 20 practicing physicians for a period of four months. Surveys were developed and validated to measure clinicians smoking cessation behaviors, attitudes, perceived self-efficacy in smoking cessation counseling, knowledge of the TTM, and smoking cessation guidelines. This survey will be administered before and after use of the MLIT. Results to be presented include (1) mean differences in clinicians smoking cessation behavior, attitudes, self-efficacy, and knowledge from pretest to posttest (dependent t-tests), and (2) validity and reliability of the pre/post test surveys.

This study was completed while the first author was at the University of Virginia. Supported by a Robert Wood Johnson Prescription for Health Grant #048036.

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POS2-100  DEVELOPMENT AND EVALUATION OF GUIDELINES FOR SMOKING CESSATION IN AUSTRALIAN GENERAL PRACTICE
R.L. Richmond*, N. Zwar, R. Borland, S. Stillman, M. Cunningham, and J. Litt

OBJECTIVE: To evaluate the use of the guidelines for smoking cessation in Australian general practice three months following training; to determine changes in the general practices; and ascertain barriers to use.

METHOD: We developed the smoking cessation guidelines which are evidence based, informed by experience in other countries (US, UK, NZ) and our experience of smoking cessation in Australia. Guidelines link general practice advice to Quitline. Fourteen general practitioners were trained in the guidelines and participated in the evaluation from NSW, Victoria, Queensland, ACT, Northern Territory and Western Australia. They represented a range of practice types and patient groups. Evaluation of the guidelines was conducted pre training and at three months.

SUMMARY OF RESULTS: 55 staff from general practices participated: 28 GPs, 11 practice nurses, 12 Aboriginal health workers and 3 counsellors/students. 81% were using the guidelines at 3 months with 19% using them every day, and 14%, 3 to 4 times a week, 41.5% implemented changes in their general practices and had identified roles for the practice staff in smoking cessation. Most useful aspects of guidelines were: allocating smokers to stage of readiness to change, referral to the Quitline, identifying smokers, providing information on pharmacotherapies, and advice about quitting. GPs' confidence levels to engage in smoking cessation significantly improved from baseline to 3 months. The most common barriers to implementing the guidelines at 3 months were: too busy, the guidelines seemed to take up too much time, patients are not responsive to advice.

DISCUSSION: We found a high rate of use of the guidelines at 3 months and changes in confidence in providing smoking cessation advice in general practice. The guidelines provide a link between GP advice and the Quitline. We hope that use of the guidelines becomes standard practice, much the same as other preventive activities.

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POS2-103  
**EFFICACY OF HEALTH PROVIDER CESSATION ADVICE: A META-ANALYSIS**

S. Sheinfeld Gorin* and J. Heck

Given the proportion of American adults who smoke, even if health professionals only have a small impact on quit rates, the public health impact of this change could potentially be enormous. Yet, health care providers may differ in their cessation effi-
cacy. The purpose of this study was to evaluate recent rigorous trials of smoking cessation counseling among physicians, nurses, dentists, and teams of providers; (1) to compare providers on the efficacy of cessation, and (2) to determine which intervention and study characteristics explain variations in intervention effects. Thirty seven randomized clinical trials or quasi-experiments (with control groups) of health care provider-delivered smoking cessation interventions, out of over 200 articles that were published between 1990 and 2004 were collected through searches of Medline, CINAHL, PSYCINFO, and dissertation abstracts, as well as hand searches. The outcome modeled was the mean difference between inter-
vention and control groups in the cessation rates using Hedges g. The univariate results revealed that receiving advice from any health care professional produced increases in quit rates. Multivariate analyses of intervention effects on cessation revealed that physicians were most effective, followed by multi-provider teams, dentists, and nurses. The findings suggest that contact with a health care profes-
sional will increase cessation; however, additional training in tobacco control for nurses is warranted. Longer-term studies of smoking cessation, particularly among dentists, are necessary.

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POS2-104  
**HOW DENTISTS APPLY THE 5 AS AND 5 RS OF THE CLINICAL PRACTICE GUIDELINE IN THEIR TOBACCO CESSATION COUNSELING?**

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Little is know about practical applications of the 5 As (for those willing to quit) and 5 Rs (for those unwilling to quit) of the U.S. Clinical Practice Guideline for tobacco use cessation counseling. This study examined how often and what types of den-
tists engaged in the 5 A- and 5 R-type cessation counseling. A mailed survey to 1,500 Texan dentists yielded 782 responses. Ten questions measured the 5 A and five questions the 5 R concepts on the 5-point Likert scale. Three factors: Inquiry about tobacco use, (2 A items, alpha = .91), Education about tobacco use (2 A and 3 R items, alpha = .92); and Support for cessation attempts (6 A items, alpha = .83) explained 69% of the variance. The time dentists spent for counseling was short-
est for Inquiry and longest for Support. About 42% of dentists inquired, 36% edu-
cated, and 2% supported their patients usually or always. The most salient dentist feature in the Inquiry factor was high self-efficacy to ask about tobacco use. Addi-
tional dentist features in the Education factor were positive attitudes about tobacco use cessation and past success in counseling. High confidence to advise smokers, greater knowledge about counseling, and previous counseling success characterized the Support factor. Only a minority of the dentists were involved in any type of cessation counseling. Findings support the Guideline but dentists edu-
cational counseling did not differentiate between the A- and R-types activities. Dentists increased self-efficacy to counsel correlated positively with all types of counsel activities.

This research was supported by a grant from the Texas Department of State Health Services.

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POS2-105  
**DENTISTS TOBACCO USE CESSATION COUNSELING AND AWARENESS OF A TELEPHONE QUITLINE DURING A COMMUNITY INTERVENTION**

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One component of the comprehensive tobacco control intervention of the Texas Tobacco Prevention Initiative (TTPI) in East Texas targeted health care providers. Those in the intervention area were urged to utilize the principles of the 5 As and 5 Rs from the Clinical Practice Guideline in cessation counseling and refer tobac-
co-using patients to the American Cancer Society telephone quitline. A principle component analysis on survey data obtained from 783 dentists (response rate = 54%), who represented equally the intervention and control areas of the TTPI, revealed that the 15 items assessing the 5 As and 5 Rs formed three stable fac-
tors which meaningfully described dentists counseling activities among all adult patients: 1) Inquiry for tobacco use; 2) Education about tobacco use; and 3) Support for cessation attempts. Applying the usually or always criterion, 43% of dentists inquired for tobacco use, 35% educated about tobacco use, and 2% sup-
ported patients who were willing to quit. Only 19% of dentists in the intervention and 12% in control areas knew about the quitline. However, awareness of the quit-
line increased significantly dentists Education and Support counseling but only in the intervention area. Quitline awareness had no effect on Inquiry in either areas. Dentists inquired and educated less than half of their patients. Their support for quitting was minimal. The TTPI intervention approach that awareness of the quit-
line mediated dentists counseling activities was confirmed.

This research was supported by a grant from the Texas Department of State Health Services.

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POS2-106  
**NEEDS ASSESSMENT FOR TOBACCO CESSATION EDUCATION/TRAINING FOR COLLEGIATE DENTAL HYGIENE STUDENTS**

Joan M. Davis*, R.D.H., M.S., and Margaret S. Stockdale, Ph.D., Southern Illinois University Carbondale

The need for inclusion of comprehensive tobacco control education/training for healthcare providers continues to be stressed in publications addressing cessation services. The dental examination and cleaning presents an excellent opportunity to provide tobacco interventions to basically healthy people on regular intervals. In addition, the evidence of tobacco use in the oral cavity both smoked and smoke-
less can provide unique, patient-specific feedback. This needs assessment, con-
ducted during the 2004 academic year at a collegiate dental hygiene clinic, assessed the level and type of cessation intervention patients (n=395) might require. Of patients who currently smoked (32%), 24% indicated being in the Action stage of change; 17% were in Preparation, 23% were in Contemplation and 36% were in Pre-contemplation. A state-wide sample of dental hygiene educators (n=71) were surveyed concurrently to determine the attitudes, perceived barriers, and current practices in tobacco education offered in their programs. Although fac-
ulty indicated tobacco education was very important (5.06 on 1-6 scale), they felt moderately confident delivering tobacco education (3.16 on 1-5 scale). Only 25% of faculty reported that their curriculum included brief motivational interviewing, pharmacotherapies or setting-up a private practice tobacco control program. The results strongly suggest the need for a comprehensive tobacco curriculum to enhance and expand existing dental hygiene program to include tobacco cessa-
tion support for tobacco-users seeking care.

This study was conducted at Southern Illinois University Carbondale. Supported by a grant from the American Cancer Society, Illinois Division #3-1262 and from the Illinois Department of Public Health.

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POS2-107  
DETERMINANTS OF TIME DENTISTS SPEND FOR TOBACCO USE CESSATION COUNSELING


Tobacco use significantly worsens oral health status and treatment outcomes. Time dentists dedicate to cessation counseling with patients is part of the successful cessation counseling. We examined how dentists’ knowledge, attitudes, and self-efficacy about cessation counseling and previous experiences with helping patients to quit were related to the time dentists used for cessation counseling. Counseling and related behaviors were assessed in a random sample of 783 full-time dentists in Texas in 2007. The most common specialty was general dentistry, followed by orthodontics, oral surgery, periodontics, and endodontics. No differences were found between the respondents and non-respondents. The mean time dentists consulted about tobacco use was 1.4 (sd=1.4) minutes per visit, varying significantly (p<0.003) by specialty. Endodontists used only 0.4 minutes when compared to periodontists and oral surgeons spent 1.6 minutes, the first dentists variable which entered into a stepwise linear regression model to explain counseling time, self-efficacy to advise to quit, explained 36.9% of the variance. Previous experiences in helping patients increased the explained variance by 5.4% and the attitudes about counseling by 3.1%. Knowledge about cessation and outcome expectations to advise contributed 1.6% and 0.5%, respectively. Periodontists were consistently the most active in counseling activities. The time dentists spent in cessation counseling was inadequate for appropriate counseling which was mostly related to dentists’ high self-efficacy to advise to quit, positive counseling experiences, and positive attitudes to counsel. Earlier findings showing that periodontists are superb counselors were replicated. No Funding.

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POS2-109  
DEVELOPMENT OF A CLIENT-CENTERED TOBACCO BRIEF INTERVENTION TRAINING FOR HEALTH INFILUENCERS

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Cessation training strategies have focused on healthcare providers, overlooking the much broader range of human services providers (Health Influencers). Despite this healthcare provider focus, rates of cessation assistance remain low. Non-medical health influencers could significantly advance tobacco control efforts at the community level. We present the design and development of an innovative brief intervention curriculum for non-medical interveners. In-person and web-based curricula for brief tobacco cessation interventions were developed in parallel for Project Reach, a randomized controlled trial comparing the effectiveness of both training models. Formative research included six focus groups with members of the target audience of health influencers (social workers, behavioral health clinicians, religious leaders and volunteers, police/corrections officers, and teachers). A training curriculum was developed with an emphasis on strategies to overcome barriers to quitting and intervening and enhancing motivations to intervene. Health influencers reported a willingness to intervene with tobacco users. Barriers included fear of confrontation, lack of time, and limited skills. Core training areas identified included: client-centered approaches, motivational strategies, social modeling and skill-building. Our formative research supports the need to develop and teach a less prescriptive approach for Health Influencers to conduct brief tobacco cessation interventions. Project Reaches community-based approach to brief intervention training has the potential to activate diverse populations of previously overlooked interveners. This client-centered brief intervention training also has potential applications in multi-channel community-based interventions, international tobacco control and promotion of other healthy behaviors.

Funding: National Cancer Institute.

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POS2-108  
IMPLEMENTATION OF THE 5 A’S OF CESSATION COUNSELING IN DIFFERENT DENTAL SPECIALTIES


Dentists are in a good position to counsel patients about tobacco use since visits are long, tobacco use compromises good oral health and hygiene, and cessation improves outcomes of dental treatments. The federal Clinical Practice Guideline recommends the use of a sequential set of the 5 A’s for tobacco use cessation counseling. This study examined their implementation and variation by dentists’ specialty. Using the 5-point Likert scale (1=never, 5=always), the implementation of the 5 A’s was assessed in a random sample of 783 dentists in Texas in 2003 among whom the dominant dental specialty was general dentistry, followed by orthodontics, oral surgery, periodontics, and endodontics. The first A, ask about tobacco use, showed that 53% of dentists usually or always engaged in this behavior. Asking frequency among periodontists and oral surgeons surpassed the mean. The prevalence of the second A, regularly advising patients to quit, was 63%. Periodontists and general dentists exceeded the average advising activity. Overall 38% of all dentists engaged regularly in the third A activity, assessing readiness to quit. The most active specialists were periodontists and general dentists. The prevalence of the fourth A, regularly assisting tobacco-using patients in quitting, was 27%. Assisting among periodontists, general dentists, and oral surgeons was above the mean. Only 5% of all dentists arranged regularly the fourth A, arranging was equally low in all specialties. In sum, dentists’ involvement in the 5 As is still low especially in orthodontics. Periodontists were consistently the most active counselors. No Funding.

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POS2-110  
PSYCHOMETRICS OF INSTRUMENTS USED TO EVALUATE BRIEF INTERVENTION TRAINING IN NON-HEALTHCARE PROVIDERS

Myra Muramoto*, M.D., M.P.H., Jean Campbell, B.A., and Mary Z. Mays, Ph.D., University of Arizona, Dept. of Family and Community Medicine

Training for brief interventions for tobacco cessation has largely targeted healthcare providers. This health care focus has overlooked a much broader audience of potential interventionists providing other human services (health influencers). There has been little research into models of cessation training for non-medical health influencers and their potential role in disseminating brief interventions. Project Reach, a randomized controlled trial comparing the efficacy of classroom and web-based training models required instruments to measure longitudinal changes in knowledge, attitudes, behaviors, and implementation of brief interventions for tobacco cessation. Instrument development involved: (1) health influencers (e.g. educators, clergy, social service workers, law enforcement), (2) subject matter experts (SMEs) in the fields of tobacco cessation, curriculum development, health behavior interventions, and public health (from academic and non-academic settings), and (3) a curriculum development team. Face validity was established by analysis of pilot data and formative research with the target audience. Reviews of instruments by panels of national and local SMEs provided content validity indices. Internal consistency, reliability, and construct validity indices were established through systematic usability testing to improve clarity, timing, and relevance of instructional sets. Intervention training appropriate for non-medical health influencers substantially expands the range of potential interventionists and requires suitable evaluation instrumentation. Iterative instrument development prevented redundancy in revision, while allowing for flexibility in design and content. The resulting instrumentation provides reliable and valid measures of knowledge, attitudes, behaviors, and implementation of brief interventions for tobacco cessation.

Funding: National Cancer Institute.

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POS2-111  PRACTICES OF CANADIAN FAMILY PHYSICIANS AND PEDIATRICIANS IN ADVISING PARENTS WHO SMOKE
Joan M. Brewster*, Ph.D., Roberta Ferrence, Ph.D., J. Charles Victor, M.Sc., Mary Jane Ashley, M.D., Joanna Cohen, Ph.D., Peter Selby, M.D., Ontario Tobacco Research Unit, University of Toronto; and Michele Tremblay, M.D., Institut National de Santé Publique du Québec.

Exposure to second-hand smoke (SHS) in homes has well-established health consequences for children; pediatricians and family practitioners are ideally positioned to address smoking by parents in homes with children. Advice from physicians is effective in reducing smoking in homes, and parents and caregivers are open to such advice. Nevertheless, there is little research on the extent to which physicians intervene to protect children from SHS. A detailed questionnaire on tobacco-related role perceptions and practice was mailed to 1600 Canadian family physicians and pediatricians. The corrected response rate was 65%. More than 80% of respondents agree they have a major role in identifying parents who smoke when patients are children, and in advising on the reduction of SHS in homes. However, pediatricians are less likely than family practitioners to perceive that they have a major role in advising and following up to help household members quit. Role perceptions are reflected in practice: pediatricians are more likely than family practitioners to advise parents of child patients to cut down or quit smoking, but less likely to take specific steps to help parents quit. Both family practitioners and pediatricians have the potential to improve their tobacco-related practice with parents. Differences in practice patterns suggest that change efforts should be tailored to individual specialties. This study was funded by the Hospital for Sick Children’s Foundation, Toronto, Ontario.

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POS2-112  HOUSEHOLD RULES AROUND REDUCING ENVIRONMENTAL TOBACCO SMOKE (ETS) EXPOSURE: A QUALITATIVE STUDY OF COUPLES WITH YOUNG CHILDREN
Kim Bercovitz*, Ph.D., Joanna Cohen, Ph.D., Roberta Ferrance, Ph.D., Rebecca Hawes, M.Sc., Bake Poland, Ph.D., Peter Selby, M.B.B.S., Donna Stewart, M.D., and Saman Wickramasinghe, M.Sc.

OBJECTIVES: To examine the household as a setting for establishing non-smoking arrangements.

METHODS: Semi-structured interviews were conducted in 21 households with male/female couples and newborn children. Interviews focused on exploring how couples negotiate non-smoking household rules and how issues of gender, class and power influence the establishment of and adherence to ETS control measures. Results: The establishment of non-smoking arrangements within households is not an overt source of conflict between male and female partners who become parents. Couples expressed anticipatory concerns about social modeling of smoking in front of pre-schoolers; this provided an incentive to adhere to non-smoking rules. ETS control measures vary depending on the smoking partner’s history and level of tobacco use, and are influenced by the type of home, neighbourhood location, and extended family arrangement in which the couple family lives. There were also notable differences in the establishment of tobacco smoking rules in the home according to social class, cultural background, type of cohabitating relationship and single vs. extended family living arrangement. CONCLUSION: Tobacco control in the home should be located within the context of family dynamics. Households vary in their norms and expectations about the control of ETS exposure. Broader issues of gender and power do come into play when negotiating non-smoking rules within the context of the male/female partnership. Priority must be given to understanding how unique aspects of both the “couple” relationship and extended family dynamics inform ETS control and harm reduction practices. Overall, while there was support for increased public health information and education to reduce childrens exposure to ETS, the majority of respondents were wary of policy approaches that would position ETS as a child neglect or protection issue. This study was funded by the Canadian Tobacco Control Research Initiative.

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POS2-113  SECONDHAND SMOKE TARING FAMILIES APART: THE HEALTH AND ECONOMIC BURDEN OF SMOKING ON CHILDREN
Cheryl Healton*, M.D.H., Molly Green, M.P.H., Matthew Farrelly, Ph.D., Jane Allen, M.A., and Donna Vallone, Ph.D., M.P.H.

OBJECTIVE: Nearly 6.5 million American children alive today will die prematurely from tobacco-related illnesses if current trends in tobacco use persist. Through passive exposure to secondhand smoke (SHS), newborns, infants, and children are at risk for consequences such as low birth weight (LBW), sudden infant death syndrome (SIDS), asthma, and ear infections. This study reports the health and economic impact of reductions in tobacco use and childrens SHS exposure.

METHODS: Using national data and published literature, we estimated the number of smoking-attributable LBW, SIDS, asthma, and ear infection cases. Using a spreadsheet simulation, we calculated annual and cumulative reductions in LBW and SIDS cases. To determine reductions in asthma and ear infections cases, we used a standard epidemiologic formula for attributable fraction. Associated costs savings were estimated for LBW, asthma, and ear infections. Costs were not associated with SIDS.

RESULTS: In 2001, tobacco use was responsible for 26,308 LBW births, 263 SIDS deaths, 291,467 asthma cases, and 99,069 cases of ear infection. Treatment these illnesses cost over $585 million. An annual 1 percentage-point reduction in SHS exposure would lead to 2,263 fewer LBW births, 19,077 fewer asthma cases, 6,755 fewer ear infection cases, 21 fewer smoking-attributable SIDS deaths, and an associated savings of nearly $46 million. Meeting long-range smoking reduction goals outlined in Healthy People 2010 would result in far fewer deaths and cases of illness and a savings of $253 million.

CONCLUSIONS: Reductions in SHS exposure would spare thousands of children from illness and death while saving governments millions of dollars in medical costs.

American Legacy Foundation.

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POS2-114  SPOUSAL SMOKING — AN ADEQUATE PROXY FOR SECOND HAND SMOKE EXPOSURE IN EPIDEMIOLOGICAL STUDIES?
Richard Edwards*, University of Manchester MPH; Rohit Gumber, University of Manchester Medical School; Ruth Wood, and Tanje Pless-Mulloli, The University of Newcastle

Early studies investigating health effects of second hand smoke (SHS) exposure focused on spousal smoking. Current studies usually include more comprehensive exposure assessment. A recent negative study using ACPS I data assessed SHS exposure using spousal smoking status at baseline. The authors argued that subjects with smoking spouses had greater lifelong SHS exposure, justifying its use as an exposure measure. We tested the hypothesis that spousal smoking is an adequate proxy for total SHS exposure. Participants (526, mean age 65 years) were ever married subjects from a study investigating environmental causes of lung cancer among women from Teesside in the UK. Detailed, life course data were collected during structured interviews on regular exposures to SHS in domestic, workplace and social settings. We calculated summary measures of lifelong regular SHS exposure by source (smoker years) and setting (exposure years). Spousal smoking was uncorrelated (kendall tau-b, +0.01, p=0.72) with domestic non-spousal smoker years exposure, and weakly correlated with exposure years workplace and social SHS exposure (+ 0.09 to 0.13, p<0.01). Most women without spousal SHS exposure had exposure to other domestic SHS (85%), workplace SHS (91%), and social SHS (93%). Seventy-two percent 20 smoker years non-epidemiological studies.

CONCLUSION: Spousal smoking was not an adequate proxy measure of overall SHS exposure. Using spousal smoking status as the main indicator of SHS exposure will result in exposure misclassification and will usually bias estimates of association towards the null.

The Fight Against Cancer Trust James Cook University Hospital Lung Fund Tends Heath Action Zone.

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POS2-115  EXPOSURE TO SHS BY SOCIO-ECONOMIC STATUS IN WOMEN FROM TEESSIDE, UK
Richard Edwards*, University of Manchester; Rohit Gumber, University of Manchester, Medical School; Ruth Wood, and Tanja Pless-Mulloli, University of Newcastle

Current exposure to second hand smoke (SHS) is greater among children and adults of lower socio-economic status (SES). We aimed to describe cumulative, life course SHS exposure and its variation by SES among older women in the UK. Participants (339, mean age 65 years) were community controls from a study investigating environmental causes of lung cancer on Teesside, UK. Life course data were collected on regular exposures to SHS in domestic, workplace and social settings; and on subjects occupational & residential histories; education; car ownership; indicators of childhood hardship; and parental and spousal social class. We constructed life course cumulative measures of SHS exposure (e.g. smoker pack years of exposure) and SES (e.g. number of main residences with rented tenure). Over 90% of subjects were exposed to SHS in each setting. There were gradients in life course domestic SHS exposure for all SES measures except child- hood hardship. The difference in domestic smoker pack years of exposure for the highest and lowest SES groups were 21.3 (95% CI 7.1 to 32.8) years for life course housing tenure and 15.8 (7.1 to 24.5) years for life course social class. Domestic SHS gradients by SES were mostly attributable to differences in spousal SHS exposure. SES gradients in social SHS exposure were generally less pronounced and less consistently present, and were largely absent for workplace SHS expos- ure. The study demonstrated that SHS exposure was almost universal among older women on Teesside. Domestic SHS exposure, and to some degree social SHS exposure were strongly related to SES. Exposure to SHS is a potential con- tributor to health inequalities.

The Fight Against Cancer Trust with additional contributions from the James Cook University Hospital Lung Fund, and Tees Health Action Zone.

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POS2-116  EXPOSURE-RESPONSE RELATION BETWEEN ENVIRONMENTAL TOBACCO SMOKE (ETS) AND MARKERS OF INFLAMMATION IN NNHANES III
Andrea Venn* and John Britton

ETS exposure is associated with a disproportionately high risk of coronary heart disease, and existing evidence suggests that this applies even at low exposure lev- els. We have therefore studied the exposure-response relation between ETS, measured objectively as serum cotinine, and levels of inflammatory markers in never smoking adults in NHANES III, a nationally representative US survey carried out between 1988 and 1994. We selected all adults aged 17 and over, reported to be never smokers and with a serum cotinine not exceeding 15ng/ml (n=7619). Our outcomes were serum c-reactive protein, plasma fibrinogen, serum homocysteine, serum LDL-cholesterol and white blood cell count. Cotinine was categorised as below level of detection, low (0.04-0.21 ng/ml) and high (0.22-15 ng/ml). We adjust- ed for confounding by age, gender, race-ethnicity, social class, physical activity, and body mass index. Level of cotinine was significantly associated with fibrinogen and homocysteine. Compared to those with undetectable cotinine, fibrinogen was estimated to be increased by 9mg/dl (95% CI 1 to 17) in those with low cotinine, and by 12mg/dl (95% CI 4 to 21) in the high group. The estimated increase in fibrinogen was 21.3 (95% CI 7.1 to 32.8) years for life course housing tenure and 15.8 (7.1 to 24.5) years for life course social class. Domestic SHS gradients by SES were mostly attributable to differences in spousal SHS exposure. SES gradients in social SHS exposure were generally less pronounced and less consistently present, and were largely absent for workplace SHS expos- ure. The study demonstrated that SHS exposure was almost universal among older women on Teesside. Domestic SHS exposure, and to some degree social SHS exposure were strongly related to SES. Exposure to SHS is a potential con- tributor to health inequalities.

The Fight Against Cancer Trust with additional contributions from the James Cook University Hospital Lung Fund, and Tees Health Action Zone.

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POS2-117  MULTI-CITY AIR MONITORING STUDY: PUBLIC POLICY AND EXPOSURE TO SECONDHAND SMOKE
Mark J. Travers*, K. Michael Cummings, Ph.D., M.P.H., and Andrew Hyland, Ph.D., Roswell Park Cancer Institute

Indoor air quality was assessed in 70 bars and restaurants in nine cities in eight states between March 27 and July 9, 2004 using the TSI SidePak AM510 Personal Aerosol Monitor. A minimum of six venues were sampled in each city and were chosen from at least two popular entertainment districts. Twenty-five venues sampled were required to be smoke-free by state or city law and 45 venues were not required to provide a smoke-free environment. The aerosol monitor measures respirable suspended particles or more specifically, PM2.5. PM2.5 is the concentra- tion of particulate matter in the air smaller than 2.5 microns in diameter. Particles of this size are released in significant amounts from burning cigarettes, are easily inhaled deep into the lungs and are associated with respiratory and cardiovascular illness and death. In the venues required to be smoke-free by law and that were actually compliant with the law, the level of PM2.5 was 90% lower compared to those venues where smoking was permitted without restrictions. The three cities that require bars and restaurants to be smoke-free had the lowest indoor pollution levels measured in micrograms per cubic meter of PM2.5: New York City (25), Buffalo (27) and Los Angeles (94 or 26 in venues compliant with the law). The high- est levels of indoor air pollution were found in the five cities with no restrictions on indoor smoking: Washington, DC (392), Galveston (543), Baltimore (293), Philadelphia (254), Hoboken (231) and Hartford (104). The 9 venues sampled in Hartford were revisited after a smoke-free ordinance went into effect. There was a 76% reduction in the average PM2.5 level after these venues went smoke-free.

Flight Attendant Medical Research Institute, Campaign For Tobacco Free Kids, Self Magazine.

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POS2-118  CHANGES IN HOSPITALITY WORKERS’ EXPOSURE TO SECONDHAND SMOKE FOLLOWING THE IMPLEMENTATION OF NEW YORK’S SMOKE-FREE LAW
Matthew C. Farrelly*, James M. Nonnemaker, Rosaleen Chou, Andrew Hyland, Kristina K. Peterson, and Ursula E. Bauer

OBJECTIVE: To assess the impact on hospitality workers exposure to second- hand smoke of New Yorks smoke-free law that prohibits smoking in all places of employment, including restaurants, bars, and bowling facilities.

Design: Pre-post longitudinal follow-up design.

Setting: Restaurants, bars, and bowling facilities in New York State. Subjects: At baseline, 97 nonsmoking workers in restaurants, bars, and bowling facilities were recruited with newspaper ads, flyers, and radio announcements. Of these, 61 completed both a baseline and follow-up survey and 49 provided saliva specimens at both time points. Intervention. The smoke-free law went into effect July 24, 2003. Main outcome measures. Self-reported sensory and respiratory symptoms and exposure to secondhand smoke; self-administered saliva cotinine specimens.

RESULTS: Hours of exposure to secondhand smoke in hospitality jobs decreased from 13.5 [10.82, 16.2] to 2.18 [0.70, 3.66], and saliva cotinine decreased from 7.06 ng/ml [4.19, 9.93] to 2.31 ng/ml [1.04, 3.58]. The prevalence of workers reporting sensory symptoms declined from 87% [78%, 96%] to 54% [41%, 67%]; there was no change in the overall prevalence of upper respiratory symptoms. Results of 12 month follow-up will be available soon.

CONCLUSION: New Yorks smoke-free law had its intended effect of protecting hospitality workers from exposure to secondhand smoke.

New York State Health Department.

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Environmental tobacco smoke (ETS) is associated with an increased risk of several diseases. In Finland, ETS is a classified carcinogen (since 2000) and employers are obligated to protect employees from ETS. In 1997, about 7% of the National FINRISK Study population reported exposure to ETS. In 2002, the ETS exposure level was studied in a cross sectional population sample. The survey was conducted in six areas of Finland with a random sample drawn from the National Population Register. Out of 12,000 subjects (age 25 to 64 years), 8,434 attended the study including a questionnaire, a physical examination and an interview. Smoking status and exposure level was verified from all participants. Non-smokers reporting daily exposure to ETS were eligible for passive monitoring (n=123). They were given two 3M organic vapor monitors, one for the work time and the other for the leisure time. A five-day sampling of the breathing zone air was based on passive monitoring of 3-ethenypyridine (3-EP), a vapor-phase compound specific to tobacco-smoke. Serum cotinine levels were determined and exposure indicators (occupation, sex, age) were studied. According to the questionnaires, 6% of men and 2.5% of women reported at least one-hour daily exposure to ETS. The corresponding figures were at home 1.3% for men and 1.7% for women, and in leisure hours 4.8% for men and 0.9% for women. The 3-EP concentrations measured in individual samples ranged from <0.01 to 30 μg/ml (n = 201) low exposures being the most frequent. The 3-EP levels were higher at work than in leisure hours: 75% of the occupational concentrations and 88% of the leisure concentrations were below 1 μg/ml. According to these measurements, 53% of the study group was exposed both at work and at leisure.

**The Finnish Work Environment Fund.**

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**POSTER SESSION 2**

**POS2-119 CROSS SECTIONAL POPULATION SAMPLE WITH PASSIVE MONITORING AND COTININE MEASUREMENTS**

K.M. Patja, T. Laatikainen, S. Vainiotalo, K. Peltonen, L. Kusumäki, and E. Vartiainen

**POS2-120 LUNG CANCER MORTALITY RISK ASSOCIATED WITH ENVIRONMENTAL TOBACCO SMOKE EXPOSURE IN HOSPITALITY SECTOR OF SEVEN EUROPEAN CITIES**

MaríaJosé López*, Manel Nebot, Olga Juárez, and Carlos Ariza, ETS Workgroup. Public Health Agency, Barcelona

**INTRODUCTION:** Hospitality workers are exposed to a very high levels of environmental tobacco smoke (ETS). The objective of this study is to estimate, from objective measurements of the ETS exposure levels, the working lifetime excess mortality risk from lung cancer associated to ETS exposure among this population.

**METHODS:** 140 samples of air nicotine were taken in restaurants and discos of seven different European countries in the framework of the ETS exposure in a sample of European cities project. Lung cancer mortality risk related to ETS occupational exposure has been assessed using the formula developed by Repace and Lowery for ambient nicotine values, assuming a 40 year working lifetime.

**RESULTS:** The lung cancer mortality risk associated with the average nicotine concentration found in discos would be higher than 1300 deaths per 100000 in Spain, France, Greece and Austria, where the risk would be higher than 2000 deaths per 100000. In Italy and Sweden the risk would be 355 and 5 per 100000 respectively. In restaurants, the risk would be 389 per 100000 in Austria, 164 per 100000 in Spain and 100 per 100000 in France. In the rest of countries studied the risk would range from 19 per 100000 (Portugal) to 70 per 100000 (Sweden).

**CONCLUSIONS:** Lung cancer mortality risk associated with ETS in hospitality sector would exceed the 1300 deaths per 100000 in most of the studied countries. In restaurants the overall risk would be lower, ranging from 19 per 100000 in Portugal to 389 per 100 000 in Austria.

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**POS2-121 EXPLORING THE ROLE OF COMMUNITY CHARACTERISTICS IN MUNICIPAL ETS BYLAW DEVELOPMENT USING GIS**

Candace Nykiforuk*, McMaster University; Sharon Campbell, Roy Cameron, Steven Brown, University of Waterloo; and John Eyles, McMaster University

This exploratory study examined associations between community-level variables and municipal ETS bylaws in Alberta and Ontario, Canada. Bylaw data was obtained from a 2001 study rating the strength of ETS bylaws in over 300 communities (using a validated scoring scheme). This was linked to socio-demographic data from the Canadian Census and Canadian Community Health Survey. Analyses were stratified by province to control for provincial tobacco control environment, and regression models were built for bylaw adoption and strength. The final models were distinct for each province indicating that both provincial and local environmental factors were important. In Alberta, where there was limited provincial regulatory activity, the models for bylaw adoption and strength were far less complex than those for Ontario where there was a stronger provincial tobacco control environment. ArcView GIS was used to identify spatial and temporal patterns in ETS bylaw development. Thematic maps were created for each bylaw and community variable to display variation in distribution. Community profiles were created to describe bylaw attributes by municipality characteristics. The maps and GIS user protocol produced are illustrative of effective use of GIS to generate informative and visually stimulating evidence that has utility for research and practice around ETS bylaws.

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**POS2-122 TOBACCO INDUSTRY ACTIVITY IN SPAIN: LESSONS FOR INTERNATIONAL TOBACCO CONTROL EFFORTS**

Mark Parascandola and Francisco G. Soto Mas

Smoking prevalence in Spain is among the highest in Europe (47% for men and 27% for women), and until recently the cost of cigarettes relative to the cost of living was lower in Spain than in any other European Union country. This situation has been fostered by social and economic circumstances in Spain favorable to the tobacco industry and the entry of multinational tobacco companies. For this study, tobacco industry documents (www.tobaccoindustrydocuments.org) from Philip Morris and RJ Reynolds were searched for records related to industry activities in Spain. During the 1980s, U.S. tobacco companies saw strong opportunities in Spain, including a growing market for American blend cigarettes and a weak regulatory environment. But Spain imposed quotas for use of domestic Spanish tobacco, which was considered to be of inferior quality. Thus, Philip Morris and RJ Reynolds invested substantially in developing agricultural assistance and research programs to modify the characteristics of tobacco grown in Spain, with the apparent aim of helping farmers shift to growing U.S. type blend tobacco. In the early 1990s, as Spanish health authorities proposed stronger tobacco control legislation, documents suggest that Philip Morris enlisted public relations firms and used contacts in the Spanish tobacco industry (then a government monopoly) to oppose such legislation. Spain provides a unique case study for understanding how multinational tobacco companies have used favorable social and economic conditions to enter new markets. This case study provides lessons for other countries currently in a similar position to Spain in the past, particularly Eastern European countries which are new entrants to the EU.

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POS2-123
IS THERE A PATTERN BETWEEN THE NICOTINE CONTENT AND THE DESCRIPTORS DISPLAYED ON CIGARETTE BRANDS IN CANADA?
D. Choinière, M. Cook, and B. Séguin

Since 2000, tobacco regulations require manufacturers and importers to disclose to Health Canada, among other things, the amount of more than 20 substances found in their cigarettes’ tobacco. Using these reports, we looked at the nicotine content of cigarettes from 250 brands to find out if there was any matching pattern with the descriptors displayed. All cigarettes had to be prepared according to Health Canada’s Official Method T-301, and the nicotine content measured using Official Method T-301. The brands were broken down according to their descriptor, regardless of their lengths: 135 “full flavour/regular”, 51 “light”, 14 “extra light”, 10 “ultra light”, 14 “mild”, 17 “extra mild”, and 9 “ultra mild”. The reported nicotine content per cigarette went from 8.17 mg to 14.28 mg (for filter cigarettes). The highest content was obtained in a filterless cigarette: 16.91 mg. When broken down by descriptor, the average nicotine content in the tobacco was as follows (mg of nicotine per cigarette): “full flavour”, 11.8; “light”, 11.7; “extra light”, 12.5; “ultra light”, 12.6; “mild”, 11.8; “extra mild”, 11.7; “ultra mild”, 11.5. These results suggest that, overall, there is no matching pattern between the descriptor used and the cigarettes’ nicotine content.

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POS2-124
ROLL TAPES: PHILIP MORRIS’ CONTROL OVER A CABLE TV NETWORK
Monique E. Muggli*, M.P.H., Nicotine Research Program and Richard D. Hurt, M.D., Nicotine Dependence Center

The use of think tanks and third party allies has long been a vehicle by which the tobacco industry disseminates its public relations messages. Documents from the files of Philip Morris (PM) show that in the mid 1990s the company had a worldwide forum to disseminate its messages regarding secondhand smoke, FDA regulation, and several other issues through the now defunct 24 hour cable satellite network, National Empowerment Television (NET). PM used and benefitted from corporate contributions to the conservative Washington DC think tank the Free Congress Foundation (FCF) whose major initiative included the launch of NET in 1993. In 1994, PM signed on as an associate broadcaster and sought to secure participation of social conservative community. Then Vice President and General Counsel at PM, Steve Parrish, appeared on NET programs on several instances to discuss litigation issues, FDA regulation of nicotine, and to unequivocally state that the tobacco industry does not market to children. PMs strategy to engage NET as its media tool for presenting the companys position was characterized as virtually limitless given the necessary financial support. Most importantly, PM could reach targeted influential congressional districts through participating in interviews and viewer call in shows. Public health policy makers and researchers should be made aware of the pervasive nature of the tobacco industry’s prior public relations efforts via broadcast media to be prepared for similar future attempts.

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POS2-125
TOBACCO ADVERTISING AS A BARRIER TO QUITTING: FINDINGS FROM THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY
David Hammond, M.Sc., University of Waterloo; Gerard Hastings, Ph.D., University of Strathclyde; Ron Boford, Ph.D., VicHealth Centre for Tobacco Control; Anne Marie Mackintosh, Ph.D., U of S; Susan Anderson, M.A., U of S; Geoffrey T. Fong Ph.D., U of W; and K. Michael Cummings, Ph.D., Roswell Park Cancer Institute

Pro-tobacco advertising is commonly discussed in terms of its capacity to attract new users. However, it also has the potential to disrupt attempts to quit by providing cues that create temptations to smoke. This paper explores this understudied phenomenon. We report on data from the International Tobacco Control Policy Evaluation Survey (ITC-PES), a cohort telephone survey of 9,058 adult (18 years) smokers across four countries: Canada, USA, UK, and Australia. Wave 1 was conducted in late 2002, and Wave 2 approximately 8 months later. The results indicate that the salience of tobacco advertising varies as a function of smoking status: in each country, smokers who had quit at Wave 2 were significantly more likely to notice tobacco advertising than respondents who continued to smoke (p<.001). Noticing advertising was greatest among recent quitters (those who quit within the past month) and decreased with the length of abstinence (p<.001). Recent quitters were also the only group who reported an increase in noticing tobacco advertising from Wave 1 (p<.001). Finally, among continuing smokers, those who intended to quit were more likely to notice advertising than those not intending to quit (p<.001).

The results indicate that the salience of tobacco advertising increases as a smoker contemplates quitting, and is greatest immediately following a quit attempt when the urge to smoke is the strongest. Data from Wave 3 will indicate whether greater awareness is also associated with increased relapse, to determine if tobacco advertising is not just an irritant for this group, but also an obstacle to quitting.


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POS2-126
THE SILK ROAD GOES UP IN SMOKE: POLITICAL INFLUENCE OF TRANSNATIONAL TOBACCO COMPANIES IN TURKEY
Sue Lawrence

There is increasing evidence of the extent to which changes in the global economy have contributed to rising tobacco consumption across low- and middle-income countries. In particular, trade liberalization via bilateral, regional and global agreements has created substantial commercial opportunities for transnational tobacco companies (TTCs). Similarly, the commitment of the International Monetary Fund (IMF) to privatization creates the prospect of rapid expansion for TTCs via strategic acquisitions and joint ventures. Turkey has long constituted an attractive target for expansion by TTCs, high existing smoking prevalence among men combines with the opportunity for significant expansion among women, the prospect of entry into the European Union, and its strategically significant location. The dominance of the state-owned monopoly, Tekel, has until recently constituted a formidable barrier to expansion into this potentially lucrative market. Turkey’s increasing integration with the wider global economy, however, led to the opening of its previously closed tobacco market in the early 1980s, while pressure from the IMF for the privatization of Tekel has made it an attractive target for investment. This presentation analyses previously secret internal documents to examine strategies adopted by TTCs in attempting to establish a significant presence in Turkey. Using documents from BAT’s Guilford depository as well as online document resources, it demonstrates the political influence exerted by TTCs. It highlights efforts to prevent the development of tobacco control policies, particularly via resistance to proposed advertising regulations. It then explores various attempts to secure either a joint venture with Tekel or an outright purchase of the monopoly. The paper concludes with a discussion of the implications of these efforts for the future trajectory of the tobacco epidemic in Turkey.

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POS2-127  THE NEED TO PROMOTE SMOKING CESSATION IN THE DEVELOPING COUNTRIES: A NECESSITY, NOT A LUXURY

Abu Saleh, M. Abdullah* and Corinne G. Husten

The rapid rise in smoking in many developing countries will have devastating consequences; by 2030 the developing world is expected to have 7 million deaths annually from tobacco use. Many smokers express a desire to quit, but they often fail because they are addicted to tobacco. Although several cessation aids (e.g. counseling, qualties, nicotine replacement therapy and bupropion) are now available in the developed world, their applicability and affordability in developing countries is less clear. Successful interventions will require many stakeholder groups to take action at the local, national and international levels. Smoking cessation should be considered as a means of reducing disease burden. However there might be many obstacles in promoting smoking cessation in developing countries. This includes economic factors (lack of priority in resource allocation), lack of awareness/interests, low perception of risks, lack of policies that promote cessation, lack of training programs, smoking behaviour of service providers, poor healthcare systems, lack of infrastructure and industry action. A strong framework for public health action is crucial to address these obstacles.

No Funding.

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POS2-128  INVESTIGATING TOBACCO CONTROL RESEARCH INVESTMENTS IN DEVELOPING COUNTRIES

W. Maalouf*, F. Stillman, H. Wipfli, and D. Yach

Largely driven by major tobacco control efforts in the developed and industrialized world, the tobacco industry vigorously sought seeking other potential markets. A natural promising potential market for this industry were developing countries that lagged behind in tobacco control research efforts including tobacco consumption, patterns of use, health impact of tobacco products, and efficacy of cessation methods, and female tobacco use. It is currently a recognized fact that tobacco consumption in the developing world is rising, and that this shifting epidemic is occurring in parallel with an increase in tobacco use promotional efforts in that region resulting in an unfortunate multiplication in tobacco-related deaths. Given that sound tobacco control policies are largely dependent on evidence-based and factual hard data made available for both researchers as well as policy makers, this paper, supported by the Global Tobacco Research Network, intends to evaluate the level of tobacco control knowledge and research infrastructure assessed and evaluated by the number publications generated in countries of the developing world. Publications listed on EMBASE and Medline during the last 5 years (1999-2004) from developing countries from 6 regions (East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia and the Sub-Saharan Africa region as classified by the World Bank) were collected and reviewed in order to: 1) review the volume of publications in the developing world that is accessible for researchers, 2) compare and contrast the volume of publications as proxy for tobacco control investment in different countries and across different regions, 3) determine the number of researchers working on tobacco control efforts in this area of the world, and 4) determine research gaps. Results, implications, impediments and future steps are to be discussed. Global Tobacco Research Network.

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POS2-129  WHO IS TRYING TO QUIT SMOKING?

Rehab Abdel-Rahman, Maged El-Selouhy*, Mostafa K. Mohamed, and Ebenezer Israel. Egyptian Smoking Prevention Research Institute

OBJECTIVES: To identify the prevalence of quit attempts and determine socio-demographic characteristics of smokers attempting to quit.

METHODS: An interview questionnaire was used to collect data on quit attempts in 9 villages in rural Egypt. Smokers with no history of quit attempts were compared to those who tried quitting before (once or more).

RESULTS: A total of 4984 adult males were interviewed. The prevalence of current male cigarette smokers was 36% and 556 (27% of smokers) tried to quit at least once from 1 day to 2 years with a median of 15 days. No significant differences were found regarding age, education and marital status for quitters. A higher percentage of the non quitters (24%) were heavily nicotine dependant compared to 16% of the quitters (p<0.001). Only 37% of non quitters feel they are able to quit, 85% want to quit, and 23% plan to quit as compared to 74% of quitters group plan to quit and 56% feeling that they could quit. The quitters stated that their smoking pattern declined after marriage (74% versus 46% in other group). Quitters tried to smoke away from their kids more than the other group (p<0.0001). 36% of quitters received advise from health care professional to quit smoking versus 5% of non quitters (p<0.001).

CONCLUSION: The quitting attempts depend largely on self perception of the ability to quit. Factors such as health care professional advice, dependency and desire to quit also play a role in quitting.

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POS2-130  DIFFERENCES IN DISCLOSURE TO PARENTS ABOUT NARGHILE AND CIGARETTE SMOKING BEHAVIOR

Nader Nassif*, Ph.D., Ghassan Akkary, B.S., Zeina El-Roueiheb, M.P.H., Mayada Kanj, M.P.H., and Hala Tamim, Ph.D., American University of Beirut

BACKGROUND: Narghile smoking is a commonly accepted practice in the Middle East. Its harmful effects have been documented in recent literature. Disclosure to significant others is essential in the later stages of behavior acquisition. This is particularly true in the case of smoking and the disclosure of such information to parents. The aim is to compare students disclosure of narghile and cigarette smoking behavior towards parents.

METHOD: A sample of 2,443 students was selected from private and public schools in greater Beirut. Students were asked to fill self-administered anonymous questionnaires addressing socio-demographic characteristics and smoking behavior.

RESULTS: The prevalence of smoking cigarette was 12%, narghile 26% and that of both was 6%. Among students who smoke cigarettes 54% had disclosed to at least one of their parents compared to 81% of narghile smokers who had reported doing so. Disclosure to mothers only was as frequent among narghile and cigarette smokers. Disclosure to fathers only was more frequent among cigarette smokers (3% for cigarette smoking and 1% for narghile). On the other hand disclosure to both parents was much more frequent among narghile smokers (30% for cigarette smoking 68% for narghile) Parental objection to smoking was significantly higher when it came to cigarette smoking (90% for cigarette smoking and 62% for narghile).

DISCUSSION: The current study suggests that while narghile smoking is known to be as harmful as cigarette smoking it seems to be a more socially acceptable practice. Furthermore, differences in disclosure can suggest the need to actively empower mothers as a possible source of health messages for adolescents.

This work was carried out with the aid of a grant from Research for International Tobacco Control (RITC), an international secretariat housed at the International Development Research Center (IDRC), in Ottawa, Canada and University Research Board (URB) at the American University of Beirut, Beirut, Lebanon.

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POS2-133
THE REPORT OF FIRST SMOKING CESSATION CLINIC TEHRAN IRAN 2004

Gholamreza Heydari*, M.D., and Mohammad Reza Masjedi, M.D.

INTRODUCTION: Tobacco use is the leading cause of preventable death worldwide. 5 million people die from tobacco each year, the half of these deaths usually occur in developing countries. If current trends continue, it is estimated that it will be responsible for 10 million deaths by the year 2020, the majority of which 7 million will occur in low-income countries.

MATERIAL AND METHOD: Smoking Cessation Clinic, as a research project, was established for the first time in Iran by NRITLD in 1998. The quitting educational courses consist of 7 sessions of 90 minutes run by General Practitioners. In implementation of smoking cessation programs, the following are being employed: Providing education on smoking hazards and quitting methods, behavioral therapies, group discussion, nicotine replacement therapy. Among the ex-smokers, some are randomly selected for confirmation of CO exsorpy smokerlyzer Test.

RESULT: Of 2072 (1615 male, 457 female) smokers registered on 1st September 2004, 549 (423 male, 126 female) were not able to completed the educational courses for different reasons and of the remaining 1523 (1192 male, 331 female), 1450 (1175 male, 275 female) have quitted successfully (88%) and others smoked cigarette in lower rate. Among those, 23.4% had a relapse into smoking a month after abstinence and the percentages in the 3rd and 6th months were 40.7% and 47.2%, respectively. One year after quitting, the rate of relapse was 52.4%.

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POS2-132
CHARACTERISTICS OF COMPLETERS AND DROP-OUTS IN SYRIAS FIRST SMOKING CESSATION TRIAL

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Many developing countries lack culturally appropriate and effective smoking cessation interventions. In Syria, smoking rates are double and quit rates half of what is observed in the U.S., but cessation services are not available. To determine the feasibility of implementing clinical trials of smoking cessation interventions in Syria, we randomized 50 smokers to either a brief (single session) or moderately intensive (4 sessions plus 6 phone contacts) free, hospital-based, behavioral counseling intervention. Subjects were recruited through newspaper ads, physician referrals, and word-of-mouth. Mean age of enrollees was 34.8 ± 11 years, 86% were men, and 64% smoked ≥ 20 cigarettes/day. Whereas 100% of those in the brief intervention completed treatment, only 40% completed the intensive treatment. Drop-outs (n = 15) and completers (n = 10) in the intensive intervention had similar levels of motivation and confidence regarding quitting at baseline. However, drop-outs were less educated (67% vs. 20%), respectively, did not complete high school and smoked for fewer years (10.2 ± 6.8 vs. 18.3 ± 8.8), but were likely to be more dependent judging by amount smoked (80% vs. 30% smoking ≥ 20 cigarettes/day), higher FTND score (5.0 ± 2.4 vs. 4.0 ± 2.9), and fewer prior quit attempts (80% vs. 100% quitting at least once) (all p-values <0.05). Nicotine dependence is an important barrier to retention in smoking cessation trials in Syria. Increasing the availability of pharmacological therapy is likely to help this effort.

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POS2-134
BELIEFS ABOUT SMOKE-FREE AREAS AND TOBACCO USE AMONG CAMBODIAN ADULTS VARY BY GENDER

Pramil Singh*, Daravuth Yet, Sinn Sovann, Khieu Sothy, Jaykaran Job, Emmanuel Rudatsikira, Floyd Petersen, Susanna Montgomery, Synnove Knutsen, and Linda Ferry

BACKGROUND: There is currently a paucity of data on beliefs about tobacco use in Southeast Asia. Data from Cambodia indicates that tobacco use is highest among older men, and lowest in certain subgroups of women. We conducted focus groups among Cambodian adults in order to identify gender-specific attitudes concerning tobacco use that can be used to design items for a nationwide tobacco survey.

METHODS: Adult smokers and non-smokers from randomly selected villages of a rural Cambodian province were enrolled in focus groups studies. Separate focus groups of women (ages 24-56 years) and men (ages 22-63 years) included the following questions: 1) Advantages/disadvantages of tobacco use; 2) Reasons for starting to smoke; 3) Attitudes towards tobacco use in the community; and 4) Attitudes towards tobacco use at the Wat (Buddhist temple).

RESULTS: All women in the sample (n=38) believed that the Wat (Buddhist temple) should be smoke-free. Among men, only non-smokers held this belief. None of the subjects believed that doctors, teachers, or children should use tobacco. Women, but not men, also believed that monks should not use tobacco. Women cited positive effects of smoking on the relief of morning sickness, and men identified the positive effects of cigarette smoke in repelling insects. Men described their initiation of tobacco use during youth as being due to the influence of older male smokers; no pattern of smoking initiation emerged in women.

CONCLUSIONS: Qualitative data from rural Cambodia indicate that attitudes about tobacco use vary by gender and identify the need for gender-specific survey items on beliefs about tobacco use.

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POS2-135

SMOKING, STANDARD OF LIVING, AND POVERTY IN CHINA

Zhengzhong Mao*, Ph.D., Teh-wei Hu, Ph.D., Yuanni Lu, M.D., Ph.D., Joy de Beyer, Ph.D., and Michael Ong, M.D., Ph.D.

OBJECTIVES: To analyze differences in smoking behavior and smoking expenditures among low and high income households in China and the impact of smoking on standard of living of low-income households in China.

METHODS: About 3,400 urban and rural households from 36 townships/districts in Southwest China were interviewed in 2002. Cross-tabulations and regression analysis are used to examine the differences of major household expenditures including food, housing, clothing, and education between households with smokers and without smokers.

RESULTS: In both urban and rural households, lower income smokers paid less per pack (3.8 vs. 8.2 RMB for urban, 1.1 vs. 1.7 RMB for rural) and smoked fewer cigarettes per day (11.2 vs. 12.0 for urban, 14.4 vs. 18.6 for rural) than higher income smokers. Lower income smokers also spent more of their total income (5.8% vs. 4.9% for urban, 7.1% vs. 5.7% for rural) than higher income smokers. Regression analyses show that each additional pack of cigarettes per month reduces other household expenditures by 2.9 RMB per capita for average households, 0.5 RMB per capita for poor urban households, and 0.2 RMB per capita for poor rural households.

CONCLUSION: Reducing cigarette expenditures could release household resources to spend on food, housing, and other goods that improve living standards. Ad valorem cigarette tax increases would minimize the tax burden on poor households with smokers.

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POS2-136

CIGARETTE REDUCTION PREDICTS 12-MONTH SMOKING CESSATION IN CHINESE SMOKERS

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This study examined predictors of 12-month abstinence in a sample of 363 Chinese smokers residing in Northern California who were enrolled in a controlled randomized trial comparing a standard self-help manual to a stage-based expert system intervention. All participants smoked at least 5 cigarettes in the past 7 days at baseline. Participant characteristics were 19.4% female, 96.1% foreign-born, mean age=40.2, 74.9% daily smokers, average cigarettes per day=9.5, 31.1% in precontemplation, 42.4% contemplation, and 26.5% preparation. Based on data obtained from 295 (81%) participants at 12-month, the intent-to-treat self-report abstinence rate was 18.7% in the standard condition and 21.3% in the expert system condition. The results suggest that stage of change is a significant predictor of 12-month abstinence.

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POS2-137

SMOKING CESSATION BY GENDER IN TUNISIA

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Gender differences in smoking motivation, nicotine dependence and quitting rate after 6 months follow up was assessed at Tunisian smoking cessation patients. Methods: we followed 250 Tunisian smokers with 30% female who attempted to quit smoking. Fagerstrom Test for Nicotine Dependence assessed the nicotine dependence. Smoking motivation was estimated by Bual Analogue Scale (VAS). Quitting rate after pharmacotherapy (Nicotine Replacement Therapy) and behavioral therapy was estimated by interview. Results: the study found that compared to men, women smokers were less nicotine dependent, and smoke less cigarettes. Men smoke more from habit or to increase "intellectual concentration". Women smoke more in social interaction context, for "pleasure", to relief stress, when they feel sad. The fear of weight gain do not seems to be an important motivation for two sexes even though it's more quoted by women. Women had less quitting rate and endure more withdrawal symptoms. Conclusion: this study underlines the necessity to identify and adapt smoking cessation by gender.

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POS2-138

HOW DO DOMINICAN REPUBLIC COMMUNITIES PERCEIVE TOBACCO USE?


The landscape of tobacco use and beliefs in the Dominican Republic (DR) is not well studied. The current paper will report results of household surveys conducted in 6 DR communities. Communities represented the range of types of communities in the DR outside of major urban areas, and included 2 small urban, 2 peri-urban, and 2 remote rural areas. 175 households were randomly selected in each community, and 1 adult was randomly selected from each household for survey (total N=1050). Preliminary results from the first community indicate a sample of 57% female with a mean age of 44. 21% of women had smoked during pregnancy; of these, 53% had used commercial cigarettes, 37% self-rolled cigarettes, and 11% cigars. Only 42% had been advised by a physician to quit during pregnancy, and 58% had quit because of pregnancy. 29% had often been exposed to ETS during pregnancy. 98% of the total sample thought smoking was harmful, yet knowledge of specific risks was lacking, with 60% indicating a causal link with respiratory disease, and fewer recognized links with cancer (43%), hypertension (29%), heart problems (16%), asthma (16%), pregnancy risk (1%), and ear infections in children (<1%). Data suggest a range of tobacco use practices, and lack of knowledge of specific risks associated with smoking. Complete results across a wide range of tobacco use, exposure, and attitude variables will be reported for all 6 communities.

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POS2-139

TOBACCO AND RELATED DISEASE SURVEILLANCE IN THE DOMINICAN REPUBLIC


Though the Dominican Republic (DR) has been ranked as having high tobacco use rates, there is no structure in place for systematically tracking tobacco use and tobacco related diseases. Results will be presented from a surveillance system implemented in 6 communities in the DR (2 small urban, 2 peri-urban, 6 rural). 175 households were randomly selected in each (total N=1050), and an adult house- hold member who was aware of household tobacco use and health variables was interviewed by local data collectors trained by the core project team. The surveil- lance assessed household size and composition; availability of resources (e.g., electricity, water, radio, telephone); tobacco use and health conditions of each fam- ily member; and household policies on tobacco use. Based on preliminary results from the first community (Bohechio; n=175), 99% of households had electricity; 91% had water, 60% had radios, and only 9% had telephones. 45% of households included at least 1 tobacco user. Type of tobacco used included commercial ciga- rettes (16%), hand-rolled tobacco (6%), cigars (2%), and pipe (1%). Smoking poli- cies in homes included smoking never allowed in home (18%), smoking allowed in home for some people (28%), smoking allowed in some places in home (5%). A full range of household characteristics, tobacco use rates by age, gender, and type of tobacco, tobacco related diseases, and household tobacco use policies will be reported for the complete sample across all 6 communities. Funding from NIH PIC R11TW00945 (Ossip-Klein).

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POS2-141

STRUCTURING OUTPATIENT SMOKING CESSATION IN AUSTRIA FIRST RESULTS

J. Eckl-Dorna*, A. Straudi, V. Klug, E. Doblinger, A. Steiner-Ringl, M. Kunze, and E. Groman

OBJECTIVE: To assess possibilities for the implementation of structured outpa- tient smoking cessation services under real life conditions, and assessment and documentation of necessary measures in respect to organisation (telephone lines, databases), controlling and public relation to guarantee a constant patient flow in different treatment settings.

METHODS: Interested patients are recruited by public relation, and given the opportunity to join a structured treatment program. The outpatient program consists of a maximum of 5-7 weekly consultations [Brief intervention (15 minutes, behav- ioural modification) and medication (NRT and/or Bupropion according the prefer- ence of the patient)] at one of the outpatient treatment units, but might be modified according the needs of the patients and of course the financial resources.

RESULTS: Until February 2004 1037 patients have joined the program. 78.7% (n=816) of the patients attended 2 times. 63% (n=652) have shown up after the quit date in week 2 (attended 3 times). The average FTND was 5.26. 53.8% preferred NRT during their cessation attempt, 4.5% used Bupropion and 1.8% decided to take a combination of Bupropion and a NRT product. 39.9% used no medication during the behavioural therapy. 76.3% of the patients who finished the treatment sessions had non-smoker values at the end (cut off point 10 ppm).

DISCUSSION: This data clearly show that patients do successful quit attempts in structured smoking cessation programs, and reduction is a result, also. Participants of the smoking cessation service show on the average higher FTND scores than the Austrian population: We target a population highly at risk. The def- inition of participation has to be discussed. Time seems to be very well invested in patients who attend more often. The burden of organisation has to be taken into account, when discussing necessary budgets.

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POS2-140

ATTITUDES AND BELIEFS TOWARD TOBACCO CONTROL IN A TOBACCO-GROWING REGION IN ARGENTINA: THE ROLE OF FAMILY SOCIAL STATUS

E. Alderete*, C.P. Kaplan, O. Jerez, V. Vilca, L. Fernandez, R.M. Mejia, and E.J. Pérez-Stable

Argentina exports high quality tobacco grown in the northwest, a poverty-stricken region. Understanding beliefs and attitudes about tobacco control among youth from families involved in tobacco production is relevant to policy makers. We con- ducted 39 semi-structured interviews with youth 14 to 20 years of age, 50% males, examining their comments to queries regarding the economic and social relevance of tobacco production and their beliefs about smoking behavior. Respondents were categorized by families position in tobacco production including large, medium and small producers, and agricultural workers. Among large and medium size produc- ers the tobacco trade is passed on from previous generations and social learning occurs through familial influences and involvement in tobacco growers associa- tions. These youth repeated the industry positions indicating that smokers, includ- ing adult role models have the right to smoke and that there is no conclusive evi- dence about the harmful effects of smoking. On the other hand, small producers and rural workers report on the strenuous nature of tobacco production work, pos- ing more hardships than other crops. Youth hope to achieve social mobility through vocational or professional training and favor crop diversification and replacement; view smoking as a harmful behavior, believe that adult role models should not smoke in the presence of children, and profits should not be prioritized over health.

Statistical evaluation was performed with the help of NOVARTIS Pharma Prague.

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POS2-142

SMOKING AMONG THE CZECH PHYSICIANS AND IN THE CZECH POPULATION. THE STATE IN 2003 COMPARED WITH THE SITUATION IN 1991

J. Widimsky*, Z. Kodová, and T. Pecka

An analysis of smoking habits among the Czech physicians was performed in 2003 and the situation was compared with smoking habits in the general popula- tion of the same age group (MONICA study). Smoking habits were analysed by anonymous questionnaire in 470 physicians. When compared with the situation in 1991 analysed in 673 Czech physicians, smoking among physicians decreased signifi- cantly both in male physicians from 29.2% in 1991 to 16.0% in 2003 (p=0,001). A similar decrease in smoking habits was observed also among female physicians - from 27.4% in 1991 to 16.2% in 2003 (p=0,001). A smaller but signifi- cant decrease could be observed also in male general population of the same age (from 41.8% in 1991 to 36.2% in 2003), but not in female population (25.4% vs. 25.8%). In spite of these positive trends, smoking remains high among Czech physicians and in the population when compared to some other western countries (e.g. USA, Great Britain, Norway). A further decrease of smoking habits is there- fore highly desirable.

Statistical evaluation was performed with the help of NOVARTIS Pharma Prague.

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POS2-143  NRT-ASSISTED CESSATION IN RUSSIA: INDIVIDUAL AND POPULATION LEVEL BENEFITS

O. Vikhireva*, S. Shalnova, A. Deev, V. Levshin, N. Radkevich, and A. Kalinina

In Russia, with its alarmingly high tobacco use prevalence, smoking causes at least 220,000 deaths annually. Nevertheless, modern methods of cessation assistance are still used rarely. Open, randomized study of nicotine gum/inhaler in smoking cessation/reduction was performed in 2002-3, being one of the first nicotine replacement therapy (NRT) trials in Russia. 169 male smokers aged 18-60 and smoking no less than 15 cigs/d were randomized to free choice vs admission of Nicorette gum (2/4 mg) or inhaler (10 mg). At 12 months, point prevalence abstinence rate was 19.7%, reduction rate - 35.5%. Costs of NRT 3-month course (with actual gum/inhaler daily doses), and of the cigarettes that would be smoked during this period, were comparable (approximately 70 USD in 2003 prices). At 12 months, expected mean relative risk reduction for coronary heart disease and total cardiovascular disease mortality reached 19%, for all-cause mortality - 21%. This information can be used in motivating smokers to quit, as cessation proved to be beneficial not only for health, but also for individual budget. With the same NRT efficacy rates at the population level (approximately 13 mln of Russian working-age males smoke 15 cigs/d and more), expected number of quitters is 2.6 mln, number of person-years saved - 13 mln. Information on NRT effectiveness and cost-effectiveness in Russian real-life conditions is disseminated at “Tobacco Control Educational and Training Workshops for Russian Doctors”—the project dedicated to smoking cessation assistance in primary health care.

Nicorette samples provided by Pharmacia Upjohn. “Tobacco Control Educational and Training Workshops for Russian Doctors” Project supported with ACS-UICC Tobacco Control Seed Grant.

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POS2-144  PATTERNS IN THE INCIDENCE OF SMOKING CESSATION IN SPAIN (1960-2000)

Anna Schiaffino*, Esteve Fernandez, Montse Garcia, Jorge Twose, and Josep Maria Borras

OBJECTIVE: To analyse the incidence of smoking cessation in Spain between 1960 and 2000 according to sex, age and educational level.

METHODS: We analysed ever smokers from 5 editions of the National Health Interview Survey (1987, 1993, 1995, 1997 and 2001, n=39,758). We reconstructed the habit and the age of each person during the study period (1960-2000). We calculated the incidence of quitting as the ratio of the persons who stopped smoking to those eligible to quit in the 2-year period. We computed the incidence according to age and educational level. All the analysis were stratified by sex.

RESULTS: The incidence of quitting increased a 140%, from 0.38% in 1961-1962 to 5.38% in 1999-2000. The incidence was stable at 0.4% until the beginning of the 1980s, when, it had a linear increase until 4%. In the last decade (1990-2000) the incidence levelled off at 5%. Women had a non-significant higher incidence than men. We observed the same pattern for females and for males. Different quitting patterns between persons aged 20-34 years old and 35-50 years were observed. The incidence has increased during all the period of study reaching the top (5.4%) in 1999-2000 among subjects 20-34 years, while among those aged 35-50 years a decrease in the incidence from 1995 onwards is apparent. More educated people had the highest incidence, with a 310% increase (from 0.2% in 1965-1966 to 7.3% in 1999-2000).

CONCLUSION: The increase in smoking cessation over the last decades in Spain follows a different pattern according to age and educational level.

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POS3-001  PRENATAL NICOTINE EXPOSURE FEMINIZES MALE MOUSE GENITALIA

David J. Vandenbergh*, Kate Anthony, Jennifer E. Foreman, and Laura Cousino Klein

Among the consequences of nicotine exposure in utero to the offspring of smokers are such negative effects as low birth weight and increased prevalence of Sudden Infant Death Syndrome (SIDS). We show in mice that nicotine toxic effects include endocrine disruption. Timed pregnant C57BL/6J mice were administered nicotine (50 micrograms/ml) with 2% saccharin in their drinking water for 24 hr/day starting on gestational day (GD) 9 through delivery (N=4). Control dams were given tap water with 2% saccharin (N=3). Pups were weighed the morning of birth, and their anogenital distance (AGD) was measured. The AGD is a sensitive indicator that is used to detect chemicals with endocrine disrupting effects. Body weight and AGD were significantly reduced in nicotine-exposed male pups compared to controls, a finding that remained significant after adjusting the AGD for weight (Anogenital Distance Index [AGDI]). None of these measures was significantly different in female pups. The range of prenatal nicotine exposure effects are not known, but nicotine has been shown to block the normal perinatal surge of testosterone in male rat pups, and cause a subsequent feminization of adult male rats. Additional studies are underway to explore the possible demasculinization of other male phenotypic traits by nicotine and its mechanism of action.

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POS3-003  MEASURING PRENATAL TOBACCO EXPOSURE IN RURAL NEPALESE WOMEN

Douglas Taren*, Ram Shrestha, Pooja Pandey, and Myra Muramoto, University of Arizona and the Nepalese Technical Assistance Program

Limited information is available on prenatal tobacco exposure and perinatal outcomes in developing countries where undernutrition is highly prevalent. Global trends in tobacco sales and consumption indicate increasing rates of smoking among women in low and middle income countries, including increasing smoking rates among pregnant women. Preliminary analyses from a survey of 596 pregnant women in the Terai region of Nepal found that 143 (24%) of women reported smoking and 131 (22%) reported smoking during pregnancy. Both smoking and oral tobacco use is prevalent in the Terai. We subsequently conducted a validation study of self-reported tobacco use with semi-quantitative urinary cotinine strips to measure exposure. Out of a total of 52 pregnant women participating, 31 reported using tobacco and 21 reported being non-users. All the women who reported being tobacco users were positive for urinary cotinine, and all women who reported being non-users were negative for urinary cotinine. Tobacco-using mothers had significantly (p < 0.01) smaller mid-upper arm circumferences and were significantly (p < 0.01) older compared with mothers who did not smoke. For 18 babies whose birthweights were available, the mean weight was less (p < 0.06) in infants (n=12) from mothers who used tobacco (mean ± SEM: 2.3 ± 0.2 kg) compared with infants (n=6) from mothers who did not use tobacco (3.05 ± 0.2 kg). This study indicates that self-reported tobacco use was a valid method for obtaining information about the prenatal tobacco exposure and tobacco use negatively affected the health status of mothers and their infants.

No Funding.

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POS3-004  NICOTINE EXPOSURE IMPACTS SEVERITY OF NEONATAL ABSTINENCE SYNDROME OF NEONATES BORN TO METHADONE STABILIZED WOMEN

Hendree Jones*, Michelle Tuten, Heather Fitzsimons, Candice Evans and Renee Cieslak

Although methadone is beneficial for pregnant opioid dependent women, many neonates undergo neonatal abstinence syndrome (NAS). NAS is characterized by signs and symptoms of gastrointestinal dysfunction, respiratory distress and central and autonomic nervous system disruptions. Although it is presently unclear why some neonates exhibit a greater NAS than others, it has been recently shown that in utero exposure to 20 or more cigarettes/day is associated with more severe NAS than in utero exposure to 10 or less cigarettes/day (Choo et al, 2004, Drug Alcohol Depend, 75, 253-60). The present study extends past research by comparing the birth outcomes of methadone stabilized pregnant women who did not smoke during pregnancy to those who were heavy smokers (e.g., 20+ cigarettes/day). Preliminary data show similar demographic (e.g., 34 vs. 29 years; p=.18, respectively) and treatment outcomes (e.g., mean methadone dose 65 vs. 70 mg; p=.73, respectively). Despite similarity in gestational age at delivery (38 vs. 40 weeks; p=.279) and birth weights, fewer neonates of non-smokers were treated for NAS relative to heavy smokers (16% vs. 67%; p=.030). These results further support the role of smoking in the severity of NAS.

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POS3-005
ADDRESSING PRENATAL SMOKING CESSATION IN INDIGENOUS AMERICAN COMMUNITIES
LaDonna BlueEye*, M.P.H., Ernestine Jennings, M.S., Sarah Carlson, M.B.A., Smoke-Free Beginnings; and Catherine Rohwedder, Dr.P.H., Smoke-Free Families National Dissemination Office

The Smoke-Free Families National Dissemination Office is funded by The Robert Wood Johnson Foundation to translate the results of effective smoking cessation interventions into practice. We collaborate with American Indian organizations to increase outreach, training and intervention capacity for providers in their communities. Data are being gathered via needs assessments and focus groups to learn about the current status of tobacco treatment services during pregnancy, and how to create culturally relevant cessation programs and materials for indigenous populations. IRB-approved, self-administered surveys were distributed to Tribal Support Centers, clinics and hospitals. As of August 2004, over 260 needs assessments were collected from physicians, nurses, health educators, and other health care practitioners across the country. Focus groups were conducted with both providers and pregnant American Indian women to supplement the survey data. Preliminary analyses from the needs assessment indicate that many providers discuss tobacco use with their clients, but there is a dearth of culturally appropriate client materials and a need for additional technical assistance such as access to clinical practice guidelines. Preliminary findings from focus groups reveal specific educational and cultural issues that should be incorporated into smoking cessation counseling protocols and patient materials. These include the ceremonial or sacred use of tobacco, and the belief that smoking does not cause low birthweight among American Indian babies. The implications of the study results will inform efforts to develop a national action plan for providing pregnancy-specific tobacco dependence treatment within indigenous American Indian communities. The Robert Wood Johnson Foundation.

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POS3-007
THE EFFECTS OF REDUCED SMOKING DURING PREGNANCY ON TERM-INTRAUTERINE GROWTH RETARDATION
Dmitry Krupitsky*, M.S.P.H., Shirley Thompson, Ph.D., and Cheryl L. Addy, Ph.D.

OBJECTIVE: To investigate the relationship between smoking, the reduction of smoking and term intrauterine growth retardation (IUGR).

METHODS: Population-based data from October 1992 to December 1995 were provided by the SC Pregnancy Risk Assessment Monitoring System (PRAMS). Statistical analyses were performed with SUDAAN software for weighted data. The cohort consisted of 2,862 term births (weighted n=105,306). Term-IUGR, defined as less than the tenth percentile of birthweight for gestational age among infants of <37 gestational weeks, was based on race and sex specific standards for SC.

RESULTS: The odds of having a term-IUGR baby were 3.69 times (95% CI 2.39, 5.68) greater among women who smoked prior to conception and during the third trimester than among women who did not smoke either time after adjusting for confounders. Among women who smoked prior to conception but quit smoking prior to the third trimester of pregnancy, the risk of having a term-IUGR baby was similar to that of the nonsmoker. Among smokers, reduction by 10 cigarettes per day prior to the third trimester decreased the risk of IUGR by 50% (adjusted OR=0.50, 95% CI 0.31, 0.81).

CONCLUSIONS: Our findings indicate that smoking is a strong risk factor for IUGR; the effect of cigarette smoking on growth retardation is more pronounced during the last trimester of gestation and any reduction in smoking is likely to be beneficial. Interventions to reduce maternal smoking should begin prior to the third trimester of pregnancy.

No Funding.

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POS3-006
PRENATAL NICOTINE EXPOSURE EXAGGERATES SYNAPTIC CARDIORESPIRATORY INTERACTIONS IN THE MEDULLA: IMPLICATIONS FOR SUDDEN INFANT DEATH SYNDROME
David Mendelowitz*, Ph.D., Robert Neff*, Ph.D., and Kathleen Griffioen, B.S.

Maternal cigarette smoking and prenatal nicotine exposure are the highest risk factors for Sudden Infant Death Syndrome (SIDS), the most common cause of death in infants between 1 and 12 months of age. During hypoxia, respiratory frequency and heart rate transiently increase and subsequently decrease. These biphasic cardiorespiratory responses normally serve to prolong survival during hypoxia by reducing the metabolic demands of cardiac and respiratory muscles. However, exaggerated responses to hypoxia may be life-threatening and have been implicated in SIDS. Infants that succumb to SIDS have a severe centrally mediated slowing of the heart which precedes or accompanies apnea. Heart rate is primarily determined by the activity of brainstem preganglionic cardiobothal vagal neurons. We developed an in vitro rat brainstem slice preparation that maintains rhythmic inspiratory-related activity and contains fluorescently labeled cardiac vagal neurons. Synaptic inputs to cardiac vagal neurons were examined using patch-clamp electrophysiological techniques. Hypoxia evoked a biphasic change in the frequency of both GABAergic and glycinegic respiratory related inhibitory post-synaptic currents (IPSCs) in cardiac vagal neurons, comprised of an initial increase, followed by a decrease in IPSC frequency. Prenatal exposure to nicotine changed the GABAergic response to hypoxia from a biphasic response to a precipitous decrease in GABAergic IPSC frequency. Hypoxia also recruited an excitatory glutamatergic synaptic pathway to cardiac vagal neurons during gasp-like events in animals exposed to prenatal nicotine, but not in unexposed animals. These results establish a neurochemical link between prenatal nicotine exposure and an exaggerated bradycardia during hypoxia that may contribute to SIDS.

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POS3-008
DOES PREGNANCY SMOKING AFFECT CHILDHOOD AND YOUNG ADULT CANCER INCIDENCE IN THE OFFSPRING?

Smoking causes several cancers typically arising in adulthood. Some are also rare occurrences in childhood, though cancer in childhood is much less common and the cancers typical at young ages are very different from those of adulthood. It is plausible that foetal exposure to tobacco-derived carcinogens is a cause of some childhood cancers, but this is difficult to differentiate from possible effects of exposure to environmental tobacco smoke in childhood. A review in 2000 suggested an estimate for the increased risk of all childhood cancer amongst offspring of women smoking in pregnancy of 10% (RR 1.1 95% CI 1.03-1.19). We have used information prospectively assembled in the Oxford Record Linkage Study, which combines information collected antenatally and at delivery, and on subsequent hospital admissions, with cancer registrations and deaths for mothers and offspring who continue to reside in the study area. More than 320,000 delivery records form the cohort base and we identified 548 babies born between 1965 and 1989 with the cancers typical at young ages are very different from those of adulthood. Smoking during pregnancy of >37 gestational weeks, was based on race and sex specific standards for SC. Statistical analyses were performed with SUDAAN software for weighted data. The cohort consisted of 2,862 term births (weighted n=105,306). Term-IUGR, defined as less than the tenth percentile of birthweight for gestational age among infants of <37 gestational weeks, was based on race and sex specific standards for SC.

RESULTS: The odds of having a term-IUGR baby were 3.69 times (95% CI 2.39, 5.68) greater among women who smoked prior to conception and during the third trimester than among women who did not smoke either time after adjusting for confounders. Among women who smoked prior to conception but quit smoking prior to the third trimester of pregnancy, the risk of having a term-IUGR baby was similar to that of the nonsmoker. Among smokers, reduction by 10 cigarettes per day prior to the third trimester decreased the risk of IUGR by 50% (adjusted OR=0.50, 95% CI 0.31, 0.81).

CONCLUSIONS: Our findings indicate that smoking is a strong risk factor for IUGR; the effect of cigarette smoking on growth retardation is more pronounced during the last trimester of gestation and any reduction in smoking is likely to be beneficial. Interventions to reduce maternal smoking should begin prior to the third trimester of pregnancy.

No Funding.

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DIFFERENCES IN SMOKING-RELATED VARIABLES BASED ON PHENYLTHIOCARBAMIDE TASTER STATUS
Sandy M. Snedecor*, M.S., Cynthia S. Pomerleau, Ph.D., Ann M. Mehringer, M.S., Raphaella Ninowski, M.A., and Ovide F. Pomerleau, Ph.D., University of Michigan Nicotine Research Laboratory

Test strips impregnated with phenylthiocarbamate (PTC) have been used to identify genetic differences based on whether a bitter taste is perceived. Because ability to taste PTC has previously been associated with other drug use, we wished to determine whether smokers perceiving PTC as bitter-tasting would have a different smoking history from those who describe it as tasteless. Specifically, we hypothesized that individuals who were sensitive to the bitter taste of PTC might also be more sensitive to the bitter taste of nicotine and therefore attain lower levels of nicotine addiction compared to smokers who perceive PTC as tasteless. We studied 464 current smokers (70% female, 79% White; age 30.5 ± 9 years) recruited to participate in laboratory experiments and clinical trials. The distribution of responses was: 217 (47%) reported the strips as tasteless, and 154 (33%) correctly reported them as bitter. The remaining 93 (20%) described the taste as salty, sweet, or other. In a comparison of the two groups with clear taste response, we found no difference in age, sex, race, smoking rate, or age started smoking regularly. Significant differences were observed in total years smoked (14.5 ± 9.2 for non-tasters, vs. 12.6 ± 8.4 for tasters, p < 0.05), FTQ (6.4 ± 2.1 vs. 5.8 ± 2.1, p < 0.01) and score on the Positive Reinforcement Questionnaire (8.1 ± 2.9 vs. 6.8 ± 3.1, p < 0.05). These findings raise the possibility that taster status may be a marker of susceptibility to nicotine dependence and suggest that further research using more sophisticated methodology is warranted.

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GENETIC INFORMATION FOR ALPHA-1 ANTI-TRYPSIN DEFICIENCY MAY INDUCE CHANGES IN SMOKING BEHAVIOR
Matthew Carpenter*, Ryan Dickson, Cindy Carter, Yonge Jones, Brian Holladay, and Charlie Strange

As genetic testing becomes increasingly widespread, genetic information may result in behavior change if disease course is modifiable. Few studies have examined changes in behavioral health outcomes as a function of genetic testing. Alpha-1 Antitrypsin (AAT) Deficiency (AATD) is a genetic condition that may lead to chronic obstructive pulmonary disease for some people. Thus, knowledge of AAT genetic status may induce cessation among smokers who test positive for the deficiency, or undermine cessation among smokers who test negative. As part of a large study examining the psychosocial impact of AATD testing, individuals with N1-1.495) completed a blood test kit and were informed of their AAT genetic status. Of these, 356 who identified as current smokers at the time of testing were sent a follow-up questionnaire 3 months after receiving test results, and 130 (37%) responded (95% Caucasian; 53% female; mean age 41 years) indicating a genetic status representative of the larger population (59% AAT non-deficient; 36% AAT carrier; 5% AAT severely deficient). In the 3 months following testing, 66% vs. 85% vs. 100% of smokers who tested non-deficient vs. carrier vs. deficient for AAT expressed a plan to quit smoking (p < .05). Cigarettes per day decreased 7% vs. 20% vs. 53% (p < .001). Similarly, 40% vs. 39%, vs. 71% made a quit attempt (p > .05). Although limited by small sample size, these preliminary trends suggest that knowledge of AATD genetic status, but perhaps not carrier status, may motivate smokers toward health change. An update, with larger sample size and additional cessation data, will be presented during conference proceedings. Study funded by a Grant from the Alpha-1 Foundation (C. Strange, PI).

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POS3-013
DIFFERENCES IN SMOKING TOPOGRAPHY ASSOCIATED WITH CYP2A6 GENOTYPE
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Approximately 80% of nicotine is inactivated when metabolized to cotinine. Variations in CYP2A6 genotype alter the rate of nicotine metabolism. Previous research has demonstrated that smokers with variant alleles associated with slower metabolism smoked fewer cigarettes per day and per week compared to those smokers who were homozygous normal. Smokers can also control their nicotine administration on a per cigarette basis by adjusting smoking topography measures, such as number of puffs, puff volume, puff velocity, and puff duration. Participants (n=119) smoked one of their preferred brand cigarettes through a smoking topography device and provided a blood sample for genotyping as part of the baseline session of a large nicotine replacement therapy study. Smokers with genotypes associated with slow or poor metabolism took significantly smaller puff volumes than those with genotypes associated with intermediate/normal nicotine metabolism. Analyses indicate no significant association with CYP2A6 genotype and number of puffs, puff velocity, puff duration, or time between puffs. These results suggest that in addition to smoking fewer cigarettes, those who metabolize nicotine slowly may also be taking smaller puff volumes on the cigarettes they smoke relative to those who metabolize nicotine normally.

This study was supported by Transdisciplinary Tobacco Use Research Center grant P50-CA84718 from the National Cancer Institute and National Institute on Drug Abuse and CIHR MOP53248.

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POS3-014
DRD2-TAQ1A GENOTYPIC MODERATION OF BUPROPION TREATMENT EFFICACY FOR SMOKING CESSATION AT 6-MONTH FOLLOW-UP
Sean P. David, M.D., S.M., George D. Papandonatos, Ph.D., Marcus R. Munafò, Ph.D., Jeanne M. McCaffery, Ph.D., Caryn Lerman, Ph.D., Elizabeth E. Lloyd-Richardson, Ph.D., Peter G. Shields, M.D., Richard A. Brown, Ph.D., and Raymond Niaura, Ph.D.

This randomized, placebo-controlled clinical trial examined the influence candidate genes in the dopamine pathway and CYP2B6 on treatment response to bupropion for smoking cessation. Smokers of European ancestry (N = 292) provided blood samples for genetic analysis and received bupropion or placebo (10 weeks) plus counseling. Assessments included the dopamine D2 receptor (DRD2 Taq1A) genotype, dopamine transporter (SLC6A3 3’VNTR) genotype, cytochrome P450 2B6 (CYP2B6 1459 C>T), and cotinine-verified 7-day point prevalence. Univariate association models with 6-month intent-to-treat analyses of smoking abstinence were fit using logistic regression. Of the potential interaction effects examined, only that for DRD2 reached statistical significance (p<0.03). Among smokers with the DRD2 Taq1A/A2/A2 genotype there was a 21% difference [34%, 95% Cl = (0.24, 0.35)] for bupropion group vs. 13%, 95% CI = (0.07, 0.22) for the placebo group) in 6-month biochemically-verified abstinence, whereas there was absolutely no response to bupropion therapy among A1/A1 or A1/A2 subjects (23% abstinence rate on both arms). This study provides the first demonstration in a prospective clinical trial of a significant DRD2 by bupropion interaction for smoking cessation.

This study was funded in part by Public Health Service grants HL32318, P50CA84719, K08 DA14276-03 and by Glaxo-Smith-Kline, Inc.

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POS3-015
SEROTONIN TRANSPORTER GENOTYPE AND TRANSDERMAL NICOTINE REPLACEMENT THERAPY EFFECTIVENESS
Sean P. David*, M.D., Patricia L. Yudkin, Ph.D., Marcus R. Munafò, Ph.D., Elaine C. Johnstone, Ph.D., Robyn Jacob, B.Sc., and Robert T. Walton M.D., University of Oxford

In vitro research demonstrates that nicotine stimulates 5-HT1A receptors in the nucleus accumbens and amygdala. PET research has shown that polymorphism in the serotonin transporter (SHTT) gene is associated with diminished 5-HT1A binding in multiple brain regions. It is biologically plausible that nicotine replacement effectiveness would be associated with SHTT genotype. 750 smokers from a randomized trial of transdermal nicotine replacement for smoking cessation were genotyped for SHTT. Abstinence was assessed at 1 and 4 weeks by self-report and CO, and 12 weeks with cotinine. We hypothesised that quit rate would be highest for LL genotype and active patch, then SS/LS active, LL placebo, and SS/LS placebo. At one week, the ORs for abstinence were 1.94 (1.30, 2.88) for SS/SL compared with 1.81 (1.08, 3.02) for LL. At 1 and 4 weeks and 1 and 12 weeks, the ORs were 2.32 for SS/SL (1.46, 3.69) and 1.45 for LL (0.82, 2.57). The relative effectiveness of patch by genotype was not statistically significant at any time point (Breslow-Day Test of Homogeneity of ORs: 1 week [p=0.83], 1 and 4 weeks [p=0.21]; 1, 4 and 12 weeks [p=0.36]). We could not demonstrate a significant effect of SHTT genotype on patch effectiveness. The descriptive results are not inconsistent with our hypothesis, but this may be due to chance as there was not a main effect of SHTT genotype.

This research was supported by Cancer Research UK, PHS Grant #1 K08 DA14276-03 and Robert Wood Johnson Foundation Generalist Physician Faculty Scholars Award.

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POS3-016
CHALLENGES IN TRANSLATING EMERGING GENETIC RESEARCH INTO IMPROVED SMOKING CESSATION TREATMENT: WILL THE PROMISE BE REALIZED?
Alexandra E. Shields*, Ph.D.

Some of the most promising developments in genetic research are focusing on innovative pharmacotherapy studies that may lead to improved smoking cessation treatment options, including tailoring treatment by genotype. While these studies hold great potential for reducing the burden of smoking on the nations health, there will be several major challenges in translating this emerging knowledge into clinical practice. This paper reviews (1) ethical, social, and policy issues pertinent to the integration of genetic-based treatments into clinical practice, (2) reports on original qualitative research investigating smokers openness to undergoing genetic testing in order to be matched to optimal treatment and (3) summarizes results of a national survey of 2000 primary care physicians regarding their attitudes toward the use of genetic testing to tailor smoking treatment, major ethical and social issues raised by the prospect of incorporating new genetic treatments into clinical practice. Strategies and inputs needed to address possible barriers to realizing the full benefit of emerging genetic research to improve smoking treatment are then addressed.

This work is supported by The Robert Wood Johnson Foundation and was conducted under the auspices of the PENN-Georgetown Transdisciplinary Tobacco Use Research Center.

CORRESPONDING AUTHOR: Alexandra E. Shields, Ph.D., Health Policy Institute, Georgetown University, 2233 Wisconsin Ave., N.W., Suite 525, Washington, DC 20007, USA; email: shields@georgetown.edu.
OBJECTIVE: To identify the predictive values of smoking abstinence at 15, 30, 60, 90 days and at 180 days in smokers treated with NRT, bupropion or combined therapy (NRT + bupropion) according with the SEPAR guidelines.

PATIENTS AND METHODS: multicenter, longitudinal and prospective study in smokers older than 18 years. Evaluations were made at 15, 30, 60, 90, and 180 days. In each visit, abstinence was determined by SR and CO measurement in expired air. The probability of abstinence at 15, 30, 60 and 90 days has been calculated against the probability of not have been at 180 days (odds ratio and confidence interval 95%). The statistical significance level are p < 0.05.

RESULTS: The study group included 904 smokers, 476 men and 428 women, with a mean age of 42.5±10.1 years. None of the personal variables (gender, age, comorbidity, number of cigarettes smoked per day, Fagerström, CO in expired air) are predictors of abstinence. Subjects who smoked during weeks 1 and 2 were significantly less likely to be abstinent from smoking at 180 days than those who did not smoke during weeks 1 and 2. The abstinence at 15 days are the better predictive variable with the outcomes at the 180 days (OR 3.11. CI 95%: 2.80-3.46).

CONCLUSION: the 15 days abstinence were the better predictive variable of outcomes at the 180 days.

None.

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POS3-021  SENSITIVITY AND SPECIFICITY OF QUANTITY/FREQUENCY DATA FOR IDENTIFYING NICOTINE DEPENDENCE

Lisa Dierker*, Nicholas Perrin and Richard Clayton

BACKGROUND: To date, little is known about the level of smoking that is nec-

essary to achieve nicotine dependence. The relative lack of research

attention is largely based on the fact that dependence criteria are typically evalu-

ated if respondents meet a rather high level of smoking, thus artificially constrain-

ing the range of possibly quantitative/frequency levels. Recent data collected by

the Tobacco Etiology Research Network are ideal for addressing this topic due to 1.

planned over-sampling across the continuum of use, and 2. the markedly low

threshold of use required for the evaluation of dependence criteria. Thus, the pres-

ent study examines cut points for quantity and frequency of smoking that most

accurately classify individuals with nicotine dependence.

METHODS: Drawing on a college freshman sample selected for representation

of smoking behavior across the continuum of use, quantity and frequency of smok-

ing behavior as well as dependence symptoms based on DSM-IV criteria were

assessed.

RESULTS: ROC curves were utilized to determine cut points for smoking quan-

tity and frequency that maximize the sensitive and specific characterization of nic-

cotine dependence. Smoking 3 or more cigarettes (quantity) or smoking on 2 or more

days (frequency) during the preceding week emerged as the most meaningful cut

points. Corresponding sensitivity and specificity estimates were (Se 95% Sp 94%) and

Sensitivity and specificity estimates were (Se 95% Sp 94%) and 95% (Sp 95%), respectively. The combination of nicotine and frequency data did not improve accurate classification of nicotine dependent individuals.

DISCUSSION: Aside from the substantive implications of this study in terms of

emerging dependence at non daily smoking levels, these results may be used to

inform a brief screen in studies that require a high concentration of dependent

smokers.

This research was sponsored by the Robert Wood Johnson Foundation, Tobacco Etiology Research Network (TERN).

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POS3-022  DIMENSIONALITY OF TOBACCO DEPENDENCE: A PRINCIPAL COMPONENTS ANALYSIS

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1; Center for Health Sciences, SRI International, Menlo Park, CA; 2Yale School of Medicine, New Haven, CT; and 3Oregon Research Institute, Eugene, OR

Principal components analysis was conducted on 86 individual items from the

Fagerström Test for Nicotine Dependence (FTTD), Nicotine Dependence Scale

(NDS), Early Smoking Experiences (ESE), Reinforcement Scale, and Reasons for

Smoking scales in a sample of 294 lifetime regular smokers (mean age 37.7 ±

13.0SD) from the longitudinal Smoking in Families Study (Hops, PI). Based on

standard criteria and parsimony, we identified 10 orthogonal factors. Items with

high loadings were used to define: (1) FTND/Automaticity; (2) Stimulaton/Focus;

(3) Reinforcement; (4) Social/Sensory; (5) Affect Control; (6) Dependence (NDS);

(7) Unpleasant ESE; (8) Weight/Appetite Control; (9) Pleasant ESE; and (10)

Nervous/Jittery. Compared to women, men had higher scores on FTND/

Automaticity and Pleasant factors, and lower scores on Affect and Weight/Appetite

control factors. Adjusting for sex, stepwise forward regression showed that current

smoking and having quit smoking for one year were associated with the largest

number (4-5) of factors, implying multi-dimensionality to these measures. In

contrast, length of time (day to years) between the first and second cigarettes

was associated with the Unpleasant (positive) and Pleasant (negative) factors only,

suggesting that subjective reactions to first cigarettes mediate the role of progres-

sion to regular smoking. Overall, these results (i) provide additional evidence for

the multi-dimensionality of tobacco dependence; (ii) demonstrate sex differences in

the severity of some dimensions; (iii) help identify potentially informative items for

future tobacco dependence assessments; and (iv) provide composite phenotypes

to be used in linkage analysis.

Research supported by the UC Tobacco Related Disease Research Program

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POS3-023  THE NICOTINE DEPENDENCE SYNDROME QUANTITY SCALE AND DSM-IV NICOTINE DEPENDENCE – A COMPARISON IN FINNISH SMOKERS

Ulla Broms*, M.Sc., Pamela A.F. Madden, Ph.D., Andrew C. Heath, Ph.D., Saul Shiffman, Ph.D., and Jaakkko Kaprio, M.D., Ph.D.

The Nicotine Dependence Syndrome Scale (NDSS; Shiffman et al, NTR 2004:6:327-48) is a multidimensional measure of nicotine dependence. The aim of this study was to examine how NDSS scores correlate with nicotine dependence defined by the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria among Finnish smokers participating in an ongoing family study of cigarette smoking. Twin pairs concordant for smoking were identified in the Finnish Twin Cohort Study. Siblings and parents of the adult twins were also interviewed by tele-

phone using a structured interview assessing smoking habits and nicotine depend-

ence based on DSM-IV criteria and FTND-related criteria. Subjects filled out a

questionnaire with the NDSS scale (33 items) soon after the interview. We carry

out analyses on 865 smokers. The NDSS-T score (a summary measure of

dependency) was normally distributed with overall mean of -0.79, SD 1.20, and

correlated highly (r=0.66) with the FTND score. We grouped the 865 smokers into
ive equally sized groups based on their NDSS-T score. The mean NDSS-T scores

in these groups were -2.58, -1.58, -0.88, -0.09, and 0.97. The corresponding pro-

portions of nicotine dependent smokers by DSM-IV criteria in these five groups

were 28%, 47%, 60%, 75%, and 86%. The corresponding odds ratios of DSM-IV
dependence were 1.0, 2.35, 3.83, 7.52, and 15.42. Thus, the NDSS-T is highly

associated with DSM-IV defined nicotine dependence.

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POS3-024  DEVELOPMENT OF INSTRUMENTS AND METHODS FOR TOBACCO USE ASSESSMENT IN THE DOMINICAN REPUBLIC


To provide a systematic assessment of tobacco use and a range of related vari-

ables in 6 communities in the Dominican Republic (DR) participating in a 5-year,

NIH-funded project, 3 sets of instruments were developed: community surveil-

lance, community survey, and smoker cohort survey. This paper will describe

the methods used to develop the instruments, train local DR data collectors to con-

duct the household surveys, and implement data collection and entry. Survey instru-

ments were developed based on results of qualitative assessment of tobacco use,

attitudes, and exposures, using Rapid Assessment Procedures (RAPs), and on

other national and global surveys, to maximize within- and cross-country compar-

isons of results. Instruments were translated into Spanish, using the Brislin

Method. Surveys were pre-tested in the US and DR to ensure cultural appropri-

ateness and clarity, and pilot tested in a DR community that was similar to the tar-

get sites. Existing local volunteer health workers in the 6 communities (vigilantes)

were trained and certified by the DR-US teams and local university faculty in

bioethics, confidentiality, basic survey methodology, and data collection protocols,

as a means of building local research capacity. Group training in a central location

was supplemented by on-site review and oversight of implementation by the proj-

dect DR team. This approach resulted in successful assessment of our target 175

households per community and 600 smokers across communities. Issues in devel-

opment, training, implementation, and lessons learned will be discussed.

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POS3-025

CHANGE IN REPORTED TIME TO FIRST CIGARETTE AND CIGARETTES PER DAY OVER 8-MONTHS AMONG SMOKERS IN THE INTERNATIONAL TOBACCO CONTROL POLICY EVALUATION SURVEY

Richard J. O’Connor*, Geoffrey T. Fong, and K. Michael Cummings for the ITCPES Research Team

Time to the first cigarette of the day (TTF) and cigarettes per day (CPD) are common measures of nicotine intake and dependence. However, few studies have examined these measures stability over time. We examined stability/change of TTF and CPD over the first two waves (8 months apart) of the International Tobacco Control Policy Evaluation Survey (ITCPES), a cohort survey of approximately 6000 adult smokers in the U.S., Canada, United Kingdom, and Australia. Stability was assessed using intra-class correlation (ICC). A square-root transformation was applied to CPD, and a natural log transformation was applied to TTF to normalize their distributions. Across countries, the average ICC was 0.768 (95% CI: 0.749, 0.785) for CPD and 0.772 (0.755, 0.787) for TTF. No significant differences were noted among the four countries on CPD, though TTF was somewhat less stable among CA smokers than among AU smokers (0.745 vs. 0.798). For TTF, 31% of smokers showed minimal change (<10%), 28% decreased TTF by at least 10%, and 41% increased TTF by at least 10%. For CPD, 35.2% showed minimal change (<10%), 37.3% showed a CPD decrease of at least 10%, and 27.5% showed at least a 10% increase in CPD. CPD change was significantly related to TTF change [X^2(4)=70.1, p<.001]. For both measures, stability was significantly higher among smokers reporting no quit attempts since the last interview. TTF and CPD strongly inter-correlated, even though substantial numbers of smokers change their smoking patterns over time.

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POS3-027

A MULTIDIMENSIONAL MEASURE OF ADOLESCENT SMOKING BEHAVIOUR: THE LIKELIHOOD OF ACTION SCALE FOR SMOKERS—ADOLESCENTS (LASS-A)

Cameron D. Norman*, Harvey Skinner and Deva Thiruchelvam

A theory-based measure of adolescent cigarette smoking behaviour change was developed using a multi-theoretical framework for assessing probability of behaviour change over time. The basic model hypothesizes that Resistance to Smoking influences Behavioural Intentions, which affect Cigarette Consumption Behaviour. Using this framework, a 29-item measure of behaviour change (the Likelihood of Action Scale for Smokers — Adolescents, LASS-A) was developed as an assessment tool for use in evaluating a school-based program as part of a 6-month randomized trial. 738 students completed the LASS-A at baseline, post-intervention, and three and six-month follow-up. Data from the control group were analysed to assess the internal consistency reliability and factor principal components analysis produced an internal consistency score. Confirmatory factor analysis on the LAS suggested a unidimensional over estimating the likelihood of action, which was tested using structural equation modelling at baseline for a measurement model. A baseline measure of time to first cigarette of the day was developed using a hypothesis testing approach. The study model was confirmed using structural equation modelling with Mplus v2.14 (Muthén & Muthén, 2002) (2 = 300.50, df = 159, p < .001) with an excellent fit (CFI = 0.95; TLI = 0.93; RMSEA = 0.067, p = .05 < 0.000; SRMRS = 0.036). A growth model was fit using follow-up data, (2 = 1450.986, df = 583, p = 0.0000). The convergence of the fit measures indicated a strong fit for the model growth over the three time points (CFI = 0.927, RMSEA = 0.057, p = 0.05 < 0.001; SRMRS = 0.057), which indicated the model was stable over time. Findings suggest that likelihood of action operates through increasing resistance that influences intention and then smoking behaviour and that this pathway of change is stable over time. The LASS-A provides a valuable assessment instrument for longitudinal tobacco control research.

This study was funded through a research operating grant from the Canadian Institutes for Health Research (CIHR) (H. Skinner, PI) and two studentships grants from the Ontario Tobacco Research Unit (C. Norman, PI).

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POS3-026

QUESTION TEST FOR MEASURING READINESS TO QUIT

V. Levshin

The follow-up of visitors of a smoking cessation service discovered that about 35% of smokers addressed for assistance did not attempt to quit. The purpose of the present work was to create and to implement in clinical practice an affordable test for accurate measure of smokers motivation to quit. On the first stage of this work the initial variant of the questionnaire was prepared which contained 15 questions concerning smokers attitude to his habit, past experience of quitting, willingness to stop smoking. Totally 290 current smokers visited smoking cessation service were examined with the initial variant of the questionnaire. Associations between variants of the answers on each of 15 questions and results of smoking cessation assistance were estimated by account of adjusted odds ratio. After the appropriate analysis we selected only those questions the answers to which had a notable association with results of the smoking cessation assistance. As a result of this revision only 5 questions were selected to be included in the diagnostic question test for a measuring of a degree of motivation to quit smoking. Smokers with a test score 6 and more were 6 times more likely to attempt quitting and 4.5 times more likely to quit for more than 1 month than smokers with a score <6, correspondingly OR = 6.2 (95% CI = 1.71-22.46) and OR = 4.44 (95% CI = 1.23-16.05). Motivation is one of the most important factors in determining a quit attempt and also an efficacy of a smoking cessation assistance. The offered question test is a method of choice to accurately measure smokers relation to their smoking habit and his motivation to quit.

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POS3-028

MEASUREMENT OF SMOKING OUTCOME EXPECTANCIES IN CHILDREN: THE SMOKING CONSEQUENCES QUESTIONNAIRE—CHILD

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Based on evidence highlighting the importance of nicotine-related measures to be developmentally and age-appropriate, we developed a smoking outcome expectancy measure (the Smoking Consequences Questionnaire-Child; SCQ-C) for children ages 7 to 12 years enrolled in a tobacco prevention program. We used the recommendations of Nicholson et al. (2002) regarding development of nicotine-related surveys for youth. Items were derived from both qualitative and quantitative sources, including focus groups, pilot work, and content sampling of the Smoking Consequences Questionnaire. We used a dichotomous agree/disagree response format to 20 items describing possible consequences of smoking a cigarette. Confirmatory factor analysis (CFA) was used to compare four factor structures, implied by previous theory and empirical research: (A) a Four-Factor Model consisting of scales measuring positive reinforcement, negative reinforcement, negative consequences, and weight control; (B) a Three-Factor Model consisting of scales measuring positive reinforcement, negative consequences, and weight control; (C) a Two-Factor Model consisting of scales measuring positive reinforcement and negative consequences; and (D) a One-Factor Model assessing a global measure of smoking attitudes. The Three-Factor model with 16 items was retained as the final model. All of the items had primary factor loadings greater than .35 and negligible cross-loadings. The reliability estimates for the sub-scales ranged from .67 to .7. The SCQ-C Positive Reinforcement scale was associated with children smoking behavior, and the SCQ-C Negative Consequences scale was inversely related to having a parent or other immediate family member who smoked. These tests provide initial evidence of construct validity.

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POS3-029  A BRIEF SET OF ASSESSMENT ITEMS FOR SMOKING CESSATION TREATMENT MATCHING AND STEPPED CARE

Paul W. McDonald*, Taryn McKnight, and K. Stephen Brown

BACKGROUND: Not all types and intensities of treatments for smoking cessation are equally effective or cost efficient with all types of smokers. Tailoring the content of behavioral interventions improves their effectiveness. Using smokers characteristics to match them to the type and intensity of treatment has the potential to improve both effectiveness and cost efficiency by creating a standard method for treatment referral. Purpose. To test questions and scoring procedures to create a simple assessment tool to triage smokers into different types and intensities of treatment for smoking cessation.

METHODS: Random digit dialing was used to select and administer a baseline telephone survey to 529 adult Canadian smokers. The baseline survey included potential triage items and criterion measures related to intentions to quit, nicotine dependence, medical history, stress, social support and self-efficacy for smoking cessation. A follow-up survey of potential triage items was re-administered seven days after baseline to assess test-retest reliability.

RESULTS: At least one assessment item related to readiness to quit, nicotine dependency/daily consumption, social support and stress had sufficient validity (r=.30), sensitivity (>.80), specificity (>30) and reliability (K=40) for inclusion in a possible triage tool. Additional potential items are identified to assess co-morbid complications and self-efficacy.

CONCLUSIONS: The identified questions represent the first essential step in creating a practical, easy to use tool to triage smokers into different types of treatment for smoking cessation.

Funding was provided by Health Canada and the Heart and Stroke Foundation of Ontario.

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POS3-030  MEASURING NICOTINE INTAKE AMONG DEPENDENT ADOLESCENT SMOKERS: COMPARABILITY OF SALIVA AND PLASMA MEASURES FOR NICOTINE, COTININE AND THIOCYANATE

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Characterizing exposure to cigarette smoke relies on measuring biomarkers, primarily nicotine metabolites, cotinine and thiocyanate. The present study compared plasma and saliva concentrations of nicotine, cotinine, and thiocyanate in highly addicted adolescent smokers. Eighty-four cessation-seeking adolescents (mean age 15.2 SD 1.3, 70% female, 31% African American, mean Fagerström Test for Dependence 6.5 SD 1.6, mean years smoked 2.6 SD 1.6) enrolled in a smoking cessation study. Before entering treatment, participant height and weight were recorded, and plasma and saliva specimens were collected. Specimens were analyzed using gas chromatography to determine nicotine and cotinine concentration, and colorimetry to determine thiocyanate concentration. Pearson correlation coefficient analysis showed a strong correlation between saliva and plasma cotinine measures (r=.746, p<.001), but no significant saliva/plasma correlations for nicotine and thiocyanate concentrations. On average, saliva cotinine concentrations were 13% higher than those in plasma. The ratio of saliva cotinine to plasma cotinine was similar across gender, but differed positively by body mass index (r=.273, p=0.015). These results suggest that among heavy adolescent smokers, there is poor concordance between plasma and saliva for nicotine and thiocyanate, but cotinine levels in saliva are comparable to those in plasma. However, individual differences in body mass index appear to influence the ratio of saliva and plasma cotinine concentrations.

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POS3-031  THE PIERCE SUSCEPTIBILITY QUESTIONNAIRE AND ITS USEFULNESS FOR UNITED STATES AIR FORCE RECRUITS

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Once, those who were not regular users of tobacco by the time they reached adulthood were unlikely to initiate tobacco use. Therefore, measures of susceptibility to tobacco use initiation were developed primarily for youth. Recent data indicates that the rates of smoking initiation among young adults are on the rise. Military recruits in particular are at high risk for smoking initiation and being able to identify those who are most susceptible to tobacco use would be helpful in directing prevention and intervention efforts towards those most at risk. This study used a modified version of the Pierce Susceptibility Questionnaire (PSQ) to determine whether it could accurately identify those most likely to initiate or relapse after Basic Military Training (BMT). ACTIVE duty recruits entering the United States Air Force over a one year period (N=31,107; 25.2% female) were assessed upon entry into BMT and a sub-sample were assessed at a 12 month follow-up. Those identified by the PSQ as susceptible to smoking at baseline were three times more likely (OR=3.122, CI=2.84-3.43, p<.001) to be smoking at follow-up than those who were not susceptible. The revised PSQ would likely prove to be an effective means for assessing the likelihood of tobacco use initiation among military recruits.

No Funding.

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POS3-032  SMOKING, BODY WEIGHT AND MILITARY FITNESS

C. Keith Haddock*, Ph.D., Sara A. Pyle, M.A., Walker S.C. Poston, Ph.D., M.P.H., and Jennifer Taylor, Ph.D., University of Missouri, Kansas City

The US military has adopted different approaches to discouraging tobacco use and supporting troops in maintaining a healthy weight. According to a recent Institute of Medicine report, the military has opted for a highly disciplinary, motivational approach to weight management. Body weight is a component of military fitness. In contrast, comprehensive tobacco cessation programs are provided on every military installation and there are no administrative penalties for smoking. This study contrasted the relative utility of body weight and smoking as markers for fitness for duty. Using data from the 2002 Department of Defense World Wide Survey of Health Related Behaviors, (N = 12,149; 24.7% Female) troops were categorized by weight (underweight, normal weight, overweight, obese) and smoking status (never use, ex-smoker, current smoker, polyuser (i.e., smoke plus use chew)). Comparisons were made on substance abuse, health behaviors, psychological problems, and legal/administrative problems. Results suggested that smoking, not body weight status, is a strong, consistent marker for fitness for duty. For example, current smokers were four times (21.2%) and polyusers were six times as likely (32.5%) to report alcohol dependence compared to never smokers (5.4%). In contrast, increasing body weight was associated with a lower likelihood of alcohol dependence. Similarly, current smokers were twice as likely (10.2%) and polyusers were three times as likely (12.1%) to report receiving judicial punishment as never smokers (4.3%). In contrast, underweight troops were most likely to have received a judicial punishment (9.2%) while obese troops were the least likely (6.6%). The military should consider smoking status as a marker of fitness for duty.

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POS3-033  PREDICTORS OF WEIGHT GAIN AFTER SMOKING CESSATION – THE INTER99 STUDY
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BACKGROUND: Weight gain is a barrier to quit smoking. In order to prevent weight gain after smoking cessation we have to improve our knowledge of the predictors of weight gain. Aim: we wanted to examine the changes in weight after smoking cessation and to look at predictors of weight gain. We focused on baseline BMI, tobacco consumption, lifestyle, psychic vulnerability, sex, age and socioeconomic status.

METHODS: INTER99 is a randomised population based intervention study. 2,408 daily smokers in all motivational stages were included at baseline and encouraged to quit. Smokers in the high intensity intervention group were offered participation in smoking cessation groups. Logistic regression was used to find predictors of weight gain of min. 5 kg after smoking cessation.

RESULTS: 221 persons were validated as point abstinent at 1-year follow-up. 88% had gained weight at 1-year follow-up. BMI at baseline was 25.9 and 26.9 for smokers and never smokers, respectively. BMI at 1-year follow-up was 25.7 and 26.6 for smokers and quitters-within-12 months, respectively. The mean weight gain among those who were abstinent was 4.2 kg (4.3) and 41% had gained 5 kg or more. Abstinence significantly predicted weight gain of 5 kg or more compared to continuous smokers (OR=8.8 (95%CI 6.2:12.5)). Neither BMI, psychic vulnerability, alcohol consumption, physical activity level, socioeconomic status (baseline factors) did significantly influence the weight gain of 5 kg or more in validated ex-smokers. Women and heavy smokers were twice as probable to gain min. 5 kg (Woman: OR 1.98 (95% CI 1.1-3.4). Heavy smoker: OR 1.85 (95% CI 1.0-3.3))

CONCLUSIONS: Most smokers gained weight when they quit. BMI of the quitters at 1-year follow-up was comparable to BMI of never smokers at baseline. Abstinence at 1-year follow-up increased the probability of weight gain of min. 5 kg almost 9 times. Lifestyle and several other factors which are supposed to be associated with higher weight had no influence on weight gain after smoking cessation. Being a woman or having higher tobacco consumption before smoking cessation almost doubled the probability of weight gain of 5 kg or more.

No funding.

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POS3-034  SMOKERS QUIT BEHAVIORS AND INTENTIONS: DO THEY VARY BY BODY MASS INDEX?
Lori Diemert*, B.Sc., J. Charles Victor, M.Sc., and Joanna Cohen, Ph.D., Ontario Tobacco Research Unit, University of Toronto

Smoking and obesity are leading preventable threats to public health; however, few studies have examined the association between obesity and intention to quit. This study examined tobacco-related behavior change and quitting intentions of obese and non-obese smokers. The 2001 Canadian Community Health Survey, a representative sample of the population. Obese (n=4,499) and non-obese (n=25,691) smokers were compared for tobacco-related behavior change that: a) was made during the past year; b) needed to be made; and c) intended to be made in the coming year. Logistic regression was conducted controlling for age, sex, income, perceived health, physical activity, diet, and years smoked. Obese smokers were less likely to reduce smoking in the past year compared to non-obese smokers (OR=0.70, p=0.047). Forty-six percent of obese smokers identified quitting smoking as the most important factor needed to improve their health, significantly more than the 20% who identified losing weight (p=0.05). However, compared to non-obese smokers, obese smokers were less likely to identify quitting as the most important factor (OR=0.62, p=0.001). A similar relationship was identified for intention to quit in the coming year. However, obese smokers were more likely than non-obese smokers to intend to reduce smoking (OR=1.41, p=0.038). Compared to non-obese smokers, obese smokers are more likely to prioritize smoking reduction, and less likely to prioritize quitting. Effective and multi-faceted cessation programs are needed to meet the goals of obese smokers.

No Funding.

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POS3-035  EFFECTS OF NICOTINE REPLACEMENT ON WEIGHT AND EATING BEHAVIORS IN SMOKERS
Hege Riise, David Gilbert*, and Norka Rabinovich

Changes in body weight were assessed in 171 individuals, of which 33 were randomly assigned to a continuing-to-smoke control group and 138 individuals (80.7%) were randomly assigned to an immediate-quit group. The immediate-quit group maintained chemically verified abstinence for the required 45 days. Relative to individuals randomly assigned to an active nicotine patch and those assigned to the control group, individuals assigned to the placebo patch group gained more weight after quitting. There was also a significant Group x Time x Gender interaction, indicating that weight gain across time was influenced by gender and nicotine replacement. There was also a significant Group x Time x Receptor allele interaction, indicating that weight gain across time was influenced by DRD2 genotype and nicotine replacement. After going off the patch, individuals in the nicotine patch group gained weight equivalent to those in the placebo group. The Appetite scale of the Shiftman-Jarvik Withdrawal Questionnaire and the Hunger scale of the Wisconsin Smoking Withdrawal Scale correlated with weight change across time.

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POS3-036  THE RELATIONSHIP BETWEEN POST-CESSATION WEIGHT GAIN AND DEPENDENCE
Anastasia Soureti* and Hayden McRobbie

We examined the relationship between weight gain and dependence in a sample of 293 smokers who were abstinent over 4-weeks of treatment with a combination of pharmacotherapy (Zyban or Nicotine Replacement) and weekly behavioural support. The average weight gain was 1.2kg (SD=2.2, min=5.5, max=9.0). Smokers who reported smoking within 30 minutes of waking put on 0.3 kg while those with greater latency to the first cigarette put on 5.5 kg (F(1,290)=8.5, p=0.05). There was a low but significant correlation between weight gain and Fagerstrom Test of Nicotine Dependence (R=.16, p<0.01), not affected by controlling for the effect of weight at baseline. Other findings on the relationship between weight gain and baseline post-cessation characteristics will be reported. Conclusion Smokers having their first cigarette within 30 minutes of waking up put on almost twice as much weight as less dependent smokers. The Royal London Hospital Smokers' Clinic receives funding from the UK National Health Service.

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**POS3-037**  
**BEHAVIORAL AND PSYCHOLOGICAL DIFFERENCES BETWEEN OBESE AND NONOBESE SMOKERS**

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Smoking and excess weight have been identified as the two most important contributors to excess morbidity and mortality in the U.S. Smokers who are also obese (BMI30) are therefore likely to be at increased risk, over and above that incurred by smoking, of medical conditions such as diabetes and heart disease. To explore further the implications of this combination of risk factors, we compared smokers who were obese (OB; n=40; BMI [mean±SEM]=34.9±0.7) with those who were not (NOB; n=87; BMI=23.8±0.3) in a convenience sample of participants who provided baseline data for laboratory studies. OB did not differ significantly from NOB on age or sex distribution; they were marginally more likely to be African American (Pearson Chi-Square=3.8, p=0.051). They also did not differ in smoking rate or nicotine dependence. OB were significantly less likely to meet recommendations for physical activity level (Pearson Chi-Square=4.9, p=0.026) and scored higher on measures of disordered eating and depression (Dieting and Bingeing Severity Scale, p=0.000; STAI-T Depression Subscale, p=0.013). They were significantly more likely to report increased appetite as a withdrawal symptom (p=0.046). The maladaptive patterns observed in obese smokers (lack of exercise; poor eating and nutritional practices; increased appetite during smoking abstinence) may exacerbate postcessation weight gain and are likely to require vigorous behavioral and/or pharmacotherapeutic intervention if the benefits of smoking cessation are to be fully realized.

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**POS3-038**  
**SMOKING STATUS, PHYSICAL ACTIVITY, FRUIT AND VEGETABLE CONSUMPTION, AND BODY MASS INDEX IN THE UNITED STATES: 1996-2000**

Jun Yang and Gary Giovino*

Although weight gain in former smokers is well documented, no previous population-based estimates of the potential moderating effect of physical activity and diet on body mass index (BMI) following cessation have been published. To better understand possible interactions among these variables, we analyzed BMI as a function of smoking status, physical activity, and fruit and vegetable consumption. Data from the 1996, 1998, and 2000 administrations of the Behavioral Risk Factor Surveillance System were combined (n = 438,304 participants aged 18 years or older). Smoking status was classified into 7 categories: current smoking, abstinent for <6 months, abstinent for 6-12 months, abstinent for 1-4 years, abstinent for 5-14 years, abstinent for >=15 years, and never smoking. Persons were classified as overweight/obese if their BMI was >=25.0 and as obese if their BMI was >=30.0. Physical activity and fruit and vegetable consumption were classified as in the Healthy People 2010 Objectives. Sex, age, years of education, race/ethnicity, and income were treated as control variables in logistic regression analyses. The prevalence of overweight/obesity and of obesity alone were, respectively, 49.3% and 15.2% in current smokers, 61.7% and 21.1% in former smokers, and 54.0 and 18.6% in never smokers. The adjusted odds of being overweight/obese or obese increased during the first year of abstinence and then leveled off. Across all seven smoking status categories, elevated BMI was inversely related to levels of physical activity and fruit and vegetable consumption. Biological, psychological, and economic explanations for these findings will be considered. Smokers should continue to prioritize cessation. Increasing physical activity and fruit and vegetable consumption will likely further disease risk reduction in many former smokers.

Robert Wood Johnson Foundation.

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**POS3-039**  
**BODY WEIGHT IN A NATIONAL SAMPLE OF DIABETIC AND NON-DIABETIC SMOKERS AND QUITTERS**

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Weight gain is common after quitting smoking, averaging 10-12 lbs. The health benefits of quitting smoking outweigh the risks associated with this amount of weight gain for most smokers. For diabetics, however, post-cessation weight gain might be associated with worsening glycemic control, increasing risk of complications. We compared body weight in a national representative sample of adult diabetic and non-diabetic current smokers, short- (<1 yr) and long-term (> 1yr) quitters, and non-smokers, using the NHANES 1999-2000 database. Body weight was greater in diabetics than non-diabetics in all 3 smoking categories, averaging a 25.8 pound difference. Weight gain attributable to smoking cessation was estimated for the U.S. population by comparing weight in smokers and quitters. Among non-diabetics, short and long-term quitters weighed 13.1 pound more than smokers (8% difference). In contrast, attributable weight in diabetics differed according to length of abstinence, being only 1.0 lbs (0.5%) for long-term quitters but 40.5 lbs (21%) for short-term quitters. Short-term diabetic quitters were more likely than diabetic smokers to report engaging in weight loss activities, but less likely to report engaging in vigorous activity. Results indicate that diabetics may gain substantial amounts of weight during the first year after quitting smoking. Supported in part by PHS Grant No. RD1 Hl88569.

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**POS3-040**  
**WEIGHT GAIN AND RELATED CONCERNS AMONG ADOLESCENT SMOKERS IN CESSATION TREATMENT**

Elissa D. Thorner*, B.S., Maria Gasior, M.D., Ph.D., Jennifer R. Schroeder, Ph.D., and Eric T. Moolchan, M.D.

The objectives of this study were to determine whether weight changes or concerns are associated with treatment outcome among adolescents enrolled in a cessation study (1) comparing girls with boys, and (2) comparing Caucasian and African American girls. Participants in this sample were 115 volunteers (13-17 yrs.) enrolled in a smoking cessation trial using cognitive behavioral therapy as well as pharmacotherapy. The sample was 15.2 ± 1.3 yrs old, 70.4% female and 71.3% Caucasian, with a mean smoking history of 3.9 ± 5.0 yrs. Pre-treatment weight concerns were assessed using the Eating Disorders module from the Diagnosis Interview for the Children and the Adolescent (DICA-IV) and aggregated into 3 dimensions: fear of obesity, dieting/disordered eating behavior, and perceived overweight. Height and weight were measured prior to treatment; weight was also assessed at each treatment visit. Abstinence from smoking at the 3-month follow-up visit (6 months post quit date) was confirmed by expired air CO 60pm. Weight concerns were reported more frequently by girls than boys for dieting behavior (chi square1)=6.85, p=0.0089) and perceived overweight (chi square1)=6.06, p=0.0045). Compared to African American girls, Caucasian girls reported more fear obesity (Fishers exact p=0.031) and dieting behaviors (Fishers exact p=0.0012). Neither weight concern nor weight change were associated with abstinence from smoking at 6 months post quit date. While preliminary findings from this sample suggest that successful adolescent tobacco cessation was not associated with short-term weight gain nor did weight concerns adversely affect cessation outcome. Supported by NIDA Intramural Funds.

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POS3-043

EFFECTS OF A SCHEDULED GRADUAL CROSSOVER OF CIGARETTES AND NICOTINE NASAL SPRAY

William T. Riley*, Ph.D., Albert Behar, M.S., Renee Shields, B.S., Kevin Kelleher, M.D., and Mark Vasiliadis, M.D.

Although nicotine nasal spray (NNS) is an effective nicotine replacement treatment, difficulties adjusting to administration method and side effects have resulted in low use rates. A computerized scheduled dosing program was developed with four stages: 1) a 7 day smoking baseline period, 2) a 10 day crossover period in which smoking was decreased as NNS was introduced, 3) a 3 week stable dosing of NNS only, and 4) a 3 to 5 week gradual taper of NNS depending on initial levels of smoking. This scheduled NNS condition was compared to NNS alone in a randomized controlled trial of 423 smokers evaluated at study initiation, treatment weeks 5 and 10, and at 6 and 12 month follow-ups. Subjects in the scheduled NNS condition were significantly more likely to use adequate doses (34% vs. 21% using > 6 doses/day; X2 = 6.69, p < .01) and to report less side effects than those in the NNS alone condition. Nicotine Dependence Syndrome Scale scores decreased significantly more in the scheduled NNS condition than in the NNS alone condition (F = 5.63, p < .02). CO-validated abstinence rates at 10 weeks were significantly greater in the scheduled condition, both for continuous abstinence (10.7% vs. 5.3%; X2 = 4.31, p < .05) and point prevalence abstinence (12.8% vs. 6.6%; X2 = 6.46, p < .05). At 6 and 12 month follow-up, abstinence rates did not differ by condition. The results of this study indicate that scheduled crossover dosing of NNS can increase adequate dosing, decrease side effects, and result in improved abstinence rates.

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POS3-042

SLEEP QUALITY AND MORNING SMOCKING URGES AS A FUNCTION OF 16 OR 24 HOURS NICOTINE PATCH FORMULATIONS

Heni-Jean Aubin*, M.D., Hopital Emile Roux; Luc Staner, M.D., Forenap; Christine Dupont, M.D., Pierre Fabre Medicament; and Gilbert Lagrange, M.D. Hopital Albert Chenevier

OBJECTIVES: to compare the effects of a 24 hours and 16 hours per 24 hours transdermal nicotine formulations on sleep quality and morning smoking urges in dependent smokers during a short period of cigarette abstinence.

METHODS: 20 smokers of both sexes (9 women and 11 men) smoking at least 20 cigarettes per day were enrolled in this randomised, open-label, crossover, 2-period trial. The patches were applied at 8.00 a.m. for 24 or 16 hours. Smoking urges (QSU, and subjective (Karolinska Sleep diary) and objective (polysomnography) sleep variables changes from baseline were compared between the two nicotine patches.

RESULTS: Both the 24 hours and the 16 hours formulations decreased the morning smoking urges on the global and two factors scores. However, the 24 hours formulation had a larger effect on global and factor 1 (rewarding smoking) QSU scores. Both patch formulations showed no difference on subjective sleep variables. However, compared to the 16 hours formulation the 24 hours patch showed a significant effect in reducing the microarousal index, in increasing slow wave sleep time and proportion, non REM proportion, and REM density. During the first third of the night, the 24 hours formulation increased slow wave sleep time, whereas the 16 hours patch increase REM sleep time.

CONCLUSIONS: Compared to the 16 hours formulation, the 24 hours patch improved sleep continuity and quality on polysomnographic measures, and reduced morning smoking urges.

This study was funded by Pierre Fabre Medicament.

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POS3-041

ATTEMPT: ASSOCIATION OF QUIT ATTEMPTS WITH BODY MASS INDEX (BMI) AND WEIGHT CONCERN IN A MULTINATIONAL COHORT STUDY OF SMOKEERS INTENDING TO QUIT

Heni-Jean Aubin*, M.D., Hopital Emile Roux; Luc Staner, M.D., Forenap; Christine Dupont, M.D., Pierre Fabre Medicament; and Gilbert Lagrange, M.D. Hopital Albert Chenevier

ATTENETMENT: (Assessment Toward Tobacco Economical and Medical Prospective Trial) is a prospective multinational observational longitudinal study designed to examine the natural course of successive smoking cessation attempts and their impact on health and economic outcomes. The objectives of the present analyses were to identify (1) the predictors of baseline BMI>=27 (2) the predictors of at least 5% weight change over 6 months (3) the influence of BMI and weight concern on the smoking cessation process.

METHODS: Participants at baseline were current smokers from US, Canada, France, and the UK who intended to quit smoking within the next three months. Iterative surveys were administered via the Internet 3 and 6 months after inclusion.

RESULTS: Among the 2009 respondents at baseline, 1303 subjects completed the 6-months questionnaire. (1) A binary logistic regression analysis found that high body mass index (BMI) was positively and independently associated with a recent attempt to quit smoking (OR=1.25 IC95%[1.017-1.53]), a higher weight concern score (OR=1.27 IC95%[1.22 - 1.33]), and a higher level of cigarette consumption (OR=1.31 IC95%[1.07 1.59]). US smokers were 5 times more likely to have a BMI>=27 than French subjects OR=5.18 IC95%(3.57 - 7.50). The quality of life score (EQ5D) was negatively associated with BMI (OR=0.611 IC95%[0.42 0.8]). (2) Factors associated with at least 5% weight gain were a low income (OR=1.48 IC95%[1.03 - 2.14]), the number of smoke-free days (OR=1.01 IC95%[1.005 1.014]) and not being single (OR=1.46 IC95%[1.21 1.7]). (3) Subjects with a high baseline BMI (>=27) combined with a low weight concern score (<5) were more likely to attempt to quit smoking over the 6 months follow up than other subjects (OR=1.014) and not being single (OR=1.46 IC95%[1.01 2.1]). (4) Subjects with a high baseline BMI (>=27) combined with a low weight concern score (<5) were more likely to attempt to quit smoking over the 6 months follow up than other subjects (OR=1.014) and not being single (OR=1.46 IC95%[1.01 2.1]). (3) Subjects with a high BMI (>=27) combined with a low weight concern score (<5) were more likely to attempt to quit smoking over the 6 months follow up than other subjects (OR=1.014) and not being single (OR=1.46 IC95%[1.01 2.1]).

CONCLUSIONS: BMI is a positive and independent predictor of quit attempt. Overweight people with less concern over weight gain are more likely to attempt to quit smoking. Reducing concern over gaining weight as a result of quitting smoking, a modifiable risk factor, could encourage more smokers to quit.

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

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PO3-045

WHO ELECTS TO USE OTC NICOTINE REPLACEMENT THERAPY? MORE DEPENDENT SMOKERS WHO HAVE DIFFICULTY QUITTING

Saul Shiffman*, Ph.D., University of Pittsburgh and Pinney Associates; Christine T. Sweeney Ph.D. and Michael E. DiMarino, M.S., Pinney Associates

Surveys attempting to assess the effect of NRT by comparing cessation outcomes in self-selected NRT users and non-users sometimes find no difference, or even worse outcomes among NRT users. These findings are likely biased by self-selection: smokers who use NRT may be more dependent and have less chance of quitting successfully in the first place. To understand which smokers are electing to use NRT, we conducted a mail survey of 9,360 U.S. adult smokers, and compared characteristics smokers who have and have not used nicotine gum or nicotine patch. Compared to non-users, NRT users (both ever-users and those who used NRT during the period of US OTC availability) were more tobacco-dependent: they were heavier smokers, had reported more intense craving and withdrawal, scored higher on multiple dependence scales. NRT users also expected quitting to be more difficult, especially without NRT, and ever-users were more likely to have smoking-related diseases and psychiatric comorbidity, markers of likely cessation failure. Thus, smokers who elected to use NRT (ever or OTC) had characteristics that predispose smokers to failure in cessation. Importantly, these differences between NRT users and non-users will bias any outcome comparisons based on self-selected NRT users such that NRT users will appear to be less successful; thus, conclusions based on self-selected groups of NRT users and non-users will systematically underestimate the effectiveness of NRT.

The study was sponsored by GlaxoSmithKline Consumer Healthcare, for whom the authors provide consulting and research services.

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PO3-046

USE OF MORE NICOTINE LOZENGES LEADS TO BETTER SUCCESS IN QUITTING

Saul Shiffman*, Ph.D., University of Pittsburgh and Pinney Associates

Compliance with instructions to use adequate amounts of cessation medications, such as nicotine gum or lozenge, is considered important to achieving treatment success. Studies show that smokers who used more pieces of nicotine gum achieved better outcomes. However, these correlational data are subject to two alternative explanations: (1) a motivational hypothesis that those who use more pieces are more motivated to quit, and achieve better outcomes on that account, and (2) a reverse causation hypothesis that smokers reduce their NRT use because they have started smoking, rather than the converse. We tested these alternative explanations in the context of a large published placebo-controlled trial of a nicotine lozenge (2 and 4 mg; GlaxoSmithKline). The motivational hypothesis predicts that high lozenge use would be associated with improved outcomes even in the placebo condition. In the whole sample (n=1818), use of more lozenges was associated with success only among those on active lozenges, and not in the placebo group. This shows the effect is pharmacological, not motivational. To address the reverse causation hypothesis, we analyzed lozenge use during the first two weeks of quitting in a subgroup of smokers (n=826) who were known and biochemically verified to be abstinent during this period. In this prospective analysis, use of more active lozenges (but not placebo) was again significantly associated with improved outcome at subsequent follow-up. The analyses rebut the alternative explanations, and suggest that use of more nicotine lozenges is causally associated with better quit rates.

The study was sponsored by GlaxoSmithKline Consumer Healthcare, for whom the author provides consulting and research services.

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PO3-047

ASSESSING THE SAFETY PROFILE OF THE NICOTINE LOZENGE IN A REAL WORLd, ACTUAL USE SETTING

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The objective was to profile adverse event (AE) information of the 4 mg and 2 mg nicotine lozenge in a real world, actual use OTC environment. This was an open-label, parallel, active comparator safety surveillance study of 2 mg and 4 mg nicotine lozenges (COMMIT). Subjects were recruited using registration cards placed inside the standard commercial packages. Consumers registered on the day they started using the lozenge either via a toll free phone number or a website. Subjects were contacted by telephone 2-3 weeks after registration and administered a questionnaire by a healthcare professional. Information on demographics, AE's, medical history and product satisfaction was collected. The study found that the 4 mg (N = 5172) and 2 mg (N = 1694) lozenges were generally well tolerated; the pattern of AEs was consistent with that seen in the pivotal clinical trial. Demographic characteristics and smoking history were also similar to the clinical trial data. The five most commonly reported AEs were hiccups, irritation to mouth or tongue, dyspepsia (heartburn), nausea and headache. Most (>85%) of the AEs were mild or moderate in intensity. The incidence and severity of AEs were generally similar for both doses, of the commonly reported AEs only hiccups, nausea and vomiting indicated any dose related effect. The large sample size allowed numerous subgroup stratifications (e.g. medical co-morbidity, smoking history, lozenge usage) however these analyses did not reveal any significant difference in the pattern, incidence or severity of AEs. The majority of participants (>85%) were generally satisfied with the product overall and with its ability to manage cravings.

This study was funded by GlaxoSmithKline Consumer Healthcare.

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PO3-048

SAFETY OF NICOTINE LOZENGE AND NICOTINE GUM IN PATIENTS WITH LABEL-SPECIFIED UNDERLYING MEDICAL CONDITIONS


The current labels for the Nicotine Replacement Therapy (NRT) products require the smokers with certain medical conditions to consult their physicians before starting to use NRT. As the 4 mg nicotine lozenge delivers approximately 25% more nicotine compared to the 4 mg nicotine gum per piece, the safety of additional nicotine available was questioned. This multi-center, randomized, open-label study was conducted to compare the safety profile of these two products in subjects with certain label-specified medical conditions (hypertension, diabetes, or cardiac diseases). A total of 901 subjects were randomized to receive lozenge or gum on a 1:1 ratio. The adverse events (AEs) were captured using a daily diary as well as during clinic visits (5 visits during the 12 week treatment). The treating physicians evaluated the clinical condition of the subjects by reviewing symptom control and disease-specific parameters at each clinic visit. The mean age of the study population was 54 years of age and the subjects smoke on average 25 cigarettes per day (cpd) at baseline. In both groups, approximately 70% of subjects had hypertension, 30% each had diabetes and cardiac diseases, and 35% had more than two disease conditions. Subjects used the assigned product on average 5-6 pieces per day during the first 6 weeks. Even though more than 90% of subjects admitted to have smoked during the study, cpd was reduced from 25 cpd at baseline to 5 cpd at week 6. The incidence of AEs reported, evaluation of the clinical conditions by the treating physicians, and measurements of disease-specific parameters (change in blood glucose, vital signs, and ECG) indicated comparable safety profile between the two products. The analysis of AEs stratified by the product usage and smoking levels did not reveal any increase in the incidence of AEs even in the highest risk group (>=median usage plus heaviest smokers). The findings from our study suggest that the 4 mg lozenge and the 4 mg gum are comparable in safety and did not appear to worsen the clinical conditions of the subjects with hypertension, diabetes, or cardiac diseases. Given the favorable safety profiles of nicotine lozenge and gum demonstrated in this study and the clear benefit of stopping smoking, clinicians should recommend the use of NRT in these patients.

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TOLERABILITY AND KINETICS OF ORAL NICOTINE

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Oral dosing represents a potential route of administration of nicotine (Nic) for pharmacotherapy of Nic addiction. Oral Nic undergoes first pass metabolism. Whether orally ingested Nic could achieve adequate Nic blood levels at tolerated doses has not been studied. Accordingly, the feasibility of oral Nic as a medication remains a question. We conducted a parallel group, placebo-controlled, dose-escalation study of immediate release Nic tablets. 48 healthy smokers who smoked at least 15 cpd were randomly assigned to active or placebo pills at each dose level (6.2 ratio). Doses were started at 4 mg and escalated by 4 mg as tolerated. Dosing was stopped at 24 mg due to development of nausea, vomiting and/or abdominal pain in 4 subjects. Plasma Nic levels increased in proportion to dose, with maximal levels ranging from 5.3 to 23.2 ng/ml, occurring on average 2.3 hr after dosing. Heart rate and blood pressure increased with Nic, with an apparent plateau in response at the 8-12 mg dose level. A dose-related decrease in cigarette craving was observed. Our study demonstrates that oral Nic is tolerated fairly well at doses up to 24 mg, achieving levels similar to or higher than those seen with other forms of NRT. The primary adverse effects at higher doses were gastrointestinal, with evidence of tolerance to cardiovascular effects at higher Nic doses. The clinical pharmacology of oral Nic tablets supports the feasibility of its investigation as an alternative form of NRT to aid smoking cessation.

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COLD TURKEY: IS IT A VIABLE CESSATION METHOD FOR LOW INCOME, UNINSURED SMOKERS?

Darlene I. Bahrs, M.P.H., CHES® and Daryl Kent, B.A.

Between July 2001 and June 2004, 333 individuals enrolled in a six session, cognitive-behavioral cessation class. Demographic data was collected upon entry. Outcome data was obtained at the end of the class. Participants were between 25 to 70 years old. Fifty-four (54%) percent were Caucasian and 30.9% were African American. Fifty-two percent (52%) had either attended or graduated from college. Despite their relatively high education, these smokers were low income and used public services as their main resource for health care. Smokers selected their quit method based on their personal interest, need, insurance or past experience. Based on matched pre and post tests, 51.8% quit smoking by the end of the intervention. Nearly half used the 15 mg. single strength patch. Among those who actually quit, however, bupropion was the most effective quit aid. Nominal regression techniques examined effectiveness of each quit method. Cold turkey was the most effective quit method with bupropion ranking second. At six months, the quit rate was 45.4%. This presentation will provide quantitative data and qualitative information to distinguish the characteristics of those who opted for cold turkey, bupropion and NRT.

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POS3-053  SOCIOECONOMIC INEQUALITIES IN QUITTING SMOKE: LONG-TERM FOLLOW-UP OF PATIENTS VISITED AT A SMOKING CESSATION UNIT

Estevé Fernandez*, Anna Schiaffino, Carme Borell, Joan Benach, Carles Ariza, Josep Maria Ramon, Jorge Twose, Manel Nebot, and Albert Kunst

OBJECTIVE: To examine social class and educational differences in long-term smoking cessation success among a cohort of smokers attending a cessation smoking clinic.

METHODS: We have studied abstinence after cessation among 1516 smokers (895 men, 621 women) treated for smoking cessation at a Smoking Cessation Unit between 1995 and 2001 at a university teaching hospital in the metropolitan area of Barcelona (Spain). We have computed 1-year and long-term (up to 8-year) abstinence probabilities by means of Kaplan-Meier curves and the hazard ratio ratio (HR) of relapse by means of Cox regression, after adjusting for other predictors of relapse.

RESULTS: Overall abstinence probability was 0.28 (95% confidence interval [CI] 0.250.30). Men and women in deprived social classes had a significant HR of relapse after long-term follow-up of 1.36 (95CI 1.071.72) and of 1.60 (95CI 1.242.06) as compared to patients in social classes affluent. The same independent effect was observed for education: men and women with primary or less than primary studies had a higher HR of relapse (1.75; 95%CI 1.352.25 and 1.92; 95%CI 1.512.46) as compared to men and women with a university degree. Similar estimates were obtained after adjustment for readiness to change stage, Fagerström score of nicotine dependence and type of treatment.

CONCLUSION: Patients of lower socioeconomic position are at higher risk of relapse. Social differences have to be taken into account in the clinical setting when tailoring specific actions to treat smoking dependence.

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POS3-055  SMOKING CESSATION IN HOMELESS POPULATIONS: A PILOT INTERVENTION

Kolawole Okuyemi*, M.D., Amelia Caldwell, M.P.H., Kimberly Richter, Ph.D., Nicole Nollen, Ph.D., Sandra Hall, Ph.D., Shawn Jeffries, Ph.D., Wendi Born, Ph.D., and Jasjit S. Ahluwalia, M.D., University of Kansas Medical Center

The prevalence of smoking among homeless individuals remains high, up to 70%. However, little intervention research has been conducted in this population because homeless persons are considered uninterested in quitting smoking and hard to reach. The purpose of this study was to assess the feasibility of a community-based smoking cessation intervention with six months follow-up. Homeless smokers (111 screened, 78 eligible, 46 enrolled) were recruited from multiple facilities in Kansas City. Participants received five individual motivational interviewing (MI) sessions, six group meetings, and their choice of eight weeks of 21mg nicotine patch or 4mg nicotine lozenge. MI targeted either smoking behaviors exclusively (smoking only) or smoking along with other addictions or life events that may impact their ability to quit (smoking plus). Group meetings were designed to provide educational information and social support. Participants had a mean age of 44 years, 65% were African-American, and 74% had at least a high school education. At eight weeks after enrollment, 85% of the participants had been retained in the study, and 68% at 16 weeks. Carbon monoxide verified 7-day abstinence rates were 16.7% and 13.3% at 8 and 16 weeks respectively. Those who used >4 patches per week were three times (33.3%) more likely to have quit at eight weeks than those who used fewer patches (10.5%). This study is ongoing and final assessments will be done at six months. Results indicate that homeless individuals can be recruited and retained in smoking cessation research. Increased efforts are needed to address high smoking rates in homeless populations.

The American Lung Association of Kansas.

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POS3-054  RECRUITMENT AND RETENTION OF HOMELESS INDIVIDUALS IN TOBACCO RESEARCH

Amelia Caldwell*, M.P.H., Kolawole Okuyemi, M.D., Shawn Jeffries, Ph.D., Kimberly Richter, Ph.D., Nicole Nollen, Ph.D., Sandra Hall, Ph.D., and Jasjit S. Ahluwalia, M.D., University of Kansas Medical Center

Smoking prevalence among homeless persons (60-70%) is much higher than the US average (25%); yet limited research has been conducted in this population. While homeless persons have been perceived as unmotivated to quit smoking, recent data have shown this view to be inaccurate. This study identifies innovative and successful strategies for recruitment and retention of homeless smokers in a pilot study. Qualitative research methods were used to inform intervention design prior to the implementation of an open-label trial of nicotine replacement therapy (NRT) and counseling. Ten key informants were identified through the local Homeless Services Coalition and interviewed regarding viable intervention options. Four community mobilizers (currently/formerly homeless) were hired to assist with recruitment and retention. Fifteen recruitment sites were selected based on familiarity and accessibility to homeless individuals. Study promotion occurred by word-of-mouth and distributing flyers. Six focus groups (n=62; 68% of those eligible) were conducted with homeless smokers to better understand smoking attitudes and behaviors, quit experiences, and preferred cessation methods. We then conducted a pilot clinical trial in which 46 of 78 (69%) individuals eligible to participate returned one week later for study enrollment. Multiple means of contacting participants were obtained at baseline. Participants attended five individual counseling sessions, as well as six support group meetings over six months. Incentives included transportation vouchers, retail gift cards, and entertainment opportunities. Attendance was better for counseling sessions and on weekday mornings. Outcomes, which are reported elsewhere, and process-related findings will be used to design a larger clinical trial targeting homeless smokers.

Funded by The American Lung Association of Kansas.

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POS3-056  PATHWAYS TO HEALTH (PATH): A CLUSTER RANDOMIZED TRIAL FOR SMOKING CESSATION AMONG SMOKERS IN LOW-INCOME HOUSING

Kolawole S. Okuyemi*, M.D., Aimee S. James, Ph.D., Nicole Nollen, Ph.D., Won Choi, Ph.D., Matthew Mayo, Ph.D., and Jasjit S. Ahluwalia, M.D., University of Kansas Medical Center, Kansas City, KS USA

Despite declining smoking rates in the general population, smoking rates remain high among those living below poverty level, such as residents of low-income housing. However, few smoking cessation studies have been conducted in these settings. The PATH study tested the effects of nicotine gum plus motivational interviewing for smoking cessation among smokers in low-income housing. The study was a cluster randomized trial of smokers from 20 low-income housing with 6 months follow-up. Intervention participants received educational materials, 8 weeks of nicotine gum, and 5 sessions of MI counseling related to quitting smoking. Comparison participants received MI sessions and materials to promote fruit and vegetable consumption. Participants (n=173) were predominantly female (70%), African American (83%), and with a high school diploma or less (79.2%). Mean age was 46.3 years (SD = 13.7). Participants were assessed at day 10, weeks 3, 5, 8, and 20, and month 6. Retention at 6 months was 75.7% (n=134) of those who entered the study. Seven-day CO-verified abstinence at 8 weeks was 61.6% and 5.6% in the smoking cessation (SC) arm and the comparison arm, and at 6 months were 76.9% and 9.3% respectively. No significant differences in smoking cessation were found between the groups; however the 9% abstinence rate in the comparison arm and the low quit rate in the intervention arm were unexpected.

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POS3-057  RECRUITMENT OF AFRICAN AMERICANS INTO CLINICAL TRIALS: THE KIS II EXPERIENCE

Tricia Snow*, Nicole Nollen, Kolawole S. Okuyemi, Won Choi, Harsohena Kaur, and Jasjit S. Ahluwalia, University of Kansas Medical Center

Developing effective and efficient recruitment methods increases adequate representation of minorities in research studies. KIS II is a randomized controlled trial that utilized innovative strategies to screen 2,030 smokers, ultimately enrolling 756 adult African American (AA) light smokers (<10 cpd). Initial recruitment focused on using traditional venues including, outreach, radio advertising, and physician referrals. These early, staggered efforts were inadequate, yielding 36 randomized participants/month for the first 8 months. Consultation with community members led to innovative strategies, delivered continuously, and designed to maximize reach within the target population. These included targeted gas pump, mass transit, and television advertising, billboards, newspaper, mass mailings, and directed mailings from physicians. These strategies bolstered recruitment, resulting in enrollment of 59 participants/month. Analyses of cost were conducted. Aside from the over 25% (140/567) that heard about the study by word of mouth, the most efficient paid method of recruitment was outreach through flyers/posters and health fair booths, resulting in a cost of $24 per person randomized ($2,664/113 randomized) followed by directed mailings from physicians at $156 ($389/25), radio and TV advertising at $287 ($541/188) and $339 ($20,223/52), respectively. The least cost effective methods were mass mailings [$695 per person randomized ($1,380/2)], newspaper [$1,108 ($9,791/9)]; mass transit [$940 ($5,640/8)]; billboard [$1,200 ($15,600/13)]; and gas pump advertising [$5,040 ($10,080/2)]. Total recruitments expenditures were $123,600. Recruitment of AAs into clinical trials is possible through a mix of targeted, traditional and innovative strategies. Continuous delivery of recruitment messages, as opposed to staggered delivery, through multiple venues also appears to be important.

Funding: NCI RO1 CA91912.

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POS3-059  KICK IT AT SWOPE II (KIS II): BASELINE DATA FROM A SMOKING CESSATION TRIAL AMONG AFRICAN AMERICAN (AA) LIGHT SMOKERS

Nicolle Nollen*, Jasjit Ahluwalia, Kolawole Okuyemi, Won Choi, Harsohena Kaur, and Matthew Mayo

Up to 50% of AAs are light smokers. Despite smoking fewer cigarettes than Whites, AAs experience higher rates of tobacco-related diseases and lower cessation rates. Few trials have focused on facilitating light smokers to quit. KIS II is a randomized controlled cessation trial examining the efficacy of gum and counseling among AA light smokers (< 10 cpd). Between March 2003 and June 2004, participants were randomly assigned to receive 8-weeks of nicotine gum (active versus placebo) and 6 counseling sessions (motivational interviewing versus health education). Six-month follow-up will be completed in January 2005. Participants (N=755) are 45.1 years of age (SD=10.7), female (66.9%), single (62.3%), insured (75.2%), have greater than a HS education (50.7%), and a monthly income of greater than $1,200 ($46.4%). Participants began smoking at 17.8 years of age (SD=5.8), smoke an average of 7.0 cigarettes per day (SD=3.2), prefer mentholated cigarettes (81.7%), and smoke within 30 minutes of waking (65.3%). Biochemical data indicate mean expired air carbon monoxide of 13.9 (SD=4.9) and serum cotinine (COT) of 251.7 (SD=150.7). On a 10-point scale, participants were motivated to quit (mean 9.1 (SD=1.7)) and confident in their ability to do so (mean 7.1 (SD=2.6)), despite having made 3.3 (SD=6.6) quit attempts in the last year. Results provide evidence contrary to assumptions that light smokers are not addicted and not interested in quitting. Participants nicotine dependence levels, high COT, and limited past success in quitting highlight the need for interventions targeting AA light smokers.

NCI RO1 CA91912.

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POS3-058  STRESS AND QUITTING AMONG AFRICAN AMERICAN SMOKERS

Delwyn Catley*, Ph.D., University of Missouri Kansas City; Brian K. Manning, M.P.H., University of Kansas Medical Center; Kari Jo Harris, Ph.D., University of Montana; Matthew S. Mayo, Ph.D., and Jasjit S. Ahluwalia, M.D., University of Kansas Medical Center

Although a number of studies have examined the association between psychological stress and quitting in smoking cessation interventions, these studies have included predominantly white smokers and few African Americans. The generalizability of the results of these studies is limited because smoking patterns and stress experiences differ between African Americans and whites. This study examined the relationship between stress and the likelihood of quitting among a sample of 300 urban African American enrolled in the placebo arm of a controlled randomized trial assessing the efficacy of bupropion for smoking cessation. Participants were predominantly female (69.3%), middle-aged (44.4 years), and of lower income (54.6% < $1800 per month). Participants received 7 weeks of placebo treatment and counseling as well as a self-help guide. Quit status and stress, measured with the Perceived Stress Scale and an adapted Hassles Index, were assessed at baseline, end of treatment (week 6), and 6 month follow-up. Logistic regression analyses indicated that although baseline stress did not predict quitting at later visits, higher stress at week 6 and month 6 was associated with not being abstinent at week 6 and month 6, respectively (all p’s < 0.05). Furthermore, changes (reductions) in perceived stress from baseline also predicted being quit at the end of treatment (p < 0.1). Results suggest that methods to help African Americans cope with stress as they quit smoking may prevent relapse to smoking.

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POS3-060  RACE-RELATED STRESS, COPING AND COTININE IN BLACK WOMEN

A. Fernandez*

It is widely acknowledged that individuals smoke to cope with stress. For example, studies have shown that Black women who report high stress levels are more likely to smoke. It is also noted that race-related stress is a significant contributing factor to the experience of general life stress among Black women. Furthermore, while it is documented that stress and coping influence physiological processes, such as immune functioning and blood pressure, no research has explored the influence of stress and coping on the major metabolite of nicotine, cotinine, among Black women. This study explored the association between responses to measures of race-related stress and plasma cotinine among 47 Black women. Average age was 38(14.1) years, while average age of smoking initiation was 19(5.0) years. Approximately 43% of the sample had a H.S. diploma/equivalent or less, and the majority of the women (70%) earned less than $25,000/yr. 77% smoked menthol cigarettes, with 48% reporting TFF cigarette was within 30 minutes of awakening, and the majority (66%) were light smokers. Average CO2 was 9.8(6.4) and average cotinine was 64.4(46.3). A multiple regression approach to the general linear model examined the combined influence of race related stress and active coping on cotinine, controlling for education. Independent variables included in the model were active coping and race-related stress. The interaction term of race-related stress x active coping was significant (p<.01). Specifically, individuals who endorsed lower levels of active coping and high levels of race-related stress had higher plasma cotinine than any other active coping by race-related groups. This finding provides further evidence for the influence of stress and coping on smoking related factors. The implications of this finding may inform ethno-culturally relevant psychosocial cessation interventions to incorporate strategies for coping with the frequent race-related stress that Black women encounter.

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POS3-061 RACE-RELATED STRESS AND SMOKING STATUS IN BLACK WOMEN

Anita F. Fernander

It is widely acknowledged that individuals smoke to cope with stress. For example, studies have shown that Black women who report high stress levels are more likely to smoke. It is also noted that race-related stress is a significant contributing factor to the experience of general life stress among Black women. However, few studies have examined the association of race-related stress and smoking status among Black women. This study explored the association between smoking status and responses to a multi-dimensional measure of race-related stress (Index of Race-Related Stress-Brief [IRRS-B]) that assesses the domains of global, cultural, institutional, and individual race-related stress. One-hundred seventy-seven Black women self-identified themselves into one of four smoking status categories: 1) current smoker (49%); 2) quit within the last month (2%); 3) quit more than 6 months ago (12%); and, 4) never smoker (37%). Average age was 38 (13.7) years and approximately 66% had some form of post-high school education, while over half (60%) earned less than $25,000/year. Analyses of variance revealed that global race-related stress, institutional race-related stress, and individual race-related stress were all significantly associated with smoking status (p<.03, p<.05, and p<.03, respectively). Unexpectedly, former smokers were more likely than current or never smokers to report the highest levels of global, institutional, and individual race-related stress. Models to explain this complex relationship between race-related stress and smoking status are suggested that may help to explain the lower long-term smoking abstinence rates documented in Black women relative to their other racial/ethnic counterparts. The implications of this finding may inform ethnically relevant psychosocial cessation interventions to incorporate strategies for coping with the frequent race-related stress that Black women encounter. This study was supported by a NIDA grant: K12 DA 01014040-04.

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POS3-062 APPLICATION AND RELEVANCE OF A NATIONAL GUIDELINE FOR COMPREHENSIVE TOBACCO CONTROL PROGRAMS FOR LATINO AND AMERICAN INDIAN COMMUNITIES


Current tobacco control policy emphasizes sustainability through collaboration with local organizations, especially for disparate populations. This paper addresses the application and relevance of the CDC Best Practices for Comprehensive Tobacco Control Programs for programs targeting American Indian and Latino communities in Arizona and California. This allows for an examination of how policy designed at the national level and reconfigured through state programs is finally implemented at the community level. Unique strategies, facilitators, and challenges for tobacco control programs in these communities will be highlighted. Semi-structured interviews were conducted with staff at the state and community levels, as well as intermediary organizations. The findings illustrate the importance of incorporating feedback from communities during all stages of planning and implementation, although the specific concerns of these two communities differ considerably. Perspectives on constraints and facilitators to guideline implementation are remarkably consistent, although American Indian communities have a more extensive set of unique barriers. While states attempted to adapt the guidelines to fit their needs, state directives were hindered by lack of data and knowledge about the communities, limitations in program focus, and funding restrictions. However, limitations existed at the community level as well, where small size and limited capacity of local programs inhibited the development of the multiple elements necessary to implement comprehensive tobacco control at the community level.

Funding: CDC Foundation.

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POS3-063 CIGARETTE SMOKING AMONG MID-ATLANTIC LATINOS

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Tobacco use is the leading preventable cause of death for the U.S. Hispanic population. The Latin American Cancer Research Coalition includes a network of community clinics surrounding Washington, DC. Spanish language interviews were completed with 141 current smokers and 158 former and non-smokers to assess social and behavioral correlates of smoking behavior among Latino primary care patients. Twenty countries of origin were represented. Participants averaged 38.4 years of age (range 19-77 years); 60% were male, 83% were from Central or South America, and 71% spoke primarily Spanish. Among smokers, 82% reported interest in stopping smoking within the next 6 months. Current smokers were more likely than former or non-smokers to use alcohol on a regular basis (59% vs. 31%, p < .0001) and to experience daily symptoms of depression (29% vs. 19%, p < .05). Logistic regression analysis found a moderating effect of depression on the relationship between alcohol use and smoking, such that current users of alcohol who reported depression were more likely to smoke (82%) than were current users of alcohol who did not report depression (56%). X2 (1) = 4.17, p < .05. Latino smokers are interested in stopping smoking, and community clinics provide an avenue for nicotine dependence treatment. Greater risk associated with alcohol use and depression should be considered in intervention development targeted for the Latino community.

This study was conducted while Dr. Cox was with Georgetown University. Supported by NCI, U61 CA86114-03.

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POS3-064 HISPANIC AND SPANISH SPEAKING SMOKERS: USE AND EFFECTIVENESS OF QUIT LINE SERVICES

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Research indicates that Hispanics smoke less and report more quit attempts, but are less likely to receive cessation advice from physicians or to use pharmaceutical aids to quit than non-Hispanic Whites. Cessation services through telephone Quit Lines (QL) have demonstrated effectiveness in helping people quit tobacco but most evaluations exclude Spanish-speaking callers. This study assessed the use and effectiveness of QL services by Hispanic or Spanish-speaking smokers. We conducted telephone surveys 6 months after individuals called the QL (n= 48, response rate=39.7%); 21 completed the survey in English and 27 in Spanish. Most (68.8%) were 26-60 years of age, male (56.3%), married (52.1%) and uninsured (52.1%); 27.1% were unemployed, 37% were educated beyond high school. Most (62.5%) were light smokers (<15 cpd); 29.2% smoked 15-20 cpd, 8.3% smoked >20 cpd. Satisfaction and quit rates were similar to, or higher than non-Hispanic callers (comparison group n=545, response rate=46.3%). Among Hispanics, 91.7% were satisfied with the QL. 93.8% reported that QL staff were sensitive to their cultural needs and treated them with respect (95.8%). Most (91.7%) made a serious quit attempt (vs. 89.7% of non-Hispanics), 68.2% used patches to help them quit (vs. 60.4% of non-Hispanics), and 45.8% quit for at least 30 days (vs. 31.6% for non-Hispanics); intent-to-treat rate for both groups=14.7%, counting non-responders as smokers. Overall, 70.8% of Hispanics vs. 67.6% of non-Hispanics either quit tobacco or reduced the amount smoked by at least 50%. QL services appear to provide high quality and effective services for Hispanic and Spanish speaking smokers. Increased efforts are needed to improve participation in research. Additional process and outcome measures will be discussed.

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POS3-065
SMOKING CESSATION AMONG HISPANIC SMOKERS: ADIOS AL FUMAR!
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[Addis al Fumari] is a randomized clinical trial that evaluated the efficacy of delivering an enhanced smoking cessation counseling program to smokers who called the National Cancer Institutes Cancer Information Service (CIS) requesting help in Spanish. Participants were randomized to either a single, standard CIS counseling call (SC) or to enhanced counseling (the single CIS call plus 3 additional proactive calls; EC). All assessment and counseling calls were delivered in Spanish. Of 355 callers, 306 agreed to participate (86% participation rate). The sample was 55% male, 92% were immigrants, 80% spoke only Spanish in the home, mean age was 41, cigarettes/day was 10, Fagerstrom score was 6, and 57% had scores on the CES-D indicating possible or probable depression (≥ 16). The sample was of low socioeconomic status. Over 50% had total annual household incomes < $20,000, 75% had no insurance, and mean years of education was 11. Among EC participants, 93% received at least 3 of the 4 counseling sessions. The overall efficacy of EC relative to SC across follow-up timepoints approached significance (p = .09). Abstinence rates were significantly different at week 5 (20.3% for EC and 11.7% for SC; p = .05), but were not maintained at week 12 (27.4% for EC and 20.5% for SC; p = .20). In sum, the Adios project recruited a very underserved, low SES, Spanish speaking population who have no or few alternatives for receiving health care; successfully followed up 80% of those individuals; and delivered at least 75% of the treatment dose to 93% of the EC participants. Moreover, promising results were found for an enhanced CIS counseling protocol. Key words: abstinence, ethnicity, funding source: Minority Health Research and Education Grant Program 2002-2003, National Cancer Institute (R01 CA89350, R01 CA094826).

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POS3-066
A STUDY OF CULTURALLY APPROPRIATE SMOKING CESSATION FOR UNDERSERVED KOREAN AMERICAN SMOKERS
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While tobacco use has historically detrimentally impacted the health of the general population in the US, underserved and new immigrant populations are currently suffering disproportionately from tobacco related health problems. Research on Asian Americans has revealed high smoking rates among Korean Americans (45.9% ever-smoking rate; 26.8% current smoking rate) (Ma et al., 2003). The present study aims to assess the feasibility of a culturally tailored Asian QUIT smoking cessation program for Korean Americans (n = 84) that combines intensive motivational interviewing and Nicotine Replacement Therapy. The study involves two-group quasi-experimental random assignment design, with pre-treatment assessment and longitudinal follow-ups (1-week, 1-month, 3-month and 6-month) and utilizes Stages of Change model and Motivational Interviewing strategies. The intervention group receives seven sessions in an individualized format, including self-help smoking cessation materials, behavioral counselor-led intensive motivational interview sessions, and Nicoderm QP Patches. The control group receives the same number of sessions, Nicoderm QP patches, and self-help general health materials. The study outcome evaluation includes assessment of smoking status, number of quit attempts, perceived risks of smoking, pros and cons of smoking, self-efficacy in quitting, and levels of distress, and acceptability and feasibility of the protocol and will serve as a foundation for a larger randomized study. The long-term goal is to achieve large-scale dissemination of the intervention with demonstrated feasibility and effectiveness based on the current study, thereby contributing to reduced prevalence of smoking and negative health outcomes in the target population. Results and discussion will be presented at the conference.

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POS3-067
REDUCING SMOKING AMONG PRISON INMATES: 6 MONTHS FEASIBILITY STUDY

BACKGROUND: 12,000 individuals enter the NSW correctional system annually. Prisons house disadvantaged populations; indigenous people are over-represented. Ecstasy drug use is common in prison (43% of prisoners, 8% of non-prisoners). The current rate of smoking in prison is 26%, with half of inmates taking drugs (Heroin 15%, cannabis 34%). The current sample scored significantly different at week 5 (20.3% for EC and 11.7% for SC; p = .05), but were not maintained at week 12 (27.4% for EC and 20.5% for SC; p = .20). In sum, the Adios project recruited a very underserved, low SES, Spanish speaking population who have no or few alternatives for receiving health care; successfully followed up 80% of those individuals; and delivered at least 75% of the treatment dose to 93% of the EC participants. Moreover, promising results were found for an enhanced CIS counseling protocol. Key words: abstinence, ethnicity, funding source: Minority Health Research and Education Grant Program 2002-2003, National Cancer Institute (R01 CA89350, R01 CA094826).

DISCUSSION: Prisoners were keen to participate in the smoking cessation program and contributed to the development of the intervention. Abstinence rates were high particularly among those not transferred to other prisons. Results were encouraging among this group with a high level of drug use.

National Heart Foundation Australia, Commonwealth Dept. of Health and Aged Care, NSW Dept. of Health, NSW Cancer Council

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POS3-068
INTERNET-BASED SMOKING TREATMENT FOR LESBIAN, GAY, BISEXUAL AND TRANSGENDER (LGBT) CIGARETTE SMOKERS
Gary L. Humfleet*, Ph.D., Greg Greenwood, Ph.D., Sharon M. Hall, Ph.D., Ricardo Munoz, Ph.D., Carolynn Hurlt, M.A., and Anthony Taylor, B.A.

Data indicate that lesbian, gay, bisexual, and transgender (LGBT) populations have higher smoking rates compared to the general population and may be at increased risk for psychosocial issues that predict smoking treatment failure. LGBT smokers may also be less likely to fully utilize smoking treatments directed to the general population due to potential negative attitudes and discrimination. The current study compares the efficacy of two interventions for LGBT smokers and examines variables that may predict smoking treatment success. 600 smokers will be randomly assigned to one of two Internet-based treatments: 1) a LGBT-targeted self-help intervention plus social support plus email-based counseling, or 2) a self-help control condition. Participants are assessed at baseline on smoking, nicotine dependence, depression diagnosis, demographics, mood, motivation to change, and alcohol use. Smoking status is assessed by self-report at Months 1, 3, 6, and 12. Preliminary analyses have been conducted on baseline variables and website use for the first 290 participants. 57% of the sample is male, 37% female and 6% transgender. Mean daily cigarettes = 21.7. The current sample scored significantly higher on measures of poor mood (anger and depression) than comparable standardized samples. 72% reported a history of a major depressive episode while 24% reported a current episode at study entry. Assessment of website use indicates that participants in the LGBT-targeted condition are more likely to utilize the website, both in number of repeat visits and the number of sessions viewed. These differences in medication adherence were not maintained at the full sample including preliminary 1, 3, and 6 month outcome data. Supported by NIDA grants DA15791, DA15732, DA02538 and P50-DA09253.

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POS3-069  INTENTION TO QUIT SMOKING AMONG LESBIAN, GAY, BISEXUAL, AND TransGENDER SMOKErS


This study’s primary aim is to identify theoretically relevant and culturally specific variables to understanding intention to quit smoking among lesbian, gay, bisexual and transgender (LGBT) smokers. Individual interviews were conducted with members of each of the four subgroups (LGB/T). The interviews probed for perspectives on the four components of the Theory of Planned Behavior (TPB: attitudes, subjective norms, perceived behavioral control, and behavioral intention to quit smoking in the next 6 months), and LGB/T-specific factors influencing intention to quit smoking. The 12 subjects were on average 34 years old, 42% were male, 42% female, and 17% transgender. Most (75%) belonged to ethnic/racial minorities, and 58% had a high school education or less. Nearly all were daily smokers (mean cigarettes/day = 15.4; SD = 9.2) with mean pack-years = 15.0 (SD = 19.6), and 70% smoked within in 30 minutes of waking. Most (60%) were in the contemplation stage of readiness to quit. A systematic analytic regime applied to the transcribed interviews revealed the saliency of LGB/T-specific factors in intention to quit smoking, such as the role of smoking in sexual identity and socialization, the impact of marginalization and rebelliousness regarding antismoking messages, added life stressors related to stigma and prejudice, and the link between achieving life milestones and cessation. We are now conducting confirmatory focus groups, to be followed by a quantitative survey. Implications for an LGB/T-specific smoking cessation intervention will be discussed.

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POS3-071  RELATIONSHIP BETWEEN SESSION ATTENDANCE AND SMOKING-RELATED VARIABLES IN STUDENTS ATTENDING A SMOKING CESSATION PROGRAM

Yu-Mei Schoenberger, Connie Kohler*, and Yoko Kawamura

It has been recommended that research on adolescent smoking cessation programs take into consideration their level of exposure to the cessation intervention. We examined a subset of participants in an evaluation study of the Not-on-Tobacco (N-O-T) Program. The subset included those who attended one or more of the N-O-T sessions (n=112). We wanted to determine if level of exposure to the intervention (number of sessions attended) was related to any of the following variables: not smoking in the past thirty days; smoking level (cigarettes/day by number of days smoked in past 30 days); intention to quit in the next 30 days; and motivation to quit. Motivation to quit was measured by the question, “How much do you want to quit smoking cigarettes for good?” Response options were: a great deal; somewhat; a little; not at all. These variables were measured at end-of-program, six- and 12-months follow-up. Results: Although only about 1/3 of the high school students attended all ten sessions; 75% attended at least seven sessions. Not smoking in the last 30 days, smoking level, and intention to quit were not related to number of sessions attended at end-of-program, six-, or 12-months. Motivation to quit was positively related to the number of sessions attended at both end-of-program and six-month follow-up (r=.23, p=.042; r=.45, p=.014). Motivation to quit may be an antecedent to or a consequence of session attendance. Given a high attrition rate and the lack of association between the number of sessions attended and quitting or reduction behaviors, adolescent cessation program developers should consider program length as an important variable.

American Legacy Foundation.

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POS3-072  EFFECTIVENESS EVALUATION OF A SCHOOL-BASED SMOKING CESSATION PROGRAM FOR ADOLESCENTS

Connie Kohler*, Yu-Mei Schoenberger, and Martha Phillips

Unlike the extensive base of evidence regarding the efficacy and effectiveness of adult smoking cessation strategies, the base of evidence regarding efficacy or effectiveness of youth cessation is scant. This project was funded to provide an effectiveness evaluation of a widely disseminated smoking cessation program, the American Lung Associations Not-on-Tobacco (N-O-T) Program. Working with the ALA of Alabama, we recruited 48 high schools to implement the N-O-T Program over a 3-year period (n=1252 students). Another 27 schools were recruited as comparison schools (n=251 students). Data were collected at baseline, end-of-program, six and 12 months. Students reported any smoking in the last 30 days. At end-of-program, 6.4% of N-O-T participants reported not smoking in the last 30 days, compared to 3.2% of comparison students. N-O-T participants were 2.5 times as likely to report not smoking as non-smokers, when accounting for race (adjusted OR=2.5; 95%CI=1.01-6.2). There were substantial differences in the treatment effects noted for whites and non-whites. Among whites, N-O-T participants were over 5 as likely to report not smoking as non-participants (OR=5.3; 95%CI=1.1-24.1); among non-whites, N-O-T participants were 1.2 times as likely as non-participants to report not smoking. Differences remained at 12 months (4.4% of N-O-T participants reported not smoking in the last 30 days, compared to 3.6% of comparison students). While students were 2.8 times as likely to report not smoking, but these differences were not statistically significant (OR=2.8; 95%CI=0.8-10.6). The difference in the OR at 12 months may reflect the 72% (65.4% in the comparison group vs. 78.6% in the intervention group) attrition in this intent to treat analysis.

American Legacy Foundation.

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POS3-073  ADOLESCENT SMOKING CESSATION ESCAPING NICOTINE & TOBACCO (ASCENT): OUTCOMES


Danya International, Inc., with funding from the National Institute on Drug Abuse under a Small Business Innovation Research grant has developed a multi-faceted smoking cessation intervention targeting adolescents, Adolescent Smoking Cessation Escaping Nicotine & Tobacco (ASCENT). The program includes a six-session smoking cessation facilitators curriculum, a facilitators video, a motivational youth video, a pocket diary, and a parent pamphlet. In evaluation of this program with random assignment of high schools (N=125) to the intervention vs. a comparison control group, 67 percent of youth who received the ASCENT intervention reported that they had not smoked daily at 12-month follow-up, compared to 42 percent in the comparison group (p<.05). Additionally, 31 percent of youth who received ASCENT reported having quit smoking compared to 23 percent of youth who were in the comparison group. Although this was not statistically significant, the overall one-year quit rate for both groups was much higher than the average rate for youth cessation programs of 12 percent. Also, a greater percent of youth who reported smoking three or less cigarettes at the beginning of the ASCENT program were able to quit smoking when compared to youth who reported smoking nine or more cigarettes a day (57.1 percent vs. 23.8 percent, p<.05). These and other relevant findings to be presented support the relative effectiveness of the ASCENT program in reducing overall cigarette smoking in adolescents.

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POS3-074  AGE AT MENARCHE AND WEIGHT CONCERNS IN RELATION TO SMOKING TRAJECTORY AND DEPENDENCE AMONG ADOLESCENT GIRLS ENROLLED IN A SMOKING CESSATION TRIAL

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By puberty many girls adopt dieting and other practices, such as cigarette smoking, to control their weight. The goal of this study was to examine whether age at menarche was associated with onset of daily smoking, and whether this relationship is influenced by weight concerns among cessation seekers. The sample consisted of 74 female participants enrolled in a smoking cessation trial (age 15.2±1.3 years; 75.7% European American, baseline BMI 24.7±5.4, age at menarche 11.7±1.2 years; Fagerström Test for Nicotine Dependence (FTND) score 7.0±1.2). Two-thirds of participants reported weight concerns at baseline, based on responses to the Eating Disorders module from the Diagnostic Interview for the Children and the Adolescent (DICA IV). In the overall sample, Pearson correlation analyses revealed a statistically significant association between age at menarche and onset of daily smoking (r=0.27, p=0.03); other correlations coefficients between age at menarche and smoking trajectory/severity variables were not statistically significant (r<0.20). Among girls reporting weight concerns, there were significant correlations between age at menarche and FTND score (r=0.29, p=0.046), while only trends emerged for correlations with onset of daily smoking (r=0.29, p=0.06) and CPD (r=0.28, p=0.053). Among girls reporting no weight concerns, no correlations approached statistical significance. These findings suggest that the relationship between age at menarche and smoking trajectory/tobacco dependence is more prominent in adolescent girls with weight concerns. Further study in larger populations that include non-treatment-seeking adolescent female smokers is warranted.

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POS3-075  ADOLESCENTS SEEKING SMOKING CESSATION TREATMENT: RELATIONSHIP BETWEEN EXTERNALIZING SYMPTOMS, SMOKING HISTORY AND OUTCOME

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The impact of psychiatric co-morbidity on tobacco dependence presents a clinical and public health problem. The current study examined the potential impact of externalizing symptomatology on the initiation of tobacco use and smoking cessation outcome. Among adolescents presenting to a cessation trial, we hypothesized a relationship between an increasing degree of externalizing symptoms and age of smoking initiation as well as less ability to achieve prolonged abstinence. Ninety-five adolescents (mean age 15.2 SD 1.3 years, mean cigarettes per day 18.6 SD 8.4, mean Fagerström Test for Nicotine Dependence (FTND) 7.1 SD 1.3, 70% female, 74% European American) cessation seekers were included in this analysis. Smoking histories and FTND scores were obtained through a questionnaire administered at the time of treatment request. The Child Behavior Checklist/4-18 (CBCL) and the Youth Self-Report (YSR) assessed the degree of externalizing symptoms using the aggressive and delinquent factors. Pearson (2-tailed) correlation revealed that participants with a higher degree of externalizing symptoms initiated smoking at an earlier age r = -0.229 (p = 0.027). Logistic regression analysis showed that the degree of externalizing symptoms predicted lower rate of prolonged abstinence (p=0.023). These findings suggest that adolescents with a high degree of externalizing symptoms might require early prevention measures and tailored interventions to enhance smoking cessation success. The relationship between externalizing psychiatric symptomatology and tobacco trajectory, dependence and treatment requires further exploration.

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POS3-076  REASONS FOR QUITTING AMONG YOUNGER ADOLESCENT CESSATION REQUESTERS

Emily J. Luther*, B.A., Matthew J. Frazier, B.S., Frederick H. Franken, B.S., Maria J. Gasior, M.D., Ph.D., Stephen J. Heishman, Ph.D., and Eric T. Moolchan, M.D., TTATRC, NIDA IRP, NIH, DHHS, Baltimore MD

Enhancing adolescent cessation requires an understanding of what methods and approaches will motivate individuals across this age group to quit. We hypothesized that younger versus older adolescents seeking cessation treatment would express different reasons for wanting to quit, reflecting developmental disparities. A telephone screen sample of 1,338 adolescent cessation-seeking smokers (mean age 15.6 SD 1.7, 60% female, 55% Caucasian, mean Fagerström Test for Nicotine Dependence 5.8 SD 2.2) recruited in Baltimore, Maryland was conducted. Participants were queried regarding their smoking behavior and reasons for wanting to quit in open-ended format. Responses were classified post hoc into 9 different categories. The population was then stratified into younger (11-15) and older (16-20) adolescents. An independent t test revealed that, while both age groups cited health as the predominant reason for wanting to quit, younger adolescents were more likely to state don’t know/other (p = .019), while older adolescents were more likely to endorse cost (p = .009) or aesthetics (p = .009). Findings from this sample suggest that raising the cost of cigarettes and targeting the aesthetic concerns is likely to be more effective for younger adolescents. More developmentally appropriate messages may need to be developed to enhance smoking cessation efforts among younger adolescents.

Supported by NIDA Intramural Funds.

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Adult studies suggest ethnic differences in motivational factors for smoking cessation. We explored potential differences in reasons for wanting to quit among youth across ethnicities. As part of their screening interview for participation in a smoking cessation trial, 1,242 adolescents were asked to state their reasons for wanting to quit smoking in open-ended format. Responses were classified into 9 categories post hoc. The mean age of participants was 15.6 years (SD 1.7). 60% were female, 55% were European Americans and the mean Fagerström Test for Nicotine Dependence was 5.8 (SD 2.2). Independent t tests were used to analyze the differences between European Americans and minorities in reasons to quit smoking. In both groups the majority of adolescents indicated health reasons as the primary reason for wanting to quit smoking (62% of total sample). However, cost of smoking was endorsed more frequently by European Americans as compared to Non-European American adolescents (p = .008). Non-European American minority adolescents indicated that lack of positive reinforcement (positive pharmacological or social effects) provided by their smoking was a key motivation for quitting (p < .001). Further examination of reasons for wanting to quit smoking in larger multi-ethnic samples of youth might enhance ethnically appropriate motivating factors and targeting among adolescents of different ethnicities.

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**POS3-078**  
**ETHNIC DIFFERENCES IN ADOLESCENTS REASONS FOR SEEKING CESSATION TREATMENT**

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**POS3-079**  
**CONCOMITANT PATHOLOGIES AND SMOKING CESSATION: THREE YEARS OF ACTIVITY OF THE ANTI-SMOKING TREATMENT IN TREVISO**

Mauro Salasnich*, Eleonora Volpato, Grazzia Carli, Maurizio Bruschi, and Giampaolo Amici

We report the activity (2001-2004) of the Anti-smoking surgery of Treviso.100 smokers have undergone individual behaviour-modification treatment combined with pharmacological therapy, the latter when not contraindicated or refused. At follow-up (1 week, 1,3,6,12 months after quitting tobacco) the non-smoking status was validated by CO measurement in exhaled air.56 patients have accessed the Anti-smoking surgery for specific medical recommendation following examination at the multi-disciplinary surgery, of whom 42.6, after pneumological, angiological, endocrinological examination, respectively. The concomitant pathologies were COPD (11), cough (18), asthma (3), dyspnea (8), respiratory failure (1), pulmonary nodule (1), periferic vascular disease (8), disthyroidism (6). The remaining 44 smokers came spontaneously. The median duration of smoking cessation in the entire group was 7 days (interquartile range 0-91). The probability of remaining smoke-free was calculated by the Kaplan-Meier survival estimates and was 0.28 after 1 year in the total group. 47 patients restarted smoking already before the first step. Other 42 patients relapsed into smoking during the following year of observation and 11 subjects were smoke-free at the last follow-up. We found a significant difference in the smoking cessation probability between the group referred by other specialists for concomitant pathologies and the spontaneous one (Kaplan-Meier 1-year probability 0.33 vs 0.20, log-rank test = 0.0491). These findings suggest that concomitant pathologies assessed by specialist examinations preliminary to anti-tobacco treatment may help to motivate in smoking cessation.

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**POS3-080**  
**CALCULATING SMOKING-ATTRIBUTABLE DEATHS: EVALUATING THE DIRECT AND INDIRECT METHODOLOGICAL APPROACHES FOR THE CANADIAN POPULATION**

Dolly Ballinas

Attributable fractions and its corresponding number of attributable deaths are used by epidemiologists to educate public health policy-makers on the potential benefits of intervention with regard to cigarette smoking and other underlying causes of disease. These estimates are used by policy-makers to help determine current priorities and strategies for disease control. Therefore, it is important to calculate the most valid and accurate smoking-attributable mortality estimates for a nation as possible. Estimates of annual smoking-attributable mortality vary depending on the methodology used. Health Canada, using the SAMMTEC method, estimated that there were 41, 408 smoking attributable deaths in 1991, while Single et al. arrived at a number 18% lower for the subsequent year. The SAMMTEC and Single et al. approaches, which both rely on direct measurement of prevalence of exposure, but differ in approaches to relative risk, and the Peto indirect method, which is notable for its lack of reliance on direct measurement of prevalence of exposure, are compared. Assumptions, limitations, and methodological concerns are described. The CPS-II survey, from which SAMMTEC derives relative risk, was a large but not nationally representative American sample and thus the appropriateness of applying the relative risks obtained from the CPS-II to the Canadian population is questioned. Lack of adjustment for potential confounders including socio-economic status and related factors such as diet, alcohol use, educational level and co-morbid conditions has been criticised for inflating estimates of smoking-attributable mortality, despite analyses which suggest that additional adjustment beyond that for age and sex do not substantially alter estimates of deaths caused by smoking. Latency effects, adjusted and updated estimates are reported.

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**POS3-081**  
**ACTIVE TOBACCO SMOKING IN EARLY ADOLESCENCE AND ADVERSE HEALTH EFFECTS TWO DECADES LATER: LONGITUDINAL EVIDENCE OF RISK**

Karen M. Jennison*, Ph.D., University of Northern Colorado and Kenneth A. Johnson, Ph.D., Social Research Associates

This study investigates the long-term health risks of tobacco smoking using data from the National Longitudinal Surveys of Youth (N=5227) for the years 1982-2002. Questions on smoking behavior measured the age of onset of tobacco use as well as smoking history. The results of a multiple logistic regression analysis, after adjustment for confounding, indicated that when compared to the typical person in the U.S. general population, active cigarette smoking before the teen years greatly increased the risk of lowered physical and mental health scores among respondents aged 40-45 as measured on the Short-Form 12-question (SF-12) Inventory. Lower scores were two and four times as common among males and two to ten times among females. For males, smoking onset in childhood and early adolescence conjointly with continued tobacco use over the life course, significantly predicted the severity of self-reported health problems as defined by the International Classification of Diseases (ICD-9) health codes, even if smokers reduced their smoking from daily to occasional during their thirties. Although the health problems of females were equally influenced by smoking initiation before the teen years, negative health consequences for them increased dramatically irrespective of subsequent smoking or nonsmoking history. Significant depressive symptomology, measured using the Center for Epidemiologic Studies Depression scale, was predicted more among males by higher cigarette smoking rates (a pack or more a day) at ages 19 to 25 than in later years, whereas depression symptoms among females were nearly four times more likely if they began smoking before their teens. These findings underscore the important linkage between youthful cigarette smoking and long-term adverse health effects. Evidence is provided that the earlier the age at which one starts to smoke tobacco, the greater the risk of diminished health in middle age.

No Funding. The data source for the study was the National Longitudinal Survey of Youth (NLSY79). The NLSY survey was sponsored by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor and data were made available from the Center for Human Resource Research, Ohio State University.

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**POS3-082**  
**TOBACCO DEPENDENCE AND WILLINGNESS TO QUIT AMONG HOSPITAL PATIENTS**

Juha Mustonen*, M.D., Ph.D., Kati Koponen, M.Sc., Tuomo Kava, M.D., Ph.D., Eeva Koistinen, M.D., Ph.D., North Karelia Hospital, Finland; and Taru Mustonen, Ph.D., Harvard School of Dental Medicine, Boston, USA

Despite sustained tobacco control activities, 19% of women and 26% of men continue to use tobacco in Finland. Hospitals provide a conducive environment for smoking cessation since many patients are being treated for smoking-related illnesses. We assessed tobacco use and dependence, willingness to quit, and attitudes towards smoke-free hospitals among patients in North Karelia Central Hospital, 1388 general hospital (GH) and 230 mental hospital (MH) patients completed a tobacco survey. More women (58%) than men answered the survey. Forty percent of respondents were 41-64 years old, and 21% reported tobacco use (18% in GH and 42% in MH). Seven percent were recent quitters (i.e., < 12 months), 24% were former smokers and 48% never smokers. Duration of smoking was over 20 years among 40% of the smokers. The majority were pack-a-day smokers who smoked their first cigarette within 30 minutes of awakening. Over half of the smokers had high nicotine dependence (49% in GH, 64% in MH). Smoking rate was 12% among pregnant women. Eighty-five percent of smokers in GH, and 67% in MH reported willingness to quit. Nearly half of the smokers supported a smoke-free hospital. To capitalize on the smoking cessation motivation, a systematic treatment of smoking patients was started in several subspecialties. Results obtained 3 months after a hospital visit from patients with acute cardiac event show that 14% continued to smoke at the pre-hospitalisation level, while others had either quit (38%) or reduced. Clearly there is a need for secondary prevention among hospital patients. Ministry of Social Affairs and Health, Finland 59/STA/2004.

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**POS3-083**  
**ACTIVE TOBACCO SMOKING IN EARLY ADOLESCENCE AND ADVERSE HEALTH EFFECTS TWO DECADES LATER: LONGITUDINAL EVIDENCE OF RISK**

Karen M. Jennison*, Ph.D., University of Northern Colorado and Kenneth A. Johnson, Ph.D., Social Research Associates

This study investigates the long-term health risks of tobacco smoking using data from the National Longitudinal Surveys of Youth (N=5227) for the years 1982-2002. Questions on smoking behavior measured the age of onset of tobacco use as well as smoking history. The results of a multiple logistic regression analysis, after adjustment for confounding, indicated that when compared to the typical person in the U.S. general population, active cigarette smoking before the teen years greatly increased the risk of lowered physical and mental health scores among respondents aged 40-45 as measured on the Short-Form 12-question (SF-12) Inventory. Lower scores were two and four times as common among males and two to ten times among females. For males, smoking onset in childhood and early adolescence conjointly with continued tobacco use over the life course, significantly predicted the severity of self-reported health problems as defined by the International Classification of Diseases (ICD-9) health codes, even if smokers reduced their smoking from daily to occasional during their thirties. Although the health problems of females were equally influenced by smoking initiation before the teen years, negative health consequences for them increased dramatically irrespective of subsequent smoking or nonsmoking history. Significant depressive symptomology, measured using the Center for Epidemiologic Studies Depression scale, was predicted more among males by higher cigarette smoking rates (a pack or more a day) at ages 19 to 25 than in later years, whereas depression symptoms among females were nearly four times more likely if they began smoking before their teens. These findings underscore the important linkage between youthful cigarette smoking and long-term adverse health effects. Evidence is provided that the earlier the age at which one starts to smoke tobacco, the greater the risk of diminished health in middle age.

No Funding. The data source for the study was the National Longitudinal Survey of Youth (NLSY79). The NLSY survey was sponsored by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor and data were made available from the Center for Human Resource Research, Ohio State University.

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**POS3-084**  
**SMOKERS’ ATTITUDES AND BEHAVIORS RELATED TO CONSUMER DEMAND FOR CESSATION COUNSELING IN THE MEDICAL CARE SETTING**

Kathryn Kahler Vose*, M.A., Deanne Weber, Ph.D., Lisa S. Weill, M.A., Tracy Orleans, Ph.D., Robin E. Mockenhaupt, Ph.D., and Holly A. Massette, Ph.D.

Research has shown that receiving counseling advice from a health care physician can significantly increase smokers’ odds of quitting successfully. However, it is unknown the degree to which smokers ask for cessation advice and the factors that contribute to this demand. To increase demand for tobacco cessation counseling, we sought to learn if there are shared characteristics among smokers who seek out advice and if a relationship exists between smokers’ attitudes toward quitting and their level of interest in cessation information. Based on data from a national mail survey of adult men and women, we divided smokers into three cessation-demand groups determined by their level of counseling interest - low-demand (LD), medium-demand (MD) and high-demand (HD). The LD group smokers less and has confidence in being able to quit, but exhibits little interest in doing so. The MD group smokers heavily and perceives the habit as harmful, but has little confidence about quitting. MD smokers believe in physicians advice; however, they don’t visit a physician regularly. The HD group smokers heavily, but wants to quit and has the confidence to do so. HD smokers are most likely to respond to communications aimed at increasing smokers’ demand for cessation counseling. The segmentation strategy in this study provides an effective way of understanding who might be most receptive to cessation counseling in the medical care setting.

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POS3-085  CHRONIC BRONCHITIS, CIGARETTE SMOKING AND THE SUBSEQUENT ONSET OF DEPRESSION AND ANXIETY: RESULTS FROM A PROSPECTIVE POPULATION-BASED COHORT STUDY

Edwin J. Wagenha*, M.Sc., Ludovic G.P.M. van Amelsvoort, Ph.D., IJmert Kant, Ph.D., and Emiel F.M. Wouters, M.D., Ph.D.

OBJECTIVES: In the present study the authors used data from a prospective, population-based cohort study to examine: 1) whether the presence of chronic bronchitis predicts the subsequent onset of depression or anxiety, and 2) if the incidence of depressed or anxious cases was different for smokers compared to non-smokers.

METHODS and RESULTS: For studying the relationship between chronic bronchitis and anxiety or depression we used data from 4468 and 4520 respondents. The presence of chronic bronchitis was associated with a significant increase in anxiety and depression (OR for anxiety=0.09, 95% CI 2.91, 8.89; OR for depression=5.00, 95% CI 2.72, 8.55, 8.16). The incidence of anxiety as well as depression was significantly higher in the smokers group (OR for anxiety=8.94, 95% CI 4.08, 19.59; OR for depression=7.56, 95% CI 3.37, 16.96).

CONCLUSION: This prospective study shows significant higher levels of anxiety as well as depression in employees with chronic bronchitis. We also found that smoking cigarettes modifies this association, resulting in an increased risk for depression in employees with chronic bronchitis who smoke.

The Maastricht Cohort Study is part of the Netherlands concerted research action on Fatigue at Work, granted by The Netherlands Organization for Scientific Research (NWO).

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POS3-087  TRAJECTORY OF PULMONARY FUNCTION IMMEDIATELY FOLLOWING ABSTINENCE IN SMOKERS WITH EARLY TO MODERATE COPD

David Gonzales*, Ph.D., Larry R. Johnson, Ph.D., A. Sonia Buist, M.D., and Paul Lees, M.S. Oregon Health & Science University, Portland, Oregon USA

Data from the Lung Health Study (LHS) indicate small pulmonary function (PF) increases at 1 year following continuous abstinence from smoking for those with chronic obstructive pulmonary disease (COPD). This substudy assessed the trajectory of PF change immediately following abstinence. Subjects were in the LHS at Oregon Health & Science University in Portland, Oregon for 5 prior years (non-intervention group). All were smokers with early to moderate COPD who participated in a cessation program at the end of the LHS (n = 31). PF testing was consistent with American Thoracic Society Standards. Baseline FEV1% of predicted (FEV1) was compared to FEV1 at 1, 2 and 3 months following the quit date for participants continuously abstinent at each measurement. A paired sample t-test of FEV1 at baseline vs. FEV1 at each month for those remaining continuously quit was conducted. Compared to baseline, FEV1 was higher at each monthly measurement: 62.6% vs. 67.9% at 1 month (p = .001); 61.9% vs. 66.5% at 2 months (p = .12; p = .017) and 59.6% vs. 63.4% at 3 months (p = 0.6; p = .039). There were no gender differences in PF changes for quitters. There were no PF increases for continuous smokers. Our findings indicate that those with early to moderate COPD who quit smoking experience immediate positive changes in PF. Due to the small sample, additional study of the immediate effects of abstinence on PF is warranted.

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POS3-088  DETERMINANTS OF SUCCESSFUL QUITTING IN PATIENTS WITH COPD

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In the SMOKE-study the efficacy of an intensive smoking quitting program for COPD patients was evaluated in a randomised controlled multicentre design with two therapy groups (234 subjects included) in an outpatient setting and a follow-up until 6 months. In the intensive SmokeStop Therapy psychosocial and pharmacological elements were combined. We expected this therapy to be more effective than the therapy of the control group: the Minimal Intervention Strategy for chest clinics. This hypothesis was not supported: only at 1 month there was a significant difference between the groups in quit rate. At 3 and 6 months there was no significant difference. The expectation that men and women would be equally successful was supported. The effect of proximal cognitive variables of the ASE-model was measured: attitude, social influence and self-efficacy. A positive correlation with abstinence was hypothesized. This hypothesis was partly supported for attitude and self-efficacy. Patients who never smoked again after there quit-date, had more positive attitudes towards smoking cessation than patients that didn’t quit or who resumed smoking. No effect of social influence was found. For self-efficacy, a different time course was found for the different smoking status groups. Quitters had a higher self-efficacy at baseline than smokers and the self-efficacy of the former increased gradually over time when they abstained continuously. Smokers had a lower self-efficacy at baseline and there scores decreased even further when their quit attempt remained unsuccessful. Finally, other predictors of successful quitting were analysed. Use of pharmacological aids and early abstinence turned out to be important predictors of prolonged or continuous abstinence.

The SMOKE study is funded by the Netherlands Asthma Fund.

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POS3-089  WHO ENDS UP WITH COPD AMONG Smokers IN A COMMUNITY SETTING?

Mohamed Zakaria, Ghada Radwan, Mostafa K. Mohamed, Mahmoud El-Zorkany, Fatma Abdel-Aziz, and Ebenezer Israel, Egyptian Smoking Prevention Research Institute

Chronic obstructive lung disease (COPD) is common among smokers and this study based on a community sample compares those with COPD with smokers with no lung function dysfunction. Methods: A community survey on smoking was carried out in rural Egypt. Cigarette smokers were identified if they smoked at least 10 cigarettes daily for 5 years. Expiratory flow/volume curve was done expiratory flow/volume curve was done for 364 cigarette smokers and 84 water pipe smokers. Lung function results were categorized using American Thoracic Society guidelines. Univariate and logistic regression analysis were performed to identify significant independent variables that were associated with COPD. Results: A total of 243 cigarette smokers with normal lung function, 22 cigarette smokers with COPD, 56 waterpipe smokers with normal lung function and 5 waterpipe smokers with COPD were identified. Symptoms, age of initiation, amount of smoking and time since last smoked did not differ significantly between the two groups. Duration of smoking emerged as the most significant variable associated with COPD (OR for smoking over 20 years was 11.9 CI 1.5-96.7, p<0.001) and age was not a significant predictor of COPD. Conclusions: The ratio of COPD to smokers with normal lung function appeared to be the same for cigarette and waterpipe smokers. Duration of smoking emerged as the major significant predictor for COPD.

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POS3-090  SMOKING, HIGH BLOOD PRESSURE, AND DIABETES IN A NATIONAL SURVEY IN EGYPT IN 2002

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A national survey of hepatitis C, smoking, diabetes and high blood pressure prevalence was carried out. Out of 9561 participants, 30% of males and 1% of females reported current smoking. The prevalence of smoking among males increased rapidly with age to peak at 54.5% in the age group 50-60 with an average age of 47% above 20 years. Above the age of 20, 32% of males smoke cigarettes, 12.1% smoke water pipe and 2.5% smoke both. The median smoking duration was 16.3 years for cigarettes and 14.8 years for waterpipe. For smoking females above 20, the median smoking duration was 8.7 years for cigarette and 17.5 years for waterpipe. 7.2% of females and 8.3% of males below 40 years of age and 22% of males and 29.3% of females above 40 were found to have high blood pressure. 8.3% below 40 years of age and 24% above 40 years of age were unaware of their high blood pressure. Having high blood pressure and also not being aware of it were both not associated with smoking status. 6% of all adults above 20 years (6.6% of males and 6.2% in females) reported being diabetics. This rate was much higher (13%) above the age of 40 than among those below 40 (1.3%) but not related to smoking status.

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POS3-091  DEVELOPMENT OF A DISEASE MANAGEMENT PROGRAM FOR Smokers IN RURAL PRIMARY CARE

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New models of chronic disease management are being applied to illnesses such as diabetes, heart failure, and asthma. Although nicotine dependence exhibits many features of chronic illness, it is unclear how these models of chronic disease management might be applied to smoking cessation. Derived in part from the Chronic Care Model, we developed a disease management program for smoking and implemented it in rural primary care practices. Smokers at all stages of readiness to quit receive health education, free pharmacotherapy (nicotine replacement therapy or bupropion), screening for contraindications to pharmacotherapy, coordination of drug therapy with the patients physician, motivational interviewing telephone-based counseling, and feedback to the patients physician on their smoking status and motivators. The program is for two years with repetitive offers of education, pharmacotherapy, and counseling. At 12 rural clinics the mean percentage of smokers screened and deemed eligible for the randomized clinical trial that agreed to participate was 78% (38-100). To date 153 smokers have been enrolled in this population-based program. These smokers had an average age of 48 years and 44% were female. Comorbid medical conditions were common: 16% with diabetes, 35% with hypertension, 45% with hyperlipidemia, 29% with chronic lung disease, and 11% with heart disease. 63% of smokers requested either NRT or bupropion after enrollment. A disease management program offers the potential to integrate state-of-the-art smoking cessation interventions into the context of rural primary care medicine. The large proportion of patients requesting pharmacotherapy suggests a large demand for smoking cessation resources among this high risk population of rural smokers with multiple comorbidities.

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POS3-092  SMOKING CESATION IN AFRICAN AMERICANS WITH DIABETES: SECONDARY ANALYSES OF THREE RANDOMIZED TRIALS

Janet Thomas*, Jasjit S. Ahluwalia, Won Choi, Nicole Nollen, Kola Okuyemi, Debra Haire-Joshu, and Matthew Mayo

Persons with diabetes are at elevated risk for CVD and these risks are increased in those who smoke. Few trials have examined smoking cessation and diabetes. Study presents the secondary analyses of three trials examining cessation in low-income African American (AA) cigarette-smokers responding affirmatively to are you being treated for diabetes/have you ever been told that you have diabetes or high blood sugar (diabetes) as compared to no-diabetes. STUDY 1: 410 low-income AA smokers were randomized to 21mg nicotine-patch or placebo for 10-weeks as an adjunct to brief-counseling. A trend toward higher 6-month quit-rates in patients with diabetes (26% [10/39] vs. 14% [52/371], p=0.06) was seen. 40% (n=8/20) of diabetic patients receiving active-patch and 8% (n=2/19) receiving placebo had quit (p<.07). STUDY 2: 500 low-income AA smokers were randomized to culturally-tailored or usual-care educational materials. Both groups received 8-weeks of nicotine patch, brief-counseling and supportive calls. Patients with diabetes had a 6-month quit-rate (30% [18/61] vs. 14% [63/438], p<0.01). 37% (n=11/30) of diabetic patients in the tailored-condition and 23% (n=7/31) receiving usual-care had quit (p=.23). STUDY 3: 600 urban AA smokers were randomized to 7-weeks 300mg bupropion or placebo. Motivational interviewing-in-person and by telephone was provided to both groups. A trend toward higher 6-month quit-rates in patients with diabetes (28% [8/29] vs. 14%, [96/671], p=0.13) was seen. 41% (n=7/17) of diabetic patients in active and 8% (n=1/12) in placebo had quit (p=0.09). Results suggest a doubling of quit rates in persons with diabetes and a substantial treatment effect with pharmacotherapy. Future intervention studies designed to examine factors which enhance smoking cessation in persons with diabetes are encouraged. No funding.

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SMOKING AND INVASIVE TREATED INTRACRANIAL ANEURYSMS (ITIA)

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BACKGROUND: In the Czech population (10,000,000), some 400 ruptured aneurysms are treated yearly. The prevalence of smoking is 30% in the population 15+

METHODS: Studied series consists of patients treated at the neurosurgical dept either by surgery or endovascular procedure between 2001-2003. We assessed selected risk factors of ITIA among 154 patients (45 men, 109 women, aged 15 to 62 years, mean average age of the whole sample 46.3 years, SD±10.81).

RESULTS: Among our patients 74 % (114/154) were smokers - 30 % (36/114) men and 71.6 % woman (78/108), heavily nicotine dependent (FTND mean 4.4, SD±1.94). The average age of starting regular smoking was 18.2 years (SD±3.86) and the average period of smoking 26.8 years (SD±11.06). Number of daily smoked cigarettes was 18.2 (SD±8.42). Their risk factors for ITIA were assessed in connection to smoking. The relative risk of ITIA in smokers was 2.85 (4 for men, 2.52 for women). Other risk factors of ITIA in smokers and non-smokers were compared. For the whole sample total cholesterol, LDL-cholesterol, and hypertension were positively associated with smoking, but without statistical significance. With statistical significance p<0.05 athero-index (TC/HDL) was lower in non-smokers than smokers: 1.3 (SD±0.37) vs. 1.9 (SD±1.26). After average period of smoking 26.8 years (SD±11.06) the triglycerides were lower in non-smokers than smokers: 1.6 (SD±0.56) vs. 1.4 (SD±0.36), and triglycerides were lower in non-smokers than smokers: 1.3 (SD±0.36). After average of smoking 22% of them (9/41), smoking reduced 49 % (20/41) and 29 % (12/41) remained smoking as baseline.

CONCLUSION: Cigarette smoking increases the risk for intracranial aneurysms rupture (HR 2.85), as well as other followed risk factors for this diagnosis, some of them significantly. Despite the intervention and knowledge of high risk, only 22 % of smokers were able to quit one year after the neurosurgery.

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DEPRESSION AND RELAPSE TO SMOKING IN PATIENTS HOSPITALIZED WITH ACUTE CARDIOVASCULAR DISEASE

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BACKGROUND: Depression is common among cardiac patients and increases CV morbidity and mortality. The impact of depressive symptoms on relapse to smoking after hospitalization for acute cardiovascular disease (CVD) is unknown.

METHODS: We analyzed data from a double-blind randomized controlled trial of smoking after hospitalization for acute cardiovascular disease (CVD). The study included 137 hospitalized patients. Depression was assessed using the Beck Depression Inventory (BDI) at baseline, 3, and 12 months. The Beck Depression Inventory (BDI) assessed depressive symptoms at baseline.

RESULTS: We can see the characteristics of smoking habits in the next table: COPD: 10 (14%). Non smokers: 15 (20.8%), smokers: 23 (31.9%, 2 female), former smokers: 34 (47.2%, 4 female). A total of 13 patients (56.5%, 1 female) could considered former smoker after two years of following visits.

CONCLUSIONS: The prevalence of smokers among SAS patients is high. The application of a minimal intervention program in motivated patient could be a useful treatment.

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CIGARETTE SMOKING AND MULTIPLE SCLEROSIS

Eva Havrdova*, Dana Horakova, Eva Krusalova, and Petra Adamcova

Recently tobacco smoking was recognized as a relevant risk factor for multiple sclerosis in an epidemiological Norwegian study. Multiple sclerosis (MS) is an inflammatory demyelinating autoimmune disease of the central nervous system with subsequent disability caused by neuronal loss. Young adults of Caucasian origin, predominantly women are the most common patients. Smoking habits are not usually followed in patients with multiple sclerosis and the risk of developing MS is not yet known among tobacco smokers. The possibility to influence the course of MS by immunomodulating drugs increased dramatically in last years. High-dose corticosteroids are used to ameliorate acute attacks. Interferon beta, glatiramer acetate and intravenous immunoglobulins are used now to postpone the progression of the disease. The possible interference of tobacco smoking with the effectiveness of these expensive drugs was never investigated. With interferon beta and glatiramer acetate we treat 517 MS patients: 136 males, mean age 37.2 y. smoking MS duration 10yrs, 381 females, mean age 35.9yrs, mean MS duration 8.8yrs. Among these patients 65 confess tobacco smoking: 20 males, mean age 39.5yrs, mean duration of MS 10yrs, mean No of smoked cigarettes 8.8, 45 females, mean age 37yrs, mean duration of MS 9.5yrs, mean No of smoked cigarettes 8.3. Cigarette smoking is known to influence the function of the immune system though the hypothesis underlying the fact that the risk to develop MS is twice higher in smokers is not yet explained satisfactorily. Products of cigarette smoke cause decreased spontaneous apoptosis of white blood cells, increased T-cell proliferation and increased macrophage adhesion, and hence may counteract the effect of first line drugs used in the treatment of MS. Further studies are needed to elucidate these effects, and patient’s information is warranted.

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SMOKING HABIT IN PATIENTS WITH SLEEP APNEA SYNDROME. RESULTS OF A MINIMAL INTERVENTION TREATMENT

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OBJECTIVE: The aim of this study was to characterized the smoking habit and analyzed the efficacy of a minimal intervention treatment in smokers with severe sleep apnea syndrome (SAS).

METHODS: From 1995 to 2002 we included 72 patients with severe SAS. A personal questionnaire was administered for analyzed the smoking habit of SAS patients. We used a minimal intervention treatment with them. Continued abstinence was monitored for two years with carbon monoxide.

RESULTS: We can see the characteristics of smoking habits in the next table: N: 72, male 60 (83%), Mean Age (SD): 62 +/- 10. CM: 32 +/- 6. AH: 46 +/- 18, CPAP: 63 (87%), Cig per day (SD): 24 +/-15. COPD: 10 (14%), Non smokers 15 (20.8%), smokers 23 (31.9%, 2 female), former smokers 34 (47.2%, 4 female). A total of 13 patients (56.5%, 1 female) could considered former smoker after two years of following visits.

CONCLUSIONS: The prevalence of smokers among SAS patients is high. The application of a minimal intervention program in motivated patient could be a useful treatment.

No funding.

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POS3-097 REDUCING SMOKING AMONG PEOPLE WITH HIV: OUTCOMES AND LESSONS FROM THREE PILOT STUDIES
Karen S. Ingersoll*, Karen L. Cropsey, and Carolyn J. Heckman

People with HIV are more vulnerable to smokers diseases. Quitting smoking is advised to reduce morbidity and mortality. Smoking interventions that consider the special treatment needs of this population have not been available. In a series of three studies, we developed interventions for smokers with HIV, and tested their feasibility and efficacy. In study 1, we evaluated the acceptability and feasibility of using one session of motivational interviewing plus written personalized feedback to target smoking and medication non-adherence among 40 HIV+ smokers. At 1M follow-up, changes in stage of change, processes of change, cigarettes per day, and adherence were found. However, few smokers quit completely. In study 2, we evaluated the impact of the same motivational intervention plus up to 8 weeks of 24-hour nicotine transdermal patches titrated to baseline smoking levels among 40 smokers with HIV, and compared that intervention to an NCI You Can quit smoking reading condition plus the nicotine patch. Group differences were not found due to failure of randomization, with more heavy smokers assigned to the motivational intervention group. Few participants used the nicotine patches as prescribed. Readiness for patch use and adherence to the patch at one month were predictors of a 75% reduction in smoking at 3M follow-up. In study 3, we evaluated the impact of a motivational intervention without written feedback among 40 participants. Results were comparable to those of study 1. We conclude that tailoring smoking interventions for people with HIV using a motivational interviewing intervention is feasible and leads to reductions in smoking. More participants achieve cessation or greater reduction in cigarettes per day when using the nicotine patch, but further refinement of interventions is needed to ensure adequate adherence to nicotine replacement therapy.

Funding was provided by NIMH K01MH061688, NIDA K23DA15774, VCU's Institute for Drug and Alcohol Studies, and patches were provided by Glaxo Smith Kline.

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POS3-099 A COMBINED SMOKING, ALCOHOL, AND DEPRESSION INTERVENTION FOR HEAD AND NECK CANCER PATIENTS
Sonia Duffy*, Ph.D., R.N., Jeffrey Terrell, M.D., David Ronis, Ph.D., and Marcia Valenstein, M.D., Ann Arbor VAMC / University of Michigan

Depression, alcohol use, and smoking are often interrelated, are highly prevalent in head and neck cancer patients, and adversely affect quality of life (QoL). Consequently, we developed a combined, smoking, alcohol, and depression intervention for head and neck cancer patients. Patients with at least one of the disorders of smoking, drinking, or depression were recruited to the study from three VA medical centers and a university hospital and randomized to either usual care or intervention. The nurse-administered intervention included medications and cognitive behavioral therapy. Data was collected on depression, smoking, alcohol use, and QoL at baseline, 6- and 12-months. Of the 154 patients that returned 6-month surveys, those in the intervention had marginally significantly better QoL mental health scores (mean 67) than those receiving usual care (mean 59) (p=.06). Using an intention to treat analysis, there were no differences in depression and alcohol use between intervention and control subjects. However, there was a significant difference (p=.05) in smoking with 47% (35 out of 74) quitting in the intervention group compared to 31% (19 out of 62) quitting in the usual care group. Since smoking, alcohol use, and depression are interrelated and respond to common treatment techniques (e.g., CBT), treatment of these behaviors/disorders in combination may be more successful and practical than treating separately.

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POS3-098 IN-HOSPITAL SMOKING CESSATION PROGRAMS: WHAT DO VA PATIENTS AND STAFF WANT AND NEED?
Sonia Duffy*, Ph.D., R.N., Carrie Karvonen, B.A., Wendy Peebles, M.S.W., Chris Herrmann, M.S.N., R.N., Pamela Reeves, M.D., and Patricia Smith, Ph.D., University of Michigan

While VA smoking cessation programs are provided outpatient, hospitalization can be an ideal time to provide cessation services. To assess how best to deliver and inpatient smoking cessation services in the VA, a survey of general inpatients (N= 89) and staff (N=122) was conducted, along with 20 interviews. Means, frequencies, and bivariate analyses were conducted and two researchers reviewed the transcribed interviews to note common themes. About 70% of hospitalized veterans were motivated smokers thinking of quitting in the next 30 days; yet only 17% stated that they received some type of cessation services. Heart patients were more likely to be thinking of quitting in the next 30 days than those admitted for other diagnoses (p=.05). Stress, boredom, and combat exposure were major reasons for smoking. About 11% of staff currently smoked and most (83%) said the VA should be doing more to assist patients to quit smoking. Less than half (41%) said readines for patch use and adherence to the patch at one month was predictors of a 75% reduction in smoking at 3M follow-up. In study 3, we evaluated the impact of a motivational intervention without written feedback among 40 participants. Results were comparable to those of study 1. We conclude that tailoring smoking interventions for people with HIV using a motivational interviewing intervention is feasible and leads to reductions in smoking. More participants achieve cessation or greater reduction in cigarettes per day when using the nicotine patch, but further refinement of interventions is needed to ensure adequate adherence to nicotine replacement therapy.

Funding was provided by NIMH K01MH061688, NIDA K23DA15774, VCU's Institute for Drug and Alcohol Studies, and patches were provided by Glaxo Smith Kline.

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POS3-100 SMOKING CESSATION FOR HEAD & NECK CANCER PATIENTS
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Smoking is a major risk factor for Head & Neck (H&N) cancer. Continued smoking past diagnosis and treatment increases risks for treatment failure, severe side effects and recurrent cancer. Despite strong recommendations to stop smoking at diagnosis, many patients continue to smoke. We have therefore developed a smoking cessation intervention program for H&N cancer patients, which are integrated into standard cancer care in an oncology department at a university hospital in Sweden. The intervention program consists of increased cancer nurse involvement, behaviour change models, cost-free nicotine replacement products for ten weeks and measuring of carbon monoxide in expired air. The intervention has been tested on 50 H&N cancer patients who were followed during the first year post diagnosis. Both qualitative and quantitative data has been collected. A qualitative study describes the experiences of the 13 H&N cancer patients and two cancer nurses regarding the smoking cessation process in this program. A quantitative study presents the effectiveness of the program, during the 2-7 week radiation therapy (RT) period and three, six, nine and twelve month post diagnosis. The results indicate that 80% of the patients were smoke-free during the RT period and approximately 70 % were smoke free one year after diagnosis. The results also show that the therapeutic patient-nurse relationship can be an important tool in the smoking cessation process.

These studies was supported by Karolinska University Hospital, Huddinge Dep of Oncology, The Foundation for Cancer-and Traffic Injuries and The Swedish National Research Council.

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POS3-101 SMOKE CESSATION INTERVENTIONS AND POST-OPERATIVE OUTCOMES IN ESOPHAGEAL AND LUNG CANCER PATIENTS


This pilot study evaluated the benefit of tailored intervention compared to brief advice for smoking cessation in lung and esophageal cancer patients undergoing surgical resection. Of the 80 participants, 50 were nonsmokers and 30 were smokers. Assessments were collected at baseline (week 0), weeks 4, 12 and 24. Smoking participants were randomized to brief advice (n = 19) or brief advice plus tailored intervention (n = 11). Although not statistically significant, those in the tailored intervention had higher abstinence rates at week 4 (91% vs. 68%, p = 0.21) and week 24 (73% vs. 56%, p = 0.47). Also, those who at baseline had less nausea (p = 0.006), less coughing (p = 0.04), and less coughing distress (p = 0.009) were more likely to be abstinent at week 4. Nonsmokers at baseline scored better on their overall depression scores (p = 0.007) than smokers. Comparisons of smoking groups to baseline assessment variables were significant (p < 0.001), with prevalences of 21.1% among 17-19 year olds, 8.8% among 20-22 year olds, and 9.1% among 23-25 year olds. Camel Exotics were used by 89% of flavored cigarette smokers. AHCCS data (n = 179) indicated that 8.4% of adults aged 25 years or older reported past-month use of flavored cigarettes. Camel Exotics were used by 73% of flavored cigarette smokers. Observed demographic differences need to be confirmed with final survey data and compared with surveys of younger adolescents. These results suggest that cigarette companies are influencing underage persons.

Robert Wood Johnson Foundation; American Legacy Foundation.

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POS3-102 THE COLLEGE FRESHMAN NICOTINE STUDY: AWARENESS AND PERCEPTIONS OF POTENTIAL REDUCED EXPOSURE TOBACCO PRODUCTS BY COLLEGE FRESHMEN

Stephanie Smith* and Frances Stillman

This study examined awareness, risk perception, and reported use of ‘reduced risk’ nicotine delivery (e.g., purported low yield tobacco, medicinal nicotine, and novel nicotine) products among full-time college freshmen attending the Johns Hopkins University in Baltimore, Maryland. This two-phase, mixed method study used both qualitative and quantitative methods. Results from the quantitative phase will be presented. Students replied to an email inviting them to participate in a web survey; 411/850 freshmen responded. Themes identified from previous qualitative focus groups were used to develop survey items. The survey instrument included 41 questions to determine demographic variables (e.g., age, gender, disposable income), history of nicotine product use (e.g., cigarettes, modified cigarettes and smokeless, chew/dip, cigars, hookah, medicinal and novel nicotine), and product risk perception. Risk perception items queried themes related to harm, sickness, addiction, benefits, peer influence, social acceptance, coolness, and regulation of nicotine products. Reporting awareness of ‘reduced risk’ products through unprompted recall was significant for predicting awareness of modified cigarettes, modified smokeless tobacco, and novel nicotine products after controlling for demographics, history of nicotine product use, and risk perception variables. None of the students reported using modified smokeless products. However, awareness of ‘reduced risk’ products and reported use of novel nicotine products significantly predicted use of modified cigarettes. These findings have important implications for health education and health promotion activities on this college campus, specifically; health concerns are lower for novel products than for conventional tobacco products. Such perceptions could undermine prevention efforts. Deterring any tobacco product use will be challenging for such a diverse array of products, particularly since some have the appearance of reduced risk potential despite insufficient evidence to derive such conclusions.

ASPH/Legacy.

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POS3-104 USE OF FLAVORED CIGARETTES AMONG POST-OPERATIVE ADOLESCENTS AND ADULTS: UNITED STATES, 2004

Gary Giovino*, Jun Yang, Cindy Tworek, K. Michael Cummings, Richard J. O’Connor, Roswell Park Cancer Institute; Dianne Barker, Barker Bi-Coastal Health Consultants; and Larry Hawk, State University of New York at Buffalo

Cigarette companies have recently marketed flavored varieties, such as Camel Exotic Blends (e.g., Crema, Twist), Kool Smooth Fusions (e.g., Mocha Taboo), and Salem Silver Label (e.g., Dark Currents). To assess characteristics of flavored cigarette users, we added questions to national surveys fielded in 2004. The first is the 12-month follow up of the National Youth Smoking Cessation Survey (NYSSCS), a two-year longitudinal telephone survey of 2,582 randomly selected smokers aged 16-24 years at baseline. The second is the baseline wave of the Assessing Hard Core Smoking Survey (AHCCS), a one-year longitudinal telephone survey of approximately 1,200 randomly selected US smokers aged 25 years and older. Unweighted analyses of preliminary NYSSCS data (n = 986) indicate that 12.2% of 17-25 year olds used flavored cigarettes during the previous 30 days. Males (16.7%) were more likely than females (7.8%) to have used them and whites (13.0%) were more likely than African Americans (5.0%) to have used them. Age differences were significant (p < 0.001), with prevalences of 21.1% among 17-19 year olds, 8.8% among 20-22 year olds, and 9.1% among 23-25 year olds. Camel Exotics were used by 89% of flavored cigarette smokers. AHCCS data (n = 179) indicated that 8.4% of adults aged 25 years or older reported past-month use of flavored cigarettes. Camel Exotics were used by 73% of flavored cigarette smokers. Observed demographic differences need to be confirmed with final survey data and compared with surveys of younger adolescents. These results suggest that cigarette companies are influencing underage persons.

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POS3-105 DISTRIBUTION OF SMOKELESS TOBACCO-RELATED REPORTS: IS THIS RESEARCH WELL-BALANCED?

Robert Mecklenburg*

Each of 826 published scientific reports about smokeless tobacco (ST) was assigned to one of seven primary subject areas shown in the 2003 Smokeless Tobacco Global Research Agenda, a comprehensive outline developed in response to a recommendation made in 2002 at the 3rd International Conference on ST. Results: Over half of identified reports (52 percent) focused on ST-related health effects and 19 percent on ST use. Of the health effects set, 93 percent focused on physical effects, only 1 percent on mental effects (ST-related dependence), and none on social effects. Half of ST product research and 56 percent of ST-related health effects research focused on cancer. Of the seven primary subjects, only 29 percent focused on the other five subjects; ST products, interventions, influences on use, health policy research, and research systems issues. Over 96 percent of studies were conducted in just two countries, the United States and India. Conclusions: ST research is heavily weighted toward more easily measured subjects, especially physical health outcomes, and of physical outcomes, toward oral cancer. There has been relatively little research on a variety of non-cancer physical health effects or on underlying biological, personal, and social factors that influence ST use. Little to nothing has been reported from most countries about any ST subject. Altogether, research appears to be uneven, with much more needed in certain subjects to help guide public education, public health activities and public policy decisions.

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**POS3-106**

**SMOKELESS TOBACCO VS. CIGARETTES, A TOOL FOR CALCULATING THE COMPARATIVE RISK**

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

Most estimates of comparative mortality risk put the risk from smokeless tobacco (ST) at 1/110th to 1/100th or less of that from smoking, with an estimate of 2% most widely quoted. The assumptions and calculations behind most such estimates are not clear, and those that are clear may be considered out of date or controversial. The magnitude of this comparative risk has important practical implications because it determines the potential benefits of a harm reduction strategy that substitutes ST for smoking, as well as the appropriateness of lumping different products together in anti-tobacco efforts. We developed a spreadsheet, using numbers derived primarily from the 2004 U.S. Surgeon General’s report on smoking, that estimates the comparative and absolute risk from ST based on relative risk inputs. This transparent tool, which we make freely available, allows anyone to calculate results based on their beliefs about these numbers (we provide examples as sensitivity analyses). Our calculation of the worst-plausible-case scenario, based on the epidemiology literature, puts the risk from ST at about 1% that from smoking. Less pessimistic inputs produce estimates closer to zero. The same calculations can be used to determine what assumptions are necessary to produce a particular comparative risk. We find that the assumptions necessary to conclude ST creates 5% the risk from smoking -to alone the common claim that the two products create similar risk - are highly inconsistent with existing evidence.

Supported by an unrestricted gift to the Center for Philosophy, Health, and Policy Sciences from U.S. Smokeless Tobacco Company.

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**POS3-108**

**POLY-TOBACCO USE AMONG U.S. AIR FORCE RECRUITS**

George E. Relyea, M.A., M.S., Mark W. Vander Weg, Ph.D., Kenneth D. Ward*, Ph.D., Margaret DeBon, Ph.D., Deborah Sherrill-Mittleman, M.S., and Robert C. Klesges, Ph.D.

The prevalence of tobacco use among military personnel remains high. Although several studies have assessed cigarette smoking rates in the military, little is known about the use of other tobacco products in this population, or about patterns of poly-tobacco use. This paper estimates the prevalence rates for combinations of tobacco products used among U.S. Air Force recruits and investigates differences by demographic factors. We examined tobacco use among 36,013 Air Force recruits at BMT (Basic Military Training) and their possible use of six tobacco products: cigarettes, bidis, chewing tobacco or dip/snuff, cigars, pipe, and clove cigarettes. Recruits were classified as never, experimental, former, and regular users of each tobacco product, which yielded a possibility of 4,096 possible combinations of tobacco usage. Over 967 combinations were found of which 27.64%(n=9,953) of recruits never used any tobacco product, only 3.23% (n=1,198) had used cigarettes exclusively with no history of other tobacco use, and 28.42%(n=10,236) used cigarettes regularly with some history of other tobacco use. Considering only regular tobacco usage resulted in a possibility of 64 combinations, of which 55 actually existed. Pipe, clove, and bidi users rarely used these products exclusively and approximately 90% of recruits use 3 other tobacco products regularly. Over 90% of regular users of cigarettes, cigars, and chewing tobacco or dip/snuff use at least 2 other tobacco products regularly. General significance tests were performed to ascertain rate differences between levels of AF status (active duty, reserve, and guard), gender, age, and ethnicity and are presented graphically.

This study was supported by NHLBI grant HL053478.

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**POS3-109**

**SMOKELESS TOBACCO AND PANCREATIC CANCER: HOW “PUBLICATION BIAS IN SITU” CAN CREATE A “FACT”**

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

In an early 2004 article, Alguacil and Silverman (A&S) claimed to find an association between smokeless tobacco (ST) use and pancreatic cancer (PC). Our research shows this claim repeated by many high-profile sources, and it appears on the verge of becoming conventional wisdom. This appears to be based solely on A&S, since the literature had not previously linked PC and ST and our 2003 review of claims about health effects of ST did not find widespread claims about PC. The problem, beyond over-concluding from a single study, is that A&S’s data actually showed an approximately null relationship. The reported positive association describes only a subgroup of subjects who used larger quantities of ST. While it is legitimate to be concerned with higher levels of exposure, it is not legitimate to then ignore the comparable protective effect found for lower levels (the overall association averaging to null). Conclusions based on a non-representative subgroup, ignoring other subgroup results, are an example of a phenomenon we previously labeled “publication bias in situ,” a major problem in the health literature. We demonstrate that for a dataset the size of A&S’s, it is fairly likely that such a “positive” result can be found by choosing a subgroup, even when no real association exists. Our findings have implications for the conduct of health research in general, and for how tenuous claims can become accepted “facts”.

Supported by an unrestricted gift to the Center for Philosophy, Health, and Policy Sciences from U.S. Smokeless Tobacco Company.

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**POS3-109 is now PA12-7**
POS3-110 QUITTING ATTITUDE AMONG WATERPIPE SMOKERS IN SYRIA
F. Hammal*, K.D. Ward, T. Eisenberg, and W. Maziak

INTRODUCTION: Part of the problem of waterpipe smoking lies in the lack of research regarding most aspects of this smoking method. This study was conducted to characterize quit attitudes among waterpipe smokers in comparison with cigarette smokers.

METHODS: Two cross sectional surveys conducted among university students and café customers. Overall 855 participants provided valid responses. This study include either only waterpipe smokers (342, male 148, female 96) or only cigarette smokers (68, male 49, female 19). Smokers were asked if they believe they can quit any time, if they are willing to quit, their main reason for quitting, main challenge of quitting, past year quit attempts, how difficult were those quit attempts, their families’ attitude toward their smoking.

RESULTS: More waterpipe smokers 87% convinced they have ability to quit any-time, compared to cigarette smokers 61.8% (P=0.001). In contrast less waterpipe smokers were willing to quit and foresee addiction and habit as the main challenge for quitting (31.4% and 6.6%, respectively) compared to cigarette smokers (77.9% and 45.3%, respectively) (P<0.001). Both daily waterpipe smokers and cigarette smokers were less confident in their ability to quit, and more likely to cite addiction and habit as the main challenge to quit compared to occasional smokers. While daily cigarette smokers were more interested in quitting, compared to occasional smokers (78.1% vs.75%), reversed results were noticed with waterpipe were less daily smoker were willing to quit compared to occasional smokers (33.6% vs. 33.7%).

CONCLUSION: The high confidence, low interest in quitting among waterpipe smokers, reflect the lack of awareness toward the health hazards and the addictive nature of waterpipe, making increased awareness a crucial part of any future work-plan.

USPHS grant R01-TW05962.

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POS3-111 INVESTIGATION OF TOXICANTS IN MAINSTREAM SMOKE AEROSOL OF THE NARGHILE WATER PIPE
Alan Shihadeh and Rawad Saleh*

A smoking machine protocol and yields for tar, nicotine, PAH, and CO are presented for the standard 171-puff steady periodic smoking regimen proposed by Shihadeh et al (2004). Results show that smokers are likely exposed to more tar and nicotine than previously thought, and that pyrrolysined PAH are present in the tar despite the low temperatures characteristic of the tobacco in narghile smoking. With a smoking regimen consisting of 171 0.53 puff of 2.6 s duration, 17 s interpuff interval, and 1.5 quick-lighting charcoal disks applied to the narghile head, the following results were obtained for a single smoking session of 10 g of moassel tobacco paste: 2.94 mg nicotine, 802 mg tar, 145 mg CO, and relative to head, the following results were obtained for a single smoking session of 10 g of moassel tobacco paste: 2.94 mg nicotine, 802 mg tar, 145 mg CO, and relative to

POS3-112 CAN YOU AFFORD TO OVERLOOK WATERPIPE SMOKING?
Jim Neergaard*, Ghada Radwan, Mostafa K. Mohamed, Fatma Abdel-Aziz, and Ebenezer Israel, Egyptian Smoking Prevention Research Institute

Many surveys do not study the waterpipe use and underestimate the prevalence of smoking by not counting the persons who smoke waterpipe alone.

OBJECTIVE: Estimate the prevalence of waterpipe smoking and its impact on overall smoking rates and characterize those who smoke waterpipe only.

METHODS: All persons 18 years or older in randomly selected households were interviewed in 9 villages in rural Egypt. Data on smoking preferences and knowledge, attitudes and behaviors were collected. Univariate analyses and logistic regression analysis were performed to identify the variables that impact on waterpipe smoking.

RESULTS: A total of 4994 adult males were interviewed in rural Egypt. The smoking prevalence was 45.2% overall (cigarettes 33.5%, waterpipe 9.3% and 2.4% for both). The mean age for the waterpipe only smoker is 44 years compared to 36 years for the cigarettes only smokers (p<0.01). Waterpipe smokers start later than cigarette smokers (28% to 68% before age 18 p<0.01). Logistic regression analysis showed that waterpipe smokers tend to be older (OR.99 CI .98-1.0), start smoking earlier (OR.84 CI .81-.86), less educated (OR 1.4 CI 1.1 1.9) and have more friends who smoke (OR 3.1 CI 1.4 8.7).

CONCLUSION: By not including those who smoke waterpipe alone, any survey would underestimate 9.3% of male smokers in rural Egypt resulting in a 20% reduction in the rates with higher rates in the older age group. Messages need to be targeted differently due to the age differences between cigarette and waterpipe smokers and their smoking patterns.

Fogarty International Center-NIH grant-TW-05944-01.

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POS3-113 PULMONARY DYSFUNCTION FROM LARGE AIRWAYS VERSUS SMALL AIRWAYS AMONG WATERPIPE SMOKERS
Ghada Hamada, Ghada Radwan*, Ebenezer Israel, Mohamed Zakaria, Maged El Setouhy, Mostafa Mohamed and Christopher Loffredo, Egyptian Smoking Prevention Institute

A community survey was carried out to study the profile of lung dysfunction among waterpipe in comparison to cigarette smokers. Methods: A total of 358 cigarette smokers (10 or more cigarettes per day), 84 waterpipe smokers and 32 controls were tested for lung function using an expiratory flow/volume curve. The percent of predicted of FEV1, FEF 25-75% and FVC values were calculated. The large airway (FEV1<80%) and small airway (FEF25-75<65%) dysfunctions were categorized using the American Thoracic society guidelines. Results: Duration of smoking by not counting the persons who smoke waterpipe alone.

A smoking machine protocol and yields for tar, nicotine, PAH, and CO are presented for the standard 171-puff steady periodic smoking regimen proposed by Shihadeh et al (2004). Results show that smokers are likely exposed to more tar and nicotine than previously thought, and that pyrrolysined PAH are present in the tar despite the low temperatures characteristic of the tobacco in narghile smoking. With a smoking regimen consisting of 171 0.53 puff of 2.6 s duration, 17 s interpuff interval, and 1.5 quick-lighting charcoal disks applied to the narghile head, the following results were obtained for a single smoking session of 10 g of moassel tobacco paste: 2.94 mg nicotine, 802 mg tar, 145 mg CO, and relative to the smoke of a single cigarette, greater quantities of chrysene, phenanthrene, and fluoranthene. Anthracene and pyrene were also identified but not quantified. The results indicate that narghile smoke likely contains an abundance of several of the chemicals thought to be causal factors in the elevated incidence of cancer, cardiovascular disease and addiction in cigarette smokers.


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POS3-114

**IS PEAK EXPIRATORY FLOW (PEF) A GOOD SCREENING INDICATOR FOR ASSESSING AIRWAY OBSTRUCTION IN WATERPIPE SMOKERS?**

Ghada Hamada, Ghada Radwan, Christopher Loffredo*, Mohamed Zakaria, Mostafa K. Mohamed, Maged El-Selouhy and Ebenezer Israel, Egyptian Smoking Prevention Research Institute

The use of Peak Expiratory Flow (PEF) measurements for population based measurements to study waterpipe smoking induced pulmonary dysfunction needs to be validated. This study assesses the usefulness of PEF measurements in waterpipe smokers. Methods: 358 cigarette smokers, 84 waterpipe smokers (Mean ±SD duration of smoking 18.8±11.5, 13.0±12.5, respectively), and 32 controls were tested for FEV1 and PEF using an expiratory flow/volume curve. The percent of predicted of FEV1 value of <0.8 and PEF value of <0.8 were calculated. Sensitivity, specificity, positive and negative predictive values were calculated using FEV1 as the gold standard against which the PEF was measured as the screening test for controls, cigarette smokers and waterpipe smokers. Results: Sensitivity for the test was 86%, 78%, 93% for controls, cigarette smokers and waterpipe smokers respectively. Positivity for PEF was 84%, 70%, 37% for controls, cigarette smokers and waterpipe smokers respectively. Positive predictive value for PEF was 60%, 48%, 33% for controls, cigarette smokers and waterpipe smokers respectively. Negative predictive value for PEF was 96%, 30%, and 98% for controls, cigarette smokers and waterpipe smokers respectively. The overall accuracy of PEF was only 68% for waterpipe smokers. Conclusions: PEF does not have adequate validity as a screening tool for waterpipe smoking induced obstruction for use in community surveys.

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POS3-115

**WATERPIPE SMOKING AMONG WOMEN ATTENDING WATERPIPE CAFES**

Nargis Labib*, Ghada Radwan, Mostafa Mohamed, Maged El-Selouhy, Rasha Aziz, and Ebenezer Israel, Egyptian Smoking Prevention Research Institute

The issue of women smoking is not culturally acceptable in Egypt. To learn more, an anonymous self administered interview questionnaire survey among women attending waterpipe cafes carried out. A total of 546 female smokers were interviewed; 49%, 28% and 23% were current cigarette smokers, waterpipe smokers or both, respectively. Median age was 32.5 years with waterpipe users being younger than cigarette smokers (29 vs 37 p<.001). Cigarette smokers smoked at a younger age than waterpipe smokers (p<.05). Spending spare time was the main reason cited for visiting waterpipe cafes for 28%, 49% and 60% for Cigarettes, waterpipe or both respectively. 9.7% of waterpipe smokers had waterpipes at home. Women who smoke waterpipe only smoke significantly less often and frequent waterpipe cafes less than those who smoke both waterpipe and cigarettes (p<.01). Being married and the belief that waterpipe smoking is less harmful than cigarettes were significantly associated with waterpipe smoking when compared to cigarette smoking (p<.001). Quit attempts were more common among female waterpipe smokers who were concerned about improving one's health (OR .177, CI .12 .48 p<.001) and listen to advice from religious leaders (OR .294, CI 0.12 .672 p<.001). Conclusions: Female smokers need better social outlets for their spare time. Appeals to good health and religious messages may help a large number of women to quit smoking.

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POS3-116

**LESS HARMFUL? MOTIVATION FOR FEMALE UNIVERSITY STUDENTS TO USE WATERPIPE!**

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Objective: To investigate the association between the belief that waterpipes are safe and the preference for waterpipe over cigarettes.

Methods: Female medical students (n=130) in a public University and female undergraduate students from a private university (n=115) who were smoking in 9 waterpipe cafes near the two universities were interviewed. A logistic regression analysis was carried out with waterpipe or cigarette smoking as the dependent variable and the belief that waterpipe is less harmful than cigarettes as the independent variable of interest.

Results: Of the total Student smokers, 27% smoked cigarettes only, 37.8% waterpipe only and 35.2% smoked both. Most (74.1%) preferred waterpipe smoking because it is less harmful (p<0.01 OR 8.8, 95% CI 2.6-29.3). Other females encouraged them to start smoking (56.6%). There were no significant differences between waterpipe and cigarette smokers regarding age, age of initiation, quit attempts, smoking patterns and knowledge about the hazards of smoking, being fashionable or being with friends. Being curious was a significant factor for initiation (OR 2.8, 95%CI 1.3-6.2, p<.01). About one in four (23.7%) attempted to quit with health cited as a major reason.

Conclusion: There is an urgent need to correct the misconception that waterpipe smoking is safe and less harmful than cigarettes.

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POS3-117

**ROLL OUR OWN CIGARETTES IN FRENCH STUDENTS**

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Because, mainly of low taxation, roll your own cigarettes became more and more popular in France (3 fold increase in 10 years). We study characteristics of smokers according to kind of tobacco use. Methods: In a large surveys conducts in France on 11386 medical students, we analyze smokers who roll cigarettes (RYO) as exclusive consumption from occasional consumption (RYO/IND) and users of industrial cigarettes only (IND). Results: The over rate of smoker of the population is 21%. The mean age is the same in the 3 groups (20.9 to 20.4 years olds). In RYO group males are 64%, for 56% in RYO/IND group and 41% in IND group (p<0.01). Initiation of tobacco will be younger in RYO group (14.6 years) than in RYO/IND group (15.1 years) or IND group (15.5 years). The number of cigarettes smoked by day is higher in RYO group (10.1 ciga/d) than in IND group (8.4 ciga/d) (p<.01). Hashish consumption rate is near double in the RYO group (65%) and IND/RYO group (63%) than in IND group (34%) (p<.01). The number of hashish items consumed in a month is also higher in the RYO group (17.5m) than in IND group (7.5m) (p<.01). Hashish consumers using more 2 items a days are 45% in the RYO group, 36% in the IND/RYO group and 18% in the IND group (p<0.01). Conclusion: Roll your own cigarette is more frequent in male and is linked with a young age of tobacco initiation and a higher consumption of hashish.

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**POS3-118**

**DRAMATIC DECREASE OF TOBACCO CONSUMPTION BY PARISIENNE TEENAGERS FOLLOWING THE NATIONAL CANCER PLANT 2003**


In France the cancer plan launched in 2003 to France led many smokers to quit tobacco with an 18% decrease of consumption in adults. This study presents the first data available on smoking initiation. Methods: Every year since 1991 PST leads a transverse survey. Data 2003-2004 are compared with the data former to the cancer plan. Results: On 54 781 questioned young people (age 15.8 ± 2.3 years, 51.9% girls), one observed 25.7% daily smokers in the girls and 20.5% among boys from 1991 to 2001 with a quasi stability of consumption On 54 781 questioned young people (age 15.8 ± 2.3 years, 51.9% girls), one observed 25.7% daily smokers in the girls and 20.5% among boys from 1991 to 2001 with a quasi stability of consumption close to 23% then a dramatic decrease with 15% daily smokers in 2003 and 12% in 2004. The decrease in 2 years is on average 55% -80% for 12-13 years, -61% for 14-15 years, -55% for 16-19 years. This decrease of consumption is related to the decrease of tobacco initiation before 16 years and after 16 years, for a quarter with a weaning. Decrease concerns as well the girls as the boys. Conclusions: The reasons of this fast “denormalization” of tobacco in teenagers are multiple. The data testify to success of the prevention set up by the cancer plan. Tobacco is a dirty and expensive product with poor interest for teenagers now.

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**POS3-119**

**INCLUSION OF DIFFERENT NICOTINE REPLACEMENT AIDS (NRA) INTO THE NATIONAL COVERAGE PROGRAM IN QUÉBEC: WHAT ARE THE BENEFITS?**

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In Québec, estimated direct related health costs from smoking, were about 660 millions in 1992. Smoking appears to be the greatest source of preventable morbidity and mortality, making smoking cessation a public health priority. Within this context, the Québec Ministry of Health had formalised a National plan of action and priorities regarding smoking cessation (Plan Québécois de lutte contre le tabagisme 2001-2005) which focus on several aspects related to smoking such as prevention, cessation and protection. Concrete efforts were made to support this campaign, amongst which, the inclusion of different nicotine replacement aids (NRA) into the National drug coverage program (Programme de couverture et dâdes pharmacocro). Results show that between 2000 and 2001, there has been an increase of 36 % of users of NRA under this National drug coverage program, increasing costs of 29 %. Among the users, 35% were unemployed and were under the Governmental Health and Welfare Plan. Government policies and programmes seek to diminish the burden of smoking on health, however in a context of budgetary constraints accountability that policies and programmes fulfill their objectives must be evaluated. Cost-effectiveness analysis usually address this issue, however given the socio-economic context in which smoking habits as well as other health determinants are distributed in Québecs society, the INSPO tabac-group have the mandate to evaluate adequately this novel program developed by the Minister of health taking into account the social relevancy. Results generated through this evaluative study will need to be analysed into an ecological perspective.

_Quebec Minister of Health and Social Services._

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**POS3-120**

**REACH, EFFICACY, AND COST-EFFECTIVENESS OF FREE NICOTINE GIVE AWAY PROGRAMS IN NEW YORK STATE**

K. Michael Cummings*, Brian Fix, Shannon Cartin, Paula Celesitino, Andrew Hyland, Department of Health Behavior, Roswell Park Cancer Institute; and Ursula Bauer, Tobacco Control Program, New York State Department of Health

In an effort to increase access to evidence based cessation therapies, tobacco control programs in New York State have implemented various interventions to make free nicotine patches and gum available to smokers wishing to quit. In one region, eligible smokers were sent a voucher redeemable at a local pharmacy for a 2-week supply of either nicotine patches or gum. In other locations smokers received either a 1 or 2-week supply of nicotine patches sent to their home. In New York City, eligible smokers received a 6-week supply of nicotine patches and a follow-up phone call. All of the programs utilized the States Quitline to screen and register eligible smokers for the free medication. The reach of the different programs was evaluated by computing the proportion of eligible smokers within an area enrolled in the program and tracking call volume to the Quitline before, during, and after the free give away promotions. Efficacy was evaluated by a telephone follow-up survey of program participants conducted 4-months after enrollment to measure use of the medications, and smoking behavior. The quit rate of program participants was contrasted with the quit rate computed from a previous follow-up survey of Quitline callers where NRT was not provided to callers. Free nicotine patches or gum was provided to 38,846 smokers representing about 2.6% of eligible smokers. In every location where free NRT was offered, call volume to the Quitline increased dramatically. Among enrolled smokers 85%-90% reported making a quit attempt in the 4-month interval after enrollment. Quit rates varied in relationship to the amount of NRT sent to participants, but were all cases was higher than the quit rate observed among callers not sent NRT (21%-35% vs. 12%). The offer of free NRT appears to be a cost-effective method to induce large numbers of smokers to make a quit attempt.

_New York State Department of Health._

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**POS3-121**

**EVIDENCE OF A DOSE-RESPONSE RELATIONSHIP BETWEEN TRUTH® ANTISMOKING AIDS AND YOUTH SMOKING**

Cheryl G. Heaton*, Dr.P.H., Matthew C. Farrelly, Ph.D., Kevin C. Davis, M.A., M. Lyndon Haviland, Dr.P.H., and Peter Messeri, Ph.D.

OBJECTIVE: In early 2000, the American Legacy Foundation launched the national truth campaign, the first national antismoking campaign to discourage tobacco use among youth. The objective of this study is to determine the impact of the campaign on national smoking rates among US youth.

METHOD: Data from the Monitoring the Future surveys were used in a pre/post quasi-experimental design to relate trends in youth smoking to varying doses of the campaign among a national sample of approximately 50,000 students in grades 8, 10, and 12, surveyed each spring from 1997 to 2002. The outcome of interest was any smoking in the past 30 days. Logistic regression models were used to test the relationship between media market measures of the dose of the truth campaign to the odds of youth smoking, controlling for an extensive set of individual- and market-level confounders.

RESULTS: Findings indicate a statistically significant relationship between the dose of campaign exposure and youth smoking. As expected, there was no relationship in 2000 only months after that the campaign launched, but this relationship steadily grew in magnitude and statistical significance from 2001-2002. We found that smoking prevalence among all students combined declined from 25.8% to 18.0% between 2000 and 2002 and that the campaign accounted for approximately 21% of this decline.

CONCLUSIONS: This study shows that the campaign is associated with substantial declines in youth smoking and has accelerated recent declines in youth smoking.

_American Legacy Foundation._

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POS3-122  WHO WINS WITH QUIT AND WIN?

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Smokers who enter a quit and win contest are usually a self-selected group, and may share different characteristics from smokers who choose not to join the contest. Findings from a current systematic review of quit and win contests suggest that people who enter a contest tend to be predominantly female, younger, better educated, smoking more cigarettes per day, in the contemplation or preparation stage of change, and have made more previous quit attempts than those smokers who do not enter the contest. The picture for socio-economic status is less consistent, with Canadian and UK studies finding a preponderance of professional and semi-professional participants (socio-economic class ABC1), while Swedish and MHHP studies report a higher proportion of manual or blue-collar workers. There also appear to be clear differences among the participants between those who succeed in quitting and those who don’t. While several studies found no correlation between gender and quitting success, higher quit rates among men than among women were reported by studies in Finland (16% versus 11%) and Sweden (30% versus 25%). Successful quitters tended to be older, of higher socio-economic status, to smoke more heavily, and to have made no or fewer previous quit attempts than unsuccessful contestants. Two factors emerged across several studies as consistent predictors of successful quitting: one was the assistance of supportive others, whether a spouse or cohabiting partner, non-smokers living with the contestant, family and friends, or workmates. The second mechanism predictive of success was abrupt or cold turkey cessation rather than tapering, reducing smoking or switching brands.

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POS3-123  EVALUATION OF ‘DROP IN TO QUIT’

Jane Beach*

The UK government has created services to enable smokers to quit. Typically, these services provide group support, for an hour per week for seven weeks, using a Withdrawal-Oriented Therapy Model. Government monitors the performance of these clinics, by assessing the number of people who set a quit date and are abstinent for four weeks. Many services, including South Birmingham, were failing to meet the target and were recruiting more affluent smokers. South Birmingham pioneered an alternative model of service delivery and evaluated the results using descriptive data to compare the outcome of existing groups with the Drop In. Method Group sessions are structured with participants attending for three weeks prior to quitting and four weeks post quit. NRT is provided on prescription. The Drop In was less formal with visits lasting approximately fifteen minutes. Participants set a quit date on week one, then attended weekly for four weeks. NRT was provided free. Results Thirty groups took place during 2003-4, with on average 15 participants per group (total=450). However, 1038 people attended the Drop In, leading to queuing times of an hour or more. 78% (769) of Drop In participants set a quit date and 571 (55%) were point prevalence quit at four weeks, validated by exhaled carbon monoxide. An additional 30 groups would have been needed to produce this figure. The Drop In attracted men and women equally, whereas groups attracted more women (60:40). Interestingly, 44% of those who quit with the Drop In were manual workers, compared to a figure of 10% within groups. Furthermore, the cost per quitter for groups was £233, compared to £118 for the Drop In. The Drop In attracted large numbers of people and boosted quit figures, reaching smokers whom otherwise might not have received support.

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POS3-124  COSMETOLOGY HEALTH ADVOCATES HELPING TO REDUCE MORBIDITY & MORTALITY (CHARM)

Toya V. Russell*, Ph.D., Myra A. Crawford, Ph.D., Lesa L. Woodby, Ph.D., Dayna J. Cook, MAEd, and Chastity N. Roberts, M.P.H.

CHARM increased the availability of smoking cessation resources by training community-based cosmetology professionals (hair stylists, barbers, and manicurists) to deliver a brief 5-A intervention. Based on NIH/NCI GIS maps, 118 salons were selected from areas serving a high concentration of smokers. Using didactic and interactive methods, 24 cosmetologists from 18 salons were trained to conduct brief tobacco cessation / reduction interventions using the 5-A model. An impact evaluation was conducted to assess changes in participants confidence and skill levels. Of 24 pretest respondents, 67% were female, 57% were stylists, 92% were Black, 26% were current smokers, 38% lived with a smoker, and 100% worked in smoke-free salons. At one-month posttest, 2 participants previously self-reporting as smokers had quit. With the exception of relapse prevention, confidence levels increased regarding ability to perform each of the 5-A skills. Relapse prevention strategies were discussed and practiced during booster sessions. In addition to routine intervention delivery, participants committed to hosting a minimum of three health events to promote tobacco-free lifestyles at their salons; 18 hosted at least one event, seven hosted at least two. To date, 15 cosmetologists have delivered the intervention to 59 clients. Cosmetologists are often trusted members of the community who are privy to clients personal concerns, which may allow for the delivery of nonthreatening health prevention messages on a peer-to-peer basis. This study equipped participants with the evidence-based skills and information necessary to conduct a brief intervention.

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POS3-125  EVALUATING TOBACCO CONTROL POLICIES USING A SYSTEM-WIDE APPROACH: THE ROLE OF SIMULATION MODELS

David T. Levy*, Ph.D., Pacific Institute for Research and Evaluation

Substantial progress has been made in reducing smoking rates and associated adverse health outcomes, but future changes may be more difficult. We will need to better isolate the effects of different policies as well as develop and improve existing policies. This talk will discuss simulation models—focusing on the SimSmoke tobacco control policy model—as a technique to examine policies, smoking rates, and health outcomes. These models may be used to focus on the effects of tobacco control policies in a dynamic system-wide fashion. First, we will focus on the use of simulation models as a guide to policy evaluation. We will discuss how the effects on studies evaluating policies depend on outcome measures, demographics, policy implementation, and time dynamics. For example, we will show that a youth-access policy will have identifiable effects in the near term only on youth smoking rates and that these effects are likely to depend on other policies in effect. We will also discuss how simulation models may be coordinated with a surveillance/evaluation system. The model may provide guidance on the design of the evaluation model, assessment of evaluation results, identification of the effects of other policies, and extrapolation of results to long-term outcomes. Ideally, empirical studies and data collection may be combined with the simulation model to develop a dynamic interactive evaluation/ surveillance process. Examples will be provided from SimSmoke models developed for the US, Arizona, California, China, New York, and Vietnam.

Dr. Levy’s research was funded by a grant from the National Cancer Institute’s (NCI’s) Cancer Intervention and Surveillance Modeling Network (CISNET) program.

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Debates over state and national tobacco legislation and the use of state funds demonstrate that there is a need for information on the likely effects of state level tobacco control policies. Well developed, dynamic computer simulation models that are based on empirical evidence and that account for the variety of influences on tobacco use can be useful tools for informing policymakers. They can identify the effects of different policies on all smokers and on specific demographic profiles of smokers. In so doing, the model can be used to convey the importance of comprehensive policy approaches to tobacco control and to improve the focus of tobacco control policies. The SimSmoke tobacco control policy simulation model may be used to track smoking and to evaluate tobacco control policies. The model tracks cohorts of smokers by age, gender, and racial/ethnic group over time, and predicts trends in smoking and smoking-attributable deaths. Specific modules analyze how public policies, such as taxes, mass media, clean air laws, cessation treatment and youth access policies, affect smoking rates and smoking related mortality. Modules also show how the effects depend on the manner in which a policy is implemented. SimSmoke was originally a national model. Because of its rich data sources, pioneering research and policies in the field of tobacco control, California has been chosen as the first state in which to implement a state level model. California SimSmoke tracks smokers by age and gender, predicts smoking and smoking related deaths based on population subgroups and public policies in effect. The model includes the effects of policies such as taxes, mass media, clean air laws, treatment to stop smoking, and youth access to tobacco. The model examines the effect of past policies and develops predictions on the effect of future policies. The California SimSmoke model estimates that tobacco control policies reduced smoking rates in California by an additional 25% relative to the level that they would have been if policies were kept at their 1988 level. By 2003, the model attributes over 60% of the reduction to price increases, over 25% of the overall effect to media policies, 10% to clean air laws, and only a small percent to youth access policies. The model estimates that over 40,000 Californians die each year. Over 5,000 lives will be saved in the year 2010 alone as a result of the CTCP and industry-initiated price increases. Tobacco control policies implemented as comprehensive tobacco control strategies have significantly impacted smoking rates. Further tax increases should lead to additional lives saved, and additional policies may result in further impacts on smoking rates, and consequently on smoking-attributable health outcomes in the population. Policy makers will be able to use the model to monitor the value of each policy, and show how past policies have been effective and where they have not been effective. They could then use the model to shape future policies. They could discern which age groups and racial groups are currently being affected by tobacco control policies in the state of California, and determine policies to improve the health of these groups. Developing this computer model also will help leaders understand about past policies and make better decisions about future policies. They could also see how the effect of policies depends on the way in which they are implemented, and the other policies already in place.

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POS3-129  REDUCING SMOKING PREVALENCE THROUGH INCREASING TRANSPORT ACCESS: A CRITICAL ROLE FOR POLICY CHANGE
Wendy Bjornson*, M.P.H., Oregon Health & Science University, Portland, OR, USA; Matthew Barry, M.P.A., Campaign for Tobacco-Free Kids, Washington, DC, USA; Tim McAfee, M.D., Center for Health Promotion, Seattle, WA, USA; and Abby Rosenthal, M.P.H., Centers for Disease Control, Atlanta, GA, USA

There are five effective methods for reducing smoking prevalence: price increases, smoking restrictions, media campaigns, telephone quitlines and evidence-based treatment. Over the last decade in the U.S., several of these methods have been translated into widespread policy changes resulting in a 300% increase in state tobacco taxes, protection of 69% of workers from second hand smoke, and 75% of states establishing quitlines. Despite these interventions, the number of adults who smoke in the U.S. has not changed much in the last ten years. Why is this? While evidence-based treatments exist and effective policies deterting initiation and encouraging quit attempts have been used, too little has been done to make treatment readily available. Lack of insurance coverage, high out-of-pocket expenses, and limited access and availability of services are barriers that must be addressed. Applying and sustaining policy change strategies to overcome these barriers and accelerate use of evidence-based treatments will be necessary to reach the Healthy People 2010 adult prevalence goal of 12%. Important initiatives are already underway, such as changes in Medicare coverage, incremental, state-level changes in coverage under Medicaid, and increasing awareness and action within the private sector to provide treatment services. Key strategies from case studies of effective policy change initiatives including Blue Cross/Blue Shield, Boeing, Medicaid, and other organizations will be presented.

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POS3-130  ASSIST RESULTS: A COMPREHENSIVE TOBACCO CONTROL DEMONSTRATION PROGRAM BASED ON POLICY AND MEDIA INTERVENTIONS
Bob Vollinger*, M.S.P.H., National Cancer Institute; Brenda Motsinger, M.S., North Carolina Department of Health and Human Services; and Frances Stillman, Ed.D., Johns Hopkins Bloomberg School of Public Health

OBJECTIVE: To demonstrate that a national comprehensive tobacco control program implemented at the state level can reduce cigarette consumption and smoking prevalence rates by achieving successful policy changes.

METHODS: The American Stop Smoking Intervention Study for Cancer Prevention was an 8-year nonrandomized demonstration project for tobacco prevention and control conducted by the National Cancer Institute, the American Cancer Society and 17 state health departments. The goal was to change the social, cultural, economic and environmental factors that promote smoking by utilizing four policy strategies: promoting smoke-free environments; countering tobacco advertising and promotion; limiting youths’ access to tobacco products; and raising excise taxes to increase the price of tobacco products. The interventions were developed and implemented by state and local tobacco control coalitions. The strength of tobacco control index was used to measure state-level program elements directed at tobacco control, and the initial outcomes (IOI) index was used to measure states’ tobacco control policy outcomes.

RESULTS: ASSIST states had a greater decrease in adult smoking prevalence than non-ASSIST states, but per capita cigarette consumption was not statistically different between ASSIST and non-ASSIST states. States with larger changes in policy scores were associated with lower cigarette consumption than states with smaller changes. When the District of Columbia was removed from the model, all of the IOI components individually were statistically significantly associated with lower smoking prevalence, including: higher percentage of smoke-free work site policies, higher cigarette price, and higher clean-indoor air local and state legislation ratings.

CONCLUSIONS: ASSIST contributed to the environment, changing social norms, and behavior change that have resulted in reduced cigarette consumption and lower smoking prevalence rates in the US since its inception in 1991. States with higher levels of capacity had lower per capita consumption, regardless of their ASSIST status, indicating that the amount of resources earmarked for tobacco control makes a difference.

ASSIST was funded by the National Cancer Institute and the American Cancer Society, and with in-kind contributions from 17 state health departments.

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POS3-131  UNDERSTANDING LOCAL POLICY DEVELOPMENT: WHAT PREDICTS STRONG ETS POLICIES?
H. Sharon Campbell*, Ph.D., Sandra Burt, Ph.D., Beth Kawash, M.A., Linda Mayhew, M.Sc., University of Waterloo; and Candace Nykiforuk, Ph.D., McMaster University

This comparative case study examines how different themes or representations of environmental tobacco smoke (ETS) issues affect policymakers views on, and decisions about, the regulation of smoking in public places. The policy literature has shown that the way in which a problem or issue is framed is an important predictor of policy outcome. Anecdotal and experiential evidence suggests that when the ETS problem is constructed within a health frame policymakers are more likely to enact a strong ETS bylaw. Empirical evidence to support this conclusion is lacking and our research was designed to address this gap in knowledge. Ten Canadian municipalities were selectively sampled to enable comparison between those which had: 1) considered and rejected an ETS bylaw; 2) passed a relatively weak ETS bylaw; and 3) passed a relatively strong ETS bylaw. Document reviews and in-depth semi-structured interviews were conducted with opponents, proponents, decision-makers and administrative staff. Study findings suggested that issue framing alone did not explain policy outcomes. Although the health frame was predominant among proponents, only four municipalities adopted strong ETS bylaws, two adopted weak bylaws and four rejected bylaws. Issue framing interacted with issue initiation and with the shape of the policy network to explain bylaw outcome. We will present an explanatory model of ETS bylaw development that integrates these three major factors with the sub-themes of the local political culture, access to resources, and the impact of bylaw diffusion. illustrating with the ten municipalities, our model will compare the different policy processes and choices made around bylaw adoption and strength, given the same environmental influences.

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POS3-132  WHERE DO CANADIAN PHYSICIANS STAND ON TOBACCO CONTROL POLICY?
Roberta Ferrence*, Ph.D., Joan M. Brewster, Ph.D., J. Charles Victor, M.Sc., Mary Jane Ashley, M.D., Joanna Cohen, Ph.D., Peter Selby, M.D., Ontario Tobacco Research Unit, University of Toronto; and Michele Tremblay, M.D., Institut National de Santé Publique de Québec

Primary care physicians can play a major role in the prevention of tobacco-related illness and are important role models in the health community. In a 2003 survey of Canadian family physicians and pediatricians, we collected information on their attitudes toward tobacco policy issues in addition to role perceptions and practice. A questionnaire was mailed to 1600 family physicians and pediatricians (response rate = 65%). Physicians were almost unanimous that non-smokers have the right to a smoke-free environment, that doctors should advise parents not to smoke around children, and that smoking smoking is an addictive disease. They disagreed that restrictions on smoking have gone too far and that it is not their role to address smoking in household members of child patients. Support was lower but substantial for laws banning smoking by parents in homes (56%) and vehicles (70%) with children, considering parents’ smoking habits in custody cases (69%), and particularly, for reporting pregnant women who smoke to the Children’s Aid Society (23%). Some results varied widely by jurisdiction, but less so by specialty and sex. Smokers were less likely to support legal measures, but had similar attitudes on other measures. These findings have implications for interventions with physicians.

This study was funded by the Hospital for Sick Childrens Foundation, Toronto, Ontario.
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POS3-133  THE IMPACT OF A 100% SMOKE FREE BYLAW ON ETS EXPOSURE AMONG NON-SMOKING BAR WORKERS: PRE-POST COMPARISON WITH CONCURRENT CONTROL

Heather Travis*, M.A.1,2, Ana Florescu, B.Sch.1,2, Roberta Ferrence, Ph.D.1,3, Peter Selby, M.D.1,2, Susan Bondy, Ph.D.1,2, Nancy Kreiger, Ph.D.1,4, and Nicole Greenspan, B.A.1,2,3; 1University of Toronto; 2Ontario Tobacco Research Unit; 3Centre for Addiction and Mental Health; and 4Cancer Care Ontario

BACKGROUND: Environmental tobacco smoke (ETS) exposure among hospital workers remains a significant hazard with long-term health implications. The implementation of a 100% smoke-free bylaw in Toronto, Ontario on June 1, 2004 provided an opportunity to assess the impact on ETS exposure among non-smoking bar workers.

METHODS: Non-smoking bar workers were recruited from Toronto (129) and Windsor, Ontario (57), a control community without a smoke-free bylaw. Participants provided urine samples, completed a CO test and questionnaire assessing ETS exposure at one month before and one and two months after the bylaw. Samples were analysed for creatinine and total cotinine. Unpaired t-tests were employed to compare mean cotinine levels between communities for all three time points. Paired t-tests were calculated for each community comparing cotinine levels pre- and post-law.

RESULTS: Retention of subjects from time 1 to time 3 was 82% in Toronto and 89% in Windsor. CO levels declined substantially at times 2 and 3. Baseline cotinine values and changes at times 2 and 3 are presented, taking into account self-report data on exposure inside the bar and in other venues.

CONCLUSIONS: Post bylaw measurements show impressive decreases in total exposure for non-smoking bar workers. Findings are important in establishing the impact of smoke-free by-laws on bar workers and have policy implications for other jurisdictions.

Funding received from the Canadian Tobacco Control Research Initiative.

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POS3-135  IMPACT OF INCREASED RETAILER COMPLIANCE ON CIGARETTE SOURCES AND SMOKING AMONG YOUTH

Hye-yeon Lee*, Ph.D., University of Hawaii at Manoa and Joseph Bauer, Ph.D., Roswell Park Cancer Institute

Studies show mixed results as to the impact of increased retailer compliance with a youth access law on reducing smoking prevalence. Some researchers advocate abandonment of youth access interventions altogether, while others advocate the importance of reducing social/noncommercial sources for cigarettes in addition to commercial sources. Using data from three-wave-surveys and vendor compliance checks conducted in 1996, 1998 and 2000 in Tucson, Arizona, this paper investigates the impact of increased retailer compliance on (1) youth perceptions regarding the ease of access to cigarettes, (2) types of sources for cigarettes and (3) youth smoking prevalence over time. An innovative strategy combining community policing with strengthening of community policies on youth access produced a 147% increase in retailer compliance in Tucson between 1996 and 2000. Data from student surveys show that the reduction in actual availability of cigarettes, documented by the vendor compliance checks, was also reflected in student perceptions regarding the ease of access to cigarettes. There was a 31% reduction in the perceived ease to purchase cigarettes from retailers from 1996 to 2000. Additional results on the relative impact of students’ perceptions about the availability of cigarettes on their smoking status, as well as changes in the sources used by students to obtain cigarettes are presented, and the implications of these results are discussed.

This study was funded by a grant from the Robert Wood Johnson Foundation.

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POS3-134  MITIGATING YOUTH ACCESS RESTRICTIONS: SOCIAL SOURCES OF TOBACCO

Murray J. Kaiserman*, Ph.D., and Paula Colwell, B.A., Health Canada

Since implementation of legislation restricting the sale of tobacco products to adolescents under the age of 18 (federally) and 19 (in some provinces), Health Canada has monitored retailer willingness to sell to minors. While more retailers are unwilling to sell tobacco products to youth (47.9% in 1995 vs 66.7% in 2002), the level has remained relatively flat over the past few years. While retailers are more unwilling to sell to youth, youth are much more able to find sources of tobacco. For example, in 2002, about 25% of youth aged 15-19 usually obtain their cigarettes from a friend, either through purchase (5%) or socially (20%). An additional 7% usually obtain their cigarettes from family members, while the rest (about 68%) buy cigarettes at retail outlets. It is this ability to find both commercial and social sources that is mitigating prevention of youth uptake. In recent focus groups, social suppliers informed Health Canada that, while feeling guilty about supplying cigarettes to youth, they are much more able to find sources of tobacco than retailers who are unwilling to sell tobacco products to youth (47.9% in 1995 vs to 66.7% in 2002), the level has remained relatively flat over the past few years. While retailers are more unwilling to sell to youth, youth are much more able to find sources of tobacco. For example, in 2002, about 25% of youth aged 15-19 usually obtain their cigarettes from a friend, either through purchase (5%) or socially (20%). An additional 7% usually obtain their cigarettes from family members, while the rest (about 68%) buy cigarettes at retail outlets. It is this ability to find both commercial and social sources for cigarettes in addition to commercial sources. Using data from three-wave-surveys and vendor compliance checks conducted in 1996, 1998 and 2000 in Tucson, Arizona, this paper investigates the impact of increased retailer compliance on (1) youth perceptions regarding the ease of access to cigarettes, (2) types of sources for cigarettes and (3) youth smoking prevalence over time. An innovative strategy combining community policing with strengthening of community policies on youth access produced a 147% increase in retailer compliance in Tucson between 1996 and 2000. Data from student surveys show that the reduction in actual availability of cigarettes, documented by the vendor compliance checks, was also reflected in student perceptions regarding the ease of access to cigarettes. There was a 31% reduction in the perceived ease to purchase cigarettes from retailers from 1996 to 2000. Additional results on the relative impact of students’ perceptions about the availability of cigarettes on their smoking status, as well as changes in the sources used by students to obtain cigarettes are presented, and the implications of these results are discussed.

This study was funded by a grant from the Robert Wood Johnson Foundation.

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POS3-136  CAN HEALTH CARE FINANCING INTERVENTIONS FOR SMOKING CESSATION TREATMENT INCREASE THE ABSTINENCE RATE?: RESULTS FROM A COCHRANE REVIEW

J. Kaper*, M.Sc., E.J. Wagena, M.Sc., J.L. Severens, Ph.D., and C.P. van Schayck, Ph.D., Maastricht University

The objective of the Cochrane Review was to assess the (cost-)effectiveness of health care financing interventions for smoking cessation treatment. In this abstract, we present the effects on abstinence from smoking. Of 2237 references, we included four randomised trials and two controlled trials. All included studies assessed the effects of coverage for smoking cessation treatment, but were too heterogeneous to pool data. Four studies compared full coverage with no coverage. Two studies found a significant increase in abstinence rate of respectively 3% (OR = 2.01, 95% CI 1.12 - 3.58) and 4% (OR = 1.47, 95% CI 1.04 - 2.06). A non-significant increase was found in the two other studies. Two studies compared full coverage with partial coverage. The abstinence rate was increased in both studies with full coverage. One of the two studies found a significant increase of 1% (OR = 2.41, 95% CI 1.51 - 3.83). Only one study compared partial coverage with no coverage. No effect was found in favour of partial coverage. Three studies presented data concerning the costs of the intervention. No full economic evaluations were performed. When full coverage was compared with no or partial coverage, the cost per additional benefit user who quit varied between $250 and $330. In conclusion, health care financing interventions, which offer full coverage instead of partial coverage or no coverage, can increase the abstinence rate by a few percent.

This review was conducted at Maastricht University. No funding.

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**POS3-137**

**THE COST-EFFECTIVENESS OF REIMBURSEMENT FOR SMOKING CESSATION TREATMENT: RESULTS FROM A RANDOMISED TRIAL**

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In a randomised trial, we examined whether reimbursement for smoking cessation treatment increased the abstinence rate. For six months, smokers in the intervention group (n=632) could receive reimbursement for smoking cessation treatment, whereas smokers in the control group (n=634) could not. Reimbursement increased the number of continuous abstinent quitters by 2.7% from 16 in the control group to 35 in the intervention group (95% confidence interval (CI) 0.5 - 4.9). To examine whether reimbursement is also cost-effective, we performed an economic evaluation. The costs were assessed according to a third party payer perspective and a societal perspective. According to the third party payer perspective, the costs of the leaflets and the reimbursed smoking cessation treatment were $17 per participant in the intervention group (95% CI $14 to $21). There were no costs in the control group. According to the societal perspective, the costs of the leaflets, all used smoking cessation treatment, smoking related medical consumption, lost productivity and travel expenses were per participant $323 in the intervention group (95% CI $254 to $425) and $292 in the control group (95% CI $204 to $380). The undiscounted incremental cost-effectiveness ratio per additional continuous abstinent quitter was $635 (range $300 to $3,447) according to the third party payer perspective and $1128 (range $8,399 to $12,774) according to the societal perspective. The costs per additional (for quality adjusted) life year saved will be presented at the conference.

This economic evaluation was performed at Maastricht University and supported by grants from STIVORO and the Dutch Asthma Foundation.

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**POS3-138**

**CONTROLLING ENVIRONMENTAL TOBACCO SMOKE: PREDICTORS OF GOVERNMENT OFFICIALS SUPPORT IN AN AMERICAN STATE**

Peter Andersen*, San Diego State University; David Butler, Jennifer Voeks, Cooper Institute; Ron Borland, Cancer Council of Victoria; Donald Helme, Wake Forest University; and Erwin Betinghe, Cooper Institute

Environmental tobacco smoke (ETS) is a major threat to public health. A high priority is the election of public officials that will regulate ETS. This study examined predictors of support for regulating ETS by city and county public officials in Colorado, USA. The survey included 684 city and county officials in Colorado (response rate=61%) interviewed by telephone and mail. Thirty-five percent of public officials reported that it is a serious or very serious problem that non-smokers breathe in other peoples cigarette smoke. About 21% were neutral and 42% said that it not serious or not serious at all that nonsmokers breath cigarette smoke. Results also indicated that, in general, support for policies to control of ETS is significantly more prevalent among public officials who (a) believe that that tobacco use is a substantial community problem, (b) are have a college education, (c) are ex-smokers rather than current smokers, (d) are female rather than male, (d) believe that nonsmokers health is adversely affected by ETS, (e) believe that government should get involved with individuals decisions about smoking, (f) live in cities or counties that have already passed laws to reduce exposure to tobacco smoke and to help current smokers quit, (g) are Democrats or Independents rather than Republicans, and (h) have smoked less than 100 cigarettes rather than more than 100 cigarettes during their lifetime. Implications for community action regarding limiting ETS are provided.

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**POS3-139**

**BARTENDER VIEWS ON SECOND-HAND SMOKE RELATED TO TOBACCO CONTROL POLICY**

Roland S. Moore*, Ph.D., Juliet P. Lee, Ph.D., Scott E. Martin, and Tamar M. Johnson, Prevention Research Center, PIRE

Ajzen’s Theory of Planned Behavior suggests that health-related behavior change is more likely to occur from changes in perceived social norms, rather than increased amounts of knowledge. In a study of tobacco control policy implementation in California bars, 34 bartenders, bar owners and managers from randomly selected bars were interviewed about their perceptions of tobacco control policy and the risks associated with second-hand smoking. Knowledge about the harms resulting from smoking and exposure to second-hand smoke was extensive, and many of the interviewed bar staff expressed their approval of smokefree workplace policy even when they were smokers themselves. In separate sets of four observations conducted in the same bars, observers assessed the degree to which these bars complied with California’s smokefree workplace policy. The least compliant (smokiest) bars were most likely to have managers and bartenders who were skeptical about the science asserting that second-hand smoke is harmful. The results from this study point to the importance of social norms regarding indoor smoking as well as the acknowledgment of health hazards resulting from second-hand smoke in the successful implementation of smokefree bar policy.

Data gathering for this study was supported by University of California Office of the President’s Tobacco-Related Disease Research Program grant 10RT-0276 and analysis was supported by National Cancer Institute grant 1R01-CA100772.

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**POS3-140**

**ARE AMERICANS RECEPTIVE TO SMOKEFREE BARS?**

William Feigelman*, Ph.D., and Julia A. Lee, Ph.D.

OBJECTIVES: It is not known whether the American public accepts smokefree bars and restaurants. Anticipating public displeasure with these ordinances, tobacco, liquor and restaurant industry trade associations have helped to stall efforts to pass laws curbing bar and restaurant smoking in the expectation that diminished patronage would inevitably result.

METHODS: In a cross-sectional trend study with data from the May 1993 and January 1999 Current Population Surveys, Tobacco Use Supplements, we compared tobacco-control attitudes among American bar and restaurant workers, all other workers, smokers and nonsmokers (total N=90,681).

RESULTS: By 1999, smokefree workplaces were widely accepted by two-thirds of adults, with half favoring completely smokefree restaurants. Preferences for completely smokefree bars remained less popular with nearly equal numbers (about 30 percent) preferring them or favoring unrestricted bar smoking. Even among bar and restaurant industry workers less than 10 percent favored unrestricted restaurant smoking. Greater acceptances of smokefree bars are now taking hold, especially in places like California, where acceptances rose 15 percent in 6 years, and 45 percent preferred them.

CONCLUSIONS: Opponents to smokefree bars and restaurants may have underestimated the levels of support and growing acceptances of smokefree living areas now taking hold among the general public.

No funding.

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POS3-141

IS TOBACCO PUP ENFORCEMENT RELATED TO YOUTH SMOKING BEHAVIOR AND ATTITUDES?—A FOCUS GROUP STUDY
Cindy Tworek*, Gary Giovino, K. Michael Cummings, and Andrew Hyland, Roswell Park Cancer Institute

State and local youth access legislation penalizing minors for possession, use, and/or purchase (PUP) of tobacco products, has increased in recent years; however, evaluation of PUP legislation and its enforcement has been minimal. This study conducted focus groups among 25 New Jersey youth in towns with local tobacco-related PUP ordinances at varying levels of enforcement activity (moderate vs. high). Focus groups were conducted in school or town libraries, and all student participants received a brief health behavior questionnaire, including demographic and tobacco-related questions. All participants were 15 to 17 year old students and town residents. All youth followed informed consent procedures, obtaining parental permission to participate. This focus group study explored the following, within the context of varying PUP enforcement levels: youth awareness, knowledge, perceptions, opinions, and experiences related to local New Jersey tobacco PUP ordinances. The study also explored possible effects of school and community enforcement of these PUP ordinances on youth smoking behavior and attitudes toward smoking. Students expressed a general sense of awareness concerning local PUP ordinances, but perceived greater school enforcement vs. community enforcement in both moderate and high enforcement towns. PUP laws did not affect smoking behavior or attitudes toward smoking among youth participants. Students expressed an unmet need for tobacco prevention, education, and cessation classes, as opposed to ineffective penalties for tobacco PUP violations, such as fines. Qualitative discussion group results and quantitative survey results will be presented within the context of varying PUP enforcement levels.

The Robert Wood Johnson Foundation provided funding for these analyses.

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POS3-142

ENFORCEMENT OF TOBACCO PUP LAWS IN RELATION TO YOUTH SMOKING BEHAVIOR
Cindy Tworek*, Gary Giovino, K. Michael Cummings, Andrew Hyland, Roswell Park Cancer Institute; and Frank Chaloupka, University of Illinois at Chicago

Despite recent increases in legislation restricting minors possession, use, and purchase (PUP) of tobacco products, evaluation of PUP laws, and their enforcement, remains minimal. This study collected state and local PUP enforcement data, via key informant interviews, to analyze the association of PUP laws, with enforcement, and youth smoking behavior from nationally representative 8th, 10th, and 12th grade Monitoring the Future student data (N=29,362). Logit analyses assessed associations of state and local PUP enforcement with youth smoking behavior, controlling for state and local PUP enforcement duration, demographic variables, and state tobacco policy variables. State purchase laws (OR=.74, p=.01) and local possession laws (OR=.88, p=.02) were associated with lower odds of current smoking. State use laws (OR=.53, p=.00) were associated with higher odds of smoking more cigarettes/day. Stronger state enforcement (state enforcement score: 0-35 points) was associated with higher odds of current smoking (OR=1.02, p=.04); but, also associated with lower odds of smoking more cigarettes/day (OR=.98, p=.00). Stronger local possession enforcement (local enforcement score: 0-15 points) was associated with lower odds of current smoking (OR=.98, p=.03); however, stratified analyses reported an association with higher odds of current smoking (OR=2.51, p=.00) and the highest local possession enforcement strata. Findings do not consistently support PUP laws as effective enforcement policies to discourage youth smoking. Mixed results suggest, in a tobacco control environment with increasingly limited money and resources, efforts should focus on policies that consistently affect youth smoking behavior, such as increasing cigarette price, stronger smoke-free air laws, and strong anti-tobacco mass-media campaigns.

The Robert Wood Johnson Foundation funded these analyses.

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POS3-143

EFFECTS OF THE INCREASE OF TOBACCO TAX ON CIGARETTE CONSUMPTION AND THE IMPACT ON HEALTH POLICY
Evelyn Plamper, M.D., M.P.H., Gabriele Klever-Deichert, Dipl.Volkswirt, and Karl W. Lauterbach*, M.D., D.Sc., University of Cologne

International studies have shown, that tobacco tax policy and pricing of cigarettes are an important factor to reduce smoking as well as to increase tax income. Due to the price elasticity the decrease in consumption is found to be lower than the tax increase. Against this international findings the recent quarterly development in Germany showed a reduction of the increase towards a decrease of tax income following the latest two steps of tax increase on tobacco. A descriptive analysis of aggregated data of the Federal Statistical Office is used to show the development of tax income and consumer behavior with regard to the degree of substitution between different taxed tobacco products. Trends in smoking behavior on the basis of representative population samples will be compared to the findings on the analysis with a focus on the smoking behavior among the 14-17 year old, which shows a decline following the last step of tax increase. Concerning the next planned steps of tobacco tax increase German tobacco control policy should give the objective of smoking reduction high priority.

None

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POS3-144

THE IMPACT OF CIGARETTE TAXATION ON CIGARETTE CONSUMPTION IN TAIWAN
Yi-Wen Tsai*, Ph.D., and Chung-Lin Yang, M.S., National Health Research Institutes

OBJECTIVE: On the January 1, 2002 when Taiwan entered the World Trade Organization (WTO), Taiwan government implemented a new tax scheme for tobacco, which involved an additional earmarked tax of five NT dollars per pack of twenty cigarettes. This study uses a four-year national longitudinal follow-up survey on cigarette consumption to examine the effect of the tax on reducing smoking and the regresivity of the new cigarette tax scheme.

DESIGN: Our sample consisted of 3349 adults, for whom data were collected from a four-year (YR2000-YR2003) national longitudinal follow-up survey on cigarette consumption. Two-part models that controlled for individual effects were used to analyze the effect of the tax effect, price elasticity and income elasticity of cigarette consumption with respect to demographic and economic factors and other variables.

RESULTS: The overall smoking rates decreased from 24.72% in 2000 to 22.03% in 2003. However, among those who smoked there was no significant change in the amount smoked per day over the same period. Two part models show that year 2002 taxation reduced smoking rate by 6.4% (std=0.059) and the amount of that smokers consumed by 3.0% (std=0.038). The overall price elasticity was 0.49, with variation found in groups of different ages, educational levels, and personal income level. The highest price elasticities were found in people between 18 and 24 years old (elasticity=-0.58 in year 2000) and in people with undergraduate or graduate educations (-0.70) and in people with monthly personal incomes below NT $20,000 (-0.72). The overall income elasticity was 0.53. The smoking rate increased with income.

CONCLUSIONS: The effect of year 2002 tax increase on reducing smoking was limited. The most responsive groups were young adults, people with higher educations and people with lower incomes. No evidence showed that Taiwanese cigarette tax was regressive, meaning imposing unfair burden on the poor.

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RP-001

APPLICATION OF A MATHEMATICAL MODEL FOR QUANTIFYING BRAIN DOPAMINE DEPENDENCE ON SUBSTANCES OF ABUSE

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Positron emission tomography (PET) brain kinetics of [beta-11C]-L-DOPA have been described by Hartvig et al. (J Neural Transm 86: 25-41, 1991) and Tedroff et al. (Acta Neurol Scand 85: 95-102, 166-173, 1992). Their kinetic model determines the rate constant (k3) for regional brain utilization of this radioactive form of natural L-DOPA. We applied their model to quantify the brains dependence on drugs that release dopamine. Nicotine was selected as a prototypic agent known to release dopamine but less than methamphetamine (Tsukada et al., Synapse 47: 207-212, 2002). Six Macaca mulatta monkeys were given i.m. low (32 microgram/kg) or high (100 microgram/kg) nicotine bid for 9 days. After withdrawal overnight, PET measurements were repeated before and after nicotine. The data for determining k3 were the mean of the two nicotine doses. In the ventral striatum, the mean k3 for nicotine naive monkeys was about 0.014/min. After acute nicotine, k3 increased insignificantly to about 0.016/min. In nicotine dependent monkeys after overnight abstinence, k3 decreased to 0.008/min, but more than doubled to 0.018/min after nicotine. The mathematical model was used to compare the uptake of radioactivity in regions of interest and in the reference tissue for different cases of nicotine dependence and k3. The model quantifies the brains dependence on nicotine. It will also be useful for analyzing the effects of other drugs of abuse that release dopamine.

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RP-002

NICOTINE-INDUCED WORKING MEMORY IMPROVEMENT ATTENUATED BY THE 5-HT2 ANTAGONIST KETANSERIN

Edward D. Levin*, Ph.D., Laura Icenogle, B.S., and Ashkan Farzad, B.S., Duke University Medical Center

Nicotine administration has been shown to significantly improve working memory performance. The critical interactions of nicotine with other non-nicotinic receptor systems for this effect are currently not clear. The understanding of these interactions is important not only for the basic understanding of the mechanisms underlying nicotine-induced memory improvement but also because nicotine use is heavy in clinical populations where other drugs are given as well. People with schizophrenia have among the highest rates of smoking of any subgroup in the population. They may smoke so heavily in part as self-medication to improve cognitive function, which is impaired with schizophrenia. Medication development for cognitive improvement in schizophrenia is an active field of development. Nicotinic drugs hold promise for providing cognitive improvement in schizophrenia. Critical to this development is the interaction between nicotinic and antipsychotic drugs. Many of the newer antipsychotic drugs have as prominent targets blockade of serotonergic 5-HT2 receptors. This we investigated the interactions of nicotine and ketanserin a 5-HT2 receptor antagonist. Previously, we found (Rezvani et al., Psychopharmacology in press, 2005) that ketanserin attenuated nicotine-induced improvements in attentional function. In the current study with female Sprague-Dawley rats, we showed that ketanserin (1 mg/kg) significantly (p<0.05) attenuated the working memory improvement caused by nicotine ditartrate (0.2 mg/kg) in the 8-arm radial maze. A higher nicotine ditartrate dose of 0.4 mg/kg overcame this effect. Nicotinic efficacy to improve cognitive function in schizophrenia may be attenuated by co-administration of antipsychotic drugs that block serotonergic 5-HT2 receptors.

This research was supported by the NIMH grant MH64494.

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RP-003

POTENTIATED NICOTINE SELF-ADMINISTRATION WITH ADOLESCENT ONSET: A RAT MODEL

Edward D. Levin*, Ph.D., Susan Lawrence, B.S., Amir H. Rezvani, Ph.D., and Jed E. Rose, Ph.D., Duke University Medical Center

Adolescence is the life stage when the great majority of tobacco addiction begins. Adolescent neurobehavioral development may be altered by adolescent-onset nicotine self-administration in a way that has persisting effects by potentiation addiction. Previously, we have shown in a rat model of nicotine self-administration that the onset of nicotine access in female rats during adolescence vs. starting in adulthood causes a significant increase in self-administration that persists through the period when the female adolescent rats become adults (Levin et al., Psychopharmacology; 169:141-149, 2003). In the current study, we have documented that male rats also show higher nicotine self-administration during adolescence. Chronic nicotine self-administration, studied over four weeks from adolescence into adulthood, was compared with self-administration beginning in adulthood in male Sprague-Dawley rats at a nicotine ditartrate dose of 0.03 mg/kg/infusion. A significant (p<0.001) age of onset difference was seen in chronic nicotine self-administration over four weeks. In male rats, the adolescent-onset group had more than triple the rate of nicotine self-administration as the adult-onset group during the first two weeks. Then, the self-administration reduced toward adult-like levels during the second two weeks of the study as the adolescent rats aged into adulthood. This effect in male rats was similar to our previous results with female rats with increased adolescent-onset nicotine intake, but differed in the persistence of higher nicotine self-administration into adulthood. Adolescent-onset nicotine self-administration in male as well as female rats caused significantly higher levels of nicotine self-administration vs. rats that began nicotine self-administration in adulthood. There appears to be a sex difference in the persistence of the higher self-administration into adulthood.

Supported by NIH grant DA015756.

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RP-004

EFFECT OF ACTIVE IMMUNISATION AGAINST NICOTINE ON CONTINUOUS NICOTINE ADMINISTRATION AND NICOTINE WITHDRAWAL IN THE RAT


The present study was set up to explore the effect of active immunisation against nicotine on continuous nicotine administration as well as on spontaneous nicotine withdrawal, measured by intracranial self-stimulation (ICSS) reward thresholds, and somatic abstinence signs. Finally, we examined the effect of challenge injections of nicotine on reward thresholds after the effects of nicotine abstinence had dissipated. The results showed that active immunisation with IP18-KLH prevented the decrease in dopamine output in the NAC associated with mecamylamine precipitated nicotine withdrawal. Moreover, active immunisation against nicotine by itself did not precipitate an abstinence syndrome as measured by reward thresholds and somatic signs. Further, the withdrawal syndrome elicited after cessation of chronic nicotine administration was attenuated in IP18-KLH immunised rats compared to control rats. Finally, the threshold effect of challenge injections of nicotine indicate that the effect of nicotine is reduced in IP18-KLH immunised rats both naïve to or previously exposed to nicotine. In conclusion, the present results suggest that active immunisation with IP18-KLH should not elicit a nicotine withdrawal reaction in smokers immunised with IP18-KLH. Furthermore, the nicotine withdrawal syndrome should not be worsened but may even beameliorated once nicotine administration is stopped.

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RP-005

EFFECTS OF ISOARECOLONE, A NICOTINIC RECEPTOR AGONIST IN RODENT MODELS OF NICOTINE DEPENDENCE

Mohammed Shoab*

The nicotinic receptor agonist, isoaecolone (ISO) has nicotine-like subjective properties as detected by rats in a discrimination paradigm. However, ISO lacks the intra-accumbens dopamine-releasing effects, a feature akin to most abused substances. In the 5-choice serial reaction time task, ISO can enhance attention and the dependence profile of ISO in rodent models of nicotine dependence. Tests for cross-substitution in which isoaecolone was substituted for nicotine (1.0 mg/kg) showed previously to generalise tonicotineindiscrimination tests were no different from saline extinction and behaviour was reinstated by re-presenting nicotine. In a model of nicotine-seeking behaviour, rats having been extinguished by removal of nicotine (0.03 mg/kg/inj) and associated cues, the presentation of priming doses of nicotine (0.1-0.4 mg/kg SC) with the cues robustly reinstated responding of nicotine-seeking behaviour. Tests with priming doses of ISO (1-20 mg/kg SC) shown previously to generalise to nicotine in discrimination tests produced significant levels of reinstatement but the responses were significantly less compared to nicotine-induced reinstatement. Overall, these results suggest ISO with its unique profile of activity should be further examined as a cognitive enhancer and most probably as a smoking cessation aid.

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RP-006

NEONATAL RAT PUPS AS A MODEL TO STUDY THE EFFECTS OF NICOTINE DURING A PERIOD CORRESPONDING TO THE THIRD HUMAN TRIMESTER

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Nicotine, the psychoactive ingredient in tobacco, is believed to be responsible for the adverse effects of smoking during pregnancy, in particular lower birth weight. Rats are often used to investigate the consequences of gestational nicotine. At birth, rat brain maturity corresponds to the end of the 2nd human trimester. To model the 3rd trimester, neonatal rat pups were exposed to nicotine during the first postnatal week. This allowed: 1) controlled delivery of nicotine; 2) use of littermates as controls; 3) no necessity for cross-fostering; 4) no maternal deprivation; and 5) no indirect effects through decreased placental function. Rat pups were treated three times a day via oral gastric intubation (control pups) to deliver formula containing nicotine (1/36 volume/body weight) from postnatal day 1 (P1) to P8. To evaluate the effectiveness of nicotine, body weight, weight gain per day (WGD) and brain weights were recorded. During treatment, nicotine had an immediate negative effect on weight and WGD compared to controls. After treatment, WGD recovered to control levels after one day, body weights returned to control levels at P11 and P20 for males and females, respectively, with no long-term consequences on growth pattern or adult body weight. Nicotine induced reduction of WGD was reversed by dihydro—erythroidine (18mg/kg/d). Brain weights were significantly reduces in male but not female pups at P8. This model can be used to study the effects of nicotine in neonates. Thus, smoking during late gestation place children at greater risk for low birth weight due to direct effects of nicotine.

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RP-007

NITRIC OXIDE SYNTHASE INHIBITION DOES NOT MODIFY NICOTINE-INDUCED CONDITIONED PLACE PREFERENCE IN MALE AND FEMALE RATS

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We have previously shown that nicotine (NIC) treatment induces conditioned place preference (CPP) in male and female Sprague Dawley rats and that the effect is stronger in males than females. CPP is observed when NIC is paired with the initially preferred or non-preferred chambers. We have also shown that NIC increases NO levels in rat brain. In the current study, we studied the effects of nitric oxide synthase inhibition (N-omega-Nitro L-Arginine, LNA, 50 mg/kg) on NIC (0.2 mg/kg, base) induced CPP in adult male and female Sprague Dawley rats. The CPP apparatus consisted of black and white chambers (associated with drugs or saline= SAL), and a third neutral chamber. Rats were initially allowed to explore each chamber for 30 minutes and time spent in each chamber was monitored to depict preference. In 8 sessions that followed rats received L-NA or SAL 12 hours prior to NIC/SAL, administered alternatively, or SAL/SAL injections, thereby the groups were SAL-SAL, LNA SAL, SAL NIC, LNA- NIC. Rats were placed in appropriate chambers (NIC was paired with the unpreferred chamber) for 15 minutes. After conditioning trials, during the final assessment, the doors between the chambers were opened, rats were placed in the neutral chamber, and time spent in each compartment was monitored for 30 minutes. In males CPP was observed in SAL-NIC and LNA-NIC groups while SAL-LNA had no effect. In females CPP was not observed at the dose employed. Although NO may modulate the rewarding or cognitive aspects of nicotine, our results suggest that NO is not involved in its conditioning effects.

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THE EFFECT OF TRANSDERMAL NICOTINE ADMINISTRATION ON ANXIETY RESPONSE TO A 35% CO2 CHALLENGE: IMPLICATIONS FOR THE RELATIONSHIP BETWEEN SMOKING AND PANIC DISORDER


Panic Disorder (PD) and cigarette smoking co-occur more frequently than would be expected by chance. Epidemiologic studies suggest the direction of effect is typically from smoking to PD. Though the mechanism of effect has not been established, one possibility is that nicotine produces sympathetic activation leading to somatic sensations which may cue panic attacks in psychologically vulnerable individuals. As a partial test of this hypothesis, we brought 33 healthy non-smokers into the lab on two days spaced one week apart. On one morning participants received a 10 mg, nicotine patch on their back, and on the other day they received a placebo patch. On both testing days participants returned in the afternoon to undergo a standardized 35% carbon dioxide respiration challenge. Results indicate that the nicotine patch, relative to the placebo patch, did result in higher blood pressure and heart rate prior to the respiration challenge. However, despite causing sympathetic activation, the nicotine patch (again, relative to the placebo patch) resulted in reduced sensitivity to the respiration challenge as measured by the Panic Symptom Checklist and no change in sensitivity as measured by two other anxiety scales. We conclude that nicotine leads to sympathetic activation though not subjective anxiety in healthy non-smokers. Future research should replicate the procedure with psychologically vulnerable individuals (e.g., those high in anxiety sensitivity) to examine whether nicotine promotes both sympathetic activation and feelings of anxiety.

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THE RELATIONSHIP BETWEEN ANXIETY, DEPRESSION AND CIGARETTE SMOKING

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The purpose of this study was to determine the strength of the relationship between cigarette smoking, depression, and anxiety, also to examine for familial linkages. The authors addressed the possibility of influences of enzyme and transporters such as MAO-B on nicotine addiction. The study included history of smoking in the family in addition to the identification of depressed and anxious parents. The authors addressed belief systems regarding smoking filtered and non-filtered cigarettes. Participants in the study consisted of 198 New York City college students between the ages of 18 to 29 who responded to a self-report questionnaire. Fifty-six percent of the sample was identified as females and 42 percent as males. The Ethnic composition of the sample was 68 percent White, 12 percent Asian 10 percent Hispanic and 10 percent Black. The participants smoked an average of ten cigarettes per day over a period of three years. The Beck Depressor Inventory (BDI) and Beck Anxiety Scales (BAS) were administered to 25 percent of the participants. The research was a three-year project that included a pilot study. Results: Ninety-two percent of the respondents had relatives who smoke; 67 percent of the respondents described their parents as anxious and 32 percent as depressed; 92 percent of the respondents did not try to quit smoking while 8 percent attempted to quit, however, smoke cessation lasted an average of two weeks. Eighty-six percent of the total sample reported moderate to high levels of anxiety and 40 percent of the respondents who took the BDI scored within the range of moderate to severe depression. Thirty-two percent reported limited mental concentration to less than one hour, and 47 percent reported limited concentration between one to two hours. Sixteen percent believed that smoking filtered cigarette prevent cancer.

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THE ROLE OF Dopamine In Co-Morbid Nicotine Dependence And Major DEPRESSION: A PET STUDY

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The prevalence of smoking in major depressive disorder (MDD) is 2 to 3 times greater than in the general population. Smoking may alleviate the anhedonic sympotms of MDD by modulating striatal dopaminergic function. We hypothesized that there would be significant differences in striatal dopaminergic function between smokers and non-smokers with and without a current diagnosis of MDD. In four different subject groups: non-smokers (NS) (n=11); smokers (SM) (n=10); MDD non-smokers (MDD-NS) (n=11) and MDD smokers (MDD-SM) (n=8), we measured [11C]-raclopride (RAC) binding to dopamine D2 receptors using PET, both prior to and 2-hours following oral administration of 30mg d-amphetamine (AMPH). Preliminary data analysis (n=6 in each group) shows that the MDD-SM group has significantly less baseline RAC binding compared to the NS group (2.70 ± 0.2 vs. 2.90 ± 0.2, p<0.05), indicating a decrease in striatal D2 receptor population in depressed smokers. AMPH-induced RAC displacement (% change from baseline) is lower in SM (-10.7±6%) versus NS (-15.9±4%) (p<0.003), and in MDD-SM (-6.1±5%) versus MDD-NS (-14.8±5%) (p<0.01), showing that smoking subjects release less dopamine in response to amphetamine, perhaps due to depletion of presynaptic dopamine stores. Concurrent MDD appears to exacerbate this effect. These results suggest that comorbid MDD and nicotine dependence may involve a hyoactive dopaminergic system and points to a possible common neural substrate for these two disorders. Further indepth analysis of the complete dataset will be presented to confirm these findings.

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GENETIC VARIATION IN CYP2A6 AND CYP2E1 AMONG JEWISH CAUCASIAN COLLEGE STUDENTS: ASSOCIATION WITH ALCOHOL AND NICOTINE DEPENDENCE

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CYP2E1 and CYP2A6 are human hepatic enzymes responsible for CYP-mediated ethanol metabolism and nicotine's inactivation to cotinine, respectively. Polymorphisms in the CYP2E1 and CYP2A6 genes have been associated with different risk for alcohol and nicotine dependence. In a prospective drug dependence acquisition study among Jewish Caucasian college students we investigated the allele frequencies of a variant CYP2E1 allele associated with higher inducibility (CYP2E1*1D) and CYP2A6 alleles associated with decreased nicotine metabolism (CYP2A6*2, CYP2A6*4, CYP2A6*6, and CYP2A6*12). The allele frequencies of CYP2A6*2 (1.6%, n=244 alleles), CYP2A6*4 (0.8%, n=242 alleles), CYP2A6*9 (9.4%, n=246 alleles), and CYP2A6*12 (1.3%, n=236 alleles) differed from other ethnic groups but were similar to previously reported frequencies among Caucasians. The observed allele frequency of CYP2E1*1D (8.0%, n=242 alleles) differed significantly from the allele frequencies among other ethnic populations (i.e.: African Americans (13.4%), Chinese (18.6%), and Indo-Asian (31.2%)). Moreover, the observed frequency of CYP2E1*1D (8.0%) was greater than CYP2E1*1D frequencies of other Caucasians (i.e. Canadian (2.1%), American (2.0%), Swedes (1.1%), and French (1.6%)), suggesting this population is unique among Caucasian populations. This study is the first to report the frequencies of CYP2A6 and CYP2E1 variant alleles among a Jewish Caucasian population, and complements previous studies that indicate substantial inter-ethnic differences in CYP2A6 and CYP2E1 variant allele frequencies. We are currently assessing the impact of this genetic variation in drug metabolism on smoking and drinking behaviors, nicotine dependence, alcohol dependence, and both nicotine and alcohol dependence, in this population.

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INTRODUCTION: We tested whether dependent smokers compared to chippers are more motivated to obtain drug rewards (cigarettes) whereas, the motivation for non-drug rewards (e.g. money) is similar in both groups. We further tested whether nicotine withdrawal in dependent smokers increases the saliency value of drug rewards whereas the value of non-drug rewards decreases. Such a motivational dissociation could explain why attempts to quit smoking often fail within the first days of abstinence when nicotine withdrawal is most pronounced.

METHODS: At the first test occasion (T1), 12 chippers and 24 nicotine-dependent smokers with regular nicotine levels were assessed. Dependent smokers were investigated at a second test occasion (T2) when half of them were abstinent for 24 hours. A computer-based motivation task (MOTT) was used to assess the motivation to obtain different rewards (time to next cigarette, money, points) by measuring the number of button presses during a response period of 3 seconds. The amount of reward delivered was proportional to the number of button presses. During the task, performance feedback was provided after each trial.

RESULTS: At T1 there was no performance difference between dependent smokers and chippers to gain money or points but dependent smokers pressed the response button more frequently for cigarettes (p<0.033). At T2 there was no difference between abstinent and non-abstinent smokers in task performance in all three reward categories.

DISCUSSION: Our data indicate that dependent smokers compared to chippers are more motivated to obtain drug rewards. In contrast to our hypothesis, nicotine withdrawal did not influence motivation to receive drug as well as non-drug rewards.

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**At T2 no difference between abstinent and non-abstinent smokers in task performance in all three reward categories.**

**DISCUSSION:** Our data indicate that dependent smokers compared to chippers are more motivated to obtain drug rewards. In contrast to our hypothesis, nicotine withdrawal did not influence motivation to receive drug as well as non-drug rewards.
AVOIDANT COPING PREDICTS AN INCREASE IN CIGARETTE USE FOR FEMALE, BUT NOT MALE, COLLEGE STUDENTS

Justin E. Greenstein*, Dan P. Evatt, Marisa C. Yates, Margaret C. Wardle, Marina Unrod, and Jon D. Kassel

Research has demonstrated that smokers' use of adaptive coping strategies is associated with increased odds of quitting. However, no research to date has examined whether different coping strategies actually predict increases in smokers' ongoing cigarette use. Two longitudinal studies investigated the relationship between coping strategies and changes in cigarette use in unselected samples of smokers not trying to quit smoking. Participants were undergraduate students from large southeastern and midwestern universities, respectively, who completed a battery of questionnaires on two occasions separated by eight weeks. Questionnaires assessed participants' cigarette use and coping strategies typically employed in response to stressful situations. In Study 1 (78 smokers; mean age = 18.4; 83% female), multiple regression analyses revealed that avoidant coping style significantly predicted an increase in cigarette use (p < 0.05) over the 8-week period. Further analyses indicated a trend toward this effect being moderated by sex such that avoidant coping style predicted increases in cigarette use for women (p = 0.05), but not men. In Study 2 (45 smokers; mean age = 18.9; 69% female), analyses again demonstrated that avoidant coping style significantly predicted increases in cigarette use (p < 0.05) over the 8-week period. This effect was significantly moderated by sex such that avoidant coping style predicted increases in cigarette use for women (p < 0.05), but not men. Taken together, these findings suggest that not all coping styles are effective at decreasing smoking and that engaging in an avoidant coping style may, in fact, result in an increase in smoking.

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The NEUROANTOMICAL SPECIFICITY FOR CIGARETTE SMOKING CRAVING: FMRI-INVESTIGATION

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Nicotine dependence is the most common substance abuse disorder. One of the characteristics of nicotine dependence is craving. Regional activation of the brain induced by craving for nicotine was evaluated by using functional magnetic resonance imaging to investigate neuroanatomical site of smoking craving. Examination on FMRI data revealed that anterior cingulate and medial frontal lobes showed increased cortical activities in nicotine dependent groups during smoking craving. The activation of anterior cingulate and medial frontal lobe in smoking craving may imply that the changes in the emotion processing for smoking related stimuli or the mechanism of unusual attention is associated with the pathophysiology of craving. However, dorsolateral prefrontal and parietal coactivation in control group might suggest the participation of a frontoparietal working memory circuit or a heightened attention. This may suggest the difference in interpretation of information or visual cue between nicotine dependence group and control group. Nicotine dependent group may experience increased attention and awareness by cigarette cue rather than control group. No funding.

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NICOTINE NASAL SPRAY DOSE-DEPENDENTLY ENHANCED SUSTAINED ATTENTION AS ASSESSED BY THE CONTINUOUS PERFORMANCE TASK


We examined the effect of nicotine nasal spray (Nicotrol) on the continuous performance task (CPT) to assess sustained attention. Participants were 24 adult smokers (12 males). After one training session, smokers attended two experimental sessions, one in which they were tobacco deprived for 12 hr (verified by CO 10 ppm) and the other in which they smoked ad libitum up to 15 minutes before the session. Order of sessions was counterbalanced. In each experimental session, 3 doses of intranasal nicotine (0, 1 and 2 mg) were administered 90 minutes apart in randomized order. A battery of physiological, subjective, and cognitive measures was assessed before each dose and repeated for 40 minutes after dosing (physiological measures and nicotine plasma concentration will be reported elsewhere.) Nicotine dose-dependently increased correct responses and decreased omission errors on the CPT (p<.01). Reaction time of correct responses also was decreased by nicotine in a dose-dependent manner (p<.05). The enhancement of sustained attention was observed in both the tobacco-deprived and nondeprived conditions, suggesting that nicotine effect was not restricted to withdrawal relief. Supported by NIDA Intramural Research Program.

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RP-020

EFFECT OF USING WESTERN IMAGERY (AFRICAN-AMERICAN MODELS, LANDMARK OF AMERICAN AND EUROPEAN CITIES) TO MARKET AND PROMOTE CIGARETTES AND TOBACCO PRODUCTS IN AFRICAN COUNTRIES ON AFRICAN YOUTHS

Ezekwesiri Israel Euchie, L.L.B., B.L., and Chizomam Peace Ngoka*, R.N.

Questionnaires were administered over a period of 4 weeks on 200 youths (100 males and 100 females, aged between 12 and 18 years old) randomly selected from diverse backgrounds across 2 States of the Nigerian federation. The questionnaires were couched to elicit and gauge the perception of African youths (using Nigerian youths as a focal point), to the predominant use of western imagery (such as African-American stars/models, landmark of major American and European cities for London: the London Bridge, for Paris: the Eiffel Tower, for New York: the Manhattan skyline and other images of western influence and culture) on billboards, television insertions and other tools to market and promote cigarette and tobacco products. Some of the findings of our research/survey were as follows:

i) Due to the over-abundance of cigarette billboards, and other advertising points on Nigerian streets, a starting 88% of our respondents had memorized (and could recite) the wordings on at least one billboard advertising cigarette. ii) 73% of the youths surveyed believe that smoking is a core component of western culture. Invariably, such youths are likely to start smoking on account of their desire to be western. We were able to garner from the response of the youths to our questionnaires that the use of western imagery to market and promote tobacco products was merely a ploy by tobacco multinationals to take advantage of the fact that a vast majority of African youths would want to feel, live and behave like their counterparts in developed societies of Europe and America.

Tobacco Free Project of the Department of Public Health of the City and County of San Francisco, California USA (contact person: Susana Hennessy Lavery, M.P.H.).

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RP-021

MENTHOL CIGARETTES AND TOBACCO WITHDRAWAL

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About 25% of US smokers and 80% of African Americans choose menthol-flavored cigarettes; however, there have been few studies of how menthol smokers differ from nonmenthol smokers. We compared 139 menthol cigarette smokers (65 men) with 60 nonmenthol smokers (34 men). The groups did not differ in age of smoking onset (15.3 ± 4.2), cigarette/day (21.8 ± 6.7) or FTND scores (6.4 ± 1.9). Significantly higher scores on 2 of the 5 constructs of the Nicotine Dependence Symptom Scale were found for menthol smokers: (Priority: 2.3, 1.8) and Tolerance (3.5, 3.1). Total NDSS score was higher (3.2) in menthol smokers than nonmenthol smokers (2.9; p<0.1). After overnight abstinence (CO < 12 ppm), scores on the MN Tobacco Withdrawal increased from 8.4 to 20.7 in menthol smokers and from 7.0 to 20.1 in nonmenthol smokers. Scores on the craving item of the MN Withdrawal scale were significantly higher in the nonmenthol group. Scores on all 7 sub-scales of the WI Tobacco Withdrawal Questionnaire significantly increased during tobacco abstinence in both groups. The subscales measuring craving, anxiety and total score increased significantly among nonmenthol smokers; however, on other tobacco craving measures (QSU, TCQ), differences were not significant. Abstinence-induced changes in mood (PANAS) and heart rate were similar in both groups. Among these subjects there were small differences in the degree of tobacco dependence on self-report scales. However, after statistically controlling for differences in ethnicity, differences between menthol and nonmenthol smokers were generally attenuated and no longer significant. Additional differences based on ethnicity, rather than menthol use, are important and require further investigation.

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RP-022

SUCCESSFUL NON-SMOKING DAY IN MAJOR LISBON HOSPITAL

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The department of Respiratory Medicine organised a public information campaign as part of the non-smoking day. Activities included: CO screening; interviews using a questionnaire on smoking habits and respiratory symptoms; counseling; how to help people quit smoking; informing people about the SOS line and quitting clinics. Two doctors specialized in smoking prevention and treatment and university paramedical students, who received special training in smoking prevention and treatment, participated in these activities. A display was set up in the main hall of the Hospital including posters, information leaflets, etc. 133 women and 101 men answered the questionnaire. Average age was 39 (min.19, max. 81). 217 were smokers, 13 ex-smokers and 4 no smokers. On average, they started smoking at age nineteen. They smoke an average of 20 cigarettes/day and 21 Unit/Pack/year. 159 (73%) smokers had already tried to quit smoking and 193(88%) wanted to quit. CO average found was 6-12 ppm. Among those completing the questionnaire, 132(56.4%) referred to coughing, sputum or shortness of breath for their age, with the last being mentioned most frequently. Indeed, for 76 people (34.8%) it was the only symptom mentioned and 44% of the young people (age< 31 years) referred it. Most smokers knew that smoking could damage their health (203-66%) but only 27(20.4%) could relate their symptoms with their smoking.

Conclusions: Most smokers knew that smoking could damage their health and were symptomatic, but failed to see the link between their complaints and their smoking behaviour. Goals: Health awareness and smoking prevention should be top priorities in all hospitals. Doctors should participate more in public information campaigns, and also educate medical and paramedical students in these matters. No funding.

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RP-023

SEX DIFFERENCES IN EGG POWER BANDS FOLLOWING AN ACUTE SMOKING MANIPULATION

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Studying brain electrical activity may provide important information to elucidate behavioral responses to acute nicotine as well as mechanisms that underlie nicotine withdrawal. Most of the studies employing EEG spectral analyses have shown that smoking decreases lower frequencies while increasing higher frequencies in EEG. On the other hand there are few studies on sex differences in EEG and smoking behavior although it is well known that nicotine affects genders differently. In our study we recorded EEGs of male and female smokers before smoking (basal levels/initial) and following an acute smoking manipulation. The control groups consisted of non-smokers whose EEG was recorded once. There were significant differences in initial band powers between male and female subjects. When band powers were compared in control and smoking groups before smoking, male smokers had lower band powers than controls at all frequencies. However, in females, smokers had a significant increase in power compared to controls, but only in the alpha band. After smoking alpha band power was decreased in females while it was increased in males resulting in a sex x smoking interaction and indicating that smoking has opposite effects in males and females regarding the alpha band. In female smokers, both delta and theta band powers also decreased but in males a significant decrease was seen only in theta band power. No significant gender differences were observed in beta band power spectrum. In conclusion, smoking modulates brain electrical activity as reflected in changes in frequency bands. This effect is not localized but rather diffuse. Sex differences are observed in the direction of change; while alpha band frequency is lowered in females it is increased in males. This opposite effect of a smoking manipulation may indicate differential effects of smoking on cognitive processes in males and females. While the beta band frequency was not affected by smoking, basal levels were four fold higher in males than females. These differences may help elucidate the sexually dimorphic central actions of smoking and tobacco addiction.

Institutional funds.

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RP-024
ONE YEAR FOLLOW-UP OF COMPARATIVE RESULTS OF TREATMENT WITH NRT WITH AND WITHOUT BUPROPION

Daniel Seijas, Natalia Tamblay, and Pia Ciasullo

Research suggests that factors which determine the cessation of smoking in patients are gender, age, daily cigarette consumption and the level of dependence. This study looks at the correlation between demographics, morbidity factors, smoking habits and treatment involving abstinence with a one year follow up. The sample group consisted of 68 people, (31 women and 37 men, with a median age of 46 and 64 respectively) that attended the smokers clinic at CENTRADUC, Pontificia Universidad Católica de Chile with the declared intention to stop smoking. Prior to treatment, they were asked to fill out structured intake assessment forms and questionnaires. They were then assigned to individual or group treatment based on clinical evaluation and prescribed 300 mg of bupropion for 4 to 8 weeks. We also used NRT substitutes. In the year 2004 we contacted the patients by phone and asked them if they continued to abstain from smoking during the 12 months following treatment. We carried out a univariate logistic regression and multiple regression analysis including potential risk factors. For the univariate analysis the factor that appeared a determinant in smoking at end point was feminine gender, while at the multiple regression analysis the risk factors were: previous respiratory disease, not using bupropion, and automatic motivation to smoke (measured with the Smoking Motivation Questionnaire from the Smokers Clinic, National Addiction Centre, Institute of Psychiatry, U. Of London). Despite the limitations of this study (small sample, non random distribution) the results matched those found in other contemporary research and can be seen as a first step in the assessment of the effectiveness of bupropion within standard treatment for nicotine dependence in a sample of Chilean patients.

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RP-025
EVALUATING SMOKERS REACTIONS TO ADVERTISING FOR NEW LOWER NICOTINE QUEST CIGARETTES

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Quest® cigarettes are a new (2003) product that has been marketed as a way for smokers to gradually reduce the nicotine they receive from cigarettes in order to, according to marketing materials, become nicotine-free. However, despite lower levels of nicotine, Quest® cigarettes do not have reduced tar levels, and thus, still pose health hazards. This study evaluated beliefs about Quest® cigarettes following exposure to a single print advertisement among 200 regular smokers who had never heard of the brand itself. Smokers made several specific false inferences about Quest® cigarettes after exposure to the print advertisement (i.e., lower in tar, less likely to cause cancer). The prevalence of these false inferences was significantly greater among smokers with less than a high school education. Additionally, need for cognition and perceived vulnerability moderated smokers health beliefs about Quest® cigarettes.

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RP-026
ARGUMENT STRENGTH AND MESSAGE SENSATION VALUE OF PUBLIC SERVICE ANNOUNCEMENTS (PSA) TARGETED TO ADULT SMOKERS

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This presentation focuses on descriptive data from the formative research phase of an experimental study of effects of PSA message sensation value (MSV) and argument strength on cognitive, physiological and behavioral responses. First, 600 PSAs were coded for topic (e.g., quitting smoking, second-hand smoke) and audience (adolescents, adults) (Kappa=.89, p<.001). Ninety-nine PSAs focused on smoking cessation and targeted to adults were selected. PSAs were coded for MSV (Morgan et al., 2003), which incorporates visual, auditory, and content features (Kendalls Tau =.91, p<.001). For each PSA, argument content (i.e., the implicit and explicit reasons given for quitting smoking) was extracted and evaluated using an argument evaluation measure (Zhao and Cappella, 2005). This measure asks respondents to indicate on a 5-point scale if the statement was: believable, convincing, new, applicable, important, providing confidence in quitting, helpful for friends, making me want to quit, giving me thoughts about continuing to smoke, giving me thoughts about continuing to smoke. Responses to these items are combined to form an argument strength score. To evaluate argument strength for the 99 PSAs, 300 current smokers were recruited nationwide in shopping malls. The argument strength measure was found to be highly internally consistent (alpha=.91, p<.01), and correlated with measures of intentions to quit smoking (r=.52, p<.01), and perceived vulnerability (r=.51, p<.01). Detailed information on PSA coding process and descriptive data on PSA argument strength and message sensation value will be presented.

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RP-027
ADOLESCENCE AND TOBACCO IN SENEGALESE SCHOOLS: CONSUMPTION AND SMOKING BEHAVIOUR AT SECONDARY SCHOOLS OF DAKAR

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In 2003, 50% men smoked in PED against 35% in PD. 20% of avoidable deaths are attributed to tobacco. This report summarizes results of an inquiry led in 2003 in 10 secondary schools of Dakar selected according to criteria as series, site setting-up and geographic environment. The objective is to supply data based on prevalence of cigarettes in order to elaborate youth’s action plan. 1000 pupils answered the questionnaire which was subjected to them and which concerned various aspects as the presence or not of a smoker in their family, number of cigarettes smoked, reasons of brands chosen and level of knowledge about smoking addiction risks. More than 60% declared there is a smoker in their family with variable proportions. 15% declared to smoke. Tobacco is at the school in spite of regulation forbidding smoking in neighbourhoods and surrounding wall. It is between 13-14 years they experiment their first cigarette in group of friends and smoke more until 19 and 21 ages. More than 89% asserted that tobacco can cause diseases against 15% and 1% don’t! On 15% of smokers, 5,2% are girls against 9,8% of boys. The most brands appreciated are Marlboro. At first, there is no chronic smoker. 1,7% declared to smoke more than 7 years, 4,7% to 4,2% between 4-6 and 1-3 years against 3,1% for less than a year. Tobacco in secondary schools of Dakar is disturbing because results obtained showed because of an important proportion of smoker. Youth are target of tobacco manufacturers. Now it urges to lead actions of sensitization and prevention to protect youth and to create environment banished of cigarettes.

This research was realized thanks to a grant of $28,000 allow by the Ministry of Health and Prevention to MAT-SENEGAL to realize activities of sensitization of young people at the level of schools. The collection, the exploitation and the data analysis of the report cost $400.

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RP-028  EFFECTS OF GENDER ON ACUTE TOBACCO WITHDRAWAL

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The acute tobacco withdrawal syndrome is an important component of tobacco dependence. We investigated whether male (n = 99) and female smokers (n = 100) differed in abstinence-related changes on self-report measures, cognitive performance tasks, and physiologic responses. Smokers not wishing to quit completed two counterbalanced experimental sessions. Before one session, they abstained from smoking for over 12 hours, and before the other they smoked normally. Women reported significantly greater abstinence-related increases in ratings on the total score of the Wisconsin Smoking Withdrawal Scale (WSWS) (significant gender by abstinence state interaction; F(1,197) = 10.2, p < .01), and on the Anger, Anxiety, Concentration, and Sadness WSWS subscales (all ps < .05). On the Questionnaire for Smoking Urges (GSU-Brief), women reported significantly higher abstinence-related increases in ratings on the factor 2 scale (p < .01), but not on the factor 1 scale. On the Positive and Negative Affect Schedule, women reported significantly greater abstinence-related increases in Negative Affect, F(1,197) = 14.1, p < .01. Men and women did not differ in the degree of abstinence-related decrements in performance on a rapid visual information processing task (RVIPT). Brain electroencephalogram (EEG) data indicated that men and women did not differ in the degree of abstinence-related increases in theta power. In general, women reported greater severity of withdrawal than men on self-report measures. However, there was less evidence for between-gender differences in abstinence-related decrements on objective cognitive tasks, or abstinence-related changes in EEG responses.

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RP-030  CHARACTERISTICS OF EDUCATIONAL MATERIALS FOR SMOKERS HOSPITALISED FOR TB

Dr. Magdalena Ciobanu*, Dr. Stefan Mihaicuta, Dr. Monica Marc, and Mat. Cristina Trandas

Tailored smoking cessation programmes for TB smokers are needed in Romania because in the Pneumology Hospitals, TB is the main cause for hospitalisation and the prevalence of smoking is very high. Objectives: to analyse which should be, in the common educational materials for smokers with TB, the needs to address for; to establish if should be useful some specific materials for each hospital. A self-administered questionnaire was applied to smokers hospitalised for TB in the 2 Pneumology Clinics from the Capital (54 pts) and from a city with tradition in tobacco control activities, during 1 month. Statistical significant differences (p<0.01) appeared regarding the distribution by age (under 30: 31.5% versus 47.1%; over 40: 46.3% versus 29.4%), the willingness to quit during hospitalisation (undecided: 7.4% versus 15.7%, but not for decided smokers: 83.3% versus 78.4%), the knowledge about a treatment (38.9% versus 55%), but not by sex (male predominance: 3.5 and 8.6) or the role of doctors (33.3% and 31.4%). Conclusions: Common educational materials for TB smokers should have males and women under 40 years old as a main target. They should address especially to decided to quit smokers, explaining the role of doctors and the treatment. Each hospital should tailor the materials depending on general age distribution. For undecided smokers and for those with lack of knowledge, public and in-hospital campaigns should be developed to increase the awareness of health consequences of smoking and the need to quit especially when an illness is present.

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RP-029  SMOKING CRAVING: EFFECTS OF THE DRD2 TAQ1 AND SLC6A3 VNTR POLYMORPHISMS

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The dopamine receptor D2 (DRD2) Taq1 A1 and the dopamine transporter (SLC6A3) 9-repeat variable number tandem repeats (VNTR) alleles have been associated to the smoking behavior. Craving for cigarettes is reported by smokers as the most troublesome reason for the maintenance of smoking habit and failure to quit. However, little is known about the relationship, between the DRD2 Taq1 A1 and SLC6A3 9-repeat VNTR alleles and craving. We investigated smoking craving and DRD2-Taq1 A1 and SLC6A3 9-repeat VNTR polymorphisms in a short-term (3-days) period of smoking abstinence. This is an analysis combining data from four double blind, randomised, 3-period, crossover studies, in healthy smokers. In each study, subjects went through 3 periods of: free smoking, enforced abstinence with an active treatment or placebo. The self-reported Questionnaire on Smoking Urges-Brief (GSU-Brief) was administered to assess craving and a plasma sample was collected in each subject for genetic analysis. In total 71 subjects were evaluated. This analysis refers to the comparison of free smoking and placebo abstinence conditions. During placebo abstinence the increase of craving intensity was corresponding to a large effect size of 1.20. Significantly stronger craving was found for individuals carrying DRD2 Taq1 A1 allele and for individuals Non carrying the SLC6A3 9-repeat VNTR (p<0.05). Craving was markedly higher for individuals which were both: carriers of DRD2 Taq1 A1 and Non carriers of SLC6A3 9-repeat VNTR alleles. These results provide further support that dopamine may be involved in smoking human craving.

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RP-031  SMOKING PREVALENCE DURING PREGNANCY AND THE CONSEQUENCES OF SMOKING IN PRAGUE

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AIMS: To assess smoking habits during pregnancy and their health impact on infant.

METHODS: In an obstetrics institute in Prague 187 pregnant women were interviewed during 2004 prior giving birth. Mothers were questioned about their cigarette smoking, level of education and social background. Additional data were obtained from hospital records. To verify responses concerning smoking, levels of carbon monoxide in expired air were measured with Bedfont Smokerlyzer. Birth weight and maturity of newborns were compared in smoking and non-smoking mothers.

RESULTS: The smoking prevalence during pregnancy was 11.23 % (21/187). (During pregnancy 76 % smokers reduced number of cigarettes smoked per day, 1 woman stopped smoking in the third trimester.) Smoking was highly connected to education level: None of the smokers had university degree, 71.5 % of smokers did not even have a high school diploma compared to only 11% non-smokers without a diploma. Smokers tend more to be single mothers (14.3 % vs. 1.3 % in non-smokers) and unemployed (24.0 % compared to 2.7 %, respectively). Average length of gestation in smokers was 275.5 days, in non-smokers 279.5 days. Average birth weight of smokers baby was 3082 g; of non-smokers baby 3437 g (355 g difference). Light immaturity was observed in 15 % of infants born to smoking mothers compared to 1.4 % of immature infants born to non-smokers.

CONCLUSIONS: This study suggests that smoking mothers have shorter pregnancy, babies with lower birth weight and more likely to be born slightly immature than babies born to non-smoking mothers. Smokers are more likely single mothers, with low education and insufficient family support. They represent a missed opportunity of aimed funding.

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We constructed adolescent smoking trajectories from ten annual assessments in the Smoking in Families Study (H. Hops, PI) in collaboration with investigation of the genetic and environmental factors of tobacco use etiology (TRDP. G. Swan, PI). Nicotine dependence (ND) was assessed at baseline (ages11-15, 51% female, 92% Caucasian) using items similar to the FTQ; and in adulthood (ages 26-32) using the FTND. Smoking abstainers were excluded from analyses (n=242 of 481). Multinomial mixture models were fit to adolescent past week cigarette consumption data, resulting in five trajectory groups: (1) Experimenters (47.1%) who smoked 1-5 cigarettes/week; (2) Slow Increasers (16.6%) who increased smoking after age 18; (3) Rapid Increasers (16.2%) whose smoking increased throughout adolescence; (4) Decreasers (9.9%) whose initial smoking decreased after age 18; and (5) Persistent Heavy smokers (10.1%) who smoked heavily throughout. Mean baseline ND scores (range 0-18) for the Experimenter, Slow, and Rapid Increaser groups (1.1, 1.1, and 1.8) were significantly lower than those of the Decreaser and Persistent Heavy groups (7.3 and 9.7). In adulthood, the Experimenters had significantly lower mean FTND (1.7±2.1SD) relative to all other groups (range 3.7-4.9). These results suggest that (i) persistent low-quantity adolescent smokers did not develop ND in adulthood; (ii) smoking more than a few cigarettes/week at any time during adolescence, regardless of trajectory phenotype, resulted in increased and similar ND scores in adulthood; and (iii) baseline adolescent ND was not significantly associated with adult FTND implicating different mechanisms of ND in adolescents and adults.

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RP-034 THE PATTERN OF SMOKING BEHAVIOR AMONG JUNIOR HIGH SCHOOL STUDENTS IN JOGJAKARTA MUNICIPALITY, INDONESIA

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BACKGROUND: There have been less data published on smoking among youth in developing countries, especially in Asian countries, than in developed countries. Descriptive analyses presented in this paper contribute new smoking behavior data and related factors among youth in Indonesia.

OBJECTIVE: Determine the proportion of smokers and establish the association between smoking status and demographics, and social network variables among male and female students in Yogyakarta municipality.

METHOD: The baseline data in the RCT of smoking inoculation was analysed. Two thousand and three hundred seventy five male and female students were selected from a list of junior high schools issued by the Department of National Education, Yogyakarta province, with a multi-stage sampling method. Data was collected by questionnaires.

RESULTS: The proportion of male and female smoker were 35% of male and 77% of female non smoker, 30% of male and 17% of female experimental smoker, and 35% of male and 6% of female frequent smoker. Male smoking status was related to age and pocket money, while none of demographic variables were found associated with female smoking status. Best friend, father, grand father and older brother smoking were related to male and female smoking status. However, mother and older sister smoking were only related to female smoking status, and teacher smoking was associated with male smoking status.

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AIM: To describe the sociodemographic factors associated to the exposure to environmental tobacco smoke (ETS) in different settings of exposure (home, leisure time, and workplace) and overall.

SUBJECTS AND METHODS: We analyzed cross-sectional data of ETS exposure in 1059 non daily smokers interviewed within the Cornella Health Interview Survey Follow-up (CHIS-FU) study. We calculated age-adjusted prevalence rates of overall ETS exposure and in different settings, according to selected sociodemographic and lifestyle variables. All analysis were stratified by sex.

RESULTS: 69.5% (95% CI: 64.5%-74.4%) of men and 62.9% (95% CI: 58.1%-67.6%) of women were exposed to ETS in any setting. Exposure to ETS was more frequent during leisure time (55.4% men and 44.3% women) than at home (25.9% men and 34.1% women) or in the workplace (34.0% men and 30.1% women). Most were daily smokers (98%) and the mean number of cigarettes smoked per day was 18.4 (SD=10.2). Using intention-to-treat analysis, the reduction rate at 12 month follow up (defined as reduction of the amount smoked by at least 50% from the baseline level at 12 month follow up) was 20% (95% CI 17.2%-23%). Stepwise logistic regression model showed that being male, having a higher personal income, being severely dependent on nicotine and having more confidence in quitting were significant predictors of reduction on smoking.

CONCLUSIONS: This study identified several predictors of smoking reduction, indicating that smokers who reduce smoking differ significantly than those who continue to smoke. These predictors should be taken into account when designing smoking reduction intervention for smokers who are unwilling to quit.

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BACKGROUND: Hardcore smokers are those who have no motivation or desire to stop smoking and who have not recently made attempts to quit. Hardcore smokers in a US survey, which used a community-based sample, were less likely to recall physicians smoking cessation advice. Aim: To determine the prevalence and characteristics of hardcore smokers attending UK family physicians and to investigate their recall of doctors stop smoking advice.

METHOD: In two separate studies, researchers distributed pre and post-consultation questionnaires to patients waiting to see physicians who worked throughout Leicestershire, England. Pre-consultation questionnaires identified regular smokers and asked about socio-demographic characteristics, smoking behaviour and attitudes. From these data smokers were categorised as hardcore or non-hardcore. All post-consultation questionnaires asked regular smokers whether or not they recalled discussing smoking with physicians. Most post-consultation questionnaires (i.e. those from the larger study) also asked smokers recalling advice about its nature. We amalgamated data from both studies to investigate hardcore smokers characteristics and their recall of doctors advice.

RESULTS: 86.1% (356/414) of adults completed the first questionnaire. Of these, 1166 (32.7%) were regular smokers and 16.1% (95% CI, 14.1 to 18.4) were hardcore. Hardcore smokers were significantly more addicted to nicotine and more likely to be male. 89.3% (1041) of regular smokers completed second questionnaires and 21.1% recalled advice against smoking. Hardcore smokers were less likely to recall advice, OR = 0.61 (95% CI, 0.39 to 0.97) and hardcore smokers who recalled advice were less likely to be offered further appointments to discuss smoking.

CONCLUSIONS: Hardcore smokers are less likely to recall doctors stop smoking advice immediately after consulting family physicians.

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Lori Diemert*, B.Sc., Ontario Tobacco Research Unit and Steve Manske, Ed.D., University of Waterloo

Despite recent reductions in adolescent smoking, preventing initiation remains a key component of comprehensive strategies to eradicate smoking. Schools have attributes that can influence youth development, similar to those of the family. Adolescents connection to their school and the association with susceptibility to future smoking and smoking status have not been studied in Canada. This study examined the association between school connectedness (SC) and smoking status among secondary students. Data from the 2001-2002 School Smoking Profile provided a convenience sample of 21,009 students in 27 secondary schools throughout 8 Ontario school boards. The overall student response rate was 89%. SC was measured by 5 Likert-scale questions and ranges from 5 (low connectedness) to 20 (high connectedness). The relationship between SC and smoking status (lifetime abstainers, puffers, and those who smoked beyond puffing), susceptibility, gender, and other factors was examined using a series of two-way ANOVAs accounting for school-level effects. Smoking status was significantly related to SC abstainers were significantly more connected (SC=14.9) to their school than puffers (SC=14.7) who were significantly more connected than those who smoked beyond puffing (SC=14.0, p<0.001). In addition, susceptibility to future smoking among lifetime abstainers and puffers was also significantly associated with SC, with non-susceptible students more connected (p<0.001). Girls were significantly more connected than boys (p=0.002). There is a dose-response relationship between smoking status and SC; moreover, susceptible students are less connected to their school. Therefore, effective school-based prevention programs should include elements to increase student school connectedness.

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RP-040  ATTITUDES OF NON-SMOKING BAR WORKERS TOWARD ENVIRONMENTAL TOBACCO SMOKE EXPOSURE AT WORK

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OBJECTIVES: Environmental tobacco smoke (ETS) exposure among hospitality workers remains a significant hazard with long-term health implications. We investigate workers’ perceptions of ETS, which can influence work practices and may help support smoke-free bylaws.

METHODS: Non-smoking bar workers were recruited from Toronto (129) and Windsor (67) in May 2004, prior to a ban on smoking in bars, and re-contacted twice one month apart. Participants provided urine samples, were tested for carbon monoxide and completed a questionnaire assessing ETS exposure and related attitudes.

RESULTS: Overall retention was 83% from time 1 to time 3. At time 3, 86% of the total sample reported that they were concerned about exposure to ETS prior to entering our study; 51% reported that being part of the study increased their level of concern toward ETS. In Windsor, 67% of participants expressed strong support for a smoke-free bylaw, but 73% thought their employer would strongly oppose such a bylaw; 35% reported that such a bylaw would have no effect on their earnings. Finally, 56% of Windsor workers reported that their employer has not taken any steps to protect staff from ETS exposure.

CONCLUSIONS: Our results provide support for the acceptability and potential effectiveness of smoking regulations in the workplace. The findings reflect concerns of hospitality workers about their exposure to ETS and strengthen the need to reduce active and passive smoking at work. Bar workers need to be informed about the neutral or positive impact of smoke-free bans on bar sales.

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RP-041  MAORI, PREGNANT AND SMOKING: WHY?

Dr. Marewa Glover

Sixty percent of Maori women of child bearing age smoke. At least 40% of them continue to smoke during pregnancy. This research explores the factors influencing smoking during pregnancy and support to quit received by Maori women. Sixty pregnant Maori women, aged 17-43, were interviewed. Despite smoking on average 9 cigarettes daily, 52% smoked within 30 minutes of waking. Whilst 45% were very concerned for babies health only 13% were in the action stage of change. Most participants knew smoking during pregnancy increases the risk for SIDS and low birth weight, but had poor knowledge of other risks. Women who wanted to quit said babies health was the main reason. Most (77%) had no smoking related health problems. On average women found out they were pregnant by 7-13 weeks. All lived with other smokers. Most (82%) recalled advice to stop smoking but only 35% were influenced by it. Most (78%) recalled pamphlets about smoking during pregnancy, but only 4 had been given a self-help booklet designed especially for Maori women. Most knew of Quitline, Nicobrein, patches and gum, but had poor knowledge of other quitting options. The women were healthy and had low motivation to quit. They had poor knowledge of the risks, received minimal support to quit and all lived with smokers.

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RP-042  PARENTAL ATTITUDES TOWARDS THE UPTAKE OF SMOKING BY CHILDREN

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Sixty-one parents participated in focus groups or in-depth interviews to elicit beliefs about child uptake of smoking. Half were smokers, 25% were ex-smokers. Participants believed children tried smoking for image control, because it was cool or they were curious. Two-thirds believed parents’ smoking influenced child uptake. Peer pressure and smoking role models depicted in the media supported uptake. Participants believed children had easy access to tobacco. They would be very disappointed if their children started so they tried to prevent that. But, they were divid-
ed over their power to influence the child’s decision to smoke. Parents who had talked to their children about smoking, emphasized the ill-effects, relayed their judgements about smoking and tried to counter the effect of their own smoking. The majority had smokefree homes and smokers tried not to smoke around chil-
dren. Most monitored their children’s spending. They didn’t think their children bought cigarettes. Most agreed the more pocket money the more likely children were to purchase cigarettes. Parents monitored the movies their children watched. But, they looked for violence, sex and drug use. Participants said interventions should strengthen children, get the family to quit smoking and role model smoke-
free. Parents needed education about what they could do to prevent child uptake. They wanted to know about the ill-effects of smoking, why people smoke, benefits of a healthy lifestyle, the effect of their smoking on children, having a smokefree home, the role of pocket money and tobacco company sponsoring of actors. Parents who smoked needed to know they could influence their child to not start smoking.

Ministry of Health.

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RP-043  ENDOTOXIN IN TOBACCO SMOKE

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Cigarette smoke has been shown to contain Limulus-reactive material and is has been suggested that this material may partly consist of endotoxin. In the present investigation we used gas chromatography-tandem mass spectrometry (GC-MSMS) for determining and characterizing endotoxin both in tobacco smoke and environmental tobacco smoke (ETS). Smoke particles of cigarettes and of air in a room with ongoing cigarette smoking were sampled on filters. The filter contents were analyzed for 3-hydroxy fatty acids (3-OH FAs) of 10-16 carbon chain lengths, used as endotoxin markers, by GC-MSMS. In the absence of tobacco smoke (controls), the filters contained small amounts of 3-OH FAs reflecting a natural background of endotoxin and the 3-OH FA pattern was dominated by 3-OH C16:0 followed by 3-OH C18:0, 3-OH C12:0 and 3-OH C14:0. This pattern was disturbed by ETS, which resulted in a strong predominance of 3-OH C14:0. In a studied case of ETS the amount of LPS was 120 times higher than that observed in the absence of tobacco smoke. 3-OH C14:0 was also the dominating 3-OH FA in particles col-
lected on filters during active smoking. By applying chiral derivatization we found that the detected 3-OH C14:0 had (R)-configuration. In conclusion, high levels of endotoxin containing 3-OH C14:0 as the major 3-OH FA are inhaled during active cigarette smoking. In addition, ETS may involve inhalation of amounts of endotoxin that are 100-fold greater than in indoor environments free from tobacco smoke. Endotoxin is one of the most potent inflammatory mediators known and may largely explain the high prevalence of respiratory disorders among smokers. 3-OH FA analysis represents a direct and very useful method for monitoring tobacco-
smoke-associated endotoxin in air.

Swedish Council for Medical Tobacco Research.

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**RP-044**

ENVIRONMENTAL TOBACCO SMOKE EXPOSURE LEVELS IN A RANGE OF OCCUPATIONAL SECTORS IN SPAIN

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INTRODUCTION: Environmental tobacco smoke (ETS) exposure in workplaces causes a wide variety of adverse health effects in workers. The objective of this study is to measure the ETS exposure levels in a wide range of occupational sectors of Spain, measuring the vapour phase nicotine as an ETS marker.

METHODS: Nicotine passive samplers (with filter treated with sodium bisulphate) were placed in a range of workplaces, including health services (hospitals and primary care centres), educational sector (schools and universities), offices and hospitality sector (pubs/discos). The samplers were placed for an approximate period of 7 days. A total of 148 samples were taken between 2002 and 2004.

RESULTS: There was presence of ETS in all the samples taken in offices and discos/bars, in 98% of the samples of the educational sector and 69% of the health sector. The mean nicotine concentration found in health services and education-sector is 0.71 g/m3 and 3.3 g/m3, respectively. Offices have a mean nicotine concentration of 0.88 g/m3 and hospitality sector have a mean nicotine concentration of 140.76 g/m3.

CONCLUSIONS: These results show a significant ETS exposure in all workplaces studied, with very high values in the hospitality sector. Well-implemented and properly enforced smoke-free policies will be necessary to eliminate ETS exposure in workplaces in Spain.

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**RP-046**

BELIEFS ABOUT SMOKING CESSATION AMONG SMOKERS AND QUITTERS IN JOGJAKARTA, INDONESIA

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BACKGROUND: Indonesia is a heaven for smokers, not only because so many brands of cigarettes are available, but also because smoking is encouraged by socio-cultural and government. Political campaign is always accompanied by free-cigarettes distribution. There is no policy whatsoever in limiting the freedom of smoking in public places. Preliminary study by the research team found 66% doctors asked patients about smoking status during consultation, however only 37% of them really asked patients to quit.

OBJECTIVES: to identify beliefs about smoking cessation in order to develop a smoking cessation program suitable for the people in Jogjakarta and Indonesia.

METHODS: Qualitative study using in-depth interview to quitters and smokers who are students, workers, doctors, and other professionals. Results: Smokers believed that smoking is not harmful since many of their relatives are smokers and they lived long life. They also believed that they did not need to quit smoking because of the idea of the harm of passive smokers. It is better to smoke rather than exposed by smoke from others. Professionals even said that it will be very dangerous to quit smoking because their body had adapted to the habit, so that quitting will shock their body. Quitters believed that someone who quit should remain not smoking because if he/she smoked again in the future, his/her health condition will be worsened. The beliefs among smokers and quitters often terrified and prevented smokers to try to quit smoking.

CONCLUSION: Beliefs about cessation are not always encouraging people to quit smoking. There is a need to develop smoking cessation program that are breaking the myths surrounding smoking cessation.

**RP-045**

PHYSICIAN ATTITUDE AND PRACTICE TOWARD SMOKING CESSATION IN INDONESIA

Nawi Ng*, Yayi Suryo Prabandari, Retna Siwi Padmawati, Keith Haddock, Felix Okah, Sara Pyle, Carrie Parker, and Carlos Poston

BACKGROUND: The effectiveness of physicians’ assessment and advice on smoking in helping smokers quit has been established in Western countries. The role of physicians in tobacco control in Indonesia has not been adequately studied. To address this gap, we conducted a survey of physicians to explore their smoking behavior, attitudes and clinical practices toward smoking.

METHODS: A cross-sectional survey among physicians working in Jogjakarta province was conducted from Oct-Dec 2003 among doctors in faculty, residency training, and the district. Physicians’ asking about and advising on patients’ smoking behavior was cross-validated by the patients’ exit interview conducted in the outpatient clinics of four public health centers.

RESULTS: Of 448 physicians who responded to the study, 23% of male and 1.4% of female physicians were current smokers. About 92% of physicians did not routinely ask about their patient’s smoking status and 10% had not advised any patient to give up smoking in the preceding 12 months. Predictors for asking were being male, a nonsmoker, and being a physician in-training. The odds of advising patients to quit were significantly greater among physicians who perceived themselves as sufficiently trained in smoking cessation. In patient exit interviews, only 6.4% of smokers reported ever having been given advice to quit smoking.

CONCLUSION: Tobacco control in Indonesia, to be effective, must address the active involvement of physicians. Indonesian physicians need to be educated on the importance of asking about tobacco use as a necessary first step in the pathway to smoking cessation.

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**RP-047**

TOBACCO EDUCATION AND CESSATION TRAINING IN NURSING SCHOOL CURRICULA IN SWEDEN

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OBJECTIVES: The WHO European guidelines recommend that training in smoking cessation should be incorporated into pre- and post-registration training of all nurses. The aim of this study was to investigate how tobacco prevention is taught in basic nursing education, both quantitatively and qualitatively.

METHODS: The Swedish university colleges for basic nursing training were surveyed in 2004. A letter, containing questionnaires for each semester was sent to the 27 schools. Two schools declined participation and 7 schools were excluded from analysis due to missing data. The analysis included a total of 18 schools and data from 100 semesters.

RESULTS: Over 80% of consenting schools reported lectures on counselling methods and behaviour techniques in their curricula. Less than half of schools (44%) included training in cessation or treatment methods. Tobacco is taught less compared to the other lifestyles. When major diseases are covered, tobacco is often mentioned among major risk factors. On average, 0.09 %, of the basic nursing study program in Sweden covers knowledge and proficiency on tobacco. Half of the schools used Problem Based Learning where knowledge is acquired by seminars, group discussions and case methodology. Data were less consistent from these schools. About 50 % of schools reported having smoking cessation programs available for students. The existence of a tobacco policy was known by 35 %.

CONCLUSIONS: Nurses and midwives have a responsibility to share their expertise on matters of health with their patients. This investigation shows that information about the consequences of tobacco use is most often conveyed to the students whereas skills and methods about how to prevent or stop using it are rarely taught.

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CONCLUSION: People of Yogyakarta special province are highly exposed to the cigarette advertisements. This condition should be concerned as challenge for tobacco control and anti tobacco health promotion.

METHODS: An unobtrusive observational method was used for data collection. Results: Out-space media cigarette advertisements were found almost in every streets in Yogyakarta. On the main roads in Yogyakarta the out-space media were big billboards. Cigarette advertisements also performed in the name of shops, restaurants, cigarette street vendors, and internet cafés. Different brand of out-space media cigarette advertisements consisted of more than two brands were found in small street vendors. Cigarette advertisements on street banners can be seen easily as sponsorships of musical performance or sport competition.

CONCLUSION: People of Yogyakarta special province are highly exposed to the cigarette advertisements. This condition should be concerned as challenge for tobacco control and anti tobacco health promotion.

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RP-052 USE OF SMOKELESS TOBACCO BY ADOLESCENTS IS A RISK FACTOR FOR CIGARETTE SMOKING TWO YEARS LATER
Herbert H. Severson*, Ph.D., Kathy Forrester, M.A., and Tony Biglan, Ph.D.

PROBLEM: Smokeless tobacco is being promoted as a safer alternative to cigarette smoking but smokeless tobacco may be a gateway drug that leads to smoking. This study assessed the risk of smoking if one had used smokeless tobacco earlier.

METHODS: The study involved assessments of 7th and 9th grade students in Oregon schools and looked at male non-smoker students, and split them into two groups based on whether they used smokeless tobacco. Six other factors commonly related to risk of smoking were included: parental smoking, sibling smoking, friends smoking, academic achievement, deviant behavior, and alcohol use.

Logistic regression analysis was used to estimate odds ratios and confidence intervals for the independent factors.

RESULTS: A two year longitudinal follow up of these students determined that use of smokeless tobacco adds significantly to the model in predicting their subsequent weekly smoking even after other variables commonly thought to be related to smoking onset had been accounted for (Chi square =9.686, signif.= .0019).

Even after six factors predicting cigarette use had been entered into the logistic regression model, the use of smokeless still had a significant odds ratio of 2.57, 95% C.I. 1.451-4.471, (p = .001).

CONCLUSIONS: We conclude that the use of ST in the 7th and 9th grades is a significant risk factor for subsequent smoking even when other factors are controlled for. The implications of this are discussed in light of earlier published articles both supportive and contrary to our research findings.

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RP-053 FINANCIAL STRESS, SMOKING CESSATION AND RELAPSE: RESULTS FROM A PROSPECTIVE STUDY OF AN AUSTRALIAN NATIONAL SAMPLE
Mohammad Siahpush* and John B. Carlin

AIM: To examine the association between financial stress and subsequent smoking cessation among smokers, and relapse among ex-smokers.

METHODS: Data came from the first two waves of the Household Income and Labour Dynamics in Australia (HILDA) survey, 2001-2003. The size of the subsample of smokers was 2076, and that of ex-smokers was 2717. Data collection was based on face-to-face interviews.

RESULTS: Smokers with more financial stress were less likely to quit, with the odds of quitting reducing by 13% (95% CI: 4 - 21%; p = 0.068) per unit on an 8-point scale that measured the number of occasions over a 6-month period on which the respondent experienced difficulty meeting a basic financial need.

CONCLUSION: This research was funded by the Victorian Health Promotion Foundation (VicHealth).

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RP-054 ENVIRONMENTAL TOBACCO SMOKE EXPOSURE IN CHILDREN WITH ASTHMA — RELATION BETWEEN LEAD AND CADMIUM, AND COTinine CONCENTRATIONS IN URINE
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Exposure to heavy metals from environmental tobacco smoke (ETS) was investigated in 23 children with asthma (8.4 ± 3.7 y). ETS exposure was assessed by an ETS-exposure index, the urinary concentration of cotinine (U-cotinine) and the house dust concentrations of nicotine at home. The corresponding concentrations of the heavy metals cadmium and lead in dust and urine (U-Cd; U-Pb) were determined in the same samples. There were strong associations between the ETS exposure index and U-cotinine (rs = 0.62; P<0.002) and nicotine in house dust (rs = 0.77; P<0.001). U-Cd correlated well with U-cotinine concentrations (rs=0.50; p = 0.021). Further, U-Pb were associated with U-cotinine, however not statistically significant (rs=0.41). Although, there was a tendency for a relation between nicotine and lead concentrations in fine dust (rs = 0.52; p = 0.06), no other significant associations were found between house dust metals and nicotine concentrations.

Thus, there was evidence for a pulmonary uptake of cadmium in children with asthma from direct inhalation of side stream smoke from their parents cigarettes.

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RP-055 CORRELATES OF STAGE OF CHANGE FOR QUITTING AMONG ADOLESCENT SMOKERS
Levi Ross*, Ph.D., Case Comprehensive Cancer Center; Connie Kohler, Dr.PH., and Yu-Mei Schoenberger, M.P.H., University of Alabama at Birmingham, School of Public Health.

Factors shown to differ across adult smokers’ stages of change for quitting, including abstinence self-efficacy may not have the same relationship to stage among adolescent smokers. Using cross sectional baseline data collected from 503 adolescent smokers enrolled in a cessation program evaluation study, we tested the hypotheses that the following variables would be significantly different for those in precontemplation as compared to those in contemplation or preparation and significantly different for those in contemplation as compared to those in preparation: age at first cigarette, abstinence self-efficacy, parental advice to quit and motivation to quit. After preliminary bivariate analyses, variables associated with stage of change (e.g., race, age, gender) were entered into a multinomial logistic regression model. The overall fit of the model was tested by a chi-square statistic (df=26)=147.84, p <.01, indicating a significant relationship between the set of the variables and readiness to quit smoking. The variables that were associated with being in contemplation versus precontemplation were abstinence self-efficacy [OR=1.50, 95%CI=1.09, 2.07], motivation to quit [OR=11.82, 95%CI=5.58, 25.02] and race [OR=1.12, 95%CI=0.02,86]. The variables associated with being in preparation versus precontemplation was motivation to quit [OR=3.42, 95%CI=2.36, 4.94]. While student were more likely to be in precontemplation than students in the other race categories. Like adults, adolescents differ in abstinence self-efficacy according to their stage of change. Furthermore, motivation to quit varied by stage. The variation of both self-efficacy and motivation to quit across stages provides evidence of the validity of the stages of change construct when applied to adolescent smokers.

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Smok e is not routinely performed in smoking cessation treatment. Smokers with airflow obstruction (AO) lost to follow-up incur the risk of accelerated loss in lung function. We evaluated the prevalence of AO among smokers enrolled in smoking cessation trials and the proportion of obstructed subjects lost to follow-up. 586 smokers performed spirometry at entry and after one year in two cessation trials. All received nicotine replacement therapy. At completion, they were classified into quitters, reducers, or continuing smokers. At enrolment, spirometry was normal in 493 (82.4%) subjects. AO (FEV1 <80% predicted) was found in 105 (17.6%) subjects: mild (FEV1 70-80% predicted) in 75, moderate (FEV1 50-69% predicted) in 22, and severe (FEV1 <50% predicted) in 8. Among the 141 subjects with normal spirometry who completed the study 64.5% were quitters, 11.3% reducers and 24.1% continuing smokers. Among the 30 subjects with AO who completed the study the proportions were 66.6%, 10% and 23.3%, respectively. Without spirometry, AO would have gone undetected in 75 of the 427 subjects lost to follow-up. In these subjects, AO was mild in 52 (69.3%), moderate in 17 (22.7%), and severe in 6 (8%). At follow-up, quitters had an improved FEV1 of 50 mL (1.1%) while reducers and continuing smokers showed a decline of 110 mL (3.2%) and 60 mL (1.6%), respectively. Spirometry gave a high yield of AO in participants in two smoking cessation trials most of whom were lost to follow-up; they would have remained unaware of their condition without spirometry. Smokers with AO should be identified and advised to seek further care.

The study has been supported by Pfizer Consumer Healthcare, Helsingborg, Sweden.

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Methods:
- A 30-item, mixed-response questionnaire was validated then distributed to a convenience sample of current smokers. Baseline smoking motivation was self-reported using a standard 10-point scale, then re-assessed after presentation of 2 hypothetical conditions: blood test results suggesting high and low risk of developing lung cancer. Desirability and likelihood of influence on future medical decisions were assessed using a 5-point Likert scale. Secondary outcomes such as preferred mode of GRF delivery and effect of socio-demographic variables were also examined.

Results:
- 77 smokers, ages 21-67 (70% female, 27% African-American, 82% using 5-20 cigarettes/day) completed the questionnaire. As expected, high-risk GRF increased motivation to quit (6.23 to 8.68, p<0.001). Low-risk GRF did not significantly change mean motivation (6.23 to 6.66, p=0.35). However, 36% of subjects recorded a decrease in motivation score following low-risk GRF while only 9% did so following high-risk GRF (p<0.001). Respondents found GRF highly desirable (mean score 1.78), and preferred receiving test results in person from their physician. No differences based on age, gender, or racial group were observed.

Conclusions:
- GRF may be a desirable and useful adjunct to GSC under the correct circumstances. However, a significant number of smokers may paradoxically experience a disincentive to quit following low-risk GRF results.

Short-term training program in translational cancer research (R25 CA69277).

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RP-062
Impact of Genetic Risk Information on Smokers Motivation to Quit
Nicole Hoff, B.S., Sarah Evens-Casey, M.P.H., Sandra Weibel, M.D., Ashwin Patkar, M.D., and Frank Leone*, M.D., M.S.

Background:
- Genetic risk feedback (GRF) in the setting of quit-smoking counseling (GSC) has been associated with immediate effects on perceived risk, quit benefits, and quit motivation. It remains unclear however whether GRF is generally desirable to tobacco users and whether low-risk results might paradoxically decrease motivation.

Objective:
- To assess desirability of GRF among smokers and quantify the magnitude/direction of impact.

Methods:
- A 30-item, mixed-response questionnaire was validated then distributed to a convenience sample of current smokers. Baseline smoking motivation was self-reported using a standard 10-point scale, then re-assessed after presentation of 2 hypothetical conditions: blood test results suggesting high and low risk of developing lung cancer. Desirability and likelihood of influence on future medical decisions were assessed using a 5-point Likert scale. Secondary outcomes such as preferred mode of GRF delivery and effect of socio-demographic variables were also examined.

Results:
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Conclusions:
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RP-063
A New Measure for Assessing the Impact of Stressful Events on Smoking Behavior
Sherry A. McKee, Ph.D., Mihaela Aslan, Ph.D., Anna Kochetkova, M.S., Paul Maciejewski, Ph.D., Stephanie O’Malley, Ph.D., Suchita Krishnan-Sarin, Ph.D., and Carolyn M. Mazure*, Ph.D., Yale School of Medicine

Stress increasingly is implicated in smoking relapse, and stressful events appear to differentially affect smoking behavior in women and men. To provide an accurate, reliable yet rapid assessment of stressful events as they affect smoking, we developed a 32-item Life Event Occurrence Survey (LEOS), using events well-established as stressors (e.g., loss of loved one), and employed Item Response Theory to generate scores from the LEOS indicating degree of exposure to and disruption from recently-occurring events. 579 treatment-seeking smokers (mean age 45.15; FTND scores 4.84; cigs/day 26.27) completed the questionnaires, and Markov Chains Monte Carlo algorithms, employing different estimation procedures, provided degree of exposure and “disruption” scores per subject. Scores were evaluated for concurrent validity and test-retest reliability across gender. Indices of concurrent validity showed that exposure and disruption scores were positively related to CES-D and perceived stress, and negatively related to emotional well-being, with females demonstrating stronger associations across these variables. Each gender was equally exposed to stressful events but females had greater disruption scores than males. Females demonstrated more consistent positive relationships between measures of negative affect and exposure/disruption scores. Exposure and disruption were positively associated with smoking temptations in negative affect situations, with females demonstrating stronger associations. Overall, the LEOS exposure and disruption scores demonstrated concurrent validity, were more powerful in highlighting gender differences and were easier to interpret than traditional methods of scoring the impact of stressful life events that either indicate or summarize the presence of stressful life events.

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RP-061
Ethnic Differences in the Timing of Smoking Cessation for Patients in Alcohol Dependence Treatment
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The Timing of Alcohol and Smoking Cessation (TASC) Study compared the effects of concurrent vs. delayed smoking intervention for patients receiving intensive alcohol dependence treatment. Main results showed no improvement between groups in smoking cessation rates, however, findings suggested that providing concurrent smoking cessation treatment might adversely affect alcohol treatment outcomes. We analyzed data from this randomized, controlled trial to examine ethnic differences in smoking and alcohol outcomes. Eligible smokers (N=498) were enrolled and randomized to concurrent (during alcohol treatment) or delayed (6 months later) smoking intervention. To examine ethnic differences this analysis focused on smokers of Caucasian (n=381) and African American (n=78) ethnicity. The smoking intervention included nicotine replacement therapy and individual behavioral counseling. At 18-months after study enrollment, 7-day point prevalence smoking abstinence rates were 14.4% for Caucasians and 10.3% for African Americans, the differences were not statistically significant. Among Caucasians, 6-month prolonged alcohol abstinence rates were consistently worse in the concurrent group than the delayed group at 6, 12 and 18 months (43% vs. 60%, P=0.001; 35% vs. 45%, P=0.045; 42% vs. 51%, P=0.059 respectively). Among African Americans, 6-month prolonged alcohol abstinence rates were not consistently different in the concurrent group than the delayed group at 6, 12, and 18 months (47% vs. 45%, P=0.861; 33% vs. 31%, P=0.793; 36% vs. 43%, P=0.544 respectively). There was no evidence of ethnic differences in the overall success of smoking cessation treatment for patients in intensive alcohol treatment. However, this analysis suggests that effect of the timing of smoking intervention on alcohol outcomes varies by ethnicity. Among African Americans, alcohol outcomes may not be adversely affected by delivery of concurrent smoking cessation treatment. Further research is required to confirm these findings.

This research was supported by funding from NIAAA R01AA11124 and the V.A. Health Services Research and Development Center for Chronic Disease Outcomes Research.

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RP-060
Hedonic Response to First Smoking Lapses: Effects on Progression to Relapse, and Effects of Nicotine Replacement Therapy
Stuart Ferguson*, Ph.D., Saul Shiffman, Ph.D., Chad Gwaltney, Ph.D., and Mark Balabanis, Ph.D.

First lapses of alcohol are clinical as they represent the juncture between abstinence and the resumption of smoking. The reinforcement derived from a lapse is thought to be an important determinant of whether it will remain an isolated incident, or herald regression into relapse. In a double-blind placebo controlled study of high-dose (35mg) transdermal Nicotine Replacement Therapy (NRT), active treatment reduced the risk of both a second lapse (HR=0.54) and relapse (HR=0.22). It was hypothesized that this effect of NRT might be mediated via decrees in the reinforcement gained from lapses. To investigate this, we examined the records of the 169 participants who lapse during treatment. Following their first lapse, using an electronic diary, subjects recorded the amount they smoked, and rated the pleasantness and satisfaction (Hedonic Rating) and the aversiveness of smoking. Subjects with higher hedonic ratings of first lapse had a greater risk of progression to second lapse (HR=1.08) and relapse (HR=1.26). Subjects who smoked more at the first lapse also had greater risk of progression (Second Lapse: HR=1.16; Relapse: HR=1.19). Aversive ratings had no bearing on progression. Importantly, however, NRT had no effect on hedonic ratings, amount smoked during the first lapse or aversive ratings (all p-values>0.5). Thus, there was no evidence to support the mediation hypothesis.

NIDA Grant DA 06804 to Saul Shiftman. GlaxoSmithKline Consumer Healthcare (GSKCH) provided patches for the study, but did not otherwise participate in the study or the paper. S. Shiftman and S. Ferguson consult exclusively for GSKCH on smoking cessation products. S. Shiftman has an interest in a new smoking cessation product. S. Shiffman has an interest in a new smoking cessation product. For clinical trials.

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**RP-064** A RANDOMIZED TRIAL OF THE EFFICACY OF BUPROPION FOR ADOLESCENT SMOKING CESSION

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Many adolescents become addicted to tobacco and are unable to quit. We conducted a prospective, randomized, double-blind, placebo-controlled, parallel-group, dose-ranging trial of the primary efficacy of bupropion (sustained-release) for smoking cessation in adolescents motivated to quit.

**METHODS:** Three treatment groups: bupropion 150 mg/day, 300 mg/day, or placebo. Six week treatment phase (plus one week pre-quit taper-up) included weekly brief, individual counseling. Follow-up occurred at 12 weeks (telephone) and 26 weeks. We randomized 312 adolescents (ages 14 to 17 years) who: smoked > 6 cigarettes per day, had exhaled carbon monoxide (CO) > 10 ppm, had at least two previous quit attempts, and had no other current major psychiatric diagnosis. Data were analyzed with chi-square, a priori specified as one-tailed.

**RESULTS:** For 245 study completers (mean age 16 yrs, 46.4% female, 75.8% Caucasian, 50.1% with Fagerström Test for Nicotine Dependence score >6) the cotinine confirmed (<50 ng/ml) seven-day point prevalence rates at 6 weeks were: placebo=6.74 %, 150mg/d=10.34%, 300mg/d=16.87% (p=0.052). Week 26 confirmed (CO<10ppm) point prevalence were: placebo=10.0%, 150mg/d=2.99%, 300mg/d=10.77% (p=0.25). Comparison of weekly point-prevalence rates for each bupropion dose showed statistically significant differences for 300mg vs. placebo at weeks 2, 3, 4 and 5. No significant differences for 150 mg vs. placebo. Preliminary analyses suggest that the 300 mg dose of bupropion appeared to have an effect that approached statistical significance at end of treatment, but had disappeared by 26 weeks. **Co-lead authors.**

National Cancer Institute, Robert Wood Johnson Foundation, GloxinoSmithKline.

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**RP-065** CONTINGENCY MANAGEMENT AND MET FOR YOUNG ADULT SMOKERS: PRELIMINARY RESULTS


The effects of contingency management (CM), one of the most robust and effective substance use treatments, generally dissipate with the removal of contingencies. In this preliminary study, we examine the utility and effectiveness of pairing CM with motivational enhancement treatment (MET) in decreasing smoking. Thirty-seven daily smokers (M=20.0 yrs., 46% women; M cigs/day=12.8, SD=5.0), with baseline CO levels > 10 ppm (M=17.8, SD=7.4) were randomly assigned to CM or noncontingent reinforcement (NR), and to either MET or relaxation (REL). Carbon monoxide (CO) samples were collected twice daily for 3 consecutive weeks. CM participants earned draws from a fishbowl containing tickets valued between $100 redeemable for prizes/gift certificates in an escalating reinforcement schedule. During Week 1, CM participants earned draws for CO less than baseline levels. During Weeks 2-3, CM participants earned draws for CO < 5 ppm, indicating abstinence. NR participants randomly earned draws for providing twice daily samples. Participants earned on average $150 during the 3 weeks. Compared to NR, CM resulted in significantly longer abstinence and lower CO levels. A significant condition by time interaction revealed that CM abstinence duration increased from Week 1 to Weeks 2-3 but remained unchanged in NR. In CM, 34.5% of CO samples in Week 1 and 41% in Weeks 2-3 were classified as abstinent, compared to 10.0% in Week 1 and 12.3% in Weeks 2-3 in NR. One-month follow-up data will examine the contribution of MET to the effectiveness of CM. **Supported by R01 DA11204 (NIDA) to P. Monti.**

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**RP-066** COMPARING RECRUITMENT APPROACHES: ENROLLING PREGNANT WOMEN INTO A SMOKING CESSION TRIAL

Elyse R. Park, Ph.D.1, Susan Regan, Ph.D.1, Beverly Loudin, M.D.1, Virginia P. Quinn, Ph.D.1, Kristin Perry, B.A.1, and Nancy Rigotti, M.D.1; 1MGH/HMS; 2Tufts Health Plan; and “KPSC”

**BACKGROUND:** Many strategies have been used to recruit pregnant smokers from prenatal care settings for smoking intervention trials. Typically recruitment is done at practices, but a centralized strategy that uses data being collected for administrative reasons could be more cost-effective. Little is known about which approach is most efficient or who is reached.

**METHODS:** Pregnant smokers were referred from Massachusetts obstetric providers for a telephone-delivered smoking cessation RCT (1) using an existing OB Risk Assessment Form sent from practices to a managed care organization (MCO; private insurance) (n=254) and (2) by direct outreach to community-based prenatal practices (CBP; private and public insurance) (n=188). The recruitment results and type of participants enrolled were compared.

**RESULTS:** The yield of enrollment per referral received was higher from CBPs (46%) than from the MCO (25%). Women recruited from the CBPs differed demographically from those recruited through the MCO (less educated, less likely to work, less likely to be living with the babies father; p<.001). Significantly more CBP women felt depressed (p<.001), and significantly fewer expected high social support for quitting (p<.01). The CBP group was significantly less likely to have a home smoking ban (p<.001). Most demographic differences disappeared when the MCO group was compared with CBP women who had private insurance, but other psychological and environmental differences remained.

**CONCLUSION:** Obtaining referrals from decentralized CBPs, rather than through a centralized MCO-based referral system, was a more efficient strategy for recruiting pregnant smokers and yielded a more socioeconomically diverse sample. The CB group had more environmental and psychosocial barriers; this was true even among CBP enrollees with private insurance.

Project funding was provided by the Robert Wood Johnson Foundation.

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**RP-067** EVALUATION OF THE FACTORS THAT INFLUENCE THE CESSATION EFFORTS OF WOMEN

V. Reichert*, P. Folan, L. Villano, N. Kohn, C. DeGaetano, D. Jacobson, L. Miceli, and A. Talwar

**PURPOSE:** We studied the factors women and men, who were motivated to quit, experienced at onset of smoking cessation program.

**METHODS:** Six weekly group sessions emphasized behavior modification and pharmacological interventions. Health and smoking information was gathered from questionnaires on day 1. Quit status verified at 1 month with exhaled carbon monoxide levels.

**RESULTS:** 1139 smoking patients total (482 males [median age 45.2 years]; 657 females [median age 48.6]); of these, median pack years for males was 33 vs. 27.5 for females. There were no differences between the genders in respect to: age at first cigarette (15 vs. 16 years), Fagerstrom scores (6.0 out of possible 10), number of quit attempts (2), More females 71.9% vs. males 63.1% smoked light cigarettes (p<.01), more females 71.8% vs. 59.4% males believed nicotine causes cancer (p<.01). 75.0% females vs. 64.5% males worried smoking may give them cancer (p<.01). Females reported feeling guilty about their smoking 77.2% vs. 61.7% (p<.01). For obstacles to quitting, more females reported: a fear of failure 17.5% vs. 10.7% (p<.01), fear of weight gain 41.1% vs. 14.6% (p<.01), worry about managing stress 63.1% vs. 55.0% (p<.01). No differences found in quit rates of males and females (59.1% vs. 54.9%).

**CONCLUSIONS:** Although in our study males and females quit equally, we found the amount of concerns of females far exceeded those of males. All smokers demonstrated significant knowledge deficits and misconceptions regarding safety of nicotine; healthcare providers need to educate smokers regarding this issue. Addressing emotional conflicts smokers reveal about their addiction is a useful tool to assist patients towards more successful cessation.

**No Funding.**

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**RP-068**

**CRAVING TRAJECTORIES AFTER FIRST LAPSE, WITH AND WITHOUT HIGH-DOSE NICOTINE PATCH**

Deborah Scharf*, B.A., Saul Shiffman, Ph.D., Chad Gwaltney, Ph.D., and Mark Balabanis, Ph.D., University of Pittsburgh

Priming models of reinstatement suggest that lapses to smoking may increase craving. Nicotine replacement (e.g. nicotine patch), however, might reduce priming effects, thus dampening potential increases in craving after a lapse. We tested this hypothesis in smokers who were randomized to either high-dose (35mg nicotine patch (n=188)) or placebo patch (n=136), using craving ratings obtained in real-time, multiple times per day. For participants who achieved 24h of smoking abstinence and then lapse, we examined average craving reported during the two days preceding the two days following the first lapse. On the two days before and after lapsing, participants on active patch reported lower craving than those on placebo patch (p<0.0001). However, whereas participants on placebo experienced an increase in craving two days after the lapse (compared to two days prior), those on active patch experienced a return to pre-lapse craving levels (significant interaction, p<0.0003). Priming of craving may occur following lapses, and thus may be an important process in promoting progression from lapse to relapse. Nicotine patch may help to impede progression from lapse to relapse by reducing priming effects after a lapse.

**NIDA grant DA06084 and SSHRC 752-2002-0161. GlaxoSmithKline Consumer Healthcare (GSKCH) provided patches for the study, but did not otherwise participate. S. Shiffman consults exclusively for GSKCH on smoking cessation products, has an interest in a new smoking cessation product, and is a founder of inviadata, inc., which provides electronic diaries for clinical trials.**

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**RP-069**

**TO STUDY PATTERN, AWARENESS AND ATTITUDE TOWARDS TOBACCO USE AMONGST PSYCHIATRIC PATIENTS**

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**AIM AND OBJECTIVE:** To study tobacco use pattern amongst patients presenting with psychiatric illness with co-morbid tobacco use; assess awareness towards harmful effects of tobacco use and availability of treatment, attitude and motivation to quit tobacco amongst tobacco using psychiatric patients.

**METHODOLOGY:** 30 patients with major psychiatric illness (diagnosed as per ICD-10 DCR) presenting with co-morbid tobacco use were assessed in this cross-sectional hospital based study. The perspectives of the close family member of patient involved in care giving were also assessed. Patients were assessed through semi-structured Performa to obtain information on socio-demographic and clinical profile including parameters like nature, duration, and course of psychiatric illness, tobacco use pattern, complications associated with tobacco use, awareness towards harmful effects of tobacco use, and availability of treatment for the same, and attitude towards quitting tobacco use. Separate Proforma was used to assess perspective of one family member per subject. The subjects were also administered appropriate psychiatric rating scales (viz., SANS, SAPS, HDRS, HARS, Mania rating scale), scales for assessing tobacco dependence (FTND and assessment scale for smokeless tobacco use). Motivation to quit tobacco use was assessed using the Readiness to Change Questionnaire.

**RESULTS:** Subjects were suffering from either psychotic or non-psychotic major psychiatric ailments and presented with smoking and chewable forms of tobacco use (dependence). The awareness, attitude and motivation to quit tobacco varied across the patients and family members. Symptoms/circumstances associated with tobacco use initiation and/or exacerbation as well as correlation with psychiatric diagnosis and symptoms shall be discussed.

**CONCLUSION:** The study provides some insights into tobacco use pattern, awareness, attitude and motivation to quit tobacco use amongst psychiatric patients.

No Funding.

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**RP-070**

**TOBACCO USE BY PHYSICIANS IN A PHYSICIAN HEALTH PROGRAM, IMPLICATIONS FOR TREATMENT AND MONITORING**

Elizabeth B. Stuyt*, M.D., and Michael H. Gendel, M.D., Colorado Physician Health Program

Ensuring good physician health is vitally important, not only from the standpoint of maintaining healthy physicians but also to improve patient care. From the standpoint of tobacco use, physician have significantly decreased their own tobacco use and currently less than 4% of physicians in the United States use tobacco compared to 25% of the general population. Tobacco use has been linked to relapse to drugs and alcohol and tobacco cessation has been shown to improve recovery rates for substance abuse. In spite of this, no studies have been done on the use of tobacco by physicians suffering from chemical dependence, or on the effect of their ongoing tobacco use on their recovery and by extension, on their ability to safely practice medicine. In fact, the majority of the inpatient treatment programs that treat professionals, including physicians, do not treat nicotine dependence as seriously as other drugs of addiction and usually allow patients to use tobacco during treatment. This study investigates the use of tobacco by physicians suffering from chemical dependence and mental illness. In a retrospective review of self-report of tobacco use on an intake questionnaire, 28% of the physicians referred to the Colorado Physician Health Program identified current tobacco use, which is significantly different from the 4% reported for physicians in general. The data presented here suggests that ongoing tobacco use may be a "red flag" for potential problems and supports the need for treatment programs to help physicians become tobacco free.

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**RP-071**

**WEIGHT LOSS IN ADOLESCENTS WHO QUIT SMOKING WITH BUPROPION**

Douglas Taren*, Sonia Fankem, and Myra Muramoto, University of Arizona

Weight gain with smoking cessation is a deterrent to quitting and a cause for relapse. 312 adolescents, 14-18 years of age, were randomized to one of three bupropion treatments (Rx): Placebo (P), low-dose (LD;150mg/day) and high-dose (HD;300mg/day). Bupropion Rx and brief individual cessation counseling occurred for 6 wks with follow-up at 6 months. Smoking status was assessed at the end of Rx and 6 months using a 7d recall and abstinence confirmed with breath carbon monoxide (CO). Weight (kg) was assessed at each time period. ANOVA indicated that there was no difference in weight changes between the P and LD groups for any comparison related to weight change. There was a significant Rx by smoking status interaction and between Rx groups for weight changes. Youth who were reported quitting in the HD group (n=26) lost 1.97kg and in the P Group (n=17) gained 0.37kg at the end of Rx. Youth who reportedly continued to smoke in the HD group (n=43) lost 1.18kg and in the P Group (n=67) gained 0.94kg at the end of Rx. Furthermore, abstinent youth (CO confirmed) in the HD group (n=18) lost 2.59kg compared with the P group (n=14) who gained 1.61kg. Youth who continued to smoke (CO confirmed) in the HD group (n=47) lost 1.20kg and in the P group (n=66) gained 0.22kg. Six month results were similar but the effect diminished. These results suggest that bupropion resulted in significant weight loss in youth who continued or stopped smoking.

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**RP-072**

**BRIEF NRT PLUS BEHAVIORAL TREATMENT COULD BE USEFUL IN SEVERE ADDICTION**

Luis Wehbe* and Jacqueline Herrera

Although there are 15 million smokers in Argentina, tobacco clinics are not enough. Effective medication to treat patients is also scarce (only patches and Bupropion). In 2002 we started to receive patients interested to quit at our Respiratory Unit in the Hospital de Comunidad, Mar del Plata, Buenos Aires State. The number of patients who attended to the clinic was as follows: 93 patients in 2002, 202 patients in 2003 and 420 patients in 2004. The success rate also improved from 37 percent in 2002, 42% in 2003 and 48 percent in 2004,eight weeks follow up). We now use lozenges and nasal spray for severely addicted patients. We can get them through WEB sales. It was useful to bring lozenges and nasal sprays but we had to try briefier treatments with these medications because for most of our patients the cost was not affordable. It surprised us the fact that briefier treatments than suggested on the literature were effective. An excellent combination was 4 mg lozenges plus nasal spray over the first four weeks. A telephone help line and a trained nurse student were useful to improve effectiveness. We make more than forty telephone calls a day, supporting patients and asking those who had stop going to return. We were able to bring many patients back to re-start treatment. In conclusion, to use a help line to recover patients, could be rewarding. Almost 50% of the patients who had stop to attend, decided to return and start a new treatment. We are interested in different kinds of combination treatments, particularly two different ways of NRT. We were excited about brief NRT treatments which for low income countries could be important.

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**RP-074**

**LONGITUDINAL METHOD OF ASSESSING MEDICAL STUDENTS’ TOBACCO TRAINING RETENTION**

Sarah Evers-Casey*, M.P.H., Jon Veloski, M.S., Ashwin Patkar, M.D., and Frank Leone, M.D., M.S.

**BACKGROUND:** Factors that influence medical student behaviors following tobacco training are poorly understood. Evaluation methods are often cross-sectional, therefore limited. Longitudinal methods are more robust, but less feasible. We describe a simple method for capturing longitudinal information about tobacco-related student behaviors and report initial validation results.

**OBJECTIVE:** To evaluate the utility of the Patient Encounter Log System (PELS) in the longitudinal assessment of tobacco training interventions.

**METHODS:** All third year medical students used a handheld computer equipped with PELS tracking software to enter information about clinical encounters. Groups of students rotated through a Medicine clerkship in one-month blocks. Each group completed an intensive half-day tobacco training during their rotation. We modified the PELS data collection screens to capture rates of cessation and prevention counseling. Students recorded date, location, and specialty setting and patient-related independent variables such as diagnosis, gender, age, and comorbidities. Assessment outcomes include feasibility, face validity, and responsiveness to change.

**RESULTS:** 201 students recorded 41,200 total encounters over 8 months, of which 31,240 (76%) included clinical history. 176 students completed the training program by the end of 8 months. 18,724 (60%) of historical encounters included smoking history and 15,517 (50%) included information about student counseling behavior. PELS remained responsive across time, rotation type, and location, reflecting anticipated differences between primary versus tertiary care, community versus university settings and pre-versus post-training.

**CONCLUSION:** PELS provides reliable, real-time access to longitudinal information concerning student tobacco-related behaviors. It represents a powerful tool with capacity to shed light on interactions between complex variables effecting provider training retention and long-term behaviors.

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**RP-073**

**INTERIM DATA FROM A PHASE I STUDY TO IDENTIFY THE OPTIMAL DOSE OF THE NICOTINE VACCINE, TA-NIC TO USE FOR EFFICACY TRIALS TO ESTABLISH IMPACT OF VACCINE ON QUIT RATES**

Campbell Bunce*, Sarah Adrnel, Sarah Fryer, Steven Rameal, Peter Treasure and Simon Long

Sixty smokers were recruited into a double-blind, randomised, placebo-controlled, dose escalation study to assess the safety and immunogenicity of the nicotine vaccine, TA-NIC, and identify the optimal dose for future efficacy trials. They were divided into three cohorts of 20 subjects randomised 4:1 active vaccine to placebo per group. Each group received a different dose of TA-NIC corresponding to 50mcg, 250mcg and 1000mcg per injection given at weeks 0, 2, 4, 6, 8 and 12. The interim results (20 weeks) of this Phase I study demonstrated that the vaccine was safe and well tolerated with a small number of severe adverse injection site reactions at the highest dose level. The anti-nicotine antibody response to the vaccine was dose dependent with a marked improvement in the rate and magnitude of the response compared to a previous study. Based on safety and immunogenicity data at the interim stage, 250 mcg was identified as the optimal dose. In addition, there was a clear reduction across all actively vaccinated groups versus placebo in the numbers of those who self-reported a reduction in smoking pleasure — for example, at week six 43% of subjects receiving TA-NIC compared to only 9% receiving the placebo, reported reduced pleasure when smoking. The final data from this study is due at the end of 2004 with Phase II trials expected to start in early 2005.

No funding.

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**RP-075**

**WHAT WORKED?—HISTORICAL REVIEW OF SMOKING POLICY IN KOREA**

Seo, Hong Gwan*, M.D., Ph.D., and Dae-Jin Kim, M.D., Ph.D.

Tobacco was introduced into Korea in the early 17th century. Since 1921 the tobacco business had been monopolized. During the tobacco monopoly, the government did not give any information about the harmfulness of tobacco. The smoking rate of Korean male had been the highest in the world, about 80%, during 70s and 80s. The enforcement decree on health promotion (EDHP) banned smoking in public facilities and only allowed smoking in designated areas in 1995 for the first time. It was a very comprehensive intervention by the government. Non-smoking facilities are required to put up prominent non-smoking notice boards, violations of which will be penalized with $3000. In late 2001, the government declared a policy of reducing smoking rate by increasing tobacco tax by 150 won, more than 10% of its original price which was the highest raise ever. The government sold all its stocks of Korea Tobacco Company for privatization in 2002. In 2003, the EDHP banned smoking in Kindergarten, school buildings, all kinds of hospitals, and nursery facilities, in which even smoking room were not allowed. The smoking rate of Korean male has decreased to 72.8% in 2003. The tax has been increased again about a half of U.S. dollar in Dec. of 2004. All the 246 health centers will provide quit smoking counseling and NRT and bupropion charge free this year. There are 10 million smokers in Korea but there are 37 million non-smokers including children who should be protected from the hazard of smoking. As the awareness of the harmfulness of secondhand smoke has increased, the consensus of need for clean air in public places has become more and more consolidat-ed. Still, monitoring and reinforcement of EDHP will be essential for the decree to be fully effective. Eventually, total ban on manufacturing and selling of tobacco will be the ultimate mean for clean air.

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RP-076
IN-VIVO EXTRACTION OF LEAD, CADMIUM AND TOBACCO SPECIFIC NITROSAMINES FROM FOUR BRANDS OF SWEDISH SNUS IN REGULAR SNUS USERS

The content of lead (Pb), cadmium (Cd) and tobacco specific nitrosamines (TSNAs) in vitro are well known in North American moist snuff as well as in Swedish snus. Their extraction from snus in vivo, however, is less studied. Tobacco contains nitrate that is microbially activated to nitrite which reacts with alkaloids to form cancer causing tobacco specific nitrosamines (TSNAs) during curing and storage of the tobacco. Snus production, in contrast to that of the fermented North American moist snuff, includes a heating process that kills bacteria, producing a nearly sterile product. This process limits the microbial formation of TSNAs during storage. In this open label, randomized, two-way cross-over study, 32 male healthy regular snus users were given repeated doses of four different brands of portion snus: 1g General, 1g Catch, 0.5g Catch Mini and 0.3g Catch Dry Mini. Each sachet of used snus was collected and analyzed of the extracted amount of Pb, Cd and TSNAs in vivo was performed for each type of snus. The mean nicotine content in General, Catch, Catch Mini and Catch Dry Mini was 9.7, 8.5, 4.8 and 5.2 mg/sachet, respectively. This mean TNSA content was 1.1, 0.9, 0.4 and 0.3 ppm/sachet, respectively. The mean Cd content was 0.3, 0.2, 0.1 and 0.2 pg/sachet. The mean Pb content was 0.2, 0.2, 0.1 and 0.1 pg/sachet, respectively. The mean nicotine extraction was up to 30% of the nicotine content in unused sachets. The percent extraction of TSNAs largely paralleled the nicotine extraction, with minor differences between the brands. Cd extraction was below 10% and Pb extraction was negligible for all brands.

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RP-077
THE PARADOX OF TOBACCO CONTROL IN NIGERIA: ISSUES IN PROMOTION
Abigail Ndisika and Michael, C Ogwezzy

Findings globally have revealed that tobacco smoking is dangerous to health and thus has been attracting increasing attention in the area of control. While some countries aim at total ban others target restriction on advertising of tobacco as a way of controlling the promotion of tobacco. This paper examined the paradox in that restriction against the backdrops of the recent setting up of a British-American Tobacco (BAT) Company in Ibadan, Oyo State, Nigeria for the production of cigarettes; in addition to the increasing use of below the line activities especially music revue to promote Benson and Hedges Brand in Nigeria. The findings of the study revealed that while there is restriction on above the line advertising, below the line activities are increasingly being used to promote tobacco in Nigeria. The paper therefore concluded that from a promotional perspective, tobacco control in Nigeria is a paradox. The paper suggested the need for all concerned to seek ways of addressing the increased use of below the line activities for effective control of the promotion of tobacco.

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RP-078
CHANGES IN PERIPHERAL MU OPIOID RECEPTORS FOLLOWING EXPOSURE TO NICOTINE AND OTHER DRUGS OF ABUSE
Ashwin A. Patkar*, M.D., Philip Matthews, B.S., Frank T. Leone, M.D., Sarah Evers-Casey, M.P.H., Kathleen Peindl, Ph.D., and Allen Zeiger, Ph.D.

OBJECTIVE: The mu opioid receptor (MOR) is considered a gateway to drug addiction. MOR are present in the brain as well as on the red blood cells (RBC). We investigated whether there were differences in MOR levels on RBC following chronic exposure to nicotine, heroin, methadone, and cocaine.

METHOD: Blood samples from systematically screened 20 tobacco smokers, 8 heroin dependent individuals, 9 illicit drug-free methadone maintained patients, 27 cocaine dependent persons, and 15 controls were studied. MOR levels on RBC were measured using flow cytometry immunomassay.

RESULTS: The MOR levels in nicotine dependent subjects (30.64 +/- 40.19) did not significantly differ from heroin (65.28 +/- 38.78), methadone (31.52 +/- 31.89), cocaine (27.35 +/- 35.78), or controls (22.78 +/- 30.89) (F=2.09, p=0.08). The MOR levels from heroin subjects were significantly higher compared to controls (t=2.87, p<0.01). There was a bimodal distribution of MOR levels in nicotine subjects with 6 (30%) smokers showing high MOR levels (86.32 +/- 7.56) and 14 (70%) smokers showing low MOR (4.83 +/- 3.46) levels. Similar distribution was seen in cocaine subjects and controls, but not in heroin and methadone subjects. Fagerstrom scores were not associated with MOR levels in smokers.

CONCLUSION: Our findings confirm that the MOR receptor is present on human RBC. Unlike heroin, nicotine exposure does not appear to alter MOR levels in the entire sample of smokers. However a subgroup of tobacco smokers show high MOR levels. Longitudinal studies with a larger subject pool are planned to clarify the influence of nicotine on the regulation of the opioid system.

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RP-079
GENETIC INFLUENCES ON THE NICOTINE DEPENDENCE SYNDROME SCALE IN U.S. ADOLESCENT AND YOUNG ADULT TWINS
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Genetic influences on nicotine dependence (ND) are documented in twin studies using DSM and Fagerstrom criteria. The scope of previous instruments limited examination of multiple dimensions within ND. The Nicotine Dependence Syndrome Scale (NDSS) was developed to assess five separate aspects of ND [drive(D), priority(P), tolerance(T), continuity(C), and stereotypy(S)], in addition to providing a total item score of ND. This study examined the psychometric structure of and genetic influences on the NDSS in a general population sample of adolescents and young adult U.S. twins. Data were obtained by mailed questionnaires from 1461 individual Missouri female and 309 male twin smokers (254 MZF pairs, 191 DZF pairs, ages 16-29, and 35 MZM pairs, 22 DZM pairs, ages 15-23) ascertained through state birth records. Factor analyses revealed somewhat different three-factor solutions in female twins (D/T/P, C, S) and male twins (D/T/S, C, P), with alpha coefficients between .69-.94. Genetic analyses found significant additive genetic (AG) influences on the total NDSS score in women [AG-.52% (95%CI-.43-.59)]. For all subscales, except C in male twins, either AG or shared environmental effects could be dropped from the model (but not both), indicating an important role for familial influences (12%-71%). Findings suggest multiple dimensions within the NDSS. Genetic analyses suggest these behaviors run in families and may in part be accounted for by genetics in this community sample, especially the total score in female twins.


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RP-080 PERCEIVED BARRIERS TO QUITTING SMOKING BY 746 ONLINE 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. It is estimated that by 2020 tobacco related illnesses will be the number one preventable disease state. While 70% of smokers want to quit, only 2-4% actually succeed. The quitting process is very difficult and smokers anticipate many barriers to quitting. We examined self-reported data of 746 users who registered for the Stop Smoking Centers self-guided interactive quit program between October 28, 2004 and January 13, 2005.

RESULTS: 746 smokers registered for the free online program between October 28, 2004 and January 13, 2005. 62.9% were female. The average registrant was 41 years of age and smoked 21 cigarettes per day. The average Fagerstrom score among users was 4.2

CONCLUSION: Self-reported data were examined from 746 users who indicated their perceived barriers to quitting. Users were allowed to select as many of the perceived barriers as they felt applied. By far the most common anticipated barriers were anxiety related with 76% of users indicating they would be tempted to smoke if they felt anxious, nervous or tense, followed by smoking after meals (71%), drinking an alcoholic beverage (65%), wanting to relax (64%) and seeing others smoking (63%). Other perceived future barriers include being offered a cigarette (57%), having just been intimate with their partner (36%), wanting to keep slim or avoid snacking/eating sweets (35%), feeling that smoking was part of the smoker's self image (19%) and wanting to feel more mature and sophisticated (9%). Since perceived barriers are commonly anxiety-related, web-based interventions may have the potential to address perceived barriers by customization. More research is needed on the presence of comorbid conditions among smokers.

No funding.

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