Epidemiology & National Surveillance

Epidemiology & National Surveillance – Addressing surveillance of tobacco use and control efforts

Over 40 studies address various aspects of epidemiology and surveillance as they pertain to women and smoking. Several studies are examining the links between smoking and cancer, or the links between smoking and other health-related issues. Other studies examine why women smoke, and the role of health care in tobacco-related diseases. A number of studies deal with smoking cessation efforts. The consequences of smoking during pregnancy, both for the mother and the child, are being examined in a number of studies.

Smoking and Cancer

While it has been long established that smoking is a cause of cancer, currently funded research seeks to extend our knowledge. Researchers are using data from the Nurses' Health Study, a long-running study of 121,700 women for a wide array of health issues, to investigate the link between smoking and breast, colorectal, and ovarian cancer risk. Data from the Black Women's Health Study, the Cooperative Family Registry for Breast Cancer Studies, and the California Teachers Study are being used to investigate possible links between smoking and breast cancer. The latter study is also examining risk from passive smoke exposure. In China, 267,000 female textile workers are being examined for links between smoking and cancer risk. A study at the University of North Carolina is examining women 3 and 5 years after being diagnosed with breast cancer to determine whether cigarette smoking affects the risk of disease-free and overall survival. Other studies are examining whether women who smoke during pregnancy are at increased risk for breast cancer. One theory is that the rapidly growing breast tissue in pregnant women is particularly susceptible to tobacco mutagens and free radicals generated by smoking. A study at Boston University is examining the generation of genetic polymorphisms and breast cancer by tobacco smoke exposure in a Cape Cod case-control study. Another study is evaluating the role of tobacco smoke in adenocarcinoma of the lung among women.

Smoking Effects Other Than Cancer

Several researchers are examining the relationship between premenstrual symptoms and active smoking or passive smoke exposure. Another study seeks to determine whether protective effects of hormone replacement therapy (HRT) are eliminated in women who smoke. Investigators theorize that hepatic metabolism of estrogen is altered in female smokers; transdermal estrogen (which avoids first-pass metabolism by the liver) will therefore be compared to oral HRT on measures of cardiovascular fitness.

Why Women Smoke

Several studies examine various aspects of tobacco use. A study being conducted at the University of Toronto is focused on determining why young women initiate smoking, by conducting interviews with low-income communities in Toronto. Research at Ohio State University recently examined the effects of biobehavioral factors on nicotine dependence in African American women. One study notes that African Americans may be more likely to begin smoking in early adulthood as they enter the workforce and start to encounter racial discrimination in society. Efforts are being made to determine developmental precursors in girls and women to the onset of tobacco use. A study at Washington University will use an extended co-twin control design to determine genetic and environmental factors that increase vulnerability to nicotine addiction. Another study examines incarcerated female smokers and nonsmokers to determine the factors that lead some but not all to smoke.

Health Care Utilization

A survey is being conducted to collect Medicaid information on tobacco dependence treatments, with special focus on coverage of treatments appropriate for pregnant smokers. This information will be used to encourage consumer use of these covered services.

Smoking Cessation Efforts

A variety of approaches are being tested to help women quit smoking. Motivational interviewing is a supportive, non-judgmental counseling style that appears to be especially useful with behaviors that are difficult to change. It helps women weigh the costs and benefits of their behaviors. A Mood Management group smoking cessation intervention, with or without a nicotine patch, is being tried with incarcerated females. Bupropion is also being tried with or without relapse prevention treatments or discussion groups. Media campaigns against smoking have been and are being tested for effectiveness in various populations.

A number of investigators are testing smoking cessation programs for pregnant women who either smoke or have quit during their pregnancy. Among the strategies being employed are motivational interviews, behavioral incentives, personal counseling combined with smoking-related health messages, telephone counseling, and nicotine gum. An intervention using motivational messages, self-help material, and follow-up contacts was recently tested using 500 female smokers from low-income urban pediatric clinics. One group is developing a mass media-health communications program combined with community organization and professional practice components. Other investigators are examining smoking and quitting behavior in pregnant women, using focus groups, interviews, and other methods. One such study employs the methods of grounded theory to develop a theoretical framework to explain behaviors and to provide a foundation for potential interventions. Another study is finding substantial fluctuation in maternal smoking levels over the course of the pregnancy, including overall status (i.e., smoking or not).

Effects of Smoking on the Fetus/Child

The effects of smoking during pregnancy on the fetus or child are being investigated in a number of ways. Several studies are examining the effect of maternal smoking on birth weight, preterm delivery, and preeclampsia (maternal hypertension with proteinuria and/or edema, usually occurring after the 20th week of gestation). One study has found that caffeine use in smokers is associated with an increased risk of small-for-gestational-age infant. Another has found that smoking during pregnancy increases chromosomal damage in maternal and newborn lymphocytes. Researchers are investigating children born to mothers who smoked during pregnancy to determine whether there are any mental or physical developmental decrements, behavior or aggression disorders, or altered age at menarche. A recent effort at Columbia University examined the role of environmental tobacco smoke in developmental damage to newborns.

Title: Biobehavioral Nicotine Dependence in Black Women
Principal Investigator: Ahijevych, Karen L.
Institution: Ohio State University, Columbus, OH
Funding Agency: National Institute on Drug Abuse
Project ID: DA010809
Project Funding Period: 1 February 1997 – 31 January 2002

Abstract: More African Americans die from diseases caused by cigarette smoking than from AIDS, homicide, drugs and accidents combined. In addition, smoking intensifies a number of serious health problems that disproportionately affect African Americans including heart disease, cancer, stroke, low birth weight, and infant mortality. African Americans report smoking fewer cigarettes per day, prefer high nicotine, mentholated brands, and are noted to be highly dependent on nicotine. Higher cotinine levels, the major metabolite of nicotine, have been described in black women, in comparison to other race-gender groups, in spite of smoking fewer cigarettes per day. Furthermore, there is a lower smoking cessation quit rate among African American women compared to Caucasian women. Alternative explanations for increased exposure as indicated by elevated cotinine levels in African American women are warranted. The overall aim of the FIRST award proposal is to examine effects of selected biobehavioral and contextual factors on smoke constituent exposure and nicotine dependence in African American and Caucasian women. Three separate studies to be conducted in the General Clinical Research Center (GCRC) with black and white women are proposed. 1) To characterize cotinine elimination trends, subjects will be admitted for a 7-day inpatient study of smoking abstinence during which plasma cotinine levels will be obtained. The effect of race, body composition, and menthol preference on cotinine trends will be analyzed. 2) During a 4 hr study, the effects of smoking topography (e.g. puff duration and volume and lung retention time), race, menthol preference, and body composition on plasma nicotine trends post-cigarette will be analyzed. Menthol exposure will be examined. 3) During a 6-day inpatient study with a counterbalanced design, smoke constituent exposure as measured by plasma nicotine and carbon monoxide increases pre to post-cigarette, as well as puff duration and volume, and lung retention time, will be contrasted across three conditions of nicotine availability of usual, increased and restricted smoking rates. Information about metabolic and behavioral issues concerning nicotine will add to a limited knowledge base about nicotine dependence in African American women and provide scientific support for specific targeted smoking cessation interventions, in conjunction with or separate from nicotine replacement.

Title: Biobehavioral Markers of Risk for Nicotine Addiction
Principal Investigator: Anokhin, Andrey P.
Institution: Washington University, St. Louis, MO
Funding Agency: National Institute on Drug Abuse
Project ID: DA000421
Project Funding Period: 1 July 2001 – 30 June 2006

Abstract: This Mentored Research Scientist Development award (KO1) resubmission requests 5 years of support for research and advanced research training on the genetic and biobehavioral etiology of substance use disorders, using nicotine addiction as a model system. Although a strong genetic contribution to smoking behavior has been well documented by recent studies, little is known about biobehavioral mechanisms that might mediate increased genetic risk. The overall goal of the proposed research is to identify electrophysiological trait markers of genetic susceptibility to nicotine addiction and to differentiate them from the long-term impact of smoking on brain function. This goal will be achieved through the integration of genetic and experimental psychophysiological methods. Epidemiological and behavioral research strongly

implicates disinhibition (deficits of inhibitory selfregulation of behavior) as a potential mediator of susceptibility to smoking and other substance use behaviors. The proposed study will use an extended co-twin control design to delineate genetic and environmental causes of differences between smokers and nonsmokers on psychophysiological traits pertinent to disinhibition. Young adult MZ female twins and their siblings (total n=300) concordant and discordant for lifetime regular smoking will be recruited from an ongoing study of 3000 female twins and their parents. Assessments will include a diagnostic interview, questionnaires, and a battery of laboratory psychophysiological tests. The focus will be on electrophysiological traits theoretically and empirically linked to cognitive and behavioral disinhibition: ERPs elicited in classical oddball and Go-No Go tasks and prepulse inhibition of startle response (PPI). Specific aims are to identify genetically transmitted characteristics of CNS functioning indicative of increased vulnerability to nicotine addiction and to assess the long-term impact of smoking on brain function. Significantly elevated MZ compared to full sib correlations will lead to a future ROI proposal to study DZ pairs, to confirm genetic etiology. It is expected that the proposed study will advance our understanding of biobehavioral mechanisms mediating vulnerability to nicotine addiction and provide useful end phenotypes for future genetic linkage or association studies of smoking and other substance use disorders. The training component will include supervised research, formal course work and tutorials in advanced methods of genetic analysis, and lab training in experimental psychopharmacology. The acquired expertise will allow the candidate to better integrate genetic and psychophysiological approaches in order to establish a program of interdisciplinary research in the neurobehavioral genetics of addiction.

Title: Cancer Risks Among Textile Workers in China
Principal Investigator: Checkoway, Harvey
Institution: Fred Hutchinson Cancer Research Center, Seattle, WA
Funding Agency: National Cancer Institute
Project ID: CA80180
Project Funding Period: 10 April 2000 – 31 March 2004

Abstract: The manufacture of cotton, wool, and synthetic fiber textiles is one of the world's largest industries. Moreover, some specific exposures within the industry are either known or suspected carcinogens. In spite of these considerations, existing knowledge of cancer risks to textile workers is based on fragmentary epidemiologic data. We are proposing an epidemiologic study in a cohort of roughly 267,000 women employees in the textile industry in Shanghai, China. The study cohort has been enumerated previously for a randomized trial of the efficacy of breast self exam, and is well characterized with respect to demographic, reproductive, and lifestyle factors, including cigarette smoking and alcohol use. We will focus on the following exposure/disease associations as primary hypotheses, all of which have been suggested but remain largely inconclusive in the literature: cotton and wool dusts and sinonasal cancer; formaldehyde and nasopharyngeal cancer; cotton dust and lung cancer; textile dyes and urinary bladder cancer; synthetic fibers and colon cancer. In a more exploratory mode, we will investigate textile exposures as potential etiologic factors for breast cancer. The study will consist of two related phases. The first phase will involve comparisons of site-specific cancer risks between the cohort and rates in the general population of Shanghai women during 1989-97. Incidence rates will be compared with city rates for the entire cohort and for the various manufacturing sectors (cotton, wool, synthetics, silk, dyeing, and finished apparel). The second, more in-depth analytic phase will be a case-cohort study nested within the cohort. The case groups will include incident, during 1989-97, cancers of the lung (expected number 1248), sinonasal passage (21), nasopharynx (100), bladder (81), colon (433), and breast (1196). A common referent subcohort (N=2496), will be selected as an age-stratified random sample from the study base of women textile workers. Historical exposure reconstruction will be performed for cotton, wool, silk, and synthetic fiber dusts, dyes, and formaldehyde to support dose-response

estimation. The proposed study will be comprised of unquestionably the world's largest, most well characterized cohort of textile workers, and should therefore generate important information that is needed for cancer risk reduction strategies for women in China and elsewhere, including the United States.

Title: Dietary and Hormonal Determinants of Cancer in Women
Principal Investigator: Colditz, Graham
Institution: Brigham and Women's Hospital, Boston, MA
Funding Agency: National Cancer Institute
Project ID: CA87969
Project Funding Period: 12 September 2000 – 30 November 2004

Abstract: The overall long-term objective of this Program Project is to identify novel dietary and hormonal determinants of breast colorectal and ovarian cancer risk in women, with the ultimate aim to find means for prevention and improved survival. The combination of questionnaire derived data with biomarkers, coupled with the long-follow-up, affords the opportunity to further understanding of the time course and mechanisms of cancer development. To achieve these objectives, we will relate a) prospectively collected data on diet, post-menopausal hormone use, smoking, and other behaviors; b) nutrient and hormone levels in prospectively collected blood; and c) genotyping information from archived DNA and tissue blocks; to incidence of breast colorectal, and ovarian cancer. This Program Project is based on the Nurses' Health Study cohort comprising 121,700 women who were 30 to 55 years of age when enrolled in 1976. The Program Project serves as the central resource for the many related grants addressing incidence of cancer and other major chronic diseases that arise in this cohort of women. Project 1. Diet, exogenous hormones and breast cancer risk. Project 2. Diet, hormones and risk of colorectal cancer. Project 3. Hormones, diet and risk of ovarian cancer. Project 4: Statistical innovations in risk modeling.

Title: Determinants and Trajectories of Smoking Cessation, Maintenance, and Relapse Among Pregnant and Postpartum Adolescents: A Naturalistic Qualitative Study
Principal Investigator: Constantine, Norm
Institution: Public Health Institute, Berkeley, CA
Funding Agency: Robert Wood Johnson Foundation
Project ID: 040675
Project Funding Period: March 2001 – November 2002

Abstract: There are several compelling reasons to study pregnant and postpartum adolescents as a distinct subpopulation with regard to smoking cessation and relapse. First, there are few published studies focused on smoking cessation and relapse among pregnant and postpartum adolescents. Second, smoking rates for pregnant adolescents are higher than for all other age groups of pregnant women. Third, pregnant adolescents typically differ from adult pregnant women on many characteristics potentially related to smoking cessation, therefore, we do not know the extent to which smoking cessation research on pregnant adults can be generalized to adolescents.

PHI's Center for Research on Adolescent Health and Development is conducting a naturalistic qualitative study to address key knowledge gaps related to smoking cessation and relapse among pregnant and postpartum adolescents. We employ the methods of grounded theory, a general methodology for developing theory that is deeply grounded in data systematically gathered and analyzed. This approach has special utility in studies to create new and theoretically expressed understandings of an understudied phenomenon, such as adolescent pregnancy and smoking cessation.

The study has two specific aims: (1) to develop a theoretical framework that explains the processes and experiences of smoking cessation, maintenance, and relapse by pregnant and postpartum adolescents, and (2) to provide a theoretical foundation for potential intervention approaches and strategies specifically targeted to this group. The study addresses the following research questions: (1) for pregnant and postpartum adolescents, what are the key processes and experiences of smoking cessation, maintenance, and relapse during pregnancy and through six months postpartum? and (2) for pregnant and postpartum adolescents, which individual and environmental factors and interactions of factors, influence smoking cessation, maintenance and relapse, during pregnancy and through six months postpartum?

Our target population comprises low-income pregnant and postpartum adolescents, predominately white, Hispanic, and African American, between the ages of 14 and 19, who: (1) have had lifetime use of 100 or more cigarettes; (2) have smoked at least 10 cigarettes during the three months prior to discovery of pregnancy; and (3) have abstained from smoking for at least 30 consecutive days during the pregnancy. Interviews are being conducted with a total of 60 adolescent participants, with some participants selected for follow-up interviews. Participants are selected based on evolving theoretical sampling considerations, but all will fall within the birth status range of three months pre-delivery to twelve months postpartum. We also will conduct four focus groups, two with adolescents and two with adult professionals. We will share our developing theory with these participants and facilitate constructive conversations in which they respond to and critique our work, and offer confirming or differing interpretations of our data.

Data management and analysis occur in coordination with data collection throughout the course of the study, and are enhanced by the use of ATLAS/ti qualitative analysis software. Our primary analytic activities consist of: (1) interview transcription, (2) open coding, (3) axial and selective coding, (4) process analysis, and (5) validation of the theoretical scheme. The specialized tools of microanalysis and memos and diagrams are used extensively.

We expect the proposed study to provide a key component of the inceptive theory development and knowledge-building needed in the understudied area of smoking cessation, maintenance, and relapse among pregnant and postpartum adolescents. The resulting knowledge should stimulate further research, as well as development and evaluation of interventions.

Title: The Alabama Tobacco Free Families Program
Principal Investigator: Crawford, Myra
Institution: University of Alabama at Birmingham, Birmingham, AL
Funding Agency: National Cancer Institute
Project ID: CA86311
Project Funding Period: 4 August 2000 – 30 June 2004

Abstract: The objective of the Alabama Tobacco Free Families (ATOFF) Program, a multi-component, multi-channel health communications and policy change program, is to reduce the smoking prevalence rate among a representative sample of pregnant females whose maternity care is supported by Medicaid. This will be achieved by reducing the rate of females of childbearing age in eight targeted counties by changes in social norms. The proposed study is an extension of two decades of public health education studies conducted by the University of Alabama at Birmingham (UAB) tobacco research team in partnership with the ADPH's Bureau of Family Health Services (BFHS). ATOFF will expand this partnership to include the ADPH Bureau of Health Promotion and Information. It is designed to enhance the capacity of the state's Tobacco Use Prevention and Control Program (TUPC), funded by CDC in 1999. UAB and ADPH will implement statewide and local partnerships targeting females of childbearing age to

be tobacco-free prior to and during pregnancy. ATOFF will be evaluated using a time series design and analysis with multiple, quarterly baseline and follow-up measures of prevalence across the eight targeted counties. Process and behavioral impact evaluations will be conducted. The four specific aims to be accomplished by the proposed study will be to 1.) Identify and select a representative sample of patients from a randomly selected sample of Medicaid-supported maternity care sites to serve as the ATOFF clinic population, and to recruit a representative sample of females (14-44) to participate in a telephone-based survey to serve as the ATOFF community cohort; 2.) Develop and implement a multi-component, multi-channel program focused on females of childbearing age and their families in eight target counties and consisting of (a) a mass media-health communications component, (b) a community organization component, and (c) a professional practice component; 3.) Document the implementation success (process evaluation) of the media messages and community initiatives to change beliefs, behaviors, and social norms related to tobacco use among the samples of females in Aim number 1 by conducting clinical and community assessments in Years 01, 02, 03 and 04; and 4.) Document, by self-reports and saliva continine tests, the effectiveness (impact evaluation) of ATOFF's program to reduce the prevalence among the clinic population at entry (first visit) into Medicaid maternity care, and by self-report via telephone of the females in the community population.

Title: Smoking Research with Incarcerated Females
Principal Investigator: Cropsey, Karen L.
Institution: Virginia Commonwealth University, Richmond, VA
Funding Agency: National Institute on Drug Abuse
Project ID: DA015774
Project Funding Period: 30 September 2002 – 31 August 2007

Abstract: The purpose of this application for a 5-year Mentored Patient-Oriented Research Career Development Award (K23) on smoking among incarcerated females is to conduct research and training activities to advance the candidate's development as an independent clinical researcher. This includes formal classwork pertaining to research design, biostatistics, and ethics along with conference attendance and meetings with mentors. The proposed research plan includes two studies that build upon each other in the area of smoking among female prisoners. The first study is cross-sectional and is designed to investigate the smoking behavior of incarcerated females. In addition, this study will examine differences between smokers, ex-smokers, and non-smokers on measures of substance abuse and personality, with consideration to other key covariables such as criminal history, medical problems, readiness to change, and Axis I pathology as possibly differentiating between the three groups. The second study will be a clinical trial using Hall et al. 's (1994) Mood Management group smoking cessation intervention combined with nicotine patch (or no patch). The intervention group will be compared to a wait-list control group who will receive the treatment six months later. It is expected that women who successfully complete the intervention will have higher smoking cessation rates than wait-list controls. Further, it is hypothesized that women with substance abuse and psychiatric comorbidity will have poorer outcomes than those without comorbidity. These projects should add significant information to the literature which is currently devoid of research related to smoking and female prisoners. This is particularly relevant now as it has been shown that women may have more difficulty with quitting smoking than men and may also have additional concerns related to smoking (e.g., smoking as weight management) that influence their success. Testing effective smoking cessation interventions with this underserved and understudied population is urgently needed as the medical costs associated with treating prisoners currently accounts for 11% of the Department of Corrections' budget and is expected to double over the next 10 years. Overall, these projects will provide experiences necessary for the candidate to develop an independent research program focusing on effective smoking interventions for incarcerated individuals.

Title: Pediatric Smoking Cessation Study
Principal Investigator: Curry, Susan J.
Institution: Center for Health Studies, Seattle, WA
Funding Agency: National Heart, Lung, and Blood Institute
Project ID: HL056772
Project Funding Period: 1 July 1997 – 30 June 2001

Abstract: In this revised application the investigators propose to recruit 500 female smokers from two low-income urban pediatric clinics. The first aim of the study is to conduct a randomized trial comparing usual care to a smoking cessation intervention consisting of a brief motivational message from a pediatric health care provider; self-help materials developed specifically for low literacy, low income populations; a 10 to 15 minute motivational interview with a specially-trained nurse at the pediatric clinic; and three personal follow-up contacts. The primary endpoint is smoking prevalence at a 12 month follow-up. Secondary endpoints include use of the self-help materials, serious quit attempts, and short and long-term abstinence. A second aim is to conduct a prospective, longitudinal assessment of factors associated with smoking cessation in the target population. For this aim, at baseline and at three and 12 months, a variety of process variables are to be measured, including knowledge and attitudes about smoking and health, expectations and concerns about weight and weight gain following smoking cessation, motivation regarding smoking cessation, alcohol and other drug use, stress, depression, partner and household-member smoking status, and health events of the child. The investigators plan to examine the degree to which these variables predict changes in smoking status, whether time-related changes in these variables are associated with change in smoking status, and the extent to which these variables moderate the intervention effects.

Title: Tobacco: Prenatal Effects and Adolescent Use
Principal Investigator: Day, Nancy L.
Institution: University of Pittsburgh at Pittsburgh, Pittsburgh, PA
Funding Agency: National Institute of Child Health and Human Development
Project ID: HD036890
Project Funding Period: 3 September 1998 – 31 May 2003

Abstract: The Maternal Health Practices and Child Development Project is a prospective study of the effects of prenatal tobacco exposure on the offspring of 755 women. We have identified significant effects of prenatal tobacco exposure on the offsprings' development of the central nervous system and on delinquent behavior and peer problems. At 10 years of age, the children have begun to experiment with tobacco and other substances. These children were more depressed and anxious, they had more attention problems, aggression, and delinquency. We will assess the long-term effects of mental and physical development, temperament, psychological status, activity levels, academic performance, behavior problems, the environment, and prenatal exposure on the adolescents' substance use at age 14 and 16 and on the development of tobacco use between the ages of 14 and 16. No prior study has been able to explore the predictors of adolescent tobacco use across time, from birth to adolescence. The cohort is a general population sample of low income women selected from a prenatal clinic. Half the women are Caucasian, half are African-American. We have assessed these mothers and their children at prenatal months 4 and 7, delivery, 8 and 18 months, 3, 6, and 10 years. We have an exceptional follow-up rate of 91% at 10 years.

Title: Breast Cancer and the Environment on Long Island
Principal Investigator: Gammon, Marilie
Institution: University of North Carolina Chapel Hill, Chapel Hill, NC
Funding Agency: National Cancer Institute
Project ID: CA66572
Project Funding Period: 8 August 1995 – 31 July 2005

Abstract: This continuation proposes to follow-up 1,508 case women newly diagnosed with breast cancer who are participants in an ongoing population-based, case-control study of breast cancer among women on Long Island. The primary aims of the ongoing parent case-control study are to determine whether risk of developing breast cancer is increased among women with higher levels of serum organochlorine compounds, including DDT and PCBs, or higher levels of polycyclic aromatic hydrocarbons, assessed by PAH-DNA levels in blood samples. The proposed continuation will follow-up the case women 3- and 5-years after diagnosis of the primary breast cancer to identity environmental factors that affect the risk of disease-free and overall survival, including (1) serum levels of DDT and PCBs, and PAH-DNA adducts based on blood samples collected at the parent case-control interview; and (2) cigarette smoking, physical activity, hormone replacement therapy, changes in weight as an adult, alcohol diet, and other factors assessed by structured questionnaire during the parent case-control interview. An additional aim is to explore whether the survival risk associated with these potential environmental risk factors is modified by known prognostic indicators in the tumor, including p53 and HER-2/neu. During the 3- and 5-year follow-up periods, medical treatment and outcomes (recurrence, second primary) will be assessed by telephone interview with the subject and by checking with physicians and medical records. Mortality will be determined by cross-checking the National Death Index, and by contacting next of kin and physicians. For the parent study, blood samples were successfully obtained for 1,087 case women and assays of DDT/PCBs and PAH-DNA adducts will be completed as planned for 643 and 577 cases, respectively. Blood samples for the remaining 444 and 320 case women, respectively, with sufficient blood volume will be assayed for these environmental compound as part of the proposed study. Assays for HER2/neu overexpression in case tumor tissue, assessed by immunohistochemisty, will be conducted for the proposed follow-up; funding for the immunohistochemical assays of p53 expression has already been obtained. Standard statistical techniques for the analysis of cohort data will be used to determine the risk of disease-free survival and overall survival, at the 3- and 5-year follow-up periods, associated with higher levels of environmental factors, with adjustments made for breast cancer treatment, breast tumor characteristics, and other clinical predictors of survival. Potential subgroup effects, with cases partitioned on p53 and HER-2/neu expression, the relation between environmental factors on breast cancer survival will be explored, where possible.

Title: Smoking, Estrogen and Cardiovascular Health in Women
Principal Investigator: Girdler, Susan S.
Institution: University of North Carolina, Chapel Hill, NC
Funding Agency: National Heart, Lung, and Blood Institute
Project ID: HL056144
Project Funding Period: 1 February 1997 – 31 January 2002

Abstract: Although epidemiological data indicate that the postmenopausal use of estrogen is associated with significant reductions in risk for coronary mortality, analyses of these data separately by smoking status reveal that the protective effects of hormone replacement therapy (HRT) may be eliminated in women smokers. Alterations in the hepatic metabolism of estrogen have been demonstrated in female smokers and this may be the mechanism rendering oral estrogen ineffective is postmenopausal smokers. Thus, the primary purpose of this study is to examine the differential effectiveness of transdermally administered estrogen (plus progesterone)

versus orally administered estrogen (plus progesterone) in 108 postmenopausal women smokers. A secondary goal of this study is to insure the inclusion of an undeserved population of women, thus one half of the investigators~ sample will represent postmenopausal women smokers residing in rural North Carolina, yielding a more diverse study population in areas of socioeconomics as well as cultural and social factors. Using a randomized, placebo controlled trial, each will be initially tested for cardiovascular stress reactivity, including cardiac output and total peripheral resistance, for beta-adrenergic receptor responsivity and for measures of blood flow and vascular hypertrophy and resistance. Then, women will be randomly assigned to either 4 months of transdermal estrogen plus progesterone (n=36), or 4 months of transdermal or oral placebo (n=36). Each will be retested at the end of this intervention period. Since transdermal estrogen delivery avoids the hepatic "first-pass" effect, the investigators hypothesize that transdermal estrogen will be significantly more effective for smokers in reducing vascular tone, increasing beta-adrenergic receptor responsivity and reducing blood pressure than oral administration. Thus, this study is expected to have clinical implications for effective hormone treatment in women smokers.

Title: Smoking and Lifestyle Risk Factors for Premenstrual Changes
Principal Investigator: Gold, Ellen
Institution: University of California, Davis, CA
Funding Agency: California Tobacco-Related Disease Research Program
Project ID: 7RT-0105
Project Funding Period: 1 July 1998 – 31 December 2001

Abstract: Premenstrual symptoms are an important health problem among women of reproductive age. Approximately 50% of women experience premenstrual symptoms at some time in their lives. In this proposed project, we plan to investigate the relationship between smoking and premenstrual symptoms.

Active and passive smoking pose unique but preventable health risks to women. Exposure to tobacco smoke is known to affect reproductive hormones in women. Since these hormones are likely to play a role in causing premenstrual symptoms, it is plausible that smoking may increase the frequency and severity of symptoms. Some previous studies suggest that smoking may worsen premenstrual symptoms, however, results from other studies do not confirm these findings. Passive smoking has not been investigated as a risk factor for premenstrual symptoms, but may also increase the frequency and severity of symptoms.

We plan to conduct a study that will examine the effects of active smoking and passive smoke exposure to premenstrual symptoms. Two groups of women, between the ages of 20 and 39 will be studied to investigate the role of active and passive exposure to smoke and premenstrual symptoms. The first group of women will be recruited from Kaiser Permanente Medical Care Program in the Sacramento area. These women will be asked to participate in recording their symptoms and other habits and activities in a daily diary. Daily records over several menstrual cycles are important for accurate diagnosis of premenstrual symptoms. We will also conduct a secondary analysis of data previously collected in a study of reproductive health among women in the Semiconductor Health Study (SHS), including six premenstrual symptoms, daily smoking, passive smoke exposure and cotinine levels collected prospectively over a mean of 5 menstrual cycles.

A well-designed epidemiologic study of the effects of active and passive smoking on PMC will add much to our knowledge of the health consequences of active and passive exposure to smoke in reproductive age women. Additionally, the results will inform current prevention and treatment strategies for premenstrual symptoms.

Title: "Smoke In My Eyes" A Qualitative Study of Young Women and Cigarette Smoking
Principal Investigator: Haines, Rebecca J.
Institution: University of Toronto, Toronto, ON
Funding Agency: National Cancer Institute of Canada
Project ID: Not available
Project Funding Period: Not available

Abstract: In recent years, it has been widely recognized that a focus on gender issues is of central importance to research on youth and tobacco control, as a result of statistical data demonstrating the higher and sustained rates of cigarette smoking among female teenagers in western nations including Canada. To the extent that quantitative approaches have dominated past studies it has been acknowledged that researchers have yet to account for the role of gender as it influences smoking status. Despite the fact that the knowledge-base on female adolescent smoking has expanded considerably during the past decade, there are still major gaps in the research as to why young women initiate smoking, and relatively little is known about the roles and functions smoking plays within their everyday lives.

Recent qualitative research has demonstrated that researchers must address young people's social representations of smoking, constructed through peer interactions. For young women, smoking behaviour contains powerful cultural meanings about adult femininity, sexuality and social status. Smoking also fulfills a range of functions for young women, in the context of home, school, and leisure settings, and during the critical period of transition to the labour market. Additionally, it has been suggested that there are unique aspects of female peer culture and social groupings that determine smoking behaviour. While this research has significantly advanced the qualitative understanding of young women's smoking behaviour, for the most part past studies have serious limitations as they position qualitative findings as merely "supplemental" to existing quantitative evidence, and have yet to use these insights to the construct an alternative theoretical paradigm that would guide new smoking prevention strategies.

To address these gaps in Canadian tobacco control research, I plan to apply a critical social science perspective to an analysis of the contextual settings and cultural meanings of young women's cigarette smoking. Crucial to the aims of my project, this approach is well-positioned to address how smoking prevention strategies focus on young women as an "at-risk" group, but neglect the meaning of smoking within the context of adolescent life-worlds. My approach will draw from the work of Pierre Bourdieu, and the insights that his theoretical framework can offer. This stance ties together structure (i.e. 'the macro') and agency (i.e. 'the micro'), through viewing day-to-day health practices as a product of an individual's social location or habitus. The framework is well-suited to a qualitative understanding of how the meanings and functions of tobacco use can differ according to habitus or the "taste-classes" which inform young women's everyday health and collective lifestyle practices.

My research sample will be drawn from diverse, low-income communities in Toronto. Through an analysis of the everyday social contexts in which smoking takes place, my research will explore what smoking means to young women "in their own words" and life-worlds, and how "smoking identities" are situated within the context of family, peer, and social interactions - mediated by variables such as gender, class, ethnoracial group, and school factors. My approach will focus on the roles and functions of smoking within young women's lives across three domains/questions: 1) Micro (self/subjective): How do young women view themselves and others who smoke? What are the roles and functions of smoking at the level of the self? 2) Meso (social/peer relationships): How are smoking identities connected to young women's dating, sexuality, and romantic relationships? What is the role of interactions with existing or potential partners in influencing smoking status? 3) Macro (socio-structural): What are the

contextual dynamics of teen smoking within public and private social spaces? How is smoking behaviour informed by the broader social class context of neighborhood and community?

In addition to qualitative interviewing, the project design includes use of the Photovoice visual methodology. This approach will provide young women with an opportunity to construct and interpret self-images of tobacco use. These research findings will have implications for both the conceptualization of young women's smoking as a health problem and for the design of gender and age-specific tobacco policies and prevention programs. In closing, the spirit of my project is articulated quite eloquently by Wearing et al. who argue that, "young women require strategies or resources to fulfill their need for pleasure and to resist the patriarchal society in which they find themselves, but they have a right to choose their experiences without damaging their health."

Title: Annual Medicaid Surveys to Medicaid and ESPDT Tobacco Dependence Treatment Coverage
Principal Investigator: Halprin, Helen
Institution: University of California at Berkeley, Berkeley, CA
Funding Agency: Not available
Project ID: Not available
Project Funding Period: Not available

Abstract: The purpose of this survey, which dates back to 2000, is to continue to collect comprehensive data in 2002 and 2003 on state Medicaid for tobacco dependence treatments with special focus on coverage of treatments appropriate for pregnant smokers and on state activities to stimulate consumer demand for these treatments. The project will be considered successful if it generates results and articles that document trends in coverage and identifies potentially successful strategies for boosting consumer use of and demand for covered services.

Title: Cigarette Smoking and Post-Partum Breast Cancer Risk
Principal Investigator: Hsieh, Chung-Cheng
Institution: University of Massachusetts Medical School, Worcester, MA
Funding Agency: National Cancer Institute
Project ID: CA88891
Project Funding Period: 13 September 2001 – 31 July 2003

Abstract: Cigarette smoking has been hypothesized to have both carcinogenic and anti-estrogenic effects that may offset each other to produce no overall effect on breast cancer risk. A full-term pregnancy also appears to have opposing effects on breast cancer risk: 1) an adverse effect shortly after delivery and 2) a beneficial effect over time. If the transient increase risk of breast cancer is due to the growth-enhancing consequences of elevated pregnancy hormones on already initiated cells, then cigarette smoking during pregnancy, through its anti-estrogenic effect, can be expected to dampen this risk. Conversely, with its carcinogenic effect, cigarette smoking during pregnancy might also reduce the long-term protection against breast cancer afforded by a full-term pregnancy. We propose to examine the effects of cigarette smoking on the risk of postpartum breast cancer occurring at different intervals following delivery. We will use a database that links together the Swedish Medical Birth Register, National Cancer Register, and Register of Causes of Death. Members of the study population are all mothers who delivered a liveborn or stillborn baby after a gestation period of at least 28 weeks in Sweden between 1973 and 1998. We have adopted a nested case-control sampling design to allow more efficient analyses. Cases are approximately 3,500 women who had one or more childbirths between 1973 and 1998 and who had a breast cancer diagnosis during the same period. For each

case subject, five controls who were born in the same year as the index case, were alive at the date of the diagnosis for the index case, and had not been diagnosed with breast cancer by that date, will be randomly selected from the source population. Logistic regression analysis will be applied to examine cigarette smoking as a risk determinant for postpartum breast cancer adjusting for age, parity, and age at first full-term pregnancy.

Title: Prevention of Tobacco Use in Rural Ethnic American Youth
Principal Investigator: Kelly, Kathleen
Institution: Colorado State University, Fort Collins, CO
Funding Agency: National Institute on Drug Abuse
Project ID: DA007074
Project Funding Period: Not available

Abstract: Project IV: This project will determine whether localized media campaigns aimed at rural 7th and 8th grade Mexican American and White non-Hispanic students can influence their attitudes toward tobacco use and the subsequent use of tobacco (smoking cigarettes and smokeless tobacco). The primary target will be young women, where smoking produces potentially greater damage due to harmful effects to the fetus, newborn, and infant among pregnant smoking females. However, media messages will not be focused solely on females, and effects on males are expected such as reduction of smokeless tobacco. An effective and relatively low cost media campaign would be a valuable asset for rural communities that usually do not have the financial and technical resources for costly prevention efforts. However, typical media campaigns may not be useful for rural communities who may view their problems as more limited or unique compared to urban environments. The media campaigns that will be tested, therefore, will be localized to include local smoking data, identification with local situations, and images of local landmarks. There is evidence that prevention efforts may be enhanced by the use of peers; therefore, the effect of the media campaign alone (MEDIA) will be compared with the effect of the media campaign when local peers are added as an integral part of the media campaign (MEDIA+). In these MEDIA+ communities, a team of local peers (11th grade women) will be trained to present and monitor the media campaign. In addition, they will make radio spots, be names in news releases, and will be included in local visual references. The addition of this social influence from older females will be tested for its ability to reduce cigarette use and smokeless tobacco among younger females and males, over and above effects obtained in the MEDIA condition. Both experimental conditions will be compared to a control condition in which pre- and post assessments are obtained, with no intervention. Media components that can be localized to rural ethnic minority communities have been developed and tested, and the training program for peer involvement in media campaigns has been tested by the investigators. The programs are designed so that, if successful, technology transfer through extension services or 4H organizations would be feasible.

Title: Maternal Caffeine Use and Pregnancy Outcome
Principal Investigator: Klebanoff, Mark A.
Institution: National Institute of Child Health and Human Development, Bethesda, MD
Funding Agency: National Institute of Child Health and Human Development
Project ID: HD002520
Project Funding Period: Not available

Abstract: The role of maternal caffeine consumption in the pathogenesis of adverse pregnancy outcomes is controversial. Several studies have found that women who consume caffeine are at increased risk of spontaneous abortion and fetal growth restriction compared to non-users. However, other equally well-done studies have found no harmful effects of caffeine

consumption. In addition, several studies have reported that caffeine is harmful only among women who smoke. All previous studies of this question have relied on maternally-reported caffeine use; no studies have employed a biomarker for caffeine. This project first validated the use of serum caffeine and its metabolites as a marker for caffeine intake, and then studied these serum markers as a risk factor for adverse pregnancy outcome. In the validation study, serum paraxanthine was determined to be an acceptable marker for caffeine intake. As part of this project, the concentration of cotinine, a metabolite of nicotine, was assayed in the serum of approximately 450 of the women and the results compared to their reported cigarette smoking. Women were found to be very honest in reporting whether they smoked, but their serum concentration of cotinine correlated only moderately with the amount smoked. This was the case for two separate populations of women 30 years apart. In the main part of this project, the serum concentration of paraxanthine, caffeine's primary metabolite, was compared between 591 women experiencing a spontaneous abortion and 2558 women with live births who had serum drawn at the same time of pregnancy as the women with spontaneous loss. In addition, the association between reduced fetal growth and third-trimester paraxanthine serum concentrations was evaluated among these 2515 women. The mean concentration of paraxanthine was higher in women experiencing a spontaneous abortion than women experiencing a live birth (752 vs 583 ng/ml). Further analysis revealed that this may be explained by a few women with very high concentrations of paraxanthine. The odds ratio for serum paraxanthine concentration greater than the 95th percentile was 1.86 ($p<0.01$), but intermediate concentrations were not associated with an elevated risk of spontaneous abortion. These results suggest that moderate caffeine consumption during pregnancy does not increase the risk of spontaneous abortion. Among the control women, 2515 provided a third-trimester serum sample. The mean paraxanthine concentration in this sample was higher among women who subsequently gave birth to a small-for-gestational age (SGA) infant (754 ng/ml) than among women who gave birth to appropriately-grown infants (654 ng/ml, $p=0.03$). There was no statistically significant association between paraxanthine and SGA birth among non-smokers ($p=0.48$). Among smokers, increasing serum paraxanthine concentration was associated with an increased risk of SGA birth ($p=0.03$).

Title: Explaining Racial Differences in Smoking
Principal Investigator: Landrine, Hope
Institution: San Diego State University Foundation, San Diego, CA
Funding Agency: California Tobacco-Related Disease Research Program
Project ID: 8RT-0013A
Project Funding Period: 1 July 1999 – 30 June 2002

Abstract: Studies indicate that the prevalence of cigarette smoking among Black adults (30-56%) far exceeds that of White adults (20-27%) even when controlling for income and education (socioeconomic status, SES). Blacks also have lower rates of quitting smoking and higher levels of nicotine dependence than Whites, with these also transcending SES. Consequently, Blacks continue to suffer smoking-related diseases and death at a significantly higher rate than Whites. In addition, Blacks have the lowest rate of smoking as adolescents but the highest rate of smoking as adults. This pattern is not an artifact of differences in smoking among Blacks born in different generations but instead suggests that something happens to Blacks at ages 18-24 that leads many to initiate smoking at those late ages, and to then be unable to quit. Although these racial differences are well-known, the explanation for them remains unknown and unexamined. Understanding the factors underlying these differences is crucial to tobacco control for the state's ethnically diverse population however, and so investigating Black smoking and racial differences in smoking is one of the five challenges ahead for TRDRP. This project responds to that challenge by examining one variable that might explain these differences racial discrimination. Our preliminary studies revealed that racial discrimination is a stronger predictor of smoking among Black adults than all SES variables, and revealed that only Blacks

who experience high discrimination have higher smoking prevalence rates than Whites. These initial data suggest that racial discrimination may be a sociocultural stressor unique to Blacks that many Blacks cope with by smoking. What happens to Blacks at ages 18-24 that leads many to initiate smoking may be the onset of racial discrimination when they become adults and enter a hostile White work-world. Hence, this project entails a survey on smoking and racial discrimination mailed to a random sample of 4,000 Black and 2,000 White California adults. We will test the hypothesis that racial discrimination accounts for Black-White differences in 1) smoking prevalence; 2) age of initiation of smoking; 3) degree of nicotine addiction, 4) difficulty quitting smoking; and 5) stage of readiness to quit smoking. We theorize that Blacks who experience frequent discrimination will differ from Whites on all five variables, whereas Blacks who experience infrequent discrimination will not. We further hypothesize that the age at which Blacks began their first full-time job will be a strong predictor of the age at which they initiated smoking. Our data then can be used to design new, culturally-tailored smoking prevention and cessation programs for Blacks that might reduce the high cost of Black tobacco use in the state. Simultaneously, we will examine the effects of various incentives and survey manipulations on response rates from Blacks and Whites, and provide data on the best procedures for getting Blacks to return surveys about their tobacco use.

Title: Smoking & Genetic Interaction in Breast Cancer Etiology
Principal Investigator: Lash, Timothy L.
Institution: Boston University, Boston, MA
Funding Agency: National Cancer Institute
Project ID: CA087724
Project Funding Period: 4 August 2000 – 31 July 2004

Abstract: The candidate, Dr. Timothy Lash, has been committed to cancer research since the beginning of his career. He studied molecular biology, including tumor biology, as an undergraduate at the Massachusetts Institute of Technology. Upon graduating, he worked as a consultant in environmental health on projects that required dose-response assessment of environmental and occupational carcinogens. Simultaneously, he completed a Masters of Public Health and the coursework for a Doctorate of Science in Epidemiology at the Boston University School of Public Health. The curricula for these degrees included many courses directly relevant to cancer prevention and control. He has worked on research projects involving breast cancer etiology, therapy, and side-effects of therapy under the direction of the proposed mentor (Dr. Rebecca Silliman) and the proposed co-mentor (Dr. Ann Aschengrau). Dr. Lash is currently an Assistant Professor of Epidemiology at the Boston University School of Public Health. He spends 75 percent of his effort on research projects directly relevant to the proposed research plan. For example, he is the project director on a study of adjuvant tamoxifen therapy in old age. Dr. Silliman is the Principal Investigator of the project, which will provide the cohort of breast cancer patients eligible for the second proposed study. Dr. Lash also works with Dr. Aschengrau, the proposed co-mentor, on analyses of the effect of active and passive smoking on breast cancer occurrence. The most recent case-control data set in which these analyses have been performed will provide the subjects eligible for the first proposed study. The environment at the Boston University Medical Center is ideally suited for accomplishing the career development goals of this application. The research plan proposes two studies of the interaction between tobacco smoke and NAT2 or COMT genetic polymorphisms. The association between tobacco smoke and breast cancer risk is complicated. It has been hypothesized that tobacco smoke exposure may both cause and prevent breast cancer, depending on the timing of exposure relative to reproductive milestones. The interaction with tobacco smoke exposure with the gene polymorphisms will allow tests of these hypotheses. The first study would collect buccal swabs from eligible participants of the second Cape Cod case-control study (Dr. Aschengrau was PI). Existing interview information would be combined with the polymorphism data extracted from

the swabs to assess the interaction between the polymorphisms and tobacco smoke subgroups under a biologically based etiologic model of breast carcinogenesis. The second study would collect buccal swabs from participants in the study of adjuvant tamoxifen therapy (Dr. Silliman PI). A similar analytic plan would be conducted, but with a case-only design.

Title: Effects of Smokeless Tobacco Use on Pregnancy
Principal Investigator: Levine, Richard J.
Institution: National Institute of Child Health and Human Development, Bethesda, MD
Funding Agency: National Institute of Child Health and Human Development
Project ID: HD008745
Project Funding Period: Not available

Abstract: Smoking cigarettes during pregnancy adversely affects pregnancy outcomes. Smokeless tobacco is thought to be a safer alternative to smoking because combustion products are not generated. We are studying the effects of smokeless tobacco on pregnancy outcomes in a retrospective cohort study of women in the Swedish Medical Birth Register. We will compare pregnancy outcomes of those who used snuff daily, but did not smoke cigarettes; those who smoked cigarettes daily, but did not use snuff; and those who used neither product. Associations between tobacco exposure and birth weight, preterm delivery, and preeclampsia will be examined.

Title: Development of Substance Use in Girls
Principal Investigator: Loeber, Rolf
Institution: University of Pittsburgh at Pittsburgh, Pittsburgh, PA
Funding Agency: National Institute on Drug Abuse
Project ID: DA012237
Project Funding Period: 15 February 2000 – 31 January 2005

Abstract: The long-term development of substance use and abuse in girls and women are poorly understood. In at least two ways, females compared to males appear more vulnerable to substance abuse and dependence: a speedier development from onset of use to abuse, and a higher propensity to develop comorbid conditions. In addition, females and males with an early onset of substance use are more likely to become substance abusers. The main goal of the proposed research is to investigate the early phases in this development process. Specifically, we propose to study precursors to the onset of early substance use (i.e., mainly alcohol and tobacco use), the transition to onset of use, and the transition to regular use in an inner-city community sample of 2,484 preadolescent girls. The girls, together with their parent and school teacher, will be assessed yearly and will be followed up over a period of five years. The sample will be made up of approximately 50 percent African-American and 50 percent Caucasian girls. The proposed study will be a substudy linked to and benefitting from the NIMH-funded study on the same girls, which has as its main object the study of the development of antisocial and delinquent behavior. The present proposal has three foci: 1). To identify the developmental precursors to the onset and regular use of substances; 2). To examine behavior problems which interact with early substance use; and 3) To elucidate the risk and protective factors predictive of the precursors of early substance use and predictive of the early use. The proposed study will be the foundation upon which follow-ups beyond the current five-year period can be built in order to better understand the long-term antecedents, risk and protective factors for substance abuse and dependence in females.

Title: Smoking During Pregnancy and Breast Cancer
Principal Investigator: Mueller, Beth A.
Institution: Fred Hutchinson Cancer Research Center, Seattle, WA
Funding Agency: National Cancer Institute
Project ID: CA096434
Project Funding Period: 1 April 2002 – 31 March 2004

Abstract: Although cigarette smoking has been linked to the etiology of several cancers, the relationship between smoking and breast cancer remains unclear. A woman's first pregnancy represents a period of rapid breast cell growth and differentiation and thus, a period of vulnerability to the influences of smoking or other exposures. During pregnancy, tobacco mutagens and free radical formation caused by smoking may affect rapidly growing breast tissue or act synergistically with elevated estrogens to increase breast cancer risk. Because breast tissue is less differentiated at the onset of first pregnancy, it may be more susceptible to mutagenesis than in subsequent pregnancies. The proposed population-based case-control study will utilize linked vital statistics - cancer registry data to test the hypothesis that cigarette smoking during first pregnancy is related to the risk of breast cancer. The specific aims of this study are to: 1)measure the risk of breast cancer associated with smoking during a first pregnancy relative to not smoking during the first pregnancy, and 2)evaluate possible differences in the relation between smoking during first pregnancy and breast cancer by tumor estrogen receptor status. To the extent possible, the study will also evaluate a possible dose response relation between the average number of cigarettes smoked per day during first pregnancy and breast cancer risk, and measure possible differences in the relation between smoking during first pregnancy and breast cancer risk by subject characteristics such as parity at the time of diagnosis and pre-pregnancy weight. This study will be among the first to examine smoking during first pregnancy and breast cancer risk. The clarification of the role of smoking during first pregnancy in breast cancer development will aid in understanding the complex etiology of breast cancer, and may identify a specific preventive strategy to help reduce breast cancer incidence.

Title: Mapping the Natural History of Smoking and Smoking Cessation Among Pregnant Women
Principal Investigator: Muramoto, Myra
Institution: The University of Arizona, College of Medicine, AZ
Funding Agency: Robert Wood Johnson Foundation
Project ID: 040672
Project Funding Period: 1 October 2000 – 30 September 2003

Abstract: Purpose: (1) To document the natural history of smoking cessation and relapse as a dynamic process influenced by differing sets of variables over time and in response to life transitions or events, e.g. delivery, motherhood, stress, depression. (2) To examine the harm reduction goals, strategies, and practices of pregnant and postpartum women who reduce their smoking intensity but not quit, and how this changes over time. (3) To gain a better understanding of how social support networks affect a woman's ability to quit or reduce smoking during pregnancy and postpartum, with a particular focus on the extent to which patient characteristics such as age, ethnicity, gravity and parity, and breastfeeding status influence provider attitudes and characteristics. (4) To document the cessation treatment practices of prenatal and maternal child health providers.

Research Design: A longitudinal ethnographic study of smoking and quitting behavior among pregnant/postpartum women who currently smoke or have quit during pregnancy. The study will apply both qualitative and quantitative methods. Subjects will be interviewed a total of nine times from the time of the study entry until six months postpartum. Each pregnant woman will be interviewed three times prior to delivery and monthly for six months postpartum. Prepartum

interviews will be in-person and postpartum interviews will consist of three in-person interviews and three telephone interviews. At the completion of the interviews, some subjects will participate in focus group sessions. In addition, this study will conduct focus groups with prenatal and maternal child health care practitioners.

Study Population: Sixty low-income pregnant women from WIC clinics in Tucson and in Pima, Pinal and Santa Cruz counties will be enrolled. Forty of the sixty women enrolled will be Caucasians and twenty will be Hispanics. A second target population (for focus groups) is prenatal and maternal child healthcare providers.

Outcome Measures: Self reported abstinence will be verified by salivary cotinine.

Title: Smoking Interventions for Low Income Pregnant Women
Principal Investigator: Ockene, Judith K.
Institution: Univ of Massachusetts Medical School Worcester, Worcester, MA
Funding Agency: National Heart, Lung, and Blood Institute
Project ID: HL051319
Project Funding Period: 1 March 1996 – 31 August 2001

Abstract: This five year Demonstration and Education project, the Provider-Delivered Smoking Intervention Project Plus (PDSIP+), will implement and evaluate the effect of a multicomponent intervention on the smoking cessation and maintenance rates of culturally-diverse, socioeconomically-disadvantaged, pregnant women (Hispanic, Black American and Caucasian) enrolled in the Women, Infants and Children (WIC) supplemental nutrition program. Three provider channels will deliver the interventions: l) WlC nutritionists during pregnancy and postpartum; 2) obstetricians (OB) and clinic staffs during pregnancy; and 3) pediatricians (PED) and clinic staffs during postpartum. A time-efficient yet intensive patient-centered intervention protocol will be used. This intervention has been previously demonstrated to be efficacious when used by general internists and family practitioners with a general population of smokers, and to be usable by WIC nutritionists. Three paired Massachusetts WIC sites and their related OB and PED clinics within Community Health Centers will be randomized to special intervention (SI) or usual care (UC). SI sites will receive training in the patient-Centered intervention, and establish an office practice management system to support intervention, which includes a system for linking the three channels of intervention delivery. UC sites will receive no intervention. In each of the three SI sites, an organizational assessment will be completed, a Health Center Operations Board will be established to tailor implementation of the intervention in each site. Then each of the SI provider channels (WlC, OB and PED) will receive intervention training consisting of a structured group program with brief individual followup sessions. Written questionnaires will be done at baseline of SI and UC providers at post-training of SI providers, and at one year followup of both Sl and LC providers. Provider adherence to the intervention will be measured by patient exit interviews (WIC providers in SI and UC), chart audit (SI only) and retrospective patient report in patient interviews. Eligible pregnant women will have a baseline interview during their WlC enrollment visit. A brief assessment involving smoking status (with saliva cotinine validation of reported cessation), stage of change and report of provider intervention behavior will occur at ninth month of pregnancy, 3- and 9-months postpartum. A more comprehensive assessment will be conducted at l- and 6-months postpartum. Maintenance of cessation and overall non-smoking rates will be determined at each assessment point. The results of this study will demonstrate the effectiveness of a multicomponent program of linked providers, which is feasible and generalizable to other behaviors and other settings serving low-income, multicultural pregnant women.

Title: Nicotine Replacement Treatment for Pregnant Smokers
Principal Investigator: Oncken, Cheryl
Institution: University of Connecticut School of Medicine and Dentistry, Farmington, CT
Funding Agency: National Institute on Drug Abuse
Project ID: DA015167
Project Funding Period: 1 July 2002 – 31 March 2007

Abstract: Smoking during pregnancy is one of the most important modifiable causes of poor pregnancy outcomes in the United States. Unfortunately, the majority of women who smoke prior to pregnancy continue to smoke during pregnancy. Even with augmented behavioral interventions, smoking cessation rates in pregnancy trials rarely exceed 20 percent. These low quit rates may be due to inadequate treatment of the physical addiction to nicotine. Indeed, medications are first-line treatment for smoking treatment in non-pregnant smokers. However, little information is available on the safety or efficacy of medications to treat pregnant smokers. This proposal will examine the utility of one first-line medication, nicotine gum, as an aid to smoking cessation during pregnancy. The specific research aims of this project are: 1. To compare smoking cessation rates and smoking reduction among pregnant smokers who are randomized to receive 2 mg nicotine gum or a matching placebo; 2. To compare nicotine gum versus placebo on surrogate measures of maternal and fetal safety (i.e., overall nicotine and tobacco exposure), and birth weight at the time of delivery; 3. To examine which subjects benefit the most from the use of nicotine gum for smoking cessation during pregnancy. Subjects will be recruited from a prenatal clinic that serves primarily a low-income, minority population. Two hundred sixty-six pregnant smokers who smoke at least 5 cigarettes per day will be randomly assigned to receive a behavioral counseling intervention and either a 6-week course of 2 mg nicotine gum or placebo for smoking cessation followed by a 6-week taper. Primary outcome measures will be 7-day point prevalence cigarette abstinence, number of cigarettes smoked per day, saliva cotinine concentrations, and measures of tobacco exposure (i.e., carbon monoxide in exhaled air, and urine anabasine and anatabine) at 6 weeks after the quit date and at 32-34 weeks gestation. Birth weight will be obtained at the time of delivery. We hypothesize that 1. Pregnant smokers who are randomized to nicotine gum will have double the quit rates, and will reduce their smoking to a greater degree than subjects randomized to placebo; 2. Nicotine gum compared to placebo will reduce maternal cotinine levels, carboxyhemoglobin levels, and urine anabasine and anatabine levels. Birth weights will be higher in the offspring of subjects randomized to nicotine gum compared to placebo and will be negatively correlated with carbon monoxide and urinary alkaloids at 32-34 weeks gestation; 3. The odds of cigarette abstinence will be increased primarily in subjects who smoke at least 15 cigarettes per day.

Title: Health Effects of PAH & ETS in Minority Women & Newborns
Principal Investigator: Perera, Frederica P.
Institution: Columbia University Health Sciences OGC, New York, NY
Funding Agency: National Institute of Environmental Health Sciences
Project ID: ES008977
Project Funding Period: 1 August 1997 – 31 July 2002

Abstract: There is increasing evidence that people of color are disproportionately exposed to numerous environmental hazards, including hazardous air pollutants such as polycyclic aromatic hydrocarbons (PAH) and environmental tobacco smoke (ETS). The Washington Heights and Harlem neighborhoods in Manhattan are typical of other Hispanic and African American communities in that they are located in a large sprawling metropolitan area characterized by elevated air pollution. The incidence of low birth weight is higher among African Americans living in Central Harlem and Hispanics living in Washington Heights than in Caucasians in the U.S. Cancer rates are also higher in African Americans than in Caucasians. Environmental risks

to the developing infant are of particular concern, given the likelihood of increased susceptibility during this period. A molecular epidemiologic cohort study of African American and Hispanic mothers and newborns is proposed to investigate the role of PAH and ETS in procarcinogenic and developmental damage. A combination of personal monitoring, questionnaire and biomarkers in peripheral blood will be used to quantify individual exposure to the toxicants of concern. The biomarkers include PAH-DNA adducts in white blood cells (an indicator of PAH exposure and procarcinogenic genetic damage) and plasma cotinine (a metabolite of nicotine and internal dosimeter of ETS). Measures of development will be assessed in the infants at birth and at 6 and 12 months. The proposal is responsive to concerns about environmental justice and to the recommendation of the National Research Council that risk assessment and public health policy pay special attention to the protection of young infants and children.

Title: Patterns of Maternal Smoking During Pregnancy
Principal Investigator: Pickett, Kate E.
Institution: University of Chicago, Chicago, IL
Funding Agency: National Institute on Drug Abuse
Project ID: DA014334
Project Funding Period: 1 September 2001 – 31 May 2003

Abstract: Studies of maternal smoking during pregnancy have traditionally conceptualized it as a relatively stable behavior, based on the assumption that few changes will occur after the transition to pregnancy. Those few studies that have examined changes over the course of the pregnancy have examined them categorically (e.g., third trimester smoking or not). In contrast, we present preliminary evidence of substantial fluctuation in maternal smoking over the course of the pregnancy, including repeated changes in overall status (i.e., smoking or not) and in categorical status (e.g., light to moderate). While these data provide evidence of individual fluctuation, group patterns of maternal smoking during pregnancy have not been empirically identified. Lack of empirical knowledge about patterns of maternal smoking seriously impedes scientific progress for two reasons. First, prenatal exposure to cigarettes has serious consequences, including accruing evidence of long term consequences such as increased risk of disruptive behavior disorders. Identifying the role that maternal smoking plays in the etiology of complex, multifactorial child outcomes will require more precise specification of exposure. Second, prevailing methods of prenatal cessation intervention are frequently limited to the first prenatal visit. Classification of specific patterns of smoking behavior may inform the development of targeted interventions. The proposed project is designed to classify patterns of maternal smoking during pregnancy utilizing sophisticated methods of trajectory analysis. We propose to conduct secondary data analysis of the Maternal-Infant Smoking Study of East Boston (MISSEB), a prospective population-based study with repeated measures of maternal smoking throughout the course of the pregnancy (n=873). Group patterns of maternal smoking trajectories (e.g., late pregnancy relapse, cycling between cessation and relapse) will be modeled using a semi-parametric mixed-model approach. Specific aims of the project are to: (1) characterize patterns of maternal smoking during pregnancy, using both self-reported and biochemical measures of maternal smoking and, (2) examine the explanatory power of these patterns for predicting adverse perinatal outcomes.

Title: Adenocarinoma of the Lung in Women
Principal Investigator: Schwartz, Ann G.
Institution: Wayne State University, Detroit, MI
Funding Agency: National Cancer Institute
Project ID: CA087895
Project Funding Period: 13 June 2001 – 31 May 2006

Abstract: In 1998, 80,000 women in the US were diagnosed with lung cancer and incidence rates, particularly of adenocarcinoma, continue to increase among women. Many pieces of evidence suggest that there are gender differences in susceptibility to tobacco carcinogens. Several studies have shown that DNA adducts, p53 mutations, CYP1A1 expression in the lung, and GSTM1 null genotypes are more frequent in females than in males. Reasons for differential susceptibility by gender might be explained by variations in metabolic enzyme functioning or hormonal differences. Some of the same enzymes involved in the metabolism of carcinogens in tobacco smoke are involved in the metabolism of estrogen. The goals of the proposed study are two-fold. First, we will evaluate the role of tobacco smoke and estrogens in determining risk of adenocarcinoma of the lung among women. Secondly, we will evaluate the role of estrogen receptors and c-erbB-2 in lung tumors to further understand the pathways through which estrogen may be acting in the lung. The specific aims are: 1) To conduct a population-based case-control study of the contribution of tobacco exposure, estrogen use, and reproductive history in determining risk of adenocarcinoma of the lung in women. 716 cases will be identified through the Metropolitan Detroit Cancer Surveillance System of the Karmanos Cancer Institute (a SEER participant). An equal number of controls will be selected through random digit dialing. 2) To determine if genotype at the metabolic enzyme loci CYP1A1, CYP1B1, CYP17, CYP19, GSTM1, GSTP1, COMT, and NQO1 are associated with risk of adenocarcinoma of the lung in women. These enzymes are active in both the metabolism of tobacco smoke carcinogens and the synthesis and metabolism of estrogens. 3) To examine gene-gene and gene-environment interactions, focusing on tobacco and estrogen effects. 4) To determine estrogen receptor status (alpha and beta) and c-erbB-2 levels in the lung tumors of women with adenocarcinoma and evaluate risk associated with tobacco exposure, estrogen use, reproductive history, and genotype at metabolic enzyme loci by tumor characteristics. The proposed study represents a focused approach to defining the contribution of genes and environments in risk of adenocarcinoma of the lung in women. The interview component of the study will provide data about individually measured environmental risk factors. Genotypes have been chosen which impact on biologically effective dose of tobacco carcinogens and estrogens in the lung. The study of tumor characteristics will provide insight into mechanism of action. This large, population-based study should provide clues for important prevention and therapeutic strategies for lung cancer.

Title: Motivational Intervention for Pregnant Women Who Continue to Smoke After Receipt of Best Practice Cessation Services
Principal Investigator: Quinn, Virginia
Institution: Kaiser Foundation Research Institute, Oakland, CA
Funding Agency: Robert Wood Johnson Foundation
Project ID: 040539
Project Funding Period: 1 October 2000 – 30 September 2003

Abstract: Purpose: To develop and test a brief, multi-component, motivational intervention for delivery by ultrasound technicians to smokers presenting for their routine mid-pregnancy ultrasound.

Research Design: The proposed intervention will be tested using a historical usual care control group design. The control group will be impaneled in the first 7 months of recruitment. The

intervention group will be impaneled in the 7 months following implementation of the cessation program. Data from baseline and postpartum interviews will be used to adjust for confounding influences and to identify the predictors of cessation.

Study Population: 284 adult pregnant smokers will be recruited from the diverse membership of a large multi-specialty group model HMO.

Intervention (if appropriate): The intervention consists of 10 to 15 minutes of counseling and written materials tailored to smokers' stage of change and characteristics that put them at risk for continued smoking. Additionally, women will receive smoking-related health messages when presented with an ultrasound scan of their developing fetus. The intervention will be structured by the principles and techniques of motivational interviewing and provide cognitive/behavioral strategies for cessation. It will include previously identified elements of effective brief interventions.

Outcome Measures (If cessation or reduction, how defined): The primary dependent variable is biochemically confirmed abstinence in the 8th month of pregnancy.

Title: Motivational Interviewing to Prevent Postpartum Relapse
Principal Investigator: Quinn, Virginia
Institution: Kaiser Foundation Research Institute, Oakland, CA
Funding Agency: California Tobacco-Related Disease Research Program
Project ID: 6KT-0206
Project Funding Period: 1 July 1997 – 30 June 2001

Abstract: The goal of this study is to develop and test an innovative relapse prevention program for women who stop smoking during pregnancy. Pregnancy offers women one of the best opportunities to stop smoking. Nearly half of the women who were smoking prior to pregnancy take advantage of this time of change and quit smoking, mainly to protect the health of their unborn child. Unfortunately, rates of relapse after delivery are high with as many as 70% of the quitters returning to smoking within 6 months of delivery.

Cigarette smoking is associated with many serious illnesses, especially those related to heart and lung disease. Although smoking carries additional risks for women of reproductive age, more than 25% of US women between the ages of 18 and 44 continue to smoke. Postpartum relapse re-exposes women to the health dangers of smoking. Further harm is done by exposing infants and children to passive smoke. Numerous studies have documented increased rates of respiratory infections, including pneumonia, bronchitis, and ear infections. More recently, passive smoke has been implicated in Sudden Infant Death Syndrome.

To develop an effective program we will adapt the principles and techniques of motivational interviewing to the context of postpartum relapse. Motivational interviewing is a supportive, non-judgmental counseling style that appears to be especially useful with behaviors that are difficult to change. It helps clients weigh the benefits and costs of their behaviors. The counseling will be delivered over the telephone by trained health educators in 4 to 6 brief calls. The literature identifies the influence of powerful barriers to maintenance such as being around other smokers, having a partner who smokes, and lack of confidence in the ability to stay off cigarettes. Counselors will help women identify their personal threats to maintenance, including lack of motivation to stay off cigarettes, and will assist women in developing effective coping strategies. The content of the program will be developed from telephone interviews and focus groups conducted among white, black, and Latino women who quit smoking during pregnancy. Subjects will be recruited from the diverse population of Southern California Kaiser Permanente. The effectiveness of the motivational interviewing program will be measured by comparing the

bio-chemically confirmed 6-month postpartum abstinence rates among women who received the counseling program and women who did not. An effective postpartum relapse prevention program would make a significant contribution to the health of young women, their newborn infants, and other family members.

Title: Prenatal Smoking Cessation Relapse Prevention Trial
Principal Investigator: Quinn, Virginia
Institution: Kaiser Foundation Research Institute, Oakland, CA
Funding Agency: National Institute of Child Health and Human Development
Project ID: HD036719
Project Funding Period: 1 May 1999 – 30 April 2003

Abstract: Smoking during pregnancy exerts an independent, adverse effect upon numerous reproductive outcomes, and thus the reduction in the prevalence of prenatal smoking has been a national priority for the past decade. Approximately a quarter of US women smoke prior to becoming pregnant, with a third of these smokers quitting prior to the start of prenatal care - and are referred to as Spontaneous Quitters (SQs). Several studies have documented that at least 25 percent of SQs relapse prior to delivery, and therefore the health of the mother and fetus is once again jeopardized due to tobacco exposure during pregnancy. To date, randomized trials testing various interventions have failed to reduce prenatal relapse with this group. This study proposes to develop a telephone counseling relapse prevention program based on the principles of motivational interviewing to address the needs of this unique group of recent quitters. The theoretically-grounded program will be developed during a formative assessment period consisting of in-depth interviews and focus groups with a representative sample of SQs. The effectiveness of the intervention will be tested under conditions of typical clinical practice among a diverse population of prenatal patients who are members of a large HMO (Southern California Kaiser- Permanente). A total of 480 SQs will be randomly assigned to either a) usual care -- consisting of provider advice which may be offered during prenatal visits and a self-help smoking cessation/maintenance booklet; or b) usual care + the experimental telephone-based counseling intervention. The principal dependent variable will be biochemically confirmed maintenance of cessation for the duration of pregnancy. If effective, the proposed intervention offers the opportunity to decrease the prevalence of prenatal smoking among the approximate 1 million US women who annually initiate prenatal care as prepregnancy smokers. Finally, as more than 75 percent of the women who stop smoking during pregnancy are SQs and given the high rate of postpartum relapse, learning about successful maintenance during pregnancy may aid intervention efforts to prevent the return to smoking after delivery.

Title: Follow-Up Study for Causes of Illness in Black Women
Principal Investigator: Rosenberg, Lynn
Institution: Boston University, Boston, MA
Funding Agency: National Cancer Institute
Project ID: CA58420
Project Funding Period: 1 January 1998 – 31 July 2004

Abstract: We propose to continue the largest follow-up study of the health of African-American women yet undertaken, the Black Women's Health Study (BWHS). The aim is to determine the effects on breast cancer incidence (and eventually other cancers) of potential risk factors, including physical activity, obesity, alcohol, diet, oral contraceptives, and postmenopausal female hormones. Most of these factors have not been studied in black women. In addition, factors specific to African-American women, including experiences and perceptions of racism and use of hair straightening products (which is very common) will be assessed. Because prevention programs require an understanding of the determinants of risk factors, we will also

assess correlates of important risk factors. The BWHS cohort was established in 1995 when 64,554 black women aged 21-69 years from all regions of the U.S. completed mail questionnaires, providing data on demographic factors, medical and reproductive history, use of oral contraceptives and other drugs, physical activity, smoking, alcohol use, diet, and other factors. Methods for following participants, collecting, processing and managing the data, and validating cancer outcomes have been developed, and results of analyses of the baseline data have been published. The first round of follow-up (every 2 years) to determine incident cancer and changes in exposures has been carried out, with a follow-up rate of 83 percent. After further cycles of follow-up through the end of the proposed grant, 600 plus cases of breast cancer will be available for analysis. Hypotheses to be assessed include whether physical activity reduces the incidence, and whether dietary fat intake and alcohol consumption increase it. African-American women suffer a greater burden of cancer morbidity than white women but there have been few studies in black women. The BWHS will contribute to the effort to improve the health of African-American women by providing insight into causes and preventives of breast cancer and other cancers and useful information for intervention programs.

Title: Coping During Spontaneous Smoking Cessation in Pregnancy
Principal Investigator: Scheibmeir, Monica
Institution: University of Kansas Medical Center, Kansas City, KS
Funding Agency: National Institute of Nursing Research
Project ID: NR007735
Project Funding Period: 1 September 2001 – 31 August 2003

Abstract: Up to 30 percent of pregnant smokers spontaneously quit smoking during pregnancy. Unfortunately, the effects of cessation are short-lived with relapse rates reaching up to 70 percent within three to six months following delivery. In spite of established behavioral interventions and pharmacotherapies discovered in the past ten years, the prevalence of smoking in pregnant women, as well as relapse in the postpartum period, remains very high. Gaps in our knowledge exist about the efficacy of coping strategies used by pregnant women to successfully quit smoking. This exploratory study will assess the smoking cessation strategies used by low-income women attending publicly funded prenatal clinics who spontaneously quit smoking during pregnancy and after delivery using quantitative and qualitative methods. The specific aims are to: (1) Describe the coping strategies that low-income spontaneous quitters use during pregnancy and the early postpartum period, (2) Compare the self-efficacy to quit smoking of low-income spontaneous quitters with that of low-income pregnant smokers, and (3) Clarify the relationship between coping strategies and self-efficacy among low-income spontaneous quitters during pregnancy and the early postpartum period. Two county health prenatal clinics will be used to recruit 30 participants for the sample of spontaneous quitters and 150 women will be recruited for the sample of continuous smokers. Data collection for the sample of spontaneous quitters will include face-to-face interviews with participants and questionnaire data collected twice during the pregnancy and once at six-weeks postpartum. For participants who continue to smoke during pregnancy, data collection will be done once and include written questionnaire information. Data analysis methods will include descriptive statistics, Pearson Product Moment correlations, mixed linear modeling and qualitative content analysis. Triangulation of the qualitative and quantitative data will enhance the validity of the findings. This study will address a critical gap in our knowledge of the primary strategies used by women to remain abstinent from cigarettes. New insights on the key factors associated with successful abstinence will be used to enhance this window of opportunity that pregnancy provides for women smokers.

Title: Prevention of Smoking Relapse in Women
Principal Investigator: Schmitz, Joy M.
Institution: University of Texas Health Science Center, Houston, TX
Funding Agency: National Institute on Drug Abuse
Project ID: DA008888
Project Funding Period: 1 June 1994 – 30 June 2003

Abstract: Cigarette smoking is a prototypic case of drug dependence and a dominant cause of coronary artery disease (CAD). In the past several decades, women's rates of CAD and other smoking-related diseases have increased in proportion to their increased exposure to tobacco smoking. Effective smoking cessation interventions have the enormous potential of reducing smoking prevalence and improving women's health. The proposed studies provide a direct and logical extension of our previous research evaluating smoking cessation and relapse prevention (RP) treatments in health-compromised women. Our ongoing work fails to provide strong evidence of RP's superiority over a comparison treatment, and underscores the need to develop more potent interventions to prevent relapse in this refractory population. We propose to do this by combining RP with a new effective and safe pharmacologic intervention. Two parallel, double-blind, placebo-controlled studies will be conducted, each employing a 2 X 2 factorial design that crosses medication (bupropion 300 mg/d vs. placebo) and therapy (RP vs. Discussion Support). Women who smoke will be randomized into one of the four treatment combinations. The 7-week trial will involve weekly clinic visits at which time participants will receive medication doses and individual therapy. The integrated treatment of RP and bupropion 300 mg/d is expected to increase significantly the probability of abstinence and produce improvements in other relevant domains, including self-efficacy, coping, craving, and depressive symptomatology. Study 1 will enroll 104 women with stable CAD. Study 2 will enroll 104 women with significant CAD risk factors, but without diagnosis. The studies are technically rigorous and scientifically innovative. An analogue role-play test will be used to examine coping skills acquisition as a function of treatment and as a predictor of outcome. To verity treatment fidelity we will use written therapy manuals, trained therapists, and adherence checking systems. Appropriate procedures to safeguard against adverse events will include initial medical evaluation, baseline ECG, daily recording of pill taking and cardiac symptoms using an electronic medication dispensing and diary unit, weekly measurement of vital signs and side effects, and regular contact with the study psychiatrist and cardiologist. The primary dependent measure will be smoking status, validated by saliva cotinine. Assessments at 3-, 6-, 9-, and 12-months following maintenance treatment will be used to evaluate the relative durability of treatment effects. In summary, this research will contribute new theoretical and empirical information concerning the independent and interactive effects of two proven interventions, and shed light on the processes by which these interventions work. We expect that this study will result in the development of an efficacious treatment for smoking in medically at-risk women, and will therefore have major implications for health and health care costs related to drug dependence and medical disorders.

Title: Young Adults and Drug Use: Careers and Familiar Factors
Principal Investigator: Sterk, Claire E.
Institution: Emory University, Atlanta, GA
Funding Agency: National Institute on Drug Abuse
Project ID: DA009819
Project Funding Period: 5 August 1996 – 31 May 2005

Abstract: This competing continuation application builds on our past research on multigenerational drug use among mothers and daughters by distinguishing between different stages of drug involvement, including resistance to involvement, initiation, continuation or discontinuation, escalation or resistance to escalation, dependence, cessation, and relapse. The

approach will allow for the identification of factors which determine an individual's susceptibility and resistance at each stage of drug involvement from the users' perspective. The proposed research also builds on our past work by including of a nested-family approach, which will allow for an exploration of the family domain and gender. Finally, we will supplement the predominantly qualitative data collection with quantitative measures. The specific aims of the proposed study are: (1) to examine the developmental progression of drug involvement among young adult cocaine users (the probands) and two of their first-degree relatives, including factors motivating and hindering the transition between stages of involvement; (2) to identify familial patterns of substance use among young adult cocaine users and their first-degree relatives; and (3) to explore the medical consequences of drug abuse among the probands and their first-degree relatives. The study sample will consist of 360 individuals: (120 probands, 120 biological parents, and 120 biological siblings). The data collection includes a limited quantitative component and a qualitative, in-depth interview. Quantitative assessments will cover demographic characteristics, family characteristics, lifetime and recent drug use, HIV/AIDS and hepatitis B and C risk behaviors, substance abuse and selected psychiatric disorders. The interview guide will cover domains such as family of origin, family tree, life stages --including early years, childhood, adolescence, and young adulthood, drug use --including tobacco and alcohol and with a focus on the drug use career trajectory, and health --including HIV/AIDS, hepatitis B and C, and mental health, specifically anxiety, antisocial personality disorder, depression, and post-traumatic stress disorder). Qualitative data analysis involves grounded theory and quantitative analyses includes descriptive statistics, least square analysis, and confirmatory factor analysis. The proposed study contributes to the research on the origins and multiple pathways to drug abuse and of factors (individual and familial) which may determine susceptibility and resistance at the various stages of drug involvement.

Title: Brief Intervention for Drug Use in Pregnant Women
Principal Investigator: Svikis, Dace S.
Institution: Virginia Commonwealth University, Richmond, VA
Funding Agency: National Institute on Drug Abuse
Project ID: DA011476
Project Funding Period: 1 February 1998 – 31 January 2004

Abstract: Prenatal drug use is associated with a variety of medical and developmental consequences. Although many women spontaneously quit substance use on learning they are pregnant, others continue to use throughout pregnancy. Compared to alcohol and tobacco, little is known about prenatal quitting rates for illicit drug use. Also, little is known about the influence of alcohol and tobacco use on prenatal illicit drug use, and about psychological and other factors that account for the differences in ability of pregnant women to quit illicit drug use. Finally, better interventions are needed to enhance prenatal substance use quitting rates. Currently, the most common intervention is brief professional advice (BPA), which has only limited clinical effectiveness. To address these issues, a random-assignment clinical trial will be conducted to assess the effectiveness of two promising interventions of increasing clinical intensity on reducing prenatal opiate and/or cocaine use. Subjects will be pregnant women of lower socioeconomic status with less than a high school education (estimated gestational age at admission 20 weeks). Subjects with pre-pregnancy/prior prenatal opiate and/or cocaine use will be randomly assigned to one of three intervention groups (N=237/group): (1) BPA only (standard medical practice); (2) BPA in combination with behavioral incentives (BI); and (3) BPA in combination with BI and Motivational Enhancement Therapy (MET). Subjects will be followed prospectively throughout pregnancy and into the post partum period to determine changes that occur in substance use. Both self-report and objective measures of substance use will be employed. The study will also identify psychological and other factors (e.g., depression, maternal-infant interactions, drug use by significant other) that influence quitting and relapse to prenatal substance use. A comparison group of non-opiate/cocaine users (N=237) will be

included to assess effects of prenatal opiate and/or cocaine use on maternal and infant outcomes. The study will also determine the influence of pre-pregnancy substance use on within-pregnancy quitting rates of illicit drug use, and the impact of quitting on maternal and infant health.

Title: Smoking During Pregnancy: Chromosome Damage in Mothers and Newborns
Principal Investigator: Tucker, James
Institution: Lawrence Livermore National Laboratory, Livermore, CA
Funding Agency: California Tobacco-Related Disease Research Program
Project ID: 8RT-0070H
Project Funding Period: 1 July 1999 – 30 June 2002

Abstract: The consequences of maternal cigarette smoking during pregnancy on both the mother and newborn are being studied. It is of particular interest to understand how smoking and inherent genetic susceptibility relate to observed chromosomal aberrations in circulating blood cells. Approximately one quarter of the population is inherently susceptible to chromosomal damage whereas the remaining three quarters are relatively resistant. It is hypothesized that sensitive populations of newborns and mothers are at increased risk to chromosomal damage by maternal smoking during pregnancy compared to relatively resistant populations.

Blood samples from 470 mothers and their newborns have been collected for this study. Peripheral blood lymphocytes from the mother and the fetal side of the placenta were cultured and harvested 48 and 72 hours later to evaluate chromosomal aberrations and genetic susceptibility, respectively. Chromosome aberrations are detected using whole chromosome painting probes to visualize chromosomes 1, 2, and 4 in red and 3, 5 and 6 in green. Approximately 1000 cell equivalents (1800 metaphase cells) are being scored from the maternal and newborn samples to identify stable and unstable chromosome damage. The clastogen, bleomycin, is used to assess susceptibility to induced chromosomal damage in vitro.

In addition to baseline and postpartum interview questionnaires data about smoking history, some maternal and newborn blood samples are being tested by our collaborators for two biochemical measures of tobacco exposure. The quantification of cotinine levels and 4-aminobiphenyl-hemoglobin (4-ABP-Hb) adducts will reduce the risk of potential recall bias for self-reported tobacco use. Preliminary data indicate that self-reported cigarette smoking behavior prior to and early in pregnancy are highly correlated with these biochemical measures of exposure.

To date, 202 mother/newborn blood sample pairs have been analyzed for chromosomal damage: 106 are from Caucasian-Americans and 96 are from African-Americans. Preliminary statistical analyses have been performed on a subset of these subjects, namely 97 Caucasian American and 73 African American sample pairs. The distribution of bleomycin-induced chromatid damage in both the maternal and newborn populations deviates from a normal distribution. In general, the newborn lymphocytes are more resistant to bleomycin-induced damage than the maternal cells. The most recent analyses of the data evaluated the effect of age, race, maternal smoking during pregnancy, ever smoking, passive smoking, and bleomycin sensitivity on chromosome aberration frequency. In univariate analyses, there are significant associations between maternal chromosome aberration frequencies and mother's age ($p = 0.05$) and passive smoke exposure ($p = 0.01$) and these factors remain significant in multivariate analysis. In univariate analyses of data for newborn samples, bleomycin sensitivity associates significantly with chromosome damage. In a multivariate analysis, ever smoking, smoking during pregnancy, and passive smoke exposure are significantly associated with chromosome damage.

We have now finished collecting the samples. In the next few months we will finish the cytogenetic analyses. We will determine if maternal and newborn populations, genetically susceptible to DNA damage, are at increased risk of chromosomal aberrations due to tobacco exposure during pregnancy. The identification of risks associated with maternal smoking during pregnancy are critical for the improvement of the health of the individual and the community.

Title: Prenatal Smoking and Preschool Behavior Problems
Principal Investigator: Wakschlag, Lauren S.
Institution: University of Chicago, Chicago, IL
Funding Agency: National Institute on Drug Abuse
Project ID: DA000330
Project Funding Period: 30 September 1997 – 31 August 2002

Abstract: Research establishing links between mothers' smoking during pregnancy and children's behavior problems suggests a significant, potentially modifiable contributor to one of the most serious mental health disorders of childhood. To establish the etiologic significance of prenatal smoking for specific types of disruptive behavior disorders, however, further prospective research is needed. The proposed project aims to provide advanced training/mentorship to the candidate in the conduct of research examining the relation of prenatal exposure to cigarette smoke and young children's behavior problems. The candidate is a clinical-developmental psychologist who seeks this training towards her goal of studying the effects of prenatal substance exposure on the development of behavior problems. Her existing expertise in the study of parent-child relationships and the clinical assessment of young children will be supplemented by: a) ongoing mentorship in regard to design and implementation of longitudinal research examining effects of prenatal substance exposure; b) advanced training in biochemical measurement and neuropharmacological effects of smoking, and longitudinal data analysis and; c) conduct of independent research. The proposed research is a prospective examination of prenatal smoking and behavior problems in high-risk preschoolers, designed to identify pathways by which smoking may increase the risk of behavioral symptomatology. Participants in an ongoing study of low-income African-American families will be recruited for this preschool follow-up assessment. Prospective data include repeated measures of pre- and postnatal smoking, parenting and infant development. 105 mother-child pairs will be seen including prenatally, actively passively, and non-exposed children. Multi-method assessment of behavior problems will include parent/examiner ratings, structured psychiatric interviewing, laboratory assessment and behavioral ratings during parent-child interaction. Child developmental functioning, parental psychopathology and parenting practices will also be assessed. Multivariate planned comparisons will be used to examine the relation of pre-and postnatal exposure to smoke and preschool behavior problems. Structural equation modeling will be used to identify direct and indirect effects of smoking with particular emphasis on causal pathways between smoking, parental psychopathology and the quality of the parent-child relationship.

Title: Prenatal Smoking and Aggression in Twins
Principal Investigator: Ward, Michelle C.
Institution: University of Southern California, Los Angeles, CA
Funding Agency: National Institute on Drug Abuse
Project ID: DA006076
Project Funding Period: Not available

Abstract: The proposed study aims to understand the relationship between prenatal smoke exposure and aggression in children. The study will expand on previous findings by also investigating the extent to which this relationship may be mediated by genetic factors; a mother's smoking behavior during pregnancy may be influenced by her own predisposition toward

antisocial behavior. Aggression, along with other traits such as cognitive ability in 9 year old twins will be measured using in depth interviews and multiple informant behavior assessments. The mothers will be assessed for antisocial behavior in similar manner, including ascertainment of current and prenatal substance abuse. This study will be conducted in a genetically informative twin design, which will allow for the investigation of the smoking/aggression relationship while controlling for covariates. It is hypothesized that children exposed in utero to high levels of cigarette smoke will exhibit elevated aggression. Also hypothesized, however, is that the said relationship will be at least partially explained by other risk factors, such as genetic predisposition towards anti-social behavior in the mother. Birth complications will also be examined for possible exacerbation of the smoking/aggression relationship as evidenced in prior studies. The effects of smoke exposure are expected to be greatest in the presence of birth complications.

Title: Northern California Cooperative Family Registry
Principal Investigator: West, Dee
Institution: Northern California Cancer Center, Union City, CA
Funding Agency: National Cancer Institute
Project ID: CA69417
Project Funding Period: 30 September 1995 – 30 November 2006

Abstract: In response to a letter RFA for the continuation of the Cooperative Family Registry for Breast Cancer Studies (CFRBCS), this proposal is one of six U-O1 proposals being submitted by the institutions participating in CFRBCS. These proposals address continued support for the CFRBCS infrastructure, provide the rationale for 13 research proposals (modules), and summarize current progress. Our proposal contains four parts, including present our participation in the collaborative development of the CFRBS Progress Report. In the core maintenance, we present our application in the collaborative development of the CFRBCS, our protocols for enrollment and data proposal addresses four aims 1) to maintain a functional resource, including follow-up of more than 1,3000 families; 2) to complete recruitment of Asian families, pathology work, BRCA1 and BRCA2 mutation testing, and transformation of lymphocytes; 3) to accrue an additional 1,060 minority and 450 Ashkenazi families, and to extend 25 interesting families; and 4) to contribute to all 13 research modules. Our specific and substantial participation in each of these modules is described. As the leader of Module 3, which includes participation in 2,300 minority families, including African-Americans, Hispanics, Chinese, Japanese, and Filipinos Data from database for future research. As the leader of Module 4, we will assess among an estimated 800 BRCA + mutation carriers the modifying influence of hormonal and lifestyle factors, including reproductive and menstrual characteristics, hormone use, diet, body size, physical activity, radiation exposure, alcohol consumption, and cigarette smoking. Finally, we present the CFRBCS progress report which highlights the unique resource assembled by the consortium which will facilitate breast cancer research for many years to come.

Title: Prenatal and Childhood Exposures and Age at Menarche
Principal Investigator: Windham, Gayle
Institution: Impact Assessment, Inc., San Diego, CA
Funding Agency: National Institute of Child Health and Human Development
Project ID: HD036762
Project Funding Period: 1 March 2000 – 28 February 2002

Abstract: Hazards posed to the developing fetus and child by exposure to chemical substances are receiving increasing attention. The developmental endpoints examined primarily have been adverse pregnancy outcomes, as well as some consideration of neurobehavioral development.

Little is known about normal menstrual function and how it is initiated during adolescence. In this pilot study we propose to examine a measure of sexual development, namely, age at menarche, and its relationship to prenatal exposure to chemical substances including, tobacco smoke, alcohol and caffeine (TAC). Active smoking is a known reproductive hazard during pregnancy and has also been associated with infertility and alterations in hormone excretion levels. Prenatal alcohol exposure is associated with fetal growth retardation and neurologic impairment in offspring. Numerous studies have shown effects of alcohol on the endocrine system of adults and there is suggestive evidence it may effect sexual maturation. Known actions of caffeine present plausible mechanisms for alteration of hormonal profiles and an association with delayed time to conception has been reported. Thus all three exposures may possibly affect sexual development via actions on the prenatal hormonal milieu or the developing nervous system. The proposed pilot study would make use of a large data base of pregnancies ascertained in the early 1960's. Subjects of this study will be the 1000 daughters followed through childhood and adolescence, at which time age at menarche was ascertained. Extensive data was collected prospectively on prenatal exposures, as well as on potential confounders. A number of important exposures and conditions of childhood were also ascertained prospectively, including parental cigarette smoking, childhood behaviors, and growth. With these data we propose to examine whether in utero exposure to TAC or childhood exposure to parental smoking are related to perturbations in age at menarche. Early age at menarche has been associated with an increased risk of breast cancer, thus alteration in menarcheal age may serve as a sentinel of other adverse effects on children's and women's health. Such data will be valuable in designing further studies of the reproductive process and growth and development in relation to early life exposures.

Title: Breast & Other Cancer in the California Teachers Cohort
Principal Investigator: Wright, William
Institution: Public Health Institute, Sacramento, CA
Funding Agency: National Cancer Institute
Project ID: CA77398
Project Funding Period: 25 September 1998 – 30 September 2003

Abstract: A cohort of 133,000 California school teachers has been established by a collaborative group of epidemiological investigators with the goals of evaluating unresolved issues related to breast cancer risk factors and studying other important issues related to women's health. The teachers were recruited with a detailed multiple choice, optically-scanned mail survey. Scanning of the questionnaires has been completed and data editing is ongoing. Planned follow-up includes routine linkage with the California Cancer Registry and California mortality files, annual re-contact of cohort members for follow-up, and biennial contact for collecting additional risk factor exposure data and information on other health outcomes. The Specific Aims for this project are to 1) test a series of unresolved and emerging hypotheses related to breast cancer aetiology (specifically associations with the lactation, hormone replacement therapy, abortion/miscarriage, dietary phytoestrogens, fibre, micronutrient consumption, alcohol intake, physical exercise and activities, family history of breast and other cancers, and active and passive cigarette smoke exposure); 2) conduct calibration/validation studies of the food-frequency questionnaire and self-reported information on family history of breast and other cancers reported in the baseline questionnaire; and 3) follow this cohort for five additional years, during which time, two or more questionnaires will be mailed to update initial exposure assessments, collect new exposure information, and assess additional disease outcomes for testing novel hypotheses of major importance to women's health, in a timely manner. During the next five years, 2,025 invasive incident and 390 in situ incident breast cancers are anticipated which will provide ample statistical power to address each of the proposed hypotheses in detail. The California Teachers Study presents a rare opportunity to study women's health, because of the size of the cohort, the uniformly high level of education among teachers, their experience

with survey instruments, their diversity of exposures and geographic residences, and the relative ease with which they can be followed in California. This research is intended to substantially increase knowledge of preventable risk factors for cancer and other health outcomes.