Cancer and Tobacco Literature

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Abstract: Cancer is the cells that grow out of control. Cancer cells can also invade other tissues. Growing out of control and invading other tissues are what makes a cell a cancer cell. Involved in more than 100 diseases, the cancer can cause serious illness and death. Normally, the cells become cancer cells because of DNA damage. This material is a literature collection of the researches on the cancer and tobacco.
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1. Introduction

Cancer is the general name for a group of more than 100 diseases. Although there are many kinds of cancer, all cancers start because abnormal cells grow out of control. Untreated cancers can cause serious illness and death. The body is made up of trillions of living cells. Normal body cells grow, divide, and die in an orderly fashion. During the early years of a person's life, normal cells divide faster to allow the person to grow. After the person becomes an adult, most cells divide only to replace worn-out or dying cells or to repair injuries.

Literatures

Alciati, M. H. (1996). "Intervention research: a model from the National Cancer Institute's Smoking and Tobacco Control Program." Am J Ind Med **29**(4): 324-8.

Recognizing that the scientific method is as critical to cancer control as it is to basic laboratory research, the National Cancer Institute (NCI) established a well-defined, systematic strategy for attaining its cancer control goals and objectives. This strategy, operationalized in the early 1980s as a five-phase process, emphasized cancer control as a research science rather than a demonstration science. The five phases of NCI's cancer control research strategy progress from hypothesis development, to methods development, to controlled intervention trials, to defined population studies, and finally to demonstration and implementation programs. This research base provides the foundation for nationwide prevention and health services programs. The application of this five-phase approach to NCI's efforts to reduce morbidity and mortality attributable to tobacco use is described, and some of the challenges that faced the Institute in this process are identified. These experiences provide an important framework for other disciplines faced with the challenge of translating science into practice.

Barnoya, J. and S. Glantz (2004). "Association of the California tobacco control program with declines in lung cancer incidence." Cancer Causes Control **15**(7): 689-95.

OBJECTIVE: The California tobacco control program enacted in 1988 has been associated with declines in smoking and heart disease mortality. Since smoking also causes lung cancer, we investigated whether the program was associated with a decline in lung and other cancer incidence. METHODS: Age-adjusted incidence rates of lung and bladder cancer (which are caused by smoking) and prostate and brain cancer (which are not) in the San Francisco-Oakland (SFO) Surveillance Epidemiology End Results (SEER) registry and other eight SEER registries from 1975 to 1999 were fitted in multiple regression analyses accounting for the time lag between program implementation and its effects on cancer incidence. Cigarette consumption over time was also analyzed and related to lung cancer incidence. RESULTS: With a one year lag, the incidence of lung cancer in SFO, relative to eight other SEER registries, fell significantly below that predicted from the pre-1990 rates, by -0.981 (cases/100,000/year)/year ($p = 0.001$). With a three year lag, the incidence of bladder cancer fell by -0.234 (cases/100,000/year)/year ($p = 0.066$). No association of the program was observed on prostate or brain cancers in SFO. During the first decade, the Program was associated with about a 6% reduction in lung cancer incidence; state-wide that corresponds to about 11,000 cases avoided. CONCLUSION: A comprehensive tobacco control program is associated with a lower incidence of lung cancer.

Bartsch, H., E. Hietanen, et al. (1990). "Possible prognostic value of pulmonary AH-locus-linked enzymes in patients with tobacco-related lung cancer." Int J Cancer **46**(2): 185-8.

As prognosis in breast cancer patients has been related to the AHH activity in their breast tissue, we have conducted a similar analysis on pulmonary drug metabolizing enzymes as prognostic markers for male lung cancer patients, primarily investigated for other reasons. A subset of 50 patients with lung cancer related to tobacco use, who had undergone thoracic surgery, was re-analyzed. The activity of parenchymal aryl hydrocarbon hydroxylase (AHH) and epoxide hydrolase (EH) that had been determined previously in homogenates of non-neoplastic surgical lung specimens, was used for comparisons of the patients' survival after surgery. When the crude mortality percentages at 1 and 2 years by AHH or EH activity, subdivided into quarters of the distribution, were calculated, a lower mortality was related to lower enzyme levels. Subjects in the 1st and 4th quarters of the distribution showed significant differences in their 1-year survival for AHH ($p = 0.05$) and EH (p less than 0.01) activities. This relationship could not be accounted for by age, cumulative lifetime smoking, recent or continuing smoking, stage or histological type of disease. Thus, the levels of pulmonary AHH and EH may have some prognostic significance in tobacco-related lung cancer.

Brown, J. K. (1993). "Gender, age, usual weight, and tobacco use as predictors of weight loss in patients with lung cancer." Oncol Nurs Forum **20**(3): 466-72.

The purpose of this study was to examine the relationships of gender, age, usual weight, and tobacco use with cancer-related weight loss, food intake, and resting energy expenditure. Data were collected from medical records, interviews, self-report diet records, indirect calorimetry, and 40K counting. A convenience sample consisted of 60 subjects with non-small cell lung cancer who were at least one month postradiotherapy. Mean weight loss was 2 kg at diagnosis and 6 kg at six weeks postradiotherapy. Partial correlations, controlling for stage of disease, indicated that gender, age, and current smoking correlate significantly with cancer-related weight loss and decreased food intake. Gender, age, and current smoking accounted for 21% of the variance of weight loss postradiotherapy over and above stage of disease. Potential practice implications focus on enhanced nutritional assessment and early intervention for men, the elderly, and current smokers, who are at higher risk for weight loss.

Calhoun, J. G., J. L. Kolker, et al. (2009). "Tobacco-free community coalitions: opportunities for enhancing oral cancer prevention programs." J Cancer Educ **24**(4): 275-9.

BACKGROUND: This study identified oral cancer (OC) education and tobacco reduction collaboration within tobacco-free community coalitions (TFCC). METHODS: Data from 4 TFCC were collected via educational intervention surveys and structured focused group Interviews. RESULTS: Of the 52 participants, 96% were aware that tobacco products are risk factors for OC, yet 33% were unaware of the high OC impact locally. About 90% agreed that primary care providers and dentists should provide OC screenings and tobacco cessation. CONCLUSION: There is a need for provider endorsement and public demand for OC screenings. Opportunity exists for partnering and collaborative OC prevention with TFCC.

Chung, F. L. (1999). "The prevention of lung cancer induced by a tobacco-specific carcinogen in rodents by green and black Tea." Proc Soc Exp Biol Med **220**(4): 244-8.

A growing body of evidence from studies in laboratory animals indicates that green tea protects against cancer development at various organ sites. We have previously shown that green tea, administered as drinking water, inhibits lung tumor development in A/J mice treated with 4-(methylnitrosamino)-1-(3-pyridyl)-l-butanone (NNK), a potent nicotine-derived lung carcinogen found in tobacco. The inhibitory effect of green tea has been attributed to its major polyphenolic compound, epigallocatechin gallate (EGCG), and, to a lesser extent, to caffeine. We have also demonstrated that while levels of O6-methylguanine, a critical lesion in NNK lung tumorigenesis, were not affected in lung DNA. However, the levels of 8-hydroxydeoxyguanosine (8-OH-dG), a marker of oxidative DNA damage, were significantly suppressed in mice treated with green tea or EGCG. These studies underscore the importance of the antioxidant activity of green tea and EGCG for their inhibitory activity against lung tumorigenesis. Unlike green tea, the effect of black tea on carcinogenesis has been scarcely studied, even though the worldwide production and consumption of black tea far exceeds that of green tea. The oxidation products found in black tea, thearubigins and theaflavins, also possess antioxidant activity, suggesting that black tea may also inhibit NNK-induced lung tumorigenesis. Indeed, bioassays in A/J mice have shown that black tea given as drinking water retarded the development of lung cancer caused by NNK. However, data on the relationship of black tea consumption with the lung cancer risk in humans are limited and inconclusive. There is a need for additional tumor bioassays in animal models to better examine the protective role of black tea against lung cancer. The development of adenocarcinomas and adenosquamous carcinomas in F344 rats upon chronic administration of NNK provides an important and

relevant model for lung carcinogenesis in smokers. Thus far, no information was previously available regarding the effects of tea on this model. We conducted a 2-year lifetime bioassay in F344 rats to determine whether black tea and caffeine are protective against lung tumorigenesis induced by NNK. Our studies in both mice and rats have generated important new data that support green and black tea and caffeine as potential preventive agents against lung cancer, suggesting that a closer examination of the roles of tea and caffeine on lung cancer in smokers may be warranted.

Cinciripini, P. M., S. S. Hecht, et al. (1997). "Tobacco addiction: implications for treatment and cancer prevention." J Natl Cancer Inst **89**(24): 1852-67.

The American Society of Clinical Oncology and the National Cancer Institute convened a symposium in June 1996 on tobacco addiction. Additional support for the symposium was provided by the American Medical Women's Association and the American Society of Preventive Oncology. The goals of this conference were to describe the burden and public health consequences of tobacco addiction, to describe the state of science for the treatment of nicotine dependence, and to explore new strategies to increase quit rates and to prevent the uptake of tobacco use. This article summarizes and integrates the meeting presentations on tobacco addiction and includes the topics of smoking prevalence; psychobiologic aspects of nicotine dependence; and implications for disease, treatment, and prevention. Comments on regulatory approaches and national strategies for reducing dependence are also summarized in presentations by Dr. David Kessler, former Food and Drug Administration Commissioner, and Dr. C. Everett Koop, former U.S. Surgeon General.

Cooley, M. E., L. Sarna, et al. (2007). "Tobacco use in women with lung cancer." Ann Behav Med **33**(3): 242-50.

BACKGROUND: Smoking cessation after a cancer diagnosis is associated with improved clinical outcomes. PURPOSE: The aims of this study are to determine smoking prevalence, describe patterns of smoking, identify readiness to quit and cessation strategies, identify factors associated with continued smoking among women with lung cancer, and determine smoking prevalence among household members. METHODS: Data were collected through questionnaires and medical record review from 230 women. Smoking was determined through self-report and biochemical verification with urinary cotinine. RESULTS: Eighty-seven percent of women reported ever-smoking, and 37% reported smoking at the time of diagnosis. Ten percent of women were smoking at entry to the study, 13% were smoking at 3 months, and 11% at 6 months. Fifty-five percent of smokers planned a quit attempt within the next month. One third of smokers received cessation assistance at diagnosis, and pharmacotherapy was the most common strategy. Significant factors associated with continued smoking included younger age, depression, and household member smoking. Continued smoking among household members was 21%. Twelve percent of household members changed their smoking behavior; 77% quit smoking, but 12% started smoking. CONCLUSIONS: The diagnosis of cancer is a strong motivator for behavioral change, and some patients need additional support to quit smoking. Family members should also be targeted for cessation interventions.

Cox, L. A., Jr. (2009). "Could removing arsenic from tobacco smoke significantly reduce smoker risks of lung cancer?" Risk Anal **29**(1): 3-17.

If a specific biological mechanism could be determined by which a carcinogen increases lung cancer risk, how might this knowledge be used to improve risk assessment? To explore this issue, we assume (perhaps incorrectly) that arsenic in cigarette smoke increases lung cancer risk by hypermethylating the promoter region of gene p16INK4a, leading to a more rapid entry of altered (initiated) cells into a clonal expansion phase. The potential impact on lung cancer of removing arsenic is then quantified using a three-stage version of a multistage clonal expansion (MSCE) model. This refines the usual two-stage clonal expansion (TSCE) model of carcinogenesis by resolving its intermediate or "initiated" cell compartment into two subcompartments, representing experimentally observed "patch" and "field" cells. This refinement allows p16 methylation effects to be represented as speeding transitions of cells from the patch state to the clonally expanding field state. Given these assumptions, removing arsenic might greatly reduce the number of nonsmall cell lung cancer cells (NSCLCs) produced in smokers, by up to two-thirds, depending on the fraction (between 0 and 1) of the smoking-induced increase in the patch-to-field transition rate prevented if arsenic were removed. At present, this fraction is unknown (and could be as low as zero), but the possibility that it could be high (close to 1) cannot be ruled out without further data.

Cummings, K. M. (1994). "Involving older Americans in the war on tobacco. The American Stop Smoking Intervention Study for Cancer Prevention." Cancer **74**(7 Suppl): 2062-6.

The American Stop Smoking Intervention Study for Cancer Prevention (ASSIST) is a collaborative effort of the National Cancer Institute,

the American Cancer Society, state health departments, and other public and private organizations to develop comprehensive tobacco use control programs in 17 states. The two main goals of the project are to reduce adult smoking prevalence to 15% or less and to reduce the rates of smoking initiation among adolescents by 50% by the year 2000. There is strong consensus within the tobacco-control field of what needs to be done to accomplish these goals. The key elements of a comprehensive tobacco control effort include (1) an excise tax policy based on raising the real price of tobacco, (2) a ban on all forms of tobacco advertising and promotion, (3) product regulation to reduce the harmful constituents found in tobacco and enforce the use of strong and prominent package warnings, (4) the enactment of policies that protect nonsmokers from inhaling tobacco smoke, (5) comprehensive efforts to eliminate minors' access to tobacco products, (6) ongoing and adequately funded efforts to educate the public about the harmful effects of tobacco, (7) the availability of cessation assistance to persons interested in discontinuing the use of tobacco, and (8) the ending of all financial assistance to the tobacco-growing industry. Because older Americans represent a growing and political influential segment of our society, the enactment of effective tobacco control policies depends in part on generating support for such measures among older citizens. This article outlines several ways in which organizations such as American Association of Retired Persons and the American Cancer Society can work together to advocate meaningful tobacco control policies (e.g., higher excise taxes, clean indoor air laws, etc.).

DiFranza, J. R. and R. J. Wellman (2003). "Preventing cancer by controlling youth tobacco use." Semin Oncol Nurs **19**(4): 261-7.

OBJECTIVES: To review the epidemiology and prevention of teen smoking and the risks of smoking among survivors of childhood cancer. DATA SOURCES: Research articles, government reports, and surveys. CONCLUSION: Nicotine dependence often begins with the first few cigarettes smoked during adolescence. Teen tobacco use is fueled by the attractive social images that tobacco companies create for their products. Curtailing the sale of tobacco to minors and increasing their price decreases availability. Banning smoking in schools and public places reduces smoking opportunities. IMPLICATIONS FOR NURSING PRACTICE: Nurses have an important role to play in the battle against tobacco-induced malignancies through collaboration with community efforts or state initiatives.

Gallus, S., C. Bosetti, et al. (2003). "Laryngeal cancer in women: tobacco, alcohol, nutritional, and hormonal factors." Cancer Epidemiol Biomarkers Prev **12**(6): 514-7.

Laryngeal cancer is the neoplasm with the largest male to female sex ratio in most populations. Thus, inadequate data are available on women. We analyzed several risk factors in the combined dataset from two case-control studies conducted between 1986 and 2000 in northern Italy and Switzerland. Cases were 68 women under age 79 years, with incident, histologically confirmed cancer of the larynx. Controls were 340 women, admitted to the same network of hospitals as cases, for acute, nonmalignant conditions, unrelated to tobacco and alcohol consumption. Odds ratios (ORs) and corresponding 95% confidence intervals (CIs) were estimated by logistic regression models, conditioned by age, study center and year of interview, and including terms for education, body mass index, tobacco, alcohol drinking, and nonalcohol energy intake. Laryngeal cancer was strongly associated with cigarette smoking (OR = 435.7, 95% CI: 38.2-4964.4 for smokers of >/=25 cigarettes/day) and alcohol drinking (OR = 4.3, 95% CI: 0.8-24.1 for >/=5 drinks/day). An inverse relation was found for vegetables (OR = 0.3, 95% CI: 0.1-0.9 for the highest level of consumption), fruit (OR = 0.5, 95% CI: 0.2-1.3), and olive oil (OR = 0.3, 95% CI: 0.1-0.9). Reproductive and hormonal factors were not consistently associated to laryngeal cancer risk. This investigation, based on a uniquely large number of laryngeal cancers in women, provides definite evidence that cigarette smoking is the prominent risk factor for laryngeal cancer in women, accounting for 78% of cases in this population. Alcohol and selected dietary aspects account for approximately 30% of cases, whereas menstrual and hormonal factors do not appear to have a consistent role in laryngeal carcinogenesis.

Gallus, S., C. Bosetti, et al. (2001). "Oesophageal cancer in women: tobacco, alcohol, nutritional and hormonal factors." Br J Cancer **85**(3): 341-5.

We analysed 3 case-control studies from Italy and Switzerland including 114 women with squamous cell oesophageal cancer and 425 controls. The multivariate odds ratio was 4.5 for heavy smoking and 5.4 for heavy alcohol drinking. Fruit intake, vegetable intake, oral contraceptive and HRT use were inversely related to oesophageal cancer.

Garces, Y. I., D. R. Schroeder, et al. (2007). "Second primary tumors following tobacco dependence treatments among head and neck cancer patients." Am J Clin Oncol **30**(5): 531-9.

OBJECTIVES: To estimate the cumulative percentage of second primary tumors (SPTs) in head and neck (H&N) cancer patients and primary cancers in general Nicotine Dependence Center (NDC) population controls following tobacco dependence consultation seen between 1988 and 2001. METHODS: A 1:1 matched pair design and a stratified Cox proportional hazard model were used. General NDC population controls were matched on age, gender, and NDC consult (type and date) to the H&N cancer patients. The study population included 101 H&N cancer patients (66 male, 35 female) with mean (SD) age of 58.7 (10.1) years. RESULTS: Baseline demographics and length of follow-up were similar between groups. However, H&N cancer patients smoked more cigarettes per day than controls ($P < 0.003$). For H&N cancer patients, the median time from initial H&N cancer diagnosis to NDC consult was 7 months (range, 0-292 months). Following the NDC consult, 27 H&N cancer patients developed 32 SPTs; whereas among the controls, 12 patients developed 12 other cancers ($P = 0.013$). There was no difference in the development of non-tobacco-related cancers ($P = 0.273$). However, H&N cancer patients were more likely to develop tobacco-related cancers ($P = 0.01$). Furthermore, there was a trend where the H&N cancer patients who continued to use tobacco were more likely to develop tobacco-related cancers than those who remained abstinent ($P = 0.10$). CONCLUSIONS: These findings confirm that H&N cancer patients are more prone to the development of tobacco-related cancers. Further, these findings suggest that H&N cancer patients who stop using tobacco are able to decrease the development of tobacco-related SPTs.

Glynn, T. J., D. M. Anderson, et al. (1991). "Tobacco-use reduction among high-risk youth: recommendations of a National Cancer Institute Expert Advisory Panel." Prev Med **20**(2): 279-91.

The National Cancer Institute's efforts to prevent tobacco-related cancers have resulted in numerous activities to reduce smoking prevalence throughout the United States. Two decades of research activity has provided much of the information needed for interventions through channels such as mass media, physician/dentist training, self-help strategies, and school-based prevention programs. However, in the area of adolescent tobacco-use reduction, it has been consistently observed that youth who have the highest tobacco-use rates are among those least likely to be reached through school-based or other programs. Thus, these youth, often labeled "high-risk," are seen as a cornerstone for tobacco use prevention efforts. Although they pose a particularly difficult access problem, many valuable recommendations for strategies to identify and reach this group were made by a recent NCI-convened Expert Advisory Panel on the Prevention and Cessation of Tobacco Use by High-Risk Youth. The Panel considered this issue from three perspectives--methods of identifying these youth, strategies for reaching them with appropriate tobacco-use prevention/cessation programs, and identification of research needs. Their recommendations and conclusions are summarized in this article. Support for research addressing the prevention and cessation of tobacco use among high-risk youth is currently being considered by the NCI.

Glynn, T. J., M. W. Manley, et al. (1993). "The United States National Cancer Institute and the science of tobacco control research." Cancer Detect Prev **17**(4-5): 507-12.

U.S. efforts to control tobacco use and tobacco-related morbidity and mortality have been reasonably successful over the past 3 decades, during which there has been a 34% reduction in adult smoking. Nevertheless, tobacco use remains a significant public health problem in the U.S., with more than 430,000 tobacco-related deaths per year and over one fourth of the population continuing to smoke. Many organizations are involved in tobacco-use control activities, the most broadly focused of which is that of the National Cancer Institute (NCI). The NCI's program is described and its emphasis on a data-based decision matrix in its approach to tobacco and cancer control research and applications of research is discussed. Finally, future approaches to tobacco-use control in the U.S. are suggested.

Gould, K. A., J. M. Eickhoff-Shemek, et al. (1998). "The impact of National Cancer Institute training on clinical tobacco use cessation services by oral health teams." J Am Dent Assoc **129**(10): 1442-9.

The authors surveyed participants in a National Cancer Institute, or NCI, training program that provides brief tobacco cessation services. They found significant improvements in the frequency with which practitioners ask patients about tobacco use and assist patients in stopping tobacco use. Improvements also were found in the participants' level of confidence and preparedness to help patients quit. Despite some limitations, the NCI training was shown to be an effective program for the oral health care team.

Gregorio, D. I., M. Hollenbeck, et al. (2009). "Who's assessing tobacco use in cancer clinical trials?" Nicotine Tob Res **11**(11): 1354-8.

INTRODUCTION: Clinical trials that do not collect data on tobacco use/exposure may not adequately assess the efficacy and effectiveness of experimental treatments. METHODS: A cross-

sectional study of interventional trials cited on ClinicalTrials.gov was undertaken that inquired of Local Project Directors from Connecticut guiding studies of breast, prostate, or colorectal cancer chemotherapy (N = 68) whether their protocols measured tobacco use by trial participants. Information pertaining to 46 trials (68%) is reported here. All but 1 were multicentered trials enrolling patients around the country. RESULTS: Only 3 trials (7%) reported routine collection of tobacco use information at baseline and no trial reported monitoring tobacco use during treatment follow-up. None of the 3 trials collecting tobacco data reported using exposure information in analysis of treatment effects. Survey respondents suggested that uncertainty about the relevance of tobacco exposure to therapeutic efficacy, ambivalence about how to incorporate such data into analyses, insufficient resources for collecting such information, and uncertainty about the validity of assessment methods might be reasons why tobacco use is not routinely assessed. DISCUSSION: Additional studies that address a fuller range of cancers, therapies, disease states, and clinical environments are needed to fully define the extent of this data lapse. Providing clinicians and trialists with appropriate tools for tobacco use assessment and encouraging them to collect such information about patients during treatment and follow-up may offer a simple cost-effective way to improve the quality and consequences of cancer care for every patient.

Gritz, E. R., L. Sarna, et al. (2007). "Building a united front: aligning the agendas for tobacco control, lung cancer research, and policy." Cancer Epidemiol Biomarkers Prev **16**(5): 859-63.

Our society bears a tremendous public health burden from tobacco-related disability and death, particularly in the realm of cancer. Yet research in lung cancer and other tobacco-related diseases research is dramatically underfunded when compared to the number of people affected. Persuading policy makers to increase funding for tobacco-related research, treatment, and policy initiatives will require considerable cooperation among the researchers, clinicians, and advocates who focus on tobacco control and those who concentrate on tobacco-related disease. Traditionally, these groups have battled over resources, expending precious energy competing for scarce funding. We propose a new way forward: these forces should come together in support of a common agenda that includes both increased tobacco control efforts and additional funding for disease-related research and treatment. Speaking with a unified voice in support of a full continuum of tobacco-related policy initiatives would significantly increase the size and influence of the coalition working to address this public health epidemic. Working together offers our nation the best chance of significantly reducing the scourge of disease and death caused by tobacco use.

Gupta, P. C., M. B. Aghi, et al. (1986). "An intervention study of tobacco chewing and smoking habits for primary prevention of oral cancer among 12,212 Indian villagers." IARC Sci Publ(74): 307-18.

In a house-to-house screening survey, 12,212 tobacco chewers and smokers were selected from the rural population in the Ernakulam district, Kerala state, India. These individuals were interviewed for their tobacco habits and examined for the presence of oral cancer and precancerous lesions, first in a baseline survey, and then annually, over a five-year period. They were educated using personal and mass media communication to give up their tobacco habits. The control group was provided from the results of the first five years of a 10-year follow-up study conducted earlier by the authors in the same area with the same methodology but on different individuals without any educational intervention. The stoppage of the tobacco habit was substantially higher in the intervention group (9.4%) compared to the control group (3.2%). A logistic regression analysis showed that the behavioural intervention was helpful to all categories of individuals, however, the effect was different for different categories: intervention was more helpful to men, chewers, and those with a long duration of the habit. These individuals rarely quit their habit without intervention.

Gupta, P. C., F. S. Mehta, et al. (1986). "Intervention study for primary prevention of oral cancer among 36 000 Indian tobacco users." Lancet **1**(8492): 1235-9.

In a house-to-house survey, 36 471 tobacco chewers and smokers were selected from the rural population in three areas of India. These individuals were interviewed for their tobacco habits and examined for the presence of oral leukoplakia and other precancerous lesions, first in a baseline survey, and then annually over a 5-year period. By personal advice and via the mass media they were encouraged to give up their tobacco habits. The follow-up rate was 97%. The control cohort was provided by the first 5-year results from a 10-year follow-up study conducted earlier in the same areas with the same methodology but on different individuals without any educational intervention. In Ernakulam district (Kerala) and Srikakulam district (Andhra) substantially more people stopped their tobacco habit and reduced the frequency of tobacco use in the intervention cohort than in the control cohort; in Bhavnagar district (Gujarat) the intervention group showed only a slightly higher proportion stopping their tobacco habits and no difference in the proportion reducing

them. The 5-year age-adjusted incidence rate of leukoplakia in Ernakulam district was 11.4 in the intervention group versus 47.8 among men, and 5.8 versus 33.0 among women; and for palatal lesions in Srikakulam district the corresponding figures were 59.8 versus 260.8 among men and 289.5 versus 489.5 among women. In Bhavnagar the incidence rate of leukoplakia did not differ between the cohorts. Since most oral cancers are preceded by precancerous lesions, education on tobacco habits should be a feasible and effective approach to primary prevention of oral cancer.

Hartman, A. M., M. J. Thun, et al. (2008). "Linking tobacco control policies and practices to early cancer endpoints: surveillance as an agent for change." Cancer Epidemiol Biomarkers Prev **17**(9): 2215-9.

State tobacco control programs provide an important laboratory for the development, implementation, and evaluation of comprehensive tobacco control interventions. Studies have shown that states and municipalities with aggressive tobacco control programs have experienced more rapid decreases in per capita cigarette sales, smoking prevalence, lung cancer, and heart disease than entities without such programs. Despite strong evidence that population-level interventions are critical in achieving large and sustained reductions in tobacco use, states do not fund tobacco control efforts at levels recommended by the Centers for Disease Control and Prevention. Research on the effectiveness and cost effectiveness of these activities is essential to inform and strengthen tobacco control at the state level. A workshop, co-organized by the American Cancer Society, the National Cancer Institute, the American Association for Cancer Research, and the Centers for Disease Control and Prevention, was held in Philadelphia in December, 2007, to discuss the topic "Linking tobacco control policies and practices to early cancer endpoints: surveillance as an agent for change." Participants represented three different disciplines. Tobacco surveillance researchers described the data currently collected on state-level tobacco control policies, protobacco countermeasures by the industry, public attitudes toward tobacco use, and measures of smoking prevalence and consumption. Cancer registry experts described the geographic coverage of high quality, population-based cancer registries. Mathematical modeling experts discussed various modeling approaches that can be used to relate upstream tobacco promotion and control activities to downstream measures such as public attitudes, changes in tobacco use, and trends in tobacco-related diseases. The most important recommendation of the Workshop was a call for national leadership to enhance the collection and integration of data from multiple sources as a resource to further study and strengthen the scientific basis for tobacco control.

Hecht, S. S. (1997). "Approaches to chemoprevention of lung cancer based on carcinogens in tobacco smoke." Environ Health Perspect **105 Suppl 4**: 955-63.

Chemoprevention may be one way to prevent lung cancer in smokers who are motivated to quit but cannot stop. The approach to chemoprevention of lung cancer described in this article is based on an understanding of the lung carcinogens present in tobacco smoke. The available data indicate that the compounds in cigarette smoke most likely involved in the induction of lung cancer in humans are the complex of polynuclear aromatic hydrocarbons typified by benzo[a]pyrene (B[a]P) and the tobacco-specific nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK). A large number of compounds are now available that inhibit lung tumorigenesis by B[a]P or NNK in rodents. Inhibition of NNK-induced lung carcinogenesis by phenethyl isothiocyanate (PEITC) and inhibition of B[a]P-induced lung carcinogenesis by benzyl isothiocyanate (BITC) are discussed as examples. Studies with PEITC in rodents clearly demonstrate that it inhibits NNK-induced lung tumorigenesis by inhibiting the metabolic activation of NNK. Similar changes appear to occur in humans according to data generated in smokers who ate watercress, a source of PEITC. It is likely that mixtures of chemopreventive agents with activity against carcinogens in tobacco smoke, such as NNK and B[a]P, will be useful in chemoprevention of lung cancer in smokers. Furthermore, there is a need to develop suppressing agents for lung cancer that might be applicable in both smokers and ex-smokers.

Hecht, S. S. (1997). "Tobacco and cancer: approaches using carcinogen biomarkers and chemoprevention." Ann N Y Acad Sci **833**: 91-111.

Tobacco products are the leading cause of avoidable cancer death in the U.S., accounting for approximately 30% of all cancer deaths. While avoidance of tobacco and smoking cessation are clearly the best way to decrease tobacco-related cancer, these approaches have not been uniformly successful. Approximately 25% of the U.S. population over 18 years of age smokes cigarettes, while 6% use smokeless tobacco products; these figures have not changed markedly in recent years. Our approach toward the tobacco and cancer problem is based on an understanding of the carcinogens in tobacco smoke. These carcinogens form the link between nicotine addiction and cancer. In this paper, two strategies for cancer prevention--the development of carcinogen-

derived biomarkers and chemopreventive agents--are discussed. Carcinogen-derived biomarkers can provide specific information on individual metabolic activation and detoxification of tobacco carcinogens. This information can be used to assess individual risk for cancer development upon exposure to tobacco products. Chemopreventive agents can be targeted against the important carcinogens in tobacco smoke. Isothiocyanates, strong inhibitors of lung cancer development by the tobacco-specific nitrosamine 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone, are discussed as an example of this approach.

Hoffman-Goetz, L., K. K. Gerlach, et al. (1997). "Cancer coverage and tobacco advertising in African-American women's popular magazines." J Community Health **22**(4): 261-70.

Mass circulating magazines offer an opportunity to inform large segments of the population about preventive health behaviors relevant for cancer control. We collected information about the number and type of cancer articles from January 1987 through December 1994 in Jet, Ebony and Essence magazines. These magazines each have a principal readership of African-American women and a paid circulation of 1,000,000 or more annually. Cancer articles were counted if the content was gender neutral or specifically targeted for women. There were 84 articles on cancer including 6 on lung cancer and 3 on other tobacco-related cancers. Nine additional references to lung cancer were mentioned under the general cancer category, but lung cancer was not the primary focus of the articles. There were 24 articles on breast cancer and 9 on cervical cancer over the 8 year period. Most of the articles (> 70%) were short fillers of less than one page in length. A prevention focus was included in 42.2%, 75.0%, and 71.0% of the cancer articles in Jet, Ebony, and Essence respectively. Of the 649 health articles, 116 were on cardiovascular disease. In contrast, there were 1,477 tobacco advertisements over the 8 years. The number of cancer articles was not significantly associated with the number of tobacco advertisements. Because tobacco-related cancers are entirely preventable and contribute to the significant cancer burden, the lack of coverage of tobacco-related cancers is a missed opportunity for health promotion among African-American females.

Jayant, K. and M. G. Deo (1986). "Oral cancer and cultural practices in relation to betel quid and tobacco chewing and smoking." Cancer Detect Prev **9**(3-4): 207-13.

Oral cancer is the most common cancer in India, Pakistan, and Sri Lanka and ranks high in several southeast Asian countries. The association of these cancers with cultural practices like chewing was recognized almost a century ago. Continued work since then has identified tobacco use as the most important avoidable cause of oral cancer. Critical appraisal of specific cultural practices that lead to high risk of oral cancer will be presented with a focus on possible strategies for prevention programs. The need to monitor cultural changes such that these changes lead to prevention of cancer and not a shift from one type of cancer to another will be emphasized.

Jemal, A., V. E. Cokkinides, et al. (2003). "Lung cancer trends in young adults: an early indicator of progress in tobacco control (United States)." Cancer Causes Control **14**(6): 579-85.

OBJECTIVE: Tobacco smoking is known to increase lung cancer occurrence beginning in young adulthood, although age-specific rates have not been used to monitor the early consequences of tobacco control efforts in the United States. We evaluated state trends in lung cancer death rates among young adults in relation to an index of state tobacco control activities and conventional indices of current smoking and cessation. Both lung cancer death rates during the recent time interval (1995-1999) and the change in these rates from 1990-1994 correlated strongly and inversely with the index of state tobacco control efforts measured in 1992-1993. Lung cancer death rates decreased in states with high tobacco control efforts, but increased in states with low tobacco control efforts. Tobacco control indices were strongly and positively correlated with cessation of smoking by age 30-39 years. Lung cancer death rates among young adults are strongly and inversely correlated with recent indices of tobacco control. Future monitoring of the effectiveness of statewide comprehensive tobacco control programs should assess trends in lung cancer rates in young adults as well as youth and adult smoking prevalence.

Jemal, A., M. J. Thun, et al. (2008). "Annual report to the nation on the status of cancer, 1975-2005, featuring trends in lung cancer, tobacco use, and tobacco control." J Natl Cancer Inst **100**(23): 1672-94.

BACKGROUND: The American Cancer Society, the Centers for Disease Control and Prevention (CDC), the National Cancer Institute (NCI), and the North American Association of Central Cancer Registries (NAACCR) collaborate annually to provide updated information on cancer occurrence and trends in the United States. This year's report includes trends in lung cancer incidence and death rates, tobacco use, and tobacco control by state of residence. Both incidence and death rates from all cancers combined decreased statistically significantly ($P < .05$) in men and women overall and in most racial and

ethnic populations. These decreases were driven largely by declines in both incidence and death rates for the three most common cancers in men (lung, colorectum, and prostate) and for two of the three leading cancers in women (breast and colorectum), combined with a leveling off of lung cancer death rates in women. Although the national trend in female lung cancer death rates has stabilized since 2003, after increasing for several decades, there is prominent state and regional variation. Lung cancer incidence and/or death rates among women increased in 18 states, 16 of them in the South or Midwest, where, on average, the prevalence of smoking was higher and the annual percentage decrease in current smoking among adult women was lower than in the West and Northeast. California was the only state with decreasing lung cancer incidence and death rates in women. CONCLUSIONS: Although the decrease in overall cancer incidence and death rates is encouraging, large state and regional differences in lung cancer trends among women underscore the need to maintain and strengthen many state tobacco control programs.

Jiang, Y., Z. D. Liang, et al. (2007). "Ataxia-telangiectasia mutated expression is associated with tobacco smoke exposure in esophageal cancer tissues and benzo[a]pyrene diol epoxide in cell lines." Int J Cancer **120**(1): 91-5.

Esophageal cancer is a substantial health problem because of its usually late stage at diagnosis and poor prognosis. Tobacco smoking and alcohol use are the most important risk factors in the development of esophageal squamous cell carcinoma (SCC). Our previous study demonstrated the binding of benzo[a]pyrene diol epoxide (BPDE), a carcinogen present in tobacco smoke and environmental pollution, to the ataxia-telangiectasia mutated (ATM) gene. To understand how this binding affects the alteration of ATM expression and to identify biomarkers for the detection of esophageal cancer, we analyzed ATM mRNA expression in tissue specimens from patients with esophageal SCC and premalignant lesions using in situ hybridization. We then performed in vitro experiments to verify and extend our ex vivo observations. We found that ATM expression was increased in esophageal SCC and its premalignant lesions when compared with normal tissues and that increased ATM expression was associated with tobacco smoke exposure and tumor de-differentiation. Moreover, BPDE induced ATM expression in esophageal SCC cell lines in a time-dependent manner. In summary, the BPDE in tobacco smoke may be responsible for increased ATM expression in premalignant and malignant esophageal tissues. Our findings suggest that the ATM gene should be further evaluated as a biomarker for the early detection of esophageal cancer and tobacco use in patients.

John, U. (2002). "The approach of comprehensive tobacco control in cancer prevention: elements and evidence." Eur J Cancer Prev **11**(5): 439-46.

The aim of this overview is to present measures of comprehensive tobacco control (CTC) and recent evidence according to their efficacy. CTC includes eight measures: raising taxes, consumer regulations, information about tobacco products, advertisement and sponsoring, economic alternatives to the production of tobacco, programmes for the support of the motivation to stop smoking and maintain tobacco abstinence, including the change of attitudes and norms in the population to support non-smoking, financial and human resources of CTC, and quality assurance of CTC. These measures include single elements such as activities against smuggling, to be considered in conjunction with tax increases. Evidence, particularly from single US states, reveals the efficacy of CTC. As discussed, the literature shows that programmes have not yet included all single elements. This is due to individual, programme-related and external limiting factors. It is concluded that in spite of these, CTC programmes are effective in adults as well as minors. A dose-response relationship between CTC and reduction of smoker rates, the amount of tobacco consumption and tobacco-attributable mortality is probable.

Johnson, B. E. (1998). "Tobacco and lung cancer." Prim Care **25**(2): 279-91.

Cigarette smoking is responsible for enormous health consequences. Lung cancer is fatal in over 80% of cases, and effective treatment is limited. The medical impact of cigarette smoking will diminish with effective measures to prevent smoking and nicotine addiction and to promote smoking cessation. Efforts should focus on the teenage population, with a combination of social, economic, and legislative interventions.

Kabir, Z., G. N. Connolly, et al. (2007). "Reduced lung cancer deaths attributable to decreased tobacco use in Massachusetts." Cancer Causes Control **18**(8): 833-8.

BACKGROUND: Approximately 88% of the lung cancer deaths in men and 71% in women occurring in the US are attributable to cigarette smoking, with almost 3,700 annual lung cancer deaths in Massachusetts. In the state, male lung cancer death rates are showing a per year annual decline following a peak in the early 1990s. Such recent declines could be mostly attributed to tobacco control efforts over the past 40 years. METHOD: This study predicts how

many fewer lung cancer deaths have occurred in Massachusetts possibly attributable to tobacco control activities. The study employs the US National Cancer Institute's "Joinpoint" Regression Analysis Program (version 3.0) using statewide age-standardized (2000 US Standard Population) lung cancer death rates from 1931 to 2003 for each of the sexes. 95% confidence intervals (CI) were also calculated. RESULTS: Modeled male lung cancer death rates stabilized from the calendar year 1977 onwards but showed significant decline from 1992 onwards, while females showed a deceleration in rising lung cancer rates from 1993 onwards. Therefore, based on their corresponding beta-coefficients (slope) and standard error for each of the two calendar years 19,665 (95% CI: 18,655; 20,765) fewer lung cancer deaths in males and 3,855 (95% CI: 3,630; 4,055) fewer lung cancer deaths in females were estimated to have occurred from 1977 to 1993 onwards, respectively, largely because of the anti-smoking interventions in the past. CONCLUSIONS: Reductions in tobacco smoking are a major factor in the decrease in lung cancer mortality rates. Sustained progress in tobacco control is essential.

Kadohama, N., K. Shintani, et al. (1993). "Tobacco alkaloid derivatives as inhibitors of breast cancer aromatase." Cancer Lett **75**(3): 175-82.

The inhibition of estrogen biosynthesis by the use of aromatase inhibitors is emerging as a valuable approach to breast cancer therapy. Because smoking has a profound effect on estrogen-related processes we examined the ability of tobacco constituents to suppress estrogen production by breast cancer aromatase. N-n-octanoylnornicotine and N-(4-hydroxyundecanoyl) anabasine suppressed aromatase activity in culture of two human breast cancer cell lines, MDA-MB-231 (IC50 of 310 and 20 microM, respectively) and SK-BR-3 (IC50 of 450 and approximately 2 microM, respectively). MDA-MB-231 cells induced by 250 nM dexamethasone or 1 mM (Bt)2cAMP were slightly more sensitive to both inhibitors. Kinetic analyses showed that inhibition by N-(4-hydroxyundecanoyl)anabasine is competitive with respect to androstenedione as substrate, with apparent Ki values of 0.2 microM against microsomal aromatase activity derived from both (Bt)2cAMP-induced MDA-MB-231 cells and human breast tumor tissue. The corresponding apparent Ki against human placental microsomal aromatase activity was 0.4 microM. These results indicate that acyl derivatives of nornicotine and anabasine block estrogen formation in breast tumor cells and tissue and could contribute to the decreased intra-tissue estrogen levels in women who smoke.

Kamataki, T., M. Fujieda, et al. (2005). "Genetic polymorphism of CYP2A6 as one of the potential determinants of tobacco-related cancer risk." Biochem Biophys Res Commun **338**(1): 306-10.

Analyzing the CYP2A6 gene of subjects who showed a poor metabolic phenotype toward SM-12502, we discovered a novel mutant allele (CYP2A6*4C) lacking the whole CYP2A6 gene. Using genetically engineered Salmonella typhimurium expressing a human CYP, we found that CYP2A6 was involved in the metabolic activation of a variety of nitrosamines such as 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone (NNK) contained in tobacco smoke. Taking these results into consideration, we hypothesized that the subjects carrying the CYP2A6*4C allele had lower risk of tobacco-related lung cancer. In accordance with our hypothesis, our epidemiological studies indicated that smokers homozygous for the CYP2A6*4C allele showed much lower odds ratios toward cancer risk. Other mutant alleles reducing the CYP2A6 activity, besides CYP2A6*4C, also reduced the risk of lung cancer in smokers, particularly of squamous-cell carcinoma and small-cell carcinoma, both smoking-related cancers. 8-Methoxypsoralen, an inhibitor of CYP2A6, efficiently prevented the occurrence of adenoma caused by NNK in A/J mice.

Kelder, G. E. and R. A. Daynard (1996). "Tobacco litigation as a public health and cancer control strategy." J Am Med Womens Assoc **51**(1-2): 57-62.

OBJECTIVE: To provide an overview of the class action and medical cost reimbursement suits of the third wave of tobacco litigation and to analyze their chances for success and their efficacy as a public health and cancer control strategy. METHOD/DATA SOURCES: The application of standard, predictive legal reasoning to documents from three class action lawsuits, four of the five state medical cost reimbursement lawsuits, documents from the tobacco industry, and appropriate secondary sources. CONCLUSIONS: Victory in any of the class actions would result in a transfer of costs, albeit an inefficient one, from injured smokers to the tobacco industry. Victory in any of the medical cost reimbursement suits would result in a transfer of costs from injured states forced to shoulder the economic burden of tobacco-induced illnesses to the tobacco industry. Such a transfer of costs would likely have the immediate impact of significantly lowering cigarette consumption, while the long-term effects would probably be much more devastating. Victory in at least some of the third wave cases is likely, because a number of factors promise to enable plaintiffs to overcome the previously impenetrable defenses of the tobacco industry.

Khan, F. A., P. G. Robinson, et al. (2000). "Predictors of tobacco and alcohol consumption and their relevance to oral cancer control amongst people from minority ethnic communities in the South Thames health region, England." J Oral Pathol Med **29**(5): 214-9.

The purpose of this study was to examine the determinants of the health behaviour of ethnic groups in relation to alcohol and tobacco use. A cross-sectional questionnaire survey was carried out using network sampling amongst community groups in the South Thames region of the United Kingdom. Self-classified ethnic groups were identified: Black-African; Black-Caribbean; Indian; Pakistani; Bangladeshi and Chinese/Vietnamese. A total of 1113 people were recruited in the study. In all of the ethnic groups, men were more likely than women to smoke tobacco. Chewing of pan and tobacco was common in the South Asian communities and alcohol consumption was high among the Black-Caribbean group. Those factors were predicted by education, employment, gender and being born in the UK. It is important to examine the determinants of such risk behaviours in order to aid appropriate targeting of health promotion interventions, particularly those related to cancer control.

Kilfoy, B. A., K. S. Hudmon, et al. (2007). "Tobacco control in state comprehensive cancer control plans: opportunities for decreasing tobacco-related disease." Prev Chronic Dis **4**(3): A61.

INTRODUCTION: Comprehensive cancer control plans published by state, tribal, and territorial health agencies present an excellent opportunity to help prevent tobacco-related and other cancers. In this analysis, we sought to estimate the extent to which tobacco control activities outlined in state comprehensive cancer control plans incorporated the tobacco control recommendations presented by the Centers for Disease Control and Prevention (CDC) in Best Practices for Comprehensive Tobacco Control Programs-August 1999 (Best Practices) and The Guide to Community Preventive Services: Tobacco Use Prevention and Control (The Guide). METHODS: We analyzed the 39 available state comprehensive cancer control plans to determine which of the CDC tobacco control recommendations were incorporated. We then summarized these data across the 39 states. RESULTS: The 39 states incorporated a mean of 5.6 recommendations from Best Practices (SD, 2.8; range, 0-9) and 3.9 recommendations from The Guide (SD, 1.9; range, 0-6). Nearly one-half of state plans (48.7%) addressed funding for tobacco control; of these, 52.6% (25.6% of total) delineated a specific, measurable goal for funding. CONCLUSION: The extent to which tobacco control is addressed in state comprehensive cancer control plans varies widely. Our analysis revealed opportunities for states to improve compliance with CDC's tobacco-related recommendations for cancer control.

Klosky, J. L., V. L. Tyc, et al. (2009). "Predictors of non-participation in a randomized intervention trial to reduce environmental tobacco smoke (ETS) exposure in pediatric cancer patients." Pediatr Blood Cancer **52**(5): 644-9.

BACKGROUND: Exposure to environmental tobacco smoke (ETS) is associated with the development of serious health consequences in children with cancer due to preexisting disease and treatment-related vulnerabilities. The purpose of the current investigation was to identify predictors of non-participation in a randomized intervention trial to reduce ETS exposure among pediatric cancer patients. METHODS: One hundred fifty-three families of pediatric cancer patients met study eligibility criteria. Parents of 117 (76%) patients agreed to study participation, whereas 36 (24%) parents declined (non-participants). Data were collected with respect to participant sociodemographic, medical, and treatment-related characteristics. RESULTS: Univariate analyses indicated that families whose primary caregivers were females or smokers were more likely to be non-participants in the ETS reduction trial (P = 0.045 and P = 0.009, respectively). Medical features that significantly associated with study non-participation included CNS tumor diagnosis (P = 0.030), no history of chemotherapy (P = 0.012), history of surgery prior to study recruitment (P = 0.036), and having future radiation therapy planned post study recruitment (P = 0.009). Multivariable logistic regression modeling revealed that study non-participation was associated with the primary caregiver being a smoker (OR = 6.48, P = 0.002) or female (OR = 8.56, P = 0.023), and patient CNS tumor diagnosis (OR = 4.63, P = 0.021). CONCLUSIONS: Although a large percentage of eligible participants enrolled in the ETS reduction trial, findings suggest that future recruitment strategies of families should be tailored to parental smoking status and gender, as well as child diagnosis and treatment.

Kondo, K., H. Tsuzuki, et al. (1996). "A dose-response relationship between the frequency of p53 mutations and tobacco consumption in lung cancer patients." J Surg Oncol **61**(1): 20-6.

Mutations of the p53 tumor suppressor gene are frequent in lung cancers. It is suggested that p53 mutations are associated with smoking-induced lung

carcinogenesis. We examined p53 mutations in 53 lung cancers by analyzing reverse transcription-polymerase chain reaction-single strand conformation polymorphism (RT-PCR-SSCP) to ascertain the association between p53 mutations and smoking. Twenty-five (47%) of 53 lung cancers carried p53 mutations. A discriminant analysis showed that the Brinkman index (0.156) and gender (0.140) significantly influenced p53 mutations. Furthermore, there was a dose-response relationship between the quantity of cigarettes consumed and the frequency of p53 mutations in lung cancer patients ($P < 0.001$). In patients with adenocarcinoma, the frequency of p53 mutations correlated with the amount of the tobacco smoked ($P < 0.05$). We suggest that the p53 gene is a target of particular carcinogen in tobacco smoke.

Lawvere, S., M. C. Mahoney, et al. (2006). "Approaches to tobacco control & lung cancer screening among physician assistants." J Cancer Educ **21**(4): 248-52.

BACKGROUND: This study explores physicians' assistants' (PA) knowledge and practice regarding tobacco cessation counseling, approaches to lung cancer early detection and management of patients at high risk of developing lung cancer. METHODS: A cross-sectional survey design was used to examine approaches to tobacco use prevention and the early detection of lung cancer among PAs from Western New York State. RESULTS: PAs report promoting use of the nicotine patch, nicotine spray and bupropion when counseling smokers on cessation. Reported management strategies for a patient at high risk of developing lung cancer were not supported by current literature. CONCLUSION: These findings suggest the need for professional educational programs aimed not only at conveying the continued importance of tobacco cessation counseling, but also information on the appropriate management options for patients at increased risk of developing lung cancer.

Lawvere, S., M. C. Mahoney, et al. (2003). "Nurse practitioners' knowledge, practice and attitudes about tobacco cessation & lung cancer screening." J Am Acad Nurse Pract **15**(8): 376-81.

PURPOSE: To determine nurse practitioners' (NPs') knowledge, practice, and attitudes about tobacco cessation counseling and lung cancer early detection. DATA SOURCE: A descriptive, cross-sectional survey design was used to examine NPs' approaches to primary and secondary prevention of tobacco use among patients in western New York. CONCLUSIONS: Among the 175 respondents, NPs appropriately counseled tobacco users on tobacco cessation. However, there was limited understanding of first-line pharmacological agents used for tobacco cessation and of how to manage treatment for a patient at high risk for lung cancer. IMPLICATIONS FOR PRACTICE: These findings suggest the need to implement professional educational programs aimed at conveying not only the importance of tobacco cessation counseling but also information on the most effective first-line pharmacological agents and appropriate management options for patients at increased risk of developing lung cancer.

Leon, X., M. del Prado Venegas, et al. (2009). "Influence of the persistence of tobacco and alcohol use in the appearance of second neoplasm in patients with a head and neck cancer. A case-control study." Cancer Causes Control **20**(5): 645-52.

OBJECTIVE: To evaluate the influence of persistent tobacco and alcohol use on the risk of a second metachronous neoplasm in the aerodigestive tract in head and neck squamous cell carcinoma (HNSCC) patients. METHODS: A matched case-control study was carried out in 514 patients with HNSCC. Case patients developed a second metachronous neoplasm in the aerodigestive tract after treatment of an index HNSCC. A patient free of second neoplasm was individually matched to every case patient by location of the index tumor, tumor stage, sex, previous tobacco and alcohol consumption, age, general health status, and treatment. Data about persistence in tobacco and alcohol consumption after treatment of the index tumor was collected retrospectively. A validation study was carried out to confirm the adequacy of this retrospective information. RESULTS: Persistent tobacco smoking and alcohol drinking after treatment of a HNSCC contributed to the risk of appearance of second neoplasm. The odds ratio of a second neoplasm for patients who continued to smoke was 2.9 (95% CI OR 1.8-4.1), and for patients who continued to use alcohol it was 5.2 (95% CI OR 3.3-7.9). There was a strong association between persistence of tobacco and alcohol use after treatment of the HNSCC index tumor. According to the attributable risk estimation, persistent tobacco and alcohol consumption would be responsible for one-third of the second neoplasms in the patients with a HNSCC index tumor. CONCLUSIONS: Persistence of tobacco and alcohol use after treatment of a HNSCC had a significant influence on the appearance of a second neoplasm in the aerodigestive tract. Cessation of tobacco and alcohol use should be a major goal after treatment of a HNSCC.

Lichtenstein, E. (1997). "Behavioral research contributions and needs in cancer prevention and

control: tobacco use prevention and cessation." Prev Med **26**(5 Pt 2): S57-63.

Following a brief review of the etiology and prevalence of tobacco use and data on the effectiveness of prevention and cessation interventions, recommendations for a research agenda are outlined. It is suggested that research on youth tobacco initiation and cessation be given highest priority because of rising prevalence rates, fundamental social importance, and the widespread support for such efforts. Policy and community approaches to deterring youth tobacco use deserve particular attention. Adult intervention research should focus on health care settings and include factors that both help and hinder adoption and routine implementation of tobacco interventions by clinicians. Developing and evaluating practical ways of using nicotine replacement therapies or other pharmacological therapies in primary care are also of importance. Media interventions that segment the smoking population by age, ethnicity, and developmental milestones should be encouraged. Three approaches could profit from working conferences of investigators and other interested parties to review the data and suggest research directions: worksite interventions, interventions with ethnic populations, and matching or tailoring interventions to specified characteristics of smokers. The importance of devoting considerable resources to investigator-initiated contrasted with sponsor-directed research is discussed.

Ma, G. X., K. C. Chu, et al. (2003). "The Asian Tobacco Education, Cancer Awareness and Research's role in tobacco and cancer control efforts in Asian American communities." Asian Am Pac Isl J Health **10**(1): 25-39.

PURPOSE: This article identifies the urgent needs for tobacco and cancer control in Asian American communities and the barriers that have historically prevented the development and implementation of tobacco and cancer prevention and intervention research programs among Asian Americans residing in Delaware Valley region of Pennsylvania and New Jersey. This article also presents ATECAR, the first long-term federal effort in tobacco and cancer control targeting the multi-ethnic Asian American communities in this area. METHODS: ATECAR uses a three-pronged approach: the development of community and university infrastructure, the development of training programs for minority and underserved students so that they will pursue cancer research careers, and community-based intervention research projects. PRINCIPAL FINDINGS: ATECAR's pioneering work redefined our understanding of Asian Americans' smoking habits and the important role of smoking, especially in newly immigrated communities. CONCLUSION: The advent of ATECAR marks the building of a viable infrastructure that can ensure sustainability of current and future efforts in tobacco control and use.

Ma, G. X., Y. Tan, et al. (2006). "Asian Tobacco Education and Cancer Awareness Research Special Population Network. A model for reducing Asian American cancer health disparities." Cancer **107**(8 Suppl): 1995-2005.

Asian Americans are the fastest growing and the second largest foreign-born ethnic group in the United States. Cancer is a leading cause of death among Asian Americans. The Asian Tobacco Education and Cancer Awareness Research (ATECAR) Special Population Network, Center for Asian Health, aimed to reduce or eliminate cancer health disparities in these diverse, underserved populations in Pennsylvania, New Jersey, Delaware, and New York. The ATECAR logic model was adapted from a variety of conceptual frameworks to develop and implement the network's multifaceted cancer health disparities research, training, awareness, and outreach programs. The model was the basis for the developmental phases of the network that included (1) needs assessment, infrastructure, and partnership building; (2) intervention research, training, and mentorship; and (3) evaluation, dissemination, and diffusion. Community involvement occurred at every operational level to ensure program and network sustainability. Between 2000 and 2005, the ATECAR network consisted of 88 partners, representing a cross-section of Asian communities, academia, cancer centers, and health service agencies, ensuring a viable infrastructure for the network's multidimensional cancer health disparities programs. ATECAR's research covered tobacco control, cancer prevention and intervention, and clinical trials. More than 22 research projects were conducted and their results disseminated in peer-reviewed journals. ATECAR also trained 76 junior researchers and special population investigators and 1014 community professionals in disparity issues. ATECAR's multimedia cancer awareness education program reached over 116,000 Asians. The ATECAR network's achievements have had a profound impact on Asian Americans and established a trend toward reducing cancer health disparities, especially among underserved Asian Americans. Cancer 2006. (c) 2006 American Cancer Society.

Ma, G. X., J. I. Toubbeh, et al. (2004). "ATECAR: An Asian American community-based participatory

research model on tobacco and cancer control." Health Promot Pract **5**(4): 382-94.

In the past few decades, community-based participatory research, which underscores the indispensable role of the community in all phases of the research process, has been recognized as a viable approach to working constructively with communities to achieve mutually beneficial goals. This article presents a history of the Asian Tobacco Education, Cancer Awareness and Research's pioneering efforts in conducting community-based participatory research among Asian Americans in the Delaware Valley region of Pennsylvania and New Jersey. Information about project background, target populations, and the rationale for the conduct of community-based participatory research in American communities is provided. It also delineates the manner in which the principles of community-based participatory research were applied as guides for the development of partnership infrastructures, research programs, and the challenges and barriers that were encountered. Facilitating factors in partnership building, and implications of employing this model in this ethnically and racially diverse population, are further discussed.

Macfarlane, G. J., T. Zheng, et al. (1995). "Alcohol, tobacco, diet and the risk of oral cancer: a pooled analysis of three case-control studies." Eur J Cancer B Oral Oncol **31B**(3): 181-7.

This combined analysis of data from three large case-control studies of oral cancer confirms the important effect of tobacco in the aetiology of the disease. The studies have been conducted in the United States, Italy and China and results for risks associated with tobacco smoking were generally consistent across centres, while those for alcohol were not; increased risks amongst alcohol drinkers were evident in two centres but not in the study conducted in Turin, Italy. In addition, the combined analysis had large enough numbers to analyse the risk of tobacco consumption in non-drinkers. In females these showed increased risks while in males the effect of tobacco alone was weaker. Given the popularity of tobacco smoking, and its consequent high attributable risk in terms of oral cancer it is reassuring, in terms of public health, that cessation will result in a substantial reduction in risk; a 30% reduction in risk for those stopping smoking between 1 and 9 years, and a 50% reduction for those stopping more than 9 years. Although encouraging smokers to stop should be the principal aim, decreases in risk for everyone could be achieved by encouraging high fruit and vegetable consumption.

Marcus, P. M., B. Newman, et al. (2000). "The associations of adolescent cigarette smoking, alcoholic beverage consumption, environmental tobacco smoke, and ionizing radiation with subsequent breast cancer risk (United States)." Cancer Causes Control **11**(3): 271-8.

OBJECTIVES: Studies of breast cancer among survivors of the World War II atomic bomb blasts over Japan suggest that the adolescent breast may be particularly sensitive to carcinogenic insult. To further explore that possibility we examined the relationships of cigarette smoking, alcohol consumption, environmental tobacco smoke (ETS) exposure, and medical treatment with ionizing radiation during adolescence with subsequent breast cancer risk. METHODS: Data from the Carolina Breast Cancer Study, a population-based, case-control study of breast cancer in North Carolina women aged 20-74 years (864 cases, 790 controls), were analyzed. RESULTS: A modest increase in breast cancer risk was suggested for women who began to smoke cigarettes between the ages of 10 and 14 years (OR: 1.5, CI: 0.9-2.5), and for women exposed to ionizing radiation between ages 10 and 19 years to treat or monitor a medical condition (OR: 1.6, CI: 0.5-2.5). Neither exposure to ETS at home prior to age 18 years (OR: 1.1, CI: 0.9-1.3) nor initiation of alcoholic beverage consumption between ages 10 and 15 years (OR: 1.1, CI: 0.6-1.8) appeared to increase risk. CONCLUSIONS: Our results are consistent with previous evidence suggesting that some adolescent exposures could influence future breast cancer risk.

Marsit, C. J., D. H. Kim, et al. (2005). "Hypermethylation of RASSF1A and BLU tumor suppressor genes in non-small cell lung cancer: implications for tobacco smoking during adolescence." Int J Cancer **114**(2): 219-23.

The putative tumor suppressors RASSF1A and BLU are mapped adjacent to one another on chromosome 3p21.3, a region frequently deleted in lung cancer. These genes are often inactivated by promoter hypermethylation, but the association of this inactivation with clinical features of the disease or with carcinogen exposure has been poorly studied. Early age starting smoking has been hypothesized as an independent risk factor for lung cancer, and mechanistically, adolescence may constitute a critical period for tobacco carcinogen exposure. To study the relationship of tobacco smoke exposure with hypermethylation of RASSF1A and BLU, methylation-specific PCR was performed on a case series study of incident, surgically resected non-small cell lung cancer (NSCLC), and the prevalence of this alteration was examined in relation to clinical and exposure information collected on the patients.

Hypermethylation of the RASSF1A promoter occurred in 47% (83/178) and of the BLU promoter in 43% (68/160) of NSCLC tumors examined. There was no significant association between methylation of these 2 genes, but methylation of either of these genes tended to occur more often in the adenocarcinoma (AC) histology compared to squamous cell carcinoma (SCC). Controlling for pack-years smoked, age, gender and histology, starting smoking under age 18 was significantly related to RASSF1A methylation [prevalence ratio (PR) = 1.6, 95% confidence interval [CI] = 1.1-2.3]. These results indicate that starting smoking under age 18 is an independent risk for RASSF1A hypermethylation, thus identifying a molecular alteration related to the epidemiologic effect of teenage smoking as a lung cancer risk.

Martin, L. M., J. E. Bouquot, et al. (1996). "Cancer prevention in the dental practice: oral cancer screening and tobacco cessation advice." J Public Health Dent **56**(6): 336-40.

OBJECTIVES: In this paper we describe the proportion of US adults who report receiving oral cancer screening and tobacco cessation counseling and assistance from dentists and other health professionals. METHODS: Data from the 1992 National Health Interview Survey (NHIS) Cancer Control Supplement, a nationally representative sample of 12,035 adults 18 years of age and older, are analyzed. RESULTS: In 1992, less than 10 percent of adults reported oral cancer screening by a dentist or hygienist within the past three years. White adults (10.1%, 95% CI = 9.3, 10.9) reported an oral cancer screening three times more frequently than black (3.2%, 95% CI = 1.9, 4.5) or Hispanic (3.4%, 95% CI = 2.1, 4.7) adults. About half of adult current smokers had seen a dentist within 12 months, and of those only 24.1 percent (95% CI = 21.7, 26.5) had been advised to quit smoking. Heavy smokers (two or more packs a day) were more likely to have been advised to quit than light (pack or less per day) or occasional smokers. A similar proportion (24.3%, 95% CI = 17.6, 31.0) of white adult men who reported using smokeless tobacco products had been told by a dentist to quit using tobacco. CONCLUSIONS: Results from this population-based survey indicate that cancer screening and tobacco cessation advice are underutilized in the dental practice. Increased patient awareness and implementation of screening and tobacco cessation interventions could improve oral cancer incidence and mortality and have a public health benefit for other tobacco-related morbidity and mortality as well.

Merchant, A., S. S. Husain, et al. (2000). "Paan without tobacco: an independent risk factor for oral cancer." Int J Cancer **86**(1): 128-31.

Oral cancer is the second most common cancer in women and the third most common in men in Pakistan. Tobacco is smoked and chewed extensively in Pakistan. Paan is a quid of piper betel leaf that contains areca nut, lime, condiment, sweeteners, and sometimes tobacco, which is also used extensively. We did this study to clarify the independent association of paan and oral cancer. Between July 1996 and March 1998, we recruited biopsy-proven, primary cases of oral squamous-cell carcinoma, from 3 tertiary teaching centers in Karachi, Pakistan, and controls pair-matched for age, gender, hospital and time of occurrence, excluding persons with a past or present history of any malignancy. There were 79 cases and 149 controls. Approximately 68% of the cases were men, 49 years old on average, the youngest being 22 years old and the eldest 80. People with oral submucous fibrosis were 19.1 times more likely to develop oral cancer than those without it, after adjusting for other risk factors. People using paan without tobacco were 9.9 times, those using paan with tobacco 8.4 times, more likely to develop oral cancer as compared with non-users, after adjustment for other covariates. This study identifies an independent effect of paan without tobacco in the causation of oral cancer. Its findings may be of significance in South Asian communities where paan is used, and among health-care providers who treat persons from South Asia.

Milker-Zabel, S., A. Zabel, et al. (2003). "Calcification in coronary arteries as quantified by CT scans correlated with tobacco consumption in patients with inoperable non-small cell lung cancer treated with three-dimensional radiotherapy." Br J Radiol **76**(912): 891-6.

It has been shown that radiological manifestations of coronary artery sclerosis are an indirect measure of co-morbidity and predictive of survival. The aim of the present study is to evaluate the outcome and side effects after three-dimensional (3D) radiotherapy in patients with unresectable non-small cell lung cancer (NSCLC) stage I, II and IIIA, depending on coronary artery calcification, Karnofsky performance index (KI) and co-morbidity. Between 1993 and 1999, 89 patients with unresectable NSCLC were treated with 3D-radiotherapy. The median age was 66.6 years and median KI 80%. All patients had 3D-treatment planning, based on CT scans. The median total dose was 60 Gy in 2 Gy fractions five times a week. The mean follow-up period was 13.2 months and mean survival time 12.2 months. Significant prognostic factors for improved survival

were KI and tumour stage. Patients with a KI<90% had a median survival of 6.5 months compared with 14 months, in patients with KI>/==" BORDER="0">90% (p<0.001). NSCLC stage I+II showed a significantly longer median survival than patients with NSCLC stage IIIA (16.5 months versus 7 months, p<0.004). A significant correlation was seen between pack-years and coronary artery calcification (p<0.05) and between age and marked coronary artery calcification. The incidence of calcification was 67% in smokers (>/==" BORDER="0">20 pack-years) and 43/58 in patients >60 years (p<0.007). Side effects, e.g. pneumonitis, did not correlate with coronary artery calcification but correlated with chronic obstructive lung disease in 19/89 patients. Conventional CT scans for 3D-treatment planning are able to detect coronary artery calcification. There is a significant correlation between age, KI, tobacco consumption and vascular calcification. Although there was a trend to worse overall survival, coronary artery calcification was not a significant predictor of progression-free and overall survival.

Mould, R. F., M. Lederman, et al. (2002). "Methodology to predict long-term cancer survival from short-term data using Tobacco Cancer Risk and Absolute Cancer Cure models." Phys Med Biol **47**(22): 3893-924.

Three parametric statistical models have been fully validated for cancer of the larynx for the prediction of long-term 15, 20 and 25 year cancer-specific survival fractions when short-term follow-up data was available for just 1-2 years after the end of treatment of the last patient. In all groups of cases the treatment period was only 5 years. Three disease stage groups were studied, T1N0, T2N0 and T3N0. The models are the Standard Lognormal (SLN) first proposed by Boag (1949 J. R. Stat. Soc. Series B 11 15-53) but only ever fully validated for cancer of the cervix, Mould and Boag (1975 Br. J. Cancer 32 529-50), and two new models which have been termed Tobacco Cancer Risk (TCR) and Absolute Cancer Cure (ACC). In each, the frequency distribution of survival times of defined groups of cancer deaths is lognormally distributed: larynx only (SLN), larynx and lung (TCR) and all cancers (ACC). All models each have three unknown parameters but it was possible to estimate a value for the lognormal parameter S a priori. By reduction to two unknown parameters the model stability has been improved. The material used to validate the methodology consisted of case histories of 965 patients, all treated during the period 1944-1968 by Dr Manuel Lederman of the Royal Marsden Hospital, London, with follow-up to 1988. This provided a follow-up range of 20-44 years and enabled predicted long-term survival fractions to be compared with the actual survival fractions, calculated by the Kaplan and Meier (1958 J. Am. Stat. Assoc. 53 457-82) method. The TCR and ACC models are better than the SLN model and for a maximum short-term follow-up of 6 years, the 20 and 25 year survival fractions could be predicted. Therefore the numbers of follow-up years saved are respectively 14 years and 19 years. Clinical trial results using the TCR and ACC models can thus be analysed much earlier than currently possible. Absolute cure from cancer was also studied, using not only the prediction models which incorporate a parameter for a statistically cured fraction of patients C(SLN), C(TCR) and C(ACC), but because of the long follow-up range of 20-44 years, also by complete life analysis. The survival experience of those who did not die of their original cancer of the larynx was compared to the expected survival experience of a population with the same age, birth cohort and sex structure. To date it has been generally assumed for early stage disease that although for some 5-10 years after treatment the survival experience of this patient subgroup might be no different from that expected in the matched group, thereafter the death rate of this subgroup becomes lower than that of the matched group. This implies that surviving cancer patients cured of their disease tend to die of other conditions at a higher than normal rate as they become older, and therefore cancer is never totally cured. Our conclusion is that at least for cancer of the glottic larynx, the answer to the question: 'Can cancer totally be cured?' is 'Yes to at least 15-years post-treatment and also probably to 25 years.'

Oefelein, M. G. and M. I. Resnick (2004). "Association of tobacco use with hormone refractory disease and survival of patients with prostate cancer." J Urol **171**(6 Pt 1): 2281-4.

PURPOSE: We identified time to the development of hormone refractory prostate cancer (HRPC) and survival in men with advanced prostate cancer and examined any association with cigarette smoking history. MATERIALS AND METHODS: The study design was retrospective. A complete tobacco history was obtained in 222 patients with advanced prostate cancer. HRPC was diagnosed in 133 of these 222 patients and death occurred in 77. Standard statistical methods and software were used to analyze these data. RESULTS: Median time to HRPC was 11, 23 and 35 months in patients with a current, former or never smoked tobacco history (p = 0.00001). Median overall survival time on androgen ablative therapy was 38, 47 and 60 months in patients with a current, former or never smoked tobacco history, respectively (p = 0.00001). CONCLUSIONS:

Tobacco use independently correlates with time to HRPC and survival in a dose dependent manner in patients with advanced prostate cancer on androgen deprivation therapy.

Orleans, C. T. (1995). "Preventing tobacco-caused cancer: a call to action." Environ Health Perspect **103 Suppl 8**: 149-52.

Nicotine addiction is the most common serious medical problem in the country. Tobacco use is responsible for 30% of cancer deaths in the United States and 90% of all lung cancer deaths. The physical addiction to nicotine explains why over 30% of Americans continue to smoke or use tobacco despite their desires and efforts to quit. The testimony summarized in this paper recommends four broad strategies for preventing tobacco-caused cancers in the United States: a) mandating and reimbursing effective treatments for nicotine addiction; b) increasing Federal and state tobacco excise taxes and earmarking a fraction of tax revenues for tobacco prevention and cessation; c) enacting other policy changes to prevent tobacco use and addiction among children, including expanded clean indoor air legislation, comprehensive youth tobacco access legislation, and the regulation of tobacco products and their advertising and promotion; and d) expanding tobacco control research and critical Federal research support. Specific recommendations are given for each broad strategy.

Ostroff, J. S., P. B. Jacobsen, et al. (1995). "Prevalence and predictors of continued tobacco use after treatment of patients with head and neck cancer." Cancer **75**(2): 569-76.

BACKGROUND: Patients with head and neck cancer who continue to smoke after diagnosis and treatment are more likely than patients who quit to experience tumor recurrence and second primary malignancies. Therefore, information about patients' smoking status and the factors associated with continued tobacco use are important considerations in the comprehensive care patients with head and neck cancer. METHODS: Study participants were 144 patients with newly diagnosed squamous cell carcinomas of the upper aerodigestive tract who underwent surgical treatment, with or without postoperative radiotherapy or chemotherapy, 3-15 months before assessment of their postoperative tobacco use. RESULTS: Among the 74 patients who had smoked in the year before diagnosis, 35% reported continued tobacco use after surgery. Compared with patients who abstained from smoking, patients who continued to use tobacco were less likely to have received postoperative radiotherapy, to have had less extensive disease, to have had oral cavity disease, and to have had higher levels of education. Hierarchical regression analysis indicated that most of the explained variance in smoking status could be accounted for on the first step of analysis by disease site. Interest in smoking cessation was high, and most patients made multiple attempts to quit. CONCLUSIONS: Although the diagnosis of a tobacco-related malignancy clearly represents a strong catalyst for smoking cessation, a sizable subgroup of patients continue to smoke. Patients with less severe disease who undergo less extensive treatment are particularly at risk for continued tobacco use. These data highlight the importance of developing smoking cessation interventions designed to meet the demographic, disease, treatment, and tobacco-use characteristics of this patient population.

Polednak, A. P. (2004). "Geographic pattern of cancers related to tobacco and alcohol in Connecticut: implications for cancer control." Cancer Detect Prev **28**(4): 302-8.

The purpose of this study was to examine the geographic distribution of standardized incidence ratios (SIRs) for Connecticut's 169 towns for 18,382 cancers diagnosed in 1995-2000 at sites most strongly associated with tobacco and/or alcohol (i.e, lung, oral cavity-pharynx, and esophagus), with consideration of census-derived indicators of socioeconomic status (SES) at the town level. For males, the state's four largest towns, all in the highest poverty-rate quartile, had statistically significantly elevated SIRs for both lung cancer and oral cavity-pharynx cancers, and also had elevated SIRs for esophageal cancer. Two of these four towns also had statistically significantly elevated SIRs for oral cavity-pharynx cancer for females. SIRs for both males and females were lowest for the lowest poverty quartile and highest for the highest poverty quartile, for each cancer-site group. Among 15,271 patients diagnosed with their first cancer at any of the selected sites in 1995-2000, risk of diagnosis of a second primary cancer at any of these sites (139 patients) was highest in the highest poverty-rate quartile. These surveillance methods should be useful for targeting cancer control efforts aimed at prevention or cessation of tobacco and/or heavy alcohol use, and early detection or chemoprevention of these cancers, including second primary cancers.

Polychronopoulou, A., A. Tzonou, et al. (1993). "Reproductive variables, tobacco, ethanol, coffee and somatometry as risk factors for ovarian cancer." Int J Cancer **55**(3): 402-7.

A hospital-based case-control study of ovarian cancer was conducted in Athens from 1989 to 1991. The cases were 189 women, residents of Greater Athens and less than 75 years old, with

histologically confirmed common malignant epithelial tumors of the ovary, operated in the 2 major cancer hospitals of the Greater Athens area. Controls were women residents of Greater Athens, less than 75 years old, who had never had cancer or had an ovary removed and who had visited patients hospitalized in the same wards as the ovarian cancer cases at the same time. The data were analyzed by modeling through multiple logistic regression. Statistically significant associations were found with induced menopause without oophorectomy [relative risk (RR) 0.17; 95% confidence interval (CI) 0.04 to 0.72], age at menopause (for an increment of 5 years RR 1.42; CI 1.00 to 2.01), hormone-replacement therapy (RR 5.73; CI 1.07 to 30.80), parity (RR 0.48; CI 0.24-0.96) and, marginally, age at first birth (for an increment of 5 years RR 1.30; CI 0.99 to 1.70). Non-significant but previously suggested or biologically plausible associations were noted with use of oral contraceptives (inverse), weight before onset of the disease (positive), and consumption of more than 2 glasses of alcoholic drinks per day (positive). There were no consistent associations with coffee, tobacco, moderate alcohol intake, broad occupational group, induced abortions, or age at menarche.

Ponder, P., A. M. Jefferson, et al. (2007). "Tobacco-related research funding at the National Cancer Institute: Portfolio analysis, fiscal year 2003." Nicotine Tob Res **9**(10): 1053-7.

A variety of methods is used to classify research conducted or funded by the National Institutes of Health (NIH). We undertook this analysis to delineate research funded by the National Cancer Institute (NCI) that specifically addresses a tobacco-related research question. Intramural projects, extramural grants, and contracts were coded according to eight categories based on information in the abstracts. One category, "research area," classified projects by the primary study outcome. A total of 318 projects met our inclusion criterion of addressing a tobacco-related research question. As a result, our estimate of about US$107 million in tobacco research during the 2003 fiscal year is different from what is officially reported by NCI. The greatest proportion of tobacco research dollars was devoted to policy research (20%, n = 47) and research on the determinants of tobacco use (19%, n = 36). The greatest number of studies focused on investigating the consequences of tobacco use (32%, n = 105). A substantial number of projects addressed a tobacco-related question specifically about women (n = 45) or a racial/ethnic group (n = 99) and used cigarettes as the primary tobacco product (n = 277). These findings elucidate key areas for future tobacco control research and may help to determine future funding priorities at NCI and in the research community at large. Although tobacco causes nearly 30% of all cancer deaths, NCI spent 2.3% of its total fiscal year 2003 budget on tobacco-related research funding.

Prochazka, M., P. Hall, et al. (2005). "Ionizing radiation and tobacco use increases the risk of a subsequent lung carcinoma in women with breast cancer: case-only design." J Clin Oncol **23**(30): 7467-74.

PURPOSE: To analyze the risk of lung cancer in women treated with radiotherapy for breast cancer. We accessed the lung dose in relation to different radiotherapy techniques, provided the excess relative risk (ERR) estimate for radiation-associated lung cancer, and evaluated the influence of tobacco use. PATIENTS AND METHODS: The Swedish Cancer Registry was used to identify 182 women diagnosed with breast and subsequent lung cancers in Stockholm County during 1958 to 2000. Radiotherapy was administered to 116 patients. Radiation dose was estimated from the original treatment charts, and information on smoking history was searched for in case records and among relatives. The risk of lung cancer was assessed in a case-only approach, where each woman contributed a pair of lungs. RESULTS: The average mean lung dose to the ipsilateral lung was 17.2 Gy (range, 7.1 to 32.0 Gy). A significantly increased relative risk (RR) of a subsequent ipsilateral lung cancer was observed at > or = 10 years of follow-up (RR = 2.04; 95% CI, 1.24 to 3.36). Squamous cell carcinoma (RR = 4.00; 95% CI, 1.50 to 10.66) was the histopathologic subgroup most closely related to ionizing radiation. The effect of radiotherapy was restricted to smokers only (RR = 3.08; 95% CI, 1.61 to 5.91). The ERR/Gy for women with latency > or = 10 years after exposure was 0.11 (95% CI, 0.02 to 0.44). CONCLUSION: Radiotherapy for breast cancer significantly increases the risk of lung carcinoma more than 10 years after exposure in women who smoked at time of breast cancer.

Rassekh, C. H. (2001). "Tobacco cancer of the oral cavity and pharynx." W V Med J **97**(1): 8-12.

Cancer of the oral cavity and pharynx affects a significant number of individuals worldwide. The most important risk factor for development of oral cavity cancer is cigarette smoking. Tobacco in other forms and other types of smoking are also thought to be major risk factors. Co-factors, particularly alcohol consumption, are also important factors in oral cancer. Management of oral cancer requires a multidisciplinary team and has major implications for patient quality of life and for public health. Efforts are underway in many countries to reduce the incidence of oral cancer. These efforts always emphasize

cessation of tobacco use and cancer screening. Local smoking cessation programs should be supported to improve the future of health care in West Virginia.

Sanderson Cox, L., C. A. Patten, et al. (2002). "Tobacco use outcomes among patients with lung cancer treated for nicotine dependence." J Clin Oncol **20**(16): 3461-9.

PURPOSE: There is a current lack of consensus about the effectiveness of nicotine dependence treatment for cancer patients. This retrospective study examined the 6-month tobacco abstinence rate among lung cancer patients treated clinically for nicotine dependence. PATIENTS AND METHODS: A date-of-treatment matched case control design was used to compare lung cancer patients (201 lung cancer patients, 41% female) and nonlung cancer patients (201 controls, 45% female) treated in the Mayo Clinic Nicotine Dependence Center between 1988 and 2000. The intervention involves a brief consultation with a nicotine dependence counselor. A treatment plan individualized to the patient's needs is then developed. The primary end point was the self-reported, 7-day point prevalence abstinence from tobacco at 6-month follow-up. RESULTS: At baseline, compared with the controls, the lung cancer patients were significantly older (P <.001), reported higher motivation to stop smoking (P =.003), and were at a higher stage of change (P =.002). The 6-month tobacco abstinence rate was 22% for the lung cancer patients compared with 14% of the control patients (P =.024). After adjusting for age, sex, baseline cigarettes smoked per day, and stage of change, no significant difference was detected between lung cancer patients and controls on the tobacco abstinence rate. CONCLUSION: The results suggest that nicotine dependence treatment is effective for patients with a diagnosis of lung cancer. The majority of lung cancer patients were motivated to stop smoking.

Sarna, L. (1999). "Prevention: tobacco control and cancer nursing." Cancer Nurs **22**(1): 21-8.

In the next century, tobacco will become the number-one cause of preventable death throughout the world, resulting in half a billion deaths. As global patterns of tobacco use change, tobacco-related morbidity and mortality will shift from developed countries to developing countries. Internationally, lung cancer will become the fifth leading cause of preventable death, affecting an increasing number of women. Tobacco cessation after a diagnosis of cancer may decrease treatment-related morbidity and increase survival. With the increasing number of cancer survivors, tobacco cessation becomes an important part of rehabilitation. This article aims to provide a foundation for developing strategies to involve cancer nurses throughout the world in an international campaign to prevent tobacco-related morbidity and mortality. The devastating health impacts of tobacco are reviewed, and highlights of new scientific findings about nicotine addiction are presented. New approaches to tobacco prevention, legislation, and regulatory policies are discussed. Tobacco assessment strategies and treatment interventions for use in cancer nursing clinical practice are reviewed, and global strategies for nursing action in tobacco control are offered.

Sarna, L., M. E. Cooley, et al. (2003). "The global epidemic of tobacco and cancer." Semin Oncol Nurs **19**(4): 233-43.

OBJECTIVES: To provide a global context for understanding the epidemic of tobacco-induced disease, and the need for nursing action. DATA SOURCES: International cancer and tobacco statistics; published articles. CONCLUSION: Tobacco use is a global problem and a significant issue for cancer control. The efforts of health professionals, especially those concerned about cancer, are needed to confront this epidemic. IMPLICATIONS FOR NURSING PRACTICE: Worldwide action of nurses, the largest group of health professionals, is critical in preventing tobacco use, helping with tobacco cessation, and decreasing exposure to second-hand smoke.

Schnoll, R. A., P. F. Engstrom, et al. (2006). "Prevalence and correlates of tobacco use among Russian cancer patients: implications for the development of smoking cessation interventions at a cancer center in Russia." Int J Behav Med **13**(1): 16-25.

This study examined the rate of smoking among 399 cancer patients in Russia and assessed correlates of tobacco use and readiness to quit smoking. The results indicated that (a) 41.6% of patients were smokers; and (b) smokers were likely to be male, have lung or colorectal cancer, exhibit low levels of knowledge concerning the negative effects of smoking, report a low level of advantages to quitting smoking and a high level of disadvantages to quitting smoking, show low perceived risk for the adverse effects of smoking, and exhibit high fatalistic beliefs. Though certain findings converge well with data collected from U.S. samples of cancer patients, these results can guide the development of smoking interventions that address the specific needs of Russian cancer patients. In sum, this study fills a critical gap in knowledge concerning the epidemic of tobacco use in Russia and broadens research regarding

tobacco use by cancer patients from the United States to the Russian Federation.

Schnoll, R. A., C. James, et al. (2003). "Longitudinal predictors of continued tobacco use among patients diagnosed with cancer." Ann Behav Med **25**(3): 214-22.

Even though continued smoking by cancer patients adversely affects survival and quality of life, about one third of patients who smoked prior to their diagnosis continue to smoke after their diagnosis. The implementation of smoking cessation treatments for cancer patients has been slowed by the lack of data on correlates of tobacco use in this population. Thus, this longitudinal study assessed demographic, medical, addiction, and psychological predictors of tobacco use among 74 head, neck, and lung cancer patients. Multivariable binary logistic regression analyses, with outcome categorized as smoker or nonsmoker, indicated that the likelihood that patients would be a smoker was associated with lower levels of perceived risk and a higher level of quitting cons. Multivariable nominal logistic regression, with outcome classified as continuous smoker, continuous quitter, relapser, or follow-up quitter, indicated that: (a). patients categorized as continuous smokers reported significantly lower quitting self-efficacy than follow-up quitters and continuous quitters, (b). relapsers reported a significantly lower level of quitting self-efficacy than either follow-up quitters or continuous quitters, and (c). continuous smokers exhibited a significantly lower level of risk perceptions than continuous abstainers. These findings can be useful for the development and evaluation of treatments to promote smoking cessation among cancer patients.

Scully, C. and S. Warnakulasuriya (2005). "The role of the dental team in preventing and diagnosing cancer: 4. Risk factor reduction: tobacco cessation." Dent Update **32**(7): 394-6, 399-401.

Tobacco use contributes to many oral and general health disorders.While cigarette smoking is the most hazardous and prevalent form of tobacco use in the industrialized countries, consideration also needs to be given to non-cigarette use such as bidi smoking in India, reverse smoking by several rural populations and use of snuff and chewing tobacco. CLINICAL RELEVANCE: Health professionals should encourage and aid cessation of tobacco use as a part of prevention of oral and other cancers.

Stanley, K. E. (1986). "Lung cancer and tobacco--a global problem." Cancer Detect Prev **9**(1-2): 83-9.

Lung cancer is the second most common cancer globally, with an estimated 590,000 new cases each year, and is expected to surpass stomach cancer as the most frequent cancer in the near future. Lung cancer is not, as many believe, a problem solely of the developed countries. An estimated 33% of all lung cancer cases occur in developing countries. Approximately 80-90% of all cases of lung cancer in developed countries are caused by tobacco. A clear-cut dose-response relationship among cigarette smokers has been observed, and the risk is greater among those who start smoking at a young age and among those who smoke "high-yield" cigarettes. In China and India, the two most populous nations on earth, from one quarter to one third of all males are addicted to tobacco smoking by the time they are 18 to 20 years old. An epidemic of lung cancer is likely within a decade from the rapidly increasing cigarette consumption in many developing countries. What is needed now is the implementation of national programs of education and legislation with the objective to establish nonsmoking as the cultural norm.

Strong, K., C. Mathers, et al. (2008). "Preventing cancer through tobacco and infection control: how many lives can we save in the next 10 years?" Eur J Cancer Prev **17**(2): 153-61.

This paper presents projections for cancer mortality, incidence and burden of disease (as disability adjusted life years) for 2005, 2015 and 2030. The projections are based on the latest available WHO mortality estimates from 2002, updated with mortality data from 107 countries and augmented by region and site-specific cancer survival models. Cancer accounted for an estimated 7.6 million deaths in 2005, and 72% of these deaths were in low-income and middle-income countries. For cancer deaths under age 70, 79% are estimated to occur in low-income and middle-income countries. Without intervention, the number of global deaths is projected to rise to 9 million in 2015 and a further 11.5 million in 2030. The rising burden of this disease, especially in low-income and middle-income countries, leads us to propose a global goal for cancer: a 2% reduction per annum over and above that which may happen as a result of current trends in prevention, case management and treatment. Achieving this goal would result in 7.7 million fewer deaths from cancer over the period from 2005 to 2015. More of these deaths will be averted in low-income and middle-income countries than in high-income countries. The scientific knowledge to achieve this goal already exists, and the target could be reached through effective cancer prevention strategies, including tobacco control, hepatitis B vaccination and prevention of cervical cancer.

Tillgren, P., B. J. Haglund, et al. (1992). "A tobacco quit and win model in the Stockholm cancer prevention programme." Eur J Cancer Prev **1**(5): 361-6.

The main objective of the Stockholm Cancer Prevention Programme (SCPP) is to reduce cancer incidence and mortality among the 1.6 million inhabitants in Stockholm county by reducing risk factors particularly related to lifestyle. The objective of the SCPP's tobacco action programme is to reduce the number of adult daily users of tobacco (including oral snuff) to 20% by the year 2000. In 1988, a nationwide Quit and Win contest was conceived as part of this long-term programme. The contest recruited nearly 13,000 participants or 0.6% of the daily tobacco users in Sweden over the age of 16 years. More than 60% of the participants were recruited from Stockholm county. This corresponds to 1.9% of the daily tobacco users in Stockholm county compared with 0.3% in the rest of Sweden. The pharmacies and the public health services organizations were the principal distributors of contest entry forms. Sixty-two percent of the men and 59% of the women were tobacco free one month after the contest, and after 6 months the corresponding figures were 30 and 25%, respectively.

Tyc, V. L. (2007). "Strategies for tobacco control among youngsters with cancer." J Pediatr Psychol **32**(9): 1067-78.

OBJECTIVE: To examine smoking rates, discuss risk factors for smoking onset, and summarize the success of smoking trials conducted to date with youngsters treated for cancer. METHODS: Studies selected from the published pediatric literature on smoking in young cancer patients were summarized to illustrate the progress in tobacco control in this vulnerable population. RESULTS: Children with cancer report smoking at rates that are lower than or comparable to those of their healthy peers, depending on their treatment status. The few smoking trials conducted with youngsters with cancer have yielded modest effects. CONCLUSIONS: The timing, intensity and duration of smoking interventions for children with cancer in the medical setting have not been adequately explored. Identification of intermediate biomarkers that are predictive of later morbidity is necessary to demonstrate the short-term impact of smoking trials. Simultaneous implementation of many levels of intervention will enhance tobacco control efforts for youngsters with cancer.

Tyc, V. L., W. Hadley, et al. (2001). "Predictors of intentions to use tobacco among adolescent survivors of cancer." J Pediatr Psychol **26**(2): 117-21.

OBJECTIVE: To examine the relationship between knowledge of tobacco-related health risks, perceptions of vulnerability to these health risks, and future intentions to use tobacco in a sample of adolescent survivors of cancer. METHODS: Written self-report questionnaires were administered to 46 survivors, 10-18 years of age (61% males, 93.5% Caucasian). RESULTS: Overall, survivors were generally knowledgeable about tobacco-related health risks, perceived themselves to be vulnerable to these health risks, and reported low future intentions to use tobacco. Regression analyses indicated that demographic factors, treatment-related variables, knowledge, and perceived vulnerability explained 28% of the variance in intentions scores, $F:(6, 39) = 2.52$, $p < .05$. Age and knowledge were significant predictors, indicating that older adolescent survivors and those with lower knowledge scores reported greater intentions to use tobacco. CONCLUSIONS: Young survivors will benefit from risk counseling interventions that educate them about their susceptibility to specific tobacco-related health risks secondary to their cancer treatment. Intensive tobacco prevention programs that target older adolescents should be developed.

Tyc, V. L., M. M. Hudson, et al. (1997). "Tobacco use among pediatric cancer patients: recommendations for developing clinical smoking interventions." J Clin Oncol **15**(6): 2194-204.

PURPOSE AND METHODS: The current status of tobacco use among young cancer patients and the acute and chronic complications associated with tobacco use in these patients is reviewed. RESULTS AND CONCLUSION: Studies report that adolescent cancer survivors use tobacco as much as their peers who have never been treated for cancer, despite the adverse consequences of engaging in this unhealthy habit. Health care professionals have the opportunity and responsibility to incorporate tobacco counseling as a routine component of medical care delivery. Nurse/physician-delivered smoking interventions have been found to promote smoking cessation in adults, although little effort has been devoted to the development of similarly effective smoking interventions for pediatric cancer patients who smoke. Components of existing smoking prevention/cessation curricula from successful school-based interventions and physician-delivered smoking interventions can be adapted and tailored to pediatric cancer patients in medical settings. Smoking interventions that educate patients about their increased vulnerability to tobacco-related consequences, relative to their healthy peers, may have an enhanced impact. Guidelines for conducting a comprehensive assessment of tobacco use and

implementing smoking interventions with pediatric cancer patients is provided. Strategies for modifying the cancer patient's perceived vulnerability to tobacco-related consequences is also discussed.

Tyc, V. L., J. Klosky, et al. (2004). "Parent-reported environmental tobacco smoke exposure among preadolescents and adolescents treated for cancer." Psychooncology **13**(8): 537-46.

Exposure to environmental tobacco smoke (ETS) poses serious health risks for children with cancer. Parental smoke is a primary source of exposure for these children. Parent smoking behaviors and parent-reported ETS exposure among children treated for cancer were examined in this study. In addition, reports of ETS exposure among children with cancer who currently smoked or who had smoked in the past were compared to those of children with cancer who never smoked. Written questionnaires about smoking behaviors and ETS exposure were administered to 47 smoking parents of youngsters diagnosed with cancer, 10-18 years of age (57.4% male, 78.7% Caucasian). Child reports of smoking status were also obtained. Results indicated that children with cancer are exposed to ETS from a number of sources and settings, as reported by their parents. Current or previous child smokers had greater ETS exposure than non-smoking children. Older children and Caucasian children also had greater ETS exposure. Level of ETS exposure did not differ based on the child's treatment status. Interventions that teach parents to protect their youngster from ETS exposure have potential for reducing adverse health outcomes in this vulnerable population.

Tyc, V. L., S. Lensing, et al. (2005). "A comparison of tobacco-related risk factors between adolescents with and without cancer." J Pediatr Psychol **30**(4): 359-70.

OBJECTIVE: To compare adolescents with and without cancer on current smoking status, intentions to smoke, and tobacco-related risk factors. METHODS: Ninety adolescents undergoing treatment for cancer (median time since diagnosis was 2.4 months) and a comparison sample of 279 adolescents without cancer, ages 12 to 18 years, completed questionnaires that asked about their smoking habits, intentions to smoke, and tobacco-related psychosocial risk factors. RESULTS: Approximately 2% of adolescents with cancer and 22% of adolescents without cancer reported current smoking. Compared to nonsmoking adolescents without cancer, nonsmoking adolescents with cancer were one third less likely to report intentions to smoke. No significant interactions were detected between group (having cancer or not) and each of the tobacco-specific and psychosocial variables tested in two separate multivariable models. Intentions to smoke were best predicted by variables most proximal to smoking. Adolescents who smoked in the past and who had lower tobacco knowledge and greater perceived instrumental value were more likely to report intentions to smoke. Adolescents who were less optimistic were also more likely to intend to smoke. CONCLUSIONS: Tobacco-related risk factors for intentions to smoke appeared to be similar among adolescents with and without cancer. Implications of these findings for tobacco control among adolescents with cancer are discussed.

Tyc, V. L., S. N. Rai, et al. (2003). "Intervention to reduce intentions to use tobacco among pediatric cancer survivors." J Clin Oncol **21**(7): 1366-72.

PURPOSE: In this randomized controlled trial, we sought to determine whether a risk counseling intervention would increase knowledge and perceived vulnerability to tobacco-related health risks and decrease future intentions to use tobacco among preadolescents and adolescents previously treated for cancer. PATIENT AND METHODS: Participants included 103 cancer survivors between the ages of 10 and 18 years who were randomly assigned to either a standard care control (SCC) group or a tobacco intervention (TI) group. Patients in the SCC group received standard advice about the risks of tobacco use. Patients in the TI group received more intensive late effects risk counseling in addition to an educational video, goal setting, written physician feedback, smoking literature, and follow-up telephone counseling. The effect of our intervention was assessed by self-reported knowledge, perceived vulnerability, and intentions at baseline, 6, and 12 months. RESULTS: Compared with the SCC group, patients who received our intervention had significantly higher knowledge scores, higher perceived vulnerability scores, and lower intention scores at 12 months. No significant differences between the SCC and TI groups at 6 months, across all measures, were found. CONCLUSION: Pediatric survivors' knowledge, perceived vulnerability to health risks, and intentions to use tobacco can be modified by a risk counseling intervention. The delayed effect of our intervention indicates that these changes may evolve over time. Implications for health care providers who engage in tobacco counseling with young cancer survivors are discussed. Additional longitudinal studies are needed to determine definitive long-term intervention effects on actual tobacco use in this high-risk population.

Tyc, V. L., L. Throckmorton-Belzer, et al. (2004). "Smoking among parents of pediatric cancer patients

and children's exposure to environmental tobacco smoke." J Child Health Care **8**(4): 288-300.

For 303 children newly diagnosed with cancer, we investigated the prevalence of parental smoking and examined patients' respiratory or pulmonary symptoms according to household smoking status. Results indicated that approximately 45 percent of patients came from households with at least one current parent smoker and 20 percent of current non-smoking parents reported past tobacco use. There was a trend for more patients from smoking households to experience respiratory problems than patients from non-smoking households (p = .068). In conclusion, many patients are at risk for parental smoke exposure and associated health problems if they are continually exposed during therapy. Clinician-delivered interventions to reduce environmental smoke exposure are clearly warranted.

Tyczynski, J. E. and H. J. Berkel (2005). "Mortality from lung cancer and tobacco smoking in Ohio (U.S.): will increasing smoking prevalence reverse current decreases in mortality?" Cancer Epidemiol Biomarkers Prev **14**(5): 1182-7.

BACKGROUND: Despite significant changes in smoking patterns within the past few decades, lung cancer remains a major cause of cancer deaths in many developed countries in people of each sex, and one of the most important public health issues. The study aims to analyze the possible impact of changes in tobacco smoking practices in the state of Ohio (U.S.) on current and future trends and patterns of lung cancer mortality. MATERIALS AND METHODS: Mortality rates from lung cancer were calculated for the period 1970 to 2001 on the basis of data from the National Center for Health Statistics. The Joinpoint regression approach was used to evaluate changes in time trends by sex, age, and race. Data on smoking prevalence in Ohio were retrieved from the Centers for Disease Control and Prevention website. RESULTS: Lung cancer mortality rates in Ohio have declined among men of all ages as well as in specific age groups in the 1990s, and the rate of increase among middle-aged and elderly women has dropped over time. The mortality rate among young women (ages 20-44) began to increase during the early 1990s. The prevalence of smoking in Ohio has increased since the early 1990s, especially among young persons. CONCLUSIONS: Recent trends in tobacco smoking in Ohio indicate that the declining trends in lung cancer mortality might be reversed in the future. An early indicator of possible change is the recent increase in mortality among young women. Implementation of the Ohio Comprehensive Tobacco Use Prevention Strategic Plan might help to disseminate proven prevention strategies among the inhabitants of Ohio and might thus prevent future increases in lung cancer mortality rates in the state.

Wakai, K., M. Inoue, et al. (2006). "Tobacco smoking and lung cancer risk: an evaluation based on a systematic review of epidemiological evidence among the Japanese population." Jpn J Clin Oncol **36**(5): 309-24.

BACKGROUND: Although tobacco smoking is the best established risk factor for lung cancer, the association is not as strong among Japanese as among Western populations. It would be of value, therefore, to quantify that association in Japan based on a systematic review of epidemiological evidence for the primary prevention of lung cancer. A total of 8 cohort studies and 14 case-control studies were identified, almost all of which consistently showed a strong association of current smoking with the risk of lung cancer. The summary relative risk for current smokers versus never smokers was estimated as 4.39 (95% confidence interval 3.92-4.92) for men and 2.79 (95% confidence interval 2.44-3.20) for women. Cohort studies and case-control studies gave reasonably consistent summary measures. The summary relative risks were 11.7 and 2.30 for squamous cell carcinoma and adenocarcinoma, respectively, in men, and were 11.3 and 1.37 correspondingly in women. CONCLUSION: There is convincing evidence that tobacco smoking strongly increases the risk of lung cancer in the Japanese population, with the relative risk for current smokers compared with never smokers measuring around 4.4 for men and 2.8 for women.

Warnakulasuriya, K. A. and N. W. Johnson (1999). "Dentists and oral cancer prevention in the UK: opinions, attitudes and practices to screening for mucosal lesions and to counselling patients on tobacco and alcohol use: baseline data from 1991." Oral Dis **5**(1): 10-4.

OBJECTIVE: To investigate the opinions, attitudes and practices towards oral cancer prevention among UK dentists as a baseline from which to measure the need for continuing education efforts in this area. The questionnaire was circulated to 15,836 dentists. The response rate of 16% was poor but due to the many dentists circulated, 2519 responses were available for analysis. This large sample, though presumptively biased towards those interested in professional matters, showed an encouraging 84% claiming to perform screening of the oral mucosa routinely. Among these, 74% reported referral of screen detected cases to a hospital for further attention and only 4% would adopt a wait and see policy. Disturbingly, half of the respondents did not enquire about risk habits related to oral cancer and, among the

other half who claimed to make such enquiries, only 30% routinely provided brief health education advice concerning these. Seventy-one percent agreed that giving advice against tobacco use is desirable but major constraints were identified, notably a lack of training, and frustration regarding patient compliance. There was even greater reluctance on the part of the respondents to enquire into the alcohol use of their patients and to provide advice on alcohol moderation. CONCLUSIONS: Most of this large but unrepresentative sample of UK dentists were carrying out screening of the oral mucosa as a part of their prevention activities in 1991. However, the survey indicated a considerable need for improvement in the manner and extent of provision of health advice in respect of the major risk factors for oral cancer: such a substantial need amongst the presumptively better motivated implies that the need amongst the practitioner population at large is even greater.

Warnakulasuriya, S., G. Sutherland, et al. (2005). "Tobacco, oral cancer, and treatment of dependence." Oral Oncol **41**(3): 244-60.

Tobacco dependence is recognised as a life-threatening disorder with serious oral health consequences which responds to treatment in the form of behavioural support and medication. While cigarette smoking is the most hazardous and prevalent form of tobacco use in the west, consideration also needs to be given to other forms such as bidi smoking in India, reverse smoking by several rural populations and use of snuff and chewing tobacco. The evidence that the use of tobacco is the major risk factor for oral cancer and potentially malignant lesions of the mouth is clear. Counseling to quit smoking is not applied in a systematic or frequent manner to people presenting with potentially malignant lesions of the oral cavity. This review makes recommendations for interventions by health professionals to encourage and aid cessation of tobacco use as a part of prevention of oral cancer.

Wasnik, K. S., S. N. Ughade, et al. (1998). "Tobacco consumption practices and risk of oro-pharyngeal cancer: a case-control study in Central India." Southeast Asian J Trop Med Public Health **29**(4): 827-34.

A hospital based, group matched case control study was conducted with the objective to assess the association between tobacco consumption practices and risk of development of oro-pharyngeal cancer in Central India. The study included 123 cases of oro-pharyngeal cancer, diagnosed on the basis of histopathology at three tertiary care centers in Nagpur city. Each case was matched for age and sex with two hospital controls: one selected from non-cancer patients and another from patients having cancer of other sites. Tobacco chewing (OR=7.98, 95% CI 4.11-13.58) and tobacco smoking (OR=2.25, 95% CI 1.22-3.70) were found to be significantly associated with oro-pharyngeal cancer on unconditional multiple logistic regression analysis. Further analysis revealed a dose-response relationship between increasing frequency, duration and retention time of tobacco in mouth and risk of oro-pharyngeal cancer. Other risk factors which were also found to contribute significantly in the outcome of oro-pharyngeal cancer in the study population were: use of traditional/local substances (eg pan, betel nut, lime) with or without tobacco, use of tobacco containing material for teeth cleaning, type of smoking (eg bidi, chillum, cigarette) and outdoor occupations. High values of estimates of attributable risk percent (ARP) and population attributable risk percent (PARP) confirmed the positive impact of reduction or elimination of the tobacco consumption practices on reducing the risk of oro-pharyngeal cancer in the population of Central India.

Waterbor, J. W., R. M. Adams, et al. (2004). "Disparities between public health educational materials and the scientific evidence that smokeless tobacco use causes cancer." J Cancer Educ **19**(1): 17-28.

BACKGROUND AND METHODS: We reviewed 4 dozen health education brochures on the dangers of smokeless tobacco (ST) use, printed between 1981 and 2001 and available to the public in 2002. Collectively, these brochures state that ST use causes oral leukoplakia, other oral conditions, and cancers of the oral cavity, larynx, pharynx, esophagus, stomach, pancreas, lung, breast, prostate, bladder, and kidney. We then reviewed the scientific literature to determine whether these claims were substantiated. RESULTS: Only for oral leukoplakia and several oral conditions is the evidence persuasive for causation by ST. The evidence that ST causes oral cancer is very suggestive, whereas the evidence for causation of other cancers is either absent or contradictory. CONCLUSIONS: Communication of the health risks of using ST must be done accurately and should be data based. Broadening the message to include additional diseases for which the evidence is inadequate could cause the message about true risks, as well as the messenger, to be discounted.

Wingo, P. A., L. A. Ries, et al. (1999). "Annual report to the nation on the status of cancer, 1973-1996, with a special section on lung cancer and tobacco smoking." J Natl Cancer Inst **91**(8): 675-90.

BACKGROUND: The American Cancer Society, the National Cancer Institute (NCI), and the Centers for Disease Control and Prevention (CDC),

including the National Center for Health Statistics (NCHS), provide the second annual report to the nation on progress in cancer prevention and control, with a special section on lung cancer and tobacco smoking. METHODS: Age-adjusted rates (using the 1970 U.S. standard population) were based on cancer incidence data from NCI and underlying cause of death data compiled by NCHS. The prevalence of tobacco use was derived from CDC surveys. Reported P values are two-sided. RESULTS: From 1990 through 1996, cancer incidence (-0.9% per year; P = .16) and cancer death (-0.6% per year; P = .001) rates for all sites combined decreased. Among the 10 leading cancer incidence sites, statistically significant decreases in incidence rates were seen in males for leukemia and cancers of the lung, colon/rectum, urinary bladder, and oral cavity and pharynx. Except for lung cancer, incidence rates for these cancers also declined in females. Among the 10 leading cancer mortality sites, statistically significant decreases in cancer death rates were seen for cancers of the male lung, female breast, the prostate, male pancreas, and male brain and, for both sexes, cancers of the colon/rectum and stomach. Age-specific analyses of lung cancer revealed that rates in males first declined at younger ages and then for each older age group successively over time; rates in females appeared to be in the early stages of following the same pattern, with rates decreasing for women aged 40-59 years. CONCLUSIONS: The declines in cancer incidence and death rates, particularly for lung cancer, are encouraging. However, unless recent upward trends in smoking among adolescents can be reversed, the lung cancer rates that are currently declining in the United States may rise again.

Wramner, B., W. Zatonski, et al. (2001). "Premature mortality in lung cancer as an indicator of effectiveness of tobacco use prevention in a gender perspective--a comparison between Poland and Sweden." Cent Eur J Public Health **9**(2): 69-73.

This contribution presents a comparative analysis of the probability of premature overall deaths and lung cancer mortality for men and women between one Nordic country--Sweden--and one country in transition in central Europe, namely Poland. Furthermore the study compares the pattern of smoking prevalence for both sexes in the two countries. Male lung cancer mortality is constant in Sweden during the last two decades, which is completely contrary to the trend in Poland with a long period of increase followed by a slow decrease during the last years. Lung cancer mortality for women in both countries is on a continuous increase and the rate is exactly the same. The premature mortality in lung cancer in Sweden in the age group of 20-44 years now is higher for women than for men. Swedish men have reduced their smoking habit strongly and far more than Polish men (17 respectively 42% 1999). The male use of moist snuff in Sweden is taken into consideration when discussing the low rate of lung cancer in Sweden. Concerning the pattern of tobacco use it is obvious that Swedish and Polish women during the last decades have had the same and slowly decreasing smoking prevalence (21 respectively 23% 1999). The conclusion is that the best way to control the lung cancer epidemic is to reduce smoking prevalence in the population. Lung cancer mortality in younger and middle aged groups is a good indicator of the success in tobacco control in a country as well for women as for men, especially in the middle age groups.

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