Tobacco Control at the National Cancer Institute: An Update to the National Cancer Advisory Board

Tobacco use remains the leading preventable cause of death in the United States. More than 400,000 Americans die prematurely each year of tobacco-related disease. The best evidence indicates that effectively reducing tobacco use requires a balanced and comprehensive approach, which combines programmatic and policy initiatives to address the prevention and treatment of tobacco use. In addition, a comprehensive surveillance and evaluation program is needed to track the relative impact of those programs and policies so that adjustments can be made.

This report on tobacco-related research highlights the current initiatives within the Division of Cancer Control and Population Sciences (DCCPS), Division of Cancer Epidemiology and Genetics (DCEG), Division of Cancer Prevention (DCP), Division of Treatment and Diagnosis (DCTD), and the Office of the Director (OD).

Members of these offices form the Tobacco Research Opportunity Team (TROT), whose mission is to plan, implement, coordinate, and communicate research on tobacco and tobacco-related cancers across the National Cancer Institute (NCI) and with our research partners.

TROT was developed in 1999 in response to NCI's Tobacco Research Implementation Plan published in 1998 (http://cancercontrol.cancer.gov/tcrb/TRIP/)***.*** Additionally, the Team's formation addressed the need for a coordinated group to advise and assist in the development and implementation of the tobacco chapter of NCI's annual budget request to the President, *The Nation's Investment in Cancer Research*.

TROT meets bi-monthly and currently is made up of 97 members. For more information about the Tobacco Research Opportunity Team, please visit the TROT intranet site at http://camp.nci.nih.gov/dccps/trot/default.htm.

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Major Initiatives/Research

Division of Cancer Control and Population Sciences (DCCPS)

Applied Research Program (ARP)

Cancer Research Network (CRN) Tobacco-Related Initiatives
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The health care delivery systems of the Cancer Research Network (CRN) comprise nearly 10 million covered lives, affording a unique opportunity to evaluate major modifiable cancer risk behaviors. CRN projects have thus far explored tobacco use and dietary behaviors, each using very different approaches.

The tobacco use projects conducted under CRN auspices have examined delivery of smoking cessation services at the organizational, clinician, and patient levels. The goal is to improve clinician adherence to national tobacco control guidelines and assure that patients receive appropriate guidance for quitting smoking.

- Tobacco Control in Managed Care: Implementation, Effectiveness, and Impact of Cost of Care
  The results of this study will help clarify the relationships between organizational policies and implementation of tobacco cessation programs, and their effects on patient smoking cessation.
- Using Electronic Medical Records to Measure and Improve Adherence to Tobacco Treatment Guidelines in Primary Care
  Evaluation of guideline implementation and routine assessment of the quality of tobacco cessation services in primary care has been hampered by imprecise and costly patient questionnaire methods currently used for measuring treatment delivery. The rapidly growing use of electronic medical records offers an attractive alternative for evaluating guideline implementation and quality of care.

Monitoring Progress in Tobacco Control Initiatives
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Several integrated surveillance systems of the United States household population have been developed to track NCI's progress in tobacco control, both in terms of individual behavior and in adopted community or state policies. Information from these surveys allows the surveillance of Americans' progress in reducing tobacco use, evaluation of tobacco control programs, and other tobacco-related research. Data are examined in terms of trends over time and patterns across various groups. Several perspectives are addressed:

- Tobacco Use Supplement (TUS) to the Current Population Survey (CPS)
  Conducted by the U.S. Census Bureau, and initiated in 1992 to evaluate the American Stop Smoking Intervention Study (ASSIST), TUC-CPS continues to be

a useful tool to track tobacco control progress both on the individual level as well as through adopted policies.

- National Health Interview Survey (NHIS) Cancer Control Supplement
  Conducted by the Centers for Disease Control and Prevention's National Center for Health Statistics, NHIS allows researchers to examine tobacco control in conjunction with control of other cancer risk factors and health behaviors in order to consider various determinants of health.
- California Health Interview Survey (CHIS)
  CHIS examines risk factors and screening in a large racially/ethnically diverse population. The population estimates allow researchers to conduct ecologic analyses at the county level (or subcounty level in the case of heavily populated areas).

Behavioral Research Program (BRP)/Tobacco Control Research Branch (TCRB)

Analysis of Tobacco Industry Documents

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The Tobacco Control and Research Branch (TCRB) has awarded grants to stimulate research on a wide variety of scientific, technical, marketing, and tactical undertakings by the tobacco industry that were documented in papers, memos, and other records. The analysis and evaluation of these documents will enhance understanding of the tobacco industry's knowledge, strategies, and tactics; provide a greater understanding of the determinants of tobacco use and addiction; and help identify effective strategies to prevent and reduce tobacco use.

International Research on Tobacco Use

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The National Cancer Institute and the Fogarty International Center, together with other partners, launched the International Tobacco and Health Research and Capacity Building Program in September 2002. This program is aimed at combating the growing incidence of tobacco-caused illnesses and death in the developing world. More information about international tobacco control efforts is available at http://cancercontrol.cancer.gov/TCRB/international/index.html.

Tobacco Control Monograph Series

Contact: Stephen Marcus, PhD, 301-594-7934, marcusst@nih.gov

TCRB produces comprehensive reports on various tobacco topics. Recent monographs include *ASSIST—Shaping the Future of Tobacco Prevention and Control* (May 2005), *Those Who Continue to Smoke* (April 2003*), Changing Adolescent Smoking Prevalence* (November 2001), and *Risks Associated with Smoking Cigarettes with Low Machine-Measured Yields of Tar and Nicotine* (October 2001). The full listing of monographs 1 through 16 is available online at http://dccps.nci.nih.gov/TCRB/monographs/index.html.

Tobacco and Health Disparities Research Network (TReND)

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NCI has partnered with the American Legacy Foundation to develop and implement the Tobacco and Health Disparities Research Network. The mission of the Network is to understand and address tobacco-related health disparities by advancing the science, translating that scientific knowledge into practice, and informing public policy. The Network includes diverse disciplines of researchers who seek to 1) encourage collaborations among multiple research disciplines, 2) serve as a forum for generating new ideas and research projects, 3) establish a translation mechanism for interacting with other networks and community advocacy groups, 4) promote the involvement and training of junior investigators and the participation of senior researchers in health

disparities research, and 5) provide scientific information and serve as a resource on tobacco and health disparities issues. This is the only national research network on tobacco and health disparities that offers a unique forum for stimulating scientific inquiry, promoting scientific collaborations, and evaluating the scientific evidence of research.

Tobacco Products
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The World Health Organization (WHO) Tobacco Free Initiative (TFI), in furtherance of the aims and objectives of the WHO Framework Convention on Tobacco Control tobacco product regulation provisions and following the recommendations of the WHO Study Group on Tobacco Product Regulation (TobReg), convened the first meeting of the WHO Tobacco Laboratory Network (TobLabNet) at The Hague, Netherlands, 28-29 April 2005. More information about the TobLabNet is available at http://dccps.nci.nih.gov/TCRB/who_toblabnet.html. Furthermore, the International Agency for Research on Cancer (IARC) publishes monographs that critically review and evaluate the published scientific evidence on human carcinogenic hazards. NCI participated in the development of the 2004 monograph titled *Tobacco Smoke and Involuntary Smoking* (Volume 83) and *Smokeless Tobacco and Some Related Nitrosamines* (Volume 89).

Tobacco Research Initiative for State and Community Interventions (TRISCI)
Contact: Bob Vollinger, MSPH, 301-496-0275, bob.vollinger@nih.gov

The Tobacco Research Initiative for State and Community Interventions stimulates research on new or existing tobacco control interventions relevant to state and community tobacco control programs. The initiative supports research on innovative tobacco prevention and control interventions at the community, state, or multi-state level, particularly policy or media-based interventions. It also emphasizes collaboration between tobacco control researchers, state-based comprehensive tobacco control programs, and community-based coalitions. More information is available at http://cancercontrol.cancer.gov/tcrb/scrfa.html.

Transdisciplinary Tobacco Use Research Centers (TTURC)
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TCRB continues to support the collaborative initiative Transdisciplinary Tobacco Use Research Centers (TTURCs), along with the National Institute on Drug Abuse (NIDA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Originally awarded funding in 1999, this initiative was extended in 2004. Within seven academic institutions, these Centers conduct a broad array of studies, including projects evaluating new models of nicotine addiction, the role of genetic and environmental factors in smoking initiation and persistence, the impact of policy upon tobacco use, methods for preventing tobacco use across cultures, and determinants of relapse.

Systems and Network Development Initiatives
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Several projects have been funded to support the understanding of tobacco control systems (e.g., improving the progression of discovery to development, and to delivery) and the development of collaborative networks of scientists in order to improve communication and collaboration on tobacco control research in priority areas. As funding levels off, such collaborations are needed to make the best use of available funds. In addition, networks create the opportunity for increasing transdisciplinarity across existing research grants and initiatives. Networks on tobacco products purported to reduce harm and disparities have been created and are progressing, and networks on surveillance/evaluation and cessation are planned.

Youth Tobacco Cessation Collaborative
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The Youth Tobacco Cessation Collaborative (YTCC) was formed in 1998 to address the gap in knowledge about what cessation strategies are most effective in assisting youth to quit smoking. Collaborative members represent major organizations that fund research, program, and policy initiatives related to controlling youth tobacco use.

Youth Tobacco Prevention and Cessation
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Research funded by DCCPS has found that the pattern of nicotine dependence among youth does not parallel the model developed for adults. Contrary to past assumptions, adolescents who are not daily smokers still may encounter significant difficulty in quitting smoking. In order to assess adolescent tobacco cessation programs and inform future activities and research, NCI has formed collaborative partnerships with other NIH institutes and centers, the Centers for Disease Control and Prevention, the Robert Wood Johnson Foundation, the American Cancer Society, and the American Legacy Foundation. Among the many new important findings from this initiative is evidence that exposure to smoking in popular movies increases the risk of smoking in teenage viewers. Currently, NCI funds research grants in the areas of youth and tobacco research, including prevention; experimentation; onset of regular tobacco use, dependence, and withdrawal; and cessation and treatment of tobacco in adolescents. Specific findings include the following:

- Researchers at Dartmouth-Hitchcock Medical Center reported a close link between tobacco promotional activities and adolescent smoking. Over time, the likelihood of smoking initiation is increased when an adolescent acquires a cigarette promotional item. Results suggest that elimination of cigarette promotional campaigns could reduce adolescent smoking.
- Researchers at the Fred Hutchinson Cancer Research Center found that the strongest predictive variables for smoking were rebelliousness and risk taking. The results suggest that smoking prevention programs should address the needs and expectations of rebellious and risk-taking youth, and should begin no later than fifth grade.

Epidemiology and Genetics Research Program (EGRP)

EGRP Grant Portfolio

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The Epidemiology and Genetics Research Program (EGRP) manages a comprehensive program of grant-supported, population-based research that brings to bear the expertise of scientists to increase our understanding of cancer etiology and prevention. Scientists from throughout the United States and internationally are supported.

The Program supports research on the determinants of cancer, including the following:

- Lifestyle factors (including tobacco, alcohol, energy balance, diet, and nutrition)
- Medications
- Environmental and occupational exposures
- Infectious agents
- Personal susceptibility factors (including obesity and reproductive characteristics)
- Acquired and inherited genetic factors.

EGRP currently funds 12 grants on tobacco/smoking research and more than 115 other grants that have some tobacco research component. The tobacco portfolio focuses on the role of genetic factors and interactions that influence tobacco dependence and the possible associations with cancer outcomes.

NCI Epidemiology Leadership Workshop on Tobacco, Diet, and Genes

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Each year EGRP holds a workshop that focuses on specific scientific topics. Extramural grantees who work in specified fields are invited to present their research, and work with one another and with NCI staff on ways to advance research in the fields. In 2004, one of the areas of focus was tobacco research, and the objectives were to

- Identify barriers and gaps in the science and to advance solutions for study
- Highlight state-of-the-science research findings by the grantees in tobacco and cancer epidemiology
- Promote new research collaborations
- Showcase the scientific accomplishments of grantees in the research portfolio

The Tobacco Working Group concentrated on identifying ways to advance research on susceptibility to tobacco carcinogenesis and consideration of the merits of conducting research on genotypes versus phenotypes. The group was chaired by Peter Shields, MD, Lombardi Cancer Center, Georgetown University, and co-chaired by Stephen Marcus, PhD, Tobacco Control Research Branch, Behavioral Research Program, DCCPS, NCI; and Xifeng Wu, MD, The University of Texas M.D. Anderson Cancer Center.

The Working Group initially focused on phenotypes related to smoking and tobacco. The members agreed that phenotype characterization provides researchers with an important tool to study tobacco-related cancers. Phenotypes offer predictive capabilities that may lead to the identification of genotypes, biomarkers, comorbidities, and

etiologies associated with cancer. They provide insight into complex genotypic traits by identifying pathways central to multiple genotypes. Phenotype classification also facilitates finding genes or single nucleotide polymorphisms (SNPs) of varying penetrance. The importance of learning from “extreme phenotypes,” such as those diagnosed with lung cancer after smoking their first cigarette, was recognized. Furthermore, phenotypes provide information about an individual’s response to exposures. Using this information, researchers can examine and identify exposure-response relationships related to dose, specific agents, and population response profiles. The Working Group concluded that identifying tobacco-related phenotypes and broadly defining them is important.

Three gaps in tobacco and cancer research requiring further study were identified: 1) identifying which populations are most susceptible to tobacco use and why; 2) determining which tobacco-related cancers need to be studied; and 3) choosing the types of tobacco control efforts needed to reach susceptible populations.

Another gap in our ability to determine the impact of tobacco on people’s health is a lack of new risk assessment tools. In addition, to assess the smoking-related risks associated with potential reduction exposure products (PREPs) and compare their use with those for cigarettes requires development of standardized risk assessment methodologies. These methods need to take into account populations at high risk for initiation of tobacco use and to identify populations at risk for tobacco-related cancers. Together, these cancer risk assessment tools can be used to identify tobacco-related cancer risk in family studies and among the more than 40 million former U.S. smokers.

Through basic science research, our understanding of the biology of lung cancer will increase. This will illuminate the causal mechanisms between exposure to tobacco smoke and lung cancer. The Working Group reported that additional research focusing on exposure-histology relationships, understanding why certain lung lesions regress, and the resulting clinical outcomes of tobacco-related cancers will increase our knowledge of the etiology and progression of the disease. To accomplish this, the array of biomarkers must improve, and the use of surrogate tissue for target tissues must be validated.

Improved methodologies are needed to confidently establish a relationship between genetic variations/polymorphisms and tobacco-related phenotypes. These methodologies need to be less costly, require less tissue, be quantitative, have high throughput, and identify extreme phenotypes. Lastly, a SNP prioritization scheme for tobacco-related cancers needs to be developed.

Many unresolved environmental tobacco smoke issues remain, the Working Group pointed out. Studies showing functional outcomes, markers of harm, carcinogen exposure, expression profiles, and susceptibility factors are all needed to assess the physiologic effects of environmental smoke. Tackling these priorities requires development of a phenotype panel for scanning genotypes, improved cohort designs, and mechanisms to systematically follow the cohort controls. Lastly, strong partnerships with health care providers and improved interview measures will facilitate cross-study analyses.

The meeting report has been widely disseminated and provides a framework for advising researchers and NCI on future directions for research.

NIH Tobacco and Nicotine Research Interest Group

Ed Trapido, ScD, co-chairs with Allison Chausmer, PhD, of the National Institute on Drug Abuse (NIDA), the trans-NIH Tobacco and Nicotine Research Interest Group (TANRIG).

International Collaborations in Tobacco Research
Contact: Deborah Winn, PhD, 301-594-9499, winnde@mail.nih.gov

Deborah Winn, PhD, served as a scientific expert on the cancer-related effects of use of smoked and smokeless tobacco for the International Agency for Research on Cancer (IARC). She was a member of the Working Group for *IARC Monograph on the Evaluation of Cancer Risks in Humans* (volume 85), concerning use of smokeless tobacco and exposure to some tobacco-related nitrosamines, and was on the World Health Organization's (WHO) Study Group on Tobacco Product Regulation.

Surveillance Research Program (SRP)

The Cancer Intervention and Surveillance Modeling Network (CISNET)

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The Cancer Intervention and Surveillance Modeling Network (CISNET) is a consortium of NCI-sponsored investigators whose focus is to use modeling to improve our understanding of the impact of cancer control interventions (e.g., prevention, screening treatment) on population trends in incidence and mortality. These models are also used to project future trends and to help determine optimal cancer control strategies.

One strength of having a consortium of modelers is the ability to employ a comparative modeling approach. While each modeler has areas of individual focus, whenever possible, a common "base" question is developed that allows for comparison across models. In these common base case collaborations, a set of common population inputs is used across all models (e.g., dissemination patterns of screening and treatment, mortality from non-cancer causes), and a common set of intermediate and final outputs is developed to help understand differences and similarities across models. There are currently collaborative projects of these base cases for the CISNET four cancer sites: breast, colorectal, lung, and prostate.

All members of the CISNET Lung Cancer Working Group (listed at http://cisnet.cancer.gov/grants/lung/) are collaborating on a set of common simulations to gain insight into similarities and differences among the models. The first of these common simulations seeks to quantify the effect of national trends in cigarette smoking on lung cancer incidence and mortality over the period 1975-2000. Once the models have been validated against observed national data, the modelers will explore possible extensions to allow projection of future trends in lung cancer rates assuming different scenarios of tobacco control outcomes.

CISNET investigators will consider providing assistance for external inquiries judged to be important and amenable to modeling. More information can be obtained from the network Web site at http://cisnet.cancer.gov/.

Division of Cancer Epidemiology and Genetics (DCEG)

Black and Blond Tobacco and Bladder Cancer Risk
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Cigarette smoking has been identified as the most significant risk factor for bladder cancer, followed by occupational exposure to chemicals such as aromatic amines and their derivatives, diesel exhaust, oil mist, pesticides, and polycyclic aromatic hydrocarbons. A variety of other exposures have also been suggested as potential risk factors, including dietary factors, certain medicines and medical conditions, chlorination by-products in drinking water, fluid intake, and certain genetic polymorphisms. To further explore etiologic hypotheses, including the role of smoking black versus blond tobacco, investigators in the Division of Cancer Epidemiology and Genetics (DCEG) are conducting an interdisciplinary, hospital-based case-control study in six geographic regions in Spain. Personal interviews are being conducted using state-of-the-art computer-assisted techniques, and biologic samples are being collected from participants to evaluate the interactions of various exposures including tobacco smoking and markers of genetic susceptibility.

Consortium of Cohorts
Contact: Robert Hoover, MD, ScD, 301-496-3004, hooverr@mail.nih.gov

The Consortium of Cohorts, a joint initiative between DCEG and the Division of Cancer Control and Population Sciences (DCCPS), was formed in 2000 to address the need for large-scale collaborative studies of gene-gene and gene-environment interactions in the etiology of cancer. More than 20 cohorts have joined the Consortium, enabling pooled analyses with sufficient statistical power to detect cancer risks associated with complex traits and interactions. Studies of several tobacco-related cancers are planned to uncover interactions with genetic polymorphisms, dietary factors, and other exposures.

International Lung Cancer Consortium
Contact: Neil Caporaso, MD, 301-496-4375, caporasn@mail.nih.gov

The International Lung Cancer Consortium (ILCCO) was established in 2004 with the aim of sharing comparable data from ongoing or completed lung cancer case-control and cohort studies. Questionnaire data and biologic samples are available from 26,000 case-control pairs from different areas and ethnicities. The consortia approach provides large study populations with substantial statistical power to identify susceptibility genes to tobacco-related lung cancer. Special efforts will be made to identify causal pathways in pulmonary carcinogenesis for smokers and non-smokers and to clarify the effects of modifier genes such as those involved in DNA repair that may augment the risk of lung cancer following tobacco and other exposures.

Smoking Cessation and Lung Cancer
Contact: Andrew Bergen, PhD, 301-435-7614, bergena@mail.nih.gov

The Alpha-Tocopherol Beta-Carotene Cancer Prevention Study (ATBC) is a randomized double-blind clinical trial in Finland that enrolled 29,000 male smokers between the ages of 50 and 69 to investigate the effects of antioxidant supplements on the incidence of lung cancer from 1985 to 1993. Using available biospecimens and self-reported medical history data, DCEG researchers, in collaboration with the Division of Cancer Prevention (DCP), DCCPS, and Finnish colleagues, are conducting nested case-control studies to investigate genetic polymorphisms, medical history, and lifestyle factors in relation to smoking history and lung cancer. Candidate susceptibility genes suspected to be involved in lung cancer risk and in smoking behavior (including smoking cessation) are being analyzed, along with DNA from lung cancer cell lines.

Tobacco Addiction and Genetic Polymorphisms
Contact: Neil Caporaso, MD, 301-496-4375, caporasn@mail.nih.gov

The Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial is a randomized, controlled trial sponsored by DCP, which also includes a large epidemiologic research component led by DCEG on the genetic and environmental causes of cancer. The PLCO-Lung component is being conducted to identify risk factors for lung and other tobacco-related cancers, as well as factors involved in smoking behavior in the cohort. The prospective design of the trial offers the opportunity to conduct nested case-control studies that permit the study of biomarkers in blood collected prior to the diagnosis of lung and other cancers. Studies relating the smoking phenotype to genetic polymorphisms of the metabolic pathways involving nicotine or neurotransmitters (e.g., dopamine and serotonin) are underway. Analyses involving markers of circulating DNA, DNA repair, infection, and inflammation are also in preparation.

Tobacco and Bladder Cancer Risk
Contact: Dalsu Baris, MD, PhD, 301-496-9093, barisd@mail.nih.gov

This study, informed by NCI's *Atlas of Cancer Mortality in the United States, 1950-1994* (Devesa et al, 1999), has been designed to identify reasons for the elevated mortality rates for bladder cancer in northern New England that have persisted over decades. A population-based case-control study of bladder cancer is being conducted in Maine, New Hampshire, and Vermont, with emphasis on the role of tobacco exposure, occupation, and contaminants in drinking water, particularly arsenic found in private wells.

Tobacco and Colorectal Polyps
Contact: Bu-Tian Ji, MD, DrPH, 301-435-4709, jib@mail.nih.gov

To characterize the role of tobacco in early colorectal carcinogenesis, a case-control study has evaluated tobacco-use habits among subjects with benign (hyperplastic or adenomatous) colorectal polyps. It was found that tobacco use, particularly recent use,

increases risk for both adenomatous and hyperplastic polyps, with the risk being substantially greater for hyperplastic lesions.

Tobacco and Esophageal Cancer
Contact: Wong-Ho Chow, PhD, 301-496-9093, choww@mail.nih.gov

Incidence rates for esophageal adenocarcinoma have been steadily rising over the last few decades, particularly in males, while the rates for squamous cell carcinoma are stable or declining somewhat. To investigate the underlying reasons for these trends, a population-based case-control study was conducted in three geographic areas of the U.S. Smoking was found to be an important risk factor for both tumors, while other risk factors varied by tumor type.

Tobacco, Genetic Susceptibility, and Lung Cancer Risk
Contact: Maria Teresa Landi, MD, PhD, 301-496-4375, landim@mail.nih.gov

This interdisciplinary, multicenter case-control study is designed to explore the genetic determinants of lung cancer and smoking. The study includes 2,000 newly diagnosed lung cancer cases and 2,000 healthy, population-based controls within a defined area around Milan, Italy. Detailed data on smoking, occupational exposures, residence, family history, diet, psychological factors, nicotine dependency, and medical history are available. The main gene effects on lung cancer risk, smoking persistence, and lifetime smoking status, as well as gene-environment and gene-gene effects in lung cancer etiology, are being investigated. Biospecimens including blood, tissue blocks, and fresh tissue from surgically treated subjects will allow for detailed study of 1) genetic instabilities in lung cancer tissue in relation to initiation and persistence of smoking along clinical presentations of lung cancer, and 2) histologic cancer subtypes related to genotype, gene expression, somatic mutations, and tobacco exposure.

Tobacco and Kidney Cancer Risk in African Americans
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Incidence rates of renal cell cancer are increasing rapidly in the U.S., and for African Americans the rates are rising more rapidly than in any other cancer site. A population-based case-control study of renal cell cancer is being conducted in two urban areas (Detroit and Chicago) to further understand the relationship between smoking and other risk factors (i.e., hypertension, obesity, genetic susceptibility) that may contribute to the differential incidence among African Americans and Caucasians.

Tobacco and Markers for Early Lung Cancer
Contact: Philip Taylor, MD, 301-594-2932, ptaylor@mail.nih.gov

Miners from the Yunnan Tin Corporation in China have experienced an extraordinary rate of lung cancer, likely due to high-level occupational exposures to radon and arsenic, particularly in combination with smoking. Data from a large biologic specimen bank and linked database for this high-risk population are being analyzed to evaluate the interaction of smoking with occupational exposures and susceptibility genes in the

development of lung cancer, and to determine the presence of biomarkers of early-stage cancer.

Tobacco and Pancreatic Cancer in African Americans and Caucasians
Contact: Debra Silverman, ScD, 301-435-4716, silvermd@mail.nih.gov

Epidemiologic research is being conducted to identify factors that play a role in the excess risk of pancreatic cancer in African Americans. A population-based case-control study in the U.S. based exclusively on direct subject interviews implicated cigarette smoking as a risk factor for pancreatic cancer, regardless of race or gender.

Tobacco Research in the International Lymphoma Epidemiology Consortium
Contact: Patricia Hartge, ScD, 301-496-7887, hartgep@mail.nih.gov

The International Lymphoma Epidemiology Consortium (InterLymph), formed in 2001, represents a collaborative research initiative involved in combining questionnaire and biomarker data from a series of case-control studies of non-Hodgkin lymphoma (NHL). A pooled data analysis involving more than 15,000 subjects (6,594 cases and 8,892 controls) has revealed that tobacco exposure increases the risk of follicular NHL. A replication study is underway to determine whether this subtype-specific association is seen in the newly diagnosed NHL cases occurring within two cohort studies being conducted by DCEG investigators.

Tobacco and Stomach Cancer
Contact: Wong-Ho Chow, PhD, 301-496-9093, choww@mail.nih.gov

This collaborative, population-based case-control study is examining reasons for the elevated incidence of stomach cancer in Poland. An increased risk has been associated with cigarette smoking, with the excess declining after smoking cessation. Epidemiologic analyses are now focusing on the role of genetic polymorphisms that affect susceptibility to tobacco-related carcinogens.

Trends in Lung Cancer Mortality: The NCI Cancer Mapping Project
Contact: Susan Devesa, PhD, 301-496-8104, devesas@mail.nih.gov

Data from NCI's *Atlas of Cancer Mortality in the United States, 1950-1994* (Devesa et al, 1999) have revealed remarkable geographic patterns for various forms of cancer, which have provided important clues to the role of environmental and lifestyle risk factors. For lung cancer, there have been striking changes in the geographic patterns corresponding to regional/temporal variations in smoking behavior by sex and race, with the recent emergence of high mortality rates among Caucasian men across the south, Caucasian women in the far western states, and African Americans in northern urban areas. These patterns point to emerging high-risk populations where further epidemiologic research and cancer control interventions may be targeted. The text, maps, rates, and the data used to generate the maps are available at www.nci.nih.gov/atlasplus.

Division of Cancer Prevention (DCP)

Chemoprevention of Tobacco-Related Cancers in Former Smokers
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The Division of Cancer Prevention (DCP) issued a request for applications (RFA) in 2001 for an initiative aimed at discovering new agents and new biomarkers to reduce the risk of cancer in former smokers. There was both a preclinical and a clinical part to this program. Seven grants were funded in the preclinical arm and four in the clinical arm. The preclinical program results are reported as follows:

Researchers at the University of Kentucky are investigating the cigarette-induced DNA adducts in mice and their significant reduction by berry-supplemented diets. Gene expression analysis has revealed 53 differentially expressed genes with cigarette exposure, which present novel molecular targets for cancer chemoprevention strategies.

Studies at the University of Colorado are aimed at developing diagnostic markers in mouse lung models that could be translated into human ex-smokers, and showed that anti-inflammatory agents prevented tumor formation in two different smoking-induced tumor models.

At Ohio State University, researchers are using NNK, a tobacco-specific carcinogen; they found that the synthetic retinoid Targretin inhibited lung tumorigenesis by approximately 50%. In a bladder cancer study, animals are given ketoprofen and NSAID to block the progression of bladder cancer in a former smoker model. Gene array and methylation patterns are being explored in these models.

Studies at the University of Alabama are in progress to test whether three classes of chemopreventive agents (zileuton, Targretin, or celecoxib) might have activity in a former-smoker rat model, and may ultimately prevent urinary bladder cancer in humans. Of major significance will be determining if the detection of survivin in the urine will serve as a biomarker for the early detection of urinary bladder cancer.

At the University of California, researchers have shown that neither myoinositol nor EGCG when given by inhalation are effective in suppressing tobacco-induced lung tumorigenesis in mice.

Studies at the Washington University have shown that a farnesyl transferase inhibitor, imidazole, is highly effective in inhibiting lung cancer in transgenic mice harboring a dominant negative *p53* and a heterozygous deletion in the *Ink4a/Arf* gene.

Researchers at Ohio State University have shown that the production of inducible nitric oxide synthetase is associated with nitrosamine-induced esophageal carcinogenesis. An iNOS inhibitor, PBIT, inhibited nitrosamine-induced esophageal carcinogenesis. A novel COX-2 inhibitor, L-748706, from Merck also inhibited esophageal carcinogenesis. Both agents have the potential to reduce the risk of esophageal cancer in former smokers.

In 2002, the RFA was reissued and seven new grants were awarded in 2003. A wide variety of new projects were initiated to identify agents to reduce cancer risk in former smokers and identify new biomarkers for clinical trials.

At Rutgers University, investigators found that green tea in drinking water and curcumin applied topically could inhibit 7, 12-dimethylbenz[a]anthracene (DMBA)-induced oral cancer in hamsters. The cancer prevention in the post-initiation phase was related to suppression of cell proliferation, induction of apoptosis, and inhibition of angiogenesis.

Researchers at the University of California, Davis, unexpectedly found that cigarette-smoke-exposed mice had slightly more tumors per animal when given selenized yeast or selenomethionine in their diets than smoke-exposed control animals with no supplements.

Studies at Johns Hopkins University have identified a fatty acid synthetase (FAS) inhibitor called FAS-93, which can reduce the lung tumor burden in NNK-treated mice in a former-smoker protocol.

Other investigators at Johns Hopkins University have shown that the bladder cancer marker BCLA-4 can be detected as early as 2 weeks after carcinogen exposure and is expressed throughout the entire cancer progression period. Therefore, BCLA-4 may be a useful marker for premalignant bladder cancer in former smokers.

Investigators at the University of Alabama at Birmingham found that aspirin reduced the weight of bladder cancers by 31%. Under a similar former-smoker protocol, caffeic acid caused a 33% reduction in the numbers of bladder cancer.

At the University of Tennessee, researchers found that neuroendocrine lung carcinogenesis in hamsters was inhibited by green tea or theophylline while the development of adenocarcinomas was promoted.

Investigators at New York University School of Medicine have developed a new tobacco-carcinogen mouse lung cancer model. They are using serum proteomics to identify new surrogate biomarkers of early lung cancer to be used in identifying precancerous tumors in former smokers.

Chemoprevention of Tobacco-Related Cancers in Former Smokers: Clinical Trials
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In 2001 and 2002, a total of seven phase II clinical trials for former smokers were funded under this RFA (RFA 02-009 and RFA 03-006, Chemoprevention of Tobacco-Related Cancers in Former Smokers: Clinical Trials): five of the studies are examining agents for lung cancer prevention, one study involves former smokers with superficial bladder cancer, and one study involves subjects with oral leukoplakia (a precursor to oral cancer).

The agents that are being studied in the lung phase II trials are celecoxib, gefitinib and celecoxib, ACAPHA (an herbal supplement), green tea, and enzastaurin.

In clinical trials aimed at preventing bladder cancer in former smokers, green tea and erlotinib are being tested.

In the oral cancer trial, celecoxib and erlotinib are being studied.

Program Project Grant on Tobacco-Induced Lung Cancer
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In a separate DCP-sponsored program project grant, being conducted at Penn State University, investigators are using a guinea pig model of human tobacco-related cancer. The program project consists of four projects and a core.

Project 1: In contrast to extensively studied genotoxic agents, such as NNK and B[a]P, there is a lack of information on the molecular mechanisms by which reactive oxidative species (RO2)-induced oxidative damage occurs in vivo. Thus, Project 1 will test the hypothesis that an inflammatory response to cigarette smoke in the guinea pig respiratory system contributes to the tumor promotion phase of lung carcinogenesis by inhibiting apoptosis through pathways involving activation of the transcriptional nuclear factor-kappa B (NF-kappaB) and activator protein-1 (AP-1) and that this process can be modulated by dietary antioxidants (vitamins and EGCG, a polyphenolic compound in tea). The results should provide a strong rationale for dietary recommendations to smokers who are unable to quit.

Project 2: In model studies, Project 2 will test the hypothesis that a superoxide, generated through redox cycling of ring-hydroxylated derivatives of benzene, reacts with nitric oxide to form peroxynitrite; the latter may be responsible for the toxicity of benzene and tobacco-associated leukemia in smokers.

Project 3: This project combines the most sensitive analytical tools with molecular and clinical investigations to test the hypothesis that critical events required for the development of cervical cancer are genetic damage and mutations of *p53* induced by tobacco carcinogens combined with HPV-induced deactivation of *p53* and inhibition of apoptosis. Primary prevention techniques must continue to take a prominent role in our efforts to reduce tobacco-related cancers.

Project 4: One of the most exciting clinical trials in the United States is the recent study demonstrating that supplementation of human nutrition with selenium-enriched yeast significantly reduces lung cancer incidence and mortality. The chemopreventive efficacy depends on the structure of the selenium-containing compound, not the element per se. Thus, Project 4 will test the hypothesis that selenium may, in part, inhibit lung carcinogenesis by inhibiting NF-kappaB, thereby downregulating COX-2 and LOX activities and inducing apoptosis.

In summary, this program project proposes to resolve critical problems in tobacco carcinogenesis and provide insights into mechanisms and optimal models of intervention by modulation of smoke carcinogens and by nutritional supplements, i.e., selenium compounds, vitamins, and EGCG.

The Prostate, Lung, Colorectal and Ovarian (PLCO) Cancer Screening Trial
Contact: Christine Berg, MD, 301-496-8544, bergc@mail.nih.gov

The Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial enrolled a total of 154,938 participants at 10 institutions nationwide. Smoking history data were collected from all participants at the time of enrollment. These data include smoking status, age participant began smoking, age participant last quit smoking, average cigarettes smoked, and use of other tobacco products. All the PLCO screening centers offer participants information on local smoking cessation programs upon request.

The Lung Screening Study (LSS)
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The Lung Screening Study (LSS) portion of the National Lung Screening Trial (NLST) enrolled over 34,000 heavy smokers and former smokers who have stopped smoking in the last 15 years. All participants have at least a 30-pack-year smoking history. Each NLST screening center has smoking cessation publications and resources available to participants upon request. NLST asks a question about current smoking status on the annual health survey sent to all participants. This information highlights changes in smoking status from the previous year.

Division of Cancer Treatment and Diagnosis (DCTD)

National Lung Screening Trial (NLST)
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The National Lung Screening Trial (NLST) is an NCI-sponsored, prospective, randomized clinical trial designed to determine if lung cancer screening using spiral computed tomography (CT) reduces lung-cancer-specific mortality compared with screening with standard chest radiographs (CXR) in a population at high risk. NLST is a combined project between an NCI-funded cooperative group, the American College of Radiology Imaging Network (ACRIN)—a network of researchers who conduct imaging clinical trials, supported by NCI's Division of Cancer Treatment and Diagnosis (DCTD)—and the Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Trial screening network, supported by the Division of Cancer Prevention.

A total of 53,419 volunteer former smokers between the ages of 55 and 74 have been recruited, more than 3,400 over the initial accrual goal and more than 6 months earlier than expected. The first participants were enrolled in September 2002, and by January 2004 the original goal of 50,000 had been reached. Recruitment to the study was achieved in partnership with the American Cancer Society by raising awareness of the trial at the local community level through their regional offices.

The more than 30 NLST participating sites are now closed to recruitment. All participants will receive an initial screen and two subsequent yearly screens. The study is designed to have a 90% statistical power to detect progressively smaller mortality effects. Yearly analyses of the data will begin in the fourth year of the trial.

The NLST-ACRIN participating sites are contributing to a tissue bank for future biomarker research, evaluation of quality-of-life issues, cost-effectiveness assessments, and evaluation of the impact of screening with spiral CT compared with CXR on smoking cessation.

Smoking Activities within and Associated with NLST

Information on smoking behavior is collected at 6-month intervals through a questionnaire* administered at NLST-ACRIN participating sites. Information gathered includes the following:

- Current smoking habit (cigarettes/day)
- Type of medical education in smoking cessation aids/programs
- Participant-initiated attempts at smoking cessation
- Duration(s) of attempted smoking cessation
- Smoking beliefs

**Derived from the 1982 WHO Cardiovascular Survey Methods Questionnaire, Fagerstrom Test for Nicotine Dependence, and Biener and Abrams Scale*

ACRIN is sharing its data collected from the biannual data collected in the questionnaire above with Elyse R. Park, PhD, an approved co-investigator from the Massachusetts General Hospital/Harvard Medical School Institute for Health Policy, to evaluate risk

perception**.** Risk perception at baseline is administered at NLST-ACRIN participating sites. Additionally, an in-depth qualitative questionnaire on risk perception is also administered at three ACRIN-NLST participating sites.

Two abstracts were submitted to the Society of Epidemiologic Research Annual Meeting:

- Gareen IF, Clark M, Park E, Sicks J (Brown University School of Medicine, Providence, RI 02912). Baseline smoking characteristics and intention to quit in participants enrolled in the American College of Radiology National Lung Screening Trial.
- Gareen IF, Clark M, Park E, Sicks J, Fryback D (Brown University School of Medicine, Providence, RI 02912). The impact of smoking status and smoking cessation on health-related quality of life in the American College of Radiology Imaging Network National Lung Screening Trial.

It is the goal of the investigators associated with this activity to have in spring of 2006 three manuscripts for publication on the following topics:

- Risk perception at baseline
- Baseline smoking and intention to quit
- Quality of life in association with time since quit

Office of the Director (OD)

Office of Communications (OC)

The National Network of Tobacco Cessation Quitlines
Contact: Candace Deaton, MPA, 301-594-9072, deatonc@mail.nih.gov

On February 3, 2004, Department of Health and Human Services (HHS) Secretary Tommy G. Thompson announced plans for a national network of tobacco cessation quitlines to provide all smokers in the United States access to the support and latest information to help them quit. The Secretary's plan to establish a National Network to ensure access to quitline services for all Americans is being realized. NCI, Centers for Disease Control and Prevention (CDC), and other state, private industry, and federal partners (www.naquitline.org) have created the infrastructure and a coordinated mechanism to offer cessation services to the American public.

The initiative provides funding to states to enhance or establish quitlines, provides quitline services to states through NCI's Cancer Information Service (CIS) until states have established a quitline, and—in keeping with the Subcommittee's recommendation to provide a national portal to available state or regionally managed quitlines—establishes a single, national access telephone number. The potential of this network for handling calls can be demonstrated by the more than 140,000 calls to 1-800-QUIT-NOW between December 10, 2004, and September 30, 2005, with no national promotion efforts.

In this initiative, states with established quitlines maintain their quitline numbers and unique branding. Calls to the newly established toll-free access number are another access point to route calls electronically, using NCI's telecommunication infrastructure, to available quitline services provided by the states. States maintain their established partnerships with community partners and vendors and continue to serve their regional populations and provide services tailored to the needs of those populations.

To further support this HHS initiative, NCI awarded three new contracts in September 2005:

- Meeting Support Contract
  NCI and CDC plan to hold two regional meetings in late spring 2006 to bring together stakeholders in the national network, including state tobacco control managers, tobacco cessation service providers, NCI and CDC project officers, and state-based quitline managers to promote and maintain strong relations with key stakeholders, collaborate in future program planning and evaluation, and support further development of a cohesive network of quitlines. These meetings are a follow-up to the five regional meetings held in spring 2004 following the announcement of the National Network.

- Evaluation Contract
  The purpose of this contract is to monitor the implementation of the HHS initiative, assess its public health impact, and provide direction for future telephone counseling network efforts to deliver evidence-based interventions for other behavioral risk factors. Evaluation information will be used to 1) strengthen key partnerships within cessation research and practice, 2) build and enhance states' capacity to provide quality quitline services, 3) increase the public use of quitline service, and 4) sustain quality quitline services.
- Promotion Contract
  A variety of promotion plans are being developed using a consumer-based, social marketing model. These plans will identify patterns of and vehicles for promotions that support the readiness, both regionally and nationally, of the national network's capacity.

In September 2005, NCI also awarded $2.5 million in supplemental funds to the University of California, San Diego (UCSD) Cancer Center to conduct nine research projects on smoking cessation quitlines. The overarching theme of the studies is to "Reach and Assist Underserved Smokers through Quitlines." Quitline investigators from five institutions in the United States and Canada are collaborating on this ambitious effort.

During the month of November 2005, ABC's "World News Tonight" launched "Quit to Live: Fighting Lung Cancer," a series of reports on smoking cessation and lung cancer prevention, which served as the national network's first large-scale, national campaign. Throughout the month, "World News Tonight" devoted unprecedented attention to reports on smoking cessation; public health policy surrounding smoking and tobacco; and the latest medical advances on lung cancer treatment and prevention. The news program producers followed several people trying to quit smoking during the month and periodically reported on the highs and lows of their challenge. As part of its campaign, "World News Tonight" directed viewers to 1-800-QUIT-NOW and to the www.smokefree.gov Web site for additional resources on cessation and lung cancer, through www.wnt.abcnews.com.

The National Network of Tobacco Cessation Quitlines is a state/federal partnership to help all those who wish to quit tobacco. It is the first step of an evolving collaboration that has the potential to have a major public health benefit. In addition to the public health impact, the movement also has the possibility to garner support from other federal agencies.

Office of Science Planning and Assessment (OSPA)/Office of Women's Health (OWH)

Women, Tobacco, and Cancer: An Agenda for the 21st Century

Contact: Anna Levy, MS, 301-435-3860, levya@mail.nih.gov

The Women, Tobacco, and Cancer Working Group, a public/private partnership led by NCI, was formed to respond to the priorities set forth by the 2001 surgeon general's report *Women and Smoking*, as well as priorities of NCI's annual plan and budget proposal, and the Department of Health and Human Services' *Healthy People 2010* goals. The group focused on identifying ways to stimulate scientific research and suggested approaches to translate knowledge into interventions to prevent tobacco-related cancers in women in the United States and other countries. The working group report articulates strategies in five areas: discovery, development, delivery, partnership, and evaluation and surveillance.

Information on current NCI activities related to women and tobacco control can be found at http://women.cancer.gov/research/tobacco.shtml, and on lung cancer at http://women.cancer.gov/research/lung.shtml. In addition, the report *Current Research and Activities: Tobacco and Tobacco-Related Cancers and Women (2001 and 2002),* available at http://women.cancer.gov/abstract/index.htm, is a portfolio analysis describing federal- and nonfederal-supported research and activities. An updated database is nearing completion and will be made publicly available as a resource.

Lung Cancer Implementation and Integration (I2) Plan

Contact: Samir Sauma, PhD, MPH, 301-402-7518, saumas@mail.nih.gov

Fewer than 40% of healthcare providers currently recommend specific treatment for tobacco use. Furthermore, even with combined behavioral and pharmacologic interventions, quit rates are no more than 15% to 25%. Therefore, the NCI integrated plan proposes a multi-pronged transdisciplinary approach to improve the success rates of smoking cessation and prevention in order to have a significant impact on the 2015 lung cancer goals. Specifically, initiatives that address both the etiology and treatment of tobacco use are proposed in the following areas:

- *Genetics of Nicotine Dependency:* Advance the discovery of how tobacco dependency occurs and the linkages between biology and behavior by exploring the role of gene variants in the nicotine-dependent phenotype. The goal is to more effectively prevent tobacco use and increase the chances of successful cessation through identification of drug targets.
- *Targeted pharmacotherapy:* Fund research on the development of molecularly targeted therapies to improve the success rate of the treatment of tobacco use and dependence
- *Imaging research:* Support functional neuro-imaging studies to characterize the neural substrates of addiction
- *Testing of nicotine vaccines:* Promote testing of nicotine vaccines that have a potential role in treatment of addiction and also may provide a future opportunity to prevent addiction

- *Nanotechnology research:* Liaise with the NCI Alliance for Nanotechnology in Cancer initiative for targeted delivery of novel nanoparticle-based therapies
- *Dissemination/Implementation of effective cessation interventions:* Support efforts to optimize the delivery of effective treatments to clinical and community environments—along with feedback mechanisms so that the delivery process serves as an additional component of discovery
- *Policy:* Support analyses on the role of policy change (e.g., clean indoor air laws, coverage of medications by health plans, tobacco tax increases) on tobacco use uptake, dependence, and cessation, for more strategic decisions on what interventions can have the greatest impact

Partnerships and Collaborations

Partnerships and Collaborations within NCI's Divisions and Offices

The NIH Tobacco and Nicotine Research Interest Group (TANRIG)

In January 2003, TANRIG was created with the goal of increasing collaboration, coordination, and communication of tobacco- and nicotine-related research among National Institutes of Health Institutes and Centers, and with partnering Department of Health and Human Services agencies.

Current TANRIG members are from centers and institutes, including the following:

- Agency for Healthcare Research and Quality (AHRQ)
- Alcohol and Tobacco Tax and Trade Bureau (TTB)
- Fogarty International Center (FIC)
- Food and Drug Administration (FDA)
- National Cancer Institute (NCI)
- National Heart, Lung, and Blood Institute (NHLBI)
- National Human Genome Research Institute (NHGRI)
- National Institute of Dental and Craniofacial Research (NIDCR)
- National Institute of Diabetes and Digestive & Kidney Diseases (NIDDK)
- National Institute of Environmental Health Sciences (NIEHS)
- National Institute of Mental Health (NIMH)
- National Institute of Neurological Disorders and Stroke (NINDS)
- National Institute of Nursing Research (NINR)
- National Institute on Alcohol Abuse and Alcoholism (NIAAA)
- National Institute on Deafness and Other Communication Disorders (NIDCD)
- National Institute on Drug Abuse (NIDA)

Partnerships and Collaborations within NIH Institutes and Offices, HHS, Other Federal Departments, and National Voluntary Organizations

Effectively reducing the use and addition to tobacco requires cooperation from various government and private agencies. Some key partnerships and collaborations on tobacco initiatives include are listed below.

Agencies within HHS

- Agency for Health Care Research and Quality (AHRQ)
- Food and Drug Administration (FDA)
- Centers for Disease Control and Prevention (CDC)
- Centers for Medicare and Medicaid Services (CMS)

State Health Departments

- Arizona Tobacco Education and Prevention Program (TEPP)
- California Department of Health Services

National Voluntary Organizations

- American Cancer Society (ACS)
- American Lung Association (ALA)
- Campaign for Tobacco-Free Kids

National Professional Societies

- American College of Radiology Imaging Network (ACRIN)

National Philanthropic Foundations

- American Legacy Foundation (Legacy)
- Robert Wood Johnson Foundation (RWJF)

International Health Organizations

- International Agency for Research on Cancer (IARC)
- World Health Organization (WHO)
- World Health Organization Tobacco Free Initiative (WHO-TFI)

Additional Tools, Products, and Resources

Bibliography of Tobacco Use and Health Disparities
http://cancercontrol.cancer.gov/tcrb/bibliography_tobacco.html

This bibliography features literature on tobacco-related health disparities and focuses on special populations and themes such as Asian Americans and Pacific Islanders; Native Americans; African Americans; Latino/Hispanic Americans; gay, lesbian, bisexual, and transgender Americans; gender; religion; mental illness; disabilities; correctional facilities; occupation; and rural/urban areas.

California Health Interview Survey
http://appliedresearch.cancer.gov/surveys/chis/

The California Health Interview Survey (CHIS) is a telephone survey that provides population-based, standardized health-related data from 55,000 households selected from all 58 counties in the state. Fielded for the first time in 2000-2001, the survey is designed to provide information on the following:

- The health of California's adults and children, including physical and mental health status, prevalence and management of chronic diseases, and diet and exercise
- Health insurance coverage, access to preventive and other health services, and barriers to use of health services
- Eligibility for and participation in state health programs

California has the nation's most racially, ethnically, and linguistically diverse population. As a result, the health and health care needs of these population groups are an important focus of the survey. Groups of particular interest include African Americans, Latinos and Hispanics, Native Americans and Alaska Natives, and Asian Americans and Pacific Islanders. The survey has been culturally adapted for and translated into five languages: Spanish, Chinese, Vietnamese, Korean, and Khmer.

Cancer Trends Progress Report: 2005 Update
http://progressreport.cancer.gov/

The *Cancer Trends Progress Report: 2005 Update* summarizes our nation’s progress against cancer in relation to the *Healthy People 2010* targets developed by the U.S. Department of Health and Human Services. Approximately one third of the report is devoted to tobacco use and policy information. First issued in 2001 as the *Cancer Progress Report*, the report is released every other year and was revised and expanded in late 2005, offering updated national trends data and a variety of new features. The information presented in this online report—intended for policy makers, researchers, clinicians, and public health service providers—was gathered through a collaborative effort with other key agencies and groups, such as the Centers for Disease Control and Prevention and the American Cancer Society.

Cancer Control PLANET
http://cancercontrolplanet.cancer.gov

Cancer Control PLANET is a Web portal that provides easy access to data and research-based resources that can help state and local cancer control program planners and staff, and cancer prevention and control researchers to design, implement, and evaluate evidence-based cancer control programs.

Measures Guide for Youth Tobacco Research
http://cancercontrol.cancer.gov/tcrb/guide_measures.html

The Measures Guide for Youth Tobacco Research is intended as a resource for anyone conducting research on youth tobacco use or intervening with adolescent tobacco users. The guide assists researchers in achieving consistency of measurement across studies for describing smoking patterns, establishing inclusion and exclusion criteria for participation, measuring potentially important mediators and moderators of treatment outcomes, and measuring tobacco use outcomes. Each measure is briefly described and details are provided about the target population, administrative issues, scoring information, psychometrics, clinical utility of the instrument, research applicability, copyright/cost issues, references, authorship, and author's contact information.

National Health Interview Survey Cancer Control Supplement
http://appliedresearch.cancer.gov/surveys/nhis/

In 2000, the National Health Interview Survey (NHIS) Cancer Control Module (CCM; also referred to as the Cancer Control Supplement [CCS] in other years) covered the following topics:

- Risk Factors
    - Tobacco use: current and past smoking, "passive smoking," smoking in the workplace, attitudes regarding smoking, and use of smokeless tobacco
    - Diet: intake of fat, fruits, vegetables, and legumes
    - Alcohol consumption
    - Drug use, such as birth control pills or estrogen replacement therapy
    - Family history of cancer
    - Genetic testing
    - Sun avoidance behavior
- Cancer Screening
    - Frequency of breast examination by a physician, mammogram, breast self-exam, Pap smear, blood stool test, proctoscopic exam, and prostate-specific antigen
    - Location of examination
    - Frequency of genetic testing for cancer risk
    - Accessibility of medical facility or physician for screening (core)
    - Type of medical insurance (core)

The NHIS is a public use data set. Data are available on the National Center for Health Statistics Web site. The 2000 and 2003 CCS/CCM are available at www.cdc.gov/nchs.

The 2005 CCS has currently just come out of the field, and results will be made public later in 2006*.*

Smokefree.gov
www.smokefree.gov

Smokefree.gov allows smokers to choose the help that best fits their needs as they become and remain nonsmokers. Immediate assistance is available in the form of

- An online step-by-step cessation guide
- Local and state telephone quitlines
- NCI's national telephone quitline
- NCI's instant messaging service
- Publications, which may be downloaded, printed, or ordered

The Smoking and Tobacco Control Monographs
http://cancercontrol.cancer.gov/tcrb/monographs/index.html

NCI established the Smoking and Tobacco Control Monograph Series in 1991 to provide ongoing and timely information about emerging public health issues in smoking and tobacco use control. The series reduces the time between availability of information from research projects and the publication and wide dissemination of this information. It also enhances the rapidity with which NCI can use findings from research trials to reduce cancer morbidity and mortality.

Tobacco Use Supplement to the Current Population Survey
http://riskfactor.cancer.gov/studies/tus-cps/

NCI has supported federal surveys of tobacco use administered as part of the Current Population Survey conducted by the U.S. Census Bureau. The Tobacco Use Supplement to the Current Population Survey (TUS-CPS) is a key source of national and state data on smoking and other tobacco use in the United States. The data set can be used by researchers for tobacco-related research and tobacco program evaluation, as well as to monitor progress in tobacco control. In an effort to better capture the tobacco-related patterns and behaviors of U.S. communities with limited English proficiency, NCI has translated the TUS-CPS into Spanish, Chinese, Vietnamese, and Korean. TUS-CPS results from 2003 (the most recent data collection) should be available sometime this year (2006).

Youth Tobacco Cessation: A Guide for Making Informed Decisions
www.cdc.gov/tobacco/educational_materials/cessation/youth_cess/index.htm

This Centers for Disease Control and Prevention publication is filled with valuable information that helps public health practitioners understand how to approach implementing a tobacco cessation intervention for youth—including assessing community needs, developing a plan, choosing an intervention, and monitoring progress.

The “better practices” model presented seeks to draw from both science and experience to identify approaches that are practical as well as effective.

Clearing the Air
www.smokefree.gov/pubs/clearing_the_air.pdf

Clearing the Air is a printed publication designed to help smokers at any stage—whether they’re still thinking about quitting, have made the decision to quit, or have already taken steps to quit and just need help maintaining a new lifestyle. Both ex-smokers and experts contributed to this guide.

Guía para Dejar de Fumar
http://dccps.nci.nih.gov/tcrb/Spanish_Smoking_book.pdf

The number of Spanish-speakers in the United States is growing rapidly. Hispanics are soon expected to become the second-largest ethnic group in the nation. Along with this trend comes a growing need for materials that will help them quit smoking and remain tobacco free. Written for those who are thinking about quitting or have already decided to quit, this printed publication is a guide filled with photographs, vibrant design elements, and content that draws upon Hispanic culture.