

MEETING SUMMARY
PRESIDENT'S CANCEL PANEL
PROMOTING HEALTHY LIFESTYLES
TO REDUCE THE RISK OF CANCER

October 23, 2006
Lexington, KY

OVERVIEW

The President's Cancer Panel (PCP, the Panel) is seeking input to help develop its recommendations to the President of the United States, the U.S. Congress, the Secretary of Health and Human Services (HHS), and the broader community of researchers, policy makers, advocates, and others within the cancer community.

This meeting was the second in the 2006-2007 series focusing on ways to reduce the risk of cancer incidence and mortality through the promotion of healthy lifestyles. In two of the meetings in this series, the Panel will hear reports on factors linking obesity, physical activity, and nutrition to cancer risk. The other two meetings will focus on the factors linking tobacco use and environmental tobacco smoke to cancer risk.

PARTICIPANTS

President's Cancer Panel (PCP)

LaSalle D. Leffall, Jr., M.D., F.A.C.S., Chair

Margaret Kripke, Ph.D.

Lance Armstrong

National Cancer Institute (NCI), National Institutes of Health (NIH)

Abby Sandler, Ph.D., Executive Secretary, PCP, NCI

Speakers

Michele Bloch, M.D., Ph.D., Medical Officer, Tobacco Control Research Branch, Division of Cancer Control and Population Sciences, NCI

Richard R. Clayton, Ph.D., Professor and Associate Dean for Research, College of Public Health, University of Kentucky

Frank J. Chaloupka, Ph.D., Professor, Department of Economics, University of Illinois at Chicago

Alfred M. Cohen, M.D., F.A.C.S., Director, Markey Cancer Center, University of Kentucky

Susan Curry, Ph.D., Director, Institute for Health Research and Policy, University of Illinois at Chicago

Gary Giovino, Ph.D., M.S., Professor, School of Public Health and Health Professions, State University of New York (SUNY) at Buffalo

Cynthia Hallett, M.P.H., Executive Director, Americans for Nonsmokers' Rights, American Nonsmokers' Rights Foundation

Melissa M. Hudson, M.D., Director, After Completion of Therapy Clinic, St. Jude Children's Research Hospital

Corinne Husten, M.D., M.P.H., Acting Director, Office on Smoking and Health, Centers for Disease Control and Prevention (CDC)

Teresa Ann Isaac, J.D., Mayor, City of Lexington, Kentucky

Kiyong Lee, Sc.D., M.P.H., C.I.H., Assistant Professor of Environmental Health, University of Kentucky

Matthew L. Myers, J.D., President and CEO, Campaign for Tobacco-Free Kids

James D. Sargent, M.D., Director of Cancer Prevention Research, Norris Cotton Cancer Center, Dartmouth Medical School

Lee T. Todd, Jr., Ph.D., President, University of Kentucky

Donna Vallone, Ph.D., Senior Vice President for Research and Evaluation, American Legacy Foundation

Everette Varney, Mayor, City of Georgetown, Kentucky

OPENING REMARKS—DR. LaSALLE D. LEFFALL, JR.

On behalf of the PCP, Dr. Leffall welcomed invited participants and the public. He provided a brief overview of the history and purpose of the Panel and the aims of the current series of meetings on reducing the risk of cancer incidence and mortality through the promotion of healthy lifestyles. Dr. Leffall explained that the issues being explored today relate to the impact of tobacco use and environmental tobacco smoke on cancer risk. A second meeting on this topic will be held February 12, 2007, in Jackson, Mississippi. He added that the meeting would consist of three panel discussions—two addressing current knowledge and one on community-based programs. Dr. Leffall thanked Dr. Alfred M. Cohen, Dr. Lee T. Todd, and the University of Kentucky for hosting this meeting.

WELCOME—DR. ALFRED M. COHEN

Background

Dr. Cohen attended the Johns Hopkins University School of Medicine and completed 6 years of surgical training at the Massachusetts General Hospital and 2.5 years at the National Cancer Institute. He then joined the Harvard/Mass General faculty for 9 years, as Co-Director of Surgical Oncology. During the subsequent 14 years, he served as Chief of the Colorectal Service, Department of Surgery, Director of the GI Cancer Management Team at Memorial Sloan-Kettering Cancer Center, and Professor of Surgery at Cornell University College of Medicine (now Weill-Cornell). He moved to his current position at the Markey Cancer Center, University of Kentucky, in September 2000. Dr. Cohen is Director and CEO of the Markey Cancer Center at the University of Kentucky in Lexington. He is Professor of Surgery at the University of Kentucky College of Medicine. Dr. Cohen has been Principal Investigator or Co-Principal Investigator on 25 clinical trials and has authored or co-authored more than 300 publications. He is President of the Society of Surgical Oncology, chairs the Colorectal Site Group of the American College of Surgeons Oncology Group, and directs the American College of Surgeons program for optimizing surgical technique in the treatment of rectal cancer.

Key Points

- < Dr. Cohen welcomed participants on behalf of the Lucille P. Markey Cancer Center.
- < The Commonwealth of Kentucky has been struggling for many decades with the effects of tobacco use. Thirty percent of pregnant women in the state smoke. The state's lung cancer rate is 50 percent above the national average. Mouth/larynx cancer, bladder cancer, pancreatic cancer, and cervical cancer are still quite common in Kentucky.
- < As the NCI budget for cancer research has tightened, the Markey Cancer Center has looked for alternative resources. The Center receives \$3 million a year from the state in the form of Tobacco Settlement funds and an additional \$3 million from increased cigarette taxes. The Center also participates in a CDC-funded six-state Appalachian regional network of Prevention Research Centers.
- < Participants in this meeting will hear descriptions of public policy efforts in two Kentucky cities to restrict smoking in public places.
- < The University of Kentucky and the Markey Cancer Center are dedicated not only to research, but also to helping the people of the Commonwealth of Kentucky.

WELCOME— DR. LEE T. TODD, JR.

Background

Dr. Todd became the 11th president of the University of Kentucky on July 1, 2001. He is a native of Earlington, Kentucky, and a graduate of the University of Kentucky and the Massachusetts Institute of Technology. Dr. Todd is the sixth University of Kentucky alumnus to hold the presidency. He is a former University of Kentucky engineering professor; a successful businessman who launched two worldwide technology companies, both based in Kentucky; and a public advocate for research, technology, and an entrepreneurial economy in the Commonwealth. President Todd is a member of the American Council on Education's Board of Directors, National Association of State Universities and Land-Grant Colleges Board of Directors, the Business Higher Education Forum, and the Council on Competitiveness. He is also a member of the National Science Foundation's Education and Human Resources Committee.

Key Points

- < Dr. Todd welcomed participants on behalf of the University of Kentucky.
- < Dr. Todd explained his personal interest in cancer control and reduction of tobacco use by stating that his mother died of lung cancer at the age of 56, after having started smoking at 14.
- < Kentucky has responded to its cancer problem with a number of efforts such as the Marty Driesler Cancer Project, through which community health care providers and facilities are encouraged to partner with the Markey Cancer Center for early detection, prevention, and treatment of lung, liver, and esophageal cancers.
- < The University of Kentucky is using its extension network to bring women to the campus to receive free screening for ovarian cancer.
- < The Markey Cancer Center is addressing colorectal cancer in several rural Kentucky counties as part of a National Colorectal Cancer Education Campaign.
- < The University of Kentucky has established 24 research initiatives called Commonwealth Collaboratives to address what Dr. Todd calls the "Kentucky Uglies"—his term for long-entrenched problems that are holding back the state's economic and cultural progress.

PANEL I

DR. GARY GIOVINO: The Tobacco Use Epidemic

Background

Dr. Giovino joined the faculty of the Department of Health Behavior in the SUNY at Buffalo School of Public Health and Health Professions in September 2006. His research interests focus on patterns, determinants, consequences, and control of tobacco use. In 1988, he joined the Office on Smoking and Health (OSH) at the CDC, where he served as Chief of the Epidemiology Branch during most of the 1990s. In 1999, he became a Senior Research Scientist in the Department of Health Behavior of the Roswell Park Cancer Institute. He is Principal Investigator of two Robert Wood Johnson Foundation (RWJF)-funded studies; the first is a survey on national patterns of youth smoking cessation and the second is a national survey of U.S. adult smokers to assess "hardcore" smoking and interest in tobacco harm reduction. He also heads the tobacco team for the ImpacTeen component of the RWJF-funded Bridging the Gap project. In addition, Dr. Giovino conducts tobacco surveillance and evaluation work with funding from NCI and the National Science Foundation. He was one of the chairs of the National Tobacco Monitoring, Research, and Evaluation Workshop, cosponsored by the National Cancer Institute, American

Legacy Foundation, CDC, and RWJF. Dr. Giovino is a member of the New York State Tobacco Control Program Advisory Board.

Key Points

- < Cigarette smoking remains the single leading preventable cause of death in the United States. There are 4,700 chemicals in cigarette smoke, 250 of which cause cancer or are otherwise toxic. Fourteen million Americans have died from tobacco use since the first Surgeon General's report in 1964, which amounts to approximately 440,000 deaths per year. These are premature, avoidable deaths.
- < Of the 440,000 deaths caused by smoking, 36 percent, or almost 159,000, are cancer related. Other major causes of death related to smoking include cardiovascular disease, respiratory disease, stroke, bronchitis, and emphysema.
- < Smoking is also associated with impaired growth among children, adolescents, and young adults; sudden infant death syndrome; low birthweight; rupture of the amniotic sac before the onset of labor, referred to as premature rupture of membranes (PROM); other reproductive disorders; cataracts; low bone density; peptic ulcer disease; and adverse surgical outcomes.
- < Smokeless tobacco is associated with oral cancer and oral leukoplakia. Daily inhalation of cigar and pipe smoke causes cancers of the mouth, larynx, and lung, as well as cardiovascular disease, and chronic obstructive pulmonary disease.
- < The 2006 Surgeon General's report documents significant health benefits of smoking cessation. These apply to men and women of all ages regardless of the presence of smoking-related disease. Former smokers live longer than continuing smokers. The report also documents evidence that secondhand smoke causes disease and premature death among nonsmokers. Secondhand smoke increases risk of sudden infant death, respiratory infection, ear problems, slow lung growth, and severe asthma.
- < Separating smokers from nonsmokers, cleaning the air in buildings, and improving ventilation do not protect people from exposure to secondhand smoke. The only solution is to eliminate smoking in public spaces.
- < We know from the 1988 Surgeon General's report and subsequent research that cigarettes and other forms of tobacco are addictive. Nicotine is the drug in tobacco that causes addiction, and the pharmacologic and behavioral processes that determine tobacco addiction are similar to those that determine addiction to drugs such as heroin and cocaine. In addition to producing dependence, nicotine also helps people regulate mood, decrease irritability, improve concentration, and control weight.
- < In epidemiological terms, tobacco is the agent that causes disease; the user of tobacco is the host, and the tobacco industry is the vector that distributes the agent. As with other agents, hosts, and vectors, those associated with tobacco influence each other in an environment that includes familial, social, cultural, political, economic, historical, and media components.
- < The study of the agent in this scenario requires study of toxins, carcinogens, and nicotine's addicting properties and the biological availability of nicotine. Research questions regarding the host involve genetics, motivation, misperceptions, comorbidities, and childhood experiences. Vector-related topics include marketing practices, activities that undermine health promotion strategies, and efforts to influence scientists and politicians.
- < Studies of the environment within which tobacco use exists involve examination of families and peer groups, cultural factors, images of tobacco in the media, smoke-free laws, pricing, and advice from physicians.
- < In the early 20th century, few people smoked manufactured cigarettes. Tobacco companies began to promote cigarettes because they deliver nicotine to the brain within seconds,

whereas nicotine derived from chewing tobacco and snuff takes approximately 30 minutes to reach the brain. Marketing strategies in the 20th century also began to target women.

- < Overall tobacco use has declined since the middle of the last century. However, in the last 15 years, use of large cigars has increased slightly and snuff use has remained stable.
- < The dramatic increase in cigarette use between 1910 and 1964, when the first Surgeon General's report was published, resulted from efforts by the tobacco industry to promote its optimal nicotine delivery product. This included not only aggressive marketing but also product placement in films and personal appearances by celebrities.
- < In the 1920s, one ad stated, "To keep a slender figure no one can deny, reach for a Lucky instead of a sweet." An ad in a medical journal in the 1940s contained the claim that "More doctors smoke Camel than any other cigarette."
- < After the harmful effects of smoking began to be reported in the 1950s, the industry changed its tactics. One ad announced that "Kent with a micronized filter is smoked by more scientists and educators than any other cigarette." (Unfortunately, the micronized filter contained asbestos.) Following the 1964 Surgeon General's report, the industry marketed low-tar cigarettes to people who wanted, but were unable, to quit smoking. Research has shown that low-tar cigarettes are not safer than standard ones.
- < As cigarette use began to decline, the industry resorted to a variety of tactics, including introduction of less expensive generic cigarettes and electronic devices that they claimed reduced toxins in cigarette smoke, renewed marketing of smokeless tobacco products, and new advertising methods focusing on seductive imagery rather than text.
- < Historically, men have been more likely to smoke and use smokeless tobacco than women. However, between 1955 and 2004, the prevalence of tobacco use among men has declined, whereas it has slowly increased among women.
- < The decline in smoking has been greatest among people with higher levels of education. Disparities also exist among racial and ethnic groups. Native Americans are the most likely to smoke, followed by whites and African Americans at about the same level, Hispanics, and Asians. There are significant differences within subgroups. Among Asians, for example, smoking prevalence is highest among recent immigrants.
- < The number of smokers who quit smoking is gradually increasing. The increase is slowest among young smokers; smokers with more education are more likely to quit.
- < In a survey on perceptions about smoking, only one-third of smokers knew that nicotine patches are less likely than smoking to cause a heart attack. Such misperceptions reduce the likelihood that smokers will use patches to help them quit smoking.
- < Data from the Monitoring the Future study show that the trend toward reduced smoking seen in the 1990s has leveled off. This trend has coincided with reduced numbers of antismoking messages and a slowing of the trend toward increased tobacco prices.
- < The CDC *Guide to Community Preventive Services* has called for increased tobacco taxes, mass media antismoking campaigns, community-based cessation programs with "quit line" telephone support systems, reduction of insurance copayments for cessation therapies, reminder systems for health care providers, and clean indoor air legislation.
- < Research has shown that tobacco use fluctuates with tobacco prices. Recent price increases associated with the Master Settlement Agreement have leveled off.
- < Funding for tobacco control programs varies by state. Between 2000 and 2006, overall spending on tobacco control was reduced from \$670 million to \$550 million.

- < Some health care programs, including Medicaid, provide support for nicotine replacement, but many smokers are unaware of these benefits.
- < As of January 2007, 21 states will have implemented smoke-free legislation. Increasing numbers of people are working in smoke-free environments, and about one-third of American homes are now smoke free. Internationally, there is a trend toward increased use of graphic warning labels; research has shown that such labels are effective in reducing smoking.
- < Forecasts based on trends in tobacco use would seem to suggest that within 30 years, tobacco use might be eliminated. This is unlikely, due primarily to recent trends toward complacency of antitobacco efforts and the resistance of hardcore smokers. Tobacco use is likely to level off at a greatly reduced prevalence rate. However, this will only be achieved through continued efforts to support individuals in overcoming tobacco addiction through countermarketing, cessation and prevention programs, and increased product regulation.

DR. MELISSA M. HUDSON: Impact of Cigarette Smoking on Health Status of Children and Adolescents with Chronic Diseases

Background

Dr. Hudson joined the St. Jude Children's Research Hospital faculty in 1989. She is currently a member of the Leukemia/Lymphoma Division in the Department of Hematology/Oncology. She has been Principal Investigator for the St. Jude pediatric Hodgkin's trials for the past 15 years. These trials have evaluated risk-adapted, response-based combined modality therapy regimens designed to reduce organ dysfunction and subsequent malignancies in long-term survivors. In 1993, Dr. Hudson became Director of the After Completion of Therapy Clinic, which supervises the care of over 5,000 long-term childhood cancer survivors. She has published widely on her research in pediatric Hodgkin's disease, late treatment sequelae after childhood cancer, and health education of childhood cancer survivors. She is Vice-Chair of the Children's Oncology Group Late Effects Steering Committee and Co-Chair of the Children's Oncology Group Long-Term Follow-Up Guidelines for Survivors of Childhood, Adolescent, and Young Adult Cancer. She also serves as the Pediatric Section Editor of the journal *Cancer* and on the Editorial Board of *Pediatric Blood and Cancer* and *ASCO News & Forum*.

Key Points

- < The chronic diseases of greatest concern with regard to the impact of smoking include conditions compromising pulmonary health like asthma and cystic fibrosis; conditions compromising cardiovascular health, including diabetes and sickle cell disease; and conditions compromising immune function, such as juvenile rheumatoid arthritis and cancer.
- < In cohorts of children with asthma, 20 to 55 percent self-report smoking; in those with diabetes, 8 to 31 percent; juvenile rheumatoid arthritis, 15 percent; cancer, 2 to 10 percent; sickle cell, 7 percent; and cystic fibrosis, 3 percent.
- < A review of studies of self-reported smoking among young adult cancer survivors has shown a reduction in smoking prevalence over time. Based on this evidence, Dr. Hudson's After Completion of Therapy Clinic has begun recruiting younger cohorts into an initiative to reduce smoking and intentions to smoke. About 22 percent of school-age children in these cohorts have reported smoking. Among survivors 5 years or more after treatment completion, self-reported smoking appears to be increasing.
- < For young cancer patients and survivors, smoking can increase the risk of exacerbated treatment toxicity, mucosal damage, respiratory infection, and adverse nutritional effects. Smoking can increase the severity and duration of mucositis and reduce treatment tolerance and efficacy. Tobacco may also increase vulnerability to late treatment toxicities for specific

organs (e.g., heart, lung) and to second cancers, fertility problems, and osteopenia or osteoporosis among long-term survivors.

- < Of the factors contributing to the risk of cancer-related morbidity (such as genetic predispositions, premorbid conditions, tumor factors, and treatment factors), only lifestyle behaviors (e.g., tobacco use, diet, and alcohol consumption) can be modified or controlled by the patients themselves.
- < Variables associated with smoking in cohorts of childhood cancer survivors are similar to those in cohorts without cancer: social influences (including peer pressure and parental smoking), perceptions of health risks, and tendencies toward risk-taking and rebelliousness.
- < Comparisons of adolescent cancer patients and survivors with nonsmoking adolescents have shown that fewer in the first group currently smoke or intend to smoke and report greater vulnerability to tobacco-related illness.
- < The intention to smoke is best predicted by tobacco-specific variables that are proximal, such as parental smoking and peer smoking. Traditional smoking prevention programs with revised and enhanced content may be applicable to children with cancer.
- < Although childhood cancer survivors perceive their health as vulnerable, they are often unaware or misinformed about cancer-related risks. While they recognize the need to change their behavior to protect health, they often fail to do so.
- < The After Completion of Therapy Clinic has developed guidelines for clinician-delivered smoking interventions with pediatric cancer patients. Basic steps include the “Five A’s”: Ask about tobacco use, Advise about general health risks, Assess the patient’s willingness to commit to change, Assist with prevention and cessation strategies, and Arrange for routine follow-up. Additional steps include informing children about complications during therapy, describing chronic health complications associated with tobacco use after therapy, and explaining their vulnerability relative to their healthy peers.
- < Childhood cancer patients and survivors, like their healthy peers, are exposed to secondhand smoke. A survey of parents of children treated at St. Jude has shown that almost 45 percent are smokers. A large percentage of these parents smoke inside their cars and in their homes and allow others to smoke in the presence of their children.
- < Research priorities at St. Jude include targeting preadolescents prior to the age of smoking initiation; combining prevention and exposure components; implementing a family-based approach to prevent initiation of smoking and exposure to environmental tobacco smoke; incorporating this approach into routine medical care for diverse populations; and developing combined behavioral and pharmacologic cessation interventions for parents.

DR. CORINNE HUSTEN: A Comprehensive Approach to Tobacco Use

Background

Dr. Husten is Acting Director of the CDC’s Office on Smoking and Health. Her research interests include treatment of tobacco use in general and tobacco use among women. She served as an editor of the 2001 Surgeon General’s report, *Women and Tobacco*, and as the CDC liaison to the Public Health Service’s Smoking Cessation Guidelines panel. Dr. Husten also served as a tobacco content expert to the Community Preventive Services Task Force for the CDC *Guide to Community Preventive Services* (the *Community Guide*) recommendations and as a contributor to the OSH’s Best Practices. In addition, she worked on the development of the Health Plan Employer Data and Information Set (HEDIS) performance measures for the treatment of tobacco use in managed care settings, worked with Partnership for Prevention on the development of a tobacco counseling benefit under Medicare, and oversaw the production of the *Making Your*

Workplace Smokefree guide. Prior to her role as Acting Director, Dr. Husten served as Chief of the Epidemiology Branch in OSH. In that capacity, she led surveillance, research, and evaluation activities. She oversaw the initiation and development of specific population surveys. In addition, she oversaw the state-based Youth and Adult Tobacco Surveys, the Global Youth Tobacco Survey, and OSH-sponsored tobacco use cessation activities. She also has been at the forefront of potentially reduced exposure product (PREP) research.

Key Points

- < Tobacco is the leading preventable cause of death in this country. For each of the 440,000 people who die from tobacco use each year, another 20 people are living with tobacco-related disease. The life expectancy of smokers is reduced by about 14 years, and smokers experience 1 to 2 more years of disability than nonsmokers. Smoking harms every organ system in the body. In addition, there is no risk-free level of exposure to secondhand smoke.
- < In the United States, the direct medical care cost associated with smoking is \$75 billion each year, accompanied by an additional \$92 billion each year in lost productivity caused by premature death. Each pack of cigarettes sold in the United States costs the country an estimated \$7.18 in health care costs and lost productivity.
- < The evidence base for effective interventions to prevent and control tobacco use is summarized in four documents: the 2000 Surgeon General's report on *Reducing Tobacco Use*; the tobacco chapter in the *Guide to Community Preventive Services*; the *Clinical Practice Guideline: Treating Tobacco Use and Dependence*; and CDC's *Best Practices for Comprehensive Tobacco Control Programs*.
- < The goals of a comprehensive tobacco control program are to reduce the initiation of tobacco use among children and young adults, increase cessation among tobacco users, eliminate exposure to secondhand smoke, and identify and eliminate tobacco-related disparities.
- < CDC has estimated that states with populations under 3 million should be spending between \$7 and \$20 per person on implementing tobacco control programs, and states with larger populations should be spending between \$5 and \$16 per person.
- < Research has identified three interventions that are effective in reducing initiation: increased prices, sustained mass media campaigns, and community mobilization.
- < Proven strategies to encourage cessation include—in addition to increased prices and media campaigns—telephone quit lines, reduction in out-of-pocket costs for treatment, and increased screening for tobacco users.
- < The primary strategy for eliminating exposure to secondhand smoke is implementation of smoking restrictions in workplace settings, including restaurants and bars, which also reduces tobacco consumption.
- < When tobacco prices are raised, prevalence rates drop and the number of cigarettes smoked by those who continue to smoke decreases among both youth and adults.
- < There is strong evidence that countermarketing campaigns reduce both youth and adult smoking rates. States with comprehensive programs that include sustained countermarketing campaigns have shown a significant decline in consumption. For example, a campaign in Florida coincided with a 35-percent reduction in smoking among high school students and a 50-percent reduction among middle school students.
- < The CDC Media Campaign Resource Center provides assistance to states and other organizations to implement effective countermarketing campaigns.
- < Quit lines are often implemented in combination with other interventions, such as self-help materials and links to provider counseling. The first state quit line, in California, found that

telephone counseling combined with patient education materials doubled cessation rates, which doubled again when free nicotine replacement therapy was added.

- < The National Network of Tobacco Cessation Quit Lines toll-free service (1-800-QUIT-NOW) forwards calls to local quit line services. Since late 2004, this service has handled more than 400,000 calls in spite of limited publicity.
- < According to the *Guide for Community Preventive Services*, reducing out-of-pocket costs for cessation treatment increases the number of people who try to quit, increases their use of proven therapies, and increases the number of people who successfully quit.
- < The *Clinical Practice Guideline* has been very influential in promoting evidence-based health care system changes needed to ensure that tobacco users receive screening. Reminder systems for physicians are important in making screening a routine feature of office visits.
- < According to the *Community Guide* and the recent Surgeon General's report, smoking bans are not only effective in reducing exposure to secondhand smoke, but also in changing attitudes and behaviors of smokers and increasing attempts to quit smoking. They also reduce opportunities for relapse. Some studies suggest that smoking policies might also reduce youth tobacco initiation by challenging the perception of smoking as a normal adult behavior.
- < A recent study has shown that cigarette sales decreased twice as fast in states with comprehensive tobacco control programs than in other states. States that spent more on such programs over longer periods of time had the greatest reductions in smoking. Another study showed that smoking prevalence among youth declined more in states with comprehensive programs than in other states.
- < Preliminary evidence suggests that these programs lead to improved health outcomes. In California, after 10 years of comprehensive tobacco control, lung cancer cases declined at a faster rate than in the rest of the country.
- < Challenges include providing sustained funding for tobacco control programs, developing strategies to deal with new smokeless tobacco products, understanding stalled progress in reducing tobacco use, and addressing disparities in tobacco use and related health outcomes.
- < Only 8 percent of available Master Settlement Agreement funds would be needed to fully support tobacco control programs in all states. Currently, approximately 3 percent of those dollars are being used for tobacco control. Sustained funding is hindered by perceptions that the problem has been solved. There are also many competing priorities for public funds.
- < New smokeless products may appeal to people who are self-conscious about smoking; could lead recent quitters into relapse and encourage initiation of tobacco use among young people; and may result in concurrent use among people who smoke outdoors and use smokeless tobacco where smoking is prohibited. More research is needed on the risks associated with long-term use of smokeless tobacco and concurrent use with cigarettes.
- < The halt in the decline in tobacco use can be explained in part by the fact that tobacco advertising (including distribution of coupons that appeal to young people) has increased while tobacco control budgets have decreased.
- < Tobacco control programs should ensure that underserved populations are included in all aspects of program activities so that future budget cuts, while reducing resources available to those populations, will not leave them with no support at all.
- < Proven solutions exist to bring smoking prevalence and tobacco use down to extremely low rates. This is feasible if we have the resources and the popular and political will to do it.

DR. KIYOUNG LEE: The Impact of Smoke-Free Laws on Indoor Air Quality

Background

Dr. Lee is an Assistant Professor of Environmental Health in the University of Kentucky College of Public Health. He is also an associate faculty member in the Graduate Center for Toxicology and a faculty associate in the Center for Smoke-Free Policy. Before coming to Kentucky, he was a faculty member at the University of California, Davis, and at Queensland University of Technology, Australia. Dr. Lee has extensive research experience in indoor air quality, industrial hygiene, and exposure assessment. His initial research interest was in the development of new monitoring devices and exposure assessment, developing a passive sampler for carbon monoxide, and evaluating passive samplers for nitrogen dioxide and ozone. He also developed a sampling device to collect expired carbon monoxide for biological monitoring. He conducted various exposure assessment studies on chronic exposure of children to ozone, exposure to carbon monoxide and nitrogen dioxide in indoor sport facilities, assessment of international exposure, association between carbon monoxide exposure and biological markers, residential nitrous acid exposures, residential ozone decay rates, air exchange rates in automobiles, development of assessment methodology of exposure-related behavior, exposures to agricultural dust and pesticides, health effects of biomass combustion in developing countries, and effects of secondhand smoke on indoor air quality.

Key Points

- < Secondhand smoke is a mixture of approximately 4,000 chemicals, of which 50 are known carcinogens. More than half of the U.S. population are exposed to secondhand smoke. Exposure to secondhand smoke is the third leading preventable cause of death in the United States. It is associated with increased risk for cardiovascular disease, respiratory illness, and lung cancer.
- < As stated in the recent Surgeon General's report, "The simple separation of smokers and nonsmokers within the same air space may reduce, but does not eliminate, the exposure of nonsmokers to environmental tobacco smoke." Smoke does not recognize the difference between smoking and nonsmoking areas.
- < Smoke-free laws have many benefits. Studies have shown that hospital admissions for heart attacks have been reduced and that hospitality workers experience improved respiratory health following implementation of such laws.
- < Dr. Lee has measured the concentration of secondhand smoke in Lexington, Kentucky, establishments (e.g., bars and restaurants) before and after implementation of a smoke-free law. The reductions in the amount of particulate matter have been dramatic.
- < A similar study was conducted in Louisville, Kentucky. The smoke-free law in that city allowed exemptions through which many establishments were able to create smoking and nonsmoking areas. In those establishments, the reductions in particulate matter were much less significant than in Lexington and less significant than in the Louisville establishments that were completely smoke free. Partial smoke-free laws have thus been shown to be ineffective.
- < As part of these studies, Dr. Lee also conducted measures to show that smoking was the only significant source of particulate matter associated with indoor air quality in the establishments selected for the study.
- < In a study to learn how many days after implementation of a smoking ban reductions in particulate matter were detected, Dr. Lee visited several establishments in Georgetown, Kentucky, immediately following implementation. The concentrations of particulate matter

dropped significantly after 1 day, and these reductions were maintained for the duration of the study.

- < Dr. Lee has also studied air quality in high schools. Kentucky has a smoke-free schools policy, but students often smoke in restrooms during breaks between classes. Concentrations of particulate matter about 10 times the exposure standard were found in the confined spaces within restrooms. Lower concentrations were found in other areas of the school.
- < Several conclusions can be drawn from these studies: there is a clear association between smoking density and air pollution—one burning cigarette is enough to increase concentrations of particulate matter; smoke-free laws can be effective in reducing indoor particulate matter and indoor air quality can improve immediately after implementation of those laws; exemptions from smoke-free laws can nullify their impact; and active enforcement of smoke-free laws and school smoke-free policies is needed.

DISCUSSION: PANEL I

Key Points

- < The tobacco industry, as the vector of disease associated with tobacco use, must be closely monitored to keep their activities under public scrutiny and to understand how these activities influence policy makers.
- < Concern about jobs in tobacco-growing states is an impediment to progress in tobacco control. While reduction of tobacco use adversely affects a few such states, the majority of the states would experience positive economic effects, since the money currently spent on tobacco would remain in their economies. Tobacco-growing states have time to help businesses and citizens transition to other crops and products.
- < Strategies to improve tobacco control include better dissemination of information about quit lines and insurance coverage for cessation programs, as well as dedication of more tobacco tax revenues to tobacco control programs.
- < States will lose tobacco tax revenues if smoking is eliminated, but they will also save money on health care.
- < As previously stated, 400,000 lives are lost each year through tobacco use. It has been estimated that 400,000 jobs are created each year through the tobacco industry. Jobs can be replaced, but people cannot.
- < Historically, tobacco control efforts have focused on individuals, but it must be remembered that people who want to stop using this addictive drug are hindered by an unsupportive environment. Recent research has demonstrated the effectiveness of population-based, community-based interventions; however, implementing these types of interventions is not enough. Policy changes are necessary to support behavioral change and reduce the impact of activities and influences that counteract antitobacco interventions and make it difficult for people to stop, as well as to resist starting, tobacco use.
- < Policy research should focus on the difference between advertising and other forms of speech protected by law. Constraints on advertising may need to differ from constraints on other forms of speech.
- < One reason that it is difficult to find resources to support antitobacco interventions is that these interventions do not involve drugs or technology and, therefore, do not represent an opportunity for someone to make a profit through their implementation.
- < Existing smoke-free laws focus on urban areas. Attention needs to be given to rural areas as well.

- < The primary message to the President from these presentations should be that tobacco control works; the nation has a moral obligation to put CDC recommendations for comprehensive tobacco prevention and control into practice.
- < The National Toxicology Board has stated that, among the 250 toxic substances in cigarette smoke, about 60 are carcinogenic.
- < It is not necessary to inflate statistics to impress upon families and individuals the long-term health effects of tobacco use.
- < The tobacco industry is making some progress in improving its image through public relations campaigns that discourage smoking among youth. The industry is involved in promoting smoke-free laws and antismoking life skills training for young people, but many believe that the laws and interventions they support are ineffective and that the industry's commitment to smoking prevention and reduction is suspect. Recent attempts to market flavored cigarettes to young people (withdrawn when legally challenged) show that the tendency toward deception on the part of the tobacco industry has not changed.
- < The agent-host-vector model used in describing the tobacco-cancer connection can be applied to obesity as well. The agent is food and the vector is the food industry. Scientists need to better understand what the industry is doing to the food supply, as well as what they are doing in terms of marketing, and what effect those activities have on the health of Americans. The effort to create smoke-free environments can be compared with efforts to change the food environment within schools to reduce obesity or change the built environment to promote physical activity. Further research is needed to build a body of evidence in the diet and nutrition area that is as strong as the evidence for tobacco control. A global approach to behavior change is needed; if individuals make a commitment to become healthier by eliminating tobacco use, they may be more receptive to other behavior changes.
- < Studies of cancer survivors have shown that this population is very interested in information on how to stay healthy after treatment.
- < A comprehensive effort by all sectors of society—government, academia, private industry, nonprofit, and the health care delivery system—could reduce tobacco use prevalence to single digits.

PANEL II

DR. MICHELE BLOCH: The Global Problem of Tobacco Use

Background

Dr. Bloch is a Medical Officer in the Tobacco Control Research Branch of the National Cancer Institute. She serves as a Program Director specializing in women and tobacco, tobacco industry documents, international tobacco control and prevention, and other areas. She is helping to develop and implement the NCI's new Smoke-Free Meeting Policy and has served as the Branch's lead in working with the U.S. Department of Justice Tobacco Litigation Team, providing numerous depositions on behalf of the Government in the case. Dr. Bloch's research activities include serving as the tobacco expert on the National Institute of Child Health and Human Development's Global Network for Women's and Children's Health Research Tobacco and Pregnancy Survey; the Global Network has completed a survey of nearly 8,000 pregnant women in nine low- and middle-income nations. Prior to joining NCI, Dr. Bloch helped develop and direct the Advocacy Institute's Women vs. Smoking Network, the first national network focused on decreasing women's and girls' use of tobacco products. She also served as a health policy consultant specializing in research, teaching, and advocacy of effective tobacco control and prevention strategies. Dr. Bloch has served as the Chair of the Alcohol, Tobacco, and Other

Drug Section of the American Public Health Association, Vice-President for Communication for the American Medical Women's Association, and Co-Chair of the Legislative Committee of the Maryland State Council on Cancer Control.

Key Points

- < Every year, about 5 million people around the world die from tobacco use. This is approximately evenly distributed between developed and developing countries. Somewhere between the year 2020 and 2025, that number will increase to 10 million deaths per year. Increasingly, those deaths will concentrate predominantly in the developing world.
- < There are about 1 billion adult male smokers worldwide. The prevalence is 50 percent in developing nations, compared with 35 percent in developed nations. There are fewer than 250 million adult female smokers worldwide. The prevalence is much lower in developing nations than in developed nations; this reflects cultural constraints on female tobacco use, but there is concern that this situation is changing. In the developed world, the trend is toward reduced or stagnant prevalence; in the developing world, tobacco use is increasing.
- < Data from the Global Youth Tobacco Survey show that almost 9 percent of students aged 13 to 15 are current smokers, with rates slightly higher among boys than girls and the highest prevalence in Europe and the Americas. An additional 18 percent are deemed susceptible to smoking in the next year. Eleven percent of students also use other tobacco products, such as smokeless products, cigars, bidis (hand-rolled cigarettes), and water pipes, with rates again higher among boys than girls. The highest prevalence of noncigarette tobacco use occurs in Southeast Asia, the Eastern Mediterranean, and the Americas.
- < Dr. Ken Warner, the Dean of the School of Health at the University of Michigan, has said that “[t]he economic future of the tobacco industry rests in low and middle income nations where rising income, trade liberalization, liberalization in terms of the treatment of women that they are now ‘free to smoke’ and the widespread introduction of sophisticated Western style advertising ensure a thriving future for tobacco sales.”
- < Globally, as in the United States, the three largest causes of mortality are cardiovascular disease, cancer, and chronic obstructive pulmonary diseases. One in five cancer deaths is attributed to tobacco; lung cancer is the leading cause of cancer death not just in the United States and in every developed country, but also around the world.
- < Among women, breast cancer is the leading cause of cancer death globally, but this is rapidly changing. In the United States and many developed nations, lung cancer has surpassed breast cancer as the leading cancer cause of death among women. In less developed countries, lung cancer rates are low among women; this rate is expected to change as female smoking increases in those countries.
- < Tobacco purchases can be a significant economic burden on families in developing nations. Money spent on tobacco means less resources for food, shelter, education, health care, and basic needs. Poor households may spend up to 10 percent of total household income on tobacco. Tobacco and poverty form a vicious cycle: tobacco use is common among poor people; tobacco use leads to poor health; and poor health leads to greater poverty. In a study in Bangladesh, it was estimated that 10.5 million currently malnourished people could have an adequate diet if money spent on tobacco were instead spent on food.
- < Tobacco farming is declining in the developed world. By 2010, at least 80 percent of the world's tobacco will be grown in developing countries. Tobacco farming produces runoffs of fertilizer and pesticides and leads to deforestation. Tobacco farmers incur serious health risks and are often in debt to tobacco companies.

- < People in developing countries have low levels of knowledge about the health risks of smoking and secondhand smoke, and quitting tobacco use is rare. Many health professionals in these countries are smokers. Barriers to improvement of this situation include a lack of resources for health education and low literacy rates.
- < Ten global risk factors are thought to account for more than one-third of all global deaths. Some are traditionally associated with poverty, such as unsafe water, poor sanitation, malnutrition, and indoor smoke from solid fuels. However, some global risk factors are those usually thought of as Western health risks, such as high blood pressure, high cholesterol, and obesity. This reflects a rapid change in patterns of consumption, particularly of food, alcohol, and tobacco around the world. These changing patterns are causing what is referred to as a risk transition. The World Health Organization's 2002 *World Health Report* states that "[t]he risk transition appears to be gaining speed. Today, more people than ever before are exposed to products and patterns of living imported or adopted from other countries that pose serious long-term risk to their health."
- < In many parts of the world, not just the developed world, people are becoming less physically active and their diets are changing dramatically. In many developing nations, this is leading to the "double burden of disease," in which populations face not only traditional risks associated with poverty, but also risks once limited to developed nations. In addition to the enormous human cost, this is creating incredible strains on health care systems.
- < The burden of diabetes on the people of India presents an example of this phenomenon. Large numbers of people in India live in poverty; at the same time, some Indians are becoming more affluent, adopting Western lifestyles. Although the current diabetes prevalence in India is one-third that of the United States, it can be expected to increase dramatically in the next 20 years as larger segments of the population become affluent, overweight city dwellers.
- < Several important research and surveillance efforts are addressing these problems. The Global Tobacco Surveillance System, which is sponsored by CDC, the World Health Organization, and the Canadian Public Health Association, is assisting multiple nations in collecting data on youth and adult tobacco use. This initiative is conducting a school-based Global Youth Tobacco Survey, a Global School Personnel Survey, and a Global Health Professional Survey.
- < The International Tobacco and Health Research and Capacity Building Program, sponsored by NCI and other NIH Institutes, is NIH's first international tobacco research initiative. This project is aimed at reducing the burden of tobacco consumption in low- and middle-income nations by conducting observational, interventional, and policy research.
- < The American Cancer Society, in collaboration with funding agencies in Canada and the United Kingdom, has launched a Small Grants Research Competition with the goal of providing country-specific, timely, and relevant research to support the Framework Convention on Tobacco Control.

DR. RICHARD R. CLAYTON: Maximizing Return on Investments in Tobacco/Cancer Control: No Smoke, No Mirrors

Background

Dr. Clayton joined the faculty of the Department of Sociology at the University of Kentucky in August of 1970. In January 2001, he was appointed to the Good Samaritan Foundation Endowed Chair in Health Behavior in the emerging School of Public Health. The School became an independent and accredited College of Public Health in 2004, with Dr. Clayton serving as the founding Chair of the Department of Health Behavior and the first Associate Dean for Research in the College. Since its inception in 1987, Dr. Clayton has been Director of the Center for

Prevention Research, the first such center funded by the National Institute on Drug Abuse (NIDA). In 1990, Dr. Clayton was appointed to the National Advisory Council of NIDA and has served on several Institute of Medicine panels. He was one of the founders of the Society for Prevention Research and served as its second President. In 1996, Dr. Clayton became Chair of the first transdisciplinary research network on tobacco, the Tobacco Etiology Research Network (TERN), funded by RWJF. That network consists of 13 senior and 11 junior-level scientists from a number of major research institutions around the country and from disciplines ranging from bench science to public health. In 2005, he became Chair of another transdisciplinary research network, the Tobacco Research Network on Disparities (TReND), funded by NCI and the American Legacy Foundation. TReND consists of 20 scientists from different disciplines and institutions.

Key Points

- < The greatest return on investment in reducing the burden of cancer will come from addressing cancers that cause large numbers of deaths and those for which the causes are well understood. Lung cancer causes more deaths among both men and women each year than the next five cancers combined, and 85 to 90 percent of all lung cancers are caused by smoking. The return on investment in tobacco control is enhanced by the association of smoking with cardiovascular disease and other health problems.
- < There is significant evidence that our health care system is not producing good return on our investment. The system is getting more and more expensive but is not providing what we need. A greater priority needs to be placed on short-term strategies that will have a significant impact on health sooner rather than later.
- < Although increased awareness, prevention of cancer initiation, improved technology for detection, improvements in the health care system, and advances in genetic testing are all important, they are not sufficient to achieve short-term reductions in lung cancer incidence. Investments in major research initiatives to understand genomics and proteomics are also important but will take many more years to produce results.
- < The real “enemy” in the fight against lung cancer, as well as many other health problems, is not genes or lack of access to care. The real enemy is our own behavior. The major reason why Americans die early is that they behave in unhealthy ways.
- < The National Commission on Prevention Priorities recently conducted a systematic review of 20 known effective clinical prevention services. The Commission identified three services for which investment would produce the greatest return: tobacco use screening and brief interventions; colorectal screening; and influenza vaccine for adults.
- < The Commission found that only about 35 percent of patients seen in primary care offices are screened for tobacco use. If this were increased to 90 percent, an improvement of 1.3 million quality-adjusted life years could be achieved.
- < In a study of application of the “Five A’s” of tobacco use intervention by an HMO, 90 percent of patients were asked if they were smokers, 71 percent were advised, 56 percent were assessed, 49 percent were assisted, and only 9 percent had arrangements made for them to quit. Outside the HMO setting, these numbers are probably even lower. A new infrastructure is needed to ensure that proven interventions are delivered.
- < In a multiethnic cohort study conducted in California and Hawaii, no significant differences were found by race and ethnicity in the risk for lung cancer among heavy smokers, but for every lower level of smoking there were statistically significant racial and ethnic differences. Little attention has focused on how to deliver smoking cessation interventions to segments of the population that perhaps need them the most.

- < A recent study of mortality rates among eight racial/ethnic groups found that between 1982 and 2001 life expectancy among the eight groups, as well as the absolute difference between the most advantaged and the most disadvantaged, remained largely unchanged.
- < In Kentucky, more than 1,000 trained community-based workers are delivering formal 12-week smoking cessation interventions four times a year in all 120 counties, which ensures that no one has to travel very far to receive this intervention. Program costs are low and the interventions are provided free to Kentucky residents.

DR. FRANK J. CHALOUKKA: The Economics of Tobacco and Tobacco Control

Background

Dr. Chaloupka is a Distinguished Professor at the University of Illinois at Chicago (UIC), where he has been on the faculty since 1988. Among other appointments, he is Director of the UIC Health Policy Center and a Fellow at the University of Illinois Institute for Government and Public Affairs. Dr. Chaloupka is Director of ImpacTeen: A Policy Research Partnership for Healthier Youth Behavior and Co-Director of the International Tobacco Evidence Network. Dr. Chaloupka's research has focused on the effects of prices and substance control policies on cigarette smoking and other tobacco use, alcohol use and abuse, and illicit drug use, as well as on various outcomes related to substance use and abuse. His research on the policy and economic determinants of health behaviors has recently expanded to include a focus on healthy eating, physical activity, and obesity. Dr. Chaloupka contributed a section on the effects of cigarette taxes and prices on youth smoking for the 1994 Surgeon General's report, *SGR 4 KIDS: The Surgeon General's Report for Kids about Smoking*, and a chapter on the economics of tobacco for the 2000 Surgeon General's report, *Reducing Tobacco Use*. In addition, he co-authored the World Bank's policy report *Curbing the Epidemic: Governments and the Economics of Tobacco Control*. He is currently updating this work as lead editor for the forthcoming NCI and World Health Organization monograph, *The Economics of Tobacco and Tobacco Control*.

Key Points

- < Over \$75 billion is spent per year on health care to treat smoking-related illnesses, and \$92 billion is lost each year in productivity due to smoking-related premature death; this figure does not take into consideration the additional lost productivity caused by morbidity associated with smoking. These costs present a strong rationale for government intervention.
- < The most effective government intervention is increasing Federal, state, and local taxes on the purchase of cigarettes. Some parts of the country have significantly raised cigarette taxes, while others are below the national average.
- < Overall increases in inflation-adjusted cigarette prices have begun to slow in response to tobacco industry efforts to reduce prices through special promotions. In recent years, the industry has spent over 80 cents per pack on promotions that directly reduce prices. These marketing tactics are being focused on cigarette brands that are popular with young people.
- < The industry effort to reduce prices has been launched in response to research that has shown that higher cigarette prices induce quitting, prevent relapse, reduce consumption, and prevent initiation of smoking. It has been estimated that a 10-percent increase in price reduces overall smoking by about 4 percent. An Illinois study showed that increased taxes stimulated increased quit line calls and increased requests for cessation assistance. Increased prices motivate some to quit and others to reduce their consumption. Preliminary data in one study show that prevalence goes back up as prices are reduced through industry promotions.

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