IN THEIR OWN WORDS

Recipients of The Alton Ochsner Award Relating Tobacco and Disease Discuss Their Work

Charles H. Hennekens, MD, DrPH is the first Sir Richard Doll Professor and Senior Academic Advisor to the Dean at the Charles E. Schmidt College of Medicine, Florida Atlantic University, Boca Raton, FL.

Charles H. Hennekens, MD, DrPH

In my entire professional life, I was never motivated by fame or fortune but the "neurotic imperative" that I could not save the ones I loved but could try to save others. I have already lived 11 years longer than any other man in my family, all of whom smoked cigarettes and all of whom died prematurely, mainly from cardiovascular disease.[1]

Perhaps not surprisingly, therefore, many decades later, I became the 29th recipient of the prestigious Ochsner award for my discoveries about the cardiovascular disease hazards of cigarette smoking in 3 areas. First, among premenopausal women, smoking is an equal opportunity killer, as cigarettes increase their risks of cardiovascular disease 13-fold. In addition, the oral contraceptive pill increases their risks of cardiovascular disease 2-fold. Under an additive model, the combined risks would be 15, under a multiplicative model 30, but the data demonstrate the combined risk to be a 39-fold increased risk of cardiovascular disease.[2] Second, among patients with severe mental illness, far and away the chief cause of the majority of their very premature deaths is cardiovascular disease due primarily to cigarette smoking and not primarily due to suicide.[3] Third, among the elderly, there are early benefits of cessation on cardiovascular disease but only late benefits on cancer. The totality of evidence, including data among the elderly, indicates that for cardiovascular disease it is never too late to quit but for cancer it is never too early. Even among the elderly, the benefits of smoking cessation on cardiovascular disease are immediate and return to that of the nonsmoker within several years.[4]

In the landmark British Doctors' Cohort Study, Doll and Peto demonstrated a 14-fold increased death rate from lung cancer among smokers of at least one pack of cigarettes daily when compared with nonsmokers.[5] In contrast, the relative risk of coronary heart disease mortality among current cigarette smokers compared with nonsmokers was only 1.6. Nonetheless, if smoking is judged to be causally related to both diseases, the elimination of cigarettes would prevent far more deaths among smokers from coronary heart disease than from lung cancer. Specifically, the attributable risks are 256 per 100,000 per year for coronary heart disease and 130 per 100,000 for lung cancer. This is because death from coronary heart disease among nonsmokers is about 413 per 100,000 per year while the corresponding figure for lung cancer is about 10 per 100,000. Thus, even a 60% increased risk of mortality from coronary heart disease due to smoking will affect a much larger number of people than a 14-fold increased risk of death from lung cancer. For these reasons, the public health impact of smoking cessation on mortality is far greater for coronary heart disease than for lung cancer.[6]

In conclusion, for 31 years Professor Edward Frohlich has served admirably as chair of the Selection Committee for the Alton Ochsner Award Relating Smoking and Health and has assembled an extraordinary group of recipients of the award, as well as those receiving special recognition.[7] Sir Isaac Newton said, "If I have seen farther, it is because I have stood on the shoulders of giants." If I have seen anything, it is because I have stood on the shoulders of my mentors and colleagues who have been professional parents and include Eugene Braunwald, Richard Doll, Margaret Drolette, George B. Hutchison, Mary Jane Jesse, Brian MacMahon, and Richard Peto, as well as my professional siblings Dave DeMets, Bob Levine, and Marc Pfeffer, all of whom continue to lead me to the thresholds of my mind.[1] I am humbled to have been the 29th recipient of the prestigious Ochsner Award whose other recipients include Doll and Peto.

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Ramaswamy Govindan, MD
is a professor in the Department of Medicine, Washington University Medical School, and director of the Section of Medical Oncology, Division of Oncology, Department of Medicine, Washington University, St. Louis, MO.

Ramaswamy Govindan, MD

Ramaswamy Govindan, MD is a leader in lung cancer clinical trials and translational research. His scientific investigations have led to seminal results defining genomic changes in patients with lung cancer. For example, using whole genome sequencing, he and his colleagues discovered previously unsuspected, significant differences in the genomes of non–small cell lung cancer patients who had smoked.

Cancer at its very core is a disease caused by gene dysregulation. During the past few years, impressive advances in gene sequencing technologies coupled with clever bioinformatics tools have enabled his laboratory to decipher genomic alterations to understand how cancer cells evolve and to discover novel targets for therapy. The Cancer Genome Atlas project has published several major papers outlining the molecular changes in lung adenocarcinoma and squamous cell carcinoma. Through these efforts, a number of novel targets have been identified in lung cancer. Dr Govindan has shown clearly that lung adenocarcinomas from smokers harbor 10 times more mutations than those from lifelong never-smokers. Nearly two–thirds of lung cancer tumor specimens have more than 5 neoantigens, highlighting the potential for cancer vaccine development based on neoantigens. Ongoing studies will hopefully improve our understanding of the molecular basis of chemoresistance in relapsed small cell lung cancer, brain metastases, and resistance to targeted therapies.

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Elizabeth (Terry) Fontham, MPH, DrPH currently serves as a member of the Board of Scientific Counselors of the National Cancer Institute. She is also on the Board of Directors of the American College of Epidemiology, as well as a member of the National Academy of Science, Engineering and Medicine's Advisory Committee on the Gulf Research Program. She serves as the Chair of American Cancer Society Cancer Screening Guideline Development Group and is a former National President of the American Cancer Society. She is the Founding Dean of the School of Public Health at Louisiana State University Health Sciences Center and Professor Emeritus of Epidemiology.

Elizabeth (Terry) Fontham, MPH, DrPH

Elizabeth (Terry) Fontham, MPH, DrPH received The Alton Ochsner Award Relating Smoking and Disease in 2008 for her seminal research on involuntary exposure to tobacco smoke and the risk of lung cancer in lifetime never-smokers. She was an author of the first US case-control study of lung cancer, reporting an increased risk of lung cancer in nonsmokers exposed to secondhand smoke.[1] Recognizing the need for additional studies to establish the carcinogenicity of secondhand smoke and to quantify the associated risk, she conducted several methodologic studies in conjunction with the International Agency for Research on Cancer (IARC) and others. Subsequently, Dr Fontham led the largest study of lung cancer conducted in nonsmoking women, a multicenter study in 5 US metropolitan areas.[2,3] This study demonstrated a significantly increased risk of lung cancer in nonsmoking women, not only from secondhand smoke exposures in the home from spouses and others but also from workplace tobacco smoke and from exposures in other settings, such as transportation, restaurants, bingo parlors, and the like. This body of work provided methodologically strong findings that secondhand smoke was causally associated with lung cancer in never-smokers and figured prominently in the evidence considered in reports of the Surgeon General, the Environmental Protection Agency, and the IARC in their determinations that involuntary smoke exposure is a cause of lung cancer.

The insights provided by this work have contributed to our understanding of the need to protect nonsmokers from such exposures and have led to policy changes and legal regulations ensuring clean indoor air in public places in this country and throughout much of the world.

Dr Fontham continues to work on public health policy and scientific research.

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