

Tobacco and NIH: more than addiction

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BACKGROUND

Smoking and other forms of tobacco use affect virtually every organ system.^{1–3} To see the range of effects one only needs to consider the chapter titles for the 2010 Report of the Surgeon General, *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease*³: The Changing Cigarette, Chemistry and Toxicology of Cigarette Smoke and Biomarkers of Exposure and Harm, Nicotine Addiction, Cancer, Cardiovascular Diseases, Pulmonary Diseases, Reproductive and Developmental Effects. The National Institutes of Health (NIH), particularly the National Cancer Institute (NCI), the National Heart Lung and Blood Institute (NHLBI) and the National Institute on Drug Abuse (NIDA) have supported extramural, and conducted intramural, research that has built the knowledge base that led to the conclusions in this report. They have also developed population-based and clinical interventions which have fuelled the extraordinary reductions in tobacco-induced disease which we have experienced in the USA over the past half-century. Recognising that smoking kills more people through heart, lung and vascular disease than cancer,⁴ the NHLBI has recently increased its efforts to contribute to the ongoing development of the knowledge base to reduce smoking.⁵ Since 2002, the NIH Fogarty International Center, in collaboration with other NIH institutes, has built international tobacco and health research capacity by supporting transdisciplinary research in low- and middle-income countries.⁶

Tobacco control at NCI is fully integrated into the infrastructure within NCI in complex ways, as it should be, because tobacco use causes nearly one-third of all cancer deaths. The Tobacco Control

Branch has contributed to reducing the cancer burden of our nation. The Branch is a complex integrated transdisciplinary programme, that has been developed over a quarter century, and embedded within the NCI structure in a manner difficult to replicate elsewhere (eg, in a new institute) in either structure or function. The Branch has a critical mass and a flexibility that has contributed not only to tobacco use sciences from biology to policy, but also to the behavioural and social sciences more generally. Research on treatment, community-based research, policy, media and communications technology, informatics and Internet modes of delivery, implementation, dissemination and economics, has advanced our understanding of how to change behaviour on a population level.

Lung cancer was the first disease linked causally to smoking⁷ and tobacco use (mostly cigarettes) remains the leading cause of lung cancer, which in turn is the leading cause of cancer death in men and women, accounting for at least 30% of all US cancer deaths (p 42).⁸ Lung cancer remains difficult to treat, with survival rates of just 16% at 5 years (p 16).⁸ Therefore, it is not surprising that the NCI has a long history of supporting research not only in the biology of the tobacco-cancer connection, but also in population-based and clinical strategies to reduce the burden of tobacco-induced disease. For example, the NCI American Stop Smoking Intervention Trial (ASSIST) operated collaboratively with the American Cancer Society in the 1990s pioneered many of the strategies used by states around the country as well as globally to reduce tobacco use.^{9–12}

These strategies have worked. The 2008 Annual Report to the Nation on the Status of Cancer¹³ documents the decline in both the incidence and death rate from all cancers for both men and women. The report describes the importance of the declining rates of cigarette smoking: 'reductions in tobacco use provide the largest single opportunity to prevent nearly one-third of cancer deaths through

the application of existing knowledge'. Another study concluded that, 'even our most conservative estimate indicates that the reductions in lung cancer resulting from reductions in tobacco smoking over the last half-century account for about 40% of the decrease in overall male cancer death rates and have prevented at least 146 000 lung cancer deaths in men between 1991 and 2003'.¹⁴

Reducing smoking and exposure to secondhand smoke also has an immediate and substantial effect on heart disease. California's large-scale tobacco control programme almost immediately reduced age-adjusted heart disease death rates,¹⁵ followed a few years later by lung and bladder cancers,¹⁶ work which was funded by NCI. Implementation of strong smoke-free laws has been shown in many studies (the first of which was also funded by NCI¹⁷) to lead to immediate declines in hospitalisations for acute myocardial infarction, averaging about 17% 1 year after the law took effect and growing to about 30% after 3 years.^{18–20} These large effects probably reflect the immediate effects of secondhand smoke on platelet and vascular endothelium function as well as contributing to reduced active smoking.^{2 3 20 21} At a time when there is increasing concern about controlling healthcare costs, these tobacco control efforts have been shown to produce rapid and substantial reductions in not only smoking and disease, but also in healthcare costs.^{22 23}

Approximately 85–90% of chronic obstructive pulmonary disease (COPD) deaths are caused by smoking. COPD is the third leading cause of death in America,²⁴ claiming 124 477 lives in 2007.²⁵ Tobacco control programmes that prevent smoking initiation or increase smoking cessation are also engaging in the best method of COPD prevention.²⁶ This strong relation between exposure to tobacco smoke and COPD, especially given the fact that no proven treatment is available for halting or reversing the progression of the disease, highlights a critical need for NHLBI to keep its strong interest and investment in tobacco and tobacco control.

Given the range of effects of tobacco use and the successes of the current NIH programmes, we were surprised when, in November 2010, the NIH Scientific Management Review Board (SMRB), an advisory committee to the NIH director, recommended in its *Report on Substance Use, Abuse and Addiction Research at NIH* that as part of an NIH-wide reorganisation 'NCI's

¹American Cancer Society, USA; ²American Heart Association, USA; ³American Lung Association, USA; ⁴Campaign for Tobacco-Free Kids, USA; ⁵Legacy, USA; ⁶Partnership for Prevention, USA

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addiction portfolio on tobacco-related research could make substantial contributions to (the new institute), especially those targeted towards prevention and behavioural interventions' (p 19).²⁷

THE CURRENT SITUATION AND SUGGESTED APPROACHES

On 18 November 2010, NIH director Dr Francis Collins issued a statement noting that he had received the SMRB recommendation and said, 'The formation of a single, new Institute devoted to such research makes scientific sense and would enhance NIH's efforts to address the substance abuse and addiction problems that take such a terrible toll on our society.'²⁸ He then announced the formation of a task force to determine what substance use and abuse and addiction research currently exists in NIH's 27 institutes and centres and make recommendations about what programmes should be moved into the proposed new institute by summer 2011.

While we take no position on the desirability of creating a new institute, we believe that moving population-based, clinical and biological tobacco research out of NCI (and, by implication, NHLBI and other institutes) would be a serious mistake that would undermine progress on reducing cancer, heart, lung disease and other diseases for eight reasons.

First, as reflected in the 2010 Surgeon General's report, tobacco use impacts virtually every organ system in the body, and the addictive effects of nicotine, while important, represent only one aspect of tobacco use.

Second, the new 'addiction institute' is likely to look at tobacco research very differently than NCI, NHLBI and the Fogarty International Center currently do because the focal point will be on the narrow focus of addiction, rather than the broad research questions related to tobacco control as it relates to reducing disease. Tobacco would simply be one (albeit an important one) of many substances of abuse.

Third, while understanding issues around nicotine addiction and its treatment are important (and an area in which NIDA has an active, and widely respected, research programme), the major reasons for the reductions in smoking-induced disease are the result of the research on population-level interventions that NCI has and NHLBI pioneered, not improvements in treatment, which have an important but much smaller effect.^{29 30}

Fourth, transferring tobacco research out of NCI, NHLBI and other institutes and centres would have the effect of marginalising this subject area to researchers in cancer, cardiovascular and other diseases. In particular, doing so would likely have the effect of inhibiting the progress which has been occurring at NCI-designated cancer centres to involve them in the integration of tobacco into their research and clinical programmes.

Fifth, in November 2010 the Secretary of Health and Human Services released the first Department-wide strategic plan to reduce the burden of tobacco use.³¹ Much of the research base for this plan was built at NCI. Moving this work will disrupt the research programme just at the time when it is most important for getting the plan off the ground.

Sixth, the new authority of the FDA to regulate tobacco products and the marketing of those products is in its early, critical stages and its success will depend to a large extent on the development and execution of a strategic plan for research in support of regulation. The NCI, in particular, is involved in, and supports, research which will be key to the new FDA authority and to disrupt this research enterprise at such a crucial time would be exceptionally damaging to the research needs of the FDA.

Seventh, moving tobacco out of NCI and NHLBI will no longer allow them to have authority to initiate and run research relating to tobacco, a major controllable risk factor for the diseases they are charged with eradicating.

Eighth, and perhaps most important, moving tobacco research out of the larger, more established Institutes would create uncertainty about both future funding and the commitment of the NIH to tobacco control. It would also convey the impression—to the research community, policymakers and the public, both domestically and internationally—that the NIH considers the tobacco problem to be solved or that it is now less important to the NIH. And there is little doubt that the tobacco industry stands ready to exploit any opportunity to promote the notion that tobacco is now a reduced priority for a widely respected and influential organisation such as the NIH.

In announcing his support for the new institute and creation of the task force, NIH Director Collins said he would consider advice from stakeholders. As major organisations concerned with reducing the burden of tobacco-induced diseases we strongly advise the task force

and Director Collins to leave existing tobacco research at NCI, NHLBI and the Fogarty International Center, with some flexibility regarding the transfer of research that is wholly focused on the dependence-producing properties of tobacco. Indeed, rather than removing tobacco research from these (and other relevant) institutes, they should be encouraged to strengthen and expand their efforts to a level commensurate with the risks tobacco imposes and the central contribution that reducing smoking and tobacco use has been demonstrated to have reducing the burden of cancer, heart, lung and other diseases.

Competing interests None.

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