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Treatments for nicotine addiction should be a top priority

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Cigarette smoking is a leading cause of death in the USA. The practice has been linked to 440 000 preventable deaths per year, mainly due to lung cancer (123 836), coronary heart disease (86 801), and respiratory disease and chronic obstructive pulmonary disease (90 582).^{1,2} These deaths are the outcome of nicotine addiction, which compels individuals to use tobacco despite the known adverse health consequences. Sadly, priorities for investment in clinical trials are directed at treatment of diseases caused by continued tobacco use, rather than addressing the root cause of the diseases: nicotine addiction (figure). Moreover, clinical trials for smoking cessation and treatment of nicotine addiction are not even within the top 25 therapeutic categories in development by the drug industry; anticancer treatments are the first priority.³ 174 pharmacotherapy trials were done for smoking cessation (46 supported by industry) compared with 1490 for lung cancer (544 supported by industry).

The small number of trials for smoking cessation does not correspond to absence of demand. Many smokers would try to quit smoking if effective and inexpensive approaches were available. Of 45.3 million US adult smokers, 43.5% had tried to quit in the past 12 months, and 80% of those who attempted to quit on their own, without pharmacological or behavioural therapies, relapsed within the first month, with only 3% still abstinent at 6 months.⁴

Unless budgets are increased to develop effective treatments for tobacco dependence, and to make these treatments available to an increased number of people, the Healthy People 2010 goal⁵ to reduce the proportion of US tobacco users from 21% to 12% is unlikely to be met. According to current projections, 16% of the US population—35 million people—will still smoke in 2025. Although the proportion of people that successfully quit smoking increased between 1965 (13.6%) and 1985 (24.2%), the proportion has since remained fairly constant, and existing smokers are more severely addicted than they were in the past.^{1,6,7} Furthermore, the effect of available drugs is small, with only 15–35% of individuals using pharmacotherapy able to remain abstinent for more than a year. Investment in the development of new treatments for smoking cessation will save lives and reduce the huge costs of related diseases (about US \$181 billion).¹

Despite enormous efforts to find treatments for lung cancer, the 5-year survival rate has increased from 6% to only 14%, and incidence and mortality have increased 2.5-fold during the same period.⁸ Incorporation of tobacco dependence into a conceptual model of chronic disease will be of profound and immediate benefit to public health. Furthermore, research findings should be used to identify new molecular targets for nicotine addiction and biomarkers to predict treatment success.

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Figure. Research priorities in tobacco addiction

(A) Number of deaths per year attributable to smoking-related diseases in USA.² (B) US clinical trials (including treatment, diagnostics, prevention, and supportive care) related to smoking and associated diseases (data from ClinicalTrials.gov, 1987-2008). *Bronchitis, emphysema, and chronic airway obstruction. †Other heart disease, aneurysm, atherosclerosis, other arterial disease, influenza or pneumonia, perinatal conditions, and burn deaths.