Treating Nicotine Addiction
Not a Medical Problem?

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Smoking cigarettes kills more people in economically developed countries than any other single environmental or behavioral factor. For any environmental exposure to have an appreciable effect on public health, the exposure either has to be common or to have a major effect on disease risk. Both of these are true of cigarette smoking. Worldwide, an estimated 1.2 billion people are current smokers (1), including 48 million in the United States (2) and 13 million in the United Kingdom (3). The prevalence of smoking in economically developed countries is typically at least 25%, and it is increasing rapidly in China and in many other areas of the world (4). The effect of smoking on mortality is also substantial, amounting to a one in two chance of premature death and including a one in four chance of death in middle age with a loss of as much as 25 yr of life (5). The major part of this premature mortality is due to lung cancer, chronic obstructive pulmonary disease, and pneumonia. Smoking is thus a cause of major health problems, and it has a particular impact on the work of pulmonary physicians. The question we address in this article is whether, even now, the effects of smoking on health, and in particular the training and involvement of physicians in the delivery of smoking cessation services, receives the recognition and attention it deserves in medicine.

It has been recognized for many years, both in the medical literature (6) and by the tobacco industry (7), that nicotine addiction plays a major part in the motivation to smoke cigarettes. A comprehensive review of the evidence by the US Surgeon General in 1988 concluded that cigarette smoking is addicting, and that nicotine is the drug in tobacco that is responsible for this effect (8). We have recently completed a further review of the evidence on nicotine addiction on behalf of the Royal College of Physicians in London (9), in a report which again concludes that nicotine obtained from cigarettes is powerfully addictive, that smoking meets both of the current widely used diagnostic criteria for substance dependence (10, 11), and that in most aspects of dependence, nicotine ranks at least on a par with other powerfully addictive drugs such as heroin and cocaine (9). Nicotine differs, however, from these and other addictive drugs in one important respect, which is that nicotine has very little positive effect on mood or on motor or mental performance (9). The overwhelming characteristic of nicotine that leads to continued use is the frequent recurrence of the symptoms of nicotine withdrawal, experienced by most smokers in particular on waking each morning (9), and it is the relief of these symptoms that drives most smokers to continue to smoke. It is, however, probably because nicotine does not appreciably enhance mood, and in particular does not cause intoxication, that such a highly addictive drug has been so widely accepted and tolerated by society when other addictive drugs such as opiates, cocaine, amphetamines, and alcohol have been subjected to strict regulatory controls (9). Smoking has tended to be, and is still widely regarded by the public, politicians, and many in the medical professions, as a personal lifestyle choice rather than a powerful drug addiction with serious implications for individual and public health.

The great majority of smokers become addicted to nicotine as teenagers, when a period of experimentation with cigarettes over a period of weeks or months establishes a dependence (12) that is likely to result in continued smoking for many years. UK survey data have demonstrated that whereas a clear majority of smokers across all ages state that they would prefer not to be smokers, and that in each year approximately one in three has attempted to quit smoking, only about 2% of all smokers in any year actually succeed in doing so (9). The result is that at current cessation rates, approximately half of all young adults who are regular smokers at the age of 25 are still likely to be smoking at age 60 (9). Data from the United States suggest that in the early 1990s the annual quit rate among smokers may have been slightly higher, but that the overall picture is much the same as in the United Kingdom (13). The reality for most smokers who try to quit smoking is that they fail within a matter of days, and that even among those who succeed in giving up for a period of weeks or months, most relapse. Addiction to nicotine is a chronic, relapsing, and in many cases lifelong problem that is likely to need repeated interventions to achieve long-term abstinence (13). Nicotine addiction is perhaps the commonest chronic disease in the developed world.

The logical consequence of this, and of the extent of the problem caused by smoking, is that recognizing and dealing with nicotine addiction should not only be a routine component of medical care, but should rank as one of the highest priorities. It would, therefore, be reasonable to expect that appropriate emphasis, commensurate with the scale of the problems caused by smoking, would be placed on teaching the prevention and management of nicotine addiction in undergraduate and postgraduate medical education, and on the delivery of smoking cessation services in clinical practice. After all, effective pharmacologic interventions for smokers have been available for the best part of 20 years, and cessation interventions involving intensive counseling support in conjunction with nicotine replacement or bupropion therapy can now achieve 1-yr smoking cessation rates in excess of 20% (13, 14). Even much less intensive interventions, including those based on brief opportunistic advice alone, can, if applied widely,

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achieve significant reductions in smoking prevalence. Because smoking cessation at virtually all ages is associated with substantial improvements in life expectancy (15), interventions at all levels of intensity are highly cost-effective (16, 17), to a degree that compares extremely favorably with most other available medical interventions in the United States (18). Interventions of comparable effectiveness and cost-effectiveness in other aspects of medicine are rapidly and systematically integrated into routine healthcare training and delivery. Has this happened with smoking cessation interventions? The available evidence suggests that the management of nicotine addiction receives very little emphasis in many medical schools, and that this lack of training can result in a reluctant or inadequate approach to dealing with smoking in clinical practice. In 1995 a survey of medical schools around the world indicated that although the majority addressed the role of smoking in causing disease, less than 40% provided teaching on smoking cessation (19). Although the response rate from medical schools in this survey was low (36%), the findings are supported by data from a survey of "young" (less than 45 yr of age) physicians who had been in practice for 9 yr or less in the United States in 1991, of whom only 21% felt that they had been adequately prepared by their training from medical school, residencies and fellowships to provide smoking cessation interventions to their patients (20). More recent data from the United States have demonstrated that undergraduate teaching programs are beginning to deal with tobacco, but that coverage of the delivery of smoking cessation interventions is still far from comprehensive. In 1997, only 55% of US medical schools addressed all six primary tobacco curriculum content areas drawn from the US National Cancer Institute and the Agency for Health Care Policy and Research guidelines in their basic science teaching, and only 5% reached equivalent targets for smoking cessation in their clinical curriculum (21). The majority of medical schools (70%) did not require undergraduates to be trained in smoking cessation skills. The investigators concluded that a majority of US physicians and medical students are not adequately trained to treat nicotine dependence (21). This evident continued failure to provide basic clinical undergraduate training in smoking cessation does not prevent many doctors from acquiring appropriate training from other sources or indeed from providing an excellent clinical service, but it does pose the question of why smoking cessation is not taught in so many medical schools when so many other medical interventions, few of which will be more effective or cost effective, receive comprehensive coverage.

In Britain the situation is almost certainly worse. Detailed data on British undergraduate curricula comparable to those in the United States (21) are not currently available, but our personal experience of undergraduate teaching and direct contact with junior medical staff in hospital practice indicates that few are familiar with smoking cessation interventions, and virtually none has received formal undergraduate training in cessation techniques. This inevitably translates into a widespread failure to deliver smoking cessation interventions in practice, and recent data have suggested that less than one in three smokers recalls receiving any advice from their primary care physician to stop smoking (22), and that family doctors themselves admit that they are reluctant to discuss smoking with their patients unless they present with a smoking-related problem (23). Until recently the UK National Health Service has not required health service providers to deliver smoking cessation services, and the government has actively discouraged the use of nicotine replacement therapy (NRT) by withdrawing nicotine products from the list of drugs that can be provided as subsidized National Health Service prescriptions. This antipathy towards the provision of smoking cessation services appears to be shared by many British doctors since the annual representatives meeting of the British Medical Association voted in June 2000 against a proposal to make NRT available through the National Health Service. The clear impression is that in Britain, and probably in the United States and many other countries, addiction to nicotine has for many years not been generally recognized or accepted as a medical problem, and the provision of smoking cessation services has not been a priority in healthcare training, planning, or delivery. The perversity and irony of this approach is illustrated especially well by the example of the use of statins in the primary prevention of myocardial infarction in Britain. A recent survey in primary care has suggested that the majority (greater than 80%) of individuals who meet established national criteria for the use of statins for primary prevention of myocardial infarction do so only because they are cigarette smokers (24). The irony is that whereas in these cases the National Health Service will fund the provision of statin therapy for life, it has not until very recently provided smoking cessation interventions to reverse what is in most cases the primary indication for statin therapy. Even ignoring the many other health benefits of quitting smoking, there is clearly something very wrong with the logic that allows this state of affairs to prevail. Similar inconsistencies probably apply in many other countries, including the United States, where the provision of smoking cessation services by health insurance plans is still limited (25).

What is needed is a substantial shift in professional and political thinking on the place of smoking cessation in modern health services. At a professional level this will involve the provision of the undergraduate and postgraduate training necessary to ensure that doctors and other healthcare workers are equipped with the skills they need to deliver smoking cessation interventions, and at a political level the provision of the resources necessary to make smoking cessation interventions routinely available to all smokers. Progress in these areas has been stimulated on both sides of the Atlantic by the publication of comprehensive evidence-based guidelines on the delivery and funding of care (13, 14) that provide a suitable framework for training and implementation of systematic smoking cessation services, and the challenge now is to translate these guidelines into practice (26, 27). The British government has recently responded to this challenge by allocating the funding necessary to provide specialist smoking cessation services, initially in designated areas of particular socioeconomic deprivation (3), but with a more recent commitment to expand the service to provide NRT and bupropion therapy throughout primary care (28). This is the first time that any national healthcare provider has taken on smoking cessation in a systematic manner, and the stated objective of generating 1.5 million ex-smokers by the end of this decade will, if achieved, actually make a significant impact on public health in Britain.

However, the prevention of smoking-related disease in society demands more than just smoking cessation services since truly radical effects on smoking prevalence will only be achieved through effective primary as well as secondary prevention. Prevention of advertising and promotion (29), mass media educational and motivational campaigns (30), restrictions on smoking in public places and at work (31), and progressive taxation (32) can all contribute to both primary and secondary prevention at a population level, but there has been remarkably little progress in any country in preventing experimentation with smoking and the development of nicotine addiction in adolescence. Societies also need to address the fundamental question of whether as a policy it is better to aim for

complete exclusion or prohibition of nicotine use, or to accept the place of nicotine in society but to regulate to make nicotine products safe. The practical reality is that even if nicotine prohibition were a realistic objective, there is and for the predictable future will be a substantial population of addicted smokers who are unable to quit and who need to be provided with a less lethal alternative to their cigarettes (33). It is therefore necessary to develop nicotine delivery products that can provide the nicotine that the addict wants, and with the speed of delivery achieved by the cigarette, but without the harmful products of tobacco combustion.

There is a great deal that the medical profession in general, and pulmonary specialists in particular can and should be doing to address these many issues. At a societal level we need as individuals and through professional organizations to be seen to be actively supporting progressive controls on advertising, price, availability, and public use of tobacco, to continue to act as advocates for the introduction of progressively more restrictive safety regulation for tobacco products, and to encourage the development and promotion to smokers of effective clean nicotine delivery systems. Within our profession we need to be active in lobbying for the inclusion of appropriate training in smoking cessation into undergraduate and postgraduate programs, for the funding of systematic and comprehensive smoking cessation services for all smokers, and in leading by example the implementation of smoking cessation interventions in accordance with current guidelines (13, 14) in our clinical practice. Finally, there is a further moral dimension that has to be addressed by those of us living in countries such as the United States and Great Britain that are major contributors to world cigarette production, and therefore to escalating world epidemic of smoking-related disease (34). The cigarette–exporting nations have to ask themselves whether the export of a highly addictive and lethal product to other countries, particularly to those in the developing world, is morally or ethically sustainable (35), and again the medical profession could take a lead in driving that debate. One of the earliest promises made by the Labour government after their election in Britain in 1996 was to adopt an "ethical" foreign policy, and in 1997 the President of the Royal College of Physicians of London wrote to the British Foreign Secretary, Robin Cook, asking whether the British government could justify the export of tobacco products to the developing world as an ethical activity. He is still waiting for a reply.

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