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Foreword

In 1962, the Royal College of Physicians published its first report on the effects of smoking on health, drawing attention to the strong relationship between cigarette smoking and lung cancer. The report concluded that this association was probably causal, that smoking may also cause other diseases including chronic bronchitis and coronary heart disease, and that smokers may be addicted to nicotine.

In the years since that report was published, the true scale of the harm caused by smoking has become apparent. Smoking is now recognised as the single largest avoidable cause of premature death and disability in Britain and in most other economically developed countries, and probably the greatest avoidable threat to public health worldwide.

Public recognition of the health risks of smoking was probably one of the major factors underlying the progressive fall in smoking prevalence that occurred in Britain between the early 1960s and mid-1990s. However, recent data suggest that it is now beginning to stabilise in Britain at approximately one in four adults, whilst smoking in younger people is becoming more common. To achieve further marked reductions in smoking prevalence, it is therefore necessary to look in more detail at the factors that cause individuals to smoke, and to consider new methods of primary and secondary prevention.

This report addresses the fundamental role of nicotine addiction in smoking. It is now recognised that nicotine addiction is one of the major reasons why people continue to smoke cigarettes, and that cigarettes are in reality extremely effective and closely controlled nicotine delivery devices. Recognition of this central role of nicotine addiction is important because it has major implications for the way that smoking is managed by doctors and other health professionals, and for the way in which harmful nicotine delivery products such as cigarettes should be regulated and controlled in society. At a time when smoking still causes one in every five deaths in Britain, measures designed to achieve further reductions in smoking are clearly important and, if successful, will realise substantial public health benefits. It is time for nicotine addiction to become a major health priority in Britain. This report explains why.

February 2000 KGMM ALBERTI
President, Royal College of Physicians

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Contents

Key points

Tobacco smoking in Britain

- Smoking prevalence in Britain has declined during the past 50 years; this trend now appears to be stabilising
- In 1997 in Britain approximately one in four adults were cigarette smokers
- By age 15, one in four British children are regular smokers
- Smoking causes one in every five deaths in Britain, and the loss of more than 550,000 years of life before age 75
- The greatest impact of smoking on mortality is on deaths from lung cancer, ischaemic heart disease and chronic obstructive airways disease
- Passive smoking damages children before and after birth
- Thirty percent of pregnant women in Britain smoke
- Smoking is strongly related to poverty and deprivation
- Smoking costs the NHS an estimated £1.5 billion per year
- No other single avoidable factor accounts for such a high proportion of deaths, hospital admissions or general practitioner consultations
- Smoking is the single most important public health problem in Britain

Physical and pharmacological effects of nicotine

- Nicotine receptors are present in the brain and many other organs vary markedly in their binding, activation and desensitisation characteristics
- Cigarettes deliver rapid doses of nicotine to receptors in the brain
- Animal studies provide strong and consistent evidence that nicotine is addictive
- The addictive effect of nicotine is mediated at least in part by stimulation of dopamine release in the nucleus accumbens
- Pure nicotine has potential adverse effects on the human body but unlike cigarettes does not appear to cause cancer or significant cardiovascular disease
- Pure nicotine may be harmful to the fetus in pregnancy but is likely to be far less hazardous than the effects of smoking.

Psychological effects of nicotine and smoking

- Smoking is widely believed to have positive effects on mood
- Objective evidence suggests that the only improvements in mood resulting from smoking are those arising from the relief of withdrawal symptoms
- Smoking withdrawal symptoms are relieved by nicotine
- Nicotine intake in smokers is stable and consistent over time
- There is strong evidence of psychological dependence on cigarettes
- The major psychological motivation to smoke is the avoidance of negative mood states caused by withdrawal of nicotine

Is nicotine a drug of addiction?

- Nicotine obtained from cigarettes meets all the standard criteria used to define a drug of dependence or addiction
- Historically, and in contrast to addiction to opiates or alcohol, addiction to nicotine has not been recognised as a medical or social problem in Britain
- Nicotine is highly addictive, to a degree similar or in some respects exceeding addiction to 'hard' drugs such as heroin or cocaine
- Most smokers do not smoke out of choice, but because they are addicted to nicotine

The natural history of smoking: the smoker's career

- Addiction to nicotine is established in most smokers during teenage years, in many cases before reaching the age at which it is legal to buy cigarettes
- Teenagers who smoke one or more cigarettes per day demonstrate evidence of addiction similar to that seen in addicted adults, but addiction can be evident at lower levels of smoking
- Addiction to nicotine is usually established in young smokers within about a year of first experimenting with cigarettes
- A small proportion of smokers, approximately 5%, do not appear to be addicted to nicotine
- Once addicted, most smokers are unable to give up smoking even when they develop disease caused by smoking and made worse by continued smoking
- Only about 2% of smokers succeed in giving up in any year
- About 50% of young adult smokers will still be smoking when they are 60

Regulation of nicotine intake for smokers, and implications for health

- Smokers tend to regulate or titrate their nicotine intake to maintain body levels within a preferred range
- Smokers who switch to cigarettes which on machine smoking deliver less nicotine and tar tend to compensate for this by smoking the cigarette more deeply or more intensively
- Smokers of low yield cigarettes actually achieve little, if any, reduction in intake of nicotine and tar, and the health benefit accrued from switching to such cigarettes is, if anything, small
- The availability of low yield cigarettes may actually be counter productive in public health terms if they encourage health conscious smokers to switch to low yield brands instead of giving up completely

Management of nicotine addiction

- Effective interventions to reduce nicotine addiction are available at both population and individual levels
- The fact that smoking is so common in Britain means that even interventions that have small effects on smoking prevalence can, if widely applied, yield substantial returns in terms of the numbers of people who give up smoking
- Nicotine replacement therapy approximately doubles the effectiveness of most other currently available smoking cessation interventions
- Smoking cessation interventions, including nicotine replacement therapy, are extremely cost effective, costing society between £212 and £873 per year of life saved in 1996 prices
- The cost-effectiveness of smoking cessation interventions using nicotine replacement therapy compares very favourably with most other medical intervention.
- Effective smoking cessation services should therefore be universally available to smokers through the NHS
- Smoking cessation services must be able to adapt to accommodate new effective therapies and interventions in the future
- Further research into the use and safety of nicotine replacement therapy relative to continued smoking during pregnancy is needed Regulatory approaches to tobacco products in Britain
- Cigarettes are extremely damaging to consumers and yet have enjoyed unparalleled freedom from consumer protection regulation
- Much of the regulation applying to tobacco in Britain has been in the form of 'voluntary agreements' with the tobacco industry
- The use of additives in cigarettes has not been subject to appropriate assessments of public health impact
- The policy of progressively reducing tar yields from cigarettes, and of printing tar yields on cigarette packs, is based on flawed measurement methodology and may be ineffective in terms of achieving public health benefits
- Pharmaceutical nicotine delivery products (eg nicotine replacement therapy) are subject to regulation by the Medicines Control Agency and are required to meet the same safety standards as any other drug; however, cigarettes are exempt from these controls
- Cigarettes are tobacco-based nicotine delivery products and should be subject to the same safety standards as any other drug.
- A co-ordinated nicotine regulation framework needs to be established in Britain to resolve anomalies in the sale and promotion of nicotine delivery products, to maximise current and future public health

Main conclusions

- Most smokers do not continue to smoke cigarettes out of choice, but because they are addicted to nicotine
- Nicotine addiction is the underlying cause of the massive burden of premature death and disability caused by smoking in Britain
- Doctors, other health professionals and indeed society as a whole, need to acknowledge nicotine addiction as a major medical and social problem
- Treatment for nicotine addiction should be universally available for all smokers as a routine facility of the National Health Service
- Tobacco products must be made subject to safety regulations that are consistent with the controls that apply to all other drugs available in Britain, and so that they are commensurate with the extent of the damage to individuals and society that smoking causes

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