

Should doctors advocate snus and other nicotine replacements?

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YES Smoking is the biggest avoidable cause of death and disability,¹ and of social inequalities in health,² in the United Kingdom. Smoking currently kills over 100 000 UK citizens each year,³ predominantly from lung cancer, heart disease, and chronic obstructive pulmonary disease. Half of all lifelong smokers die from smoking, typically losing 10 years of life.⁴ Non-smokers are victims too. Although smoking is prohibited in public and workplaces throughout the UK, smoking in the home remains an important cause of morbidity and mortality through passive exposure, especially in young children.⁵ Stopping smoking reverses or prevents progression of these problems.

Currently, 77% of UK smokers want to give up smoking, and 78% have tried and failed.⁶ Of the many reasons why they have not succeeded in quitting, the most important is addiction to nicotine. Cigarettes deliver nicotine to the brain rapidly, and in high doses, achieving arterial concentrations around five to six times those obtained, far more slowly, from conventional nicotine replacement therapy products.⁷ The repeated high dose hits of nicotine that cigarettes deliver not only reward the smoker directly but also confer rewarding properties on other stimuli arising from smoking and behaviours associated with it.⁸ The result is a powerful addiction, such that someone who is a regular smoker at 25 has a roughly even chance of still being a smoker at 60¹—assuming, of course, that they survive that long.

The tragedy is that nicotine addiction itself is not especially hazardous. Nicotine is not harmless,⁸ but in practice accounts for little if any of the morbidity and mortality caused by smoking. It is the hundreds of other toxins in tobacco smoke, not nicotine, that make smoking so deadly. So if smokers who are unable, unwilling, or simply unlikely to quit were to switch from cigarettes to other, less hazardous sources of nicotine, millions of lives could be saved.

Safer choices

By far the safest alternative is the current range of nicotine replacement products. All reduce the symptoms of withdrawal from smoking and therefore, although marketed and licensed primarily as cessation aids, are also logical long term substitutes for cigarettes. However, because of their low dose and delivery rate they are not highly effective; smokers find them helpful but not satisfying as a cigarette substitute. So it would help if medicinal nicotine products could be developed to mimic the cigarette more closely—delivering high doses, quickly, on demand.

Another, and more controversial, alternative source of nicotine is smokeless tobacco or snuff—tobacco for oral or nasal use. Smokeless tobacco products are all considerably more hazardous than nicotine replacement therapy and some especially so. The Swedish moist tobacco products (known as snus) are among the less hazardous and cause pancreatic cancer, probably cardiovascular disease, and various other health problems.⁸⁻¹² However, because these risks are all lower for snus than for smoking, and

because snus use does not cause lung cancer or chronic obstructive pulmonary disease, snus use is substantially less hazardous than smoking.

Recent data from Sweden, where snus has been available for years, indicate that habitual smokers and young people experimenting with tobacco products have substituted snus for cigarettes, resulting in low levels of smoking.^{13 14} This suggests that smokeless tobacco is an acceptable smoking substitute for some smokers and therefore snus may be effective in this role in other populations.

Although nicotine replacement therapy is not licensed for use as a long term substitute for smoking, in practice it is common sense for health professionals dealing with smokers who are unable to quit smoking to encourage use of medicinal nicotine products as a substitute for smoking, and prescribe them if necessary. They should strongly advise smokers that the best option would be to quit all nicotine use, and do all they can to support this by encouraging uptake of behavioural therapy

supported by nicotine replacement therapy, bupropion, or varenicline in accordance with established clinical guidelines. However, for those who try repeatedly and fail, or for those who are not ready to stop using nicotine, switching to a medicinal nicotine product is the logical next best option. Doctors should encourage this.

Using smokeless tobacco is another matter. In the UK, the only legally available smokeless products are the more hazardous ones because the 1992 Tobacco for Oral Use (Safety) Regulations prohibit the supply of oral tobacco products that are not intended to be smoked or chewed. Snus is intended to be sucked, so it is illegal for a doctor or anyone else to supply it, although mail order purchase for personal use from a supplier in Sweden is within the law. In my view, as a measure of last resort in smokers who have tried all other cessation and substitution options, doctors would be justified in suggesting an individual trial of snus. Whether this approach will prove effective remains to be seen and desperately needs to be tested in clinical trials. However, while the alternative is equivalent to a form of Russian roulette in which every other chamber of the revolver holds a bullet, pursuing a less hazardous alternative—even this one—surely makes sense.

Competing interests:

JB has collaborated in a multicentre randomised clinical trial comparing varenicline with nicotine replacement therapy funded by Pfizer, and has consulted for a company developing a nicotine vaccine.



Use of snus is less harmful than smoking and **John Britton** thinks that doctors should suggest it to people who are unable to give up cigarettes. But **Alexander Macara** argues that it could result in increased use of tobacco

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NO The use of smokeless tobacco products—notably snus—has suddenly become controversial. Reasons for this include publicity by the tobacco industry,¹ the introduction in England of a ban on smoking in public places,² recent interest by major multinational companies in acquiring manufacturers of smokeless tobacco products,³ and the publication of comprehensive reports by a scientific committee of the European Commission⁴ and the Royal College of Physicians of London.⁵

Last October the British American Tobacco Company pressed the European Union to reconsider its 1992 ban on snus,¹ from which Sweden secured an exemption when it joined the union. Three weeks later the European Parliament called on the commission “to investigate the health risks associated with the consumption of snus and its impact on the consumption of cigarettes.”⁶

Health hazards

Epidemiological studies of the effects of snus are often undermined because it is commonly used along with smoked tobacco and alcohol.⁷ Different lifestyle factors and patterns of use in different countries preclude any Cochrane-style meta-analysis, but the two recent reports summarise the current state of knowledge.^{4 5}

The expert group of the International Agency for Research on Cancer has concluded that smokeless tobacco is carcinogenic

What is snus?

Snus is the Swedish word for snuff, which was fashionable to inhale before cigarettes superseded it. BAT describes snus as “A finely ground moist tobacco, either loose or in tiny sachets—a bit like tiny teabags—that are placed under the upper lip and typically held in the mouth for about 30 minutes before being discarded.”¹

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to humans,⁸ and the European Commission report cites studies by the Swedish Institute of Public Health and the Karolinska Institute as evidence that snus is carcinogenic.⁹

The obvious entry point to research on snus is the oral cavity. Mucosal changes, known as snus induced lesions or leucoplakia, are inevitable and potentially precancerous with a gradient in severity suggesting a dose response.¹⁰ Lesions in the local epithelium are reversible on quitting but gingival retractions are not.

In India, a 10 year follow-up study has shown that oral cancers invariably arise from pre-existing leucoplakia.¹¹ In the US, oral cavity cancer was found in patients who were exclusive users of smokeless tobacco and who had no exposure to alcohol.¹² Studies in India, Pakistan, and the Sudan reported large increases in the risk for oral cancers related to the use of various smokeless tobacco products,⁴ and the International Agency for Research on Cancer has stated, “There is sufficient evidence that smokeless tobacco causes oral cancer.”⁸

There is particularly strong evidence of a causal relation between smokeless tobacco and pancreatic cancer, notably from the Swedish construction workers cohort¹³ and the Lutheran brotherhood cohort in the US.¹⁴

The INTERHEART study covering 52 countries showed an increased risk of cardiovascular disease in all forms of tobacco combined.¹⁵ A recent follow-up of a large US cohort showed that compared with men who had never used any tobacco product, men who quit tobacco use entirely or switched to smokeless products had significantly higher relative risks of cardiovascular disease, particularly the switchers.¹⁶ The EC report concluded that smokeless tobacco has a significant effect on myocardial infarction.⁴

A cohort study based on the Swedish Birth Registry showed an increased risk of premature birth and pre-eclampsia among snus users compared with non-users of any tobacco.¹⁷

Nicotine exposure

Smokeless tobacco delivers quantities of nicotine comparable to those typically absorbed from cigarette smoke and is

addictive, although unarguably less so than smoked tobacco. Nicotine levels obtained from snus are about twice as high as those obtained from nicotine replacement therapy, which does not induce dependence.⁴ Moreover, at least 60% of people who use snus to quit smoking become chronic snus users.⁴ However, Action on Smoking and Health asks whether snus is the new way to give up smoking.¹⁸ The royal college’s report also envisages “harm reduction” by providing safer sources of nicotine, but within the context of a nicotine regulatory authority.⁵

Citing various experts, the European report argues, “If snus or other STP can provide some of the smokers who cannot otherwise quit smoking with a less hazardous source of nicotine that is acceptable to them, then the use of snus as a harm reduction option deserves consideration . . . if, on the other hand, the availability of snus has little impact on smoking prevalence but adds further tobacco users to the existing population, as appears

to have existed in Norway, there would be no benefit but an adverse impact on public health by allowing snus use.”⁴ I fear the second outcome. If legalised, snus might be taken up by people, especially the young, who might never have smoked tobacco but who may then progress to doing so.

BAT admits “smokeless does not mean harmless and the best way to avoid the risks associated with consuming tobacco is not to consume it at all.”¹ A harm reduction policy could instead lead to harm perpetuation.

The tobacco industry’s constant defence is that tobacco is a legal product. But if we had known before tobacco was ever used, how disastrous it would prove to be, would it not have been banned in all its forms?

Competing interests: AWM chaired a programme development group for NICE on smoking cessation, the conclusions of which will be published on 23 February.

All references are in the version on bmj.com

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