

# The dietetics

## of smoking cessation in

## people with diabetes

✉ Jocelyne Bertoglio

*Compared to people without the condition, people with diabetes are at increased risk from vascular diseases – including heart attack and stroke. This risk is further increased in people with diabetes who smoke; smokers with the condition should be advised by their health carers to stop smoking as a matter of urgency. But giving up the habit is not easy. Successful cessation requires people to surmount a number of difficulties, including strong physical, psychological and behavioural dependencies, and the possibility of post-cessation weight gain. Jocelyne Bertoglio looks at a number of factors that complicate people's attempts to stop smoking, and outlines some of the nutritional recommendations for smoking cessation, especially in people with diabetes.*



When people inhale the fumes of burning tobacco using a pipe or in the form of cigars or cigarettes, their body is in fact attacked by smoke. The composition of these noxious fumes is complex and varied; more than 4000 components have been identified, such as:

### *Carbon monoxide*

Carbon monoxide dangerously replaces oxygen in red blood cells and attacks the proteins that transport oxygen to muscle tissue, including the heart; and causes long-term damage to the cells that line the inner wall of blood vessels.

### *Tar*

The yellow stains on the fingers and teeth of smokers are caused by tar. Tar contains substances that are responsible for the development of cancer, such as benzopyrene, which is responsible for the increased risk of cancers of the lungs, bladder and stomach.

**When people inhale the fumes of burning tobacco, their body is attacked by smoke.**

### *Nicotine*

This organic compound is also a carcinogen. It is a potent nerve poison and is included in many insecticides. Nicotine is one of the main factors leading to the pleasure and habit-forming qualities of tobacco smoking.

### **Short-lived pleasure at a very high price**

The nicotine that is absorbed when people smoke tobacco is transported quickly in the blood, resulting in a sharp rise in nicotine levels in the body. Reaching the brain in less than 15 seconds, and working

It is essential for people with diabetes who are trying to stop smoking to have a structured diet that includes fresh fruit, green vegetables and pulses.



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on receptors there to release the 'pleasure hormone', dopamine, nicotine causes a 'rush' – a brief state of light euphoria. The nicotine rush decreases as a smoker finishes a cigarette but nicotine remains in the brain for about two hours. Thus, people who smoke compulsively do so in order to maintain these fluctuating levels of nicotine.

Nicotine provokes a number of important alterations in various aspects of the body's metabolism. These include effects on:

**Instead of eating, smokers often smoke in order to raise blood glucose levels.**

#### *Body weight*

Nicotine increases the energy expenditure of physical activity – by around 10%. This is not always compensated by an increase in the intake of food. The production of heat (thermogenesis) in the body

of smokers is increased by around 6%; it is estimated that the basal metabolism of people who smoke is increased by around 200 kcal compared to non-smokers.

Furthermore, nicotine provokes an increase in the levels of certain hormones, including adrenaline. The release of adrenaline leads to elevated levels of blood glucose. Instead of eating, smokers when they are hungry generally respond to low levels of blood glucose by using this hyperglycaemic action of nicotine. Hence, in people of a comparable height and age, smokers weigh on average 2 kg-3 kg less than non-smokers.

#### *The digestive tract*

Nicotine speeds up gastric emptying and reduces the time required for the transport of food/waste through the intestines. Problems related to constipation are quite common among people who have recently stopped smoking.

#### *The distribution of fat*

Nicotine has an impact on the distribution of a person's body fat. Chronic smokers suffer abnormal function in the area of the brain that is related to weight gain (the hypothalamus). This plays an important role in determining the accumulation of fat around the abdominal organs.

#### *Food choices*

Smoking leads to a reduction in a person's sensitivity to smell and taste. This effect – which is reversible when a person successfully stops smoking – often results in:

- a desire to eat strong-tasting food – sweet, spicy and/or salty
- an increased liking for dishes with a high fat content
- a reduced desire to eat fruits and vegetables.

People who smoke often have a poorly structured diet; many smokers do not eat breakfast, and typically consume an excessive amount of caffeine, alcohol

and fatty foods. In many if not most cases, the unhealthy effects of these dietary alterations are compounded by scarce and irregular physical activity.

The unhealthy dietary alterations provoked by smoking are often compounded by scarce and irregular physical activity.

**Support for smokers with diabetes**

Smokers should be assessed to determine the degree of their nicotine addiction (see the Fagerstrom’s test for nicotine dependence on this page). Nicotine replacement therapy might be necessary and perhaps accompanied by cognitive behavioural therapy. Nutritional recommendations and lifestyle advice should form part of the support offered by health-care providers for smoking cessation, especially in the case of people with diabetes. Below are some of the practical recommendations that can be given to people with diabetes who are trying to stop smoking.

**Nutritional and lifestyle advice should form part of the support for smoking cessation in people with diabetes.**

**Diet**

It is essential for people with diabetes to have a structured diet: three meals a day (breakfast is of particular importance to people with the condition). The fats (such as olive oil or sunflower oil) used in the preparation of meals should be alternated and, if possible, fish should be eaten two or three times per

week. An increased consumption of fibre – green vegetables and pulses – is also strongly recommended. The use of spices, herbs, and garlic will enhance the taste of cooked dishes, making them more appealing to the temporarily damaged palate of people who smoke while helping also to reduce the consumption of salt.

Despite their inertia when it comes to tobacco cessation, most smokers are familiar with many of the negative

consequences of their dependency; in many cases, people who smoke continue to do so deliberately ignoring health warnings. Over-emphasis of the threats from smoking therefore might be unnecessary and even counter-productive. As well as the health benefits, it is important to emphasize the positive value of the enjoyment that can be gained through eating wholesome food. Meal times should be promoted as key moments of the day, a source of enjoyment to be relished.

**Box 1: Fagerstrom’s test for nicotine dependence**

For health-care providers, it is important to know the degree of addiction suffered by smokers in their care. Fagerstrom’s test for nicotine dependence is a simple way to assess a person’s addiction. Each answer scores a set amount of points. The points are then added and checked against the score indicator below.

Questions	Answers	Points
1. How soon after you wake up do you smoke your first cigarette?	Within 5 minutes 6 to 30 minutes 31 to 60 minutes After 60 minutes	● 3 ● 2 ● 1 ● 0
2. Do you find it difficult to refrain from smoking in places where it is forbidden?	Yes No	● 1 ● 0
3. Which cigarette would you be the most unwilling to give up?	The first one in the morning Any other	● 1 ● 0
4. How many cigarettes a day do you smoke?	1 to 10 11 to 20 21 to 30 31 or more	● 0 ● 1 ● 2 ● 3
5. Do you smoke more during the first hours in the morning than during the rest of the day?	Yes No	● 1 ● 0
6. Do you smoke if you are so ill that you are in bed all day?	Yes No	● 1 ● 0

**Score:**

0-2 Very low addiction / 3-4 Low addiction / 5 Medium addiction  
6-7 High addiction / 8-10 Very high addiction

Source: Heatherton TF, Kozlowski LT, Frecker RC, Fagerstrom KO. The Fagerstrom Test for Nicotine Dependence: a revision of the Fagerstrom Tolerance Questionnaire. Br J Addict 1991; 86: 1119-27.

### Weight gain

The threat of post-cessation weight gain is one of the most frequently cited reasons for continued tobacco use. However, too strict a caloric restriction is not in fact recommended; weight stabilization can be an acceptable target. The following are recommendations relating specifically to the prevention of weight gain in people with diabetes who are trying to stop smoking:

- artificially sweetened desserts should be avoided and replaced by fresh fruit
- attempts should be made to reduce the consumption of cheese, dishes with rich sauces, shop-bought pre-cooked meals, convenience foods such as pizza (often high in fat, sugar, and salt content)
- certain foods should be avoided, such as: chips (French fries), olives, peanuts, crackers (salted biscuits), crisps (potato chips)
- while constant grazing should be avoided, the integration of healthy snacks in a person's diet can sometimes help to combat urges to smoke; in such cases, foods should be chosen which have a low content of fat and sugar, such as raw vegetables, sugar-free milk products, and fruits.

### Lifestyle

All too often, therapeutic lifestyle changes that are seen to be imposed by well-meaning health carers are short-lived and can in some cases cause resentment, giving rise to further negative effects. When giving smoking-related advice, the lifestyle of each person should be taken into account.

Some or all of the lifestyle recommendations listed below might be agreed upon as part of a person's individual strategy to stop smoking and avoid post-cessation weight gain and relapses:

- regular consumption of water (about two litres per day) or, if preferred, sugar-free flavoured drinks
- control of the intake of alcohol – which can aggravate the desire for nicotine and always represents caloric intake
- reduction if necessary of the consumption of coffee – often associated with the compulsive behaviour of smokers and a risk factor for relapse
- regular physical activity – essential to prevent or limit weight gain.

### Our responsibility as health carers

Health-care providers have an important role to play in smoking cessation. Removing the ashtrays from waiting rooms or putting up anti-tobacco posters is not enough; a pro-active, collaborative approach is required from health carers in a range of fields, including family doctors, nurses, nutritionists, psychologists.

Any treatment must take into account psycho-social as well as physical and pharmacological factors. It is important therefore for health-care providers to take a team-based approach to smoking cessation and where necessary to call on the support of those working in other fields.

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### Further reading

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