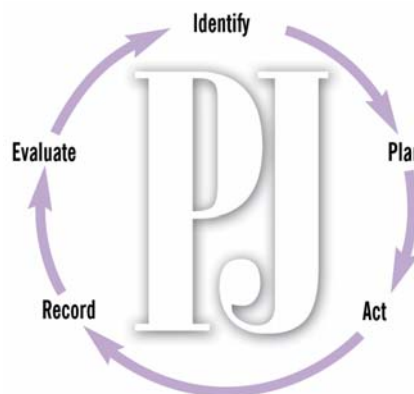
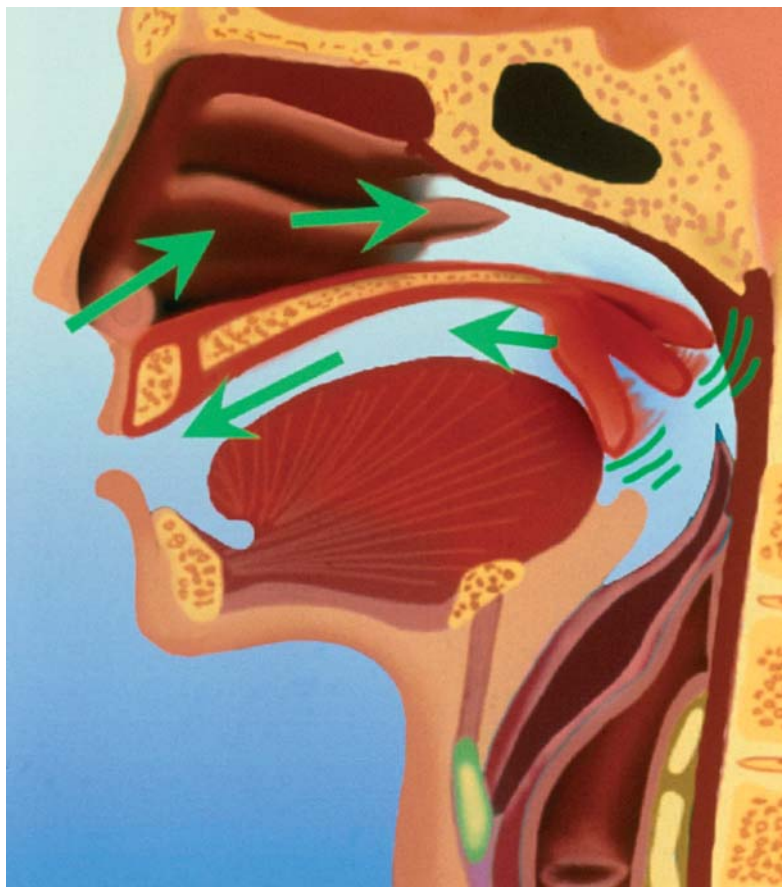


# Snoring and the evidence behind the various treatments available

Should pharmacists recommend anti-snoring products? In this final article in a series on sleep and sleeping disorders, **Alan Nathan** provides a background to the causes of and treatments for snoring, and reviews the evidence behind various anti-snoring products that are available over the counter



## Identify knowledge gaps

1. What are the causes of snoring?
2. Is there any evidence for anti-snoring products?
3. What is the best approach to reducing snoring?

Before reading on, think about how this article may help you to do your job better. The Royal Pharmaceutical Society's areas of competence for pharmacists are listed in "Plan and record", (available at: [www.rpsgb.org/education](http://www.rpsgb.org/education)). This article relates to "providing advice and counselling" (see appendix 4 of "Plan and record").

Snoring is often regarded as little more than a source of amusement. Seeing somebody asleep and giving a performance of their own during a concert or play, for example, usually provokes at least suppressed mirth among those sitting around the culprit. In general, snoring is not a health problem but, far from being amusing, it can often be a source of distress to a partner and a cause of discord in the home. In some cases snoring, as a manifestation of sleep apnoea (see *PJ*, 12 February, pp187–90), can be a real threat to health.

Several surveys have been carried out and the general finding is that up to about 50 per cent of all adult males and about 25 per cent of females are habitual snorers.

In one study,<sup>1</sup> a third of the men and a fifth of the women reported snoring loudly. Another study<sup>2</sup> defined loudness in terms of the Minnesota Pollution Control Agency limit on the maximum acceptable outdoor night-time noise level (55 decibels). This was

## Snoring can be a source of distress and discord in the home

exceeded by 12.3 per cent of all individuals tested and by nearly half of those with sleep apnoea. In an accompanying editorial the principal author of the article wrote that, theoretically, these snorers "could be arrested in bed for disturbing the peace". A further survey<sup>3</sup> found that 52 per cent of married women and 15 per cent of married men were bothered by their spouse's snoring.

Pharmacies are often the first port of call for snorers, or their desperate domestic partners, for snoring cures and a wide range of these is available.

## Causes of snoring

Snoring occurs when air does not flow smoothly through the passages in the nose and throat. These air passages are surrounded by soft tissue structures (see Panel 1, p310, for a description of these structures).

When people are awake, muscle tone is maintained in these soft tissues, allowing air to flow freely through the oral cavity. During

sleep the structures relax, causing the air passages to narrow and, if the mouth is partially open and air is drawn in through it, the structures vibrate to create the sounds of snoring. It is also possible to snore with the mouth closed if there is an obstruction to airflow through the nasal passages, either as a result of congestion (eg, due to an upper respiratory tract infection or allergic rhinitis) or an anatomical defect or other physical blockage.

### Factors predisposing to snoring

Many factors have been associated with snoring:

**Obesity** Obese people are more likely to snore than those who are not. The problem is greater in men than in women because in men, excess fat tends to be deposited around the neck, compressing the soft tissue structures in the oral cavity and obstructing airflow. Middle-aged men whose collar size is 16 inches or above are predisposed to snoring. The remedy is, of course, to lose weight.

**Mouth breathing** During sleep the lower jaw muscles relax causing the mouth to fall open. This compresses the soft tissues in the oral cavity and obstructs airflow in the nose. Sleeping on one's back can also cause the mouth to open and the tongue to fall backward, resulting in further turbulence. If there is any blockage in the nasal passages air intake will be further impeded and compensated for by breathing through the mouth.

In serious and chronic cases of snoring due to mouth breathing, the cause of any possible nasal blockage should be investigated by an ear, nose and throat specialist. Nasal dilators are available for people whose nostrils tend to "collapse" when asleep. Nasal congestion due to rhinitis can be caused by house dust mites and allergens, both of which can build up in old pillows. A new pillow with a synthetic filling (feather pillows are more likely to be allergenic) or the use of an anti-allergy pillow liner may solve the problem. Remedies that can be tried include short-term use of topical sympathomimetic decongestants, or drops or inhalations containing volatile oils used just before bedtime.

Oral sympathomimetics can also be tried, but they stimulate the central nervous system and can cause wakefulness. There are also devices to stop people sleeping on their backs. For example, a common suggestion is to sew a golf ball into the back of your sleep wear. If a person cannot sleep comfortably on their side, raising the head with extra pillows or other support can help. This can prevent the tongue falling back and keeps the throat open.

**Tongue base snoring** In people with retrognathia ("weak chin") the lower jaw is not properly formed and recedes below the upper jaw. This anatomical defect pushes the base of the tongue backward during sleep, constricting the throat and causing vibration as air is drawn over it.

## During sleep soft tissue structures relax, causing the air passages to narrow

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**Alcohol and drugs** Central nervous system depressants increase the state of relaxation of the muscles in the throat and depress respiratory drive. Snoring is always made worse by alcohol intake and, ideally, alcohol should be avoided for at least four hours before going to bed. Use of hypnotic, anti-depressant or antipsychotic drugs is also likely to increase snoring.

**Age** The incidence of snoring in both men and women increases with age. There is little that can be done but by paying attention to snoring, and taking reasonable steps to minimise it, the possibility of sleep apnoea developing will be reduced.

**Gender** Although men are about twice as likely than women to be habitual snorers, the incidence of snoring in women tends to increase after the menopause.<sup>4</sup> Some women claim that hormone replacement therapy resolves the problem although one small scale study showed that it had no effect.<sup>5</sup> Snoring also increases during pregnancy, with a concomitant increase in incidence of hypertension and the possibility of pre-eclampsia and fetal growth retardation.

**Sleep apnoea** Sleep apnoea is associated with snoring, but is a much more serious condition. It generally affects people in middle age: up to 4 per cent of men and 2 per cent of women between the ages of 35 and 65 years suffer from it. For unknown reasons sleep apnoea is less common in the elderly.

### Anti-snoring aids

There are several products sold to stop snoring. Some can easily be described as "weird and wonderful". The Queen Victoria Hospital Sleep Studies Unit (QVHSSU) at the Queen Victoria Hospital NHS Trust, West Sussex, has

### Panel 1: Soft tissue structures of the nose and mouth

The oral cavity, extending from the gums and teeth to the fauces (the opening to the pharynx) contains several soft tissue structures: the soft palate, forming the posterior portion of the roof of the mouth, and the uvula, a conical muscular process hanging from its free border, together close off the nasopharynx during swallowing to prevent food and liquids entering the nasal cavity; the tongue; the palatoglossal arch, extending to the side and base of the tongue; the palatopharyngeal arch, extending posteriorly from the tongue to the sides of the pharynx; the palatine tonsils, situated between the arches; the lingual tonsils situated at the base of the tongue; and the pharyngeal tonsil (or adenoid), embedded in the posterior wall of the naso-pharynx. The pharynx is a flexible muscular tube extending from the junction of the rear of the soft palate and the internal nasal passages to the epiglottis at the top of the larynx.



**Anti-snoring aids include nasal strips and essential oil-based sprays**

conducted some trials and collected reports from patients on the effectiveness of commercially available anti-snoring aids (see Resources).

**Nasal dilators** Nasal dilators are flexible plastic devices which are placed inside the nostrils to keep them propped open. They are designed for people who snore because one or both nostrils collapse when they sleep. This can be tested for by holding one nostril closed and breathing through the other with the mouth closed. If the nostril can be successfully propped open with a small piece of a matchstick (as recommended by the British Snoring and Sleep Apnoea Association), a nasal dilator may be helpful. One brand available is Nozovent. However, the QVHSSU verdict on this product was that all patients reported that it ended up on the pillow almost immediately after insertion, and that it is next to useless as a treatment for snoring.

**Nasal strips** Nasal strips are sticky-backed spring clips which are stuck on the outside of the nose to dilate the nostrils (see picture above). They are intended for people who wish to enhance their breathing during exercise and for those who snore, due to small or collapsing nostrils. Brands available include BreatheRight and AirPlus. The QVSSU verdict is that they give a subjective feeling that the nose is clearer and may help if the nostrils are small, but overall their efficacy is not impressive and they are of limited value.

**Mandibular advancement devices** Mandibular advancement devices are designed for “tongue based” snorers. They are made from thermoflexible plastic and are moulded in the mouth after being softened in boiling water. The intention is to advance the lower jaw to cut down mouth breathing and aid breathing through the nose. Brands include Somnoguard and Noiselezz. QVHSSU reports that it tried this type of product

**Snoring is  
always made  
worse by  
alcohol intake**

extensively when it became available but only one patient benefited.

**Chin-up strips and oral vestibular shields** Chin-up strips are essentially plasters designed to be applied over the chin and lower jaw of “mouth breathers” to keep the mouth closed during sleep. Another device for “mouth breathers” is the oral vestibular shield, (eg, Somni Snore Guard). Like the mandibular advancement device, it is made of thermoflexible plastic and is shaped to the wearer’s mouth. When in place it effectively blocks breathing through the mouth, so a snorer must have at least one clear nasal airway in order to use this device. No objective assessment of the efficacy of either chin-up strips or oral vestibular shields has been found.

**Herbal mouth sprays** Stop Snoring Spray contains a mixture of natural essential oils, intended to be used at bedtime to reduce snoring. A recent double-blind study reported a significant reduction in snoring reported by bed partners in a group of snoring volunteers, using either an essential oil spray or gargle formulation.<sup>6</sup> Snore Calm Herbal Spray contains extract of eyebright (*Eupharasia officinalis*). Its manufacturers claim that the astringent properties of the herb reduce snoring by tightening the tissues around the soft palate and uvula. Many of these products claim to have high success rates (eg, Snoreeze spray claims to be effective in nine out of 10 cases). Some of these products contain nut oils.

**Snore pillows** Pillows made from different materials and of various designs are available to help “back sleepers”, mainly by raising the head. QVHSSU reports that the theory underlying their use is good — it operates on the same principle that anaesthetists use in keeping the airways of anaesthetised patients open. However, in practice, the pillows are not really effective. Other means of reducing snoring in back sleepers include devices to stop snorers sleeping on their backs.

**Electronic anti-snoring devices** Worn on the wrist like a watch, according to the manufacturer this device, the Silent Night Snore Stopper, detects snoring sounds and sends out weak electrical impulses to the wrist, causing the wearer to change position and stop snoring without waking up. The QVHSSU reports that one weary patient who had bought the device complained that he got an electric shock every time his partner turned over in bed.

**Ear plugs** Some ear plugs are marketed specifically for snoring, and several brands are available. Presumably they are intended not for the snorer but for his or her bed partner. No investigations of evidence of efficacy could be found, but it is possible that this method is the most effective — at least from a long-suffering partner’s point of view.

For further comments on the evidence base for anti-snoring products, see Panel 2 (p312).

## Summary

- Snoring does not usually indicate an underlying health problem, but it can be the cause of serious domestic friction so steps should be taken to reduce it
- Such objective evidence as is available tends to indicate that commercial anti-snoring preparations and devices are of little value, and lifestyle measures are more likely to be effective in reducing snoring
- Obstructive sleep apnoea is a potentially serious condition for which medical help should be sought

### Surgical treatments for snoring

For socially disruptive snoring and obstructive sleep apnoea unresponsive to other treatments, some surgical procedures are available.

**Laser-assisted uvulopaptoplasty** Laser-assisted uvulopaptoplasty (“snoreplasty”) is a relatively new procedure. It involves the removal of excess tissue from the soft palate and uvula by vaporisation with a small hand-held laser. It is performed under local anaesthetic and takes about 30 minutes. It can be repeated if necessary at four- to six-week intervals, when more tissue is progressively removed until the problem is cured. Up to six treatments may be required but this method is usually successful.

**Uvulopalatopharyngoplasty** Uvulopalatopharyngoplasty involves the trimming and



Mike Wyndham Medical Picture Library

## Surgical treatments for snoring are also available

tightening of soft tissue in the throat by conventional surgical techniques. It is carried out under general anaesthetic and has a success rate of 30–50 per cent.

**Tonsillectomy and adenoidectomy** If snoring or apnoea is due to excessively large tonsils or adenoids, they can be removed.

**Mandibular surgery** Retrognathia can be corrected by an operation to extend the lower jaw bone.

### Action: practice points

Reading is only one way to undertake CPD and the Society will expect to see various approaches in a pharmacist's CPD portfolio.

1. Examine the anti-snoring aids stocked in your pharmacy and read any accompanying product literature. How convinced are you by any claims made in it?
2. Revise your knowledge on the management of upper respiratory tract infections.
3. Do some internet research on snoring in children. How prevalent is it and what is its significance in relation to children's health?

### Evaluate

For your work to be presented as CPD, you need to evaluate your reading and any other activities.

Answer the following questions:

- What have you learnt?
- How has it added value to your practice? (Have you applied this learning or had any feedback?)
- What will you do now and how will this be achieved?

## Panel 2: The evidence base for anti-snoring products

In addition to the QVHSSU reports, one further investigation of the efficacy of anti-snoring aids has been published.<sup>7</sup> This investigated the effectiveness of a lubricating mouth spray, nasal dilator strips and an ergonomically shaped pillow on a sample of 40 patients who complained of socially disruptive snoring. Polysomnographic studies were carried out on the patients before and during use of the devices, and their bed partners' views of the effectiveness of the devices was collected through daily questionnaires. No significant objective or subjective difference in snoring was found between nights when the devices were used and when they were not. The authors concluded that the devices tested did not reduce snoring.

As for many areas of health, some people believe that there is a cure for everything. I suppose there is nothing wrong with pharmacists stocking and selling anti-snoring aids. They can advise that the available evidence tends to show that these products do not work in the majority of cases. In this way, those who are not prepared to accept the evidence can find out for themselves whether these products work or not. Incidentally, the British Snoring and Sleep Apnoea Association recommends most of these products unreservedly.

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### Resources

- Visit [www.1stoppingnoising.co.uk](http://www.1stoppingnoising.co.uk) for more information on the work of the Queen Victoria Hospital Sleep Studies Unit.
- Information from the British Snoring and Sleep Apnoea Association is available at: [www.britishtsnoring.co.uk](http://www.britishtsnoring.co.uk)

### Other articles in this series

- Sleep and sleeping disorders (*PJ*, 12 February, pp187–90)
- Insomnia and its management (*PJ*, 26 February, pp243–6)