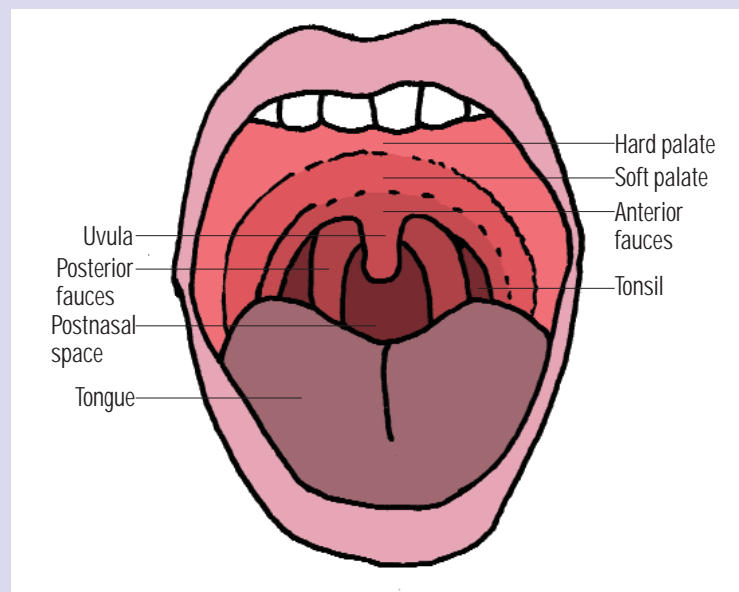


Giving advice on sore throats

With only one in 18 adults with a sore throat consulting his or her GP, for most people the pharmacy is likely to be the first port of call.

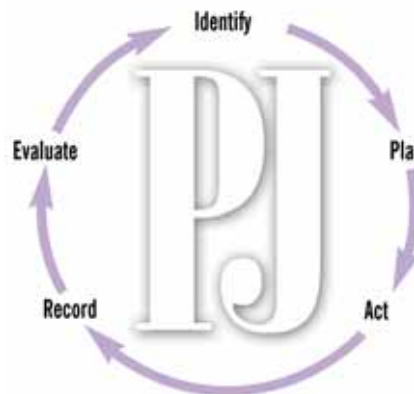
Sarah Marshall looks at some causes of sore throats and factors pharmacists should consider when consulted

Structure of the throat



The throat comprises a series of concentric arches: the hard palate, the soft palate, the anterior and posterior fauces (between these are the tonsils) and the uvula. The area stretching from the soft palate to the upper part of the epiglottis (the thin flap of cartilage that covers the entrance of the larynx [voice box] during swallowing) is called the oropharynx. The larynx connects the oropharynx to the trachea. Vocal cords are muscular ridges within the larynx and their vibration creates the voice.

In the neck and throat there are various groups of lymph nodes, such as the posterior nodes and anterior nodes.



Identify knowledge gaps

1. Which ingredient in products for sore throats has antibacterial and antifungal activity?
2. Why should a person with a sore throat not usually be prescribed a broad spectrum penicillin?
3. Why should patients complaining of a sore throat and taking carbimazole be referred to their GP immediately?

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). This article relates to "common disease states" (see appendix 4 of "Plan and record").

People use the term "sore throat" to describe pharyngitis, tonsillitis and laryngitis. Tonsillitis is inflammation due to infection of the tonsils, whereas pharyngitis is inflammation of the oropharynx only but, in practice, the distinction between the two can be unclear and they can occur simultaneously. "Laryngitis" is used when there is hoarseness with soreness lower down in the throat.

Sore throats are mostly minor and self-limiting and are often associated with a viral upper respiratory tract infection (at least 70 per cent of sore throats are the result of cold or influenza viruses¹). However, there are numerous other infective causes (see Panel 1), including glandular fever. A sore throat is often an early sign of chickenpox, mumps or measles. The most common bacterial pathogen is group A beta haemolytic streptococcus (GABHS), also known as *Streptococcus pyogenes*.

Non-infective causes include irritation by tobacco smoke, overuse of the voice (often seen in teachers or singers), laryngopharyngeal reflux, scalding (eg, after drinking hot liquids), some drugs (eg, steroid inhalers causing oral thrush in patients with asthma) and malignancy.

Adults experience two or three sore throats each year but incidence in children is higher. Children aged between five and 10 years and young adults aged between 15 and 25 years are the most frequently affected.²

Symptoms and diagnosis

In addition to a painful throat a person might complain of discomfort on swallowing, fever, headache and general malaise. Other possible accompanying symptoms include earache (pain or infection can spread along the Eustachian tube), loss of appetite and loss of voice or changes in voice. Glands in the neck may be tender and enlarged. Children often experience high fever, abdominal pain, nausea and vomiting.

On examination, the tonsils or oropharynx may be red and swollen and flecks of whitish pus or a coating may be visible on the tonsils. GPs use an otoscope but pharmacists could keep a small torch at hand to make looking at a sore throat easier if they wish.

A sore throat is often the first sign of a cold or influenza. If this is the case, it is likely to pass within 48 hours and be followed by other symptoms, such as aches and a runny nose.

Classic streptococcal tonsillitis is common in schoolchildren. It is acute in onset and the sore throat is accompanied by headache and abdominal pain. There is intense redness of the tonsils and pharynx, with yellow exudate and painful swollen glands. However less than one third of patients exhibit these signs. A red rash (see below) is a further indication of streptococcal infection.

It is difficult to distinguish between a viral and bacterial infection. Throat swabs are rarely taken by GPs from patients suffering from sore throats, because they fail to differentiate between infection and carriage (6 to 40 per cent of the population is likely to carry GABHS, without symptoms²). In addition, the delay in processing results means they are of little use in routine diagnosis. However swabs may be useful when treatment has failed or in high risk patients (eg, those who are immunodeficient or who have diabetes).

Blisters on the throat may indicate hand, foot and mouth disease, while white patches on the mucosa of the mouth and soft palate may indicate candida infection.

When to refer

In most patients, a sore throat will resolve within a week. Pharmacists should refer a patient to his or her GP if:

- He or she cannot swallow liquids
- The sore throat is recurrent or lasts more than seven days
- He or she experiences prolonged (over three weeks) or repeated bouts of hoarseness
- He or she develops a red rash
- Earache, which does not resolve within 48 hours, develops
- The throat is painful, has not improved within 48 hours and there are no symptoms of cold or influenza
- Glands in the neck are swollen with no other symptoms or fail to go down within three weeks of a sore throat clearing
- He or she has had rheumatic fever

Young children may need earlier referral.

Some drugs (eg, carbimazole, propylthiouracil, gold salts, tolbutamide, phenothiazines) can reduce the numbers of neutrophils in the blood (resulting in neutropenia or, if severe, agranulocytosis), leading to increased susceptibility to infection. Patients taking such drugs and presenting with a sore throat should be referred urgently because this may be the first sign of drug-induced bone marrow suppression.

Patients with a sore throat and breathing difficulties should be referred to hospital immediately. These symptoms, combined with others, such as fever and drooling, may suggest epiglottitis, a rare but potentially life-threatening condition. If suspected, examination of the throat should not be attempted because this can block the airway.

Patients with a persistent sore throat, with heavy night sweats and enlarged glands in the

Panel 1: Some causes of sore throats

Viral 200+ viruses, such as rhinovirus, influenza, parainfluenza, adenovirus, coronavirus, Epstein-Barr virus (glandular fever), cytomegalovirus, parvovirus B19 (slapped cheek syndrome), coxsackie A virus (hand, foot and mouth)

Bacterial Group A beta-haemolytic streptococcus (tonsillitis ["strep throat"], quinsy), *Haemophilus influenzae* b (epiglottitis)

Fungal/yeast *Candida* (oral thrush)

Panel 2: Ingredients in sore throat products

- Demulcents (eg, glycerin and honey)
- Antiseptics (eg, amylmetacresol, benzalkonium, cetylpyridinium, dequalinium, dichlorobenzylalcohol, hexylresorcinol, phenol)
- Antibacterials (eg, tyrothricin)
- Local anaesthetics (eg, benzocaine, lidocaine)
- Volatile oils (eg, menthol and eucalyptus)

neck should be referred because these can be signs of lymphoma.

Treatment

Once serious illness has been excluded, a sore throat can be tackled with over-the-counter products. Analgesics are the first choice. In clinical trials paracetamol and ibuprofen have been shown to be effective in relieving the pain of a sore throat³ and should be taken regularly to maximise pain relief. However, many more products for sore throats are available. Formulations include lozenges, pastilles, syrups, gargles and throat sprays. Ingredients fall into several categories, including demulcents, antibacterials, local anaesthetics and volatile oils (see Panel 2).

Gargles have a short contact time with affected tissues, making relief transient. In addition, they do not reach the larynx, making them inappropriate in laryngitis (see Panel 3). Gargles may wash infecting organisms out of the pharynx but studies have shown the level of contamination to be rapidly restored.⁵ Some people find a warm salty water gargle soothing. Patients should be advised not to swallow mouthwashes or gargles.

Aspirin gargles are a popular, but unproven, remedy for sore throats. One or two soluble aspirin tablets dissolved in a glass of water is gargled for three or four minutes, three or four times a day. The usual cautions and contraindications for aspirin apply.

Demulcents, such as glycerin, relieve irritation. Sucking lozenges or pastilles produces saliva, which soothes inflammation. It may also wash infecting organisms off the throat tissues. Demulcent products are safe for most people to take as often as necessary to relieve discomfort although the sugar content should be borne in mind. For people with diabetes, mouthwashes and gargles may be preferable due to their low sugar content. Sugar-free varieties of lozenges or pastilles are also available (eg, Bradosol, Strepsils sugar free).

Many products contain ingredients that have antiseptic, antibacterial or antifungal action. Tyrothricin is an antibacterial mixture of polypeptides and dequalinium (eg, Dequadin lozenges) has both antibacterial and antifungal activity. Given that most sore throats are caused by viruses, however, the value of such products may lie in their demulcent action.

Local anaesthetics numb the tongue and throat and may be useful for patients who find swallowing painful but sensitisation can occur with prolonged use.

Volatile oils (eg, menthol and eucalyptus oil), may have an analgesic effect as well as easing breathing through congested nasal passages.

Anti-inflammatory agents Clinical trials have shown flurbiprofen, available OTC in lozenges (eg, Strefen lozenges), to be superior to placebo⁶ but data comparing this with other treatments is lacking. Flurbiprofen lozenges are contraindicated in children under 12 years old and in those already taking non-steroidal anti-inflammatory drugs. Side effects include taste disturbance and

Sarah Marshall, PhD, MRPharmS, is a freelance pharmaceutical writer from Aberdeenshire

Panel 3: Laryngitis

Symptoms of laryngitis include hoarseness, loss of voice, sore throat, irritating cough, persistent clearing of throat and cold or influenza symptoms. Acute laryngitis is usually mild, self-limiting (up to three weeks' duration) and caused by a viral infection. It has a rapid onset and improves within two weeks, although the hoarseness may last longer. In young children or babies acute laryngitis can cause croup (acute laryngotracheitis), which, if severe enough to produce difficulty in breathing and stridor (noisy inspiration), should be referred.

In contrast, chronic laryngitis can last for weeks or even months. It is likely to be due to "vocal abuse", such as exposure to tobacco smoke, dehydration, acid reflux, excessive alcohol or overuse of the voice. Hoarseness may also result from vocal cord dysfunction caused by tumours, paralysis (eg, in neurological disease) and growths, such as polyps or nodules. Nodules are small keratinous swellings, which develop as a result of prolonged use or strain of the voice.

Given the short lived and viral nature of acute laryngitis in most cases antibiotics are not appropriate⁴ and treatment aims to relieve symptoms. Chronic laryngitis requires further investigation to determine the cause and, therefore, the appropriate treatment. For example, surgery may be needed to remove polyps or nodules. Vocal training /therapy can help to prevent recurrences of nodules. Treatments for laryngopharyngeal reflux include proton pump inhibitors and H₂ receptor antagonists.

Advice pharmacists can give to patients with laryngitis includes:

- Rest your voice, hoarseness should resolve within three weeks
- Avoid alcohol and smoking
- Use an air humidifier or menthol inhalation to relieve sensations of dryness in the airways
- Try to avoid excessive coughing or swallowing

Panel 4: Tonsillectomy

The tonsils are part of the lymphatic system and help keep the respiratory tract free of infection. Surgical removal of the tonsils is a common but controversial operation. Supporting evidence as to its value is weak, especially because recurrent tonsillitis naturally improves over time and this has to be balanced against complications, such as post-operative pain and bleeding. Clinical Knowledge Summaries suggests that tonsillectomy is indicated only if all of the following criteria are met:²

- Sore throats are due to tonsillitis
- The person has five or more episodes of sore throat per year
- Symptoms have been occurring for at least a year
- Episodes of sore throat are disabling and preventing normal functioning

mouth ulcers. To avoid the latter, patients can be advised to move the lozenge around the mouth. Other cautions, contraindications and side effects are similar to those for NSAIDs in general.

Another anti-inflammatory, benzydamine, is available in a mouthwash and spray form (Difflam). It also has analgesic activity and may work by inhibiting prostaglandin synthesis. It has been shown to be effective in reducing the symptoms of sore throat compared with placebo.⁷ Side effects include numbness and stinging of the mouth. Dilution of the mouth wash with an equal quantity of water can help. The duration of action of benzydamine is short, necessitating application every one and a half to three hours, for a maximum of seven days.

Antibiotics In 2006, a systematic review showed that viral sore throats resolve by day 3 in 40 per cent of people and within a week in 82 per cent of patients, even if they are bacterial.⁸ According to this much cited review,

the absolute benefit of antibiotics is modest, only shortening the duration of a sore throat by about 16 hours in the first week. However, although the review included some 12,000 subjects, few of the studies reviewed included children — the group that tends to be vulnerable to streptococcal tonsillitis.

Clinical Knowledge Summaries recommends that antibiotics are prescribed if:

- There is marked systemic upset, secondary to an acute sore throat
- There is spread of infection to around the tonsils (unilateral peritonsillitis)
- The patient has had rheumatic fever in the past (infections in these patients may present a cardiac risk)
- Other concurrent medical conditions increase the risk from acute infections

Antibiotics seemed to give a greater reduction in symptoms in those with throat swabs positive for streptococcus.⁸ They are also more likely to be of value when the infection appears clinically significant (eg, the presence of high fever, pus on the tonsils, enlarged painful glands in the neck or in those with a history of ear infections). The benefit of treatment must be weighed against the potential for adverse effects and increased bacterial resistance.

The first-line antibiotic for sore throats is phenoxymethylpenicillin. It has the advantages of efficacy, safety, a narrow spectrum (that includes GABHS) and low cost. Erythromycin is used for people who are allergic to penicillin, or in whom treatment has failed. It can also be used for children who find phenoxymethylpenicillin oral solution unpalatable.

Both these antibiotics are as effective as more expensive broader spectrum drugs. The duration of treatment with either antibiotic is usually seven or 10 days.² Penicillin and erythromycin may be given four times daily or double the dose may be given twice daily.² Because phenoxymethylpenicillin must be taken on an empty stomach the twice daily dosage may be more practical for many patients, especially young children.

For reasons that are not fully understood, sore throat recurs in some patients treated with antibiotics. In severe or recurrent cases larger doses or longer courses may be necessary. Furthermore, tonsillectomy may sometimes be indicated (see Panel 4).

Sore throat can also be a symptom of glandular fever (see Panel 5, p130).

Complications

Complications of sore throat include otitis media (particularly in children under five years), sinusitis, quinsy, scarlet fever, rheumatic fever and acute glomerulonephritis.

Quinsy is an abscess forming around the tonsil, following tonsillitis. Symptoms are acute sore throat (often worse on one side), fever, drooling, and swelling in the neck or face. It can be severe enough to restrict breathing but is rare. Quinsy can be treated



Viewing medicine

On examination, the tonsils or oropharynx may be red and swollen with flecks of whitish pus

Panel 5 : Glandular fever

Glandular fever, also known as infectious mononucleosis, is the result of infection with Epstein Barr virus. It occurs especially in teenagers and young adults.

Symptoms and signs may include an extremely sore, swollen throat (tonsils may be massively enlarged), pain on swallowing, creamy exudates on tonsils, enlarged and tender glands in neck and armpits, fever, nausea and anorexia, extreme tiredness, muscle aches and headache, and an enlarged spleen (splenomegaly). Blood tests, such as a full blood count and a monospot test, are required to diagnose glandular fever definitively.

Treatment is aimed at relieving symptoms, since there is no antiviral therapy available. In severe cases (if pain or swelling threatens the airway, or if dysphagia is severe) a short course of a corticosteroid, such as prednisolone, may be prescribed although there is little evidence to support this.⁹

About 70 per cent patients, if mistakenly given ampicillin or amoxicillin (eg, for a sore throat), develop a measles-like rash. Various mechanisms for this reaction have been suggested. The British National Formulary advises, therefore, that broad spectrum penicillins should not be prescribed for "blind" treatment of a sore throat.

Glandular fever is usually mild and self-limiting but, in some instances, swelling of tonsils can be severe enough to merit admission to hospital to prevent airway obstruction. Tiredness, lethargy and depression may persist for some months afterwards, with some patients going on to develop chronic fatigue syndrome (also known as myalgic encephalomyelitis; ME). There is a suggested link between glandular fever and multiple sclerosis.

Advice pharmacists can offer (in addition to general advice for sore throats) include avoiding rough or contact sports for eight weeks because of the risk of spleen rupture and avoiding kissing and close body contact while ill.



Signs of glandular fever may include enlarged and tender glands

in the region of £60m per annum (before any treatment or investigation).¹⁰

Advice that pharmacists can give includes:

- Most sore throats are viral and self-limiting
- Symptoms can be relieved by analgesics/anti-inflammatory agents and OTC products if relevant
- Drink plenty of warm fluids
- Rest if you have a temperature
- Avoid cigarette smoke
- Take the full course of any prescribed antibiotics even if you feel better after a couple of days, discard any unused antibiotic at end of course
- Do not share toothbrushes or eating or drinking utensils with others

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with phenoxymethylpenicillin but, if severe, requires hospital admission, intravenous antibiotics and fluids, and drainage of the abscess under local anaesthetic.

Some patients with tonsillitis due to GABHS are sensitive to the erythrogenic toxins produced by the bacteria and come out in a red rash, which typically starts at the neck and spreads to the trunk. This is known as scarlet fever. Infection is most common in children between the ages of four and eight years. Symptoms of streptococcal tonsillitis are accompanied by a white coated tongue through which red papillae protrude (a "white strawberry tongue"). Loss of the coating produces a "raspberry tongue" (red with prominent papillae). The face becomes flushed although the area around the mouth is pale.

Treatment of scarlet fever is as for streptococcal tonsillitis. Infection with GABHS can lead to acute glomerulonephritis or rheumatic fever, although these complications are rare in the UK. Some of the surface proteins on GABHS share certain amino acid sequences with some human tissue and it is thought that this leads to patients developing an immune response to their own tissues.

General advice

A GP with a list of 2,000 patients will see about 120 cases of sore throat annually² and, in 1999, it was estimated that the cost to the NHS of GP consultations for sore throat was

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. Review your OTC preparations for sore throat and work out with colleagues which you would recommend and why.
2. Next time you dispense a prescription for carbimazole check that the patient knows what to do if he or she develops a sore throat.
3. With your staff, make a list of questions you would ask a customer requiring an OTC treatment for a sore throat.

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?