



Management of sore throat and indications for tonsillectomy

A national clinical guideline



April 2010

KEY TO EVIDENCE STATEMENTS AND GRADES OF RECOMMENDATIONS

LEVELS OF EVIDENCE

1 ⁺⁺	High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
1 ⁺	Well conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias
1 ⁻	Meta-analyses, systematic reviews, or RCTs with a high risk of bias
2 ⁺⁺	High quality systematic reviews of case control or cohort studies High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal
2 ⁺	Well conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal
2 ⁻	Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal
3	Non-analytic studies, eg case reports, case series
4	Expert opinion

GRADES OF RECOMMENDATION

Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

A	At least one meta-analysis, systematic review, or RCT rated as 1 ⁺⁺ , and directly applicable to the target population; or A body of evidence consisting principally of studies rated as 1 ⁺ , directly applicable to the target population, and demonstrating overall consistency of results
B	A body of evidence including studies rated as 2 ⁺⁺ , directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1 ⁺⁺ or 1 ⁺
C	A body of evidence including studies rated as 2 ⁺ , directly applicable to the target population and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 2 ⁺⁺
D	Evidence level 3 or 4; or Extrapolated evidence from studies rated as 2 ⁺

GOOD PRACTICE POINTS

- | | |
|-------------------------------------|---|
| <input checked="" type="checkbox"/> | Recommended best practice based on the clinical experience of the guideline development group |
|-------------------------------------|---|

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Scottish Intercollegiate Guidelines Network

**Management of sore throat and
indications for tonsillectomy**

A national clinical guideline



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purpose of implementation in NHSScotland

**Scottish Intercollegiate Guidelines Network
Elliott House, 8 -10 Hillside Crescent
Edinburgh EH7 5EA**

www.sign.ac.uk

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1 Introduction

1.1 THE NEED FOR A GUIDELINE

The management of sore throat is a significant burden on health service resources. Most patients who seek advice see their general practitioner (GP) and in most cases the condition is relatively minor and self limiting. However, a significant number of patients experience unacceptable morbidity, inconvenience, and loss of education or earnings due to recurrent sore throat. The use of antibiotics in patients with recurrent sore throat has been controversial. The indications for tonsillectomy have long been a matter of debate. Tonsillectomy has a small but significant complication rate and an outcome that is not clearly defined.

The guideline SIGN 34, Management of sore throat and indications for tonsillectomy, was published in 1999. Awareness of the guideline among physicians has led to more efficient and effective use of healthcare resources.¹ In 2005 a consultation document identified the need for an update. This guideline updates SIGN 34 to reflect the most recent evidence.

1.2 REMIT OF THE GUIDELINE

1.2.1 OVERALL OBJECTIVES

This guideline covers diagnosis, pain management, antibiotic use, indications for surgical management and postoperative care for acute and recurrent sore throat in children and adults. It does not address tonsillectomy for suspected malignancy nor as a treatment for sleep apnoea or peritonsillar abscess. Specific surgical techniques, anaesthetic techniques and organisation of care, eg day case surgery, are not covered. The aim of this guideline is to suggest a rational approach to the management of acute sore throat in general practice and to provide criteria for referral for tonsillectomy in recurrent tonsillitis. The guideline also provides examples of patient information leaflets which may assist in management and facilitate decision making about the need for surgery (see *Annexes 2 and 3*) and suggests areas for further research (see *section 10.2*).

1.2.2 TARGET USERS OF THE GUIDELINE

This guideline will be of particular interest to general practitioners, nurses, paediatricians, pharmacists, otolaryngologists, anaesthetists, public health specialists, patients with recurrent sore throat and their carers.

1.3 DEFINITIONS

Acute pharyngitis, tonsillitis, or acute exudative tonsillitis may all cause sore throat. For the purpose of non-surgical management, these are considered together under the term 'sore throat'.

No accepted definition of 'childhood' exists in Scots law or NHSScotland. Upper cut-off ages used in studies of children included in this guideline vary from 12 to 16. For the purposes of this guideline, recommendations concerning tonsillectomy in childhood apply to ages 4-16. For prescribing in children, advice in the BNF for Children should be followed.²

1.4 STATEMENT OF INTENT

This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is advised, however, that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.

1.4.1 PRESCRIBING OF MEDICINES OUTWITH THEIR MARKETING AUTHORISATION

Recommendations within this guideline are based on the best clinical evidence. Some recommendations may be for medicines prescribed outwith the marketing authorisation (product licence). This is known as "off label" use. It is not unusual for medicines to be prescribed outwith their product licence and this can be necessary for a variety of reasons.

Generally the unlicensed use of medicines becomes necessary if the clinical need cannot be met by licensed medicines; such use should be supported by appropriate evidence and experience.

To recommend a medicine outwith its UK Marketing Authorisation it may be prescribed for:

- An indication not specified within the marketing authorisation
- Administration via a different route
- Administration of a different dose.

'Prescribing medicines outside the recommendations of their marketing authorisation alters (and probably increases) the prescribers' professional responsibility and potential liability. The prescriber should be able to justify and feel competent in using such medicines.'³

Any practitioner following a recommendation and prescribing a licensed medicine outwith the product licence needs to be aware that they are responsible for this, and in the event of adverse outcomes, may be required to justify the decisions that they have taken.

Prior to prescribing, the licensing status of a medication should be checked in the current version of the British National Formulary (BNF).

1.4.2 ADDITIONAL ADVICE TO NHSSCOTLAND FROM NHS QUALITY IMPROVEMENT SCOTLAND AND THE SCOTTISH MEDICINES CONSORTIUM

NHS QIS processes multiple technology appraisals (MTAs) for NHSScotland that have been produced by the National Institute for Health and Clinical Excellence (NICE) in England and Wales.

The Scottish Medicines Consortium (SMC) provides advice to NHS Boards and their Area Drug and Therapeutics Committees about the status of all newly licensed medicines and any major new indications for established products.

No relevant SMC advice or NICE MTAs were identified.

2 Key recommendations

The following recommendations were highlighted by the guideline development group as the key clinical recommendations that should be prioritised for implementation. The grade of recommendation relates to the strength of the supporting evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

2.1 DIAGNOSIS AND PRESENTATION

- C** The Centor clinical prediction score should be used to assist the decision on whether to prescribe an antibiotic, but cannot be relied upon for a precise diagnosis.
- D** Throat swabs should not be carried out routinely in primary care management of sore throat.

2.2 GENERAL MANAGEMENT

- A** Ibuprofen 400 mg three times daily is recommended for relief of fever, headache and throat pain in adults with sore throat.
- A** In adults with sore throat who are intolerant to ibuprofen, paracetamol 1 g four times daily when required is recommended for symptom relief.
- A** Antibiotics should not be used to secure symptomatic relief in sore throat.

2.3 SURGICAL MANAGEMENT

- A** Watchful waiting is more appropriate than tonsillectomy for children with mild sore throats.
- A** Tonsillectomy is recommended for recurrent severe sore throat in adults.
- D** The following are recommended as indications for consideration of tonsillectomy for recurrent acute sore throat in both children and adults:
 - sore throats are due to acute tonsillitis
 - the episodes of sore throat are disabling and prevent normal functioning
 - seven or more well documented, clinically significant, adequately treated sore throats in the preceding year or
 - five or more such episodes in each of the preceding two years or
 - three or more such episodes in each of the preceding three years.

2.4 POSTOPERATIVE CARE

- At the time of discharge, patients/carers should be provided with written information advising them whom to contact and at what hospital unit or department to present if they have postoperative problems or complications.
- D** Patients should be made aware of the potential for pain to increase for up to 6 days following tonsillectomy.
- Patients/carers should be given written and oral instruction prior to discharge from hospital on the expected pain profile and the safety profile of the analgesic(s) issued with particular reference to appropriate dose and duration of use. They should be issued with enough analgesic to last for a week.

- A** Routine use of anti-emetic drugs to prevent postoperative nausea and vomiting (PONV) in tonsillectomy is recommended.
- A** A single intraoperative dose of dexamethasone (*dose range 0.15 to 1.0 mg/kg; maximum dose range 8 to 25 mg*) is recommended to prevent postoperative vomiting in children undergoing tonsillectomy or adenotonsillectomy.
- B** A single dose of 10 mg dexamethasone at induction of anaesthesia may be considered to prevent PONV in adults undergoing tonsillectomy or adenotonsillectomy.

3 Presentation

3.1 INCIDENCE OF SORE THROAT IN GENERAL PRACTICE

Most patients with sore throat do not attend their general practitioner (GP) to seek help with their condition.⁴ A UK study of 516 women aged 20-44 years found that only one in 18 episodes of sore throat led to a GP consultation.⁵ The age distribution of patients and the management of sore throat which is reported to a GP vary widely across Europe.⁶

The unit cost of a GP surgery consultation in the UK in 2008-09 was £35.⁷ In Scotland in 2005-2006, consultations for any form of sore throat or tonsillitis numbered 313,150, a rate of 58.3 per 1,000 population.⁸ The cost to NHSScotland of GP consultations for sore throat therefore exceeds £10.9 million per annum, before any treatment or investigation. In 2006-2007 in Scotland, 3,605 tonsillectomies were performed for bacterial tonsillitis. NHSScotland spends approximately £3 million on tonsillectomy operations per year.⁸

3.2 REASONS FOR PRESENTATION IN GENERAL PRACTICE

In common with many familiar conditions encountered in general practice, presentation with sore throat may be the introductory topic to a wider agenda for the patient. The complex interplay between the patient, the doctor, psychosocial factors and the acute illness is relevant to the reason for the consultation and may have a fundamental influence upon decisions made.⁹⁻¹¹ Evidence suggests that antibiotic prescribing for sore throat in general practice enhances patient belief in antibiotics and increases intention to consult for future episodes.¹²

2+

C Practitioners should be aware of underlying psychosocial influences in patients presenting with sore throat.

A patient information leaflet may be of value in the management of acute sore throat and may assist in managing future episodes at home without general practitioner involvement.

3.3 EMERGENCY HOSPITAL ADMISSION

Hospital admission will be required for patients with sore throat who have stridor, progressive difficulty with swallowing, increasing pain, or severe systemic symptoms. When such patients present acutely to an ENT service they may have peritonsillar cellulitis or abscess (quinsy) and may require parenteral antibiotics. The complication of parapharyngeal abscess is not common. In young adults, glandular fever (infectious mononucleosis) is a common reason for hospital admission as these patients are often unable to swallow. Patients with severe uncomplicated tonsillitis who develop dysphagia and dehydration may require admission.

Sore throat associated with stridor or respiratory difficulty is an absolute indication for admission to hospital.

4 Diagnosis of sore throat

There is no evidence that bacterial sore throats are more severe than viral ones or that the duration of the illness is significantly different in either case. The precise diagnosis may be of academic interest, or possibly clinically relevant in more severe cases. Between 50 to 80% of infective sore throat is of viral cause, including influenza and primary herpes simplex. An additional 1-10% of cases are caused by Epstein-Barr virus (glandular fever). The most common bacterial organism identified is group A beta-haemolytic streptococcus (GABHS), which causes 5-36% of infections.¹³ Other organisms include *Chlamydia pneumonia*, *Mycoplasma pneumonia*, *Haemophilus influenza*, *Candida*, *Neisseria meningitides* and *Neisseria gonorrhoeae*.

Diagnosis can be attempted on clinical findings or by laboratory or near patient testing. Commonly used tests include culture of throat swabs (section 4.2) and rapid antigen testing (RAT) (section 4.3).

4.1 CLINICAL DIAGNOSIS

Precise clinical diagnosis is difficult in practice. Distinguishing between a viral and bacterial aetiology is one of the main considerations. The most common bacterial pathogen is GABHS, for which antibiotic treatment may be considered. Several studies have attempted to differentiate between GABHS and viral causes on the basis of symptoms and clinical signs. No single symptom or sign is useful when used alone, but combinations of factors have been used in several clinical prediction rules. A systematic review of these studies has shown that the Centor scoring system may help categorise the individual patient's risk level for GABHS infection.¹³

The Centor score gives one point each for:

- tonsillar exudate
- tender anterior cervical lymph nodes
- history of fever
- absence of cough.

The likelihood of GABHS infection increases with increasing score, and is between 25-86% with a score of 4 and 2-23% with a score of 1, depending upon age, local prevalence and seasonal variation. Streptococcal infection is most likely in the 5–15 year old age group and gets progressively less likely in younger or older patients.¹³ The score is not validated for use in children under three years.

The use of a clinical prediction rule such as the Centor score gives a clinician a rational basis on which to estimate the probability that a sore throat is due to GABHS, but cannot be relied upon for a precise diagnosis. It may assist the decision on whether to prescribe an antibiotic.

C The Centor clinical prediction score should be used to assist the decision on whether to prescribe an antibiotic, but cannot be relied upon for a precise diagnosis.

In addition to clinical examination, assessment of a patient with sore throat should take account of other medical conditions and medication which may suggest an increased susceptibility to infection and lower the threshold for treatment.

Occasionally, sore throat may be a presenting symptom of acute epiglottitis or other serious upper airway disease.

- If breathing difficulty is present, urgent referral to hospital is mandatory and attempts to examine the throat should be avoided.

2+

4.2 THROAT CULTURE

A positive throat culture for GABHS makes the diagnosis of streptococcal sore throat likely but a negative culture does not rule out the diagnosis. There are cases where streptococcus is isolated from sore throats but there is no serological evidence of infection.¹⁴ The asymptomatic carrier rate for GABHS is up to 40%.^{14,15} The flora of bacteria recovered from the surface of the tonsil correlates poorly with that of those deep in the tonsillar crypts which are most likely to be causing the infection.^{16,17} Symptoms also correlate poorly with results of throat swab culture.¹⁸

3

Throat swabs are neither sensitive nor specific for serologically confirmed infection, considerably increase costs, may medicalise illness, and alter few management decisions.¹⁹

D Throat swabs should not be carried out routinely in primary care management of sore throat.

Throat swabs may be used to establish aetiology of recurrent severe episodes in adults when considering referral for tonsillectomy (see section 7.2.2).

4.3 RAPID ANTIGEN TESTING

Rapid antigen testing (RAT) is commonly used in North America to identify GABHS. Samples are taken from a throat swab and results are available within 10 minutes. Tests available in 2003 showed sensitivities between 59 and 95% and specificities over 90%.²⁰ The polymerase chain reaction (PCR) based tests now available are equivalent or superior to culture.²¹

Neither RAT nor throat swab culture can differentiate between the streptococcal carrier state and invasive infection.²¹

3

A study in Canada showed that RAT use reduced antibiotic prescribing. The rate of antibiotic prescribing for sore throat in the control group was 58.2%. A Swiss study showed lower antibiotic use after RAT when compared to giving antibiotics for all patients with Centor score 3 or 4. The findings cannot be generalised to Scotland because the rate of antibiotic prescribing for sore throat in Scotland is unknown.^{22,23} Further studies are required to evaluate the cost effectiveness and clinical benefit of RAT in Scotland.

Insufficient evidence was identified to support a recommendation.

5 General management of sore throat

Diagnosis of a sore throat does not mean that an antibiotic has to be administered (see section 6). Adequate analgesia will usually be all that is required.

5.1 PAIN RELIEF IN ADULTS

In adults, diclofenac and ibuprofen are superior to paracetamol and aspirin in reducing throat pain as early as one hour post dose.²⁴⁻²⁶

1++

Ibuprofen is available over the counter and is only slightly more expensive than paracetamol.

A large blinded randomised controlled trial (RCT) involving 8,633 European adults showed that ibuprofen is as well tolerated as paracetamol and produces fewer serious gastrointestinal adverse effects, irrespective of patient age, in short courses for acute pain.²⁷

1++

Ibuprofen should not be routinely given to adults with or at risk of dehydration due to concerns regarding renal toxicity although this serious adverse effect is rare.

No head to head trials that compared ibuprofen and diclofenac were identified.

A **Ibuprofen 400 mg three times daily is recommended for relief of fever, headache and throat pain in adults with sore throat.**

A systematic review has shown that ibuprofen does not exacerbate asthma morbidity in a paediatric population.²⁸ Caution is advised using ibuprofen in adults with asthma as similar evidence in adults could not be found.

1+

One RCT showed that aspirin and paracetamol are both equally effective, and superior to placebo, at reducing fever, headache, achiness and throat pain for up to six hours.²⁹ The recognised complications of aspirin therapy make this agent less suitable for general use.

1++

A **In adults with sore throat who are intolerant to ibuprofen, paracetamol 1 g four times daily when required is recommended for symptom relief.**

Ibuprofen and paracetamol are often used together. Evidence concerning the safety and efficacy of this combination in adults is lacking, but is available in children (see section 5.2).

5.2 PAIN RELIEF IN CHILDREN

No RCTs were identified on the specific use of paracetamol, ibuprofen, or diclofenac alone or in comparison with each other in the treatment of acute sore throat in children. The recognised complications of aspirin therapy, including Reye's syndrome in children, make this agent less suitable for general use, and its use as an analgesic is contraindicated in patients under 16 years.

In children with sore throat, an adequate dose of paracetamol should be used as first line treatment for pain relief.

A systematic review and meta-analysis of ibuprofen and paracetamol use in febrile children and occurrence of asthma-related symptoms showed that there is a low risk of asthma-related morbidity associated with ibuprofen use in children.²⁸

1+

A **Ibuprofen can be used as an alternative to paracetamol in children.**

Recent case reports have highlighted concern about renal toxicity in dehydrated children given ibuprofen.^{30, 31}

3

D **Ibuprofen should not be given routinely to children with or at risk of dehydration.**

Ibuprofen and paracetamol are commonly used in combination or on an alternating schedule for children with febrile symptoms. A review of five randomised studies of combined or alternating ibuprofen and paracetamol for febrile children demonstrated that the studies have produced conflicting results.³² The primary outcome of these studies was temperature or time with fever. None of the studies specifically considered pain relief for sore throat. There is insufficient evidence to choose between ibuprofen, paracetamol, or their combination for pain relief in children. NICE guideline CG47, Feverish illness in children, notes that the potential drug interactions of this combination are unknown and that polypharmacy increases the risk of drug administration errors.³³

Diclofenac should not be used routinely for the relief of sore throat in children as there is insufficient evidence to establish safety.

5.3 ADJUNCTIVE THERAPY

No good quality evidence on the effectiveness of non-prescription throat sprays, lozenges and gargles was identified. No studies provided evidence of lasting benefit. No trials compared these products with conventional analgesics. There is insufficient evidence to support a recommendation.

5.3.1 CORTICOSTEROIDS

Three trials of varying quality on the effectiveness of a single dose of oral dexamethasone for pharyngitis in children produced conflicting results.³⁴⁻³⁶ Larger, well designed trials are required. The evidence is insufficient to support a recommendation. | 1++
| 1+
| 1-

One RCT looking at effectiveness of prednisone in pharyngitis was carried out on a relatively small number of patients (n = 79) and the follow up was short.³⁷ | 1+

In patients with acute glandular fever (infectious mononucleosis) requiring hospitalisation, corticosteroids may have a role when pain and swelling threaten the airway or where there is very severe dysphagia.

5.3.2 ECHINACEA

A double blind placebo controlled RCT of Echinacea purpurea therapy for throat pain in common cold (n = 128) found that the treatment did not reduce symptom scores or duration of symptoms.³⁸ | 1+

B Echinacea purpurea is not recommended for treatment of sore throat.

6 Antibiotics

6.1 ANTIBIOTICS IN ACUTE SORE THROAT

In the UK, the significance of the presence of bacterial pathogens in cases of sore throat remains in doubt (see *section 4*).³⁹ It is therefore illogical to treat all sore throats with antibiotics. There is a favourable outcome in the majority of cases even when antibiotics are withheld.

An open study of prescribing strategy in over 700 patients randomised to antibiotic versus no prescription versus delayed prescription for three days showed no difference in duration of illness, proportion of patients better by day 3, days missed from work or school, or proportion of patients satisfied with treatment.⁴⁰ The exclusion criteria in this trial were: other explanations of sore throat, very ill, suspected or previous rheumatic fever, multiple attacks of tonsillitis, quinsy, or pregnancy.

1+

Even if the sore throat persists, a throat swab to identify GABHS may not be helpful, as the poor specificity and sensitivity of throat swabs limit their usefulness (see *section 4.2*). Nevertheless, randomised controlled trials of antibiotic therapy in patients with acute sore throat in whom GABHS has or has not been isolated (whether or not causative) have been reported. There is no evidence of clear clinical benefit from the use of any particular antibiotic.

6.1.1 USE OF ANTIBIOTICS IN SORE THROAT IN WHICH GABHS HAS BEEN DETECTED

Most trials have compared penicillin with a variety of other antibiotics, notably cephalosporins. Although optimum elimination of GABHS is secured with intramuscular long-acting penicillin,⁴¹ oral penicillin V given 6-hourly for 10 days is widely regarded as the gold standard treatment in such trials, with the advantages of cheapness and tolerability.^{42,43} Other more expensive antibiotics, mainly cephalosporins, have been shown to be statistically significantly more successful in eradicating the organism, although the clinical advantage is much less clear.^{44, 45} Some cephalosporins offer a more convenient dosage regimen⁴⁶ but twice and three times daily dosage for oral penicillin V have also been shown to be effective in eliminating GABHS.^{42, 47, 48} A ten day course of penicillin appears to be more effective than five days.⁴² There is no convincing evidence of advantage for any individual cephalosporin.

6.1.2 USE OF ANTIBIOTICS TO RELIEVE SYMPTOMS IN SORE THROAT

The limitations of performing throat swabs and of isolating, or failing to isolate, GABHS must be re-emphasised (see *section 4.2*). There is evidence from a small American study (n = 26) that erythromycin may provide symptomatic relief from nausea but not pain in non-streptococcal sore throat.⁴⁹ In an RCT (n = 103) conducted in the UK comparing penicillin, cefixime and placebo, mean symptom scores for all responders on days 2 through 7 were lowest for cefixime.⁵⁰ However, there is no convincing evidence of benefit from antibiotic therapy as primary treatment for sore throat.

The superiority of antibiotics over simple analgesics is marginal in reducing duration or severity of symptoms.^{40, 51} Even in proven GABHS infection, the symptomatic improvement following penicillin, although superior to that following placebo in some studies,^{52, 53} has been unimpressive in others, especially when compared to simple analgesics.^{54, 55}

1+

A Antibiotics should not be used to secure symptomatic relief in sore throat.

In view of increases in healthcare-acquired infections and antibiotic resistance in the community, unnecessary prescribing of antibiotics for minor self limiting illness should be avoided.

In severe cases, where the practitioner is concerned about the clinical condition of the patient, antibiotics should not be withheld. (Penicillin V 500 mg four times daily for 10 days is the dosage used in the majority of studies. A macrolide can be considered as an alternative first line treatment, in line with local guidance.)

- ☑ In certain unusual circumstances, such as epidemics, more widespread prescription of antibiotics may be recommended and the relevant public health guidance should be followed.
- ☑ Ampicillin-based antibiotics, including co-amoxiclav, should not be used for sore throat because these antibiotics may cause a rash when used in the presence of glandular fever.

6.2 ANTIBIOTICS IN RECURRENT SORE THROAT

When infective sore throat recurs in patients who have received antibiotic treatment, the reasons may include inappropriate antibiotic therapy, inadequate dose or duration of previous therapy, patient non-compliance/non-concordance, re-infection, or local breakdown of penicillin by beta-lactamase-producing commensals.^{56,57} Benzathine penicillin,⁵⁸ cefuroxime⁵⁹ and clindamycin^{60,61} have been shown to be superior to penicillin V in the management of children with this problem, and may reduce the frequency of episodes.

1+

The possible hazards of clindamycin, including antibiotic-associated colitis, must be weighed against its efficacy in the treatment of sore throat in patients in whom GABHS has been isolated. It may be considered as an alternative to surgery in those in whom surgery is contraindicated or in those who do not wish to have the operation.

Three RCTs examined whether antibiotics for sore throat reduce the number of subsequent sore throats or whether these can, if used prophylactically, reduce the incidence of recurrent sore throat.⁶²⁻⁶⁴ One of the three studies showed no effect, the other two a modest but statistically significant effect, one for prophylactic effect and the other for the beneficial effect of courses of antibiotics. The methodological quality of all three studies was poor so the conclusions are not robust.

1+

There is evidence of modest benefit from prescription of certain antibiotics, notably in the cephalosporin group in terms of reduction of frequency of sore throat. This is both when used therapeutically and prophylactically.^{62,64} A similar effect from macrolide antibiotics (azithromycin) is not demonstrated.⁶³

1-

The general use of antibiotics involves the risk of the development of resistant bacteria, the risk of adverse effects including allergic reactions, promotion of *Candida* infections, and increased prescribing costs.

- ☑ Antibiotic prophylaxis for recurrent sore throat is not recommended.

6.3 USE OF ANTIBIOTICS TO PREVENT RHEUMATIC FEVER AND GLOMERULONEPHRITIS

The primary clinical rationale for treating streptococcal pharyngitis with antibiotics is the prevention of rheumatic fever and other sequelae. Outbreaks of rheumatic fever are still being reported in both children and adults in the United States.⁴⁴ A small reduction in bacteriological failure rate has to be weighed against the considerable increase in cost when antibiotics other than penicillin are used.⁴³ The incidence of rheumatic fever in the UK is extremely low and there is no support in the literature for the routine treatment of sore throat with penicillin to prevent the development of rheumatic fever.⁶⁵ Similar considerations apply to the prevention of glomerulonephritis.⁶⁶

2+

- C** Sore throat should not be treated with antibiotics specifically to prevent the development of rheumatic fever and acute glomerulonephritis.

6.4 USE OF ANTIBIOTICS TO PREVENT SUPPURATIVE COMPLICATIONS

There is no evidence that the routine administration of antibiotics to individuals with sore throats will reduce the occurrence of suppurative complications such as quinsy.

- The prevention of suppurative complications is not a specific indication for antibiotic therapy in sore throat.

6.5 USE OF ANTIBIOTICS TO PREVENT CROSS INFECTION IN SORE THROAT

No studies on this subject in the community setting in the UK have been identified. The evidence in favour of the use of antibiotics to prevent cross infection in sore throat comes mainly from army barracks and other closed institutions. There is no evidence that trying to eradicate GABHS with routine antibiotic therapy for sore throat will produce any measurable health gain in the general public, and some danger in encouraging the emergence of antibiotic resistant strains of other organisms, although GABHS remains sensitive to penicillin despite its widespread use.⁴⁴
⁶⁷ An American study has recommended that when GABHS has been identified in children, a full 24 hours of antibiotic treatment should be given before return to school or day care.⁶⁸

2+

- C** **Antibiotics may prevent cross infection with GABHS in closed institutions (such as barracks, boarding schools) but should not be used routinely to prevent cross infection in the general community.**

7 Surgery in recurrent sore throat

7.1 TONSILLECTOMY RATES FOR ALL SURGICAL INDICATIONS

Tonsillectomy is a common procedure in Scotland. Between 2002 and 2005 a prospective audit concerning the safety of all adenotonsillar surgery in Scotland with the use of disposable instruments was undertaken. In this three-year period the total number of tonsillectomies and adenotonsillectomies undertaken in Scotland for all indications was 14,530. A total of 619 patients were readmitted to an ENT unit within 28 days of adenotonsillar surgery, a readmission rate of 4.3%. Of the readmissions, 72.6% were due to haemorrhage and 12.7% were due to pain.⁶⁹ In the year 2006-2007, the number of tonsillectomies performed in Scotland specifically for bacterial tonsillitis was 3,605.⁸

Rates of patient and parental satisfaction with the outcome following tonsillectomy in excess of 90% have been reported.⁷⁰⁻⁷²

7.2 EVIDENCE FOR SURGERY IN RECURRENT TONSILLITIS

The literature on surgery for recurrent tonsillitis is limited. Most published studies refer to a paediatric population. The widely accepted criteria for surgery are seven episodes of tonsillitis in the preceding year, five episodes in each of the preceding two years, or three episodes in each of the preceding three years, but these criteria have been arrived at arbitrarily.⁷³ They take no account of whether the condition is worsening or improving and make no distinction between children and adults, in whom the disease may behave differently. The small amount of information about adult sore throat and the effect of tonsillectomy is not scientifically robust but suggests that surgery is beneficial.⁷⁴

7.2.1 CHILDREN

No study demonstrated clear clinical benefit of tonsillectomy in children. A Cochrane review showed modest benefit of tonsillectomy or adenotonsillectomy in the treatment of recurrent acute tonsillitis.⁷⁵ In this review, in those children with severe recurring tonsillitis the benefit was a reduction in the number of sore throats by three episodes in the first postoperative year, one of those episodes being moderate to severe. The reduction in sore throats in the severe group is accompanied by one episode of sore throat as a direct consequence of the surgery itself. In the case of less severely affected children, the benefit of tonsillectomy or adenotonsillectomy is more modest, with a reduction by one episode of sore throat in the first postoperative year, reducing the number of sore throat days from 22 to 17 on average.

1++

No recent studies evaluated tonsillectomy in children with severe sore throats, the group that is assumed to be the most likely to benefit from surgical intervention.

An RCT conducted in the Netherlands of 300 children aged 2 to 8 years with mild to moderate sore throat found that adenotonsillectomy was not cost effective in mild to moderate sore throat and did not result in significant clinical benefit.⁷⁶

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In 328 children with moderate sore throat, an RCT of tonsillectomy or adenotonsillectomy versus watchful waiting found a statistically significant reduction in the incidence of mild sore throats in the surgical group, but the clinical significance of this reduction has to be balanced against the risk of complication of the procedure.⁷⁷

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In a pragmatic randomised controlled trial with a parallel non-randomised preference study of tonsillectomy and adenotonsillectomy in 729 children (268 in the randomised trial group and 461 in the cohort group), the estimated effect of surgery over two years of follow up was a reduction of 3.5 episodes of sore throat (95% CI 1.8 to 5.2) compared to medical management. This difference was not statistically significant. Children and parents both exhibited a strong preference for surgical management, but the health of all the children with recurrent sore throat was noted to improve with time. The study did not provide clear-cut evidence of clinical effectiveness or cost effectiveness.⁷⁸

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Four randomised controlled trials of tonsillectomy compared with non-surgical management in children conducted prior to 1985 have also been reported.^{73, 79-81} Three were designed before 1971 and would not satisfy current criteria for a well designed, controlled and analysed study. In the most quoted reference, randomisation was not balanced in frequency of episodes or socioeconomic group.⁷³ In this study, the number of episodes of sore throat post-tonsillectomy was significantly fewer than in the control group, although when the number of days of illness with sore throat was taken into account, including those associated with surgery, benefit from tonsillectomy was less evident.

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1-

Despite this limited evidence, many non-controlled studies suggest benefit in children who have had tonsillectomy, not only in reduction of the number of sore throats but in improvement in their general health and well-being.⁸²⁻⁸⁴

3

Although rare complications have been reported, the risk of these occurring should not be a barrier to decision making in the group for whom tonsillectomy is felt to be beneficial.⁸⁵

A Watchful waiting is more appropriate than tonsillectomy for children with mild sore throats.

Adenotonsillectomy in children with obstructive sleep apnoea and in patients with rare conditions such as periodic fever is outwith the scope of this guideline.

7.2.2 ADULTS

A Cochrane review found limited evidence of benefit of tonsillectomy in adults.⁷⁵

1++

In adults with proven recurrent group A streptococcal pharyngitis (GAHSP), a small well conducted RCT demonstrated benefit for tonsillectomy in adults. Tonsillectomy reduced the incidence of GAHSP in the 90-day postoperative period with a number needed to treat (NNT) of 5.⁸⁶

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A Tonsillectomy is recommended for recurrent severe sore throat in adults.

7.3 REFERRAL CRITERIA FOR TONSILLECTOMY FOR THE TREATMENT OF RECURRENT TONSILLITIS

Tonsillectomy can prevent recurrent acute attacks of tonsillitis, but not recurrent sore throats due to other causes. Before considering tonsillectomy, the diagnosis of recurrent tonsillitis should be confirmed by history and clinical examination and, if possible, differentiated from generalised pharyngitis.

The natural history of tonsillitis is for the episodes to get less frequent with time, but epidemiological data are lacking in all age groups to allow a prediction of this to be made in individual patients.

Tonsillectomy requires a short admission to hospital and a general anaesthetic, is painful, and is occasionally complicated by bleeding. Return to usual activities takes on average two weeks, with a corresponding loss of time from education or work.

Evidence on exactly which children with sore throats benefit from tonsillectomy is not available, but current evidence suggests that the benefit of tonsillectomy increases with the severity and frequency of sore throats prior to tonsillectomy. Apart from adults with proven recurrent GAHSP (see section 7.2.2), evidence on which adults will benefit from tonsillectomy is not available. The referral criteria below have been adapted from SIGN 34 and from Paradise et al.⁷³

D The following are recommended as indications for consideration of tonsillectomy for recurrent acute sore throat in both children and adults:

- sore throats are due to acute tonsillitis
- the episodes of sore throat are disabling and prevent normal functioning
- seven or more well documented, clinically significant, adequately treated sore throats in the preceding year or
- five or more such episodes in each of the preceding two years or
- three or more such episodes in each of the preceding three years.

Cognisance should also be taken of whether the frequency of episodes is increasing or decreasing.

Note that, in considering whether a patient meets these criteria, the GP may have difficulty in documenting the frequency of episodes because patients do not always consult when they have an episode. There may also be uncertainty about whether the sore throats are due to acute tonsillitis or other causes.

There are situations in which tonsillectomy may be appropriate outwith these criteria. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available, as explained in section 7.4.

7.4 OTOLARYNGOLOGICAL ASSESSMENT

Patients referred will rarely be seen by a specialist during an acute episode of sore throat, so the diagnosis of recurrent acute tonsillitis rests with the referring doctor. Questioning the patient about the appearance of the throat, the degree of systemic upset, and the presence of tender neck lymph nodes can help confirm the diagnosis.

The specialist should also confirm the frequency of occurrence of the episodes and assess the associated disability. If the criteria set out above are confirmed, the management options should be discussed and the benefits of tonsillectomy weighed against the natural history of resolution and the temporary incapacity associated with tonsillectomy. This information may be reinforced by means of an appropriately designed patient information leaflet (see *Annexes 2 and 3*). The rate of readmission for bleeding should also be stated as part of informed consent.

In some cases this will be the first discussion the patient or parents have had which takes into account all factors for and against surgery. In addition the frequency of episodes is often an impression rather than fully documented. Under these circumstances a period of watchful waiting of at least six months, during which the patient or parent can more objectively record the number, duration and severity of the episodes, may be suggested. This would allow a more balanced judgement to be made as to the likely benefit or otherwise of tonsillectomy. This could either be reported to the GP after six months, who would then refer again if appropriate, or be reported by the patient at a pre-arranged review hospital appointment.

- When in doubt as to whether tonsillectomy would be beneficial, a six month period of watchful waiting is recommended prior to consideration of tonsillectomy to establish firmly the pattern of symptoms and allow the patient to consider fully the implications of an operation.

7.5 POSTOPERATIVE CARE

Patients frequently experience significant postoperative morbidity following a tonsillectomy. This can include throat and ear pain, fever, poor oral intake, halitosis, and decreased activity levels. Pain is associated with a delay in return to normal activity and diet for patients. This problem can have an impact on the recovery of tonsil beds and lead to a secondary bleed.

- At the time of discharge, patients/carers should be provided with written information advising them whom to contact and at what hospital unit or department to present if they have postoperative problems or complications.

7.5.1 POSTOPERATIVE PAIN PATTERN

Following tonsillectomy, patients or carers may be reluctant to use analgesics for more than a few days because of fears of tolerance and side effects. Five RCTs involving a total of 369 patients provided data on postoperative pain levels.⁸⁷⁻⁹¹ One single cohort study of 129 patients directly addressed the question of postoperative pain over time following tonsillectomy.⁹² These studies demonstrated that after tonsillectomy pain will reduce in the first few days in most cases, but is likely to increase at day 4 or 5 before finally tailing off from day 6 onwards. The reason for this increase in pain is not known, but it is not thought to be due to infection.^{90,91}

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3

The single cohort study showed that a subgroup of patients post-tonsillectomy who had an unscheduled medical consultation had significantly more pain (and took significantly more analgesic) on days 5-7.⁹²

3

D Patients should be made aware of the potential for pain to increase for up to 6 days following tonsillectomy.

- Patients/carers should be given written and oral instruction prior to discharge from hospital on the expected pain profile and the safety profile of the analgesic(s) issued with particular reference to appropriate dose and duration of use. They should be issued with enough analgesic to last for a week.

7.5.2 LOCAL ANAESTHESIA

It is not routine clinical practice in Scotland to administer local anaesthesia (LA) for tonsillectomy. Over the last decade, the routine use of perioperative LA infiltration has declined in Scotland, as improved alternative analgesia and anti-emetic regimens have been developed.

A Cochrane review found no evidence to support the use of either local anaesthetic infiltration or topical application.⁹³ Five good quality RCTs have found no benefit.⁹⁴⁻⁹⁸

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There is some evidence to support analgesia benefit in the first few hours postoperatively but this evidence is arguably obsolete in the context of current practice.⁹⁹⁻¹⁰⁵

Four studies describe some prolonged benefit beyond 24 hours but include additional injectate (fentanyl and clonidine) or small numbers.^{106,107} One well conducted RCT in children and adults showed benefit for several days with a 'slow release' topical method.¹⁰⁸ Improved analgesia beyond that provided with paracetamol/NSAID/opiate/anti-emetic remains unproven.

As there is conflicting evidence from well conducted trials, no recommendation on use of LA can be made.

7.5.3 PREVENTION OF POSTOPERATIVE NAUSEA AND VOMITING (PONV)

Interventions considered for prevention of PONV include anti-emetic drugs, single dose dexamethasone, acupuncture, and preoperative fasting.

Two systematic reviews including over 100,000 patients considered the effectiveness of anti-emetic drugs in reducing PONV. Cyclizine, dexamethasone, dolasetron, droperidol, granisetron, metoclopramide, ondansetron, and tropisetron were all effective compared to placebo in preventing PONV with few side effects.^{109, 110}

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A Routine use of anti-emetic drugs to prevent PONV in tonsillectomy is recommended.

A Cochrane review of non-steroidal anti-inflammatory drugs (NSAIDs) in paediatric tonsillectomy concluded that NSAIDs do not cause a statistically significant increase in bleeding requiring a return to theatre. In 10 trials (>800 children) in which PONV was an outcome, there was less PONV when NSAIDs were used as part of the analgesic regimen, compared to when NSAIDs were not used; odds ratio (OR) 0.4 (95% CI 0.23 - 0.72).¹¹¹

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A NSAIDs are recommended as part of postoperative analgesia to reduce PONV.

A Cochrane review concluded that a single intraoperative dose of dexamethasone (dose range 0.15 to 1.0 mg/kg; maximum dose range 8 to 25 mg) is effective, relatively safe and inexpensive for reduction of paediatric emesis after tonsillectomy and adenotonsillectomy. Treating four children will prevent one episode of emesis (NNT = 4). No complications were found as a result of dexamethasone administration.¹¹²

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A A single intraoperative dose of dexamethasone (dose range 0.15 to 1.0 mg/kg; maximum dose range 8 to 25 mg) is recommended to prevent postoperative vomiting in children undergoing tonsillectomy or adenotonsillectomy.

One RCT (n=215) of dexamethasone published after the Cochrane review showed a dose dependent reduction in PONV in children undergoing tonsillectomy. The study reported an increase in postoperative bleeding, which has not been seen in other studies. Three different methods of tonsillectomy were used, which adds to the uncertainty regarding the conclusion.¹¹³

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One well conducted double blind RCT on the effectiveness of dexamethasone for preventing PONV in adults was identified. The study involved 72 patients (80% female) aged 16 to 42 with a completion rate of 64%. Those treated with dexamethasone 10 mg intravenously at induction of anaesthesia had significantly less PONV on the day of operation (p=0.001), although on subsequent days there was no significant difference between the groups.⁸⁸

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B A single dose of 10 mg dexamethasone at induction of anaesthesia may be considered to prevent PONV in adults undergoing tonsillectomy or adenotonsillectomy.

A Cochrane review published in 2009 included 40 studies on stimulation of the wrist acupuncture point P6 compared to anti-emetics or sham treatment in adults and children. Methods of stimulation included needle acupuncture, electroacupuncture, laser acupuncture, acupressure, and others.¹¹⁴ Allocation concealment was inadequate in 36 of 40 trials. Two of the included studies examined P6 stimulation, PONV and paediatric tonsillectomy.^{115, 116} The Cochrane review concluded that stimulation of the P6 acupuncture point is effective in reducing nausea, vomiting, and the need for rescue anti-emetics in patients without anti-emetic prophylaxis.

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B Stimulation of the acupuncture point P6 should be routinely considered in patients at risk of PONV where anti-emetic drug prophylaxis is not suitable.

No studies on the effectiveness of fasting for prevention of PONV in adults were identified. A Cochrane review on preoperative fasting in children included a wide variety of operations and it is not clear how many studies included tonsillectomies.¹¹⁷ Of the 23 RCTs included, only one reported on postoperative vomiting and none reported on nausea. The fasting regimens favoured in the Cochrane review are already adopted in many paediatric centres for all operations.

There is insufficient evidence to make a recommendation on fasting prior to tonsillectomy for the prevention of PONV.

8 Provision of information

This section reflects the issues likely to be of most concern to patients and their carers. These points are provided for use by health professionals when discussing recurrent sore throat and tonsillectomy with patients and carers and in guiding the local production of information materials.

8.1 SOURCES OF FURTHER INFORMATION

ENT UK

Royal College of Surgeons
35-43 Lincoln's Inn Fields
London WC2A 3PE
Tel: 020 7404 8373 (voice)
Email: admin@entuk.org • Web: www.entuk.org

Provides information and leaflets on adult and children's tonsil surgery.

Health Information Plus

Web: www.healthinfoplus.scot.nhs.uk

Health Information Plus offers an online library of quality assured health information provided by NHS Education for Scotland for patients, carers and the public.

NHS 24

Tel: 08454 24 24 24 (voice) 18001 08454 24 24 24 (textphone)
Web: www.nhs24.com

NHS 24 provides a comprehensive range of up-to-date health information and self-care advice for people in Scotland.

8.2 CHECKLIST FOR PROVISION OF INFORMATION

This section gives examples of the information patients/carers may find helpful at the key stages of the patient journey. The checklist was designed by members of the guideline development group based on their experience and their understanding of the evidence base. The checklist is neither exhaustive nor exclusive.

Diagnosis
<ul style="list-style-type: none"> ▪ Advise that recurrent sore throat is a treatable condition ▪ Explain the different treatment options available ▪ Advise patients and carers to monitor time lost from education/work because of sore throat ▪ Provide an information leaflet to help patients manage sore throat at home and advise patients to contact their GP or NHS 24 if they have the following symptoms: <ul style="list-style-type: none"> - any difficulty in breathing - any difficulty swallowing saliva or opening their mouth - a persistent high temperature - a particularly severe illness, especially with symptoms mainly on one side of the throat - a sore throat which has been worsening for several days.
Treatment
<ul style="list-style-type: none"> ▪ Advise patients/carers how to relieve symptoms and manage pain ▪ Inform patients that if antibiotics are prescribed the course should be completed ▪ Inform patients that most sore throats can be self-managed and that persistent sore throats can be managed in primary care. Inform patients of referral criteria for tonsillectomy ▪ Inform patients that there is no guarantee that tonsillectomy will prevent ALL sore throats in the future; inform patients of the difference between bacterial and viral sore throat ▪ Advise patients of length of stay, the need for general anaesthetic and potential complications, ie bleeding.
Post-surgery
<ul style="list-style-type: none"> ▪ Advise on recovery time and expected loss of time from education/work ▪ Inform patients of foods that may cause discomfort and the importance of adequate fluid intake.
Discharge
<ul style="list-style-type: none"> ▪ Ensure patients are aware that pain may increase for up to 6 days following tonsillectomy and that they should continue to take adequate analgesia ▪ Provide written information advising whom to contact and at what hospital unit or department to present if they have postoperative problems or complications.

9 Implementing the guideline

This section provides advice on audit as a tool to aid implementation.

Implementation of national clinical guidelines is the responsibility of each NHS Board and is an essential part of clinical governance. Mechanisms should be in place to review care provided against the guideline recommendations. The reasons for any differences should be assessed and addressed where appropriate. Local arrangements should then be made to implement the national guideline in individual hospitals, units and practices.

9.1 AUDITING CURRENT PRACTICE

A first step in implementing a clinical practice guideline is to gain an understanding of current clinical practice. Audit tools designed around guideline recommendations can assist in this process. Audit tools should be comprehensive but not time consuming to use. Successful implementation and audit of guideline recommendations requires good communication between staff and multidisciplinary team working.

The 2008 Scottish prospective audit of tonsil and adenoid surgery made the following recommendations for the audit of tonsillectomy:⁶⁹

- Each department should collect their own tonsillectomy audit figures. Demographic patient detail, operator qualifications and surgical technique combined with primary haemorrhage theatre returns, secondary haemorrhage theatre returns and blood transfusion rates should form the minimum data set.
- Departmental tonsillectomy audit figures should be presented at morbidity and mortality meetings and the proceedings collated centrally within the Trust or division in the form of a report.
- The divisional report should be sent to a central Scottish point under the combined jurisdiction of “Scottish ENT Surgeons”, NHS QIS and the Chief Medical Officer.
- Careful departmental and personnel audit should be applied to techniques that provide a bloodless tonsillectomy bed such as coblator, ultrasonic, laser or diathermy. These techniques should be benchmarked against Scottish national figures.
- Further audit is required concerning postoperative pain relief.

10 The evidence base

10.1 SYSTEMATIC LITERATURE REVIEW

The evidence base for this guideline was synthesised in accordance with SIGN methodology. A systematic review of the literature was carried out using search strategies devised by a SIGN information specialist. Databases searched include Medline, Embase, CINAHL, PsycINFO, and the Cochrane Library. For most searches, the date range covered was January 2000-December 2008. Internet searches were carried out on various websites including the US National Guideline Clearinghouse, NLH Guidelines Finder, and Guidelines International Network (GIN). The Medline version of the database search strategies for each key question can be found on the SIGN website. The main searches were supplemented by material identified by individual members of the guideline development group.

10.1.1 LITERATURE SEARCH FOR PATIENT ISSUES

At the start of the guideline development process, a SIGN Information Officer conducted a literature search for qualitative and quantitative studies that addressed patient issues of relevance to sore throat and tonsillectomy. Databases searched include Medline, Embase, CINAHL, and PsycINFO. The results were summarised by the Patient Involvement Officer and presented to the guideline development group. A copy of the Medline version of the patient search strategy is available on the SIGN website.

10.2 RECOMMENDATIONS FOR RESEARCH

The guideline development group was not able to identify sufficient evidence to answer all of the key questions asked in this guideline. The following areas for further research have been identified:

- comparison of antibiotic prescribing rates in primary care with the use of Centor CDR and the use of Centor with selective RAT
- effectiveness of surgery for recurring tonsillitis
- identification of individuals most likely to benefit from tonsillectomy
- whether stimulation of the acupuncture point P6 in addition to anti-emetics is better than anti-emetics alone in reducing PONV.

10.3 REVIEW AND UPDATING

This guideline was issued in 2010 and will be considered for review in three years. Any updates to the guideline in the interim period will be noted on the SIGN website: www.sign.ac.uk.

11 Development of the guideline

11.1 INTRODUCTION

SIGN is a collaborative network of clinicians, other healthcare professionals and patient organisations and is part of NHS Quality Improvement Scotland. SIGN guidelines are developed by multidisciplinary groups of practising clinicians using a standard methodology based on a systematic review of the evidence. The views and interests of NHS Quality Improvement Scotland as the funding body have not influenced any aspect of guideline development, including the final recommendations. Further details about SIGN and the guideline development methodology are contained in “SIGN 50: A Guideline Developer’s Handbook”, available at www.sign.ac.uk.

11.2 THE GUIDELINE DEVELOPMENT GROUP

Mr S S Musheer Hussain (Chair)	<i>Consultant Otolaryngologist, Ninewells Hospital and Tayside Children’s Hospital, Dundee</i>
Mr Brian Bingham	<i>Consultant Otolaryngologist, Victoria Infirmary, Glasgow</i>
Dr Lynn Buchan	<i>General Practitioner, Borders</i>
Mr Andrew Dawson	<i>Lay Representative, Sutherland</i>
Mrs Aileen Garrett	<i>Nurse Practitioner, Penicuik Health Centre</i>
Dr Iain Hardy	<i>General Practitioner, Saltcoats Group Practice</i>
Ms Michele Hilton Boon	<i>Programme Manager, SIGN</i>
Dr Laura Jones	<i>Consultant Paediatrician, Royal Hospital for Sick Children, Edinburgh</i>
Ms Joanna Kelly	<i>Information Officer, SIGN</i>
Dr Carol Macmillan	<i>Consultant Anaesthetist, Ninewells Hospital, Dundee</i>
Miss Susan McKenzie	<i>Charge Nurse, Royal Hospital for Sick Children, Edinburgh</i>
Mr William McKerrow	<i>Consultant ENT Surgeon, Raigmore Hospital, Inverness</i>
Dr Alex Sánchez-Vivar	<i>National Coordinator of the Health Protection Network (HPN), NHS National Services Scotland, Health Protection Scotland, Glasgow</i>
Dr Vijay Sonthalia	<i>General Practitioner, Hunter Health Centre, East Kilbride</i>
Dr Bob Soutter	<i>General Practitioner, Galashiels Health Centre</i>
Dr Mairi Stark	<i>Consultant Paediatrician, Royal Hospital for Sick Children, Edinburgh</i>
Miss Elaine Ward	<i>Primary Care Development Pharmacist, NHS Greater Glasgow and Clyde</i>
Miss Aileen White	<i>Consultant Otolaryngologist, Royal Alexandra Hospital, Paisley</i>

The membership of the guideline development group was confirmed following consultation with the member organisations of SIGN. All members of the guideline development group made declarations of interest and further details of these are available on request from the SIGN Executive. Guideline development and literature review expertise, support and facilitation were provided by the SIGN Executive.

Mary Deas	<i>Distribution and Office Coordinator</i>
Lesley Forsyth	<i>Events Coordinator</i>
Karen Graham	<i>Patient Involvement Officer</i>
Stuart Neville	<i>Publications Designer</i>
Gaynor Rattray	<i>Senior Guideline Coordinator</i>

11.2.1 PATIENT INVOLVEMENT

In addition to the identification of relevant patient issues from a broad literature search, SIGN involves patients and carers throughout the guideline development process in several ways. SIGN attempts to recruit a minimum of two patient representatives to each guideline development group by inviting nominations from the relevant “umbrella”, national and/or local patient focused organisations in Scotland. Where organisations are unable to nominate, patient representatives are sought via other means, eg from consultation with health board public involvement staff.

Further patient and public participation in guideline development was achieved by involving patients, carers and voluntary organisation representatives at the National Open Meeting (see section 11.4.1). Patient representatives were invited to take part in the peer review stage of the guideline and specific guidance for lay reviewers was circulated. Members of the SIGN patient network were also invited to comment on the draft guideline section on provision of information.

11.3 ACKNOWLEDGEMENTS

SIGN is grateful to the following former member of the guideline development group who contributed to the development of this guideline.

Dr Fiona Bisset *Consultant in Public Health Medicine, Directorate of Health and Wellbeing, Scottish Government*

SIGN would like to acknowledge the guideline development group responsible for SIGN 34: Management of Sore Throat and Indications for Tonsillectomy, on which this guideline is based.

Mr William McKerrow *Consultant Otolaryngologist, Raigmore Hospital, Inverness (Chair)*

Dr Ann Bisset *Senior Registrar in Public Health Medicine, Grampian Health Board*

Mr Robin Blair *Consultant Otolaryngologist, Ninewells Hospital and Medical School, Dundee*

Professor George Browning *Consultant Otolaryngologist, Glasgow Royal Infirmary*

Mr John Dempster *Consultant Otolaryngologist, Crosshouse Hospital, Kilmarnock*

Dr Jill Morrison *General Practitioner, Department of General Practice, Glasgow University*

Dr Barney Reilly *General Practitioner, Whitefriars Surgery, Perth*

Ms Susan Renton *Ward Sister, ENT Ward, Royal Hospital for Sick Children, Edinburgh*

Dr George Russell *Consultant Paediatrician, Royal Aberdeen Children's Hospital*

Mr David Sim *Consultant Otolaryngologist, St John's Hospital at Howden, Livingston*

11.4 CONSULTATION AND PEER REVIEW

11.4.1 NATIONAL OPEN MEETING

A national open meeting is the main consultative phase of SIGN guideline development at which the guideline development group presents its draft recommendations for the first time. The national open meeting for this guideline was held on 23 January 2009 and was attended by 52 representatives of all the key specialties relevant to the guideline. The draft guideline was also available on the SIGN website for a limited period at this stage to allow those unable to attend the meeting to contribute to the development of the guideline.

11.4.2 PEER REVIEW

This guideline was also reviewed in draft form by the following independent expert referees, who were asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence base supporting the recommendations in the guideline. The guideline group addresses every comment made by an external reviewer, and must justify any disagreement with the reviewers' comments.

SIGN is very grateful to all of these experts for their contribution to the guideline.

Mr Martin J Burton	<i>Consultant Otolaryngologist, Oxford Radcliffe NHS Trust Senior Clinical Lecturer, University of Oxford</i>
Dr George Crooks	<i>Medical Director NHS 24 and the Scottish Ambulance Service, Glasgow</i>
Dr Jon Dowell	<i>Director of Undergraduate Studies, Community Health Sciences Education, Dundee</i>
Dr Haytham Kubba	<i>Consultant Paediatric Otolaryngologist, Royal Hospital for Sick Children, Glasgow</i>
Mr T H J Lesser	<i>Consultant ENT/Skull Base Surgeon, Aintree University Hospitals NHS Foundation Trust, Liverpool</i>
Dr Helen Lewis	<i>Consultant Paediatrician, Royal College of Paediatrics and Child Health, London</i>
Dr Peter Macfarlane	<i>Consultant Paediatrician, Royal College of Paediatrics and Child Health, London</i>
Dr Graham MacKenzie	<i>Consultant in Public Health, Deaconess House, Edinburgh</i>
Dr Una McFadyen	<i>Consultant Paediatrician, Stirling Royal Infirmary</i>
Mr John McGarva	<i>Consultant ENT Surgeon, Stirling Royal Infirmary</i>
Dr Andrew Power	<i>Medical Prescribing Adviser, Victoria Infirmary, Glasgow</i>
Mr Peter J Robb	<i>Consultant ENT Surgeon, Epsom & St Helier University Hospitals NHS Trust</i>
Dr Grant Rodney	<i>Consultant Anaesthetist, Ninewells Hospital, Dundee</i>
Ms Mandy Sim	<i>Pain Management Nurse Specialist, Royal Hospital for Sick Children, Edinburgh</i>
Dr Geeta Subramanian	<i>Consultant Paediatrician, Royal College of Paediatrics and Child Health, London</i>
Dr Avril Washington	<i>British Paediatric Mental Health Group, Royal College of Paediatrics and Child Health, London</i>
Dr Graham Wilson	<i>Scottish Representative, Council of the Association of Paediatric Anaesthetists of Great Britain and Ireland</i>
Professor Janet Wilson	<i>Professor of Otolaryngology Head and Neck Surgery, Freeman Hospital, Newcastle upon Tyne</i>

11.4.3 SIGN EDITORIAL GROUP

As a final quality control check, the guideline is reviewed by an editorial group including the relevant specialty representatives on SIGN Council to ensure that the specialist reviewers' comments have been addressed adequately and that any risk of bias in the guideline development process as a whole has been minimised. The editorial group for this guideline was as follows.

Dr Keith Brown	<i>Chair of SIGN; Co-Editor</i>
Ms Beatrice Cant	<i>SIGN Programme Manager</i>
Dr David Cuthbert	<i>GPwSI in ENT, Ferguson Medical Practice, Broxburn</i>
Mr Andrew de Beaux	<i>Royal College of Surgeons of Edinburgh</i>
Dr Richard Garratt	<i>Royal College of General Practitioners Scotland</i>
Dr Sara Twaddle	<i>Director of SIGN; Co-Editor</i>

Abbreviations

A&E	accident and emergency
BNF	British National Formulary
CI	confidence interval
ENT	ear, nose and throat
GABHS	group A beta-haemolytic streptococcus
GAHSP	group A streptococcal pharyngitis
GP	general practitioner
LA	local anaesthesia
MTA	multiple technology appraisal
NHS QIS	NHS Quality Improvement Scotland
NICE	National Institute for Health and Clinical Excellence
NNT	number needed to treat
NSAID	non-steroidal anti-inflammatory drug
OR	odds ratio
PCR	polymerase chain reaction
PONV	postoperative nausea and vomiting
RAT	rapid antigen testing
RCT	randomised controlled trial
SIGN	Scottish Intercollegiate Guidelines Network
SMC	Scottish Medicines Consortium

Annex 1

Key questions used to develop the guideline

The following questions were used to inform the process of identifying, sifting, and including or excluding evidence for use in the guideline development process. Key questions are structured (where appropriate) according to the PICO format, specifying patient group or population, intervention, comparison, and outcome.

THE KEY QUESTIONS USED TO update SIGN 34

DIAGNOSIS		
Key question	Inclusion/exclusion criteria	See guideline section
1. What is the evidence of burden of disease caused by misdiagnosis of cause of sore throat?	Consider gastro-oesophageal reflux and H. pylori	
2. What is the evidence to support the use of rapid antigen testing [compared to throat swabbing] in the diagnosis of streptococcal sore throat? How does it affect patient outcomes?		4.3
3. Is there any evidence that the clinical picture/features can help differentiate between viral and bacterial sore throat?	Consider: fever, tonsillar exudate/pus, cervical lymphadenopathy, cough, absence of cough, duration of symptoms eg pain, dysphagia, pharyngeal erythema, spots and rashes, centor criteria, breese scale, other clinical scales	4.1
MANAGEMENT		
Key question	Inclusion/ exclusion criteria	See guideline section
4. A. Which analgesic (or combination of analgesics) is most effective in adults with sore throat in terms of speed and duration of pain relief? B. Which analgesic (or combination of analgesics) is most effective in children with sore throat in terms of speed and duration of pain relief?	Include: paracetamol, ibuprofen, adjuvant compounds to painkillers (eg caffeine), topical sprays, Chinese medicines; consider gastrointestinal bleeding, nausea, diarrhoea Exclude aspirin and diclofenac	5.1 and 5.2
5. Which adjunctive therapies are useful in sore throat in terms of pain relief and dysphagia?	Benzydamine (topical agents), sprays, lozenges (eg Fisherman's Friends), gargles, steroids (consider harms and adverse effects from long term use)	5.3

6. Does the use of the following antibiotics in acute sore throat (a) relieve symptoms (b) prevent sequelae (c) prevent complications (eg abscess formation, breathing problems, quinsy/peritonsillar abscess)?	Include: Penicillin V, macrolides, cefalexin, amoxicillin, co-amoxiclav (consider dose and duration of treatment)	6.1
7. Will prescribing antibiotics to treat sore throat reduce subsequent episodes in recurrent sore throat?		6.2
8. What is the evidence that antibiotic prophylaxis reduces recurrent episodes of sore throat?	Include: Penicillin V, macrolides, cefalexin, amoxicillin, co-amoxiclav (consider dose and duration of treatment)	6.2
SURGERY IN RECURRENT SORE THROAT		
Key question	Inclusion/exclusion criteria	<i>See guideline section</i>
9. In children with recurrent sore throat, is tonsillectomy (compared to non-surgical intervention) clinically- and cost-effective?	consider: (a) reducing episodes of recurrence (b) improving general health (c) improving quality of life (d) long term harms of tonsillectomy	7.2
10. In adults with recurrent sore throat, is tonsillectomy (compared to non-surgical intervention) clinically- and cost-effective?	consider: (a) reducing episodes of recurrence (b) improving general health (c) improving quality of life (d) long term harms of tonsillectomy	7.2
11. What are the indications for tonsillectomy for treatment of sore throat in children and adults?	Consider age ranges	7.3
12. In tonsillectomy, is local anaesthesia effective and safe in reducing postoperative pain in children and adults?	Consider morbidity and complications	7.5.2
13.A. What is the postoperative pain pattern following tonsillectomy? B. Does informing patients about pain they should expect reduce the incidence of postoperative consultation?		7.5.1


14. Which treatments are effective in preventing postoperative vomiting?	Consider intraoperative corticosteroids, anti-emetic injections, acupuncture/acupressure, intravenous fluids, preoperative fasting regimens, premedication	7.5.3
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Annex 2

Example patient information leaflet: About Children's Tonsil Surgery

ABOUT CHILDREN'S TONSIL SURGERY

ENT:UK is the professional association for Ear, Nose and Throat Surgeons and related professionals in the UK. This information leaflet is to support and not to replace the discussion between you and your specialist. Before you give your consent to the treatment, you should raise any concerns with your specialist.



ENT·UK
The Royal College of Surgeons of England
35-43 Lincoln's Inn Fields
London WC2 3PE
www.entuk.org

BRITISH ASSOCIATION OF OTORHINOLARYNGOLOGISTS
HEAD & NECK SURGEONS

Your child may have sore ears

This is normal. It happens because the throat and ears have the same nerves. It does not usually mean that your child has an ear infection.

Your child's throat will look white

This is normal while the throat heals. You may also see small threads in your child's throat - sometimes these are used to help stop the bleeding during the operation, and they will fall out by themselves.

Some children get a throat infection after surgery, usually if they have not been eating properly. If this happens you may notice a fever and a bad smell from your child's throat. If this happens call your GP or the hospital for advice.

Keep your child off school for 10 to 14 days

Make sure he or she rests at home away from crowds and smoky places. Keep him or her away from people with coughs and colds. Your child may also feel tired for the first few days.

Bleeding can be serious

If you notice any bleeding from your child's throat, you must see a doctor. Either call your GP, call the ward, or go to your nearest hospital casualty department.

If you have any problems or questions, please contact:

Please insert local department routine and emergency contact details here

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0602

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What are tonsils?

Tonsils are small glands in the throat, one on each side. They are there to fight germs when you are a young child. After the age of about three years, the tonsils become less important in fighting germs and usually shrink. Your body can still fight germs without them.

Why take them out?

We only take tonsils out if they are doing more harm than good. We will only take your child's tonsils out if he or she is getting lots of sore throats, which are making him or her lose time from school. Sometimes small children have tonsils so big that they block their breathing at night.

Are there alternatives to having the tonsils removed?

Your child will not always need to have his or her tonsils out. You may want to just wait and see if the tonsil problem gets better by itself. Children often grow out of the problem over a year or so. The doctor should explain to you why he or she feels that surgery is the best treatment.

Antibiotics may help for a while, but frequent doses of antibiotics can cause other problems. A low-dose antibiotic for a number of months may help to keep the infections away during an important period such as during examinations. There is no evidence that alternative treatments such as homeopathy or cranial osteopathy are helpful for tonsil problems.



The removal of enlarged tonsils like this can relieve the airway.

You may change your mind about the operation at any time, and signing a consent form does not mean that your child has to have the operation.

If you would like to have a second opinion about the treatment, you can ask your specialist. He or she will not mind arranging this for you. You may wish to ask your own GP to arrange a second opinion with another specialist.

Before your child's operation

Arrange for your child to have a couple of weeks off school. Let us know if he or she has a sore throat or cold in the week before the operation - it will be safer to put it off for a few weeks. It is very important to tell us if your child has any unusual bleeding or bruising problems, or if this type of problem might run in the family.

How is the operation done?

Your child will be asleep. We will take his or her tonsils out through the mouth, and then stop the bleeding. This takes about 20 minutes. Your child will then go to a recovery area to be watched carefully as he or she wakes up from the anaesthetic. He or she will be away from the ward for about an hour in total.

How long will my child be in hospital?

In some hospitals, tonsil surgery is done as a day case, so that he or she can go home on the same day as the operation. Other hospitals may keep children in hospital for one night. It may depend on whether your child has their operation in the morning or the afternoon. Either way, we will only let him or her go home when he or she is eating and drinking and feels well enough.

Possible complications

Tonsil surgery is very safe, but every operation has a small risk.

The most serious problem is bleeding. This may need a second operation to stop it. About two children out of every 100 who have their tonsils out will need to be taken back into hospital because of bleeding, but only one child out of every 100 will need a second operation. Please let us know before surgery if anyone in the family has a bleeding problem.

During the operation, there is a very small chance that we may chip or knock out a tooth, especially if it is loose, capped or crowned. Please let us know if your child has any teeth like this.

Some children feel sick after the operation. We may need to give your child some medicine for this, but it usually settles quickly.

Your child's throat will be sore

Your child's throat will get better day-by-day. Give him or her painkillers regularly, half an hour before meals for the first few days. Do not give more than it says on the label. Do not give your child aspirin - it could make your child bleed. (Aspirin is not safe to give to children under the age of 16 years at any time, unless prescribed by a doctor).

Eat normal food

Eating food will help your child's throat to heal. It will help the pain too. Always give him or her a drink with every meal. Chewing gum may also help the pain.

Annex 3

Example patient information leaflet: About Adult Tonsil Surgery

they have not been eating properly. If this happens you may notice a fever and a bad smell from your throat. Call your GP or the hospital for advice if this happens.

You will need 10 to 14 days off work

Make sure you rest at home away from crowds and smoky places. Keep away from people with coughs and colds. You may feel tired for the first few days.

Bleeding can be serious

If you notice any bleeding from your throat, you must see a doctor. Call your GP, call the ward, or go to your nearest hospital casualty department.

**ABOUT
ADULT TONSIL
SURGERY**

ENT:UK is the professional association for Ear, Nose and Throat Surgeons and related professionals in the UK. This information leaflet is to support and not to replace the discussion between you and your specialist. Before you give your consent to the treatment, you should raise any concerns with your specialist.



ENT-UK
The Royal College of Surgeons of England
35-43 Lincoln's Inn Fields
London WC2 3PE
www.entuk.org

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ENT-UK
BRITISH ASSOCIATION OF OTORHINOLARYNGOLOGISTS
HEAD & NECK SURGEONS

What are tonsils?

Tonsils are small glands in the throat, one on each side. They are there to fight germs when you are a young child. As you get older, the tonsils become less important in fighting germs and usually shrink. Your body can still fight germs without them.

Why take them out?

We only take them out if they are doing more harm than good. We take tonsils out if they cause recurrent sore throats despite treatment with antibiotics. The other main reason for removing tonsils is if they are large and block the airway. A quinsy is an abscess that develops alongside the tonsil, as a result of tonsil infection, and is most unpleasant. People who have had a quinsy therefore often choose to have a tonsillectomy to prevent having another. Tonsils are also removed if we suspect there is a tumour in the tonsil. A rapid increase in the size of a tonsil or ulceration or bleeding occurs if a tumour of the tonsil develops. Tumours of the tonsil are rare.



The removal of enlarged tonsils like this can relieve airway obstruction.

Do I have to have my tonsils out?

You will not always need to have your tonsils out. You may want to just wait and see if the tonsil problem gets

better by itself. The doctor should explain to you why he or she feels that surgery is the best treatment.

You may change your mind about the operation at any time, and signing a consent form does not mean that you have to have the operation.

If you would like to have a second opinion about the treatment, you can ask your specialist. He or she will not mind arranging this for you. You may wish to ask your own GP to arrange a second opinion with another specialist.

Before your operation

Arrange for two weeks off work. Let us know if you have a chest infection or tonsillitis before your admission date because it may be better to postpone the operation. It is very important to tell us if you have any unusual bleeding or bruising problems, or if this type of problem might run in your family.

How is the operation done?

You will be asleep under general anaesthetic. We take the tonsils out through the mouth, and then stop the bleeding. This takes about 30 minutes.

How long will I be in hospital?

In most hospitals, surgeons prefer tonsillectomy patients to stay in hospital for one night. In some hospitals, tonsil surgery is done as a day case, if your home is close to the hospital. Either way, we will only let you go home when you are eating and drinking and feel well enough.

Possible complications

Tonsil surgery is very safe, but every operation has a small risk. The most serious problem is bleeding. This may need a second operation to stop it. As many as five adults out of every 100 who have their tonsils out will need to be taken back into hospital because of bleeding, but only one adult out of every 100 will need a second operation.

During the operation, there is a very small chance that we may chip or knock out a tooth, especially if it is loose, capped or crowned. Please let us know if you have any teeth like this.

Your throat will be sore

Your throat will sore for approximately ten days. It is important to take painkillers regularly, half an hour before meals for at least the first week. Do not take aspirin because it may make you bleed.

Eat normal food

Eating food will help your throat to heal. It will help the pain too. Drink plenty of water and stick to bland non spicy food. Chewing gum may also help the pain.

You may have sore ears

This is normal. It happens because your throat and ears have the same nerves. It does not mean that you have an ear infection.

Your throat will look white

This is normal white your throat heals. You may also see small threads in your throat - they are used to help stop the bleeding during the operation, and they will fall out by themselves.

Some people get a throat infection after surgery, usually if

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