



Scottish Intercollegiate Guidelines Network



Management of Sore Throat and Indications for Tonsillectomy

A national clinical guideline



National Meeting Draft
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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 of RCTs, or RCTs with a low risk of bias
1 ⁻	Meta-analyses, systematic reviews of RCTs, 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 supporting evidence on which the evidence 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



Recommended best practice based on the clinical experience of the guideline development group.

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Verbatim extract from SIGN 34 published in 1999. This material covers areas that were not updated in the current version of the guideline.

Every care is taken to ensure that this publication is correct in every detail at the time of publication. However, in the event of errors or omissions, corrections will be published in the web version of this document, which is the definitive version at all times. This version can be found on our website at

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1 Introduction

1.1 THE NEED FOR A GUIDELINE

The management of sore throat in general practice and the further progress to tonsillectomy in a number of cases results in significant use of health service resources.

In most cases, the condition is relatively minor and self-limiting. Sore throat has few long term adverse health effects. However, a significant number of patients experience unacceptable morbidity, inconvenience, and loss of education or earnings due to recurrent sore throat. As a result, patients present to general practitioners, who may actively treat them with antibiotics of questionable efficacy and considerable aggregate cost.

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A proportion of these patients are referred to ENT surgeons, who may recommend surgery on criteria which are based on precedent, personal experience and a belief of benefit, rather than good scientific evidence. Tonsillectomy has an appreciable perioperative morbidity, a complication rate of around 2%, and the outcome is as yet undefined. However, in most cases, patients (or their parents) seem satisfied with the operation and to benefit from it (see section 7.1).¹ The paucity of good quality literature addressing an area of long established practice does not inevitably mean that that practice is valueless.

A guideline for management of acute and recurrent sore throat based on a systematic review of the literature (see section 10) has the potential to benefit patient care in addition to encouraging more efficient and effective use of health service resources. The guideline should consider optimal management, such that patients are not denied effective treatment which may reduce long term morbidity and minimise unproductive time due to illness.

This guideline updates SIGN 34 to reflect the most recent evidence on diagnosis, pain management, antibiotic use, surgical management, and postoperative care.

1.2 REMIT OF THE GUIDELINE

1.2.1 OVERALL OBJECTIVES

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This guideline presents evidence-based recommendations for the management of acute and recurring sore throat and indications for tonsillectomy in both adults and children. Note that the guideline considers only tonsillectomy for recurring sore throat. It does not address tonsillectomy for suspected malignancy or as a treatment for sleep apnoea, peritonsillar abscess, or other conditions. The published literature is mainly concerned with a paediatric population and there is little evidence concerning the management of recurring sore throats in adults. The aim of this guideline is to suggest a rational approach to the management of acute sore throat in general practice and to provide reasonable criteria for referral for tonsillectomy. The guideline also provides examples of patient information leaflets which may assist in management and facilitate decision making about operation (see Annexes 2 and 3) and suggests areas where further research could be productive (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, as well as patients with recurrent sore throat and their carers.

1.3 DEFINITIONS

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Sore throat may also be described as acute pharyngitis, tonsillitis, or acute exudative tonsillitis. For the purpose of this guideline, these terms are treated as synonymous. There is no agreed definition of chronic or recurrent sore throat. Within this guideline, the term 'sore throat' is used.

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.'²

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.

SMC advice and NHS QIS validated NICE MTAs relevant to this guideline are summarised in the section on implementation.

2 Key recommendations

This section will contain recommendations highlighted by the guideline development group and those who commented on earlier drafts as being clinically very important. They are the key clinical recommendations that should be prioritised for implementation. The clinical importance of these recommendations is not dependent on the strength of the supporting evidence.

Comments from reviewers are welcome as to which recommendations should be highlighted in this section to ensure that their implementation is prioritised by health boards.

3 Presentation

3.1 INCIDENCE OF SORE THROAT IN GENERAL PRACTICE

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Most patients with sore throat never attend their general practitioner (GP).³ A UK study of 516 women aged 0-44 years found that only one in 18 episodes of sore throat led to a GP consultation.⁴

The overall incidence of sore throat in all age groups has been estimated variously at 500 cases per GP per year according to 1978 figures,³ 100 per 1,000 people per year,⁵ or 45/1,000 consultations in New Zealand.⁶ Estimates of consultation rates (per capita per annum) for sore throat also vary: 0.08-0.20 in single practices, 0.2 in a region, and in the possibly atypical practices in the national morbidity survey, approximately 0.1 (assuming one in four 'respiratory' attendances are for sore throat and allowing for re-attendance).⁷ Different definitions make comparisons between figures difficult. The age distribution and management of sore throat which is reported to a GP varies widely across Europe.⁸

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. Assuming that a consultation costs £20, then the cost to NHSScotland of GP consultations for sore throat exceeds £6.2 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.⁹

3.2 REASONS FOR PRESENTATION IN GENERAL PRACTICE

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A 1994 Dutch study of 1,441 children attending general practice estimated 223 new episodes of tonsillitis per 1,000 subjects per year during the first five years of life, with no difference between sexes or social classes. The observed distribution was not random: more children than expected had no episodes, and significantly more children than expected had high numbers of episodes (>11 episodes). Factor analysis showed that sore throat, otitis media and common cold were interrelated, but the authors point out that 'illness behaviour' may partly influence the tendency to seek care for less serious diseases.¹⁰

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.¹¹⁻¹³ Recent evidence suggests that antibiotic prescribing for sore throat in general practice enhances patient belief in antibiotics and increases intention to consult for future episodes.¹⁴

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 (see example at Annex 2).

3.3 EMERGENCY HOSPITAL ADMISSION

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Hospital admission will be required for few patients with sore throat. When such patients present acutely to an ENT service they usually have peritonsillar cellulitis or abscess and may require parenteral antibiotics. The complication of parapharyngeal abscess is not common. In young adults, infectious mononucleosis is a common reason for hospital admission as these patients are often unable to swallow. The occasional patient with severe uncomplicated tonsillitis may require admission because of dysphagia and dehydration.

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

4 Diagnosis of sore throat

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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 (with an additional 1 – 10% caused by the Epstein Barr virus). The most common bacterial organism identified is group A beta-haemolytic streptococcus (GABHS), which causes 5-36% of infections. Other organisms to be considered are Chlamydia pneumonia, Mycoplasma pneumonia, Haemophilus influenza, Candida, and Neisseria gonorrhoeae.

Diagnosis can be attempted on clinical findings or by laboratory or near patient testing. The most commonly used tests in worldwide terms are culture of throat swabs and rapid antigen testing (RAT).

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 and Mclsaac scoring systems may help categorise the individual patient's risk level for GABHS infection.¹⁵

2+

The Centor clinical prediction rule is a 4 point score with one point each for:

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

The likelihood of GABHS infection depends on the local prevalence in patients presenting with sore throat, as shown in the following table.

Table 1: Centor score and likelihood of GABHS infection

Score	Likelihood ratio	Pretest probability of GABHS sore throat (%)						
		5	10	15	20	25	40	50
0	0.16	1	2	2	3	5	10	14
1	0.3	2	3	5	7	9	17	23
2	0.75	4	8	12	16	20	33	43
3	2.1	10	19	27	34	41	58	68
4	6.3	25	41	53	61	68	81	86

The Mclsaac modification of the Centor rule adds one point if age under 15 years, and subtracts one point if age 45 years or over. This reflects the higher likelihood of streptococcal infection in younger people with sore throat. Neither scoring rule is 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. Patients may more readily agree with a decision not to prescribe if the reason for a low probability of bacterial infection is explained.

C

The Centor clinical prediction rule can 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.

4.1.1 DAMAGE TO THE OROPHARYNGEAL MUCOSA

Factors that damage oropharyngeal mucosa, often recurrently, increase the risk of oropharyngeal infection. Mouth breathing dries the oropharyngeal mucosa and removes the nasal filter of pathogens. Mouth breathing is commoner in cigarette smokers but most commonly occurs in adults as a result of gross deviation of the nasal septum or as the result of nasal polyposis. In children occlusive adenoid tissue produces mouth breathing. Gastro-oesophageal reflux can damage oropharyngeal mucosa. The use of proprietary gargles, pain relief solutions and astringent lozenges for more than seven days may damage oropharyngeal mucosa. Use of such products should conform to manufacturer's instructions.

☑

A good background history is required in the assessment of recurrent acute sore throat. Predisposing factors such as nasal obstruction (mouth breathing), cigarette smoking, gastro-oesophageal reflux and the excessive use of oropharyngeal astringents or pain relief gargles should be considered.

4.2 THROAT CULTURE

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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.¹⁶ There is also a high asymptomatic carrier rate for GABHS of up to 40%.^{16, 17} 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.^{18, 19} Symptoms also correlate poorly with results of throat swab culture.²⁰

Throat swabs are neither sensitive nor specific for serologically confirmed infection, considerably increase costs, may medicalise illness, and alter few management decisions.²¹

C

Throat swabs should not be carried out routinely in sore throat.

4.3 RAPID ANTIGEN TESTING (RAT)

Rapid antigen testing is commonly used in North America to identify GABHS. These tests 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%.²² It is likely that the polymerase chain reaction (PCR) based tests now available are equivalent or superior to culture.²³

If used in conjunction with the Centor clinical prediction score, sensitivity and specificity of a RAT increase with each rise in the Centor score.²⁴

Neither RAT nor throat swab culture can differentiate between the streptococcal carrier state and invasive infection.²³

Studies in Switzerland and Canada have shown a reduction in inappropriate antibiotic use when RAT is used, but this is on a background of high antibiotic use.^{24, 25}

In Scotland, over 300,000 primary care consultations a year are due to sore throat, and there are likely to be many with sore throat who visit their pharmacy or take no action. Introducing routine RAT may medicalise sore throat and lead to a marked increase in consultations. This may increase the number of antibiotics prescribed.

D Rapid antigen testing should not be carried out routinely in sore throat.

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 SIMPLE ANALGESICS

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The majority of patients with sore throat probably never attend a general practitioner but instead obtain symptomatic relief with ibuprofen or paracetamol. The recognised complications of aspirin therapy, including Reye's syndrome in children, make this agent less suitable for general use.

There is minimal literature regarding the use of stronger analgesics for sore throat. Combination preparations (such as paracetamol with codeine) are known to be associated with nausea, disorientation and severe constipation, but may be useful for some patients. In hospital and in general practice, weak opioids such as dihydrocodeine, sometimes in combination with other agents, are occasionally used but the risks of abuse limit their value in general practice.

5.2 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.²⁶⁻²⁸

1 + +

Ibuprofen is available over the counter and from various retail sources. It is only minimally more expensive than paracetamol.

A large blinded RCT involving 8,633 European adult patients showed that ibuprofen is as well tolerated as paracetamol and there are fewer serious gastrointestinal adverse effects with ibuprofen than paracetamol, irrespective of age, in short courses for acute pain.²⁹

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 trials compared ibuprofen and diclofenac against each other for effectiveness.

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.³⁰ Caution is advised using ibuprofen in asthmatic adults 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. Both drugs equally reduce fever, headache, achiness and throat pain for up to six hours.³¹

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 in combination. Combined therapy with ibuprofen and paracetamol for febrile symptoms in children is faster and superior to paracetamol alone³² but similar evidence in adults is lacking.

1 + +

5.3 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.

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

Combined therapy with ibuprofen and paracetamol for febrile symptoms in children gives faster and superior pain relief to paracetamol alone.³²

1 + +

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 for asthma-related morbidity associated with ibuprofen use in children.³⁰

1 +

Recent case reports have highlighted the concern about renal toxicity in dehydrated children given ibuprofen.³³ Ibuprofen should not be given routinely to children with or at risk of dehydration.

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

A**Ibuprofen can be used as a safe and effective alternative to paracetamol in children.****A****In febrile children, combined therapy with ibuprofen and paracetamol can be recommended.**

5.4 ADJUNCTIVE THERAPY

Throat sprays, lozenges and gargles are widely used and available over the counter. There is no good quality evidence on the effectiveness of these products. No studies provided evidence of lasting benefit. No trials compared these products with conventional analgesics.

Three trials on the effectiveness of a single dose of oral dexamethasone produced conflicting results.³⁴⁻³⁶ Larger, well-designed trials are required. Routine use of dexamethasone for the relief of sore throat is not recommended.

In patients with acute infectious mononucleosis requiring hospitalisation, corticosteroids are very occasionally prescribed when pain and swelling threaten the airway or where there is very severe dysphagia.

One RCT looking at effectiveness of steroids was carried out on a relatively small number of patients and the follow up was short.³⁷ The result of this trial is not convincing enough for generalisation.

A double blind placebo controlled RCT of Echinacea Purpurea therapy for throat pain in common cold did not reduce the symptoms or duration of common cold symptoms.³⁸

1 +

5.5 SYMPTOMATIC TREATMENT IN THE COMMUNITY

The community pharmacist is a useful source of advice on management of uncomplicated sore throat in the community.

6 Antibiotics in sore throat

6.1 ANTIBIOTICS IN ACUTE SORE THROAT

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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 and 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 vs. no prescription vs. delayed prescription for three days showed no difference in the main outcomes.⁴⁰ It is important to note that the following exclusion criteria were applied to entry to the trial: 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 and these are summarised in Annex 4.

The limited information available is insufficient to support a recommendation on the routine use of antibiotics in acute sore throat.



In view of increases in healthcare-acquired infections and antibiotic resistance in the community, injudicious 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. Cephalosporins should be considered as an alternative first line treatment, keeping in mind 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.



Practitioners should be aware that infectious mononucleosis may present with severe sore throat with exudate and anterior cervical lymphadenopathy, and should avoid prescription of ampicillin-based antibiotics, including co-amoxiclav, as first line treatment.

6.2 ANTIBIOTICS IN RECURRENT SORE THROAT

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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, and local breakdown of penicillin by beta-lactamase-producing commensals.^{41, 42} Benzathine penicillin,⁴³ cefuroxime⁴⁴ and clindamycin^{45, 46} 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 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.

There is no evidence to support a recommendation on the use of antibiotics in recurrent non-streptococcal sore throat.

In cases of recurrent sore throat associated with GABHS (not necessarily causal) the limited

evidence of benefit available suggests that a 10-day course of antibiotic may reduce the number and frequency of attacks. However, diagnosis of GABHS is not reliable.

Three RCTs examined whether antibiotics for sore throat reduces the number of subsequent sore throats or whether these can, if used prophylactically, reduce the incidence of recurrent sore throat.⁴⁷⁻⁴⁹ 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 relatively poor so the conclusions are not robust.

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.^{47, 49} A similar effect from macrolide (azithromycin) antibiotics is not demonstrated.⁴⁸

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

D

Antibiotic prophylaxis for recurrent sore throat is not recommended, particularly taking account of the risks and potential adverse effects of the increased use of antibiotics in this condition.

1-

6.3 USE OF ANTIBIOTICS TO PREVENT RHEUMATIC FEVER AND GLOMERULONEPHRITIS

It has been contended that the primary clinical rationale for treating streptococcal pharyngitis with antibiotics is the prevention of rheumatic fever and other sequelae, and that outbreaks of rheumatic fever are still being reported in both children and adults in the United States.⁵⁰ This does not apply in the UK, and a small reduction in bacteriological failure rate has to be weighed against the considerable increase in cost when antibiotics other than penicillin are used.⁵¹ 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.⁵²

Similar considerations apply to the prevention of glomerulonephritis.⁵³ Most of the information on the prevention of acute rheumatism comes from studies performed on military personnel living in overcrowded barracks immediately after the second World War, when the incidence of rheumatic fever was exceptionally high. At that time penicillin, particularly benzathine penicillin, was shown to be an effective prophylactic.⁵⁴ There is no evidence that these results are applicable in modern Britain.

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C

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

2+

6.4 USE OF ANTIBIOTICS TO PREVENT SUPPURATIVE COMPLICATIONS

Patients with severe pustular tonsillitis are frequently treated with antibiotics both in general practice and in hospital on pragmatic grounds. 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 incidence of quinsy is very low, although figures from the Common Services Agency, Information & Statistics Division show it has risen over the last five years. There is no evidence that this is related to changes in the use of antibiotic therapy.

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D

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

6.5 USE OF ANTIBIOTICS TO RELIEVE SYMPTOMS

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Although antibiotic therapy has been shown to alleviate symptoms even in sore throats not caused by bacteria,⁵⁵ the superiority of antibiotics over simple analgesics is marginal in reducing duration or severity.^{40, 56} Even in proven GABHS infection, the symptomatic improvement following penicillin, although superior to that following placebo in some studies,^{57, 58} has been unimpressive in others, especially when compared to simple analgesics.^{59, 60}

1+

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

Even if the symptomatic benefit were more substantial, a single case of penicillin-induced anaphylaxis would be a heavy price to pay.

6.6 USE OF ANTIBIOTICS TO PREVENT CROSS INFECTION IN SORE THROAT

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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 and there is no recent evidence from this country. 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.^{50, 61} 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.⁶²

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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 the three years of the audit the total number of tonsillectomies and adenotonsillectomies undertaken in Scotland was 14,530.

In the period of the audit, 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.

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Data from the Information and Statistics Division of the Common Services Agency of the NHS in Scotland show that, between 1990 and 1996, the rate for tonsillectomies in children aged 0-15 declined from 602 per 100,000 (6,152 operations) to 511 per 100,000 (5,256 operations). 44% of patients were male. 54% had their adenoids removed and 13% had surgery to drain the middle ear at the same operation. In adults aged 16 years and over, the tonsillectomy rate increased from 72 per 100,000 in 1990 (2,919 operations) to 78 per 100,000 in 1996 (3,200 operations). 32% were male. In 1996, 0.8% of children and 3% of adults were treated as day cases. 54% of children and 61% of adults had a two-night stay.

The Scottish Tonsillectomy Audit, carried out by the Audit Subcommittee of the Scottish Otolaryngological Society and funded by the Clinical Resource & Audit Group (CRAG) looked at tonsillectomy activity throughout Scotland over a 12 month period from February 1992. Outcome was measured by the response to a questionnaire at six months and one year after surgery, and indicated a high satisfaction rate among patients of 97%, with a 75% response rate at six months and 45% at one year.¹

7.2 EVIDENCE FOR SURGERY IN RECURRENT SORE THROAT

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The literature on surgery for sore throat is scanty. Most published studies refer to a paediatric population. The current widely accepted criteria for surgery are of the order of 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, and have been arrived at arbitrarily.⁶³ 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 by current standards but suggests that surgery is beneficial.⁶⁴

7.2.1 CHILDREN

No study demonstrated definite clinical benefit of tonsillectomy in children. A Cochrane review showed limited benefit of tonsillectomy or adenotonsillectomy in the treatment of sore throat.⁶⁵ In those children with severe recurring sore throat the benefit was of the order of reduction of 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.

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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 of 300 children with mild to moderate sore throat in the Netherlands found that adenotonsillectomy was not cost effective in mild to moderate sore throat and did not result in

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significant clinical benefit.⁶⁶

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.⁶⁷

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

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

Evidence on exactly which children with sore throats benefit from tonsillectomy is not available. The NESSTAC study is in progress and will be incorporated into future guidelines.⁶⁸ Adenotonsillectomy remains a procedure that is indicated in children with obstructive sleep apnoea and in patients with rare conditions such as periodic fever.

7.2.2 ADULTS

A Cochrane review found limited evidence for benefit of tonsillectomy in adults.⁶⁵

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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 (NNT = 5).⁶⁹

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

7.3 REFERRAL CRITERIA FOR TONSILLECTOMY

It seems reasonable to assume that recurrent acute attacks of tonsillitis can be prevented by tonsillectomy, but tonsillectomy will not prevent recurrent sore throats due to other reasons. Hence, 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.

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Four randomised controlled trials of tonsillectomy against non-surgical management in children have been reported.^{63, 70-72} All were designed before 1972 and none would satisfy current criteria for a well designed, controlled and analysed study. In the most quoted reference in particular, randomisation was not balanced in frequency of episodes or socioeconomic group.⁶³ 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. No randomised controlled studies have been reported in adults.

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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.⁷³⁻⁷⁵

3

The following are recommended as reasonable indications for consideration of tonsillectomy for recurrent acute sore throat in both children and adults, based on the current level of knowledge, clinical observation in the field and the results of clinical audit.

D Patients should meet all of the following criteria:

- sore throats are due to acute tonsillitis
- five or more episodes of sore throat per year
- symptoms for at least a year
- the episodes of sore throat are disabling and prevent normal functioning.

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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.

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

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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 example at Annex 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 operation. 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 re-refer if appropriate, or be reported by the patient at a pre-arranged review hospital appointment.

D

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 operation.

7.5 POSTOPERATIVE CARE

Patients frequently experience significant postoperative morbidity. This can include throat and ear pain, fever, poor oral intake, halitosis, and decreased activity levels following a

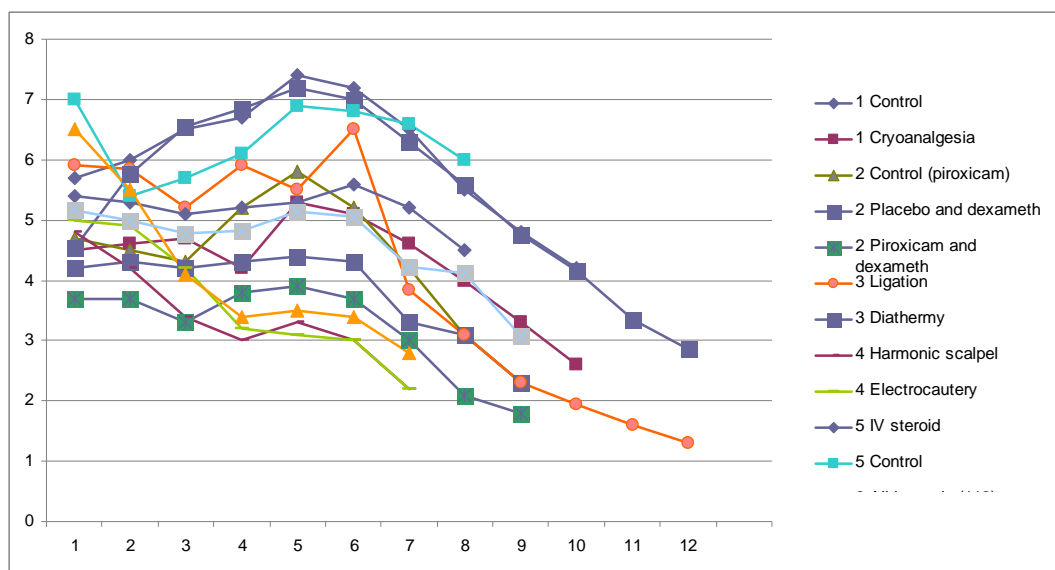
tonsillectomy. Pain is associated with a delay in return to normal activity and diet for patients. This problem could have an impact on the recovery of tonsil beds and lead to secondary bleed.

- 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.⁷⁶⁻⁸⁰ One single cohort study of 129 patients directly addressed the question of postoperative pain over time following tonsillectomy.⁸¹ Figure 1 summarises data extracted from these studies.

Figure 1: Level of pain reported per day following tonsillectomy



After tonsillectomy, in most cases pain will reduce in the first few days, but is likely to increase at day 5 before finally tailing off from day 6 onwards. The reason for the increase in pain at day 5 is not known, but it is not thought to be due to infection.

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The single cohort study showed that a subgroup of patients post-tonsillectomy who made unscheduled medical consultation had significantly more pain (and took significantly more analgesic) at day 5 – 7.⁸¹

D Primary care practitioners should be made aware of the potential for pain to increase on day 5 following tonsillectomy.

D 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 a week.

7.5.2 LOCAL ANAESTHESIA

It is not currently routine clinical practice in Scotland to administer local anaesthesia (LA) for tonsillectomy, although this was not the case in the recent past. Over the last 10 years or so, the routine use of perioperative LA infiltration has declined in Scotland, as improved alternative analgesia and anti-emetic regimes have developed.

Improving postoperative pain would facilitate early discharge, and some centres are looking

towards routine tonsillectomy as becoming a day-case procedure. The resource implications to administer LA perioperatively are small. The potential benefit is improved analgesia, shortening the time to eat & drink following the operation, and facilitate an early discharge.

A Cochrane systematic review found no evidence to support the use of either local anaesthetic infiltration or topical application.⁸² Since then, five good quality RCT studies have found no benefit.⁸³⁻⁸⁷

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There is some evidence to support analgesia benefit in the first few hours postoperatively but this is arguably obsolete with use of analgesia described above.⁸⁸⁻⁹⁴

Four studies describe some prolonged benefit beyond 24 hours but include additional injectate (fentanyl & clonidine) or small numbers.^{95, 96} One well conducted RCT in children and adults showed benefit for several days with a 'slow release' topical method.⁹⁷ 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 pre-operative fasting.

Two Cochrane reviews^{98, 99} and one RCT¹⁰⁰ considered the effectiveness of anti-emetic drugs in reducing PONV. These studies included over 100,000 patients. Droperidol, metoclopramide, ondansetron, tropisetron, dolasetron, dexamethasone, cyclizine and granisetron were all effective compared to placebo in preventing PONV with few side effects. Either nausea or vomiting affects at most 80/100 people after surgery. If all 100 were given one of the above drugs, about 28 would benefit and 72 would not.

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NSAIDs do not cause any increase in bleeding requiring a return to theatre. In 10 trials (>800 children) there was less PONV when NSAIDs were used as part of the analgesic regimen, compared to when NSAIDs were not used; OR 0.4 (95% CI 0.23- 0.72).⁹⁸

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

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

A Cochrane review concluded that dexamethasone is an effective, relatively safe and inexpensive treatment for reducing paediatric emesis after tonsillectomy and adenotonsillectomy. Treating four children will result in one benefiting from no emesis (NNT=4). No complications were found as a result of dexamethasone administration.¹⁰¹

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No evidence on the effectiveness of dexamethasone for preventing PONV in adults was identified.

A A single intraoperative intravenous dose of dexamethasone is recommended for children undergoing tonsillectomy or adenotonsillectomy.

A single intraoperative intravenous dose of dexamethasone is likely to benefit adults undergoing tonsillectomy or adenotonsillectomy.

A Cochrane review published in 2004 included 26 suitable studies on acupuncture/acupressure.¹⁰² One further relevant RCT was identified.¹⁰³ Three studies examined P6 stimulation, PONV and tonsillectomy.¹⁰³⁻¹⁰⁵ These studies demonstrated that stimulation of the P6 acupuncture point is effective at reducing nausea, vomiting, and the need for rescue anti-emetics, and may be more effective at reducing nausea (but not vomiting) than anti-emetics.

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

A

Stimulation of the acupuncture point P6 may be used for patients with nausea without vomiting.

No studies on the effectiveness of fasting for prevention of PONV in adults were identified. A Cochrane review on pre-operative fasting in children included a wide variety of operations and it is not clear how many studies included tonsillectomies.¹⁰⁶ Of the 23 included RCTs, 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 xxx with patients and carers and in guiding the production of locally produced information materials.

8.1 SOURCES OF FURTHER INFORMATION

This section is under development.

Comments from reviewers are welcome as to organisations or web sites that should be recommended.

8.2 CHECKLIST FOR PROVISION OF INFORMATION

This section explains what information patients/carers can reasonably expect to be provided with at the key stages of the patient journey and how assessments and interventions should usually be organised. The checklist was designed by members of the guideline development group based on their clinical experience and their understanding of the evidence base.

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 GP/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 ▪ In patients undergoing tonsillectomy, inform patients of waiting period for operation ▪ Inform patients that there is no guarantee that tonsillectomy will prevent ALL sore throats in the future – inform patients of difference between bacterial and viral sore throat. ▪ Advise patients of length of stay, need for general anesthetic and potential complications ie bleeding
Post-surgery
<ul style="list-style-type: none"> ▪ Advise on recovery time - 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 will peak at day 5 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 post-operative problems or complications

9 Implementing the guideline

This section provides advice on the resource implications associated with implementing the key clinical recommendations, and 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.

This section is under development. Comments are welcome on:

- **Barriers to be addressed in implementation**
- **Suggestions on how to facilitate implementation**
- **Resource implications of recommendations**

9.1 RESOURCE IMPLICATIONS OF KEY RECOMMENDATIONS

If the consultation identifies key recommendations that would have significant cost implications, a budgetary impact report will be produced where this is deemed necessary to aid implementation.

9.2 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.

This section of the guideline is under development. Comments are welcome.

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 year range covered was 2000-2008. 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 in the section covering supplementary guideline material (<http://www.sign.ac.uk/guidelines/published/support/>). The main searches were supplemented by material identified by individual members of the guideline development group.

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:

- effectiveness of surgery for recurring tonsillitis/pharyngitis in adults
- role of local anaesthesia in improving tonsillectomy outcomes
- whether stimulation of the acupuncture point P6 in addition to antiemetics is better than anti-emetics alone in reducing PONV
- comparison of antibiotic prescribing rates in primary care with the use of Centor CDR and the use of Centor with selective RAT.

10.3 REVIEW AND UPDATING

This guideline was issued in 2009 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>
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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.

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*

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 xx 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.

Title and full name	<i>Job title, Work place, City</i>
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Title and full name	<i>Job title, Work place, City</i>

11.4.3 SIGN EDITORIAL GROUP

As a final quality control check, the guideline is reviewed by an editorial group comprising 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>
Dr Safia Qureshi	<i>SIGN Programme Director; Co-Editor</i>
Dr Sara Twaddle	<i>Director of SIGN; Co-Editor</i>

Abbreviations

A&E	accident and emergency
BNF	British National Formulary
CI	confidence interval
CRAG	Clinical Resource and Audit Group
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
NESSTAC	North of England and Scotland study of tonsillectomy and adeno-tonsillectomy in children
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	4.1
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	5.2 and 5.3
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)	5.4

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

Annex 2

Example patient information leaflet: Tonsillitis and sore throat

TONSILLITIS AND SORE THROAT

Sore throats are particularly common in young children and young adults. This is probably because they are mixing in different social groups, and this is the first time that they have been exposed to the bacteria or viruses which cause sore throats. It is common in adults to have two or three sore throats per year, especially when developing a cold. After they have had a sore throat from particular bacteria or viruses, patients develop immunity to those bacteria or viruses. Antibiotics will not help most sore throats. The antibiotics themselves can cause unpleasant side-effects, and if they are used too often, they will no longer be effective for patients with life-threatening illness.

Home treatment:

- Children should be given paracetamol (follow the instructions for their age); adults should take ibuprofen (400 mg three times daily) or paracetamol 1 g four times daily
- Drink plenty of fluids
- Stay at home if you have a raised temperature
- Avoid cigarette smoke.

Further advice on simple relief measures can be obtained from your community pharmacist.

Contact your doctor if you have:

- 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.

Annex 3

Example patient information leaflet: Tonsillectomy

TONSILLECTOMY

It is common for people to suffer several sore throats most years. These are not always due to tonsillitis and may be linked to colds or flu. Young children and young adults are more prone to sore throats. This is probably because they are mixing in different social groups, and this is the first time that they have been exposed to the bacteria or viruses which cause sore throats. After they have had a sore throat from particular bacteria or viruses, patients develop immunity to those bacteria or viruses.

For some carefully selected patients, tonsillectomy can be beneficial.

The operation itself is very straightforward, but before making a decision to have a tonsillectomy, you may wish to consider the following drawbacks:

- One or two night stay in hospital and a general anaesthetic.
- A sore throat with a two week recovery period. This tends to be more of a problem in adults (it is worth comparing this with how much time you suffer from sore throats at present).
- Complications can occur, both with the operation and the anaesthetic.
- Currently 4.3% of patients having tonsillectomies in Scotland come back into hospital because of complications which arose after they had gone home, particularly bleeding.
- By the time you have your operation, it is possible that you will have grown out of the condition anyway, particularly if waiting lists are long. (No one can predict this accurately.)

Most patients currently having tonsillectomy report benefit from the operation, but there is no guarantee that tonsillectomy will prevent all sore throats in the future.

Sore throats can occasionally be a sign of more serious conditions, especially in older patients who start to get persistent sore throats. You should discuss any concerns with your doctor, who will advise on appropriate investigations and treatment.

Annex 4

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

**SIGN
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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,¹⁰⁷ 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.^{51, 108} 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.^{50, 109} Some cephalosporins offer a more convenient dosage regimen¹¹⁰ but twice and three times daily dosage for oral penicillin V have also been shown to be effective in eliminating GABHS.^{108, 111, 112} A 10-day course of penicillin appears to be more effective than five days.¹⁰⁸ There is no convincing evidence of advantage for any individual cephalosporin.

USE OF ANTIBIOTICS IN SORE THROAT IN WHICH GABHS HAS NOT BEEN DETECTED

**SIGN
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The limitations of performing throat swabs and of isolating, or failing to isolate, GABHS must be re-emphasised (see section 4). There is evidence from a small American study of 26 patients that erythromycin may provide symptomatic relief in non-streptococcal sore throat.⁵⁵ A recent UK study suggests that a cephalosporin may improve the rate of resolution of symptoms.¹¹³ However, there is no convincing evidence of benefit from antibiotic therapy as primary treatment for sore throat.

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