Corticosteroids for sore throat: a clinical practice guideline

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What is the role of a single dose of oral corticosteroids for those with acute sore throat? Using the GRADE framework according to the BMJ Rapid Recommendation process, an expert panel make a weak recommendation in favour of corticosteroid use. The panel produced these recommendations based on a linked systematic review triggered by a large randomised trial published in April 2017. This trial reported that corticosteroids increased the proportion of patients with complete resolution of pain at 48 hours. Box 1 shows all of the articles and evidence linked in this Rapid Recommendation package. The infographic provides the recommendation together with an overview of the absolute benefits and harms of corticosteroids in the standard GRADE format. Table 2 below shows any evidence that has emerged since the publication of this article. Clinicians and their patients can find consultation decision aids to facilitate shared decision making in MAGICapp (www.magicapp.org/goto/guideline/JjXYAL/sec-tion/j79pvn).

Acute sore throat is defined as pain in the throat for less than 14 days. Acute sore throat could be caused by pharyngitis, nasopharyngitis, tonsillitis, peritonsillar abscess, or retropharyngeal abscess. Some patients with sore throat also experience headache, fever, muscle stiffness, cough, and general malaise.

Acute sore throat is common, but only a minority of patients will visit their general practitioner.1 A survey reported that the main reasons are to establish the cause of the symptoms, obtain pain relief, and to gain information on the course of the disease.2 Data from Dutch and Flemish primary care databases show that, for every 1000 consecutive patients consulting a general practitioner, 50 present with an acute sore throat.12 In the US, more than 92 million visits by adults to primary care practices and emergency departments between 1997 and 2010 were recorded.2 Sore throat presenting as acute tonsillitis is also the commonest cause for emergency admission to otolaryngology services in the US.3

Acute sore throat is a self limiting disease and typically resolves after 7-10 days in adults and 2-7 days in children.1 Most infections are of viral origin; only a few are caused by a bacterial infection, of which group A β-haemolytic streptococcus, Haemophilus influenzae, and Moraxella catarrhalis are the most common pathogens. Evidence suggests that the time to resolution is not associated with the type of pathogen.7 About 2% of patients initially presenting with sore throat will have a mononucleosis infection caused by an Epstein-Barr virus, which could prolong the duration of symptoms.8 Some patients experience unacceptable morbidity and inconvenience, and miss school or work due to recurrent sore throat.9 Pain is a common reason for work or school absence. Complications of sore throat are rare: about 0.2% of patients with tonsillitis will develop a peritonsillar abscess.9

The diagnosis of an acute sore throat is based on signs and symptoms. The Center clinical prediction rules can be used to help predict whether the sore throat is caused by a bacterial pathogen, and thus guide the decision whether to prescribe an antibiotic.10
**RAPID RECOMMENDATIONS**

### Population

This recommendation applies to almost all patients with sore throat:
- Children 5 years and older and all adults
- Severe and not severe sore throat
- Emergency and primary care settings
- Patients with a viral or bacterial sore throat
- Patients who receive immediate or deferred antibiotics

However, the recommendation is not applicable to patients with:
- Infectious mononucleosis
- Immunocompromising conditions
- Sore throat following surgery or intubation
- Children under 5 years old

### Comparison

**Short course of steroids**
- 1–2 doses of oral Dexamethasone (or equivalent dose of alternative corticosteroid) + standard care

**No steroids**
- Standard clinical care, which typically includes analgesics, and may include antibiotics

- **Favours steroids**
- **Favours no steroids**

#### Comparison of benefits and harms

<table>
<thead>
<tr>
<th></th>
<th>Events per 1000 people</th>
<th>Evidence quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete pain resolution (24 hrs)</td>
<td>224</td>
<td>124 more</td>
</tr>
<tr>
<td>Complete pain resolution (48 hrs)</td>
<td>608</td>
<td>183 more</td>
</tr>
<tr>
<td>Mean time to resolution (hours)</td>
<td>33.0</td>
<td>11.1 fewer</td>
</tr>
<tr>
<td>Symptom recurrence or relapse</td>
<td>34</td>
<td>No important difference</td>
</tr>
<tr>
<td>Antibiotics prescription</td>
<td>468</td>
<td>96 fewer</td>
</tr>
</tbody>
</table>

#### Preferences and values

The panel believes that there is a great variability on how much reduction in pain severity or time to complete pain resolution each patient would consider important. Shared decision making may help establish what matters most to each patient.

#### Serious adverse events

One-dose administration of steroids is not likely to cause serious adverse events. Very low quality evidence exists for extremely rare but serious adverse effects following higher doses or longer courses of steroids (up to 30 days).

#### Multiple doses

Risks may outweigh benefits when cumulative doses of steroids are given for multiple episodes of sore throat. To mitigate this issue, clinicians could administer the medication in office if possible, or prescribe only one dose per visit.

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Most guidelines recommend paracetamol or ibuprofen as the first choice treatment.13 The use of corticosteroids is mentioned in few, and is generally discouraged (table 1). Antibiotics are probably not helpful for pain relief in an episode of acute sore throat caused by viruses, but may help those with a bacterial infection.1415 Recommended management of sore throat varies widely, and table 1 summarises current guidelines.

The evidence
The linked systematic review reports the effects of corticosteroids when added to standard care in patients with acute sore throat.16 Figure 1 gives an overview of the number and types of patients included, the study funding, and patient involvement, as well as a summary of the benefits and harms of corticosteroids for treating acute sore throat.

The panel identified eight patient-important outcomes needed to inform the recommendation: complete resolution of pain, time to onset of pain relief, pain severity, need for antibiotics, days missed from school or work, recurrence of symptoms, duration of bad or non-tolerable symptoms, and adverse effects. The included studies reported on all patient-important outcomes, except for duration of bad or non-tolerable symptoms. Regarding pain, the panel appraised the likelihood of complete resolution of pain at 24 hours and 48 hours, as well as the mean time to complete resolution of pain and the mean time to onset of pain relief.

Although most of the studies (80%) were conducted in emergency departments, they accounted for 54% of all patients enrolled across studies. The remaining 46% were enrolled in the studies conducted in primary care settings, and the panel was therefore confident that the evidence was applicable to them as well. Most of the studies focused in adults only (60%). The studies that focused only on children (three studies, 2% of all the patients enrolled in the studies) did not include children younger than 5 years old, and thus the recommendation does not apply to younger ages.

Since the randomised controlled trials focused on patients who did not have recurrent episodes of sore throat, the panel was less confident of the applicability of the evidence to such patients, and the recommendation therefore does not apply to them. Similarly, the panel did not consider patients with sore throat after surgery or intubation, nor immunocompromised patients.

Understanding the recommendation
The recommendation for using corticosteroids made by the panel was weak because of the modest reduction of symptoms and the large variability in patient preferences.

The panel is confident that the recommendation applies to almost all patients with acute sore throat: children 5 years and older and adults, severe and not severe sore throat, patients who receive immediate antibiotics and those who receive deferred antibiotics, patients with a viral or bacterial sore throat, and patients who seek
RAPID RECOMMENDATIONS

A single dose of corticosteroids is unlikely to cause serious adverse events
- The randomised trials did not report any major event attributable to single dose corticosteroids (GRADE moderate quality evidence)
- The panel also considered evidence from observational studies that used higher doses of steroids. A large retrospective US cohort study of private insurance claims assessed adverse events in 327,452 adults who received an outpatient prescription of corticosteroids. There was a small absolute increase in the rate of sepsis, venous thromboembolism, and fracture in the first 30 days (GRADE low quality evidence, due to suboptimal verification of diagnosis in large databases and confounding by indication). The panel agreed that such events seemed unlikely with single dose steroids
- Similarly, among paediatric populations, indirect evidence from a meta-analysis of 44 randomised trials did not report any major adverse events in patients with conditions requiring a short course of corticosteroids (such as asthma, bronchiolitis, croup, wheeze, and pharyngitis or tonsillitis)

There are no differences in the relative effects of corticosteroids (when compared with usual care) between primary care settings and emergency departments
- It is unlikely that new information will change interpretation for outcomes that are high to moderate quality of evidence.

DATA SOURCES

NUMBER OF TRIALS 10
NUMBER OF PATIENTS 1,426

TRIAL CHARACTERISTICS
- Drugs studied in trials
  - Dexamethasone
  - Prednisone
  - Betamethasone
- Oral delivery: 5
- Intramuscular delivery: 5

PATIENT CHARACTERISTICS
- Mean number of patients enrolled
  - Mean 58
  - Mean 153
  - Mean 576
- Mean age at baseline
  - Mean 10
  - Mean 26
  - Mean 34
- Streptococcus positive
  - % of patients
    - Mean 15
    - Mean 51
    - Mean 100
- Antimicrobial use
  - % of patients
    - Mean 38
    - Mean 83
    - Mean 100

FUNDING
80% of trials did not report the source of funding and 20% of trials reported non-industry funding

Fig 1 | Characteristics of patients and trials included in systematic review of effects of corticosteroids on acute sore throat

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**RAPID RECOMMENDATIONS**

### PRACTICAL ISSUES

<table>
<thead>
<tr>
<th>Steroids</th>
<th>No steroids</th>
</tr>
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<tbody>
<tr>
<td><strong>MEDICATION ROUTINE</strong></td>
<td></td>
</tr>
<tr>
<td>One (or two) doses of steroids, taken as pill(s) or intramuscular injection(s)</td>
<td>May require concomitant antibiotics, and/or over the counter pain relievers</td>
</tr>
<tr>
<td><strong>TESTS &amp; VISITS</strong></td>
<td></td>
</tr>
<tr>
<td>May need additional visits if symptoms do not resolve or worsen</td>
<td></td>
</tr>
<tr>
<td><strong>ADVERSE EFFECTS</strong></td>
<td></td>
</tr>
<tr>
<td>Serious adverse events are unlikely with one-dose corticosteroids. There may be risks with repeated doses across multiple episodes of sore throat, or through self-medication</td>
<td>May require concomitant antibiotics, and/or over the counter pain relievers</td>
</tr>
<tr>
<td><strong>EMOTIONAL WELL-BEING</strong></td>
<td></td>
</tr>
<tr>
<td>May cause transient sleep disturbance and excitability, although infrequently with one-dose corticosteroids</td>
<td></td>
</tr>
<tr>
<td><strong>PREGNANCY &amp; NURSING</strong></td>
<td></td>
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<tr>
<td>Dexamethasone crosses the placenta, and is generally avoided during pregnancy. There is, however, probably no risk of malformation</td>
<td></td>
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<tr>
<td><strong>COSTS &amp; ACCESS</strong></td>
<td></td>
</tr>
<tr>
<td>Inexpensive, available by prescription</td>
<td></td>
</tr>
<tr>
<td><strong>FOOD &amp; DRINK</strong></td>
<td></td>
</tr>
<tr>
<td>May increase appetite, particularly in children</td>
<td></td>
</tr>
</tbody>
</table>

**Fig2 Practical issues about use of corticosteroids to treat acute sore throat**

The panel was less confident about whether:

- Corticosteroids reduced antibiotic use, due to a lack of improvement or worsening of symptoms in patients not prescribed antibiotics immediately when consulting the physician (GRADE low quality evidence)
- Corticosteroids reduced the average time to complete resolution of pain (GRADE low quality evidence).

**Values and preferences**

The weak recommendation for corticosteroids reflects a high value on a modest reduction of symptom severity and the time that it takes to achieve such improvement, and a substantial and important increase in the chance of complete resolution of pain at 48 hours.

The panel, including the patient representatives, felt that the values and preferences are likely to vary greatly across patients, which justifies a weak recommendation. For example, achieving complete pain resolution 12 hours earlier may be of little importance for patients who feel less busy in their daily life, have higher tolerance to pain, or whose symptoms are not so severe; whereas it may be very important to patients whose ability to go to school or to perform at work are compromised, caregivers wishing to reduce their children’s pain, or patients experiencing their pain as severe.

The panel believes that there is great variability in how much reduction in pain severity or time to complete pain resolution each patient would consider important. However, the greater the reduction in hours to achieve complete resolution of pain, the more likely it is that typical patients would place high value on those outcomes. Patients who place a high value in reducing the symptoms by any amount (such as patients with lower tolerance to pain or with severe symptoms) are more likely to accept receiving corticosteroids.

The weak recommendation for corticosteroids also reflects the concerns that the panel had with acceptability. Specifically, how acceptable is it to treat a condition that is usually not severe and is self-limiting with a drug that many patients, practitioners, and other stakeholders know is almost always used for more severe diseases.

The systematic search for empirical data on patients’ values and preferences related to sore throat identified 41/49 references that were screened at the title and abstract level. From these, we screened 99 full text articles, from which only two provided relevant information on patients’ values and preferences (see appendix 1 on bmj.com). Neither of the studies provided additional data that had not been raised by the panel members: the panel had identified appropriate patient-important outcomes and considered the variability in patient values and preferences regarding sore throat management.

**EDUCATION IN PRACTICE**

- How do you currently approach giving advice for those with acute sore throat? Do you consider offering corticosteroids?
- The recommendation for corticosteroid use is weak, and patient’s preferences are likely to vary. What information could you share with your patient to help reach a decision together?
- Have you learnt one thing from this article that might alter how you consult with patients with sore throat? How might you share this information with colleagues to learn together?
- To what extent do you practice shared decision making for such preference-sensitive decisions?

**HOW PATIENTS WERE INVOLVED IN THE CREATION OF THIS ARTICLE**

Five people with lived experience of sore throat were full panel members. These panel members identified important outcomes, and led the discussion on values and preferences. These patient representatives agreed that while small reductions in pain severity and time to complete pain resolution (for example 12 compared to 24 hours) were important to them, these values may not be shared by all patients; they expected moderate to great variability in how much importance other patients would place in small reductions in pain. These panel members participated in the teleconferences and email discussions and met all authorship criteria.
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Table 2 | New evidence which has emerged after initial publication

<table>
<thead>
<tr>
<th>Date</th>
<th>New evidence</th>
<th>Citation</th>
<th>Findings</th>
<th>Implications for recommendation(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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There are currently no updates to the article.

Practical issues and other considerations

Figure 2 outlines the key practical issues for patients and clinicians discussing adjunct steroids for sore throat, which are also accessible along with the evidence as decision aids to support shared decision-making in MAGIC-Capp. Steroids are typically given as 10 mg dexamethasone (or adapted to weight for children: 0.6 mg/kg, up to a maximum dose of 10 mg), typically taken as pill or intramuscular injection.

The risks may outweigh the benefits when larger cumulative doses of corticosteroids are given to patients who experience multiple episodes of sore throat, either through multiple visits or for patients who self-medicate if prescribed more than one pill for their previous episode. To mitigate this issue, clinicians should administer the medication in office if possible or prescribe only one dose per visit.

Costs and resources

The panel focused on the patient perspective rather than that of society when formulating the recommendation. Given the low cost of corticosteroids for treating sore throat, implementation of this recommendation is unlikely to have an important impact on the costs for health funders. The treatment is inexpensive and likely to be offered in the context of a consultation that would have taken place anyway. Nevertheless, it remains uncertain whether it may increase the proportion of patients visiting a doctor to get a prescription of corticosteroids.

Uncertainties for future research

Key research questions to inform decision makers and future guidelines include:

- Are there any severe adverse effects of using one-dose of steroids for treating sore throat?
- What are the effects of corticosteroids, in addition to standard care, in patients with recurrent episodes of acute sore throat?

Updates to this article

Table 2 shows evidence which has emerged since the publication of this article. As new evidence is published, a group will assess the new evidence and make a judgment on to what extent it is expected to alter the recommendation.

Competing interests: All authors have completed the BMJ Rapid Recommendations interests disclosure form and a detailed, contextualised description of all disclosures is reported in appendix 2 on bmj.com. As with all BMJ Rapid Recommendations, the executive team and The BMJ judged that no panel member had any financial conflict of interest. Professional and academic interests are minimised as much as possible, while maintaining necessary expertise on the panel to make fully informed decisions.

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Transparency: B Aertgeerts affirms that the manuscript is an honest, accurate, and transparent account of the recommendation being reported; that no important aspects of the recommendation have been omitted; and that any discrepancies from the recommendation as planned (and, if relevant, registered) have been explained.

RAPID RECOMMENDATIONS


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