

## Living FRIendly Summaries of the Body of Evidence using Epistemonikos (FRISBEE)

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# Are systemic corticosteroids useful for the management of acute pharyngitis?

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## Abstract

### INTRODUCTION

Pain associated to acute pharyngitis is a frequent cause of consultation. Usual care includes non-steroidal anti-inflammatories and antibiotics in selected cases, but pain relief is not always quick enough. The use of corticosteroids has been proposed as a therapeutic alternative, but its actual efficacy is matter of debate.

### METHODS

To answer this question we used Epistemonikos, the largest database of systematic reviews in health, which is maintained by screening multiple information sources, including MEDLINE, EMBASE, Cochrane, among others. We extracted data from the systematic reviews, reanalyzed data of primary studies, conducted a meta-analysis and generated a summary of findings table using the GRADE approach.

### RESULTS AND CONCLUSIONS

We identified eight systematic reviews including 11 studies overall, of which 10 were randomized trials. We concluded a short course of systemic corticosteroids reduces pain related to acute pharyngitis, without increasing the risk of adverse effects.

### Problem

Acute pharyngitis is a frequent condition. Viral etiology predominates, but a small percentage of bacterial etiology exists, among which group A beta-hemolytic Streptococcus stands out.

Acute pharyngitis related pain is a frequent reason for consultation in primary care and emergency departments. Usual care with non-steroidal anti-inflammatories and antibiotics in selected cases does not relieve pain completely and timely in all cases.

Corticosteroids have been proposed for the management of pain related to acute pharyngitis based on their potent anti-inflammatory effect.

The present summary aims to determine if corticosteroids constitute an effective and safe intervention for the management of acute pharyngitis.

## Methods

To answer the question, we used Epistemonikos, the largest database of systematic reviews in health, which is maintained by screening multiple information sources, including MEDLINE, EMBASE, Cochrane, among others, to

identify systematic reviews and their included primary studies. We extracted data from the identified reviews and reanalyzed data from primary studies included in those reviews. With this information, we generated a structured summary denominated FRISBEE (Friendly Summary of Body of Evidence using Epistemonikos) using a pre-established format, which includes key messages, a summary of the body of evidence (presented as an evidence matrix in Epistemonikos), meta-analysis of the total of studies when it is possible, a summary of findings table following the GRADE approach and a table of other considerations for decision-making.

### Key messages

- Systemic corticosteroids decrease pain related to acute pharyngitis.
- There are minimal or no adverse effects associated to a short course of corticosteroids.

### About the body of evidence for this question

<p>What is the evidence. See evidence matrix in Epistemonikos later</p>	<p>We identified eight systematic reviews [1],[2],[3],[4],[5],[6],[7],[8], including 11 primary studies [9],[10],[11],[12],[13],[14],[15],[16],[17],[18],[19], of which 10 corresponded to randomized trials [9],[10],[12],[13],[14],[15],[16],[17],[18],[19]. This table and the summary in general are based on the latter.</p>
<p>What types of patients were included*</p>	<p>All of the trials considered patients presenting with acute pharyngitis. Six trials only included adult patients [9],[12],[13],[14],[18],[19], three only pediatric patients [10],[15],[17] and one did not differentiate [16]. Average age was 24 years, including patients from four years and older. Detection of group A beta-hemolytic Streptococcus was an inclusion criterion in one trial [15]. Two trials did not report detection of this pathogen [16],[18]. The remaining trials reported detection in 14.9 to 57.5% of patients [9],[10],[12],[13],[14],[17],[19]. Among exclusion criteria the following stand out: previous use of antibiotics in two trials [10],[12], pregnancy in nine trials [10],[12],[13],[14],[15],[16],[17],[18] and diabetes mellitus in nine trials [9],[10],[12],[13],[14],[16],[18],[19]. All trials excluded immunocompromised patients, suspected peritonsillar or retropharyngeal abscess and previous use of corticosteroids. Three trials were conducted in primary care [10],[12],[13], while the remaining trials were conducted in emergency departments [9],[14],[15],[16],[17],[18],[19].</p>
<p>What types of interventions were included*</p>	<p>All of the trials compared systemic corticosteroids against placebo or no treatment. Most trials used a single 8-10 mg or 0.6 mg/kg dose of dexamethasone [9],[10],[12],[15],[16],[17],[18],[19]. One trial used prednisone [13] and one used betamethasone [14], both as single dose. Route of administration was oral in seven trials [9],[10],[12],[13],[15],[17],[19] and intramuscular in three [14],[16],[18]. In six trials, all patients received antibiotics [9],[14],[15],[16],[18],[19]. In four trials, the indication of antibiotics was at physician discretion or when group A beta-hemolytic Streptococcus was detected [10],[12],[13],[17]. In four trials, all patients received analgesia [9],[15],[18],[19] and in the remaining trials analgesia was at physician discretion [10],[12],[13],[14],[16],[17].</p>
<p>What types of outcomes were measured</p>	<p>Systematic reviews grouped outcomes as follows: resolution of pain at 24 or 48 hours, time to onset of pain relief, time to complete resolution of pain, pain intensity (visual analog scale) at 24 hours, symptoms recurrence, antibiotic prescription, work and school absenteeism, and adverse effects. Mean follow up time in trials was 18 days, with a range from three days to two months.</p>

\* The information about primary studies is extracted from the systematic reviews identified, unless otherwise specified.

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## Summary of Findings

The information about the effects of corticosteroids for acute pharyngitis is based on ten randomized trials including 966 patients [9],[10],[12],[13],[14],[15],[16],[17],[18],[19]. Five trials reported resolution of pain at 24 hours [12],[13],[15],[18],[19]. The remaining trials reported pain in other ways (see other considerations for decision-making section). Eight trials reported adverse effects [10],[12],[14],[15],[16],[17],[18],[19]. The summary of findings is the following:

- Systemic corticosteroids increase the number of patients with resolution of pain at 24 hours. The certainty of the evidence is high.
- Systemic corticosteroids do not increase adverse effects or these are minimal. The certainty of the evidence is high.

<b>Systemic corticosteroids for acute pharyngitis</b>				
<b>Patients</b>	Adults and children with acute pharyngitis			
<b>Intervention</b>	Systemic corticosteroids (added to usual treatment)			
<b>Comparison</b>	Placebo or no treatment (added to usual treatment)			
Outcome	Absolute effect*		Relative effect (95% CI)	Certainty of evidence (GRADE)
	WITHOUT corticosteroids	WITH corticosteroids		
	Difference: patients per 1000			
Resolution of pain at 24 hours	158 per 1000	379 per 1000	RR 2.4 (1.29 a 4.47)	⊕⊕⊕⊕ High
	Difference: 221 patients more (Margin of error: 46 less to 548 more)			
Adverse effects	Five trials reported absence of adverse effects in both groups. Three trials reported no significant differences between corticosteroids and placebo.			⊕⊕⊕⊕ <sup>1</sup> High
Margin of error: 95% confidence interval (CI). RR: Risk ratio. GRADE: Evidence grades of the GRADE Working Group (see later).  *The risk <b>WITHOUT corticosteroids</b> is based on the risk in the control group of the trials. The risk <b>WITH systemic corticosteroids</b> (and its margin of error) is calculated from relative effect (and its margin of error).  <sup>1</sup> Even though half of the randomized trials analyzing this outcome presented a moderate to high risk of bias, certainty of the evidence was not downgraded, as this would had minimally modified the conclusion.				

Following the link to access the interactive version of this table ([Interactive Summary of Findings – iSoF](#))

<b>About the certainty of the evidence (GRADE)*</b>
⊕⊕⊕⊕ <b>High:</b> This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.
⊕⊕⊕○ <b>Moderate:</b> This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate
⊕⊕○○ <b>Low:</b> This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.
⊕○○○ <b>Very low:</b> This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.
*This concept is also called ‘quality of the evidence’ or ‘confidence in effect estimates’. † Substantially different = a large enough difference that it might affect a decision.

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## Other considerations for decision-making

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### To whom this evidence does and does not apply

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- The present summary applies to children and adults with acute pharyngitis in primary care or emergency department setting.
  - Some trials demanded detection of group A beta-hemolytic Streptococcus or reported a high percentage of detection, however this was not predominant, therefore results apply regardless of the etiology of acute pharyngitis.
  - Even though most analysed trials prescribed antibiotics, results can be extrapolated to patients without indication of antibiotics. In fact, the trial that included the highest amount of patients did not initially prescribe them [12].
  - The present summary does not apply to immunocompromised patients or those with suspected peritonsillar or retropharyngeal abscess. Pregnant patients or those with diabetes mellitus were excluded from the analysed trials, and the use of corticosteroids could imply other consequences for them.
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### About the outcomes included in this summary

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- To generate the summary of findings table we selected outcome resolution of pain at 24 hours, because it was considered critical for decision-making. This selection is based on the opinion of the authors of this article.
  - Effects over other outcomes related to pain do not modify conclusions: resolution of pain at 48 hours (164 more per 1000 patients [95% CI: 88 to 249 more]; certainty of evidence: moderate) [12],[13],[15],[18], time to onset of pain relief (MD -4.84 hours [95% CI: -1.9 to -7.8]) [9],[10],[12],[14],[16],[17],[18],[19], time to complete resolution of pain (MD -11.1 hours [95% CI: -0.41 to -21.8]) [10],[12],[14],[16],[17],[18].
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### Balance between benefits and risks, and certainty of the evidence

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- The present summary shows a reduction of pain when systemic corticosteroids are added to the treatment of acute pharyngitis, with high certainty.
  - The use of corticosteroids in this context does not increase the risk of adverse effects.
  - Severe adverse effects (peritonsillar abscess, pneumonia) did not vary between intervention and placebo either [8]. It should be noted that observational studies have reported severe adverse effects with short periods of corticosteroids in adult patients, therefore their low frequency occurrence cannot be discarded [20]. A systematic review on the use of short periods of corticosteroids in children presenting with respiratory conditions did not show an increase in adverse effects [21].
  - The balance between benefits and risk for this intervention is favorable.
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### Resource considerations

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- Systemic corticosteroids for short periods have a low cost.
  - If benefits, absence of adverse effects and low cost are considered, this intervention is probably cost-effective. A formal economic analysis might allow quantification of cost-benefit of this intervention in specific settings.
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### What would patients and their doctors think about this intervention

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- Facing the evidence presented in this summary, most patients and caregivers should incline towards its use.
  - However, some patients might choose no treatment, as this condition is self-limited.
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### Differences between this summary and other sources

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- The conclusion presented in this summary agree with systematic reviews identified.
  - The conclusions from this summary are partially concordant with the main guidelines. The 2012 ad-hoc guideline of the European Society of Clinical Microbiology and Infectious Diseases recommends the use of systemic corticosteroids only for adult patients with severe presentation of acute pharyngitis, added to concomitant antibiotic use [22]. The 2012 guideline from the Infectious Diseases Society of America (IDSA) does not recommend the use of systemic corticosteroids for acute pharyngitis caused by group A beta-hemolytic Streptococcus [23]. It is important to highlight that the recommendation from this guidelines is based on a portion of the evidence identified in this summary.
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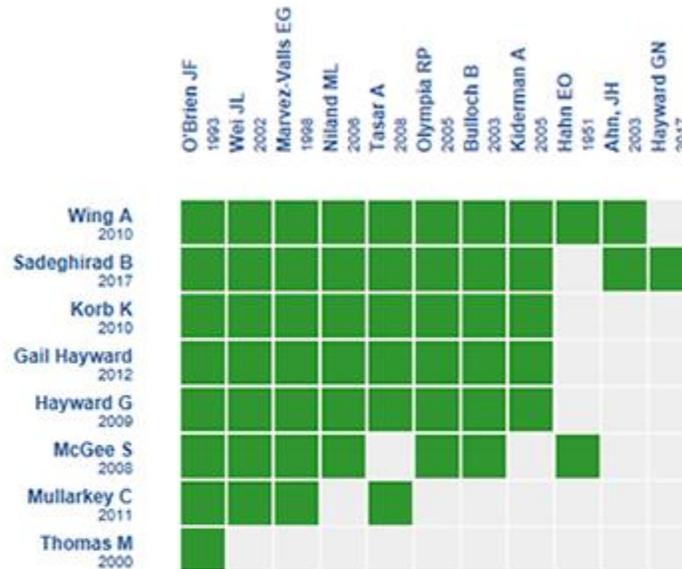
### Could this evidence change in the future?

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- Given the certainty of evidence, there is a very low probability of future investigation changing this conclusion.
  - We did not identify ongoing trials in the International Clinical Trials Registry Platform of the World Health Organization evaluating the use of systemic corticosteroids for acute pharyngitis.
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### How we conducted this summary

Using automated and collaborative means, we compiled all the relevant evidence for the question of interest and we present it as a matrix of evidence.



An evidence matrix is a table that compares systematic reviews that answer the same question.

Rows represent systematic reviews, and columns show primary studies.

The boxes in green correspond to studies included in the respective revisions.

The system automatically detects new systematic reviews including any of the primary studies in the matrix, which will be added if they actually answer the same question.

Follow the link to access the **interactive version**: [Corticosteroids versus placebo or no treatment for acute pharyngitis](#)

### Notes

The upper portion of the matrix of evidence will display a warning of "new evidence" if new systematic reviews are published after the publication of this summary. Even though the project considers the periodical update of these summaries, users are invited to comment in *Medwave* or to contact the authors through email if they find new evidence and the summary should be updated earlier.

After creating an account in Epistemonikos, users will be able to save the matrixes and to receive automated notifications any time new evidence potentially relevant for the question appears.

This article is part of the Epistemonikos Evidence Synthesis project. It is elaborated with a pre-established methodology, following rigorous methodological standards and internal peer review process. Each of these articles corresponds to a summary, denominated FRISBEE (Friendly Summary of Body of Evidence using

Epistemonikos), whose main objective is to synthesize the body of evidence for a specific question, with a friendly format to clinical professionals. Its main resources are based on the evidence matrix of Epistemonikos and analysis of results using GRADE methodology. Further details of the methods for developing this FRISBEE are described here

(<http://dx.doi.org/10.5867/medwave.2014.06.5997>)

Epistemonikos foundation is a non-for-profit organization aiming to bring information closer to health decision-makers with technology. Its main development is Epistemonikos database ([www.epistemonikos.org](http://www.epistemonikos.org)).

#### Potential conflicts of interest

The authors do not have relevant interests to declare.

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