

# Guideline for The Diagnosis and Management of Acute Pharyngitis



Administered by the Alberta  
Medical Association

2008 update

*This clinical practice guideline (CPG) was developed by a Clinical Practice Guideline working group. The guideline is intended for use with the immunocompetent individual. The goal of this guideline is to reduce inappropriate use of antibiotics in the treatment of pharyngitis.*

## MANAGEMENT

### Diagnosis

- Viruses are the most common cause of acute pharyngitis. Throat cultures do **NOT** need to be done when viral infection is suspected by the presence of: rhinorrhea, hoarseness, cough, and conjunctivitis
- Group A Streptococcal pharyngitis is uncommon in children < 3 years old.
- A throat swab for culture must be done to reliably diagnose Group A Streptococcal pharyngitis
- Patients with all four of the classic symptoms of Group A Streptococcal pharyngitis:
  - pharyngeal or tonsillar exudate
  - swollen anterior cervical nodes
  - a history of a fever greater than 38°C
  - absence of coughhave a 44% chance that they will **NOT** have Group A Streptococcal pharyngitis.
- Rapid strep (antigen detection) tests lack sensitivity, lack evidence of improved clinical outcome and are **NOT** recommended.
- Antibody tests (ASOT) are of no immediate value in the diagnosis or treatment of acute Group A Streptococcal pharyngitis.
- Repeat (post treatment) throat cultures are not routinely recommended.

### Treatment

#### Viral Pharyngitis

- Antibiotics are **NOT** indicated.
- Symptomatic treatment with over-the-counter pain relievers such as oral acetaminophen or ibuprofen may be helpful in relieving discomfort from pharyngitis.
- Products such as antiseptic/antibacterial lozenges, sprays and antibacterial mouthwashes/gargles are not recommended as they may lead to resistance.

#### Group A Streptococcal Pharyngitis

- Delay treatment until culture confirms diagnosis.
- Empiric antibiotic therapy is not recommended but the Clinical Practice Guideline working group acknowledges that in certain circumstances (lack of patient follow-up; lack of laboratory access; toxic presentation) patients presenting with all four classic symptoms of Group A Streptococcal pharyngitis (pharyngeal or tonsillar exudates, swollen anterior cervical glands, history of fever 38°C, and absence of cough), can be treated empirically with antibiotics (see over).
- Antibiotic therapy for confirmed Group A Streptococcal Pharyngitis decreases:
  - severity of symptoms
  - duration of symptoms by ~1 day
  - risk of transmission (after 24 hours of therapy)
  - likelihood of suppurative complications and rheumatic fever
- For Group A Streptococcal pharyngitis, a full 10 day course is recommended to prevent acute rheumatic fever.
- There is no good evidence that shorter antibiotic courses (including cephalosporins and newer macrolides) are as effective as 10 days.
- Confirmed Group A Streptococcal pharyngitis should be treated with penicillin unless contraindicated.

The above recommendations are systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances. They should be used as an adjunct to sound clinical decision making

## Penicillin

### Children

Penicillin VK\* 40mg/kg/day PO **bid** for 10 days

\* *Use tablets whenever possible to avoid problems with the taste of the medication or mask the taste of oral suspensions.*

### Adults

Penicillin VK 300mg PO **tid** for 10 days

or

Penicillin VK 600mg PO **bid** for 10 days

### Alternatives in Penicillin Allergic Patients

- Oral erythromycin or clindamycin is acceptable for patients allergic to penicillin.

	Children	Adults
<b>Clindamycin</b>	20mg/kg/day PO <b>tid</b> for 10 days	300mg PO <b>tid</b> for 10 days
<b>Erythromycin</b>	40mg/kg/day PO <b>tid</b> for 10 days	250mg PO <b>qid</b> or 333mg PO <b>tid</b> for 10 days

### Antibiotics NOT Recommended in Pharyngitis

- TMP/SMX has no activity against Group A Streptococcus.
- It is the opinion of the Clinical Practice Guideline working group, that because of rapidly emerging bacterial resistance in commensal flora with subsequent transfer to pathogens, **these broad spectrum antibiotics**, including the quinolones and cephalosporins **should NOT be used** in the treatment of Group A Streptococcal pharyngitis.

### Management of Non-Responders

- If a patient with confirmed Group A Streptococcal pharyngitis remains symptomatic on appropriate antibiotic therapy after 72 hours, the patient should be reassessed for such factors as:
  - acute complications of Group A Streptococcal pharyngitis (e.g., peritonsillar abscess)

- concurrent viral infections
- compliance.

### Management of Relapses

- Despite universal susceptibility of Group A Streptococcus to penicillin, penicillin therapy may fail due to  $\beta$ -lactamase production of oral anaerobes.
- In a patient presenting with acute symptoms 2 to 7 days after completion of appropriate antibiotic therapy, a repeat throat culture should be performed.
- If the culture is positive for Group A Streptococcus, consider prescribing an inhibitor such as a  $\beta$ -lactam/ $\beta$ -lactamase agent, amoxicillin-clavulanate, or non- $\beta$ -lactam antibiotics such as clindamycin or erythromycin (if not given as first line therapy).
- The patient should be reassessed for concurrent viral infection and non-compliance and with treatment recommendations.

### Late Relapse or Recurrent

Children	Duration
<b>Clindamycin</b> 20mg/kg/d PO <b>tid</b>	10 days
<b>Amoxicillin-clavulanate</b> 40 mg/kg/day PO <b>tid</b>	10 days
<b>Erythromycin</b> 40mg/kg/day PO <b>tid</b>	10 days
<b>Penicillin VK</b> 40mg/kg/day PO <b>bid</b>	10 days
<b>Adults</b>	
<b>Clindamycin</b> 300mg PO <b>tid</b>	10 days
<b>Amoxicillin-clavulanate</b> 875 mg PO <b>bid</b> or 500 mg PO <b>tid</b>	10 days
<b>Erythromycin</b> 250mg PO <b>qid</b> or 333mg PO <b>tid</b>	10 days
<b>Penicillin VK</b> 600mg PO <b>bid</b> or 300mg PO <b>tid</b>	10 days

### Management of Symptomatic Recurrences

- If the patient has 3 or more culture confirmed symptomatic episodes of Group A Streptococcal pharyngitis in a one year period assess for:
  - carrier status and transmission within families

where one family member or close contact may be an asymptomatic carrier of Group A Streptococcus.

- do throat swab during asymptomatic interval to document carrier status of patients to document carrier status
- do throat swab during of all household members to document carrier status (see next page).

### Carriers

Streptococcal carriers appear to be at little risk for developing rheumatic fever. In general, chronic carriers are not considered to be important in the spread of Group A Streptococcus to individuals who live and work around them.

Up to 20% of the pediatric population may carry Group A Streptococcus asymptotically. Carriage rates in older adolescents and adults is much lower at 2.4-3.7%. **These asymptomatic carriers do NOT need to be identified or treated except in high risk settings:**

- family member with rheumatic fever or post Streptococcal glomerulonephritis
- outbreak of rheumatic fever
- outbreak of pharyngitis in a closed community
- repeat transmission within families
- multiple ( $\geq 3$ /year) culture confirmed episodes of symptomatic pharyngitis

### Eradication of Carrier State in HIGH RISK Patients

<u>Children</u>	<u>Duration</u>
<b>Clindamycin</b> 20mg/kg/d PO tid <b>Amoxicillin-clavulanate</b> 40mg/kg/day PO tid	10 days
<b>[Penicillin VK</b> 40mg/kg/d PO bid or tid + <b>Rifampin</b> 10mg/kg PO bid (max 300mg/dose)]	10 days  10 days
<u>Adults</u>	
<b>Clindamycin</b> 300mg PO tid	4 days
<b>Amoxicillin-clavulanate</b> 875mg PO bid or 500mg PO tid	10 days 10 days
<b>[Penicillin VK</b> 300 mg PO tid or 600mg PO bid + <b>Rifampin</b> 300mg PO bid over last 4 days of treatment	10 days

### Prevention

- Handwashing
- Avoid sharing items such as utensils, water bottles, and toothbrushes

### ISSUES

- **The majority of cases of pharyngitis are of viral etiology and should NOT be treated with antibiotic therapy.**
- Excessive or inappropriate use of antibiotics for viral infections has led to the emergence of antibiotic resistance of other oropharyngeal flora.
- Group A  $\beta$ -hemolytic streptococcus (Group A Streptococcus) is the most common bacterial pathogen causing pharyngitis.
  - the goal of antibiotics is to prevent acute and long term sequelae (acute rheumatic fever);
  - awaiting the results of throat cultures prior to treating the disease is recommended and will still prevent complications;
  - Group A Streptococci are uniformly susceptible, worldwide, to penicillin;
- **The diagnosis of streptococcal pharyngitis can not be reliably made without throat culture.**

### BACKGROUND

#### Introduction

Physicians in primary care encounter adults and children who have a sore throat either as part of a constellation of symptoms or as an isolated symptom. Etiologic agents involved in pharyngitis are **most often viral** (including the virus causing mononucleosis). Group A Streptococcus is the most commonly encountered bacterial pathogen in pharyngitis. Other bacterial causes include other beta-haemolytic streptococci (group C and G), *Neisseria gonorrhoeae* and *Arcanobacterium haemolyticum*. The role of *Chlamydia pneumoniae* and *Mycoplasma pneumoniae* has been suggested but not substantiated. The clinical significance and treatment of Group C and G streptococcus remains controversial. The reporting of these organisms by microbiology

laboratories is also variable. Decisions to treat should be based on the severity of the clinical presentation.

## Epidemiology

Group A Streptococcal pharyngitis is predominantly a disease of youth, with 50 percent of the patients in the 5 to 15 year old age groups. The peak incidence is during the first few years of school. It is the most common bacterial pathogen encountered in patients over 3 years of age.<sup>2</sup> Group A Streptococcus occurs most often in fall, winter and spring and is nearly always acquired by direct contact with respiratory secretions.<sup>3</sup>

## DIAGNOSIS

### Clinical Presentation and Physical Examination

Repeat studies have shown that it is not possible to distinguish between Group A Strep and viral pharyngitis with acceptable sensitivity and specificity based on history and clinical findings. Clinical signs and symptoms are not specific. The diagnosis must be made by throat culture.

The presence of certain typical symptoms of acute viral infection should dissuade the physician from seriously considering acute Group A Streptococcal pharyngitis.

**When a patient presents with signs of viral pharyngitis, including rhinorrhea, hoarseness, cough and conjunctivitis,** the clinician that performs a diagnostic test for Group A Streptococcus is much more likely to identify a chronic pharyngeal carrier of Group A Streptococcus than a patient with true Group A Streptococcal pharyngitis.<sup>4</sup>

Clinical prediction rules have been proposed as a way to increase the accuracy of clinical diagnosis. A scoring system devised by McIsaac et al using age and four clinical symptoms (tonsillar swelling or exudate, swollen anterior cervical nodes, a history of a fever greater than 38°C and lack of a cough) has been used to assess the likelihood of Group A Streptococcal pharyngitis.<sup>5</sup> McIsaac has suggested that if a patient presents with **only one of the four symptoms, a throat culture and antibiotics are not indicated.**<sup>5</sup> All other patients should undergo throat cultures and await the results before starting antibiotic therapy. His results indicate that **even if the patient has all four symptoms, 44% will not have Group A Streptococcal pharyngitis.**

## Throat Cultures

The diagnostic standard for Group A Streptococcal pharyngitis is the throat swab for culture. Proper technique includes sampling of the tonsils and peritonsillar pillars, as cultures of saliva and buccal mucosa often yield a negative result.<sup>6</sup> Throat cultures are 90 to 95% sensitive ie., a 5 to 10% false negative rate when compared in serial specimens. Thus there is a minimal but defined need to reculture a negative result assuming proper technique for untreated symptomatic patients with repeat visits.<sup>7</sup>

## Rapid Antigen Tests

Many Group A Streptococcus antigen detection tests are available. Most of the tests have a high degree of specificity but their sensitivity in clinical practice is low.<sup>8</sup> A negative test however does not exclude the presence of Group A Streptococcal pharyngitis, therefore, a throat culture should be obtained. Because of the low sensitivity and because antibiotic treatment of Group A Streptococcal pharyngitis can be delayed without consequence, rapid antigen tests are not currently recommended.

## TREATMENT

Patients with Group A Streptococcal pharyngitis are infectious for 2-5 days prior to symptoms, during acute illness, and for ~1 week after if not treated.

### Treatment Schedules

In selecting a regimen for the treatment of Group A Streptococcal pharyngitis, physicians should consider various factors, including bacteriologic and clinical efficacy, ease of adherence to the recommended regimen, spectrum of activity of the selected agent, potential side effects, and cost. No single regimen eradicates Group A Streptococcal from the pharynx in 100% of treated patients.

### Delayed treatment

Many patients with acute pharyngitis are prescribed antibiotics before throat culture results are available. Since up to 85% of these patients do not have Group A Streptococcal pharyngitis and thus do not respond to antibiotic treatment, a large number of patients receive antibiotics unnecessarily.<sup>9</sup> **Delaying antibiotic treatment, while awaiting the results of the throat culture, for**

**48 to 72 hours may have important advantages:** (i) it will significantly minimize the number of patients being treated unnecessarily before the results of a throat culture are available; (ii) it may be associated with decreased reinfection rates<sup>10</sup> in two small studies, children receiving immediate treatment were more than 2 times more likely to experience reinfection with Group A Streptococcus within 4 months than were children receiving delayed treatment;<sup>10,11</sup> (iii) it does not increase the risk of rheumatic fever.<sup>12</sup> In one study, delay in treatment up to 9 days did not increase incidence of rheumatic fever.<sup>12</sup>

## Penicillin

Penicillin is the antimicrobial agent of choice for the treatment of Group A Streptococcal pharyngitis, except in individuals with histories of penicillin allergy. Penicillin has a narrow spectrum of activity and a long standing proven efficacy. Resistance of Group A Streptococcus to penicillin has not been documented.

Many recent comparative clinical trials used dosages of penicillin V of 40 mg/kg per day (maximum 750mg/day) given two to three times daily. Generally, 250 mg 2 or 3 times daily is recommended for most children.<sup>13,14</sup> Little information is available about comparable doses in adults. Penicillin V is preferred to penicillin G because it is more resistant to gastric acid. Although the broader spectrum penicillins, ampicillin, and amoxicillin, are often used for treatment of Group A Streptococcal pharyngitis, they provide an unnecessarily broad spectrum of activity compared to penicillin.

## Macrolides

Oral erythromycin is considered the first alternative to penicillin V for treatment of Group A Streptococcal pharyngitis in patients allergic to penicillin. Macrolide resistance of Group A Streptococcus is low but increasing. Erythromycin preparations are better tolerated and better absorbed when given with food rather than on an empty stomach. Nausea, cramping and diarrhea are common adverse effects of erythromycin. Newer macrolides offer no microbiologic advantage, are more expensive, but may be better tolerated.

## Clindamycin

Studies have shown clindamycin to be effective for the treatment of Group A Streptococcal pharyngitis. However, clindamycin resistance, while low, is increasing. It is particularly useful in penicillin allergic, erythromycin intolerant patients.

## Compliance

Dosage interval, treatment duration, side effects and palatability can affect compliance and thus clinical outcome. These factors are especially important in the treatment of children, in whom non-compliance can be a significant medical issue.<sup>17</sup>

## Response to Treatment

Clinical response of children with Group A Streptococcal pharyngitis to appropriate antimicrobial treatment is usually evident within 24-48 hours. Persistence of high fever and severe symptoms beyond this period indicates the need for reassessment and is suggestive of the development of a suppurative complication or another underlying disease. Antibiotic failure is also a possibility.

## Follow-Up

The majority of patients with Group A Streptococcal pharyngitis respond clinically to antimicrobial therapy, and Group A Streptococcus are eradicated from the pharynx.<sup>13,14, 18-21</sup> Routine follow-up and/or post-treatment throat cultures 2 to 7 days after completion of therapy are not required.

## ADVICE TO PATIENTS

The Toward Optimized Practice Program supports the right of the patient to make an informed decision about his/her health care options. Patient education is important in understanding that in many cases, pharyngitis has a viral rather than bacterial origin. Education is also important in decisions surrounding treatment of Group A Streptococcal pharyngitis. It is paramount that patients recognize that the success of antimicrobial therapy hinges on compliance with treatment recommendations and that the opportunity for treatment failure and antibiotic resistance increases with poor compliance.

## REFERENCES

1. Blondel-Hill E, Fryters S. Bugs and Drugs. Capital Health Authority, 2006.
2. Kaplan E. The group A streptococcal upper respiratory tract carrier state. *Journal of Pediatrics*, 1980; 97: 337-345.
3. Schwartz R, Hayden G, Wientzen R. Children less than 3 years old with pharyngitis. *Clin Pediatrics*, 1986; 25: 185-188.
4. Shulman S. Streptococcal pharyngitis: diagnostic considerations. *The Pediatric Infectious Diseases Journal*, 1994; 13(6): 567-575.
5. McIsaac W, White D, Tannenbaum D. A clinical score to reduce unnecessary antibiotic use in patients with sore throat. *CMAJ*, 1998; 158: 75-83.
6. Brien J, Bass J. Streptococcal pharyngitis: optimal site for throat culture. *Clin Lab Observations*, 1985; 106: 781-783.
7. Crawford G, Brancato F, Holmes K. Streptococcal pharyngitis: diagnosis by Gram stain. *Annals of Internal Medicine*, 1979; 90: 293-297.
8. Congeni B. The resurgence of acute rheumatic fever in the United States. *Pediatric Annals*, 1992; 21: 816-820.
9. Holmberg S, Faich G. Streptococcal pharyngitis and acute rheumatic fever in Rhode Island. *Journal of the American Medical Association*, 1983; 250: 2307-2312.
10. El Daher N, Hijazi S, Rawashdeh N, et al. Immediate vs. delayed treatment of group A beta-hemolytic streptococcal pharyngitis with penicillin V. *Pediatric Infectious Disease Journal*, 1991; 10: 126-130.
11. Pichichero M, Disney F, Talpey W. et al. Adverse and beneficial effects of immediate treatment of group A beta-hemolytic streptococcal pharyngitis with penicillin. *Pediatric Infectious Disease Journal*, 1987; 6:653-663.
12. Smith D. Current concepts in the management of pharyngitis. *Comprehensive Therapy*, 1996; 22(12): 806-809.
13. Gerber M, Spadaccini L, Wright L, et al. Twice daily penicillin in the treatment of streptococcal pharyngitis. *American Journal Dis Child*, 1985; 139: 1145-1148.
14. Bass J. Antibiotic management of group A streptococcal pharyngotonsillitis. *Pediatric Infectious Disease Journal*, 1991; 10: S43-S49.
15. Disney F, Downton M, Higgin J, et al. Comparison of once daily cefadroxil and four times daily erythromycin in group A streptococcal tonsillopharyngitis. *Adv Therapy*, 1990; 7: 312-326.
16. Anderson J. Cross sensitivity to cephalosporins in patients allergic to penicillin. *Pediatric Infectious Diseases*, 1986; 5: 557-561.
17. Eisen S, Miller D, Woodward R, et al. The effect of prescribed daily dose frequency on patient medication compliance. *Archives of Internal Medicine*, 1990; 150: 1881-1884.
18. Hooton T. A comparison of azithromycin and penicillin V for the treatment of streptococcal pharyngitis. *American Journal of Medicine*, 1991; 91: 23S-30S.
19. Still J. Management of pediatric patients with group A  $\beta$ -hemolytic streptococcus pharyngitis: treatment options. *Pediatric Infectious Disease Journal*, 1995; 14: S57-S61.
20. Pichichero M, Margolis P. A comparison of cephalosporins and penicillin in the treatment of group A streptococcal pharyngitis: a meta analysis supporting the concept of microbial copathogenicity. *Pediatric Infectious Disease Journal*, 1991; 10: 275-281.
21. Gooch W, McLinn S, Aronovitz G, et al. Efficacy of cefuroxime axetil suspension compared with that of penicillin V suspension in children with group A streptococcal pharyngitis. *Antimicrobial Agents Chemotherapy*, 1993; 37: 159-163.
22. Markowitz M, Gerber M, Kaplan E. Treatment of pharyngotonsillitis: reports of penicillin's demise are premature. *Journal of Pediatrics*, 1993; 123(5): 679-685.
23. Bisno A, Gerber M, Gwaltney J, et al. Practice guidelines for the diagnosis and management of group A streptococcal pharyngitis. *Clinical Infectious Diseases*, 2002; 35: 113-125.
24. Bisno A, Peter G, Kaplan E. Diagnosis of strep throat in adults: are clinical criteria really good enough? *Clinical Infectious Diseases*, 2002; 35: 126-129.
25. Ebell M, Smith M, Barry H, et al. Does this patient have strep throat? *JAMA* 2000, 284: 2912-2918.
26. Lan Aj, Colford J. The impact of dosing frequency on the efficacy of 10-day penicillin or amoxicillin therapy for streptococcal tonsillopharyngitis: a meta-analysis. *Pediatrics* 2000 Feb; 105:E19.
27. Snow S, Mottur-Pilson C, Cooper R, et al. Principles of appropriate antibiotic use for acute pharyngitis in adults. *Ann Intern Med*, 2001; 134: 506-508.
28. Cooper R, Hoffman J, Bartlett J, et al. Principles of appropriate antibiotic use for acute pharyngitis in adults: background. *Ann Intern Med*, 2001; 134: 509-517.
29. Tan J. Treatment recommendations for acute pharyngitis. *Curr Treatment Options Infect Dis*, 2003; 5: 143-150.

30. Del Mar C, Glasziou P, Spinks A. Antibiotics for sore throat. Cochrane Database of Systematic Reviews. 3, 2004.
31. Brook I. Beta-lactamase producing bacteria in mixed infections. Clinical Microbiology and Infectious Diseases, 2004; 10: 777-784.

## **Toward Optimized Practice (TOP) Program**

Arising out of the 2003 Master Agreement, TOP succeeds the former Alberta Clinical Practice Guidelines program, and maintains and distributes Alberta CPGs. TOP is a health quality improvement initiative that fits within the broader health system focus on quality and complements other strategies such as Primary Care Initiative and the Physician Office System Program.

The TOP program supports physician practices, and the teams they work with, by fostering the use of evidence-based best practices and quality initiatives in medical care in Alberta. The program offers a variety of tools and outreach services to help physicians and their colleagues meet the challenge of keeping practices current in an environment of continually emerging evidence.

The CPG Working Group for Antibiotics is a multi-disciplinary team composed of family physicians, infectious disease specialists, internal medicine specialists, pediatricians, community and hospital pharmacists, epidemiologists, public health professionals, consumers, and an Alberta Health representative. The team encourages your feedback. If you have difficulty applying this guideline, if you find the recommendations problematic, or if you need more information on this guideline, please contact:

TOP Program  
12230 - 106 Avenue NW  
Edmonton AB T5N 3Z1  
Phone: (780) 482-0319  
Fax: (780) 482-5445  
Email: [cpg@topalbertadoctors.org](mailto:cpg@topalbertadoctors.org)  
Website: [www.topalbertadoctors.org](http://www.topalbertadoctors.org)