

A Practical Guide to Diagnosis and Treatment of Infection in the Outpatient Setting

Diagnosis and Treatment of Pharyngitis

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Pharyngitis is one of the most common illnesses encountered by primary care physicians in the outpatient setting. The most common bacterial, and therefore treatable, cause of acute pharyngitis, is group A streptococcus, or *Streptococcus pyogenes*. In children, group A streptococcus causes 15 – 30% of cases of pharyngitis. However, only 5-to10% of all adult cases of pharyngitis are bacterial; the remainder are due to viruses. In spite of the low prevalence of streptococcal disease, almost three quarters of all adults presenting to a primary care physician with a sore throat are prescribed an antibiotic, 68% of these were prescribed broader spectrum, more expensive antibiotics than those recommended. Therefore, it is in the setting of pharyngitis that we find more antibiotic overuse and misuse than with any other diagnosis.

Rationale for treating streptococcal pharyngitis. There is no rationale for treating viral pharyngitis. Perhaps the reason so many patients with viral infections are treated with antibiotics is the fear of sequellae of untreated streptococcal infections, as well as the fear of potential litigation if the diagnosis is missed. However, the risk of post-streptococcal complications is very low, and in adults it is almost negligible.

Acute rheumatic fever is the most feared post-streptococcal syndrome that is effectively prevented by treatment of the acute infection. Although rampant in other countries around the world, it is relatively rare in the USA. It is associated only with certain streptococcal serotypes (variations in the cell-surface M-protein) which seem to be uncommon in North America. Over the past 20 years there have been few regional epidemics within the United States. The endemicity seen in places like Africa and South America is not seen here. Most studies in the USA show an attack rate of between 0.5% and 3% in people having had untreated streptococcal pharyngitis. It should be noted that about one third of cases of rheumatic fever occur after *asymptomatic* streptococcal infection.

Peritonsillar abscesses are a potential complication of streptococcal pharyngitis. Antibiotic treatment of pharyngitis prevents progression to abscess formation, however it is very uncommon even without treatment.

Another reason one might treat streptococcal pharyngitis is to reduce symptoms. However, this is a self-limited disease and will resolve without treatment. Recent data suggests that antibiotic treatment shortens the duration of illness only by about one day.

Transmission of the infection can be prevented by the use of antibiotics, but this is only significant in the pediatric population in which the risk of spread is highest. Transmission of group A streptococcal infection from adults is nearly zero. Therefore, this is not an acceptable reason for treating adults.

How to decide who receives antibiotics. Studies have shown that experienced physicians can correctly diagnose streptococcal pharyngitis by clinical criteria alone only

35 to 50% of the time. This means that a diagnosis of streptococcal infection can't be achieved just by having the patient say "ahh".

The presence of cough, runny nose (coryza), sneezing and conjunctivitis are indicators of a viral infection and virtually rule out bacteria. These patients need neither further testing nor antibiotics.

The (1) absence of symptoms suggesting viral infection, plus (2) the presence of fever, (3) tonsillar enlargement with exudates and (4) tender anterior cervical lymphadenopathy are criteria that suggest a bacterial etiology. Patients with all *four* of these criteria may reasonably be treated with antibiotics empirically. The case for empiric antibiotics is made even stronger in the symptomatic parent of a child who recently has had *documented* streptococcal pharyngitis.

In patients with *two* or *three* of these criteria, further testing is recommended:

Culture is still the gold standard of diagnostic methods. It has a sensitivity of 90 to 95%. Two problems exist with this method. First, it can delay the initiation of therapy as 24 to 48 hours of incubation are required before a result is known. Fortunately, treatment can be delayed safely for up to nine days after onset of symptoms and still be effective in preventing sequellae. Second, it can be falsely positive in that it does not differentiate between streptococcal carrier state and infection. A streptococcal carrier may have a viral pharyngitis just as easily as a non-carrier. The asymptomatic carrier state is not an indication for antibiotics.

The Rapid Antigen Detection Test (RADT) has a sensitivity between 80 to 90% and is nearly 100% specific. This means that if it is positive, the patient probably has the disease. It is also less likely than culture to pick up carriers, but more likely to miss true cases (less sensitive). In adults, sequellae from untreated streptococcal infections are so rare that a 10% false negativity rate is an acceptable risk. Therefore, in adults with only two or three clinical criteria for streptococcal infection whose RADT is negative, treatment is not recommended. The greatest advantage of RADT is that results come back almost immediately, so that patients may be tested and treatment instituted all while the patient waits in your office. RADT is more expensive than culture, however.

Children who have a higher risk of sequellae and who have a negative RADT, should also have a throat culture in case the RADT was falsely negative. If the culture is positive, they should be treated with antibiotics. Again, treatment may be safely withheld until the culture result comes back.

Adults with zero, or only one of the clinical criteria should not be tested or treated.

Figure 1 presents a flow chart to aid in determining who should be treated.

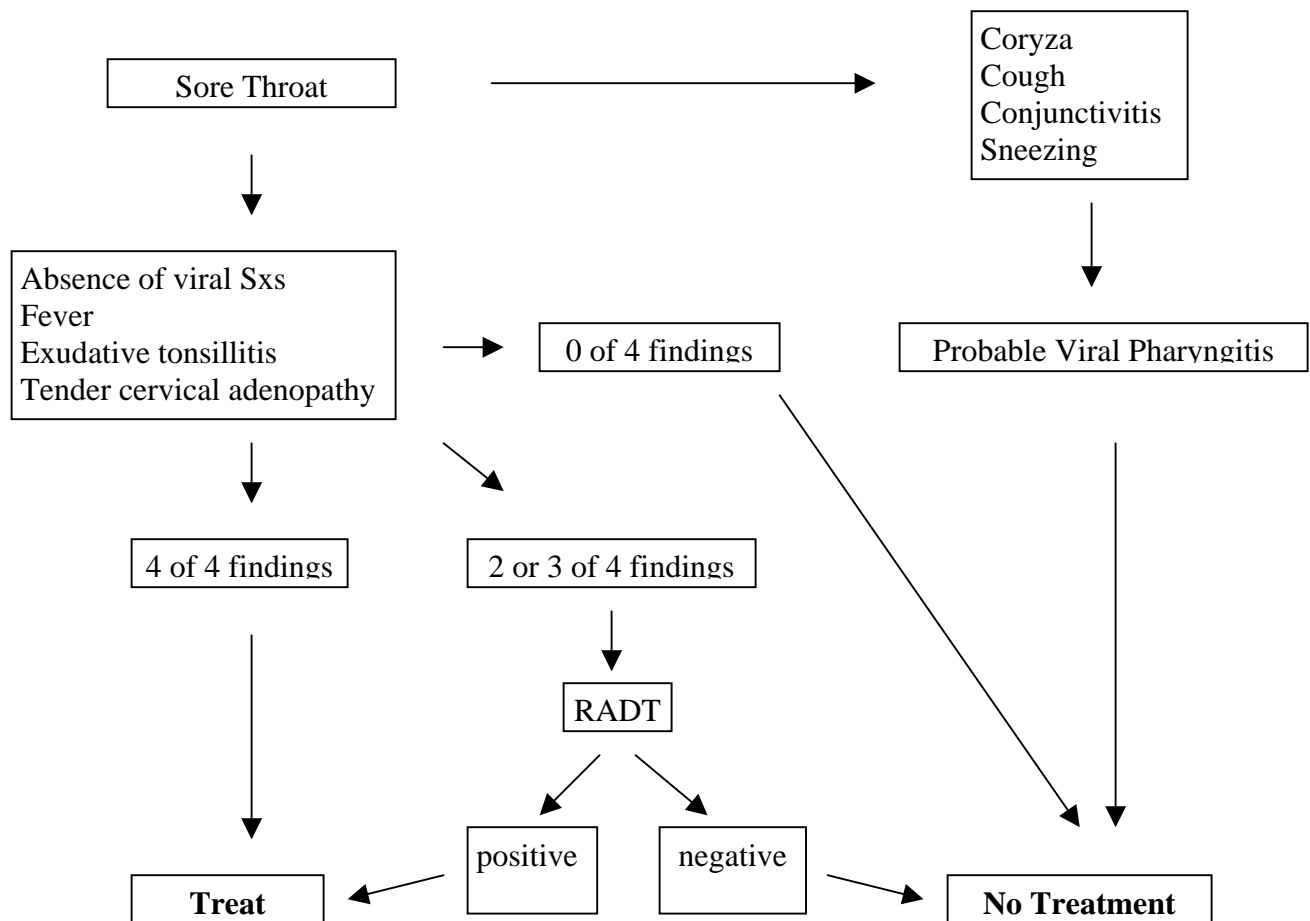


Figure 1. Algorithm for treatment criteria for pharyngitis in adults

Antibiotic choice. Penicillin, ampicillin, or amoxicillin are the recommended treatment for streptococcal pharyngitis. Erythromycin or cephalexin are the recommended choices for those who are penicillin-allergic. Although also effective, amoxicillin/clavulenate (Augmentin), clarithromycin, azithromycin, higher generation oral cephalosporins and fluoroquinolones are not acceptable because of their broader spectrum of activity which applies selective pressure on normal flora to develop resistant mutations. These drugs, which are also more expensive, have no efficacy advantage over the recommended drugs.

It should be noted that the FDA approves a drug for treatment of a certain infection because it is proven efficacious by clinical studies. Many of the more expensive broad spectrum antibiotics have been approved for treating streptococcal pharyngitis, but authoritative organizations, such as the Infectious Disease Society of America, do not support their use.

Duration of therapy with oral antibiotics is ten days. A single intramuscular dose of benzathine penicillin may also suffice. Doses of these antibiotics are given below in Table 1.

Antibiotic	Dose
Penicillin V	500 mg PO QID x 10 days
Amoxicillin	500 mg PO TID x 10 days
Ampicillin	500 mg PO QID x 10 days
Erythromycin ethyl succinate (EES)	400 mg PO QID x 10 days
E-mycin	333 mg PO TID x 10 days
Cephalexin	500 mg PO QID x 10 days
Benzathine penicillin	1.2 million units IM x1

Table 1 – Doses of antibiotics used in treatment of streptococcal pharyngitis in adults

Conclusion. More overuse and misuse of antibiotics occurs in the management of pharyngitis than any other diagnosis. This increases the cost of healthcare through the cost of antibiotics unnecessarily prescribed and through the increased cost of treating multi-drug resistant bacterial infections created by antibiotic overuse. The implementation of antibiotics in treatment of pharyngitis can be limited to those who will truly benefit from them by following the diagnostic algorithm and taking the time to do the necessary tests when appropriate.

There must be discipline among physicians and education of patients to employ antimicrobials only when needed and curb the overuse of these potent drugs.