

# CONTAGIOUS COMMENTS

## Department of Epidemiology

### Commonly Asked Questions About Group A Streptococcal Pharyngitis

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#### **Are there symptoms and signs that make GABHS more likely as a causative agent in children presenting with pharyngitis?**

GABHS pharyngitis is predominantly seen in school-age children. The incidence is highest during winter and early spring and in children exposed to other children with proven strep disease. On physical examination, the presence of tonsillopharyngeal exudates (also seen with adenovirus and EBV) or anterior cervical lymphadenitis increases the likelihood of strep infection.

#### **Are there clinical situations where GABHS is less likely?**

GABHS pharyngitis is seen less often in young children and adolescents. Children under three years of age should be tested only if GABHS would be fully consistent with their symptoms (e.g. not cough). Children with coryza, cough and or wheezing may be strep carriers but viruses are by far the more likely cause of their symptoms.

#### **How reliable is the rapid antigen test? When should cultures be done?**

Most rapid tests, which use enzyme-immunoassay methods, range in sensitivity from 80-90% when compared to the gold standard of selective blood agar plate cultures. They are highly specific, so a positive test can be considered equivalent to a positive throat culture. The key is to get a vigorous sample of the tonsils and posterior pharynx, which our colleague, Dr. Amer, has likened to a "tonsillar biopsy." In situations where suspicion is high (see above) a negative rapid test should be backed up by a throat culture unless the lab has documented equivalence of the two techniques. The Red Book recognizes that, in some office laboratories, the rapid antigen test may be as good or better than culture. It is recommended that a head-to-head comparison be done to formally document equivalence before routine backup culture is discontinued.

#### **Why treat GABHS pharyngitis?**

The reasons for treating GABHS pharyngitis are to prevent suppurative complications (peritonsillar or retropharyngeal abscess, cervical lymphadenitis, mastoiditis, sinusitis and otitis media), prevent or treat rheumatic fever, decrease infectivity and shorten the clinical course of the disease (only in those with severe symptoms).

#### **What are the current incidence rates of rheumatic fever?**

##### **Who is at risk?**

Currently, it is estimated that < 1% of patients who have GABHS pharyngitis develop acute rheumatic fever although we have heard of a number of cases in the past several months. Only certain strains of GABHS cause rheumatic fever and only in certain genetically predisposed children.

#### **What is the best therapeutic option for treating Group A Strep?**

The commonly used antibiotics for treating Group A Strep pharyngitis are discussed below.

##### **Penicillins:**

Penicillin or Amoxicillin have traditionally been the most commonly used antibiotics for treatment because of their proven efficacy, low cost and narrow spectrum. They are still the "drug of choice" in the AAP Red Book. Penicillin V 2 to 3 times a day or Amoxicillin once a day for 10 days has been the standard therapy, but microbiologic failure rates of up to 35% have been reported, especially in children < 6 yrs of age. A number of factors may lead to such high rates- including poor compliance and poor palatability of the suspension. Amoxicillin tastes better. It has also been shown that the penicillins are less likely to eradicate GABHS from the throat in chronic carriers.

##### **Cephalosporins:**

Cephalosporins such as Cephalexin have been shown to have higher rates of eradication than penicillins. Bacteriological eradication and clinical cure rates of 93-95% have been obtained in multiple randomized controlled trials. The standard duration of therapy is Cephalexin twice a day for 10 days, but Cefdinir and Cefpodoxime have shown comparable cure rates with a 5 day regimen. Because it is inexpensive and palatable many of us feel that Cephalexin twice a day for five days may be sufficient therapy for GABHS and superior to the penicillins.

##### **Macrolides:**

A 5 day course of Azithromycin has been reported to achieve similar rates to a 10 day course of Penicillin, and is an appealing option because of its once daily dosing. However, it is associated with a higher cost and streptococcal resistance can develop rapidly with macrolides compared with the penicillins., For these reasons, macrolides are not recommended as first line therapy.

##### **Clindamycin:**

Clindamycin has been shown to have the highest rates of eradication (92%) for GABHS carriers. It is best reserved for patients with "recurrent" streptococcal pharyngitis, who may be carriers. It is not recommended for first-line treatment given its decreased tolerability.

**Table 1.** Summary of some common antibiotics: dose, duration and clinical cure rate for the treatment of group A streptococcal tonsillopharyngitis (see text for recommended options).

<b>Acute Pharyngitis:</b>			
Antibiotic	Duration of Therapy	Dose	Clinical Cure Rate
Penicillin	10 days	Penicillin V 50-75mg/kg/day div tid Benzathine Penicillin 600,000 units IM if < 27kg, 1.2 million units if > 27kg, single dose	63-64%
Amoxicillin	10 days	50mg/kg/day once daily	86%
Azithromycin	5 days	12mg/kg once daily	82%
Cephalexin	10 days	25-50mg/kg/day in 2 divided doses	94%
<b>Eradication of carrier state:</b>			
Clindamycin	10 days	20mg/kg/day in 3 div doses	92% for carrier state
Penicillin + Rifampin	10 days (rifampin final 4 days)	Penicillin V 50-75mg/kg/day div tid Benzathine Penicillin 600,000 units IM if < 27kg, 1.2 million units if > 27kg, single dose Rifampin 20mg/kg/day twice a day for 4 days	55%

**What are the reasons for treatment failure?**

There have been many theories proposed for antibiotic failure. Some of these are outlined below:

- Patient Age-** failure rates appear to be higher in younger children. In a study of 478 children, teenagers and young adults with GAS, bacteriologic response was observed in 80-100% of adults and adolescents, but only 74% and 59% in those aged 6-12 and 2-5 years old, respectively. This may be because the younger children were actually carriers with symptoms caused by an intercurrent viral infection.
- Compliance with Medications-** 3 times daily dosing with Penicillin and administration away from meals (as Penicillin should be given one hour before or 2 hours after meals for optimal absorption) as well as poor palatability of the suspension leads to poor compliance.

- Repeated Exposure-** Even if treated successfully, recurrence can occur soon after, and may appear like treatment failure. This is more common in crowded living conditions within the family, at work, at school or in daycare setting.
- Copathogens-** the presence of other colonizing bacteria in the throat that produce beta -lactamase inactivating penicillin has been hypothesized as a mechanism for penicillin failure.

**Does treatment of GABHS pharyngitis decrease the rates of acute glomerulonephritis?**

No, treatment of GABHS pharyngitis does not prevent the development of acute glomerulonephritis.

**Should we treat non Group A streptococci such as Group C and G?**

Groups C and G have been reported to rarely cause pharyngitis (generally less severe than GABHS) and/or glomerulonephritis (even rarer). The benefit of antibacterial therapy is unknown. It is not currently recommended to look for these organisms in routine throat cultures.

**What about antibody titers?**

A single elevated antibody titer does not rule in or rule out current active GABHS infection since many carriers will have elevated titers as well. The only usefulness of titers appears to be as an adjunct in the diagnosis of acute rheumatic fever and acute poststreptococcal glomerulonephritis.

**Should we treat asymptomatic GABHS carriage?**

Streptococcal carriage is defined as the persistence of GABHS in the throat after treatment, but we don't recommend routinely reculturing patients as a "test of cure." Antibody titers don't clarify the issue. After 1-2 months of carriage, there are diminished numbers of organisms, and lower transmission rates. Chronic carriers do not appear to be at increased risk of developing acute rheumatic fever. We do not recommend looking for GABHS carriers as they generally do not warrant treatment and it only increases family paranoia. However, eradication may be considered in the following situations:

- Families with repeated cases of apparent GABHS pharyngitis
- Patients in a community with an outbreak of serious GABHS infections or acute rheumatic fever
- Patients with a history of acute rheumatic fever or a positive family history
- Household contacts of invasive GABHS
- Parental "strep paranoia" unresponsive to rational discourse

The options for treatment of asymptomatic GABHS carriage are outlined in Table 1.

**Should the animals or environment be cultured in children with apparently recurrent GABHS?**

Most authorities agree that the importance of pets and the environment in transmission of Group A strep is unknown but

probably small. Therefore, routine culturing of pets and the child's environment is not recommended.

### When should other family members be cultured/treated?

Invasive Group A Strep, defined as the isolation of GABHS from a normally sterile site or its isolation in necrotizing fasciitis and streptococcal toxic shock syndrome, is an indication for obtaining throat cultures of household contacts. Prophylaxis is recommended for those contacts who are at the highest risk of death from invasive infection. The regimens are listed in Table 1 as 'eradication of carrier state'.

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