



STATEMENT OF ENDORSEMENT

Prevention of Rheumatic Fever and Diagnosis and Treatment of Acute Streptococcal Pharyngitis

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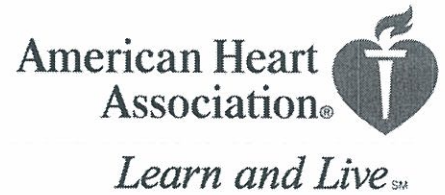
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Prevention of Rheumatic Fever and Diagnosis and Treatment of Acute Streptococcal Pharyngitis

A Scientific Statement From the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee of the Council on Cardiovascular Disease in the Young, the Interdisciplinary Council on Functional Genomics and Translational Biology, and the Interdisciplinary Council on Quality of Care and Outcomes Research

*Endorsed by the American Academy of Pediatrics**

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Abstract—Primary prevention of acute rheumatic fever is accomplished by proper identification and adequate antibiotic treatment of group A β -hemolytic streptococcal (GAS) tonsillopharyngitis. Diagnosis of GAS pharyngitis is best accomplished by combining clinical judgment with diagnostic test results, the criterion standard of which is the throat culture. Penicillin (either oral penicillin V or injectable benzathine penicillin) is the treatment of choice, because it is cost-effective, has a narrow spectrum of activity, and has long-standing proven efficacy, and GAS resistant to penicillin have not been documented. For penicillin-allergic individuals, acceptable alternatives include a narrow-spectrum oral cephalosporin, oral clindamycin, or various oral macrolides or azalides. The individual who has had an attack of rheumatic fever is at very high risk of developing recurrences after subsequent GAS pharyngitis and needs continuous antimicrobial prophylaxis to prevent such recurrences (secondary prevention). The recommended duration of prophylaxis depends on the number of previous attacks, the time elapsed since the last attack, the risk of exposure to GAS infections, the age of the patient, and the presence or absence of cardiac involvement. Penicillin is again the agent of choice for secondary prophylaxis, but sulfadiazine or a macrolide or azalide are acceptable alternatives in penicillin-allergic individuals. This report updates the 1995 statement by the American Heart Association Rheumatic Fever, Endocarditis, and Kawasaki Disease Committee. It includes new recommendations for the diagnosis and treatment of GAS pharyngitis, as well as for the secondary prevention of rheumatic fever, and classifies the strength of the recommendations and level of evidence supporting them. (*Circulation*. 2009;119:1541-1551.)

Key Words: AHA Scientific Statements ■ pediatrics ■ infectious diseases ■ prevention
■ rheumatic heart disease ■ rheumatic fever ■ streptococcal pharyngitis

This scientific statement is an update of a 1995 statement on prevention of rheumatic fever by this committee.¹ Prevention of both initial and recurrent attacks of rheumatic fever depends on control of group A β -hemolytic streptococ-

cal (GAS) tonsillopharyngitis (strep throat). Prevention of first attacks (primary prevention) is accomplished by proper identification and adequate antibiotic treatment of streptococcal infections. The individual who has had an attack of

*On February 3, 2009, the American Academy of Pediatrics (AAP) endorsed the American Heart Association (AHA) Statement: Prevention of Rheumatic Fever and Diagnosis and Treatment of Acute Streptococcal Pharyngitis.

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This statement was approved by the American Heart Association Science Advisory and Coordinating Committee on November 25, 2008. A copy of the statement is available at <http://www.americanheart.org/presenter.jhtml?identifier=3003999> by selecting either the "topic list" link or the "chronological list" link (No. LS-1968). To purchase additional reprints, call 843-216-2533 or e-mail kelle.ramsay@wolterskluwer.com

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rheumatic fever is at high risk of developing recurrences after subsequent GAS pharyngitis and needs continuous antimicrobial prophylaxis for years to prevent such recurrences (secondary prevention).²⁻⁶

In developing areas of the world, acute rheumatic fever and rheumatic heart disease are estimated to affect nearly 20 million people and are the leading causes of cardiovascular death during the first 5 decades of life.⁷ In contrast, the incidence of acute rheumatic fever has decreased dramatically in most developed countries.⁸ In certain areas of the United States, a few localized outbreaks in civilian and military populations were reported in the 1980s.^{8,9} This reappearance of acute rheumatic fever serves as a reminder of the importance of continued attention to prevention of rheumatic fever in this and other developed countries; however, currently, the overall incidence of acute rheumatic fever remains very low in most areas of the United States.^{10,11} The recommendations in the present statement are primarily based on this assumption. Physicians practicing in areas outside the United States with a higher incidence of acute rheumatic fever or in areas of the United States experiencing an outbreak of acute rheumatic fever need to take this into consideration.

The writing group was charged with the task of performing an assessment of the evidence and assigning a classification of recommendations and a level of evidence (LOE) to each recommendation. The American College of Cardiology/American Heart Association (AHA) classification system was used as follows:

Classification of Recommendations:

Class I: Conditions for which there is evidence and/or general agreement that a given procedure or treatment is beneficial, useful, and effective.

Class II: Conditions for which there is conflicting evidence and/or a divergence of opinion about the usefulness/efficacy of a procedure or treatment.

Class IIa: Weight of evidence/opinion is in favor of usefulness/efficacy.

Class IIb: Usefulness/efficacy is less well established by evidence/opinion.

Class III: Conditions for which there is evidence and/or general agreement that a procedure/treatment is not useful/effective and in some cases may be harmful.

Level of Evidence:

Level of Evidence A: Data derived from multiple randomized clinical trials or meta-analyses.

Level of Evidence B: Data derived from a single randomized trial or nonrandomized studies.

Level of Evidence C: Only consensus opinion of experts, cases studies, or standard of care.

Prevention of Initial Attacks (Primary Prevention)

GAS infections of the pharynx are the precipitating cause of rheumatic fever. During epidemics over a half century ago, as many as 3% of untreated acute streptococcal sore throats were followed by rheumatic fever; in endemic infections, the incidence of rheumatic fever is substantially less.¹² Appropriate

antibiotic treatment of streptococcal pharyngitis prevents acute rheumatic fever in most cases.¹³ Unfortunately, at least one third of episodes of acute rheumatic fever result from inapparent streptococcal infections.¹⁴ In addition, some symptomatic patients do not seek medical care. In these instances, rheumatic fever is not preventable.

Diagnosis of Streptococcal Infections

Prevention of initial episodes of acute rheumatic fever requires accurate recognition and proper antibiotic treatment of GAS pharyngitis. Streptococcal skin infections (impetigo or pyoderma) have not been proven to lead to acute rheumatic fever and are not discussed here. Acute pharyngitis is caused considerably more often by viruses than by bacteria. Viruses that commonly cause pharyngitis include influenza virus, parainfluenza virus, rhinovirus, coronavirus, adenovirus, respiratory syncytial virus, Epstein-Barr virus, enteroviruses, and herpesviruses. Other causes of acute pharyngitis include groups C and G streptococci, *Neisseria gonorrhoeae*, *Mycoplasma pneumoniae*, *Chlamydia pneumoniae*, *Arcanobacterium hemolyticum*, and human immunodeficiency virus (HIV).

GAS pharyngitis is primarily a disease of children 5 to 15 years of age, and in temperate climates, it usually occurs in the winter and early spring. GAS is an uncommon cause of pharyngitis in preschool children, but outbreaks in child care settings have been reported.^{15,16} However, rheumatic fever is rare in children younger than 3 years of age in the United States. Initial attacks of rheumatic fever are also rare in adults, but recurrences are well documented.

Clinical findings suggestive of GAS as the cause of an episode of acute pharyngitis (Table 1) include sore throat (generally of sudden onset), pain on swallowing, fever of varying degree (usually from 101°F to 104°F), and headache; abdominal pain, nausea, and vomiting may also occur, especially in children. Additional clinical findings include tonsillopharyngeal erythema with or without exudates, anterior cervical lymphadenitis, soft palate petechiae, beefy red swollen uvula, and a scarlatiniform rash. None of these clinical manifestations individually is specific enough to diagnose GAS pharyngitis, and these clinical signs and symptoms can occur with other upper respiratory tract infections. These clinical findings are noted primarily in children older than 3 years of age and in adults. Clinical findings in younger children can be different and less specific. For example, infants with GAS upper respiratory tract infections may present with excoriated nares or purulent nasal discharge. A history of close contact with a well-documented case of GAS pharyngitis may be helpful in making the diagnosis, as is an awareness of a high prevalence of GAS infections in the community. Clinical findings highly suggestive of a viral cause of an episode of acute pharyngitis include coryza, hoarseness, cough, diarrhea, conjunctivitis, and a characteristic viral enanthem and/or exanthem (Table 1).

Accurate differentiation of GAS pharyngitis from pharyngitis caused by other pathogens based on history and clinical findings is often difficult even for experienced clinicians. Therefore, some form of microbiological confirmation, with either a throat culture or a rapid antigen detection test (RADT), is required for the diagnosis of GAS pharyngitis