

Streptococcal Infections (invasive group A strep, GAS)

What is group A *Streptococcus* (GAS)?

Group A streptococci are bacteria commonly found in the throat and on the skin. The vast majority of GAS infections are relatively mild illnesses, such as strep throat and [impetigo](#). Occasionally, however, these bacteria can cause much more severe and even life threatening diseases such as necrotizing fasciitis (occasionally described as "the flesh-eating bacteria") and streptococcal toxic shock syndrome (STSS). In addition, people may carry group A streptococci in the throat or on the skin and have no symptoms of disease.

How are group A streptococci spread?

These bacteria are spread by direct contact with nose and throat discharges of an infected individual or with infected skin lesions. The risk of spread is greatest when an individual is ill, such as when people have strep throat or an infected wound. Individuals who carry the bacteria but have no symptoms are much less contagious. Treatment of an infected person with an appropriate antibiotic for 24 hours or longer eliminates contagiousness. However, it is important to complete the entire course of antibiotics as prescribed. Household items like plates, cups and toys do not play a major role in disease transmission.

What is invasive group A streptococcal disease?

Invasive GAS disease is a severe and sometimes life-threatening infection in which the bacteria have invaded parts of the body, such as the blood, deep muscle and fat tissue or the lungs. Two of the most severe, but least common, forms of invasive GAS disease are called necrotizing fasciitis (infection of muscle and fat tissue) and streptococcal toxic shock syndrome (a rapidly progressing infection causing low blood pressure/shock and injury to organs such as the kidneys, liver and lungs). Approximately 20 percent of patients with necrotizing fasciitis and 60 percent with STSS die. About 10-15 percent of patients with other forms of invasive group A streptococcal disease die.

What are the early signs and symptoms of necrotizing fasciitis and streptococcal toxic shock syndrome?

Early signs and symptoms of necrotizing fasciitis include fever, severe pain and swelling, and redness at the wound site. Early signs and symptoms of STSS may include fever, dizziness, confusion, low blood pressure, rash and abdominal pain.

How common is invasive group A streptococcal disease?

Approximately 9,000-11,500 cases of invasive GAS disease occur in the United States each year resulting in 1,000-1,800 deaths. The Centers for Disease Control and Prevention estimates that less than 10% of these are cases of necrotizing fasciitis and STSS. In contrast, there are several million cases of strep throat and impetigo annually. Clusters of cases or outbreaks of invasive GAS have not been reported in any schools or communities in New York State.

Why does invasive group A streptococcal disease occur?

Invasive group A streptococcal infections occur when the bacteria gets past the defenses of the person who is infected. This may occur when a person has sores or other breaks in the skin that

allow the bacteria to get into the tissue. Health conditions that decrease a person's immunity to infection also make invasive disease more likely. In addition, there are certain strains of GAS that are more likely to cause severe disease than others. The reason why some strains will cause more severe illness is not totally clear but may involve the production of substances (toxins) that cause shock and organ damage and of enzymes that cause tissue destruction.

Who is most at risk of invasive group A streptococcal disease?

Few people who come in contact with a virulent strain of GAS will develop invasive GAS disease; most will have a routine throat or skin infection and some may have no symptoms whatsoever. Although healthy people can get invasive GAS disease, people with chronic illnesses like cancer, diabetes and kidney dialysis, and those who use medications such as steroids, are at higher risk. In addition, breaks in the skin, like cuts, surgical wounds or chickenpox, may provide an opportunity for the bacteria to enter the body.

Can invasive group A streptococcal disease be treated?

Group A streptococcus bacteria can be treated with common, inexpensive antibiotics. Penicillin is the drug of choice for both mild and severe disease. For penicillin-allergic patients with mild illness, erythromycin can be used, although occasional resistance has been seen. Clindamycin may be used to treat penicillin-allergic patients with more severe illness and can be added to the treatment in cases of necrotizing fasciitis or STSS. Certain other antibiotics also are effective. In addition to antibiotics, supportive care in an intensive care unit and sometimes surgery are necessary with these diseases. Early treatment may reduce the risk of death although, unfortunately, even appropriate therapy does not prevent death in every case.

Should contacts of individuals with invasive group A streptococcal disease be tested and treated?

The risk of secondary cases of invasive GAS disease among persons with casual contact to a case is very small. However, there are occasional reports of close contacts such as family members developing severe disease. In general, it is not necessary for all persons exposed to someone with an invasive group A streptococcal infection to be tested or receive preventive antibiotics. If household contacts are in good health, they should be watched for signs of GAS infection, but will not need to take preventive antibiotics. However, some individuals may be at higher risk of invasive disease if infected (for example, persons with diabetes, cancer, chronic heart disease or alcoholism).

What can be done to help prevent invasive group A streptococcal infections?

The spread of all types of group A streptococcal infections may be reduced by good hand washing, especially after coughing and sneezing, before and after preparing foods and before eating. Persons with sore throats should be seen by a physician who can perform tests to find out whether it is strep throat; if so, one should stay home from work, school or daycare for 24 hours or more after taking an antibiotic. All wounds should be kept clean. Wounds should be watched for possible signs of infection which include increasing redness, swelling and pain at the wound site. If these signs occur, especially in a person who also has a fever, consult a doctor immediately.