Streptococcal infections

Bacterial disease

What is Streptococcus?

The bacteria from the genus *Streptococcus* are organisms that naturally live in the throat, nose, skin and digestive tract of humans and animals. Most species of *Streptococcus* live in the body without causing disease.

However, when a person’s immunity is low, from poor diet, stress, disease or aggressive treatments like chemotherapy, the normally dormant bacteria can begin to attack the body. When this occurs, the bacteria spread into surrounding tissues or into the bloodstream and cause disease.

Streptococci can also be passed from person to person through direct contact, sneezing, coughing or shaking hands.

What diseases do streptococci cause?

Streptococcal infections can cause a wide range of diseases from mild infections like the common strep throat to life-threatening conditions such as toxic shock syndrome (TSS) or meningitis.

Streptococcal infections can usually be treated with antibiotics if diagnosed early.

If left untreated, streptococci can lead to chronic autoimmune diseases such as rheumatic heart disease, where the body’s immune system starts attacking the heart cells, causing permanent damage to the heart muscle. 500,000 people worldwide die each year from these diseases.

500,000 people die each year worldwide from rheumatic heart disease

Streptococcal infections can cause:

- Rheumatic heart disease
- Rheumatic fever
- Strep throat
- Puerperal fever
- Impetigo (skin infection)
- Meningitis
- Scarlet fever
- Streptococcal toxic shock syndrome
- Invasive GAS disease
- Necrotising fasciitis
- Acute poststreptococcal glomerulonephritis
- Streptococcal pneumonia

*Streptococcus bacteria under an electron microscope*
QIMR researchers have developed a vaccine against group A streptococcus. Human clinical trials are expected to begin in 2011.

These kinds of diseases commonly affect children in developing countries, where poverty is widespread and antibiotic treatments are not readily available.

The Australian Indigenous population is also particularly susceptible to streptococcal infections. Indigenous Australians have the highest rates of rheumatic heart disease and rheumatic fever in the world.

What is QIMR doing to prevent streptococcal disease?

The Queensland Institute of Medical Research (QIMR) researches a wide range of diseases from around the world, with the aim to improve the health of future generations through medical research.

QIMR scientists are currently researching a variety of facets of group A, C and G streptococci in order to:

- Identify possible candidates for a vaccine against group A streptococcus infection.
- Investigate how and why some streptococci cause disease while others do not.
- Examine the disease severity of group C and G streptococci infection compared to group A streptococcus.

QIMR researchers have recently developed a vaccine against group A streptococcus, *Streptococcus pyogenes*, the main culprit for streptococcal disease.

Human clinical trials are expected to begin in 2011.

QIMR also has an Indigenous Health Research Program and a laboratory dedicated to investigating the link between scabies and streptococcal infection. This research will lead to better health outcomes for Indigenous Australians affected by streptococcal-related disease.

Did you know?

- Helen Keller’s blindness and deafness is thought to have been caused by scarlet fever.
- Jim Hensen died from invasive group A streptococcal disease that started from a strep throat.
- Kevin Rudd had rheumatic fever as a child, which led to his heart valve being replaced when he was 36 years old.
- Thomas Edison lost part of his hearing to scarlet fever.