What is it?

*Naegleria fowleri* (nigh-GLEER-E-uh) is an ameba commonly found in warm freshwater and soil. Only one species infects people, *Naegleria fowleri*. It causes a very rare but severe brain infection. Most infections are fatal.

How does infection occur?

*Naegleria* infects people by entering the body through the nose. Generally, this occurs when people use warm freshwater for activities like swimming or diving. More rarely, infections have been reported when people irrigate their sinuses with contaminated tap water. The ameba travels up the nose to the brain where it destroys brain tissue. You cannot be infected with *Naegleria fowleri* by drinking contaminated water or swimming in a properly cleaned, maintained, and disinfected swimming pool.

What are the symptoms?

*Naegleria fowleri* causes a disease called primary amebic meningoencephalitis (PAM). In its early stages, symptoms of PAM may be similar to symptoms of bacterial meningitis.

Initial symptoms of PAM start about 5 days (range, 1 to 7 days) after infection. The initial symptoms may include headache, fever, nausea, or vomiting. Later symptoms can include stiff neck, confusion, lack of attention to people and surroundings, loss of balance, seizures, and hallucinations. After the start of symptoms, the disease progresses rapidly and almost always causes death within about 5 days (range, 1 to 12 days).

What should I do if I think I have symptoms associated with *Naegleria fowleri*?

Infection with *Naegleria fowleri* is very rare. The early symptoms of the infection are similar to those caused by many more common illnesses, such as bacterial meningitis. People should seek medical care immediately whenever they develop a sudden onset of fever, headache, stiff neck, and vomiting, particularly if they have been in warm freshwater recently.

How common are *Naegleria fowleri* infections in the United States?

*Naegleria fowleri* infections are very rare. In the 10 years from 2002 to 2011, 32 infections were reported in the U.S.

When do *Naegleria fowleri* infections most commonly occur?

While infections are very rare, they more commonly occur when it is hot for prolonged periods of time, which results in higher water temperatures and lower water levels.

How can I know if a specific lake or other water body has *Naegleria fowleri*?

*Naegleria* can be found in many warm freshwater lakes and rivers in the United States, including Minnesota. Recreational water users should assume that there is a low level of risk when entering all warm freshwater. There are no rapid, standardized tests to detect *Naegleria* in water.

How can I reduce the risk of *Naegleria fowleri* infections while swimming?

It is likely that a low risk of Naegleria infection will always exist with warm freshwater lakes, rivers, and hot springs. The only known way to prevent *Naegleria* infections is to refrain from water-related activities. However, some measures that might reduce risk by limiting the chance of contaminated water going up the nose include:

- Avoid water-related activities in warm freshwater during periods of high water temperatures and low water levels.
- Avoid putting your head under the water in hot springs and other untreated thermal waters.
- Avoid digging in, or stirring up, the sediment while taking part in water-related activities in shallow, warm freshwater areas.
- Hold your nose shut or use nose clips when taking part in water-related activities in bodies of warm freshwater.