



***Naegleria* Infection** (nigh-GLEER-e-uh)

What is *Naegleria*?

Naegleria is a free-living amoeba commonly found in the environment in water and soil. Only one species of *Naegleria* has been found to infect humans, *Naegleria fowleri*.

Where is *Naegleria* found?

Naegleria fowleri is found worldwide. Most commonly, the amoeba is found in:

- Warm bodies of freshwater, such as lakes and rivers
- Geothermal water such as hot springs
- Warm water discharge from industrial plants
- Poorly maintained and minimally chlorinated swimming pools
- Soil

How common is *Naegleria* infection?

Although *Naegleria* is commonly found in the environment, infection occurs rarely. Only 23 infections were documented in the U.S. between 1995 and 2004.

When is *Naegleria* most common?

Infection with *Naegleria* is very rare. However, when it does occur, infection is most common during the dry, summer months, when the air temperature is hot, the water is warm, and water levels are low. The number of infections increase during years characterized by heat waves.

How does infection with *Naegleria* occur?

Infection with *Naegleria* occurs when the amoeba enters the body through the nose. Generally this occurs when people are participating in water-related activities such as swimming underwater, diving, or other water sports that result in water going up the nose. The amoeba then travels to the brain and spinal cord where it destroys the brain tissue.

What are the signs and symptoms of *Naegleria* infection?

Infection with *Naegleria* causes the disease primary amoebic meningoencephalitis (PAM), a brain inflammation, which leads to the destruction of brain tissue.

Initial signs and symptoms of PAM start 1 to 14 days after infection. These symptoms include headache, fever, nausea, vomiting, and stiff neck. As the amoebae cause more extensive destruction of brain tissue this leads to confusion, lack of attention to people and surroundings, loss of balance, seizures, and hallucinations. After onset of symptoms, the disease progresses rapidly and usually results in death within 3 to 7 days.

What should I do if I have been swimming or playing in freshwater and now think I have symptoms associated with *Naegleria*?

Infection with *Naegleria* is very rare and the early symptoms associated with *Naegleria* may actually be caused by other more common illnesses, such as meningitis. To ensure prompt treatment, people should seek medical care immediately if they develop a sudden onset of two or more of the early symptoms (e.g., fever, headache, stiff neck) at the same time or if the symptoms are unusually severe.

Is there treatment for infection with *Naegleria*?

Several drugs are effective against *Naegleria* in the laboratory. However, although a variety of treatments have been used to treat infected persons, their effectiveness is unclear since most infections have still been fatal.

Can infection be spread from person-to-person?

No. *Naegleria* infection cannot be spread by person-to-person contact.

How can I reduce the risk of infection with *Naegleria*?

Naegleria is found in many freshwater lakes and rivers in the United States, particularly in southern tier states. Therefore, it is likely that a low risk of *Naegleria* infection will always be associated with swimming in warm freshwater lakes, rivers, and hot springs. Some measures that may reduce this risk include:

- Avoid swimming or jumping into bodies of warm freshwater, hot springs, and thermally-polluted water such as water around power plants.
- Avoid swimming or jumping into freshwater during periods of high temperature and low water volume.
- Hold the nose shut or use nose clips when jumping or diving into bodies of warm freshwater such as lakes, rivers, or hot springs.
- Avoid digging in or stirring up the sediment while swimming in shallow, warm freshwater areas.
- Do not swim in areas posted as "no swimming" or in areas warning about an increased risk of *Naegleria* infections.

For further information on protecting yourself from recreational water illnesses, go to <http://www.cdc.gov/healthyswimming>.

Can I get *Naegleria* infection from a swimming pool?

No. You cannot get *Naegleria* infection from a swimming pool as long as the pool is properly cleaned, maintained, and chlorinated.

This fact sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with a health care provider. If you have any questions about the disease described above or think that you may have a parasitic infection, consult a health care provider.

From http://www.cdc.gov/ncidod/dpd/parasites/naegleria/factsht_naegleria.htm



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