

## **Brain-Eating Amoeba**

### **What Is a Brain-Eating Amoeba?**

Amoebas are single-celled organisms. The so-called brain-eating amoeba is a species discovered in 1965. Its formal name is *Naegleria fowleri*. Although first identified in Australia, this amoeba is believed to have evolved in the U.S.

There are several species of *Naegleria* but only the *fowleri* species causes human disease. There are several *fowleri* subtypes. All are believed equally dangerous.

*N. fowleri* is microscopic: 8 micrometers to 15 micrometers in size, depending on its life stage and environment. By comparison, a hair is 40 to 50 micrometers wide.

Like other amoebas, *Naegleria* reproduces by cell division. When conditions aren't right, the amoebas become inactive cysts. When conditions are favorable, the cysts turn into trophozoites -- the feeding form of the amoeba. To reach their food, *N. fowleri* trophozoites temporarily grow tails (flagella) that allow them to swim. In this form they cannot eat, so they soon go back to the trophozoite stage.

### **Where Are Brain-Eating Amoebas Found?**

*Naegleria* loves very warm water. It can survive in water as hot as 113 degrees Fahrenheit. These amoebas can be found in warm places around the globe. *N. fowleri* is found in:

- Warm lakes, ponds, and rock pits
- Mud puddles
- Warm, slow-flowing rivers, especially those with low water levels
- Untreated swimming pools and spas
- Untreated well water or untreated municipal water
- Hot springs and other geothermal water sources
- Thermally polluted water, such as runoff from power plants
- Aquariums
- Soil, including indoor dust

*Naegleria* can't live in salt water. It can't survive in properly treated swimming pools or in properly treated municipal water.

### **How Long Until Symptoms of Brain-Eating Amoeba Appear?**

It takes two to 15 days for symptoms to appear after *N. fowleri* amoebas enter the nose. Death usually occurs three to seven days after symptoms appear. The average time to death is 5.3 days from symptom onset. Only a handful of patients worldwide have been reported to have survived an infection.

### **What Are the First Symptoms Someone Might Have?**

Symptoms of PAM are not specific to this disease. At first, PAM may seem like viral meningitis. Symptoms include:

- headache
- fever
- stiff neck

- loss of appetite
- vomiting
- altered mental state
- seizures
- coma

There may also be hallucinations, drooping eyelid, blurred vision, and loss of the sense of taste.

### **Is There a Treatment for Infection With Brain-Eating Amoeba?**

The right treatment isn't clear. A number of drugs kill *N. fowleri* amoebas in the test tube. But even when treated with these drugs, very few patients survive.

<http://www.webmd.com/brain/brain-eating-amoeba>