

Amoebas in Lakes

Every summer, questions surface about an aquatic amoeba (*Naegleria fowleri*) with a bad reputation. This organism is part of the larger protozoa group mentioned on page 2. Over the past 30 years, there have been 34 deaths recorded in the United States due to exposure to this nasty little organism. Fifteen of the deaths occurred in Florida.

Fortunately, the chances of coming in contact with *Naegleria*, or contracting the resulting illness (Primary Amoebic Meningoencephalitis—PAM, for short) are quite slim. In Florida, health officials estimate that there is only one case for every 2.5 million hours that people spend in freshwater. Drowning and boating accidents pose a much greater threat to our state's water enthusiasts. With that said, there are a few precautions swimmers can take to decrease their chances of exposure even more.

The first thing you should know is that, with the exception of Antarctica, this amoeba is believed to exist in virtually every lake and river around the world. It is also found in spas, hot tubs, thermally enriched waters and poorly chlorinated swimming pools. So, if you're thinking of simply avoiding these aquatic environments, you might get a little lonely.

So, How Does One Avoid the Amoeba?

The best way to prevent exposure to *Naegleria* is to avoid stirring up bottom sediments, as this is where the amoeba lives and feeds on bottom sediments composed of fallen leaves and dead plants. Once sediments are mixed into the water column, the amoeba could be forced up the nose of a swimmer who jumps or falls into the water. This increases the chance for it to enter into an ear or nasal passage where it can follow the olfactory nerve and gain entry into the brain, where it has been known to cause problems.



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It's important to note that swimmers who have contracted PAM usually got it after rooting around the lake bottom, in heavy silt where the amoeba lives. Therefore, keeping one's face away from the bottom of a lake, river, canal, etc. and keeping swimmers from jumping off a dock into shallow water—or any other scenario that would result in the disruption of bottom sediments—will significantly reduce the risk of exposure to *Naegleria*. Young children are at the highest risk of exposure as they tend to engage in such activities.

Everyone can be further protected by wearing ear plugs and a nose clip (or a dive mask that covers the nose) when swimming. Remember, exposure to bottom sediments is the single MOST important factor that increases chances for infection.

During most of the year, concentrations of *Naegleria* are rarely high enough to cause public health problems. However, as water temperatures rise during the summer (82-86 degrees Fahrenheit), it provides a more accommodating environment for the amoeba to feed and multiply. So, if possible, avoid swimming in warm shallow waters during this time.

Diagnosis

Early diagnosis is the best bet for survival. In the two known cases where patients survived infection from *Naegleria*, the family doctor recognized the symptoms immediately and was quick to react with appropriate antibiotics. Persons who complain of severe headaches, rigidity of the neck, impaired sense of smell and taste, nausea, vomiting and/or a high fever, and who have been swimming in a lake should be taken to a doctor. If the treatment is going to be effective, it needs to be administered quickly.

Note: You cannot get PAM by eating fish from a lake.