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HEALTH ADVISORY: Primary Amebic Meningoencephalitis

Primary amebic meningoencephalitis (PAM) was diagnosed in a Texas teenager last week, the first case reported in Texas this year. **The Texas Department of State Health Services would like to remind clinicians to be aware of the possibility of *Naegleria fowleri* infection in patients presenting with bacterial-meningitis-like symptoms and recent freshwater exposure. If PAM is suspected, contact CDC immediately for consultation and assistance obtaining miltefosine for treatment, and report PAM cases to the local health department.**

Naegleria fowleri is the free-living ameba (single-celled organism) that causes PAM, a rare and devastating brain infection that is almost always fatal. Infection occurs when contaminated water enters the body through the nose and the ameba travels to the brain, where it destroys the brain tissue.

Naegleria fowleri is found in warm freshwater (e.g., lakes, rivers, and ponds) and soil. Infection most often occurs when people engage in recreational activities in warm freshwaters, like diving and swimming. In very rare cases, *N. fowleri* infection has occurred when water from other sources (e.g., contaminated tap water) enters the nose. Infection does not occur by drinking contaminated water. Most infections occur in July, August, and September. Nine PAM cases have been reported in Texas since 2005.

Initial symptoms start 1-9 days after exposure and may consist of severe frontal headache, fever, nausea, and vomiting. As the disease progresses, later symptoms may include stiff neck, seizures, altered mental status, hallucinations, and coma. The disease progresses rapidly and usually results in death 1-18 days after symptom onset. Clinicians should be aware of possible *Naegleria fowleri* infections in patients presenting with the above symptoms and who have had recent exposure to warm freshwater.

Infections of *Naegleria fowleri* are extremely rare, but the organism is ubiquitous in warm freshwater making the risk of infection always present. The only way to prevent *N. fowleri* infection due to swimming is to refrain from water-related activities in freshwater. Actions that people can take to reduce the risk of *N. fowleri* infection should focus on limiting water exposure going up the nose.

- Avoid water-related activities in freshwater during periods of high water temperatures and low water levels.
- Hold your nose shut, use nose clips, or keep your head above water when taking part in water-related activities in bodies of warm freshwater, hot springs, or untreated water.
- Avoid digging up or stirring up sediment while engaging in water-related activities in shallow, warm freshwater.
- If you use a Neti-Pot or syringe for nasal irrigation or participate in ritual nasal rinsing be sure to use only sterile, distilled, or lukewarm previously boiled water.

Miltefosine, an anti-leishmania drug, has shown some promise for treatment of *Naegleria fowleri* infections. Clinicians who have a patient with suspected PAM should contact the Centers for Disease Control and Prevention's Emergency Operations Center at 770-488-7100 for 24/7 diagnostic assistance, specimen collection guidance, treatment recommendations, and assistance obtaining miltefosine.

PAM and other free-living ameba infections (i.e., *Acanthamoeba, Balamuthia*) are reportable to Texas local health departments at 800-705-8868 or http://www.dshs.texas.gov/idcu/investigation/conditions/contacts/.

More information about PAM is available at http://www.cdc.gov/parasites/naegleria/.