

## WATERBORNE DISEASE OUTBREAKS

### REPORTING INFORMATION

- **Class C:** Report by the end of the next business day to the local public health department where the patient resides. If patient residence is unknown, report to the local public health department in which the reporting health care provider or laboratory is located. The exception: if the outbreak, unusual incident, or epidemic has an unexpected pattern of cases, suspected cases, deaths, or increased incidence of disease that is a major public health concern, then such outbreak, unusual incident, or epidemic shall be reported immediately via telephone.
- Reporting Form(s) and/or Mechanism:
  - [Ohio Confidential Reportable Disease form](#) (HEA 3334, rev. 1/09), [Positive Laboratory Findings for Reportable Disease form](#) (HEA 3333, rev. 8/05), the local public health department via the Ohio Disease Reporting System (ODRS), or telephone.
  - The local health department (LHD) should call the Ohio Department of Health (ODH) Outbreak Response and Bioterrorism Investigation Team (ORBIT) at 614-995-5599.
  - The LHD should complete the Centers for Disease Control and Prevention (CDC) form [Investigation of a Waterborne Outbreak](#) (CDC 52.12 rev. 03/08) and submit it to ODH ORBIT at 246 North High Street, Columbus, Ohio 43215.
  - The [Enteric Case Report](#) is not required but might be useful with local health department follow-up of individual cases. This report should not be sent to ODH. It is for local health department use only.
  - There are several additional forms that may need to be completed or are available to assist with the investigation depending on the organism(s) and setting involved or suspected.

### AGENT

Waterborne disease outbreaks are caused by many different microorganisms. In the United States, these include agents that cause enteric, skin and respiratory diseases. Enteric agents are most commonly associated with waterborne disease outbreaks, and include *Cryptosporidium* sp., *E. coli* O157:H7, *Giardia*, *Shigella*, hepatitis A virus and norovirus. Agents causing skin infections include *Pseudomonas* and schistosomes. Respiratory agents include *Legionella*. The majority of waterborne disease outbreaks have undetermined etiology. If the causative agent identified is reportable as an individual listing under the Ohio Administrative Code (e.g. hepatitis A, *Shigella*), the individual case(s) should be reported.

### CASE DEFINITIONS

#### Definition of a waterborne disease outbreak from drinking water

1. Two or more persons that are epidemiologically linked by location of exposure to water, time, and illness. This includes drinking water and water not intended for drinking (excluding recreational water). *AND*
2. Epidemiologic evidence implicates water as the probable source of illness (e.g. beverages contaminated by plumbing failures in drink mix/soda machines).

#### Definition of a waterborne disease outbreak from recreational water

1. Two or more persons that are epidemiologically linked by location of exposure to recreational water (e.g. swimming pools, wading pools, spas, water slides,

- interactive fountains, wet decks, and fresh and marine bodies of water), time, and illness. *AND*
2. Epidemiologic evidence that implicates water or volatilization of water-associated compounds into the air surrounding an aquatic facility as the probable source of the illness.

**NOTE:** Single cases of laboratory-confirmed primary amebic meningoencephalitis (PAM) due to *Naegleria fowleri*, single cases of wound or other *Vibrio* infections, single cases of chemical or toxin poisoning associated with water may in some circumstances be considered waterborne disease outbreaks.

### **SIGNS AND SYMPTOMS**

Symptoms, incubation and duration vary in type and severity, depending on the agent and dose. If symptoms are respiratory (e.g. *Legionella*), please refer to the legionellosis chapter of this manual.

### **DIAGNOSIS**

Depends on the suspected agent(s). To discuss diagnostic testing options and to make any arrangements for laboratory testing, contact the ODH Outbreak Response and Bioterrorism Investigation Team (ORBIT) at 614-995-5599.

If the symptoms are enteric, stool specimens may be collected and sent to the ODH Laboratory. In some circumstances testing can be done at the ODH Laboratory without charge. To obtain the fee exemption and to arrange for receipt of the stool transport kit, contact the ODH ORBIT at 614-995-5599. Depending upon the suspected organism, C&S transport medium and/or parasite kits will be used for transport of the specimens. Testing for norovirus requires the collection of bulk stool specimens.

If symptoms are of other types (e.g. skin infections [*Pseudomonas*] or systemic infections), please call ORBIT at 614-995-5599 for assistance.

If water samples are to be collected, special arrangements must be made in advance by contacting ORBIT at 614-995-5599. ORBIT will work with the Bureau of Environmental Health or the CDC to arrange for testing in outbreak situations. The ODH Laboratory does not test water samples.

## **EPIDEMIOLOGY**

### **Source**

Water which has been contaminated with a disease causing agent. Reported outbreaks in the United States have been associated with surface waters (e.g. lakes, streams, rivers), well water, spring water, recreational and other aquatic facility waters, bottled water, and less frequently with water from municipal treatment plants.

### **Occurrence**

The majority of outbreaks occur from June through October. One hundred six outbreaks were reported in the United States during 2005-2006. Of these, 78 were associated with recreational or other aquatic facility venues.

### **Mode of Transmission**

Ingestion or contact with contaminated water.

### **Period of Communicability and Carrier State**

Waterborne disease may be communicable and carrier states can exist, depending upon the agent. For norovirus, no carrier state has been documented; the period of communicability is believed to be from onset of symptoms to at least 48 hours after recovery. For information on other agents (e.g. *Giardia*, *Shigella*, hepatitis A virus), refer to the respective chapters in this manual.

## **PUBLIC HEALTH MANAGEMENT**

Waterborne disease outbreaks should be investigated to uncover the source of infection so that interventions can be instituted and further cases prevented. Two excellent resources for conducting waterborne investigations are:

- Recreational water toolkit:  
[http://www.cdc.gov/healthyswimming/rwi\\_outbreak.htm](http://www.cdc.gov/healthyswimming/rwi_outbreak.htm)
- Drinking water toolkit:  
<http://www.cdc.gov/ncidod/dpd/healthywater/professional.htm>

In addition to testing of biological samples, the following are important:

- Histories of symptoms and exposures (including exposure to water) should be obtained for cases and controls and compared.
- The source of the water should be investigated to determine treated/filtered status, repair/damage to sewer lines.

Based upon water analyses and/or epidemiologic and clinical findings, advise persons using the water source about methods to eliminate further exposure to the water or disinfection of the source.