

09-ID-02

Committee: Infectious

Title: Public Health Reporting and National Notification for Waterborne Disease Outbreaks

I. Statement of the Problem

CSTE position statement 07-EC-02 recognized the need to develop an official list of nationally notifiable conditions and a standardized reporting definition for each condition on the official list. The position statement also specified that each definition had to comply with American Health Information Community recommended standards to support “automated case reporting from electronic health records or other clinical care information systems.” In July 2008, CSTE identified sixty-eight conditions warranting inclusion on the official list, each of which now requires a standardized reporting definition.

II. Background and Justification

Background¹

During 2005--2006, a total of 106 waterborne disease outbreaks were reported in the US affecting 5,120 persons with 116 hospitalizations and 20 deaths. These outbreaks were associated with recreational water, drinking water and water not intended for drinking. More than half of reported waterborne outbreaks are gastroenteritis caused by infectious agents, chemicals, or toxins. Approximately one quarter of reported waterborne outbreaks are acute respiratory illness and a tenth are outbreaks of dermatitis. The remainder of waterborne disease outbreaks are due to a variety of illnesses and symptom complexes. The majority of outbreaks and over 90% of cases result from sources where the drinking or recreational water has been treated. Approximately one third of waterborne outbreaks are caused by bacteria, a third by parasites and a tenth by viruses; chemical or toxin exposures cause about 5% of outbreaks and the cause is not identified for the remaining outbreaks. Ongoing surveillance is necessary to identify and control outbreaks, to develop and monitor the effectiveness of disease prevention strategies, and to tailor risk prevention messages for the public.

Justification

Waterborne Disease Outbreaks meet the following criteria for a nationally and **standard** notifiable condition, as specified in CSTE position statement 08-EC-02:

- A majority of state and territorial jurisdictions—or jurisdictions comprising a majority of the US population—have laws or regulations requiring **standard** reporting of waterborne disease outbreaks to public health authorities
- CDC requests **standard** notification of waterborne disease outbreaks to federal authorities

¹ Much of the material in the background is directly quoted from the CDC’s Healthy Water website (<http://www.cdc.gov/healthywater/>). See the references for further information on this source.

- CDC has condition-specific policies and practices concerning the agency’s response to, and use of, notifications. Data are collected on waterborne disease outbreaks to characterize the frequency, source, number of people affected, severity of infection, and agent involved. These data are collected in order to understand the causes of waterborne disease outbreaks in the United States so that recommendations to decrease the frequency may be made.

III. Statement of the desired action(s) to be taken

CSTE requests that CDC adopt this standardized reporting definition for waterborne disease outbreaks to facilitate timelier, complete, and standardized local and national reporting of this condition.

IV. Goals of Surveillance

To provide information on the temporal, geographic, and demographic occurrence of waterborne disease outbreaks to facilitate their prevention and control.

V. Methods for Surveillance

Surveillance for waterborne disease outbreaks should use the sources of data and the extent of coverage listed in Table V.

Table V. Recommended sources of data and extent of coverage for ascertaining waterborne disease outbreaks.

Source of data for case ascertainment	Coverage	
	Population-wide	Sentinel sites
clinician reporting	X	
laboratory reporting	X	
reporting by other entities (e.g., hospitals, veterinarians, pharmacies)	X	
death certificates		
hospital discharge or outpatient records		
extracts from electronic medical records		
telephone survey		
school-based survey		
other _____		

VI. Criteria for Reporting

Reporting refers to the process of healthcare providers or institutions (e.g., clinicians, clinical laboratories, hospitals) submitting basic information to governmental public health agencies about cases of illness that meet certain reporting requirements or criteria. Cases of illness may also be ascertained by the secondary analysis of administrative health data or clinical data. The purpose of this section is to provide those criteria that should be used by humans and machines to determine whether a specific illness should be reported.²

A. Narrative description of criteria to determine whether a waterborne disease outbreak should be reported to public health authorities

Report any outbreak to public health authorities that meets any of the following criteria:

An incident in which two or more epidemiologically-linked persons experience a similar illness after exposure to the same water source and epidemiologic evidence implicates the water as the source of the illness. The implicated water may be drinking water, recreational water, water not intended for drinking (e.g., water used for agricultural purposes or in a cooling tower) or water of unknown intent. The route of exposure may be ingestion, inhalation, intranasal, or contact. The agent associated with the waterborne disease outbreak may be a microbe, chemical, or toxin. Water testing to demonstrate contamination or identify the etiologic agent is preferred, but not required for inclusion. Chemicals (including disinfection byproducts) in drinking water or in recreational water that cause health effects either through water exposure or by volatilization leading to poor air quality are included.

Other recommended reporting procedures

- All waterborne disease outbreaks should be reported.
- Frequency of reporting should follow the state health department's routine schedule.

B. Table of criteria to determine whether a waterborne disease outbreak should be reported to public health authorities

² “Human-based” criteria (described below under “A. Narrative”) can be applied by medical care providers and laboratory staff based on clinical judgment and clinical diagnosis. Machine-based criteria (described below under “B. Table”) can be applied using computerized algorithms that operate in electronic health record systems, including computerized records of laboratory test orders and laboratory test results; other clinical data systems (e.g., hospital discharge data systems serving multiple hospitals); or administrative data (e.g., healthcare provider billing data, vital records, and EMS data).

Table VI-B. Proposed Table of criteria to determine whether a case should be reported to public health authorities. Note: The following criteria are proposed for evaluation before general implementation. For purposes of currently implementing reporting the narrative description in VI-A, should be used. Meeting the criteria listed under any single column of this table is sufficient to report an outbreak, as indicated by the column’s heading.

Criterion	Reporting
<i>Epidemiological risk factors</i>	
Any outbreak involving two or more persons of an infectious disease, chemical poisoning or toxin-mediated illness where water is indicated as the source by an epidemiological investigation.	O

Notes:

O = At least one of these “O” criteria in each category in the same column (e.g., clinical presentation and laboratory findings)—in conjunction with all other “N” criteria in the same column—is required to report a case.

C. Disease Specific Data Elements:

Disease-specific data elements to be included in the initial report are listed below.

Clinical Factors

Common symptoms

Date of onset

Epidemiological Risk Factors

Drinking water source

Recreational water exposure

Type

Swimming pool

Lake

River, stream, creek

Canal

Location

Date

Hot tub or spa exposure

Exposure to mists or sprays

Type

Shower

Hot tub

Spa

Other

Location

Date

Exposure to water not intended for drinking

Cooling tower
Irrigation water
Water of unknown intent

VII. Case Definition for Case Classification

A. Narrative description of criteria to determine whether a case should be classified as confirmed is provided:

Clinical description

Symptoms of illness depend upon etiologic agent.

Laboratory criteria for diagnosis

Depends upon etiologic agent.

Definition

A waterborne disease outbreak is an incident in which two or more epidemiologically-linked persons experience a similar illness after exposure to the same water source and epidemiologic evidence implicates the water as the likely source of the illness.

Comment

The implicated water in these waterborne disease outbreaks may be drinking water, recreational water, water not intended for drinking (e.g., water used for agricultural purposes or in a cooling tower) or water of unknown intent. The route of exposure may be ingestion, inhalation, intranasal, or contact. The agent associated with the waterborne disease outbreak may be a microbe, chemical, or toxin. Water testing to demonstrate contamination or identify the etiologic agent is preferred, but not required for inclusion. Chemicals (including disinfection byproducts) in drinking water or in recreational water that cause health effects either through water exposure or by volatilization leading to poor air quality are included. Reports of waterborne disease outbreaks received through the National Outbreak Reporting System (NORS) are captured in the Waterborne Disease and Outbreak Surveillance System (WBDOSS).

Although not reported through NORS, the WBDOSS also accepts single cases of chemical exposure, wound infection and other illnesses, (e.g., *Naegleria* infections) that are epidemiologically linked to water exposure as well as aquatic facility-related health events (e.g., chemical mixing accidents or air quality problems). However, these single cases or aquatic facility-related health events are not reported or analyzed as waterborne disease outbreaks.

See also:

<http://www.cdc.gov/healthywater/statistics/wbdoss/index.html>

B. Classification Tables

Table VII-B lists the criteria that must be met for an outbreak to be classified as confirmed.

Table VII-B. Criteria for classifying a waterborne disease outbreak. Meeting the criteria listed under any single column of this table is sufficient to classify an outbreak, as indicated by the column's heading.

Criterion	Outbreak Definition		
	Confirmed	Probable	Suspected
<i>Epidemiological risk factors</i>			
Any outbreak of an infectious disease, chemical poisoning or toxin-mediated illness where water is indicated as the source by an epidemiological investigation.	O		

Notes:

O = At least one of these “O” criteria in each category in the same column (e.g., clinical presentation and laboratory findings)—in conjunction with all other “N” criteria in the same column—is required to classify a case.

VIII. Period of Surveillance

Surveillance should be on-going.

IX. Data sharing/release and print criteria

CDC requests notification of waterborne disease outbreaks.

Data for waterborne disease outbreaks are summarized biennially for the MMWR Surveillance Summaries and may be included in MMWR or journal articles on waterborne disease as needed to describe the frequency and distribution of waterborne disease outbreaks. Interim data on waterborne outbreaks are provided to states upon request. Case-specific data are not included.

X. References

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XI. Coordination:

Agencies for Response:

- (1) Thomas R. Frieden, MD, MPH
Director
Centers for Disease Control and Prevention
1600 Clifton Road, NE
Atlanta GA 30333
(404) 639-7000
txf2@cdc.gov

XII. Submitting Author:

- (2) Bela Matyas
Chief, Disease Investigations Section
California Department of Public Health
850 Marina Bay Parkway
Richmond, CA 94804
Bela.matyas@cdph.ca.gov

Co-Authors:

- (1) Harry F. Hull, Medical Epidemiologist
HF Hull & Associates, LLC
1140 St. Dennis Court
Saint Paul, MN 55116
(651) 695-8114
hullhf@msn.com
- (2) Cecil Lynch, Medical Informaticist
OntoReason
7292 Shady Woods Circle
Midvale, UT 84047
(916) 412.5504
clynch@ontoreason.com
- (3) R. Gibson Parrish, Medical Epidemiologist
P.O. Box 197
480 Bayley Hazen Road
Peacham, VT 05862
(802) 592-3357
gib.parrish@gmail.com