

Section 1

ABOUT THE DISEASE

A. Etiologic Agent

Several nontoxigenic *Vibrio* species (i.e., those that do not produce the toxin that causes cholera) can cause a variety of clinical syndromes, including gastroenteritis, wound infection, and bacteremia. The most commonly reported nontoxigenic *Vibrio* species associated with gastroenteritis is *Vibrio parahaemolyticus*. *V. vulnificus* usually causes primary septicemia and wound infections; *V. alginolyticus* is also associated with wound infections. Other species include: *V. fluvialis*, *V. mimicus*, and *V. furnissii*.

B. Clinical Description

Infection with *V. parahaemolyticus* usually results in gastrointestinal illness characterized by watery diarrhea and abdominal cramps. Primary bacteremia and wound infection characterize illness caused by the other *Vibrio* species mentioned above, but these can also be caused by *V. parahaemolyticus* on occasion. These infections can be severe, even life-threatening, in immunocompromised individuals and in people with liver disease.

C. Vectors and Reservoirs

Noncholera *Vibrio* species are natural inhabitants of marine coastal environments. During cold weather months, organisms are found in marine silt; during the summer months, they are found free in coastal waters, and in and on fish and shellfish.

D. Modes of Transmission

Transmission occurs through ingestion of contaminated food. Direct contact with contaminated water can also lead to infection. Direct person-to-person transmission is rare.

E. Incubation Period

For gastroenteritis, the incubation period is usually about 24 hours but can range from five to 92 hours.

F. Period of Communicability or Infectious Period

Vibriosis is not considered to be transmitted person-to-person. Foodhandlers who have been diagnosed with a noncholera *Vibrio* infection may return to work after diarrhea has resolved.

G. Epidemiology

Infection occurs most frequently during summer and fall months, when *Vibrio* populations in seawater are highest. Gastroenteritis usually follows ingestion of uncooked or undercooked seafood, especially oysters, clams, crabs, and shrimp. Wound infections can result from exposure of pre-existing wounds to contaminated seawater or from punctures resulting from handling of contaminated shellfish or occurring in contaminated water. Exposure to contaminated water during natural disasters (hurricanes) has resulted in infection. People with liver disease, low gastric acidity, and immunodeficiency have increased susceptibility to infection with *Vibrio* species.

H. Bioterrorist Potential

Noncholera *Vibrio* species are not listed by the Centers for Disease Control and Prevention (CDC) as bioterrorist agents.

Section 2

REPORTING CRITERIA AND LABORATORY TESTING

A. What to Report to the Massachusetts Department of Public Health (MDPH)

Report the following:

- Isolation of any *Vibrio* species from a clinical specimen.

B. Laboratory Testing Services Available

The MDPH William A. Hinton State Laboratory Institute (HSLI) can perform confirmatory testing and/or further identification on isolates of any *Vibrio species* from any clinical source.

The HSLI Food Microbiology Laboratory, at (617) 983-6610, will test implicated food items from case clusters or outbreaks for *Vibrio* species. See Section 4D for more information.

For more information on isolate submission, contact the HSLI Reference Laboratory at (617) 983-6607.

Section 3

REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify sources of infection of major public health concern (e.g., contaminated water, shellfish, or other food), and to stop transmission from such a source.
- To identify cases of vibriosis to prevent further infections.

B. Laboratory and Health Care Provider Reporting Requirements

Vibriosis is reportable to the local board of health (LBOH). The MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspect cases of vibriosis, as defined by the reporting criteria in Section 2A.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of *Vibrio sp.* shall report such evidence of infection directly to the MDPH.

Additionally, all laboratories performing examinations on any specimens derived from Massachusetts residents are required to submit all *Vibrio sp.* isolates directly to the MDPH William A. Hinton State Laboratory Institute (HSLI) for further examination.

C. Local Board of Health (LBOH) Reporting and Follow-Up Responsibilities

Reporting Requirements

MDPH regulations (*105 CMR 300.000*) stipulate that vibriosis is reportable to the LBOH and that each LBOH must report any confirmed case of vibriosis or suspect case of vibriosis, as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Infectious Disease, Office of Integrated Surveillance and Informatics Services (ISIS) via MAVEN. Refer to the List of Diseases Reportable to Local Boards of Health for information on prioritization and timeliness requirements of reporting and case investigation <http://www.mass.gov/eohhs/docs/dph/cdc/reporting/rprtbl diseases-lboh.pdf>

Case Investigation

It is the responsibility of the LBOH to complete all questions in each of the question packages by interviewing the case and others who may be able to provide information. Much of the information required can be obtained from the health care provider or from the medical record.

Calling the provider

If the case was hospitalized (i.e. reporting facility is a hospital), call infection control at the named hospital. A list of infection preventionists can be found in the help section of MAVEN. If the case was seen at a clinician's office, ask to speak to a nurse working with the ordering provider.

Calling the case or parent/guardian of the case

Before calling the case, review the disease fact sheet by clicking on the Help Button located in MAVEN and/or the disease chapter in the Guide to Surveillance, Reporting and Control. The call may take a few minutes, so in order to maximize the chance of getting the information needed, it might be good to note the potential length of the call with your contact, and offer the opportunity to call back when it is more convenient. Asking questions about how the case or child is feeling may get the case or parent talking. If you are unable to answer a question they have, don't hesitate to call the Division of Epidemiology and Immunization at 617-983-6800 for assistance, and call the case back with the answer later. People are often more than willing to talk about their illness, and they may be very happy to speak with someone who can answer their questions.

Using MAVEN

Administrative Question Package

Monitor your "Online LBOH Notification for Immediate Disease" workflow in MAVEN for any new cases of vibriosis during the months of May - October. An MDPH Epi-of-the-Day (EOD) will review all new cases and request immediate follow up for *V. parahaemolyticus* events. EODs will create a note for LBOHs in non-*parahaemolyticus* cases that only routine follow up is needed. Once a new event appears in this workflow, open the Administrative Question Package (QP) and under the "Local Health and Investigation" section, answer the first question "**Step 1** - LBOH acknowledged" by selecting "Yes". The "LBOH acknowledged date" will then auto populate to the current day. Completing this first step will move the event out of this workflow and into your "Online LBOH notified but Case Report Forms (CRF) are pending" workflow. Note the date you started your investigation by answering "**Step 2** - Investigation started" as "Yes" and then note the date where shown. Record your name, agency, and phone numbers where shown in "**Step 3** - LBOH/Agency Investigator."

Demographic Question Package

Record all demographic and employment information. It is particularly important to complete the Race/Ethnicity and Occupation questions.

Clinical Question Package

Complete the “Diagnosis/Clinical Information” section, providing the diagnosis date, symptom information and date of symptom onset and other medical information.

Risk Exposure/Control & Prevention Question Package

Accurately record all risk questions regarding travel and consumption of any high risk foods. Please note that human infection usually results from exposure to the organism by consumption of raw or undercooked shellfish, usually oysters. As you enter data into MAVEN, additional questions will appear for you to answer regarding risk/exposure.

Traceback Question Package

These questions will be followed up by the MA Vibrio Control Program Manager (VCPM). You can see the fields, but not enter responses, as they are restricted. You may be contacted by the VCPM during the investigation.

Completing Your Investigation

1. If you were able to complete a case investigation and follow-up is complete, mark “**Step 4 – Case Report Form Completed**” as “Yes” and then choose Local Board of Health (LBOH) –Ready for MDPH review for the Completed by variable.
2. If you have made several attempts to obtain case information but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please complete “**Step 4 - Case Report Form Completed**” as “No” and then choose a primary reason why the case investigation was not completed from the choices provided in the primary reason answer variable list.
3. If you are not online for MAVEN you may submit a paper case report form. After completing the form, attach laboratory report(s) and fax or mail (in an envelope marked “Confidential”) to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to obtain a copy of the case report form and to confirm receipt of your fax.

The mailing address is:

MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)
305 South Street, 5th Floor
Jamaica Plain, MA 02130
Fax: (617) 983-6813

Section 4

CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (105 CMR 300.200)

Foodhandlers with non-cholera vibriosis who have diarrhea must be excluded from work.

Note: A case of vibriosis is defined by the reporting criteria in Section 2A of this chapter.

Minimum Period of Isolation of Patient

Food handlers with diarrhea may return to work after diarrhea has resolved. There are no restrictions for contacts of cases.

B. Protection of Contacts of a Case

None

C. Managing Special Situations

Reported Incidence Is Higher Than Usual/Outbreak Suspected

If the number of cases reported in your city/town is higher than usual, if you suspect an outbreak, or if multiple cases are reported, investigate to determine the source of infection and the mode of transmission. A contaminated vehicle (e.g., water or food) should be sought, and applicable preventive or control measures should be instituted. Since person-to-person transmission is theoretically possible, special emphasis should be placed on personal cleanliness and sanitary disposal of feces. The MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850 will work with you to determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

D. Preventive Measures

Environmental Measures

Implicated food items from Massachusetts or elsewhere in the U.S. must be removed from consumption. A decision about testing implicated food items can be made in consultation with the Bureau of Environmental Health, Food Protection Program (FPP) or the MDPH Division of Epidemiology and Immunization. The FPP can help coordinate pickup and testing of food samples. If a commercial product is suspected, the FPP will coordinate follow-up with relevant outside agencies.

Note: The role of the FPP is to establish policy and to provide technical assistance with the environmental investigation, such as interpreting the Massachusetts Food Code, conducting a Hazard Analysis and Critical Control Point (HACCP) risk assessment, initiating enforcement actions, and collecting food samples.

The general policy of the HSLI is to test only food samples implicated in suspected outbreaks, not single cases (except when botulism is suspected). However, leftover food consumed within the incubation period by a single, confirmed case of vibriosis may be prioritized for testing.

Note: Refer to the MDPH's Foodborne Illness Investigation and Control Reference Manual for comprehensive information on investigating foodborne illness complaints and outbreaks. Copies of this manual have been made available to LBOH. It can also be located on the MDPH website in PDF format at <http://www.mass.gov/eohhs/gov/local-gov/foodbourne-illness/foodborne-illness-investigations-and-control.html>. For the most recent changes to the Massachusetts Food Code, contact the FPP at (617) 983-6712 or on the MDPH website at www.mass.gov/dph/fpp.

Personal Preventive Measures/Education

To avoid exposure, recommend that individuals:

- Do not eat raw or undercooked fish or shellfish. Despite good sanitation, even shellfish harvested from coastal U.S. waters may be contaminated with *Vibrio sp.*
- Always wash hands thoroughly with soap and water before eating or preparing food and after using the toilet.
- Wash children’s hands as well as their own hands after changing a child’s diapers, and dispose of feces in a sanitary manner.
- Wash hands thoroughly and frequently when ill with diarrhea or when caring for someone with diarrhea. Hands should be scrubbed for at least 15–20 seconds after cleaning the bathroom; after using the toilet or helping someone use the toilet; after changing diapers; before handling food; and before eating.

International Travel

Travelers should pay attention to what they eat and drink. Avoiding risky foods and potentially contaminated beverages will also help protect against other illnesses, including traveler’s diarrhea, typhoid fever, dysentery, and hepatitis A.

Travelers should:

- “Boil it, cook it, peel it, or forget it.”
- Drink only bottled or boiled water, keeping in mind that bottled carbonated water is safer than bottled noncarbonated water.
- Ask for drinks without ice, unless the ice is made from bottled or boiled water.
- Avoid popsicles and flavored ices that may have been made with contaminated water.
- Eat foods that have been thoroughly cooked and that are still hot and steaming.
- Avoid raw vegetables and fruits that cannot be peeled. Vegetables like lettuce are easily contaminated and are very hard to wash well.
- Peel raw fruits or vegetables and not eat the peelings.
- Avoid foods and beverages from street vendors.
- Avoid undercooked or raw fish or shellfish, including ceviche.
- Not bring any perishable food back to the U.S.

For more information regarding international travel contact the CDC’s Traveler’s Health Office at (877) 394-8747 or on the CDC website at www.cdc.gov/travel

Section 5

ADDITIONAL INFORMATION

The Massachusetts case definition of vibriosis aligns with the CDC’s National Notifiable Diseases Surveillance System (NNDSS) 2012 case classification for a probable confirmed case. A confirmed case is defined by isolation of a species of the family *Vibrionaceae* (other than toxigenic *Vibrio cholerae* O1 or

O139, which are reportable as cholera) from a clinical specimen. A probable case is a clinically compatible case that is epidemiologically linked to a confirmed case.

Public Health Fact Sheets on *Vibrio parahaemolyticus* and Cholera are available from the MDPH Division of Epidemiology and Immunization at <http://www.mass.gov/eohhs/gov/departments/dph/programs/id/epidemiology/factsheets.html> or in the MAVEN help section.