

Vibriosis (non-cholera)

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To identify sources of transmission (e.g., commercially distributed food product or shellfish collection area) and to prevent further transmission from such sources.
2. When disease is due to privately collected shellfish, to inform those individuals how to reduce their risk of exposure.

B. Legal Reporting Requirements

1. Health care providers: notifiable to local health jurisdiction within 24 hours.
2. Health care facilities: notifiable to local health jurisdiction within 24 hours.
3. Laboratories: *Vibrio* (non-cholera) species notifiable to local health jurisdiction within 24 hours; specimen submission - culture (2 business days).
4. Local health jurisdictions: notifiable to Washington State Department of Health (DOH) Office of Communicable Disease Epidemiology (OCDE) within 7 days of case investigation completion or summary information required within 21 days of initial notification.

Note: Persons with non-toxigenic strains of *V. cholerae* are reported as cases of vibriosis. Persons with toxigenic strains of *V. cholerae* (O1 or O139) are reported as cholera cases.

C. Local Health Jurisdiction Investigation Responsibilities

1. Begin investigation within one working day. Enter case in Public Health Issues Management System (PHIMS) immediately to generate a PHIMS case ID that will be used in tracking.
2. Interview case using the PHIMS interview form (<http://www.doh.wa.gov/Portals/1/Documents/5100/210-052-ReportForm-Vibriosis.pdf>) **as well as** the CDC Cholera and Other Vibrio (COVIS) Illness Surveillance Report form (<http://www.doh.wa.gov/Portals/1/Documents/5100/cdc5279-covis-vibriosis-508c.pdf>)
3. Facilitate environmental investigation, as indicated.
4. To track progress through the investigation, use the Vibrio checklist.

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agents

Vibriosis is caused by infection with pathogenic species of the family *Vibrionaceae*. Genera that more commonly cause human illness include *Vibrio* and *Grimontia*. The most important non-cholera human pathogens in the *Vibrio* genus are *Vibrio parahaemolyticus*, *V. vulnificus*, non-toxigenic *V. cholerae*, and *V. mimicus*. Species that less commonly cause human illness include *V. alginolyticus*, *V. fluvialis* and *G. hollisae*. *Vibrio* species that naturally inhabit coastal waters in the United States and

Canada and are present in higher concentrations during warm summer months.

B. Description of Illness

Vibrio parahaemolyticus primarily causes a diarrheal illness characterized by sudden onset of watery diarrhea often accompanied by abdominal cramping. Bloody diarrhea (<15% of cases), vomiting, headache, and low grade fever also can occur.

V. vulnificus is a virulent organism that most commonly causes soft tissue infections and septicemia in persons with immunocompromising conditions, liver disease and other chronic illnesses. Septicemia can occur after ingestion of the organism in undercooked shellfish or exposure of a wound to seawater containing the organism. *V. vulnificus* is responsible for almost all the seafood-related deaths in the United States; the case fatality rate is approximately 25%.

V. alginolyticus most commonly causes cellulitis and acute otitis media or externa while nontoxicogenic (non-O1, non-O139) *V. cholerae* causes a diarrheal illness. *V. mimicus* can cause a cholera-like illness.

C. Vibriosis in Washington State

The number of vibriosis reports varies from year to year depending on environmental conditions. In 2006, a large outbreak of vibriosis occurred in Washington involving at least 110 residents.

Vibrio parahaemolyticus is endemic to the estuaries of Washington as are several other *Vibrio* species. To date, no *V. vulnificus* and *V. mimicus* infections have been reported associated with aquatic origins within Washington.

Most vibriosis cases in the United States occur between April and October. During the warmer months of the year, the DOH Shellfish Program routinely monitors shellfish from Washington growing waters for the presence of *V. parahaemolyticus* and will impose harvest restrictions if growing areas are linked to human illness.

D. Reservoirs

V. parahaemolyticus and *V. vulnificus* naturally occur in coastal waters. Although *V. parahaemolyticus* is ubiquitous in the United States (including Washington), *V. vulnificus* occurs at highest concentrations along the Gulf coast and in the Northeast. Molluscan shellfish become contaminated with the organism while filter feeding.

V. parahaemolyticus and *V. vulnificus* are halophilic (i.e. salt-requiring). Nontoxicogenic (non-O1, non-O139) *V. cholerae* can live in both freshwater and salt water.

E. Modes of Transmission

In the United States, most sporadic cases of vibriosis (non-cholera) follow the ingestion of raw or inadequately cooked seafood, particularly oysters. Common vehicles or mechanisms of transmission include:

1. Ingestion of inadequately cooked or raw seafood.
2. Ingestion of foods cross-contaminated with seawater or raw seafood.
3. Exposure of cuts or wounds to seawater.

F. Incubation Period

12–24 hours; range 4–96 hours.

G. Period of Communicability

Person-to-person transmission probably does not occur, suggesting the infective dose for immunocompetent persons is high. There is no carrier state.

H. Treatment

Treatment for gastroenteritis is primarily oral rehydration and supportive therapy. Antibiotics are generally not necessary in most cases of *V. parahaemolyticus* gastroenteritis but may be indicated if the diarrhea is severe. Cellulitis and septicemia caused by *V. vulnificus* require rapid treatment with appropriate antibiotics.

3. CASE DEFINITIONS

A. Clinical Criteria for Diagnosis

Vibriosis should be suspected if a patient has watery diarrhea and has eaten raw or undercooked seafood, especially oysters, or when a wound infection or sepsis occurs after exposure to seawater.

B. Laboratory Criteria for Diagnosis

Isolation of a species of the family *Vibrionaceae* (other than toxigenic *Vibrio cholerae* O1 or O139) from a clinical specimen.

C. Case Definition

1. Probable: A clinically compatible case that is epidemiologically linked to a confirmed case.
2. Confirmed: A case that is laboratory confirmed.

4. DIAGNOSIS AND LABORATORY SERVICES

A. Diagnosis

The diagnosis is made by isolation of a species of the family *Vibrionaceae* from stool, blood or wounds.

B. Tests Available at PHL

Laboratories in Washington are required to submit *Vibrio* isolates to PHL, which provides isolate confirmation/identification. In an outbreak, PHL will also culture stool for *Vibrio* species. Contact OCDE for approval prior to submitting specimens for culture.

Note that PHL require all clinical specimens have two patient identifiers, a name **and** a second identifier (e.g., date of birth) both on the specimen label and on the submission form. Due to laboratory accreditation standards, specimens will be rejected for testing if not properly identified. Also include specimen source and collection date.

C. Specimen Collection

For stool culturing, use a sterile applicator swab to collect stool, insert the swab into Cary-Blair transport medium, break off the stick at the score line below the lid of the

bottle, push the cap on tightly, seal with pressure-sensitive labeling tape and mail immediately.

Enclose a completed PHL Microbiology form with each isolate and stool specimen.

<http://www.doh.wa.gov/Portals/1/Documents/5230/302-013-Micro.pdf>

5. ROUTINE CASE INVESTIGATION

Communicable Disease Epidemiology (CD Epi) at the Local Health Jurisdiction will interview the case and others who may be able to provide pertinent information. In the event shellfish or other seafood were from a commercial source (restaurant, market or grocery, food truck, other commercial enterprise), an environmental health investigation is also required and shellfish tags must be collected. Use the Vibrio checklist to track progress of investigation.

A. Enter case in PHIMS

1. Enter case in Public Health Issues Management System (PHIMS) immediately to generate a PHIMS case ID that will be used in tracking.

B. Interview Case

1. Interview case using BOTH the PHIMS case report form (<http://www.doh.wa.gov/Portals/1/Documents/5100/210-052-ReportForm-Vibriosis.pdf>) AND the COVIS (Cholera and Other Vibrio Illness Surveillance Report) form (<http://www.doh.wa.gov/Portals/1/Documents/5100/cdc5279-covis-vibriosis-508c.pdf>).
2. Ask case whether any acquaintances or household members have had a similar illness within the previous four days. Obtain the ill person's name, diagnosis, and telephone number or address. (Note: Anyone meeting the probable case definition should be reported and investigated in the same manner as a confirmed case).
3. If case consumed shellfish or other seafood in the exposure period, also ask the case questions 1 through 6 on **page 4** of the [COVIS form](#): questions 1-6 (if known to the case) and 12 (if recreational harvest).
4. If the case has an ear or skin infection, complete the top of page 3. For either case, add any additional information or comments to the bottom of page 3. Draw a line diagonally through page 4.
5. Once the interview is complete, fax the entire 4 pages of the COVIS form, with as much information as is available, to DOH OCDE at 206-418-5515. Note that page 4 of the COVIS form may not be complete at this point as additional information may need to be collected by other parties; this is fine, all 4 pages of the COVIS form, including the incomplete page 4 should still be faxed to DOH OCDE.

When interviewing, get as specific information as possible about shellfish (what type of shellfish, how prepared, when and where consumed).

- *If recreational harvest:* Gather details about who harvested the shellfish or other seafood (including contact information in the event additional information needs to be gathered), when and where it was harvested, storage conditions, and how the items were prepared (served raw, if cooked, how cooked, possibilities for cross-contamination in storage or preparation).

- *If shellfish or seafood were from a commercial source (restaurant, market/grocery, food truck or other commercial establishment):* If possible, use the restaurant's/market's menu online when interviewing the case. Be aware, however, that the shellfish eaten may have been a special item not on the menu. To pinpoint dates and times of the meal, ask the case to look at receipts, online bank statements, or calendars. Some restaurants serve multiple types of shellfish, and it is crucial to pinpoint *exactly* which shellfish were eaten. If possible, have the case look at pictures of shellfish during the interview, or describe what the various types of shellfish look like to assist in recall.
- *If case handled raw shellfish:* Determine the type of shellfish and source (market, recreational harvest, restaurant, other source). Obtain specific details about the exact type of shellfish and exactly where they were harvested and served.
- *If travel outside the United States:* Obtain travel dates and locations visited.
- *If skin exposure to seawater:* Obtain date and exact location of exposure (beach name and location).
- *If consumption of untreated water:* Obtain date and exact location of exposure.

C. Environmental Evaluation

Note: For ALL cases, regardless of Environmental Health investigation status, complete steps 5 A and B above.

Environmental evaluation is needed if there was a commercial source for the shellfish or seafood (that is, if shellfish/seafood were from a restaurant, market/grocery, food truck or other commercial establishment). Below are three common scenarios.

1. If case consumed shellfish or other seafood from a commercial establishment (restaurant, grocery/market, food truck or other commercial establishment) in the same jurisdiction as residence, LHJ CD Epi should:

- a. Request that LHJ Environmental Health (EH) perform an investigation to determine whether there was evidence of improper storage, cross-contamination, or holding temperature violations.
- b. Provide LHJ EH with page 4 of the [COVIS form](#) (with a PHIMS case ID or LHJ identifier written on the top) after filling in any information already known.
- c. Request that LHJ EH collect shellfish tags for the implicated product (be as specific as possible regarding what product is suspected to ensure that the appropriate tags are collected).
- d. Request that LHJ EH use [Field Investigation Worksheet \(Part II\)](#) to collect shellfish handling information and complete questions 7-12 and 15 on page 4 of the COVIS form.
- e. Request that LHJ EH return [page 4 of the COVIS form](#) (with PHIMS number or other identifier at the top) and shellfish tags (again, be as specific as

possible regarding what shellfish were consumed so that only the appropriate tags are collected) to DOH Shellfish Program via email at sf.illness@doh.wa.gov or fax to 360-236-2257.

2. If case consumed shellfish or other seafood from a commercial establishment (restaurant, grocery/market, food truck or other commercial establishment) in a different county than the county of residence (but still within Washington), LHJ CD Epi should:

- a. Contact EH in the LHJ where the commercial establishment is located and request that they perform an environmental investigation and collect tags as in section C1.

3. If case consumed shellfish or other seafood from a commercial establishment (restaurant, grocery/market, food truck or other commercial establishment) in a state other than Washington, LHJ CD Epi should:

- a. Contact DOH OCDE at 206-418-5500. DOH OCDE will facilitate environmental investigation and tag collection.

Be sure to still complete the [PHIMS case report form](#) and [COVIS form](#), as described in section 5B above. (Enter case in PHIMS, as above, and fax to DOH OCDE pages 1-4 of the COVIS form, with any unknown information left blank.)

6. CONTROLLING FURTHER SPREAD

A. Infection Control Recommendations

1. Hospitalized patients should be treated with standard precautions. Contact precautions should be used for diapered or incontinent persons for the duration of the illness.
2. The case should be educated regarding effective hand washing, particularly after using the toilet, changing diapers, and before preparing or eating food.
3. As indicated, the case should be instructed on the importance of proper food handling and adequate cooking of shellfish; and avoidance of cross-contamination of other foods by raw shellfish or contaminated seawater.

B. Case Management

Follow up culturing not required.

C. Contact Management

Household and other close contacts are generally not at risk for infection since the infection is probably not directly transmitted person-to-person.

D. Management of Other Exposed Persons

Other exposed persons should be educated about symptoms and told to consult a health care provider for diagnostic testing and treatment if indicated.

E. Environmental Measures

The DOH Shellfish Program will decide whether a product recall or harvesting restrictions are warranted after receiving the information collected in Section 5C above.

7. MANAGING SPECIAL SITUATIONS

A. Case is a Food Handler

Because vibriosis is not transmitted person-to-person, there are no individual isolation control measures necessary. If a case is a food handler, or in another high-risk occupation, counsel them to exclude themselves from work until symptoms stop, as would be the recommendation for any diarrheal illness.

B. Food Served at a Public Gathering Implicated

Determine the source of shellfish and how the shellfish were handled prior to consumption.

C. Case Works at a Health Care or Residential Care Facility

Determine if there has been increased incidence of diarrheal illness within the past week. If so, investigate these reports to identify possible common source outbreaks or continuing sources of exposure. A facility may have requirements for reporting to their licensing agency. If indicated, conduct a sanitary inspection of the facility and obtain food history related to consumption of shellfish.

D. Outbreaks

If you suspect an outbreak, contact OCDE and begin an investigation immediately.

8. ROUTINE PREVENTION

A. Immunization Recommendations: None

B. Prevention Recommendations

1. Do not eat raw oysters or other raw shellfish, particularly if you are immunocompromised or have chronic liver disease. *V. parahaemolyticus* does not alter the appearance, taste, or odor of oysters.
2. Before harvesting shellfish, consult the 24 hour PSP Hotline 1-800-562-5632 or the DOH website: <http://www.doh.wa.gov/CommunityandEnvironment/Shellfish/RecreationalShellfish> for information on shellfish harvest areas closed due to marine biotoxins or *Vibrio*.
3. Cook Molluscan shellfish (oysters, clams, and mussels) thoroughly so that they reach a minimum internal temperature of 145°F (63°C) for 15 seconds. Do not eat those shellfish that do not open during cooking. Note that cooking does not affect marine biotoxins.
4. Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood.
5. Keep shellfish cold at all times after purchase until preparation or consumption.
6. Eat shellfish promptly after cooking and refrigerate leftovers.
7. Wear protective clothing (e.g., gloves) when handling raw shellfish.
8. Avoid exposure of open wounds or broken skin to warm salt or brackish water, or to raw shellfish harvested from such waters.

UPDATES

January 2011: The Legal Reporting Requirements section has been revised to reflect the 2011 Notifiable Conditions Rule revision.

January 2012: Case definition updated to include reclassified species within family Vibrionaceae.

July 2015: Updates to streamline and make more clear the case investigation process.