

Disease Fact Sheet: Vibriosis

Vibrio parahaemolyticus and *V. vulnificus* can both cause illness; they are described below. Cholera is discussed in a separate fact sheet.

VIBRIO PARAHAEMOLYTICUS

What is *Vibrio parahaemolyticus*?

Vibrio parahaemolyticus is a bacterium in the same family as the bacteria that cause cholera. It lives in brackish saltwater and causes gastrointestinal illness in humans. *V. parahaemolyticus* naturally inhabits coastal waters in the United States and Canada and is present in higher concentrations during summer; it is a halophilic (salt-requiring) organism.

What type of illness is caused by *V. parahaemolyticus*?

When ingested, *V. parahaemolyticus* causes watery diarrhea often with abdominal cramping, nausea, vomiting, fever and chills. Usually these symptoms occur within 24 hours of ingestion. Illness is usually self-limited and lasts 3 days. Severe disease is rare and occurs more commonly in persons with weakened immune systems. *V. parahaemolyticus* can also cause an infection of the skin when an open wound exposed to warm seawater is contaminated with the organism.

How does infection with *V. parahaemolyticus* occur?

Most people become infected by eating raw or undercooked shellfish, particularly oysters. Less commonly, skin infections result from exposure of an open wound to warm seawater.

How common is infection with *V. parahaemolyticus*?

In Asia, *V. parahaemolyticus* is a common cause of foodborne disease. In the United States, it is less commonly recognized as a cause of illness, partly because clinical laboratories rarely use the selective medium that is necessary to identify this organism. Not all states require that *V. parahaemolyticus* infections be reported to the state health department, but CDC collaborates with the Gulf Coast states of Alabama, Florida, Louisiana, and Texas to monitor the number of cases of *Vibrio* infection in this region. From those states, about 30-40 cases of *V. parahaemolyticus* infections are reported each year.

How is *V. parahaemolyticus* infection diagnosed?

Vibrio organisms can be isolated from cultures of stool, wound, or blood. For isolation from stool, use of a selective medium that has thiosulfate, citrate, bile salts, and sucrose (TCBS agar) is recommended. If there is clinical suspicion of infection with this organism, the microbiology laboratory should be notified so that they will perform cultures using this medium. A physician should suspect *V. parahaemolyticus* infection if a patient has watery diarrhea and has eaten raw or undercooked seafood, especially oysters, or when a wound infection occurs after exposure to seawater.

How is *V. parahaemolyticus* treated?

Treatment is not necessary in most cases of *V. parahaemolyticus* infection. There is no evidence that antibiotic treatment decreases the severity or the length of the illness. Patients should drink plenty of liquids to replace fluids lost through diarrhea. In severe or prolonged illnesses, antibiotics such as tetracycline, ampicillin or ciprofloxacin can be used. The choice of antibiotics should be based on antimicrobial susceptibilities of the organism.

How do oysters become contaminated with *V. parahaemolyticus*?

Vibrio is a naturally occurring organism commonly found in waters where oysters are cultivated. When the appropriate conditions occur with regard to salt content and temperature, *V. parahaemolyticus* thrives.

How is *V. parahaemolyticus* infection prevented?

Most infections caused by *V. parahaemolyticus* in the United States can be prevented by thoroughly cooking seafood, especially oysters. When an outbreak is traced to an oyster bed, health officials recommend closing the oyster bed until conditions are less favorable for *V. parahaemolyticus*. Wound infections can be prevented by avoiding exposure of open wounds to warm seawater.

VIBRIO VULNIFICUS

What is *Vibrio vulnificus*?

Vibrio vulnificus is a bacterium in the same family as the bacteria that cause cholera. It normally lives in warm seawater and is part of a group of vibrios that are called "halophilic" because they require salt.

What type of illness does *V. vulnificus* cause?

V. vulnificus can cause gastrointestinal disease in people who eat contaminated seafood. Among healthy people, ingestion of *V. vulnificus* can cause vomiting, diarrhea, and abdominal pain. In immunocompromised persons, particularly those with chronic liver disease, *V. vulnificus* can infect the bloodstream, causing a severe and life-threatening illness characterized by fever and chills, decreased blood pressure (septic shock), and blistering skin lesions. *V. vulnificus* bloodstream infections are fatal about 50% of the time. *V. vulnificus* can also cause an infection of the skin when open wounds are exposed to warm seawater. These infections can lead to skin breakdown and ulceration. Persons who are immunocompromised are at higher risk for invasion of the organism into the bloodstream and potentially fatal complications.

How common is *V. vulnificus* infection?

V. vulnificus is a rare cause of disease, but it is also under-reported. Between 1988 and 1995, CDC received reports of over 300 *V. vulnificus* infections from the Gulf Coast states, where the majority of cases occur. There is no national surveillance system for *V. vulnificus*, but CDC collaborates with the states of Alabama, Florida, Louisiana, Texas, and Mississippi to monitor the number of cases of *V. vulnificus* infection in the Gulf Coast region.

How do persons become infected with *V. vulnificus*?

Persons who are immunocompromised, especially those with chronic liver disease, are at risk for *V. vulnificus* when they eat raw seafood, particularly oysters. A recent study showed that people with these pre-existing medical conditions were 80 times more likely to develop *V. vulnificus* bloodstream infections than were healthy people. The bacterium is frequently isolated from oysters and other shellfish in warm coastal waters during the summer months. People with open wounds can be exposed to *V. vulnificus* through direct contact with seawater. There is no evidence for person-to-person transmission of *V. vulnificus*.

How is *V. vulnificus* infection prevented?

Some tips for preventing *V. vulnificus* infections, particularly among immunocompromised patients, including those with underlying liver disease:

- Do not eat raw oysters or other raw shellfish.
- Cook shellfish (oysters, clams, mussels) thoroughly: For shellfish in the shell, either a) boil until the shells open and continue boiling for 5 more minutes, or b) steam until the shells open and then continue cooking for 9 more minutes.
- Do not eat shellfish that do not open during cooking. Boil shucked oysters at least 3 minutes, or fry them in oil at least 10 minutes at 375°F.
- Avoid cross-contamination of cooked seafood and other foods with raw seafood and juices from raw seafood.
- Eat shellfish promptly after cooking and refrigerate leftovers.
- Avoid exposure of open wounds or broken skin to warm salt or brackish water, or to raw shellfish harvested from such waters.
- Wear protective clothing (e.g., gloves) when handling raw shellfish.

How can *V. vulnificus* infection be diagnosed?

V. vulnificus infection is diagnosed by routine stool, wound, or blood cultures; the laboratory should be notified when this infection is suspected by the physician, since a special growth medium can be used to increase the diagnostic yield. Doctors should have a high suspicion for this organism when patients present with gastrointestinal illness, fever, or shock following the ingestion of raw seafood, especially oysters, or with a wound infection after exposure to seawater.

How is *V. vulnificus* infection treated?

V. vulnificus infection is treated with antibiotics. Doxycycline or a third-generation cephalosporin (e.g., ceftazidime) is appropriate.

Information about the potential dangers of raw oyster consumption is available 24 hours a day from the FDA's Seafood Hotline (telephone 1-800-332-4010). Information is also available on the world wide web at: <http://vm.cfsan.fda.gov/>.

Courtesy of the Centers for Disease Control and Prevention (CDC)