The organism *Vibrio vulnificus* causes wound infections, gastroenteritis or a serious syndrome known as "primary septicema." *V. vulnificus* infections are either transmitted to humans through open wounds in contact with seawater or through consumption of certain improperly cooked or raw shellfish. Studies have shown that *V. vulnificus* is most likely to be present during warm months. In South Carolina, shellfish harvesting (both commercial and recreational) is generally not permitted between April and October. The harvest season will vary depending on environmental conditions.

This bacterium has been isolated from water, sediment, plankton and shellfish (oysters, clams and crabs) located in the Gulf of Mexico, the Atlantic Coast as far north as Cape Cod and the entire U.S. West Coast. Cases of illness have also been associated with brackish lakes in New Mexico and Oklahoma.

**Nature of the Disease**

Wound infections result from contaminating an existing open wound with seawater harboring the organism, or by cutting part of the body on coral, fish, etc., followed by contamination with the organism.

All individuals who consume foods contaminated with this organism are susceptible to gastroenteritis, which usually develops within 16 hours of eating the contaminated food. Over 70 percent of infected individuals have distinctive bulbous skin lesions.

**High-Risk Factors:** Certain health conditions put you at risk for serious illness or death from *V. vulnificus* infection. In these individuals, the microorganism enters the blood stream, resulting in septic shock, rapidly followed by death in many cases (about 50 percent). These individuals are strongly advised not to consume raw or inadequately cooked seafood. Some of these conditions have no signs or symptoms so you may not know you are at risk. If you are an older adult, you also may be at increased risk because older people more often have these risk conditions than younger people. Check with your doctor if you are unsure of your risk.

These high-risk conditions include:

- Liver disease, either from excessive alcohol intake, viral hepatitis or other causes
- Hemochromatosis, an iron disorder
- Diabetes
- Stomach problems, including previous stomach surgery and low stomach acid (for example, from antacid use)
- Cancer
- Immune disorders, including HIV infection
- Long-term steroid use (as for asthma and arthritis).

IF YOU ARE OR THINK YOU MAY BE IN ANY OF THESE RISK CATEGORIES, YOU SHOULD NOT EAT RAW OYSTERS.

**How Can "High Risk" Individuals Avoid *Vibrio vulnificus***?

Avoid exposure of recent or healing wounds, cuts, punctures, or burns, to warm seawater. When swimming or wading, temporarily cover wounds with watertight wrap. The *V. vulnificus* lives naturally in warm seawater, can enter a person’s wound and, in some cases extend to the bloodstream and cause a potentially fatal illness. The highly invasive nature of this bacterium is cause for special concern.
Consumers in high-risk categories should avoid consumption of raw shellfish, particularly oysters. Oysters are filter-feeding animals that can concentrate Vibrio bacteria from the water into their system. The bacteria are not a result of pollution; so, although oysters should always be obtained from reputable sources, eating oysters from "clean" waters or in reputable restaurants with high turnover does not provide protection. Eating raw oysters with hot sauce or while drinking alcohol does not kill the bacteria, either.

When eating shellfish, particularly oysters, be sure they are properly and thoroughly cooked. Thorough cooking kills the Vibrio bacteria and markedly reduces the risk of becoming ill. However, steaming oysters as is done at an oyster roast does not always provide enough heat to kill all the Vibrio bacteria. Additional heating is necessary to impart a noticeable cooked appearance.

Avoid cross-contamination of previously cooked shellfish with raw shellfish. A common cause of cross-contamination is storing cooked shellfish in the original container used for raw shellfish, or storing raw and cooked shellfish in the same area.

### Drinking Alcoholic Beverages Regularly & Liver Disease

Drinking alcoholic beverages regularly, you may be at risk for liver disease, and, as a result, at risk for serious illness or death from raw oysters. Even drinking two to three drinks each day can cause liver disease, which may have no symptoms. Liver disease will put you at increased risk for V. vulnificus infection from raw oysters. The risk of death is almost 200 times greater in those with liver disease than those without liver disease.

### Oyster Safety - What You Can Do

**At Restaurants:** Order oysters fully cooked. Some states display notices for those at risk. Use them as reminders of how to avoid illness.

**Cooking at Home:**

- **In the Shell:** Cook live oysters in boiling water for three to five minutes after shells open. Use small pots to boil or steam oysters. Do not cook too many oysters in the same pot, because the ones in the middle may not get fully cooked. Discard any oysters that do not open during cooking. Steam live oysters four to nine minutes in a steamer that’s already steaming.

- **Shucked:** Boil or simmer for at least three minutes or until edges curl. Fry in oil for at least three minutes at 375 °F. Broil 3 inches from heat for three minutes. Bake (as in Oysters Rockefeller) for 10 minutes at 450 °F.

### Diagnosis

The culturing of the organism from wounds, diarrheic stools or blood is used to diagnose the illness. The infective dose for gastrointestinal symptoms in healthy individuals is unknown, but for predisposed persons, septicemia can occur with doses of less than 100 total organisms.

### What are the Chances for an Infection?

Rare! No major outbreaks of illness have been attributed to this organism. Sporadic cases have occurred in South Carolina, becoming more prevalent during the warmer months. To date no fatalities have been related to eating oysters harvested in S.C. waters. Most healthy individuals are not troubled by V. vulnificus infections from water or food. Also, extensive federal and state regulatory programs monitor the production and marketing of raw shellfish to assure product safety. Thus, the V. vulnificus problem is primarily restricted to individuals in the risk categories. These individuals are advised not to eat raw shellfish.

### Sources: