

Vibrio vulnificus

Vibrios are gram-negative bacteria that are found in estuarine and marine environments¹. They colonize filter feeding animals such as shellfish and can also be found free-living in seawater. The optimal growing temperature is between 68-95°F (20-35°C), but it can grow at temperatures up to 105°F (41°C). In addition, the bacterium is halophilic². Given their distribution, most infections occur in states surrounding the Gulf of Mexico¹. The bacteria are highly susceptible to pH, cooking, and freezing and can be killed by common disinfectants such as bleach or alcohol².

People become infected with the bacteria in several ways. One way is by consumption of raw or undercooked seafood or cross-contamination of food with contaminated water. In healthy individuals, the bacteria can cause symptoms of gastroenteritis that is generally self-limiting¹. However, in those who are immunocompromised the bacteria can infect the blood causing septicemia that can cause severe or deadly infections in other parts of the body. Septicemia can be characterized by fever and chills, occasionally accompanied by vomiting, diarrhea, abdominal pain, and pain in the extremities. Death occurs in an average of 35% of septicemia cases. Those at highest risk for developing septicemia are those who are immunocompromised or have other chronic health problems, such as high serum iron levels or liver disease. Another way that people can be infected with the bacteria is through an open wound exposure to seawater. Wound infections can be characterized by inflammation at the wound site, which can progress to cellulitis, bullous lesions, and necrosis. Infections can become systemic which can lead to additional symptoms of chills, fever, hypotension, and altered mental status². The health status of individuals can determine the severity of illness, as death or amputations can be a result of wound infections. People with underlying medical conditions may be at increased risk of infection and serious complications¹.

In Florida, under Florida Administrative Code 61C-4.010(8), all public food service establishments serving raw oysters shall display, on menus, placards, or other effective means, the following notice: "Consumer Information: There is risk associated with consuming raw oysters. If you have chronic illness of the liver, stomach or blood or have immune disorders, you are at greater risk of serious illness from raw oysters and should eat oysters fully cooked. If unsure of your risk, consult a physician."

Infections from *Vibrio* bacteria that cause cholera and vibriosis have been reportable diseases in Florida since 1981. Since 2007, the states of Florida, Texas and California are consistently responsible for reporting the most cases of vibriosis³. *Vibrio vulnificus* (*V. vulnificus*) is a type of vibriosis that has had high morbidity and mortality and has been an interest of the Florida Department of Agriculture and Consumer Services due to its potential to be linked to locally harvested shellfish. Single cases of *V. vulnificus* are investigated as if they are outbreaks to determine exposure source. From 2000 to 2014, there has been an average of 28.6 *V. vulnificus* cases reported each year in Florida with a range of 13 – 46 cases. Most cases are reported during the months of May through October. Between 2004 and 2014, there were 1,401 cases of vibriosis reported in Florida and *V. vulnificus* accounted for 331 (23.6%) of those cases. During that time frame, there were 111 deaths reported due to vibriosis and *V. vulnificus* infections accounted for 96 (86.5%) of those cases. For *V. vulnificus* cases, wound infections accounted for 51.2% of cases, seafood exposures accounted for 23.3% of reported cases and the remaining 25.5% had exposures that could not be classified due to multiple factors (unable to interview, had both exposures to seawater and raw seafood). Cases were white (89%), non-Hispanic (92%) males (86%). Data collected from 2008 to 2014 indicated that 34.3% of reported cases abused alcohol, 32.8% had liver disease, 30% had heart disease, and 24% had diabetes (systematic collection of risk factors was not collected prior to 2008)⁴.

1. *Vibrio vulnificus*. Centers for Disease Control and Prevention. Page last updated: October 21, 2013. Page accessed on January 25, 2016 <http://www.cdc.gov/vibrio/vibriov.html>
2. Bad Bug Book: Foodborne Pathogenic Microorganisms and Natural Toxins Handbook. Food and

Drug Administration. 2012. Pages: 46-49

3. Summary of Notifiable Diseases, United States, 2011. Morbidity and Mortality Weekly Report. 5 July 2013. 60(53): 1-117. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6053a1.htm>
4. Florida Department of Health, Bureau of Epidemiology. Florida's Reportable Disease Surveillance System – Merlin.

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