

## ***Vibrio vulnificus***

Vibrios are gram-negative bacteria that are found in estuarine and marine environments<sup>1</sup>. 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 halophilic<sup>2</sup>. Given their distribution, most *Vibrio vulnificus* (*V. vulnificus*) infections occur in states surrounding the Gulf of Mexico<sup>3</sup>. The bacteria are highly susceptible to pH, cooking, and freezing and can be killed by common disinfectants such as bleach or alcohol<sup>2</sup>.

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 generally lasts about three days<sup>1</sup>. 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 status<sup>2</sup>. 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 complications<sup>1</sup>.

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 vibriosis<sup>3</sup>. *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 2022, there has been an average of 34 *V. vulnificus* cases reported each year in Florida with a range of 13 – 74 cases. Most cases are reported during the months of May through October. Between 2004 and 2022, there were 3,364 confirmed and probable cases of vibriosis reported in Florida and *V. vulnificus* accounted for 651 (19%) of those cases. During that time frame, there were 238 deaths reported associated with vibriosis cases and *V. vulnificus* infections accounted for 177 (74%) of those cases. For *V. vulnificus* cases, wound infections accounted for 54% of cases, seafood exposures accounted for 20% of reported cases and the remaining 26% had exposures that could not be classified due to multiple factors (unable to interview, had both exposures to seawater and raw seafood). Most cases were white (85%), non-Hispanic (87%), males (66%). Data collected from 2008 to 2022 indicated that 27% of reported cases had a history of abusing alcohol, 24% had liver disease, 29% had heart disease, and 22% had diabetes (systematic collection of risk factors was not collected prior to 2008)<sup>4</sup>.

1. *Vibrio* Species Causing Vibriosis. Centers for Disease Control and Prevention. Page last reviewed: March 5, 2019. Page accessed on December 18, 2023 <https://www.cdc.gov/vibrio/index.html>
2. Bad Bug Book: Foodborne Pathogenic Microorganisms and Natural Toxins Handbook. Food and Drug Administration. 2012. Pages: 46-49

3. COVIS Annual Summary. Centers for Disease Control and Prevention. Page last reviewed: September 19, 2023. Page accessed on December 18, 2023  
<https://www.cdc.gov/vibrio/surveillance.html>
4. Florida Department of Health, Bureau of Epidemiology. Florida's Reportable Disease Surveillance System – Merlin.

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