

September 25, 2023

Health Notice for District of Columbia Health Care Providers Severe *Vibrio vulnificus* Infections in the United States Associated with Warming Coastal Waters

SUMMARY

The Centers for Disease Control and Prevention (CDC) issued a Health Alert Network (HAN) Health Advisory on September 1, 2023, to notify healthcare providers, laboratories, and public health departments about recent reports of fatal *Vibrio vulnificus* infections, including wound and foodborne infections. CDC urges clinicians to consider *V. vulnificus* as a possible cause of infected wounds that were exposed to coastal waters, especially near the Gulf of Mexico or the East Coast during periods with warmer coastal sea surface temperatures. About one in five people with *V. vulnificus* infections die, sometimes within 1-2 days of becoming infected. As of September 18, 2023, DC Health has not received any reports of *V. vulnificus* cases. The purpose of this health notice is to provide recommendations for prompt diagnosis, treatment, and clinical management of *V. vulnificus* wound infections. Providers are reminded that all vibrio infections are nationally notifiable and need to be reported to DC Health.

BACKGROUND

Vibrio is a genus of gram-negative bacteria native to coastal salt water and brackish water (a mix of salt water and fresh water) environments. Molluscan shellfish, which are filter feeders, acquire vibrio as part of their normal flora¹. *Vibrio cholerae* (serotypes 01 and 0139) causes the much-feared severe diarrheal illness, cholera². *Vibrio parahaemolyticus*, which causes a diarrheal illness, causes the most *Vibrio* infections in the United States. *Vibrio vulnificus* causes more severe and fatal non-diarrheal illnesses. The case fatality rate of *V. vulnificus* infections is 30%¹. *V. vulnificus* reaches high enough concentrations to cause human illness only when coastal water temperatures are warm, typically from May to October¹. In the U.S., *V. vulnificus* infections have historically occurred on the Gulf Coast, but are increasingly being reported on the East Coast. There has been an eightfold increase in East Coast *V. vulnificus* cases from 1988-2018. The summer of 2023 was marked by heatwaves and above average coastal surface water temperatures. This was associated with a number of severe and fatal *V. vulnificus* cases reported in East Coast states as far north as Connecticut and New York.

Unlike other *Vibrio* species, *V. vulnificus* is mainly transmitted through exposure of an open wound to warm seawater, which causes a distinctive and rapidly progressive necrotizing skin and soft tissue infection often associated with bacteremia in healthy people as well as compromised hosts. After a short incubation period (4 h to 4 days; mean 12 h), the disease begins with swelling,

erythema, and often intense pain around the wound³. These signs and symptoms are followed by cellulitis, which spreads rapidly and is sometimes accompanied by vesicular, bullous, or necrotic lesions³. Hemorrhagic bullae are a hallmark of *V. vulnificus* skin and soft tissue infection¹. Necrotizing fasciitis caused by *V. vulnificus* can be fatal within 24 hours of admission⁴. The case fatality rate can be as high as 71%, especially if accompanied by sepsis or septic shock⁴. A minority of *V. vulnificus* infections are foodborne. A typical foodborne infection comes about when a person with an underlying medical condition (especially cirrhosis) consumes raw oysters containing the bacteria and develops an often fatal septicemia (fatality rate 50%)¹. Others at high-risk for foodborne *V. vulnificus* infection include: people with iron-overload conditions (such as hemochromatosis and hemolytic anemia), people with other liver diseases, chronic renal disease, HIV, malignancy, and immunosuppressive medications¹. Almost all oysters harvested in the summer from Chesapeake Bay contain *V. vulnificus*¹. Person-to-person contact has **not** been reported.

RECOMMENDATIONS FOR CLINICIANS FOR THE MANAGEMENT OF *VIBRIO VULNIFICUS* WOUND INFECTIONS

- Consider *V. vulnificus* as a possible cause of infections in wounds that were exposed to coastal waters.
- When assessing the patient, inquire about any relevant exposures. This includes whether they had an open wound when entering coastal waters, acquired a scratch or cut while in coastal water, or had open wound contact with raw or undercooked seafood.
- If *V. vulnificus* infection is suspected:
 - Obtain wound or hemorrhagic bullae cultures and send all *V. vulnificus* isolates to the DC Public Health Laboratory (DC PHL).
 - Blood cultures are recommended in addition to wound and hemorrhagic bullae cultures if the patient is febrile, has hemorrhagic bullae, or has signs of sepsis.
 - For laboratory questions or concerns, contact CDC at EntericBacteria@cdc.gov
 - Prompt initiation of antibiotic treatment and early surgical intervention improve survival. Consultation with an infectious disease specialist is also recommended, as appropriate. Do not delay initiation of antibiotics while awaiting consultation with surgery, infectious disease, or awaiting confirmation from the laboratory. For antibiotic recommendations, please refer to [CDC Management of *V. vulnificus* Wound Infections](#).
- Aggressive debridement is necessary to remove necrotic tissue. Severe cases might require fasciotomy or amputation of the infected limb.

REPORTING REQUIREMENTS

All *Vibrio* infections are nationally notifiable. Cases of vibriosis must be reported within 24 hours by submitting a Notifiable Disease and Condition Case Report Form online using the DC Reporting and Surveillance Center (DCRC), which can be found on our Infectious Diseases website: dchealth.dc.gov/node/143092.

ADDITIONAL RESOURCES

- [CDC HAN Health Advisory: Severe *Vibrio vulnificus* Infections in the United States Associated with Warming Coastal Waters](#). (CDC 2023)
- [Emergency Wound Management for Healthcare Professionals](#). (CDC 2023)
- [Vibrio Information for Health Professionals & Laboratorians](#). (CDC 2023)

REFERENCES

1. Neill, M.A. and Carpenter, C.C.J., Chapter 215 *Other Pathogenic Vibrios*, In Mandell, Douglas, and Bennett's Principles and Practice of Infectious Disease, 9th edition (2020), Edited by Bennett, JE et al.
2. Waldor, M.K. and Ryan, E.T., Chapter 214 *Vibrio cholerae*, In Mandell, Douglas, and Bennett's Principles and Practice of Infectious Disease, 9th edition (2020), Edited by Bennett, JE et al.
3. Waldor, M. K., & Keush, G.T. (2005). *Cholera and other vibrioses*, In Kasper, D. L. et al. (Eds.), Harrison's Principles of Internal Medicine (16th ed, pp. 910-914). New York, NY: McGraw-Hill Companies, Inc.
4. Chen, S-C., Lee, Y-T., Tsai, S-J., Chan, K-S., Chao, W-N., Wang, P-H., & al. (2012). Antibiotic therapy for necrotizing fasciitis caused by *Vibrio vulnificus*: retrospective analysis of an 8-year period. *Journal of Antimicrobial Chemotherapy*, 67(2), 488–493. Retrieved from academic.oup.com/jac/article/67/2/488/703232.

Please contact DC Health regarding severe *Vibrio vulnificus* infections at:
Phone: (202) 442-9021 (8:15 am-4:45 pm) | 844-493-2652 (after-hours calls) | Fax: (20) 442-8060 | Email: foodborne.epi@dc.gov