

***Vibrio parahaemolyticus* Infection Associated with Raw Oysters from Washington**

July-September

Multiple counties/Multiple states

On August 11, 2017, the Minnesota Department of Health (MDH) Public Health Laboratory (PHL) identified a cluster of three *Vibrio parahaemolyticus* isolates with indistinguishable pulsed-field gel

electrophoresis (PFGE) patterns (Minnesota designation VPS37VPN36; PulseNet designation K16S12.0584/K16N11.0565). All three reported eating raw oysters in the week before their illness onset, but at three different restaurants. Additional cases were identified both in Minnesota and in other states. A multi-agency investigation was initiated that culminated with coordination between MDH epidemiology, MDH Environmental Health, the Minnesota Department of Agriculture (MDA), Hennepin County Environmental Health and Epidemiology, the Minneapolis Department of Health, Anoka County Environmental Health, the Centers for Disease Control and Prevention (CDC), the United States Food and Drug Administration (FDA), and other state health departments.

A confirmed case was defined as a person with a culture-confirmed infection with *Vibrio parahaemolyticus* with the outbreak PFGE pattern. A probable case was defined as a person who tested positive for *Vibrio sp.* using a culture-independent diagnostic test and had an epidemiological link to a confirmed case. All confirmed and probable cases were interviewed with the *Cholera* and Other *Vibrio* Illness Surveillance (COVIS) interview form and a supplemental questionnaire to ascertain additional information on any oysters consumed.

Sanitarians conducted environmental assessments at all restaurants identified, and collected invoices and harvest tags for oysters consumed, collected temperature logs or took temperatures of product currently held, and assessed the restaurant or firm for evidence of improper handling or storage of oysters.

Additional case finding was attempted at restaurants where more than one case reported eating oysters. Receipts from the cases' meal dates were collected, and patrons who ate oysters were interviewed by MDH staff about food consumption and illness history.

Nationally, states were asked to provide information on the oyster harvest tags associated with their case illnesses. Tags were provided to source states for additional investigation of the oyster farms and distributors.

Six confirmed cases and one probable case were identified in Minnesota. The median incubation period was 1 day (range, 1 to 8 days), and the median duration of illness for the five cases who had recovered at time of interview was 7 days (range, 6 to 10 days). All seven cases reported both diarrhea and abdominal cramps, four (57%) vomiting, four (57%) muscle aches, three (43%) fever, and two (29%) bloody stool. One person was hospitalized and none died.

Cases reported eating oysters from five different restaurants and one seafood market; two cases reported eating at Restaurant A, a sushi restaurant in Minneapolis, 5 days apart (September 17 and 22). The other restaurants where cases purchased oysters in Minnesota were Restaurant B in Elk River (meal date, July 9), Restaurant C in Eagan (meal date, July 15), Restaurant D in Minneapolis (meal date, July 18), and Restaurant E in Coon Rapids (meal date, August 4). One case purchased oysters at Market A in Minneapolis on July 15.

Oyster tags were collected from all restaurants and markets except for Restaurant C. Restaurant C staff had not retained oyster tags, and the distributor was an out-of-state firm who was unable to be reached despite multiple attempts by the Minnesota Department of Agriculture and FDA. Market A had nine varieties of oyster for sale on July 15, and the case was unable to recall what variety was purchased. All tags and invoices were collected and forwarded to FDA shellfish sanitation staff.

Restaurant B, Restaurant D, and Restaurant E all had two possible varieties of oysters for sale on the implicated meal dates, Skookum and Annas Bay, Hammersly Inlet and Totten Inlet, and Prince Edward 3F and British Columbia 14-8, respectively. Skookum, Hammersly Inlet, and Totten Inlet are all in Washington's Salish Sea near Shelton, Washington. Annas Bay is also in Washington, in the Hood Canal, but not closely connected to the other three locations. BC 14-8 is located in British Columbia in the Georgia Straight near Denman Island.

Only oysters harvested from Hammersly Inlet were served at Restaurant A. Oysters harvested on September 7 were served to the first case, and oysters harvested on September 14 were served to the second case. This information was provided to FDA and Washington State Department of Health Shellfish Program staff.

Thirty-four cases were identified nationally. PFGE is not routinely performed on *Vibrio parahaemolyticus* in all states, so this likely represents only a portion of cases. No specific oyster harvest area was identified as a source for all cases. Generally, this pattern appears to be common in the Salish Sea. Whole genome sequencing (WGS) analysis of 24 *V. parahaemolyticus* isolates found that all 24 were within 0 to 5 single nucleotide polymorphisms of other isolates in this cluster.

This was an outbreak of *Vibrio parahaemolyticus* infections associated with oysters from the Salish Sea in Washington and British Columbia, with a subcluster specifically associated with oysters from Hammersly Inlet served at Restaurant A in Minneapolis.