Maine Center for Disease Control and Prevention
An Office of the Department of Health and Human Services
Paul R. LePage, Governor — Mary C. Mayhew, Commissioner

Increase in Vibriosis, Maine, July - September 2012

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Maine Center for Disease Control and Prevention

BACKGROUND

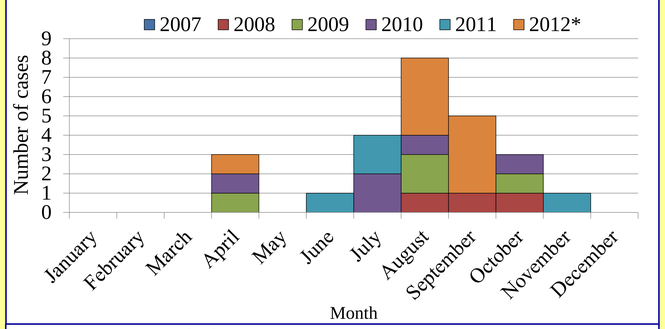
- The most common causes of vibriosis:
  - *Vibrio parahaemolyticus*
  - *Vibrio vulnificus*
  - *Vibrio alginolyticus*
- *Vibrio spp*. can be isolated from blood, stool and wounds
- Raw shellfish (especially oysters) are most common foodborne exposure to *vibrio spp.*
- Majority of Maine cases in past five years are due to seawater exposure, or exposure in other states or countries
- Nationally an increase in vibriosis was noted from 1996-2010
- Vibriosis cases that reside in Maine increased from 4 cases in 2011 to 9 cases in 2012
  - Five year (2007-2011) median number of cases is 4
- Most cases occur in the summer months

Table 1. Vibriosis cases by year, Maine, 2007-2012*

	2007	2008	2009	2010	2011	2012*
Vibriosis	0	3	4	5	4	9

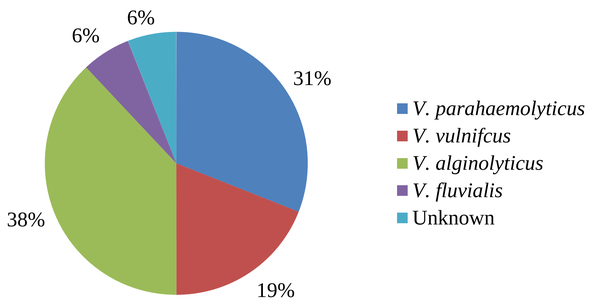
*2012 cases through 10/31/12

Figure 1. Vibriosis cases by month, Maine 2007-2012*



*2012 cases through 10/31/12

Figure 2. Vibrio species causing illness in Maine residents, 2007-2011



METHODS

- All cases of vibriosis are investigated by field epidemiologists, including out-of-state residents tested in Maine involved in this cluster
- The federal CDC report form for vibriosis is used to collect the following information:
  - Symptoms, including date and time of onset
  - Exposure to seafood, including food establishment, date and time (7 days prior to illness)
  - Exposure to seawater, including location, date and time (7 days prior to illness)
- Interagency team with representatives from Maine CDC (Division of Infectious Disease, Division of Environmental Health and Health and Environmental Testing Laboratory), Department of Agriculture and Rural Resources, and Department of Marine Resources was formed to monitor the outbreak and investigate risk factors
- Due to the increase in cases reported in out-of-state residents, an email notification was sent to a national foodborne disease listserv to alert colleagues to report cases in their jurisdictions who were exposed in Maine
- A Health Alert was sent to Maine providers on September 6, 2012 reminding them to test for *Vibrio spp.* if no other cause of illness was identified

RESULTS – Epidemiological Investigation

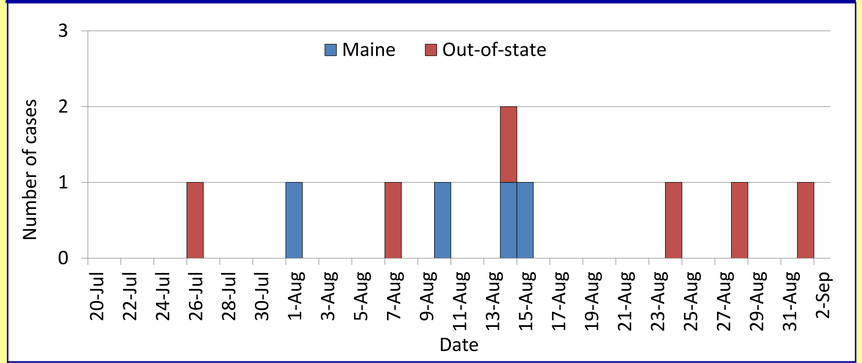
- As of October 31, 2012, there have been 9 cases of vibriosis reported in Maine residents and 7 cases in out-of-state residents with exposure to seafood in Maine
  - 2 cases had out-of-state exposures (one seawater; one seafood)
  - 2 cases were wound infections from seawater exposure in Maine
  - 1 patient was unable to be reached for an interview
  - 4 cases (and 7 out-of-state residents) all reported seafood exposures
- 43% (3/7) of out-of-state cases were diagnosed in Maine; others were reported to Maine
- All seafood exposures occurred in multiple Maine counties

Table 2. Characteristics of vibriosis cases associated with seafood exposure, July – September 2012

	Maine Residents N = 4	Out-of-state residents N = 7	All Seafood exposure cases N = 11
Type of specimen*			
Stool specimens	3 (75%)	6	9 (82%)
Blood specimens	1 (25%)	0	1 (9%)
Species identified			
V. parahaemolyticus (VP)	3 (75%)	5 (71%)	8 (73%)
V. fluvialis	1 (25%)	0	1 (9%)
Coinfection VP and *fluvialis*	0	1 (14%)	1 (9%)
Grimontia hollisae	0	1(14%)	1 (9%)
Seafood exposure			
Oysters (raw)	0	4 (57%)	4 (36%)
Lobster	4 (100%)	2 (29%)	6 (54%)
Mussels (steamed)	0	1 (14%)	1 (9%)
Clams (cooked)	1 (25%)	1 (14%)	2 (18%)
Clams (raw)	0	1 (14%)	1 (9%)
Crab meat (cooked)	0	1 (14%)	1 (9%)
Patient Demographics			
Male	2 (50%)	4 (57%)	6 (55%)
Female	2 (50%)	3 (43%)	5 (45%)
Median age (range), years	73 (64-73)	69 (52-93)	73 (52-93)
Hospitalized	1 (25%)	3 (43%)	4 (36%)
Deaths	0	1 (14%)	1 (9%)

*One unknown type of specimen

Figure 3. Vibriosis cases with seafood consumption by illness onset date and residency, July – September 2012*



*one out-of-state resident with unknown onset date

RESULTS – Environmental Investigation

- Inspectors from the Maine CDC Health Inspections Program, Department of Agriculture and Rural Resources and/or Department of Marine Resources inspected 18 establishments
  - Agency oversight depends on the type of establishment and type of seafood
- Violations found at food establishments:
  - No separation of raw vs. cooked foods
  - Food temperatures not checked
  - Improper cold storage of foods
  - Lack of proper consumer advisory notification on menu
  - Lack of cleanliness and fly infestations
- All facilities cooperated with inspectors
- 20 seafood vendors were identified
  - 4 vendors were visited by Department of Marine Resources and/or Department of Agriculture and Rural Resources inspectors

CONCLUSIONS

- In 2012 Maine had an increase in vibriosis cases compared to previous years
- The majority of cases were vibrio gastroenteritis, not reported recently in Maine
- Many different types of seafood and types of establishments were involved
  - Exposures were not limited to a single seafood or a single source
- Most cases in this cluster were attributed to *Vibrio parahaemolyticus*; not *V. alginolyticus* which is more commonly seen in Maine
- Interagency collaboration led to a rapid, joint response with inspections conducted at food service establishments where cases reported eating and seafood processing facilities that supplied the seafood
- Some violations were corrected on site and follow-up inspections were conducted by respective agencies
- Partner agencies regularly participate in the Maine CDC Food Safety Workgroup to address food safety issues and improve outbreak investigations and this ongoing collaboration allowed for a coordinated public health response

ACKNOWLEDGEMENTS

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SOURCES

Newton A, Magdalena K, Vugia, D, Henao OL and Mahon BE. Increasing rates of vibriosis in the United States, 1996-2012: Review of surveillance data from 2 systems. CID 2012;54(S5):S391-5.