

Outbreak of *Vibrio* in imported lump crab meat: Maryland's investigation

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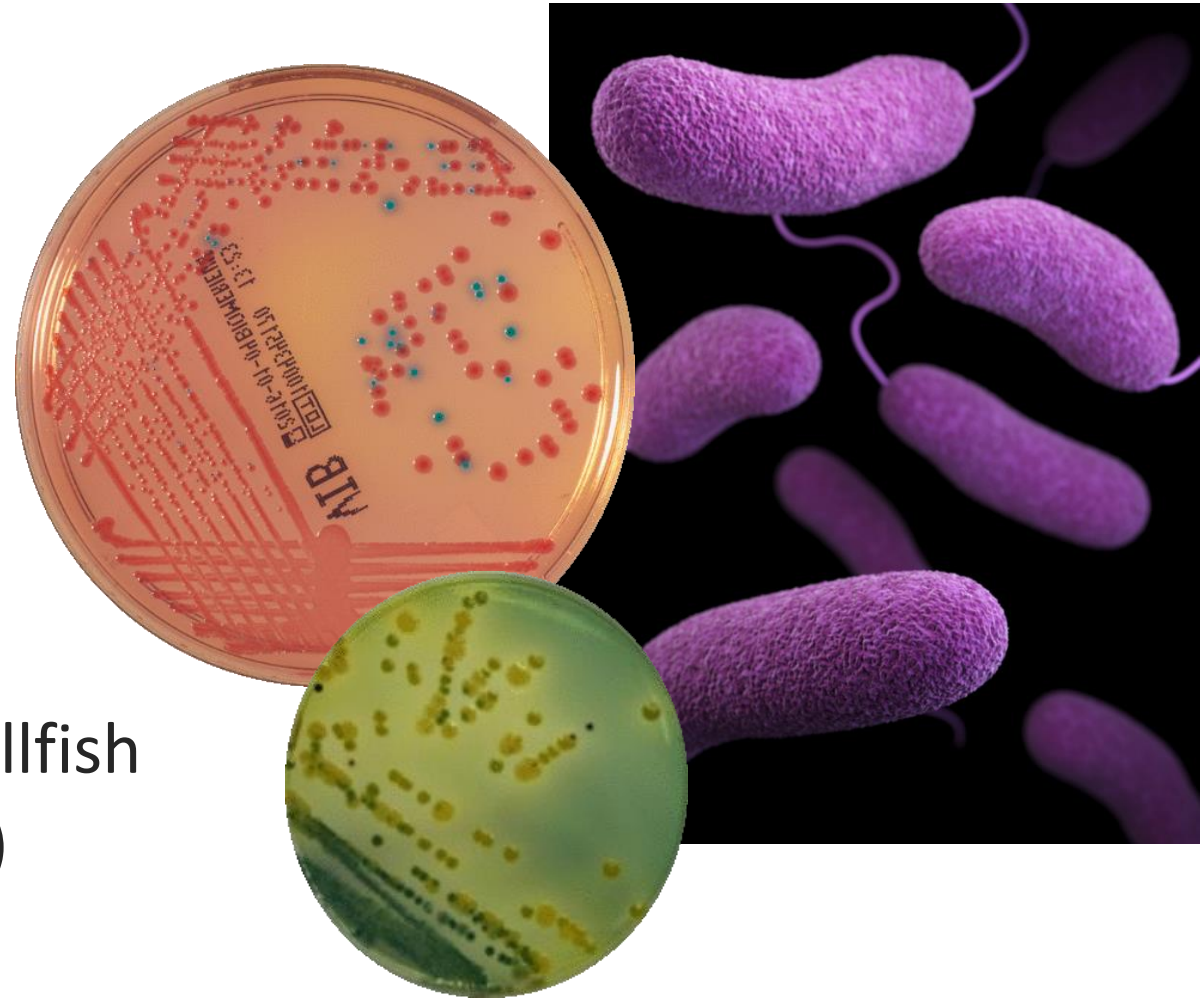
Division of Outbreak Investigation

PulseNet/OutbreakNet East Coast Regional Meeting

January 16, 2019

Vibrio parahaemolyticus

- Gram negative bacteria
- Found world-wide
 - Temperate grower (>15°C)
 - Prevalent in coastal waters
- Source of:
 - Wound infections
 - Foodborne illness
 - Eating raw or undercooked shellfish
 - Other seafood (less commonly)
 - Bacteremia



Maryland *Vibrio* Surveillance Process

- Every *Vibrio* (+) lab result investigated
- LHDs attempt interview with COVIS
- Reported shellfish exposures trigger MD Office of Food Protection investigation
 - LHD EH conducts inspections, collects tags & invoices
- Regulations require submission of isolate to SPHL for confirmation, PFGE, WGS
- COVIS sent to MDH for validation, completion, transmission to CDC

State: _____ Year: _____ Age: _____ Sex: _____ Last Name: _____

CDC CHOLERA AND OTHER VIBRIO ILLNESS SURVEILLANCE REPORT
OMB 0920-0728 Exp. Date 01/31/2019

REPORTING HEALTH DEPARTMENT

State	City	County/Parish	SEND COMPLETED REPORT TO STATE INSPECTOR, CONTROL State will forward to: Center for Disease Control and Prevention E-mail: cdc.vibrio@cdc.gov E-Fax: 888-235-1733 Center for Disease Control and Prevention Infectious Diseases Epidemiology Branch 1600 Clifton Road, NE, 000 Atlanta, GA 30333
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1. PATIENT CASE INFORMATION

1. First 3 letters of patient's last name: _____ 2. Sex: M F Unk

3. Date of birth (MM/DD/YYYY): ___/___/____ 4. Age: _____ 5. NNDSS Case ID: _____
YEARS MONTHS

6. Race: American Indian/Alaska Native White
 Black or African American Other
 Native Hawaiian or other Pacific Islander Not provided/Unknown Asian

7. Ethnicity: Hispanic/Latino
 Not Hispanic/Latino Unk/Not Provided

8. Occupation: _____

2. LABORATORY INFORMATION

Use the *Vibrio* Species key to indicate which species were positively identified by culture or CDT result as applicable.

<i>V. cholerae</i> O1—CH1	<i>V. cholerae</i> O139—CH2	<i>V. cholerae</i> non-O1, non-O139—CH3	<i>V. cholerae</i> O1—CH1	<i>V. cholerae</i> O139—CH2	<i>V. cholerae</i> non-O1, non-O139—CH3	<i>V. parahaemolyticus</i> —PAR	<i>V. vulnificus</i> —VUL	<i>Vibrio</i> —species not identified—ND	Other—OTH (Specify below)	Multiple species—MUL (Specify below)
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Laboratory results (If more than one specimen is tested, complete one row per specimen. If more than two specimens were tested, please check here and attach additional sheet. CDT indicates a culture-independent diagnostic test.)

1. **Specimen one:** Date collected: _____ Received at public health laboratory? Y N U If yes, State lab ID: _____

Specimen source: <input type="checkbox"/> Stool <input type="checkbox"/> Blood <input type="checkbox"/> Wound <input type="checkbox"/> Other (if wound or other, specify site): _____	Culture result: <input type="checkbox"/> Pos <input type="checkbox"/> Neg <input type="checkbox"/> Unk <input type="checkbox"/> Not Done If positive, species identified: _____ If species identified as multiple or other, specify: _____	CDT result: <input type="checkbox"/> Pos <input type="checkbox"/> Neg <input type="checkbox"/> Unk <input type="checkbox"/> Not Done If applicable, species identified: _____ Name/type of diagnostic test used: _____
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2. **Specimen two:** Date collected: _____ Received at public health laboratory? Y N U If yes, State lab ID: _____

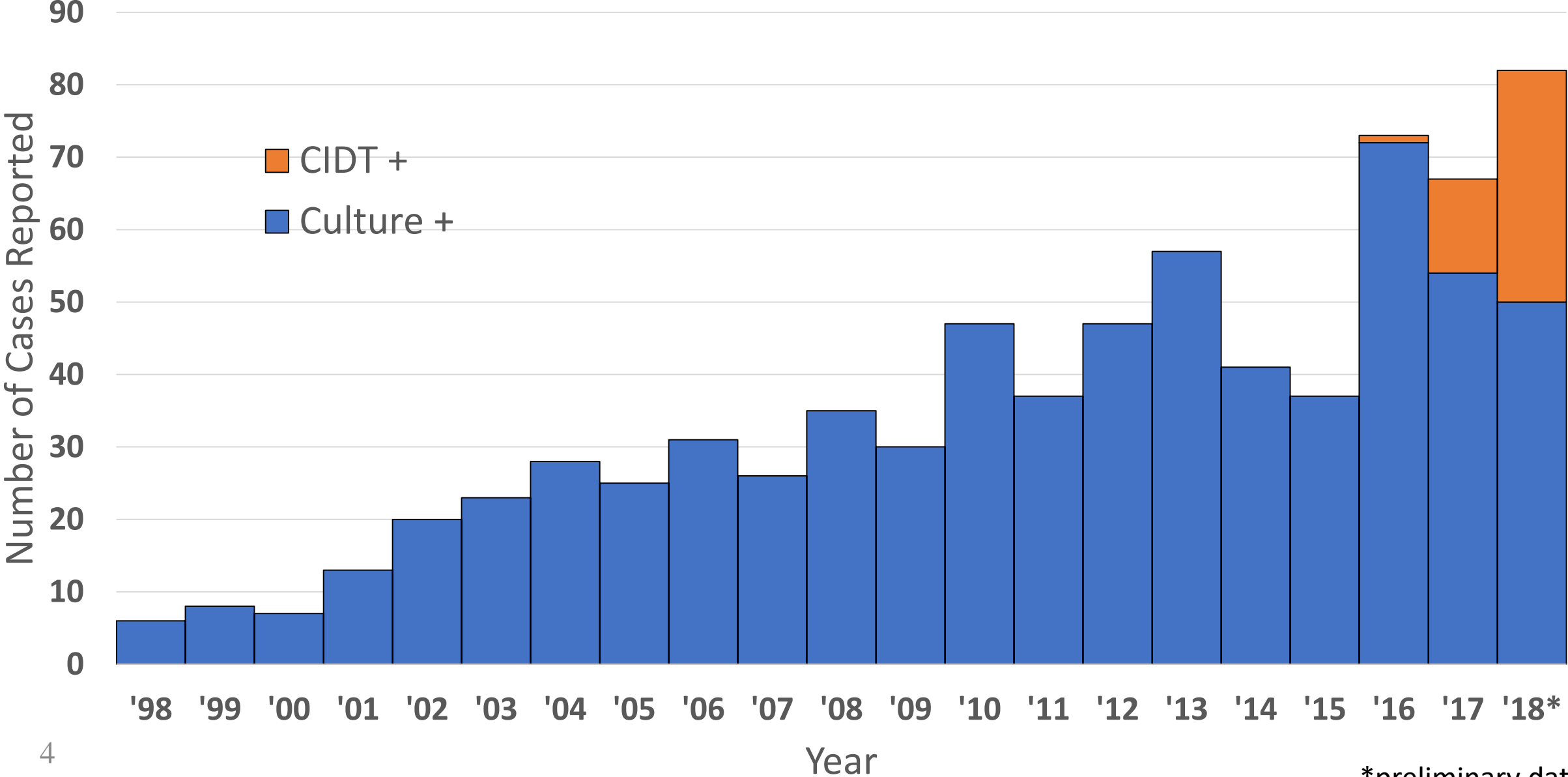
Specimen source: <input type="checkbox"/> Stool <input type="checkbox"/> Blood <input type="checkbox"/> Wound <input type="checkbox"/> Other (if wound or other, specify site): _____	Culture result: <input type="checkbox"/> Pos <input type="checkbox"/> Neg <input type="checkbox"/> Unk <input type="checkbox"/> Not Done If positive, species identified: _____ If species identified as multiple or other, specify: _____	CDT result: <input type="checkbox"/> Pos <input type="checkbox"/> Neg <input type="checkbox"/> Unk <input type="checkbox"/> Not Done If applicable, species identified: _____ Name/type of diagnostic test used: _____
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3. If other non-*Vibrio* organism(s) isolated from same specimen, list: _____

Complete **only** if isolate is *Vibrio cholerae* O1 or O139:

4. Serotype: Inaba Ogawa 5. Biotype: El Tor Classical Not done Unk

Reported *Vibrio* Cases, Maryland, 1998-2018



*preliminary data

Maryland Initial Investigation Timeline

June 4

- LHD notifies MDH of 2 *Vibrio* cases with crab exposure from Store A
- LHD EH inspects Store A

June 8

- FDA notifies MDH of *Vibrio* in LA resident with crab meat exposure in DC (Restaurant C)

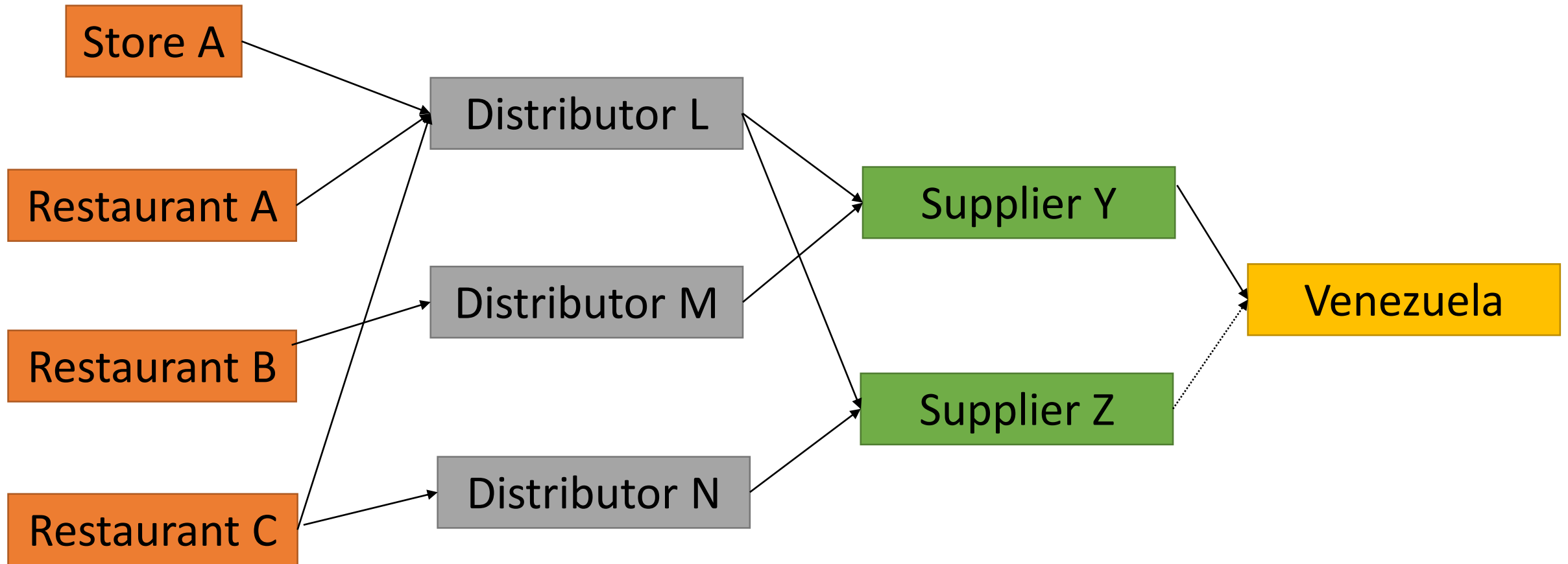
June 18

- Lab reports 3 cases match by PFGE:
 - 2 from Store A
 - Case that ate crab cake at Baltimore restaurant (Restaurant A)

June 21

- LHD reports *Vp* case ate crabs benedict at Restaurant B
- MDH links PCR+ case that ate at Restaurant B on same day as confirmed *Vp*

Early SMarRRT Traceback Diagram



Maryland Investigation Timeline, cont.

June 26

- Lab uploads 3 sequences to NCBI: all ST3, highly related

June 29

- LHD reports *Vp* case with crab at Restaurant D
- PA notifies MDH of case from March with crab exposure in MD
- Call COVIS team
- Call with FDA

July 2

- CDC assigns cluster code 1806MDK16-1
- FDA transfers to CORE Response Team

July 3

- Request goes out to state COVIS coordinators asking for any *Vibrio* cases with lump crabmeat exposures

Communications Timeline



Larry Hogan, Governor · Boyd K. Rutherford, Lt. Governor · Robert R. Neall, Secretary

Office of Communication
Brittany Fowler · 410-767-3535
Nikki Laska · 410-767-3535

FOR IMMEDIATE RELEASE:

State Urges Marylanders Not To Consume Fresh Crab Meat Imported From Venezuela

Maryland Department of Health Investigating Contamination

Baltimore, MD (July 6, 2018)—The Maryland Department of Health is urging Marylanders to avoid eating fresh crab meat imported from Venezuela because of a possible link to a cluster of Vibrio infections.

The Department is investigating a cluster of Vibrio infections in imported “fresh” (non-pasteurized) crab meat—from a plastic tub—with a label that says it was imported from Venezuela. The imported crab meat is sold under the name of Maryland crab product and has not been associated with this cluster.

The implicated foods have been prepared in both household and restaurant settings in a variety of dishes, such as crab cakes, seafood salad containing crab, and crab benedict.

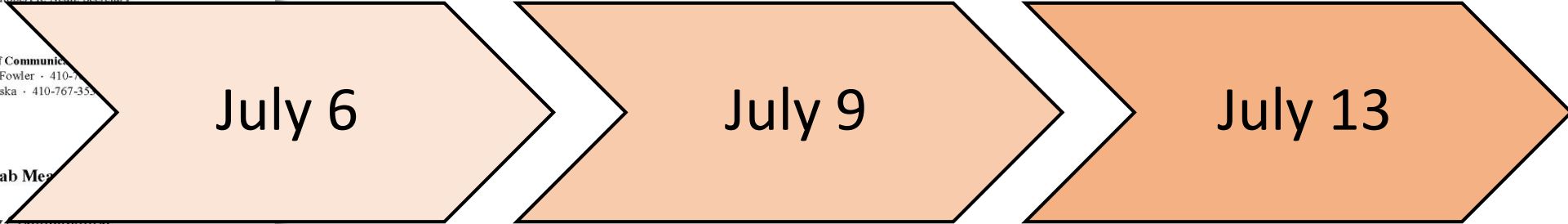
Symptoms of Vibrio parahaemolyticus infection include watery diarrhea, abdominal cramping, nausea, vomiting, fever, and chills. At least 9 cases who consumed imported crab meat have been confirmed in the state of Maryland. Two of the individuals were hospitalized and there have been no deaths.

Vibrio infections can be caused by ingestion of Vibrio-containing water or shellfish and by direct skin exposure to Vibrio-containing salt or brackish water, including waters of the Chesapeake Bay and its tributaries. However, none of the individuals have reported contact with water as a likely cause of illness.

Individuals who have recently consumed imported crab meat from Venezuela and are experiencing any of the symptoms listed above should consult their primary care provider.

The Department continues to investigate this cluster and will provide updates as warranted. Consumers should refrain from eating these non-pasteurized imported products until further notice.

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- MDH puts out press release

- MDH sends out Health Officer Memo
- MDH posts notice on Epi-X

- CDC releases outbreak notice
- FDA releases media alert



Maryland Lump Crabmeat Testing

- July 9: SMarRRT collected 6 unopened samples of lump crabmeat from local distributors
- 4 samples presumptive positive for pathogenic *V. parahaemolyticus*
 - 7 of 22 isolates forwarded for PFGE and WGS
 - All 7 had unique PFGE and novel MLST patterns
 - Performed most probable number (MPN) enumeration analysis

Internal #	PFGE Pattern		MLST
	Sfil	NotI	
62-1 4C 2	K16S12.0662	K16N11.0660	novel
65-1a	K16S12.0664	K16N11.0662	novel
66-1c	K16S12.0666	K16N11.0664	novel
66-1x	K16S12.0663	K16N11.0661	novel
66-2b	K16S12.0665	K16N11.0663	novel
67-1 2b	K16S12.0661	K16N11.0659	novel
67-1b	K16S12.0661	K16N11.0659	novel

Sample #	Organism	Count (MPN/g)
000062	<i>V. parahaemolyticus</i>	240/g
000065	<i>V. parahaemolyticus</i>	> 1,100/g
000066	<i>V. parahaemolyticus</i>	> 1,100/g
000067	<i>V. parahaemolyticus</i>	> 1,100/g

Thank you

MDH Division of Outbreak Investigation

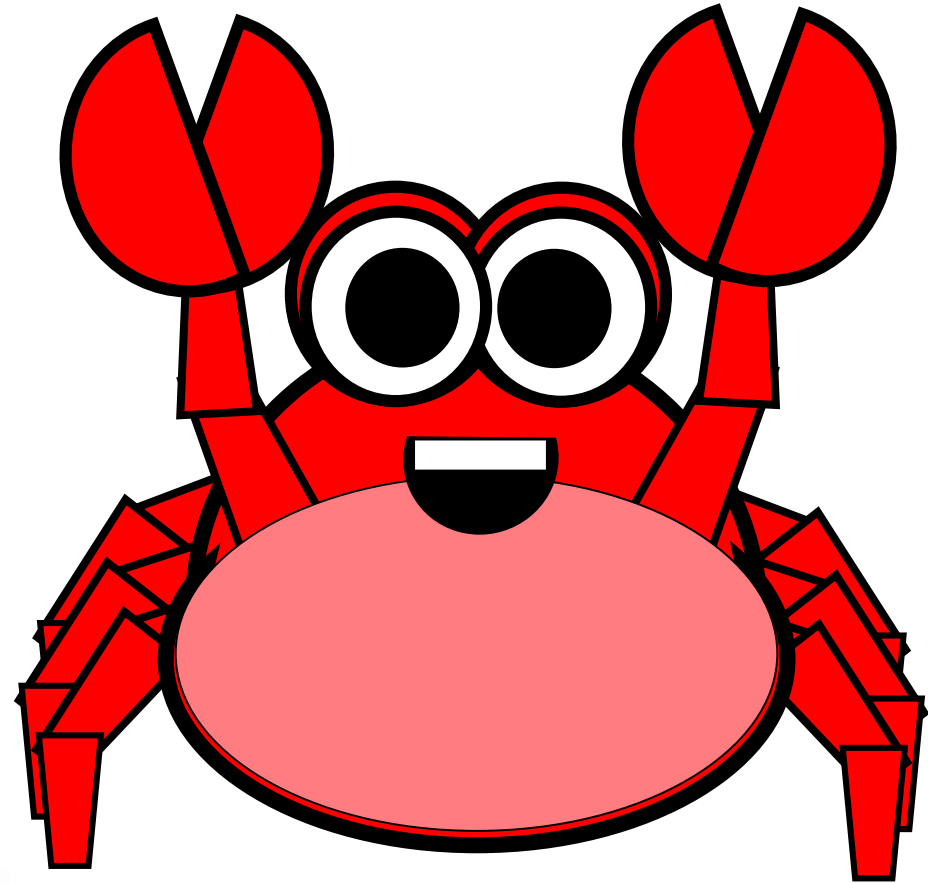
MDH EIP FoodNet

MDH Rapid Response Team (SMarRRT)

Maryland Laboratories Administration:
WGS and PFGE Labs

CDC COVIS Team

FDA Core Response Team



Maryland Department of Health
Prevention and Health Promotion Administration
<https://phpa.health.maryland.gov>