Is the Convenience Worth It?

Foodborne Outbreaks in Iowa

Kemi Oni, MPH | Melanie Harris, MPA
Iowa Governor’s Conference on Public Health
April 23, 2019
Objectives

• Summary of outbreaks in Iowa
• Notable outbreaks in 2018
  ✓ Epidemiological investigation
  ✓ Environmental investigation
  ✓ Partner collaborations
2018 Outbreak Summary
Total numbers of outbreaks investigated

179 infectious disease outbreaks were investigated in Iowa in 2018

- Gastrointestinal (57%)
- Respiratory* (38%)
- VPD^ (3%)
- Other+ (2%)

*Respiratory includes upper and lower respiratory illness, influenza, and influenza like illness.
^VPDs are vaccine-preventable diseases (including varicella and pertussis, excluding influenza).
+Other includes certain rash illnesses, and other agents/symptom presentation that do not fit in the other categories.
**Modes of transmission**

- **Animal** = 2
  - Gastrointestinal (1)
  - Vector-borne (1)
- **Foodborne** = 11
  - Gastrointestinal
- **Person-to-person** = 130
  - Respiratory (69)
  - Gastrointestinal (54)
  - Vaccine Preventable (5)
  - Rash (2)
- **Unknown** = 36
  - Gastrointestinal (36)
Numbers of outbreaks investigated by month of illness onset, N=178*

*One outbreak was excluded because onset of first illness fell in 2017.
2018 Notable Outbreaks
Timeline of Events - 2018

<table>
<thead>
<tr>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
</tr>
</thead>
</table>

- January: Image of a bowl of food
- February: Image of a dish with vegetables
- March: Image of a pasta dish
- April: Image of a taco truck
- May: Image of a salad
- June: Image of a chile pepper
- July: Image of a meal with a sombrero
- August: Image of a dish with a slice of lime
Multi-State Outbreak of *Salmonella* Linked to Chicken Salad

February, 2018
February 7, 2018

- The Iowa Department of Public Health (IDPH) and the State Hygienic Laboratory (SHL) noticed an increase in the number of *Salmonella* cases
- Trend analysis was performed – no common exposure was identified
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February 13, 2018
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• CDC assumes coordination of the outbreak response due to multistate exposures.

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• Triple T recalled all chicken salad produced from January 2, 2018 to February 7, 2018.

• Whole Genome Sequence analysis performed on a subset of clinical isolates and the two positive chicken salad isolates showed that they were closely related genetically.
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Epidemiologic curve of confirmed cases, by date of illness onset* (n=240)

*Date of lab collection used when illness onset date is unknown.
Map of confirmed cases, by county of residence
## Case summary

### Case Demographics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age range (median), (N=240)</td>
<td>0-89 (77)</td>
</tr>
<tr>
<td>Age categories in years, (N=240)</td>
<td>N (%)</td>
</tr>
<tr>
<td>0-17</td>
<td>17 (7)</td>
</tr>
<tr>
<td>18-40</td>
<td>50 (21)</td>
</tr>
<tr>
<td>41-60</td>
<td>71 (29)</td>
</tr>
<tr>
<td>61-80</td>
<td>81 (34)</td>
</tr>
<tr>
<td>81+</td>
<td>21 (9)</td>
</tr>
<tr>
<td>Gender, (N=240)</td>
<td>N (%)</td>
</tr>
<tr>
<td>Female</td>
<td>157 (65)</td>
</tr>
<tr>
<td>Male</td>
<td>83 (35)</td>
</tr>
</tbody>
</table>

### Case Outcomes

<table>
<thead>
<tr>
<th>Outcomes, (N=239)</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitalized</td>
<td>81 (34)</td>
</tr>
<tr>
<td>Died</td>
<td>1 (&lt;1)</td>
</tr>
</tbody>
</table>

Hospitalization information is unknown for one confirmed case.
wgMLST Analysis

0-2 alleles; median 0

0-59 alleles; median 0

Environmental
In summary...

**Iowa:**
- 240 laboratory confirmed cases from 64 Iowa counties
- 176 (73%) reported eating chicken salad sold at Fareway

**National:**
- 265 cases from 8 states (IA, MN, IL, WI, IN, MS, NE, SD)
- Of the 222 people interviewed, 194 (87%) reported eating chicken salad sold at Fareway
Conclusion

• Clinical laboratory culture independent stool testing had strengths and limitations; quick recognition of sudden increase of cases but delayed serotyping and fingerprinting at SHL

• Dual jurisdiction at Triple T (FDA and USDA) presented challenges during the outbreak regarding inspection, communication, and sample collection

• Strong relationships with all partners, especially Fareway, were instrumental in removing product BEFORE lab testing confirmation
Multi-State Outbreak of Cyclosporiasis Linked to McDonald’s Salad

July, 2018
But first...

- Cyclosporiasis is an intestinal parasite caused by parasite *Cyclospora cayetanensis*
- Transmitted through ingestion of fecally contaminated food or water
- Incubation period ranges from 2-14 days
  - Average of seven days
- It needs approximately 1-2 weeks after being passed in a bowel movement to become infectious for another person
  - Person to person transmission is unlikely
- Symptoms include watery diarrhea, loss of appetite and weight, bloating, increased gas, and fatigue
- *Cyclospora* is the lowest-illness causing parasite reportable to IDPH with an average of 16 cases from 2015 to 2017
  - The last outbreak of *Cylospora* in Iowa was in 2013 with 148 cases
Map of cases, by county of residence (n=199)
Epidemiologic curve of confirmed cases, by date of illness onset and exposure source*

*Date of lab collection used when illness onset date is unknown.
McDonald’s Investigation

July 10, 2019

• Internal meeting was held to discuss five cases of cyclosporiasis with exposure to McDonald’s salad

• Data analysis was conducted
  • Food population survey was utilized to determine the frequency at which the population consumes products from McDonald’s

• CDC and DIA were notified of findings
  • CDC notified Iowa of similar exposures in Illinois

• DIA notified McDonald’s corporate

• IDPH continued with interviewing cases
McDonald’s Investigation

July 11, 2018

• Conference call was held with McDonald’s to discuss epidemiological findings and obtain distribution and supplier information

✓ Salads supplied to Iowa and Illinois are sourced by Fresh Express in Streamwood, Illinois
✓ All salads sold at McDonald’s comes with the same salad blend
✓ This blend consists of chopped romaine lettuce, baby spinach, baby kale, and red leaf lettuce (few variations)
✓ Consumers has choices between Bacon Ranch Salad, Southwest Chicken Salad, or a Side Salad
✓ Southwest Chicken Salad is the number one selling salad at McDonald’s
McDonald’s Investigation

July 12, 2018
• Supplier and distribution information was obtained from McDonald’s
• Detailed ingredient list was obtained from McDonald’s
• IDPH issued a news release cautioning people experiencing symptoms consistent with cyclosporiasis infection and exposure to McDonald’s salad to seek medical care

July 13, 2018
• McDonald’s voluntarily stopped selling salads at approximately 3,000 of their U.S. restaurants. These included stores in IA, IL, IN, MI, OH, MN, NE, ND, KY, WI, WV, MO, MT, and SD
Epidemiologic curve of confirmed cases, by date of illness onset (n=99)
Map of cases, by county of residence
Case summary

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National Summary

• 511 laboratory confirmed cases from 15 states
• 66% were female
• Of the 472 interviewed people, 24 were hospitalized
• No deaths were reported
• CDC declared outbreak over on September 12, 2018
Conclusion

• CDC closed the outbreak in September
• Epidemiological and environmental investigation identified salads packaged by Fresh Express and sold at McDonald’s as the source of exposure
• Limitations in this outbreak include:
  • Long incubation period
  • Recall bias
• FDA testing on an unused package of romaine lettuce and carrot mix distributed to McDonald’s by the Fresh Express processor shows the presence of Cyclospora.
Multi-State Outbreak of *Salmonella* Linked to Spring Salad

August, 2018
Outbreak Investigation

• CDC, public health and regulatory officials in several states, and FDA investigated a multistate outbreak of salmonella infections

• PulseNet system was used to identify illness that were part of this outbreak

• In interviews, ill people answered questions about the food they ate and other exposures in the week before they became ill

• Sixty (76%) of 79 people interviewed reported eating Spring Pasta Salad from Hy-Vee grocery stores in IA, KS, MN, NE, and SD.
Map of cases, by state

<table>
<thead>
<tr>
<th>State</th>
<th>Ill People</th>
</tr>
</thead>
<tbody>
<tr>
<td>Illinois</td>
<td>2</td>
</tr>
<tr>
<td>Iowa</td>
<td>37</td>
</tr>
<tr>
<td>Kansas</td>
<td>3</td>
</tr>
<tr>
<td>Minnesota</td>
<td>23</td>
</tr>
<tr>
<td>Missouri</td>
<td>3</td>
</tr>
<tr>
<td>Nebraska</td>
<td>11</td>
</tr>
<tr>
<td>North Dakota</td>
<td>1</td>
</tr>
<tr>
<td>Oregon</td>
<td>1</td>
</tr>
<tr>
<td>South Dakota</td>
<td>19</td>
</tr>
<tr>
<td>Tennessee</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>101</strong></td>
</tr>
</tbody>
</table>
Epidemiologic curve of confirmed cases, by date of illness onset (n=101)

- 101 people infected from 10 states
- Onset of illness ranged from June 21, 2018 to August 7, 2018
- Twenty-five people were hospitalized
- No deaths were reported
Outbreak Investigation

July 16, 2018
• Hy-Vee removed Spring Pasta Salad products from all of its stores.
• Hy-Vee stores are located in Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, South Dakota and Wisconsin.

July 17, 2018
• Hy-Vee recalled its Spring Pasta Salad because it might be contaminated with *Salmonella*.

September 5, 2018
• CDC declared the outbreak over
Questions?

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