Lessons Learned from Outbreaks: E. coli O157 Linked to Romaine Lettuce

Lyndsay Bottichio
Colin Schwensohn
Scott Nowicki
Adiam Tesfai
Natasha Dowell

Central Regional Meeting
March 6, 2019
2018 Outbreak of *E. coli* O157:H7 Infections Linked to Romaine Lettuce from the Yuma Growing Region
Day 1: Outbreak Detection

- NJ Department of Health notifies CDC of a cluster of *E. coli* O157 infections in NJ and PA
  - Most ill people reported eating salads from the same restaurant chain

- CDC Foodborne Outbreak Response Team begins coordinating the investigation
Day 4: Confirming a Multistate Outbreak

- PulseNet confirms 8 O157:H7 illnesses from 6 states with the same PFGE pattern

- Only common ingredient in the salads in NJ and PA appears to be romaine lettuce
  - NJ collects records for romaine lettuce supplied to the restaurants

- NJ releases a media statement about their investigation
A Break in the Case: Not Just Pre-Chopped Romaine?

- State and local health officials in AK identified a cluster of illnesses at a correctional facility
  - Ill people report eating romaine lettuce

- Traceback investigations showed the lettuce was whole heads of romaine from Yuma, AZ region
Environmental Assessment Launched

- Environmental assessment to determine possible routes of romaine contamination
  - Observation and record collection
  - Soil, water, and other sampling

- Outbreak strain identified in irrigation canal water adjacent to many fields identified in traceback
  - How did the outbreak strain get in the water?
  - How did the water contaminate the romaine?
Romaine Exposures

- 152/179 (85%) reported romaine lettuce

- 20 illness sub-clusters, encompassing >50% of cases
  - Includes restaurants, aforementioned AK correctional facility, and institutional cases in MN
  - Sub-cluster in OH from chain fast food with no romaine
Epilogue

- Outbreak declared over on June 28, 2018
  - 21 day maximum shelf life for romaine
  - 2-4 week reporting delay in PulseNet

- 240 ill people from 37 states
  - 46% hospitalized; 28 people developed HUS; 5 deaths
Outbreak Challenges

- **Challenges collecting epidemiologic data**
  - People who eat lettuce eat it often, and many have multiple exposures
  - Many people don’t remember what type of lettuce eaten

- **Challenges interpreting traceback data**
  - Romaine from multiple farms/ranches/lots comingled at processing
  - Common identifiers not always used to track through production/distribution

- **Challenges communicating clearly**
  - Labels on romaine lettuce do not typically list growing region
  - Sometimes conflicting advice from various outlets and agencies
  - Collateral damage to romaine producers outside of the Yuma growing region
Outbreak Conclusions

- Largest multistate outbreak of *E. coli* O157:H7 infections in over a decade

- Providing clear messaging was challenging; however, we needed to provide rapid advice to the public
  - Outbreak grew quickly and was severe

- Moving forward, how might we do things differently if this happens again?
  - How can we use WGS going forward for this “clade of concern”?
Acknowledgments

- State and local epi, lab, food safety, and agriculture partners
- FDA
- USDA
- CDC Waterborne Team
- CDC Enteric Lab
- CDC FORT