Food Protection Program

Using Collaboration to Identify an ETEC outbreak

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Agenda

- Cluster #1
- About ETEC
- Cluster #2
- Cluster #3
- Epi information
- Environmental Results
- Lab Findings
- Final summary

How it Started AKA Cluster #1

- May 6, 2022, a Friday, a local health department (LHD) in Fairfield county received a call from a school regarding 16 staff having GI symptoms after eating food at a teacher appreciation event catered by a local restaurant.

Day 1

- The local health department visited the establishment and school to do an environmental investigation.
  - They clarified on 2 different luncheons for different schools, interviewed staff that prepared food items for the luncheon, obtained invoices, and a master list of food workers with contact information.
- One of the food workers interviewed reported diarrhea on the night before.
  - This person returned to work the next day.
  - They were sent home w/ a stool kit and could not return until results are available.
  - This person prepared the guacamole.

The menu for the luncheon

- Catered from the food establishment
  - Rice & Beans
  - Soft & hard shelled tacos
    - Shrimp, Beef, Veggie, and Chicken options
  - Guacamole
  - Smoked corn
  - Field Green Salad
  - Fixings = cheese (2 types), sour cream, lettuce, cilantro, green & red salsa, creamy orange sauce

The menu continued

- Desserts
  - Prepackaged cookies, brownies from grocery stores
  - Grapes & strawberries from grocery stores
- Candy
  - Bought online (pixie sticks, rolos & sour patch kids)
- Beverages
  - Sorrel – a tangy spice infused beverage (common in the Caribbean)
    - Store bought bagged dried Sorrel, boiled w/ Ginger, strained and sugar added for taste
  - Packaged lemonade
  - Bottled water & canned seltzer
  - Bagged ice from local grocery stores

Day 3

- An ill teacher contacted our Epi program to confirm that their positive e.coli test was in fact Enterotoxigenic *Escherichia coli (E. coli)*, or ETEC.
- That food worker tested negative for Norovirus but there was a hit for ETEC & Giardia lamblia using BioFire
- FPP staff completed an Environmental Assessment for NEARS
- <u>This became Connecticut's first ETEC outbreak investigation</u>

ETEC

- “ETEC infection has been associated mostly with traveller's diarrhoea among visitors to endemic developing countries, causing an estimated 10 000 000 cases of traveller's diarrhoea annually. In the USA, an estimated 40 000 ETEC cases occur annually, with 55% associated with international travel and 45% acquired domestically through foodborne transmission.”1

[1]Buuck S, Smith K, Fowler RC, Cebelinski E, Lappi V, Boxrud D, Medus C. Epidemiology of Enterotoxigenic *Escherichia coli* infection in Minnesota, 2016-2017. Epidemiol Infect. 2020 Sep 1;148:e206. doi: 10.1017/S0950268820001934. PMID: 32867880; PMCID: PMC7506794.

Cluster #2

- Another teacher appreciation event, this time at a daycare center.
- Food was purchased from the same food establishment and consumed on the same day as Cluster #1.
- There were about 16 who attended the event, 9-10 became ill.
- Food was served buffet style, with: steak, chicken, and roasted vegetables taco options.
- Attendees began getting ill Thursday morning.
- Bottled beverages were provided and no other foods from other sources.
- They also had a bagel platter, several days before the event,with assorted bagels and cream cheese from a local bagel place.

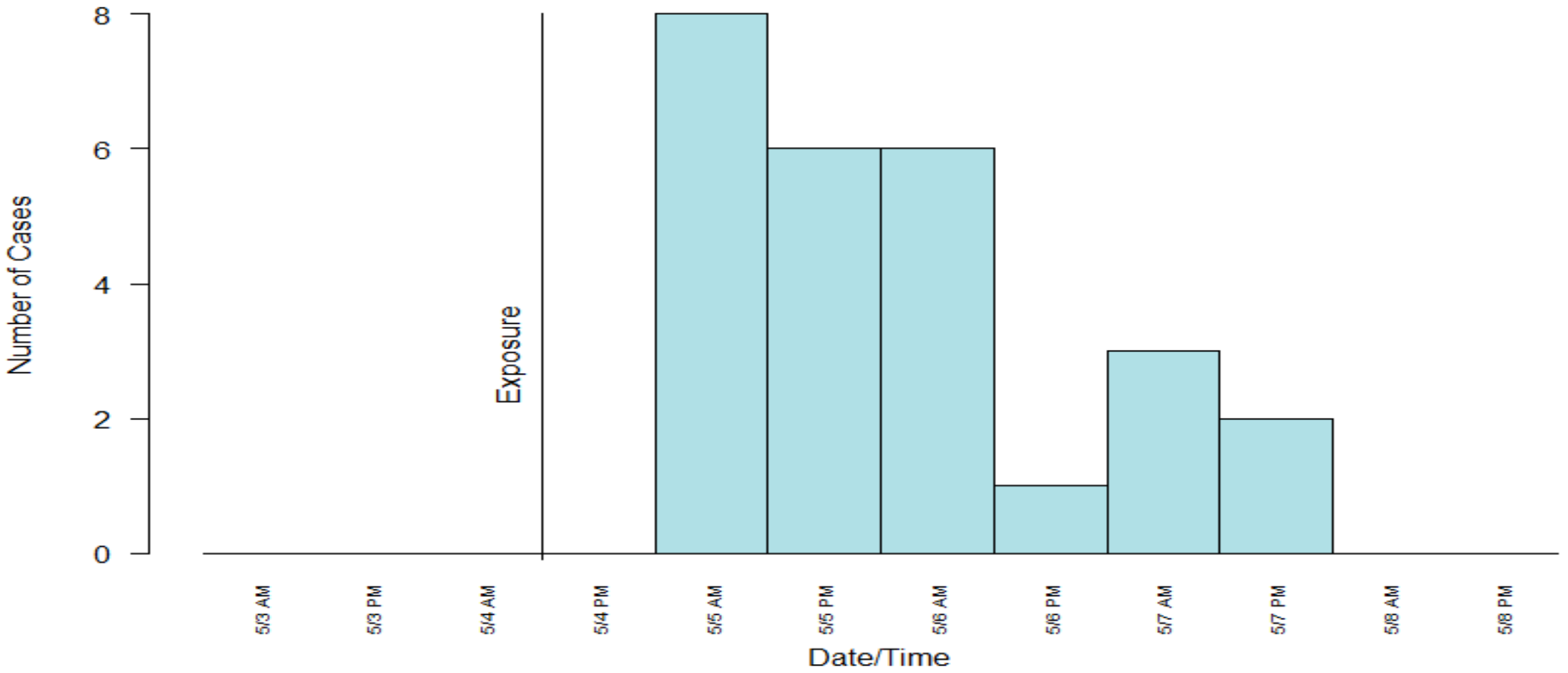
Cluster #2 continued

- The first report of illness was from a teacher, symptoms developed about 24 hours after consuming the food.
  - Mostly diarrhea (5-6 stools). Felt better in about 24 hours.
  - Consumed: Chicken taco, with green sauce, cheese, rice & beans, steak, chips, salsa, and guacamole.
  - No drinks and no bagels the day before.
- The organizer was not ill, and ate: steak taco, all the toppings, chips, salsa, guacamole. He did not eat any chicken or roasted vegetables.

Cluster #3

- On Day 2, CT EEIP received a call after a small family group had gotten take out from the same establishment on May 3, 2022.
- The group consisted of 4 adults from 2 house holds getting together to celebrate a family member's birthday.
  - 3 of which had illness, onset was May 4, 2022 & still symptomatic 7 days later
  - Person #1 had guacamole, chorizo tacos, shrimp tacos. Onset of diarrhea, vomiting, cramps, nausea on morning of 5/5.
  - Person #2 had guacamole, chorizo tacos, shrimp tacos and had onset of diarrhea on 5/5.
  - Person #3 had steak tacos, guacamole, and chorizo tacos.
  - Well person had shrimp tacos and chicken tacos.
    - Only person who did not eat the guacamole or chorizo tacos.

Figure 1: Onset of Illness Among ETEC Cases Associated with Events A&B



The Epi side of things

- To assess the extent and severity of illness and food exposures CT DPH EEIP emailed a survey link to attendees.
- **A case was defined as an individual with no prior illness who ate food served at either event and experienced diarrhea (≥3 stools in a 24 hour period) within three days of the event.**
- The survey was sent to 76 attendees:
  - 49 (out of 60) surveys were completed in cluster #1
  - 5 (out of 16) surveys were completed in cluster #2
  - 14 respondents were excluded from incomplete responses
  - 3 additional responses were excluded due to pre-existing gastrointestinal symptoms
- A total of 26 cases were identified
  - 24 from Cluster #1
  - 2 from Cluster #2

Survey Results

- 19 of the 26 (73%) ill respondents were female
- Age range was 22 to 64 years old (median 39.5)
- Median incubation period was 31 hours (12 – 73 hours, 1 missing response)
- Median duration was 72 hours (12-216 hours, 15 missing responses)

Survey Results continued

- Reported symptoms
  - Diarrhea = 100% (26)
  - Cramps = 92% (24/26)
  - Nausea = 61% (14/23)
  - Headache = 50% (12/24)
  - Muscle aches = 50% (11/22)
  - Chills = 38% (9/24)
  - Fever (range 99.1F – 99.5F) = 16% (3/19)
  - Vomiting = 15% (4/26)
- 6 cases sought outpatient medical care
- No one was hospitalized
- No deaths

Cohort Study

- Analysis of reported menu item consumption among survey respondents revealed that ingestion of sour cream was associated with illness (Relative Risk: 2.00, 95% CI: 1.26-3.17, p=0.010).

- The attack rate among those who reported sour cream consumption was 100% (10/10), and the attack rate among those who reported no sour cream consumption was 50% (9/18).

No other menu items were significantly associated with illness

Environmental Findings – Local Health

Local Health

- Observed proper temperatures for cold & hot holding, cooking, and cooling.
  - Head chef – some items are prepared 1 to 2 days in advanced (marinating and cooking)
- Observed glove use where needed.
- Documentation of employee training program available.
- Ill food worker poster posted.
- CFPM onsite
- An ill worker reported working on 5/2 & 5/4

Environmental Findings – DPH FPP

NEARS

- During the manager interview they indicated that food workers did not receive food safety training
- Since Covid, when a food worker calls out sick managers have started to ask what symptoms they are experiencing
- All employees receive paid sick time
- Although a food probe thermometer was available, its use was not observed by staff
- No evidence of cross contamination, temperature abuse or improper sanitizing during visit

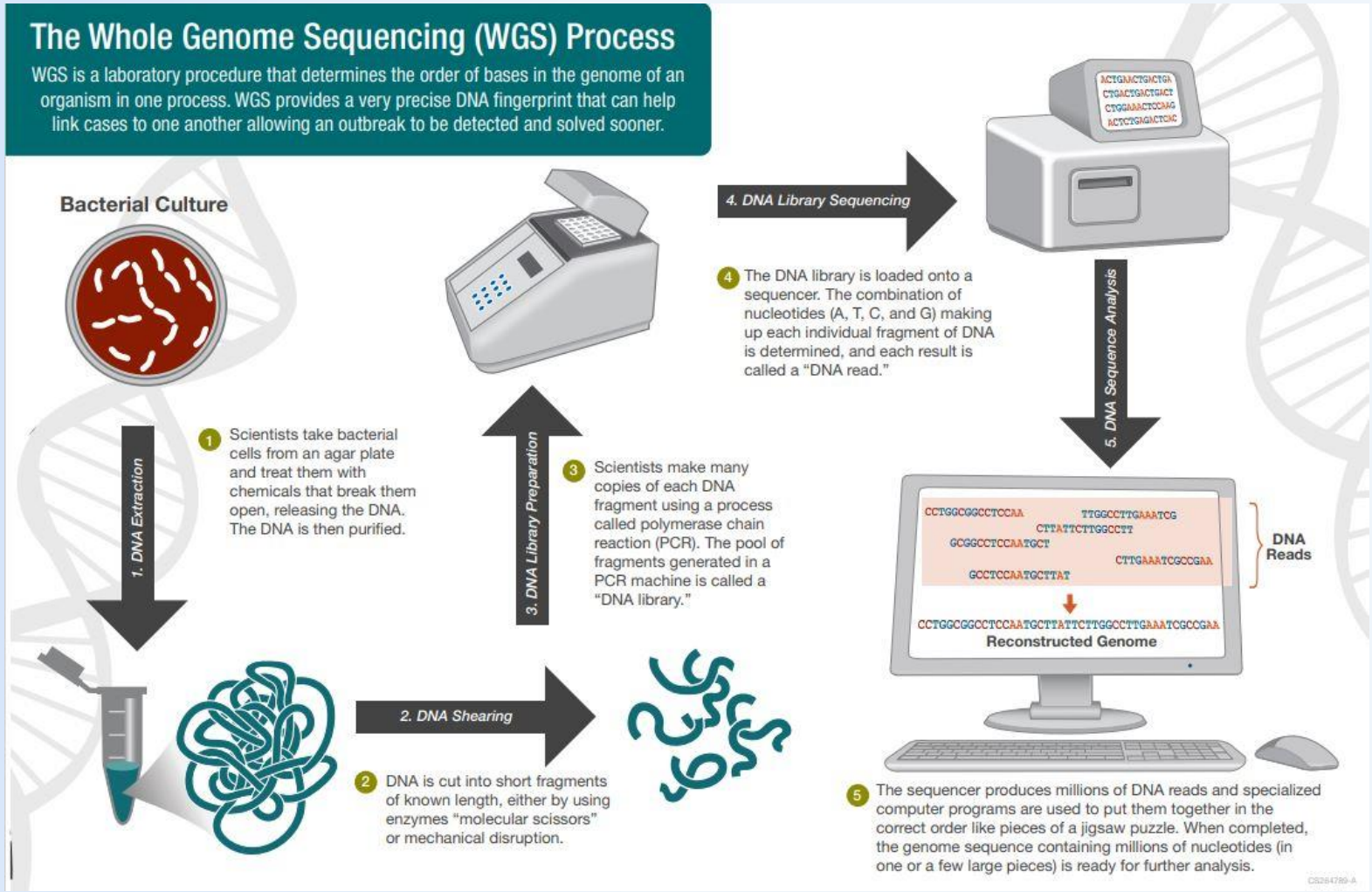
Lab Findings

- The LHD requested stool samples from all ill food workers & DPH requested stool samples from all ill patrons.
  - Testing for ETEC was done using BioFire™

- Patrons = 7 tested positive for ETEC
- Food workers = 8 staff tested positive
  - 1 w/ ETEC & Giardia (first staff & symptomatic)
  - 1 w/ ETEC & Yersinia (had a fever)
  - 1* w/ Yersinia
  - 3* w/ ETEC
  - 1* w/ EAEC
  - 1* w/ EPEC

*notes asymptomatic

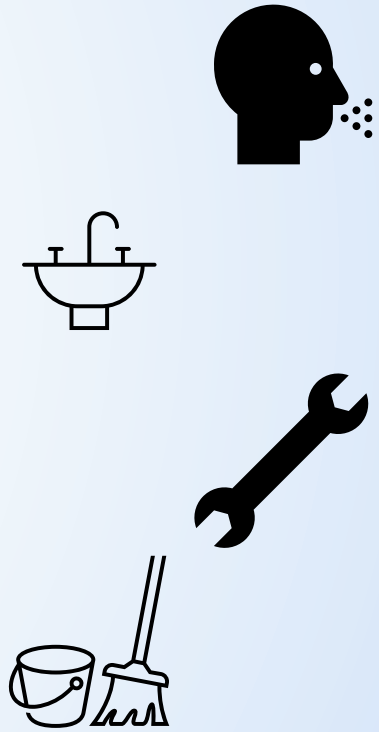
WGS - Minnesota



- ETEC was isolated from 9 of the 12 specimens.
- All 9 were serotype O169/O183:H41
  - At least 1 sample from each of the 3 clusters and a food worker
- Highly related by WGS (0-4 alleles apart)

Control Measures

- Exclusion of ill food workers.
- There was no leftover food items from the days in question, however, fresh food samples were collected.
- Corrected issue with low sanitizer in 3-bay sink at time of local health visit.
- Due to limited knowledge at the time no other control measures were implemented.



Final Summary

- A cohort study revealed that the ingestion of sour cream was associated with illness and no other menu items were significantly associated with illness.
- ETEC has often been associated with traveler's diarrhea but is increasing in foodborne disease outbreaks.

Employers in CT w/ 50 or more employees are required to provide paid sick leave to service workers who meet certain criteria.

- ETEC is most likely under reported due to limitations on testing & knowledge.
- Current prevention methods are limited to washing fruits & vegetables prior to consumption, frequent hand washing, adequate sanitizing of food contact surfaces.
- Increased surveillance could help identify prevention & understand how it spreads.

A big thank you to:

- Minnesota Department of Public Health Laboratory & Foodborne Diseases Unit
- The CT Local Health department
- The CT Epidemiology & Emerging Infections Program
- Yale Emerging Infections Program (EIP)
- The CT Department of Public Health Laboratory
- Food Protection Program

Questions

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