Revisiting a classic:

June Wedding Post-Reception GI Illness, Virginia Beach, 2023

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Virginia Beach Department of Public Health

Field Epidemiology Seminar

Oct 25, 2023

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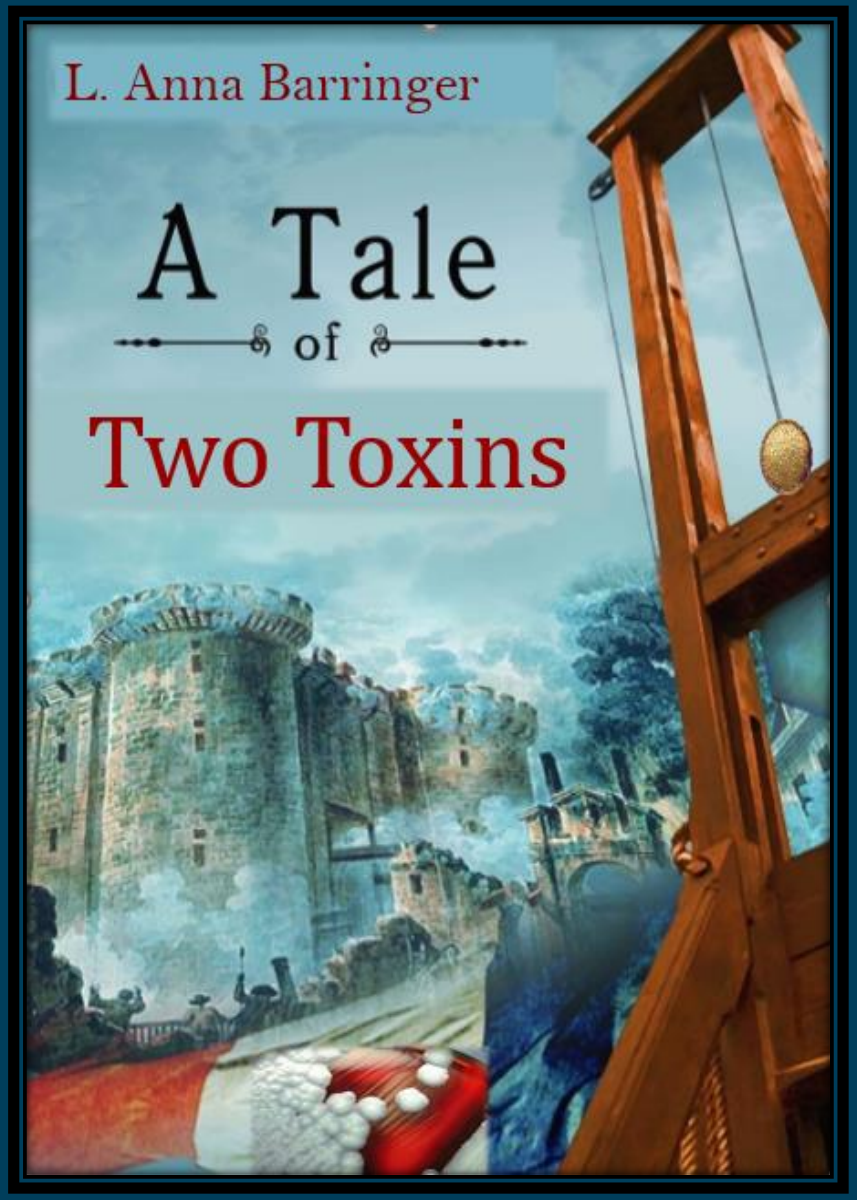

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Learning Objectives:

- Describe the importance of Epidemiology and Environmental Health working together during a foodborne illness outbreak (FBI) investigation
- Identify 2 organisms that contribute to FBI outbreaks
- Name 4 best practices used to improve Foodborne outbreak investigations

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Background

June 2023

- Initial call
  - Caterer
  - Wednesday, June 14th
- Event
  - Wedding reception
  - Saturday, June 10th
  - Rural renovated barn venue
  - Up to 70 reported ill/GI Illness

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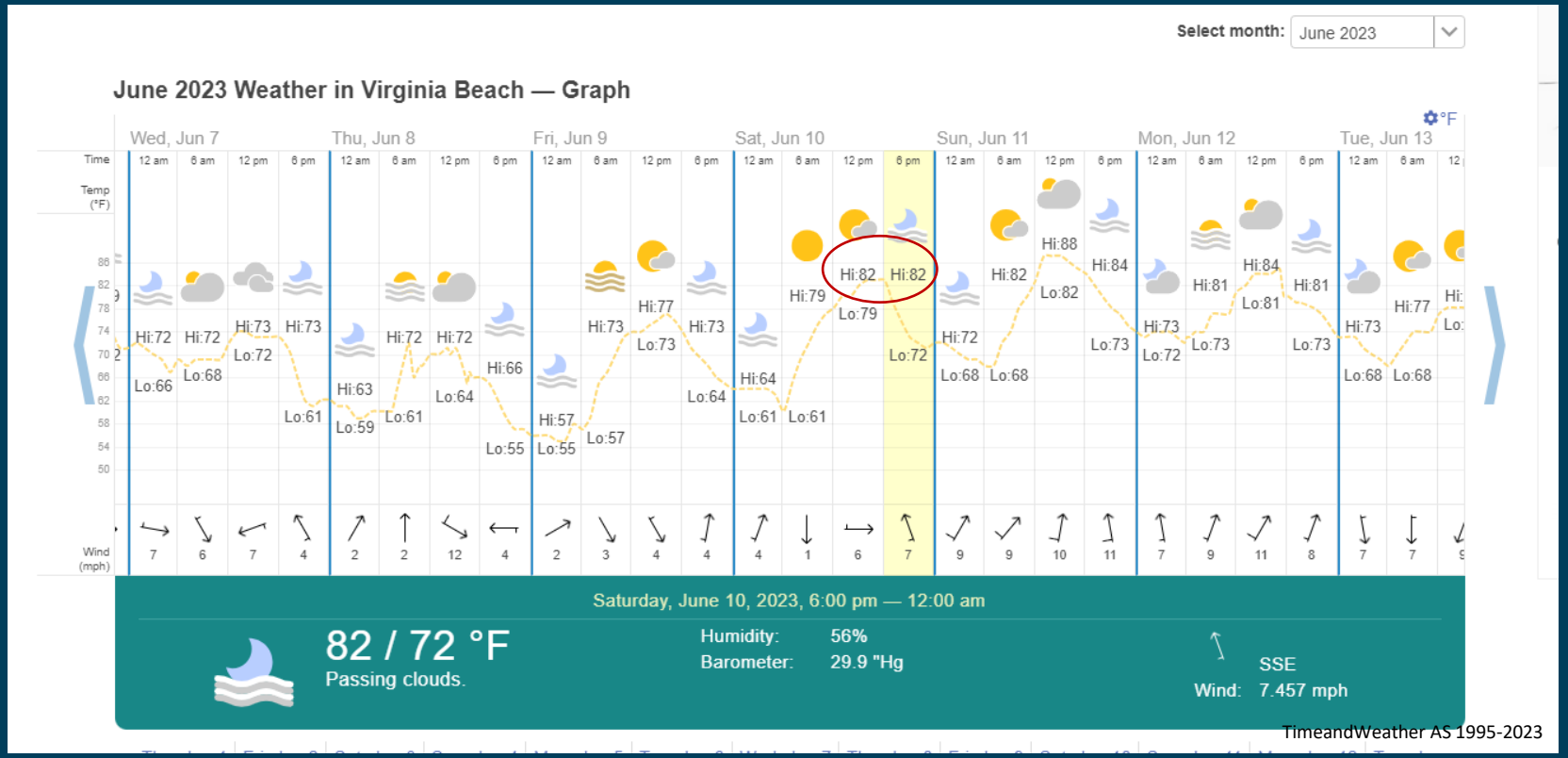
COUNTYLINE


Semler


4/12/2008 6:15


PHOTOGRAPHY

Event Day Weather:



"For they say when you marry in June, you're a bride all your life."

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Epidemiologic Investigation

- Retrospective Cohort Study

- Case Definition: a person who experienced diarrhea within 24-hours after consuming food from the buffet at the reception on June 10th, 2023
  - Diarrhea: 3 or more stools w/i a 24-hour period

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Epidemiologic Investigation

- Obtained the event menu/guest list
- Called ill family members to conduct initial assessment and arrange for specimen collections
- Worked with VDH Foodborne Team to develop a REDCap survey
- Participated in a joint site visit with EH
- Obtained food samples from establishment

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Epidemiologic Investigation

- Continued calling attendees to arrange to email/text a survey link
- Prepared an Epidemic curve using Excel
- VDH Foodborne Team conducted analysis of survey data utilizing OpenEpi

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Environmental Investigation

- Food Service Inspection
  - Conducted routine inspection, Thurs, 6/15
    - Food Prep area
    - Venders
    - Storage/Holding
  - Interview
    - Caterer/Owner

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Environmental Investigation

- Multiple interviews with caterer and chef
- **Reviewed using CDC NEARS Form**
  - Food sourcing
  - Preparation
  - Cooking
  - Transportation
  - Holding
  - Serving

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Epidemiologic Investigation

Survey Results

- 111 asked to complete the survey
- 62 (55.9%) completed the survey
- Age range 12-77 years
  - Median age 30 years
- 58.1% female
- 48 (77.4%) were VA residents
  - Remaining were from 7 other states and 3 countries
- 46 (74.2%) respondents reported illness

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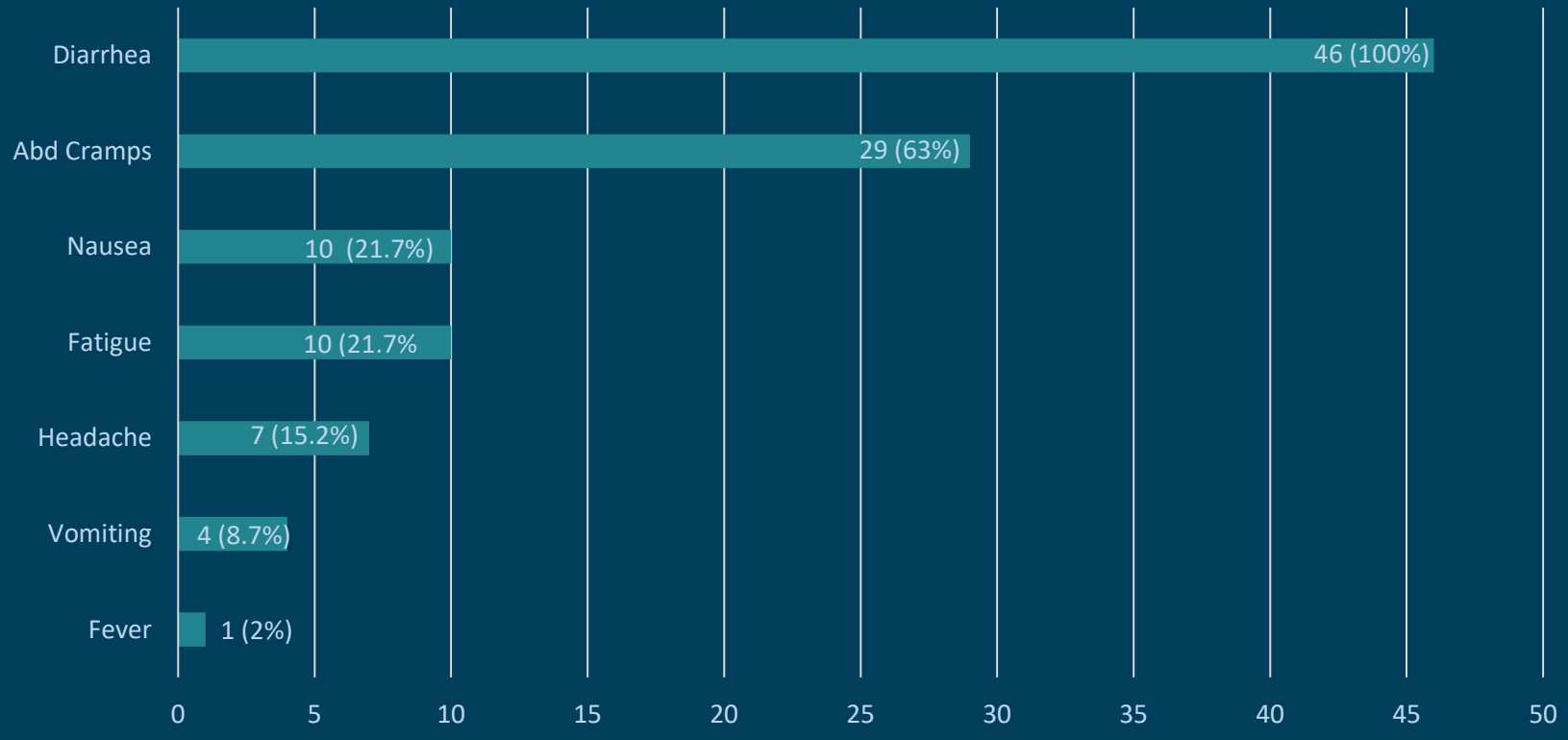
Frequency of Symptoms



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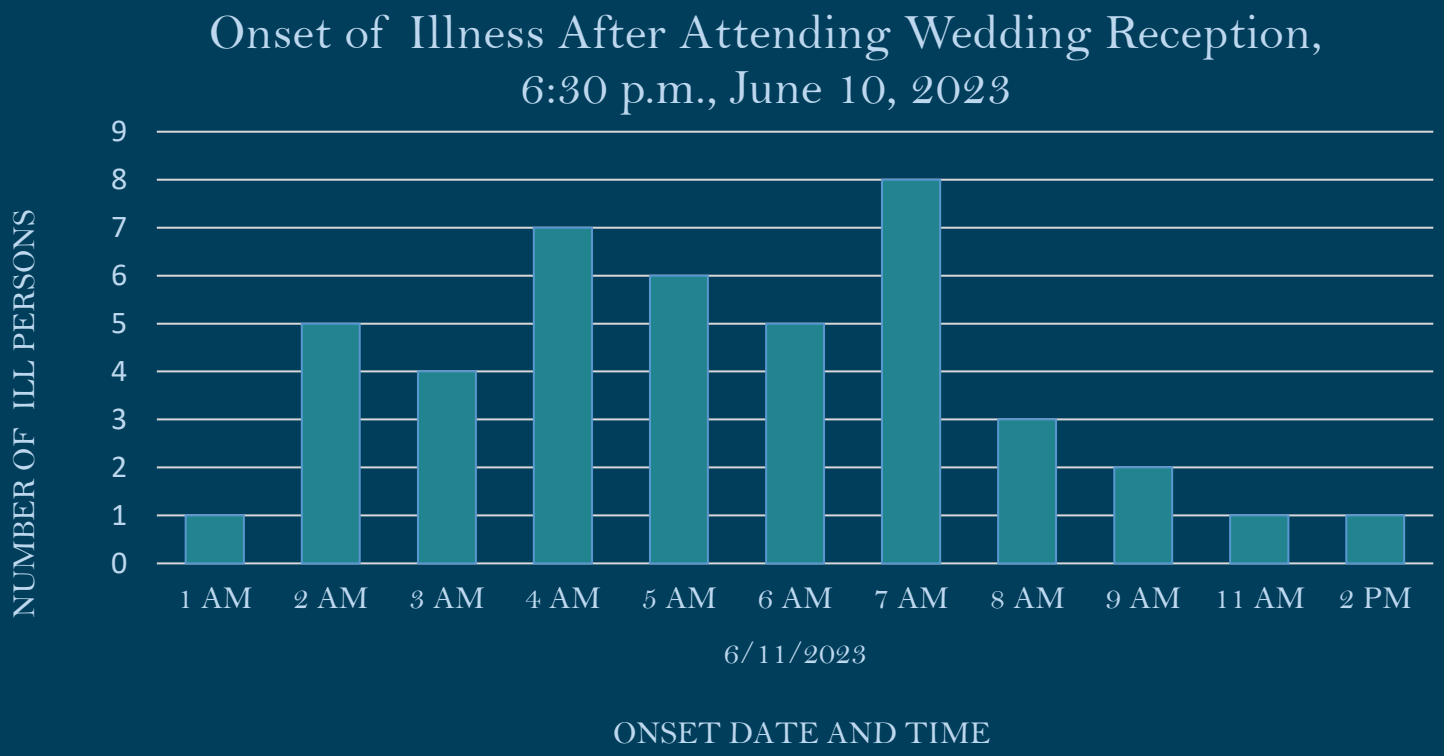
Epidemic Curve



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Survey Analysis

Food Item	#/Consumed	Relative Risk*	p-value	95% CI
BBQ Pulled Pork	55	**4.00**	0.009	0.69-23.2
Sweet Potato/Ham Biscuit	30	1.48	0.006	1.06-2.07
Ice	53	1.26	0.245	0.61-2.62
Mac & Cheese	48	1.21	0.192	0.76-1.94
Grilled Chicken	49	1.08	0.356	0.70-1.67

*These relative measures give an indication of the "strength of association."

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Environmental Investigation

- Results:
  - Multiple violations were noted, mostly with sanitation
  - No identified ill food handlers/servers
  - Obtained food flow for event foods
  - No available temperature logs from event
  - Caterer:
    - Opens her establishment on Sundays for brunch
      - Serves some of the same dishes from events
    - Had an upcoming event at same venue
      - EH made visit to observe food prep
      - All was in order
    - Was temporarily removed from the venue preferred vender list

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Laboratory

- Results
  - Specimen 1: **Both** B. cereus, C. perfringens **detected**
  - Specimen 2: B. cereus **detected**, C. perfringens not detected
  - Specimen 3: B. cereus not detected, C. perfringens not detected

  - Patient 1 lived in one household/Patients 2 & 3 lived together in a separate household

  - Food Items: Pulled pork, macaroni noodles, green beans, sliced grapes
    - Negative for all organism

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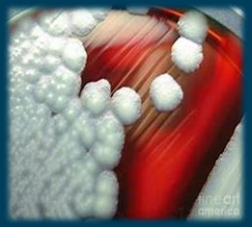
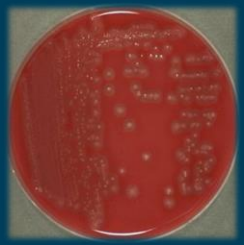
Toxins

Bacillus cereus



Clostridium perfringens



- Spore-forming bacteria
- Risky food holding temps
  - Between 41-134 F
- Incubation: 6-24 hours
- Primary symptoms
  - Diarrhea and abdominal pain/cramps
- Duration: resolves within 24 hours
- Not spread person-to-person

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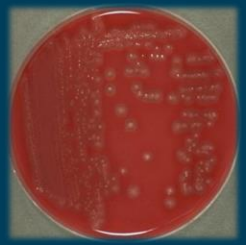
High-Risk Foods

Bacillus cereus

- Fish
- Dairy
- Meat
- Sauces
- Soups and stews
- Vegetables

- Causes up to 63,500 cases of foodborne illness each year

Clostridium perfringens



- Meat
  - Pork
  - Beef
  - Poultry
  - products cooked with sauce are at high risk of contamination

- Causes over 1 million cases of foodborne illness each year

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Discussion

- The 2 patients with Bacillus cereus isolated from stool meet VDH/CDC definition for an outbreak with this organism

- The significance of the patient with both Bacillus cereus and Clostridium perfringens isolated from stool is unknown

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Limitations

- Notification was 72 hours after the last onset of illness
- No one sought medical attention, resulting in the only specimens for testing collected >96 hours after illness
- No leftover foods from the reception available for testing
- City code does not require food establishments to provide temperature logs

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Lessons Learned

- Use a multidisciplinary team (Epi, EH, Lab) approach to respond to Foodborne outbreaks
- The initial establishment visit should focus on the reported outbreak/event
- Ensure all participants receive the survey link for the most accurate data analysis
- Provide learning opportunities for both EH and Epi to work together on FBI tabletop exercises

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The End

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REFERENCES

- Bad Bug Book, 2nd Edition, U.S.F.D.A., February 2022, Bacillus cereus and other Bacillus species
- Bad Bug Book, 2nd Edition, U.S.F.D.A., February 2022, Clostridium perfringens
- Centers for Disease Control and Prevention (CDC) Website

IMAGES:

- Google and Bing Images
- TimeandDate AS 1995-2023
- Rakuben Kobo Books

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