

2 for 1 Clostridium Perfringens Response

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Wedding Outbreak # 1

- Wedding occurred on 4/6/19; symptoms started approximately 8 hours after the meal.
- Complainant reported ~33 out of 120 attendees:
 - Cases in IA, IN, MI, OH, PA, TN, and WI.
- Symptoms included diarrhea, vomiting, nausea, and abdominal cramping.
- Wedding occurred on private property in County A and was catered by a business based out of nearby County B.
- The food was reportedly prepared out of a restaurant where the caterer was employed. Note: the caterer was not permitted by County B.
- An enterotoxin was the suspected cause of the illnesses.
- ISDH Epidemiology Resource Center held epidemiological jurisdiction; County A (event's location) and County B (caterer) held food regulatory/environmental jurisdiction. ISDH Food Protection Program provided guidance to County B for the environmental assessment.

Epidemiological Investigation

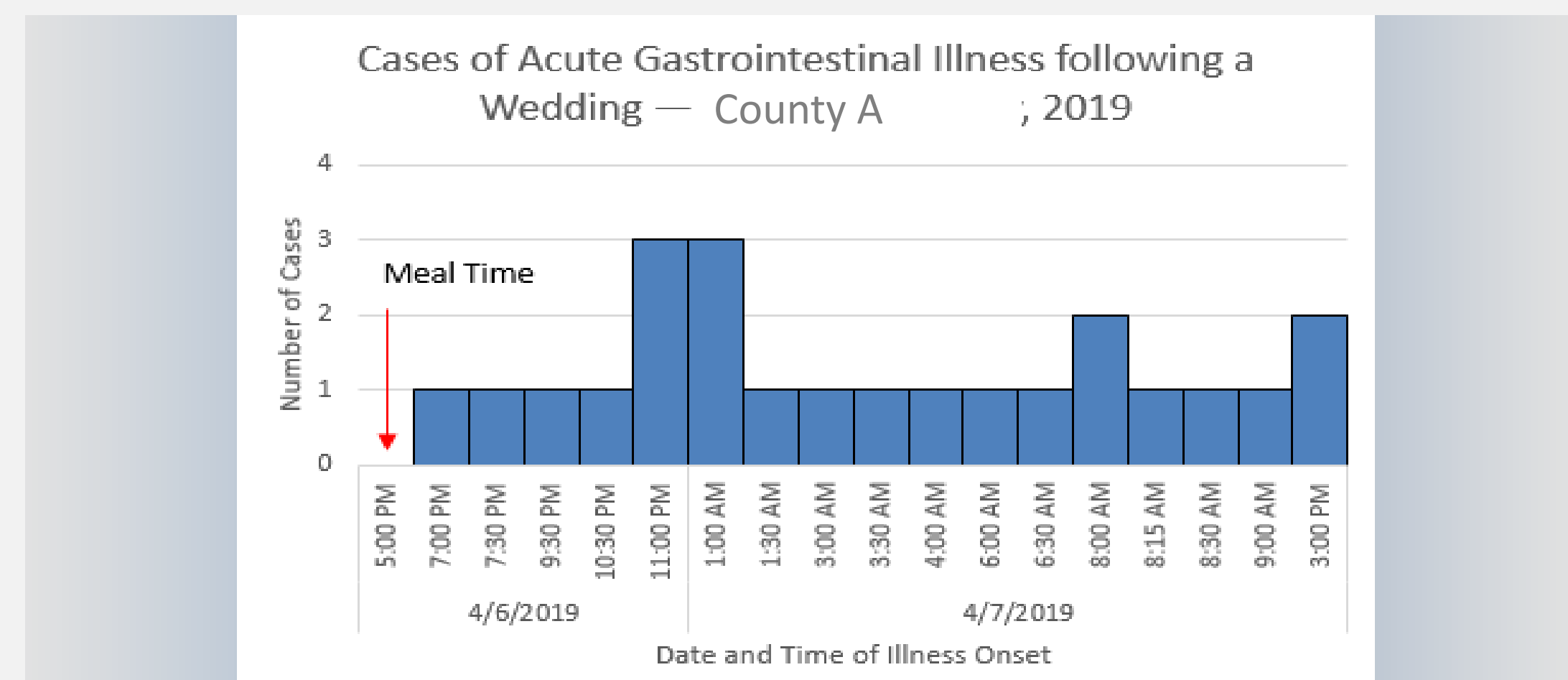


Table A: Epidemiological Curve for outbreak 1.

- Received 60 responses:
 - 42% reported illness.
 - Symptoms were abdominal cramps (76%), diarrhea (84%), and watery stool (76%).
 - Average incubation period was 10 hours, with a minimum of 2 hours and maximum of 22 hours.
 - No one reported being ill before the event.

Menu item	Risk Ratio	Lower CI	Upper CI	p-value
Salad	2.5714	1.2703	5.2051	0.0037137
Smashed red skin potatoes	3.3	1.1315	9.6243	0.0061464
Candied bacon wrapped chicken bites	2.188	1.1633	4.1156	0.0107586
Herb chicken tenders	2.081	0.9809	4.4147	0.031086
Sweet Tea	0.546	0.2235	1.334	0.1162175
Pot roast	1.5714	0.7855	3.1439	0.1391706
Rolls with butter	1.5714	0.7855	3.1439	0.1391706
Iced Tea	0.4734	0.1346	1.6657	0.1565692
Artichoke dip	1.3636	0.7494	2.4814	0.2239678
Tomato/cheese skewers	0.7654	0.4152	1.411	0.2730581
Lemonade	1.2667	0.7027	2.2831	0.3111045
Ice	0.8289	0.4018	1.7102	0.4176317
Cake	1.0864	0.5839	2.0216	0.5049955
Green beans with bacon and onion	1.1047	0.5458	2.2356	0.5110735

Table B: Cohort Study for outbreak 1.

".... All food was cold. No sternos..."

"Ice cream was placed on cake with bare hands..."

"I ate a piece of chicken...I thought it may be undercooked....looked at chicken and saw pink."

"Arrived before the ceremony...approx. 2 p.m. Meal was served around 5:30 p.m. Two meats were in roaster ovens plugged into an outlet...potatoes lukewarm."

"....don't believe the chicken served with wedding dinner was done....salad was warm and sat out with dressing all afternoon."



Environmental Investigation

- Conducted at the restaurant where food preparation reportedly occurred. Caterer was also employed at the restaurant.
- Inadequate set-up for catering operations in the restaurant and the event location:
 - Only one oven at the restaurant.
 - Lack of handwashing amenities at the event location. Used sanitizer buckets for handwashing.
 - Power issues at the event location.
- Cooking temperatures:
 - Bacon-wrapped chicken reportedly cooked in oven to 172°F.
 - Herb chicken tenders reportedly cooked in a roaster to 140°F initially and then reached 170°F four hours later.
- Holding temperatures:
 - Served chicken in buffet pans. Used sternos for maintaining temperatures. Fans blew out the sternos.
 - Smashed red skin potatoes were stored in the roasters and according to caterer held at 135°F.
 - The rest of the chicken was kept in roasters. Would have been out of temperature control during transport and when plugged into the outlet that did not work.
 - Salad was prepared onsite with gloved hands and set out without temperature control, but was reportedly gone within the hour.

Wedding Outbreak # 2

- Wedding occurred on 6/22/19; symptoms started about 10 hours after the meal.
- The complainant reported ~100 out of 200 attendees:
 - Symptomatic cases from FL, IA, IN, KY, MI, and OH.
- Symptoms included diarrhea, cramping, watery stool, and nausea.
- Wedding occurred in a commercial venue in County A, and the same caterer was reported from outbreak 1.
- Initially two clinical samples tested positive for *Clostridium difficile*, but an enterotoxin was also suspected.
- ISDH Epidemiology Resource Center held epidemiological jurisdiction; County A (event's location) and County B (caterer) held food regulatory/environmental jurisdiction. ISDH Food Protection Program provided guidance and sampling assistance to Counties A and B.

Epidemiological Investigation

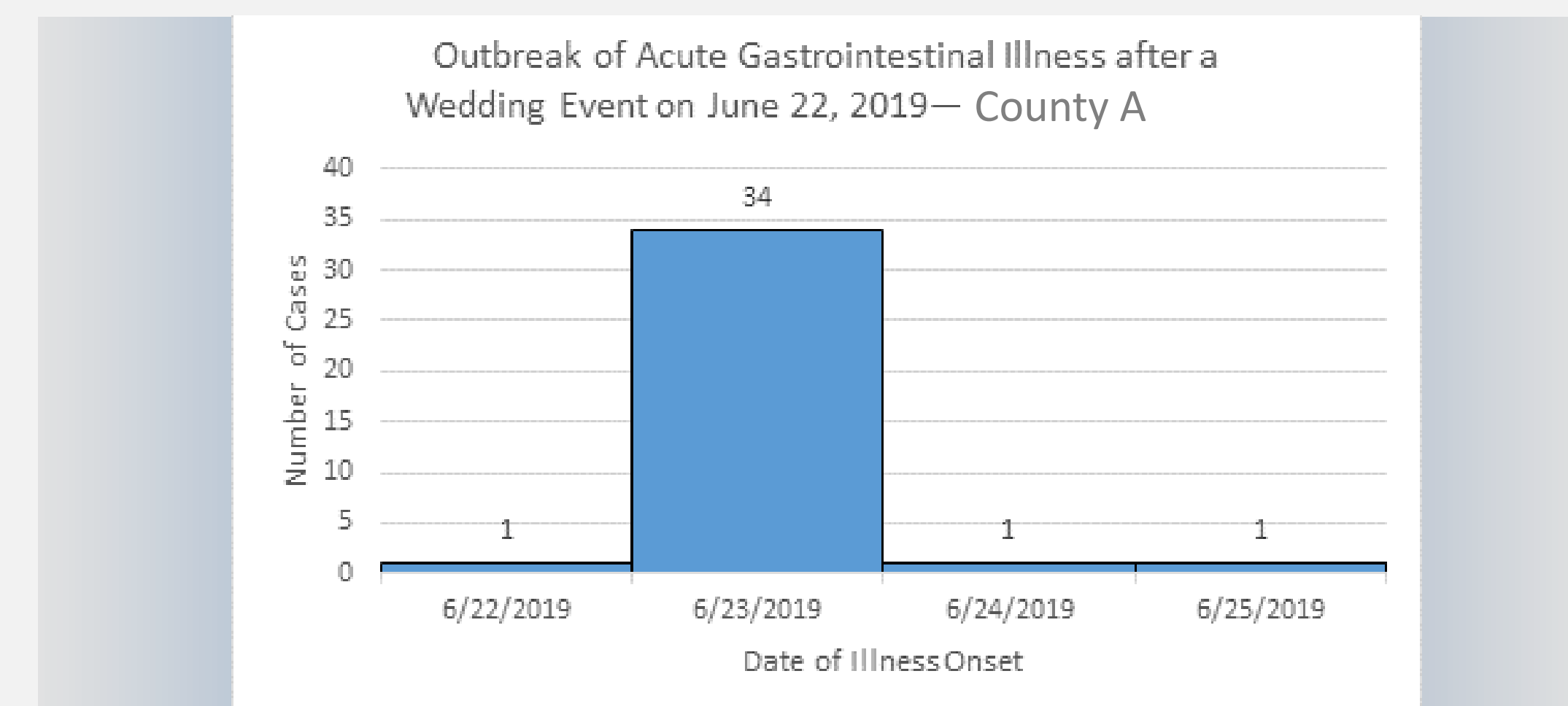


Table C: Epidemiological Curve for outbreak 2.

Received 78 responses:

- 60% reported illness.
- Symptoms were diarrhea (96%), abdominal cramps (87%), watery stool (83%), and nausea (64%).
- Average incubation period was 8 hours. Median duration of illness was 10 hours.
- No one reported being ill before the event.

Food Item	Risk Ratio Estimate	Lower	Upper
Shredded Chicken	2.7857	1.5249	5.089
Rice	1.3333	0.8668	2.0509
Cupcakes	1.1706	0.7931	1.7276
Shredded Cheese	1.1457	0.7876	1.6666
Tortilla Chips	1.0938	0.717	1.6685
Ice	1.0674	0.7422	1.5352
Queso Dip	1.0483	0.6718	1.6358
Beans	1.0084	0.6951	1.4629
Quesadillas	0.9514	0.6648	1.3614
Guacamole	0.9368	0.6514	1.3473
Sour Cream	0.9199	0.6412	1.3197
Chocolate Covered Strawberries	0.9199	0.6412	1.3197
Shredded Beef	0.8584	0.5806	1.2691

Table D: Cohort Study for outbreak 2.

Environmental Investigation

- The caterer had not followed up on becoming licensed in County B.
- The caterer's employment was terminated with the restaurant reportedly used for her catering business:
 - The owner alleged that she did not have permission to use the restaurant for her catering business. Nor did she use it as indicated in the video monitoring at the restaurant.
 - The owner alleged that she was ordering food beyond the normal weekly orders. The foods included chicken, beans, and blueberries.

Laboratory Investigation

- Four clinical specimens were positive for *Clostridium perfringens* at the ISDH Laboratory:
 - Sent to the CDC for further characterization. The clinical samples tested positive for *Clostridium perfringens* enterotoxin.

Laboratory Investigation Cont.

- Food samples were collected by County A and ISDH FPP at the commercial venue:
 - ISDH sent the food samples to Michigan's Bureau of Laboratories for analysis. The shredded chicken tested positive for *Clostridium perfringens* enterotoxin.

CDC Guide for Confirming Etiology for *Clostridium Perfringens*

- Isolation of 10⁶ organisms/g from stool of two or more ill persons, provided specimen is properly handled.
OR
- Demonstration of enterotoxin in the stool of two or more ill persons.
OR
- Isolation of 10⁵ organisms/g from epidemiologically implicated food, provided specimen is properly handled.

Conclusion

- Strengths:
 - Found *Clostridium perfringens* enterotoxin in the food and clinical samples that confirmed the etiology.
 - Good collaboration between partners.
 - Illustrated the public health risk for stolen food as "alleged" by ex-employer.
 - Identified suspect food, contributing factors, and environmental antecedents.
- Challenges:
 - Relied on interviews of the caterer during the first outbreak and unable to conduct an environmental assessment or interview of the caterer during the second outbreak.
 - Unclear if the information gathered during the initial interview was accurate after speaking to the ex-employer.
 - Unable to confirm the etiology during the first outbreak, but an enterotoxin was suspected.
 - Complex CDC requirements for confirming the etiology.
 - Challenges in laboratory testing for the clinical and food samples.
 - Lack of catering permits or tracking capabilities of these types of food operations.
 - Communication barriers between partners.
- Follow-up Actions:
 - Cease and desist letters sent to known address(es) of the caterer.
 - Notified the county in which the caterer was thought to reside in case the business began to operate again in that county.
 - Clarified catering permits with local jurisdictions and discussed difficulties in regulating "under the radar" food operations.

Poster completed by Laurie Kidwell, RRT Supervisor
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