





Eastern AHEC requires all speakers to disclose any relevant financial conflicts of interest.

Erica Berl, Vanessa Greene and Nicole Lee have no conflicts of interest

Building Planes...



<https://www.youtube.com/watch?v=JVSiooNywfg>





THE VOMIT COMET

What NOT to do at a holiday potluck

http://newsimg.bbc.co.uk/media/images/45857000/jpg/_45857771_zero_esa_226.jpg

Just Imagine...



- You work third shift at a USPS distribution center
- You and your 31 colleagues have decided to have a Veteran's Day potluck
- Everyone is bringing their favorite dishes to share



The Menu

- BBQ pork
- Fried chicken
- Corn pudding
- Macaroni and cheese
- Collard greens
- Potato salad
- Rolls
- Lots of cake



Potluck Interrupted

- Tuesday 9:30 p.m. Food put out
- Wednesday 12:30 a.m. BBQ pork arrives
- Wednesday 1:30 a.m. Potluck scheduled to start but postponed



Potluck Interrupted

- Wednesday 4:30 a.m. Food put back in refrigerator
- Wednesday 11:30 p.m. Food taken back out
- Thursday 12:30 a.m. Potluck started



And So It Begins.....

- Thursday 1 a.m. First reported illness
 - The chaos starts as some ill attendees don't quite make it to the bathroom
- Multiple people so violently ill that they are texting from the bathroom



...And Continues

- Thursday 5:30 a.m. Paramedics call local health department to report multiple calls for GI illnesses
- News media picks up the story
- First reports are that ~200 people ate at potluck
 - 32 actual attendees
- Five people taken to ED via ambulance



...And Continues

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- First reports are that ~200 people ate at potluck
 - 32 actual attendees
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Clinical Picture

- 26/27 (96 %) w/diarrhea
- 19/27 (70%) w/vomiting
- No hospitalizations
 - 7/27 (26%) sought medical care
- All onsets are fairly rapid
 - From 30 minutes to 6 ½ hours after meal



Laboratory

- MCHD obtains leftover food samples and submits to a private lab
- One ill person tested for enterics but negative for staph aureus



Investigation Results

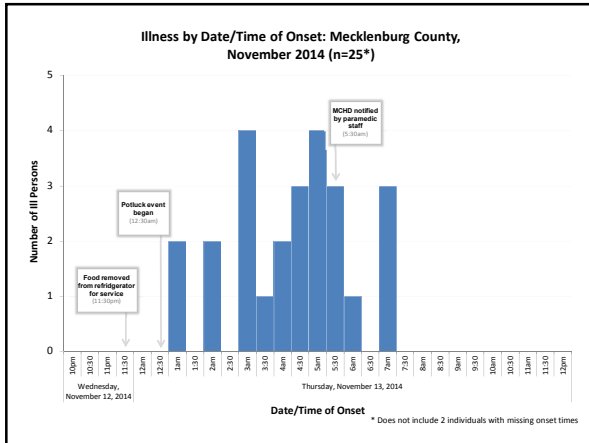
- Food testing was complicated
 - Batched - Mac & Cheese, Fried Chicken, Bbq no Sauce, Potato Salad
 - Bbq w/ Sauce
- Both samples are positive for Staphylococcus aureus
- MCHD interviewed all attendees
 - No food item clearly implicated



The Culprit

- Commonly found on the skin and in the noses of up to 25% of healthy people and animals.
- Food poisoning occurs when bacterium multiplies and produces a toxin.
- Salt tolerant, most often associated with significant handling of ready to eat foods.
- Toxin not destroyed by cooking.
- Symptoms typically diarrhea, nausea and vomiting
 - Onset: 30 minutes – 6 hours
 - Duration: 1 day

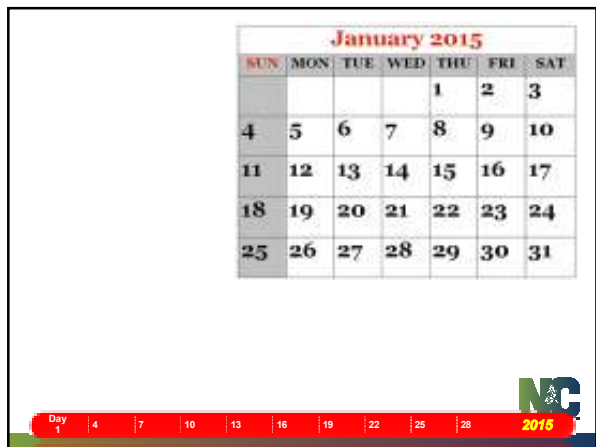


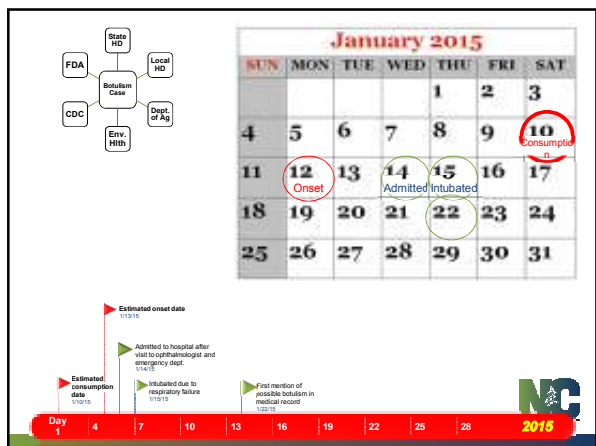


THE LEAR JET
A road paved with good intentions...

<http://www.centralstbader.com/images/learjet60.jpg>







As of 10/8/15

- Moved her butcher shop location to a new location in a prime real estate area in her county.
- She's doing VERY well. Still running her business and living on her own.





THE OSPREY
More than meets the eye

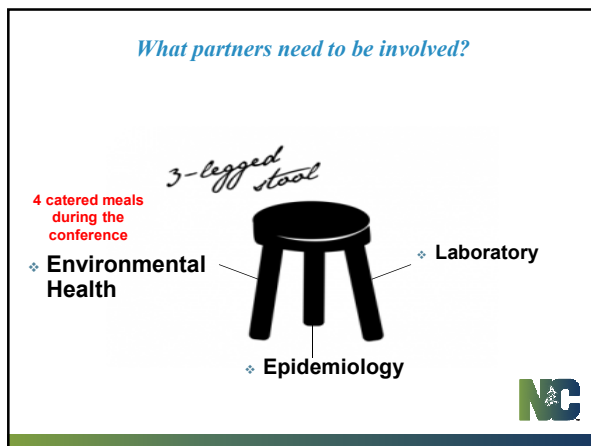
<http://oregonstate.edu/dept/afrc/articles/osprey.php>



MORE ON THIS

- ☐ Cause of illness at student conference undetermined
- ☐ Five hospitalized after illness outbreak at student leadership conference
- Raw: Students fall ill at Sheraton

Initial Stats	
150	Ill attendees
25	Received onsite IV hydration
Multiple	EMS trucks onsite
5	Transferred to hospital



What partners need to be involved?

3-legged stool

4 catered meals during the conference

❖ Environmental Health

❖ Laboratory

❖ Epidemiology

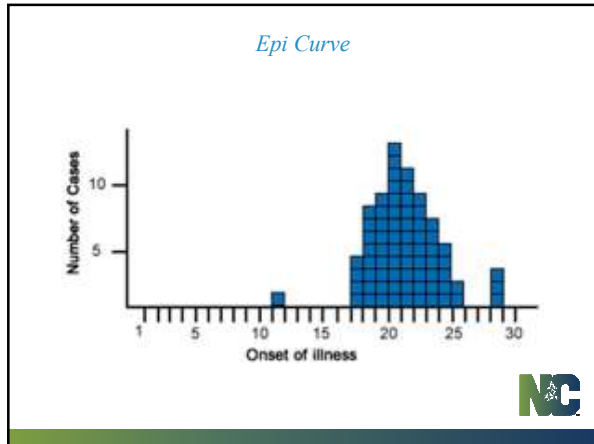
NC

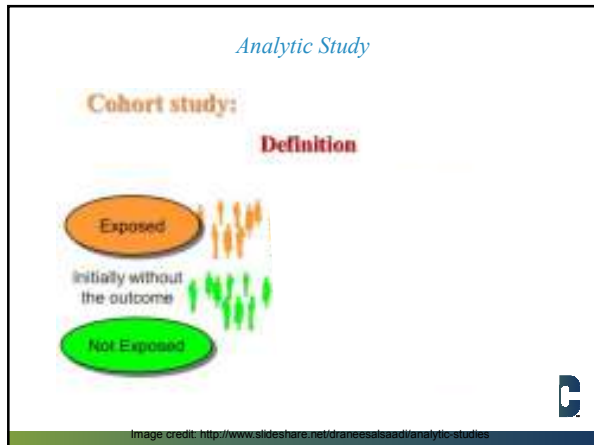
Demographics

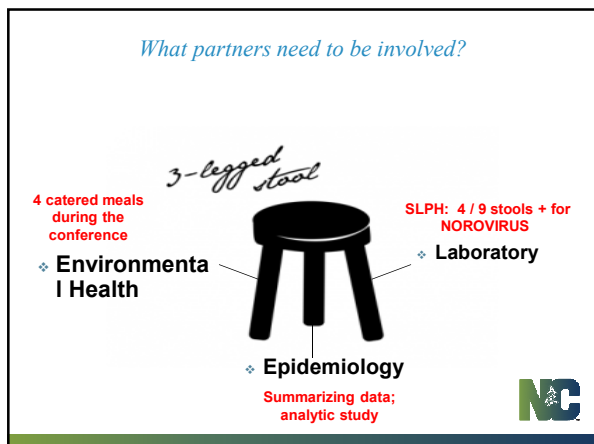
A blue line graph is overlaid on silhouettes of a child, a woman, a man, a woman, and a person in a wheelchair, representing demographic diversity.

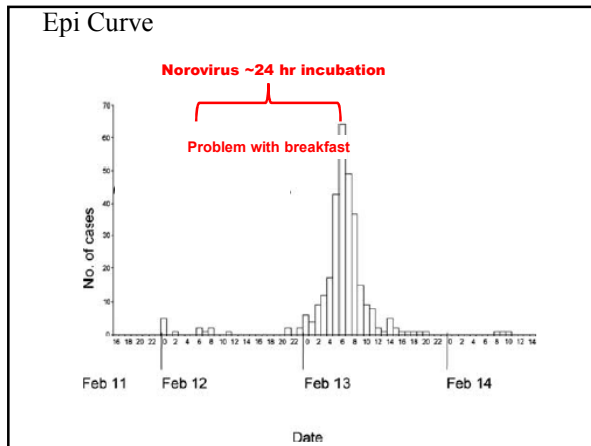
Symptomology

Three stylized human figures in red, yellow, and blue, representing different symptom profiles.



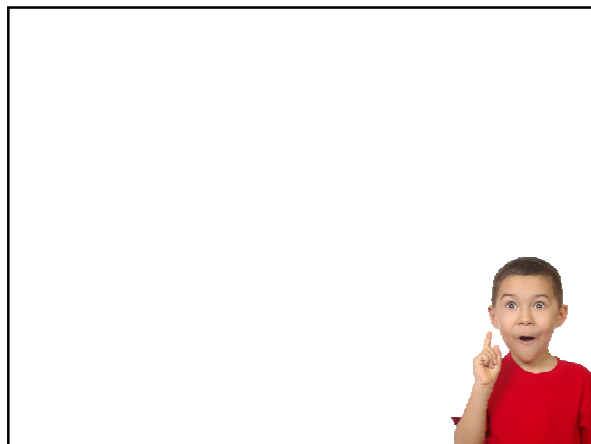


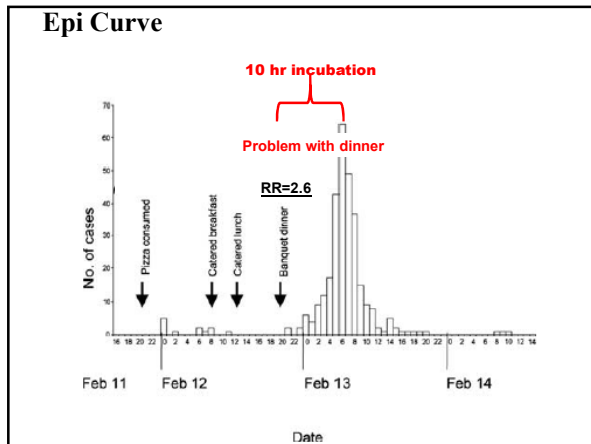




Results from analytic study

	EXPOSED				NOT EXPOSED				Rel risk	CI
	Ill	Not ill	Total	Attack Rate	Ill	Not ill	Total	Attack Rate		
Mtg rm water				61%				65%	.94	
Thr pizza				63%				63%	1	
Fri bkfst				64%				60%	1.1	
Fri lunch										
Fri dinner										





What partners need to be involved?

Found no violations during Hungry Howie's and Sheraton inspection. Centerplate was noted to have cooked chicken to 160F instead of 165F.

ed stool

❖ Environmental Health

❖ Epidemiology

❖ Laboratory

SLPH: 4 / 9 stools + for NOROVIRUS

CDC: 8 / 9 stools + for Clostridium perfringens enterotoxin; 5 / 6 stools detected the gene for the toxin

Something happened during the Friday night banquet dinner

Symptomology

Symptom Groups		
	#	%
Vomiting (no D)	10	3
Diarrhea (no V)	262	85
V & D	38	12
Total	310	

Only 15% with vomiting!

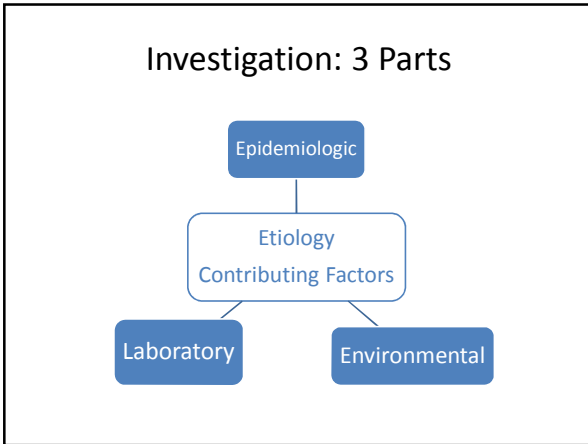
We'd expect more than 50% to have vomited at the time if norovirus was the cause.



Initial Report

- Thanksgiving Day luncheon for employees





Epi Investigation

- Menu
- List of attendees
- Contact information available
 - Email addresses



Cohort Study

Lab investigation

- Clinical samples
 - 5 stool samples submitted
- Food samples
 - 20 different food samples

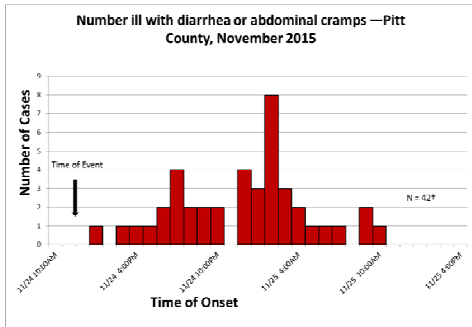


Environmental Investigation

- Collect food samples
- Review food production process
- Inspect facility



Epi Findings



Epi Findings – Cohort Study

Food Item	Cases		Non-cases		Risk Ratio	95% CI	
	N=44	%	N=14	%		Lower	Upper
Turkey	36	81	6	42	1.71	1.03	2.84
Stuffing	27	61	5	36	1.29	0.94	1.77
Turkey or Stuffing	38	86	6	42	2.02	1.09	3.73
Hawaiian Ham	7	16	8	57	0.54	0.31	0.94
Macaroni and cheese	31	70	9	64	1.07	0.77	1.50
Cajun mashed potatoes	11	25	2	14	1.15	0.86	1.54
Roasted red potatoes	12	27	3	21	1.08	0.79	1.46
Yams	18	41	5	36	1.05	0.79	1.41
String beans	14	32	7	50	0.82	0.59	1.16
Broccoli casserole	21	48	6	42	1.05	0.78	1.40
Collards	8	18	1	7	1.21	0.91	1.61
Lima beans	3	7	1	7	0.99	0.55	1.77
Deviled eggs	23	52	3	21	1.35	1.01	1.80

Lab Findings

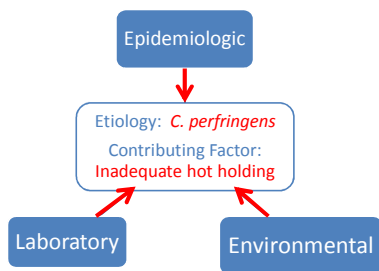
Food Samples	Enumeration (CFU's/gram)	PCR Genes*		
		cpa	cpe	cpb
Turkey	1 x 10 ⁵	+	+	-
Turkey	1 x 10 ⁵	+	+	-
Turkey	2 x 10 ⁵	+	+	-
Turkey	+ ⁰	+	+	-
Hawaiian Ham	-	-	-	-
Stuffing	-	-	-	-

- 5 stool samples:
- Culture positive for *C. perfringens*
 - Positive cpa and cpe gene

Environmental Findings

- Caterer unlicensed
- Prepared food in a residential kitchen
- Improper hot holding

Conclusion

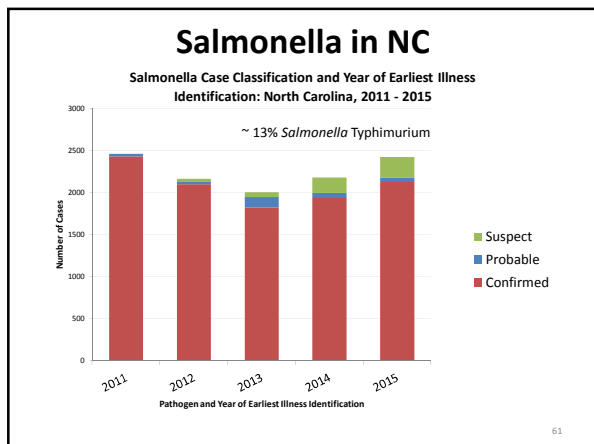


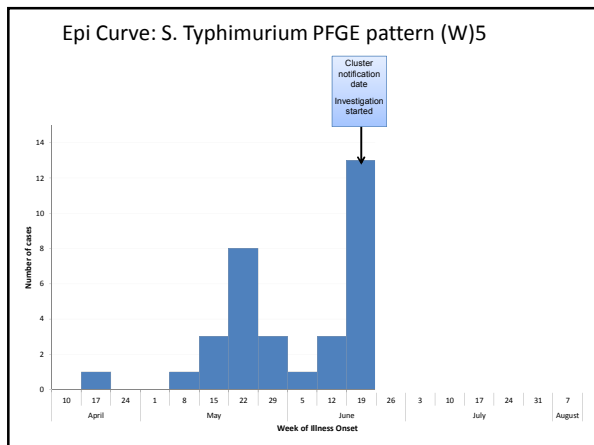


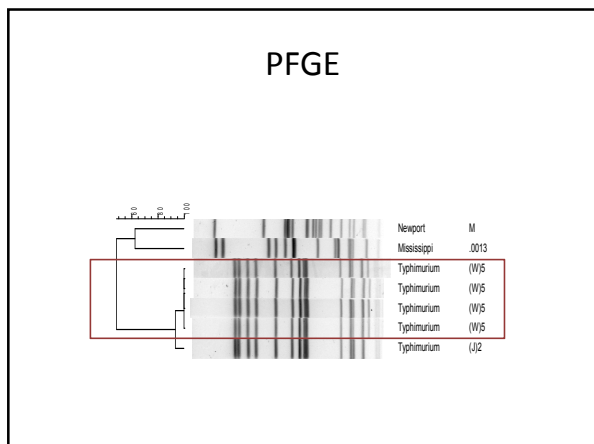
STEALTH BOMBER

Almost undetected

<https://www.youtube.com/watch?v=OR-u0386A-c>







Epi Investigation

- Cheese-focused questionnaire administered to cases by phone
- 46/61(75%) cases successfully interviewed
 - 36 (78%) reported eating at a restaurant that served the creamery cheeses or shopped at a store, market of farm that sold these cheeses.
 - 26 (57%) reported possibly or definitely consuming the creamery cheese
 - 11/26 (42%) reported sampling the cheese at a store or market
 - 13/26 (50%) reported eating a cheese plate

Cheese Consumption Heat Map

Aged, raw milk		Pasteurized									
Hickory Grove	Calvander	Carolina Moon	New Moon	Dairyland	Mozzarella	Thunder Mountain Sales	Pheta	Quark	Burrata	Paneer	
Definitely	Definitely	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly
Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly	Possibly
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*Three additional persons reported consuming CHC cheese but a specific type could not be determined

Epi Summary

- Case definition:
- A North Carolina resident, or a person who visited North Carolina, with a positive culture for *Salmonella* Typhimurium with PFGE pattern (W)5 (PulseNet pattern JPXX01.0324) collected during April 24 to August 14, 2016.
- 101 cases in NC
 - 60 (59%) female
 - Median age: 28.5
 - 16 (18%) hospitalizations
 - No deaths
 - 8 out-of-state cases identified

Lab Results- environmental

Sample Type	Date Collected	Result
Raw Milk (Unofficial)	6/28/2016	Salmonella positive
Raw Milk (Official)	7/8/2016	Salmonella positive
New Moon Cheese	7/8/2016	Salmonella not isolated
Smoked Farmers	7/8/2016	Salmonella not isolated
Raw Milk (Official)	7/25/2016	Salmonella not isolated
Operations (well) water	7/26/2016	Salmonella not isolated
Chill (sweet) water	7/26/2016	Salmonella not isolated
Environmental Samples (50)	7/27/2016	Salmonella not isolated
Calvander: Code 160413/310413	7/27/2016	Salmonella not isolated
Calvander: Code 151221/311221	7/27/2016	Salmonella not isolated
Calvander: Code 151221/301221	7/27/2016	Salmonella not isolated
Hickory Grove: Code 160527/310527	7/27/2016	Salmonella positive
Carolina Moon: Code 160614/310614	7/27/2016	Salmonella not isolated
Mozzarella: Code 310727	7/27/2016	Salmonella not isolated
Calvander (retail sample)	7/28/2016	Salmonella not isolated

Environmental Investigation - NCDA

- On farm investigation:
 - Opportunity for cross-contamination
 - Ill employees
 - Reported ill cows/calves in the spring
 - Rodent infestation
- Recall management
 - 108 establishments
- Restoration and Recovery

Conclusion

- Etiology : *Salmonella* Typhimurium
- Vehicle: Cheeses
 - Hickory Grove and possibly others
- Contributing factors
 - Cross-contamination
 - Aging inadequate??
 - Ill employees??
 - Rodent Infestation??
 - Ill cows??
- Root cause – inadequate space?



787 DREAMLINER
Built to Fail

http://www.thairways.com/en_GB/news/news_announcement/news_detail/THAIs_First_787_Dreamliner_Arrives_Home.page



Wednesday, June 17, 2015



Thursday, June 18, 2015




Monday, June 22, 2015




Local Actions

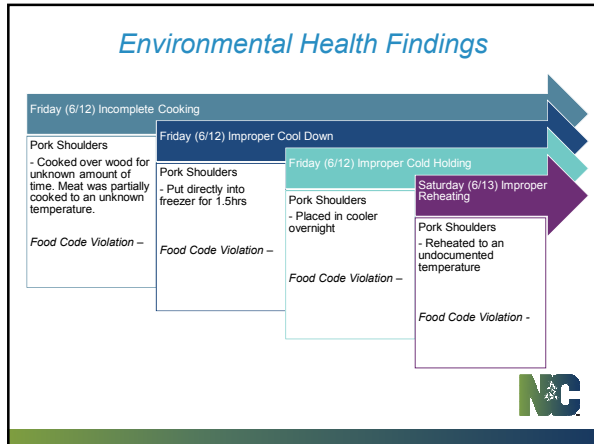
- Memo released to providers
- Press release
- Questionnaire developed and administered to those calling to report illness associated w/eating at restaurant Q
 - ~ 340 completed in about a week
- 24 hour call line set up
 - Handled calls for ill, information, reports
- Environmental Health visit

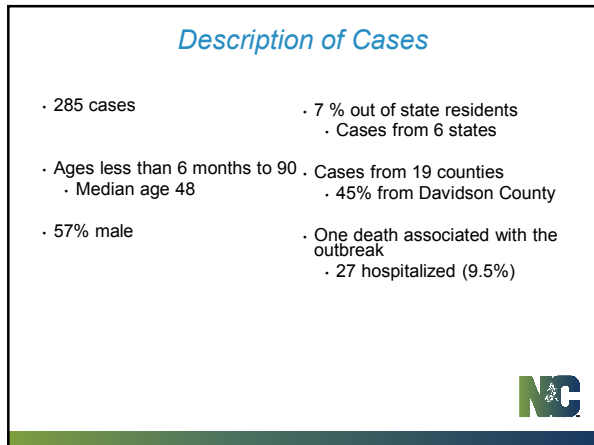


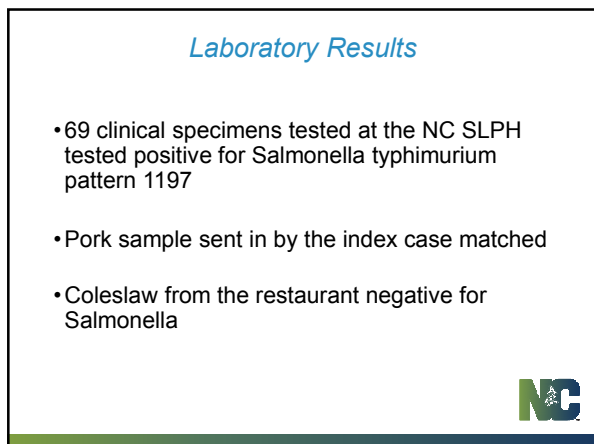
State Actions

- NC Health Alert Network memo sent to all local health departments
- Epi-X sent
 - Out of state ill
- Daily conference calls between local and state agencies
 - LHD's , NC SLPH, NC Dept. of Ag, NC EH, DHHS PIO
- NC DHHS Public Affairs set up a website with daily investigation updates, i.e. illness numbers, etc.









The CD Branch would like to acknowledgement the following health departments.

- **Appalachian Health District**
- **Davidson**
- **Mecklenburg**
- **Orange**
- **Pitt**
- **Wake**



Questions?