



Outbreak of Salmonellosis at a Hotel

Communicable Disease Conference

Nicole Lee

May 20, 2014

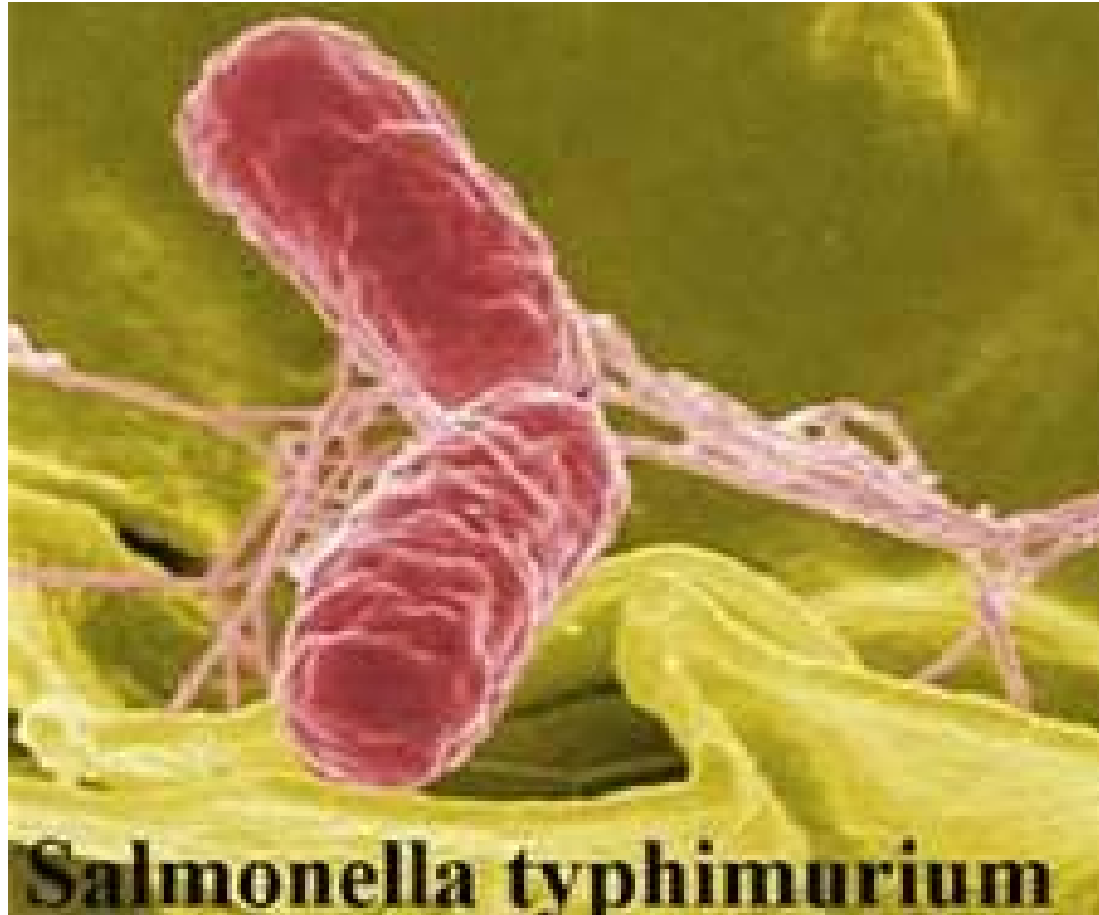


Presentation Content

- Salmonella Background
- 1st Five Days of Response
- Analytic Study and Results
- Next Steps



SALMONELLA BACKGROUND



Salmonella typhimurium

What is Salmonella and why do we care?

- Bacterium discovered by an American scientist named **Salmon**.
- Causes diarrhea, abdominal cramps & fever
 - 12 hrs – 3 days hours after infection
 - Lasts 4 – 7 days,
 - Most recover w/o treatment
 - Elderly, young, immunocompromised more likely to have severe illness
- More common in summer instead of winter



SOURCES AND TRANSMISSION

Products of Animal Origin











Pets



Cross-contamination







Person to person







1ST FIVE DAYS OF RESPONSE

Day I



MONDAY, MAY 13, 2013

10:00am - Call from CD Nurse

- Fifteen ill with N/V/D (some bloody)
 - 10 / 15 hotel staff
 - 3 / 10 food handlers
- 1 hospitalized
- Two of three samples (+ Salmonella)
- May 8th was the first onset

4pm - Conf call

- LHD: Comm Dz, Env Hlth
- State: Comm Dz, Env Hlth, Lab, Public Affairs

Day 1 Summary of Actions/Decisions

- **Confirm** the story
- Implement **control measures** with hotel/rest.
- **Interview** ill
- Coordinate hotel **inspection** with Env Hlth
- Coordinate stool specimen collection, shipment, and **testing** with state lab
- Develop **communication** tools
- Send statewide & national **alerts** to identify additional cases
- Request **receipts** from hotel (case-control study)
- Develop **survey** from hotel menu
- **Send** state staff to Cumberland to assist with summarizing data and data entry

Day 2



TUESDAY, MAY 14, 2013

On the road

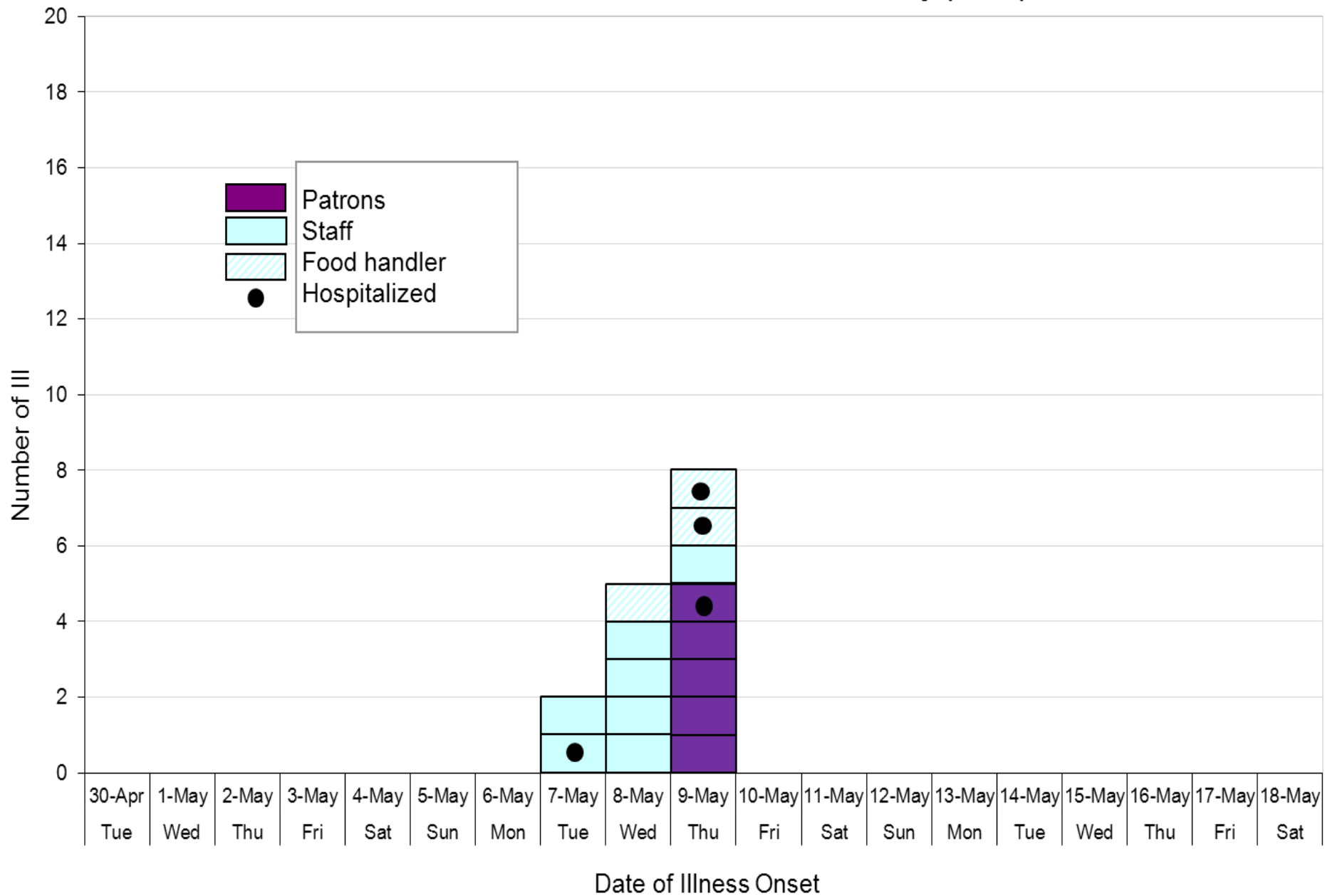


Day 2 (Tues, May 14)

- Getting our line list up to date
- Entering case information into our statewide surveillance system (NCEDSS)
- Creating an epi curve
- Assessing the needs of local health department staff
- Prepare for 4pm conference call with state staff

Number of Ill Patrons and Staff by Date of Illness Onset

Salmonellosis Outbreak: Cumberland County (n=15)



Day 2



**WEDNESDAY, MAY 15,
2013**

Back on the road



Day 3 (Wed, May 15)

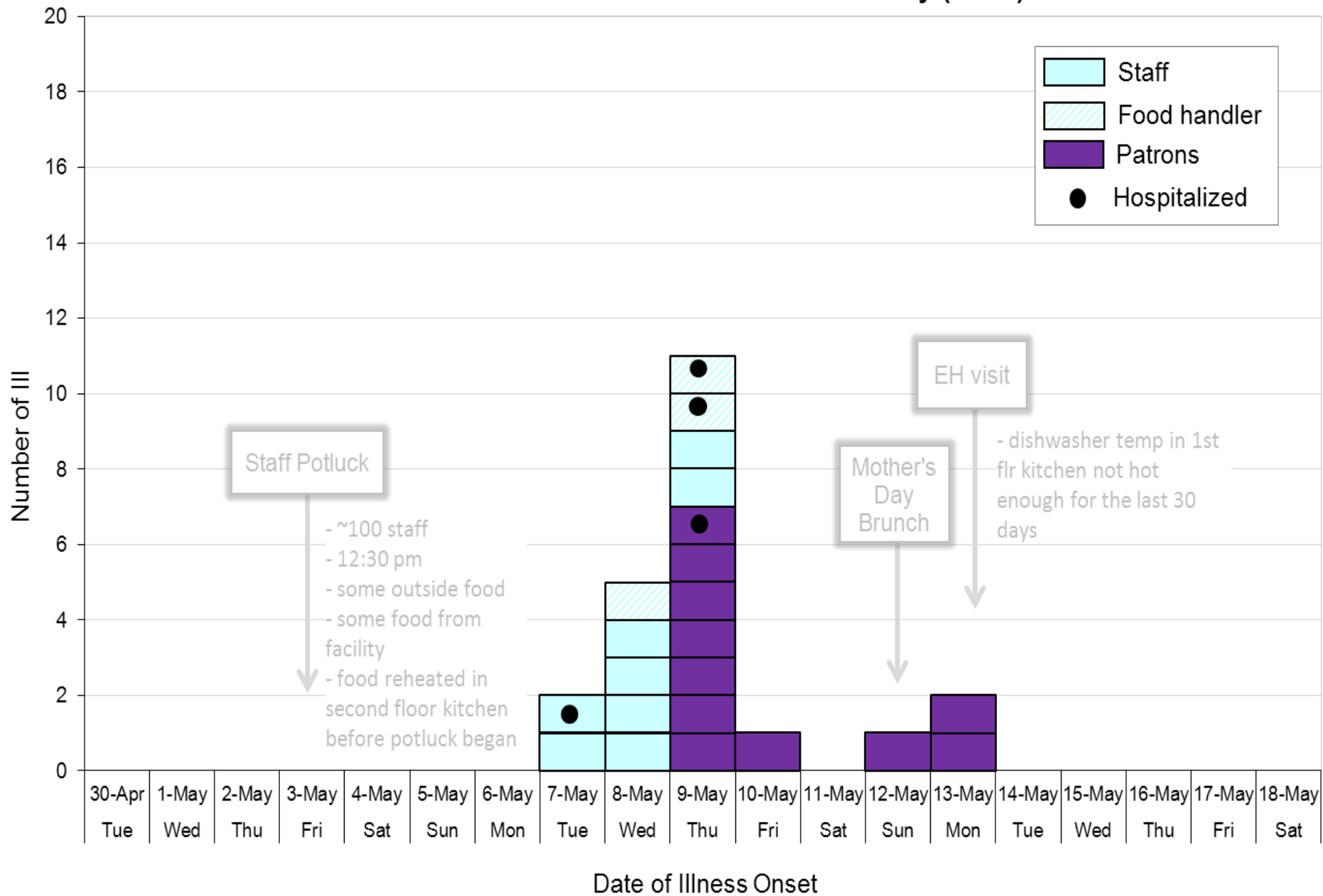
- Repeat Day 2 activities plus...
 - Accompany local environmental health staff to hotel for follow up
 - Complete open ended interview with 3-4 cases
 - Send menu to state staff
- Prepare for 4pm conference call with state staff

Day 3 (Wed, May 15)

- **STATE STAFF:** begin developing paper-based questionnaire regarding food and activity exposures

Number of Ill Patrons and Staff by Date of Illness Onset

Salmonellosis Outbreak: Cumberland County (n=22)



Day 4



**THURSDAY, MAY 16,
2013**

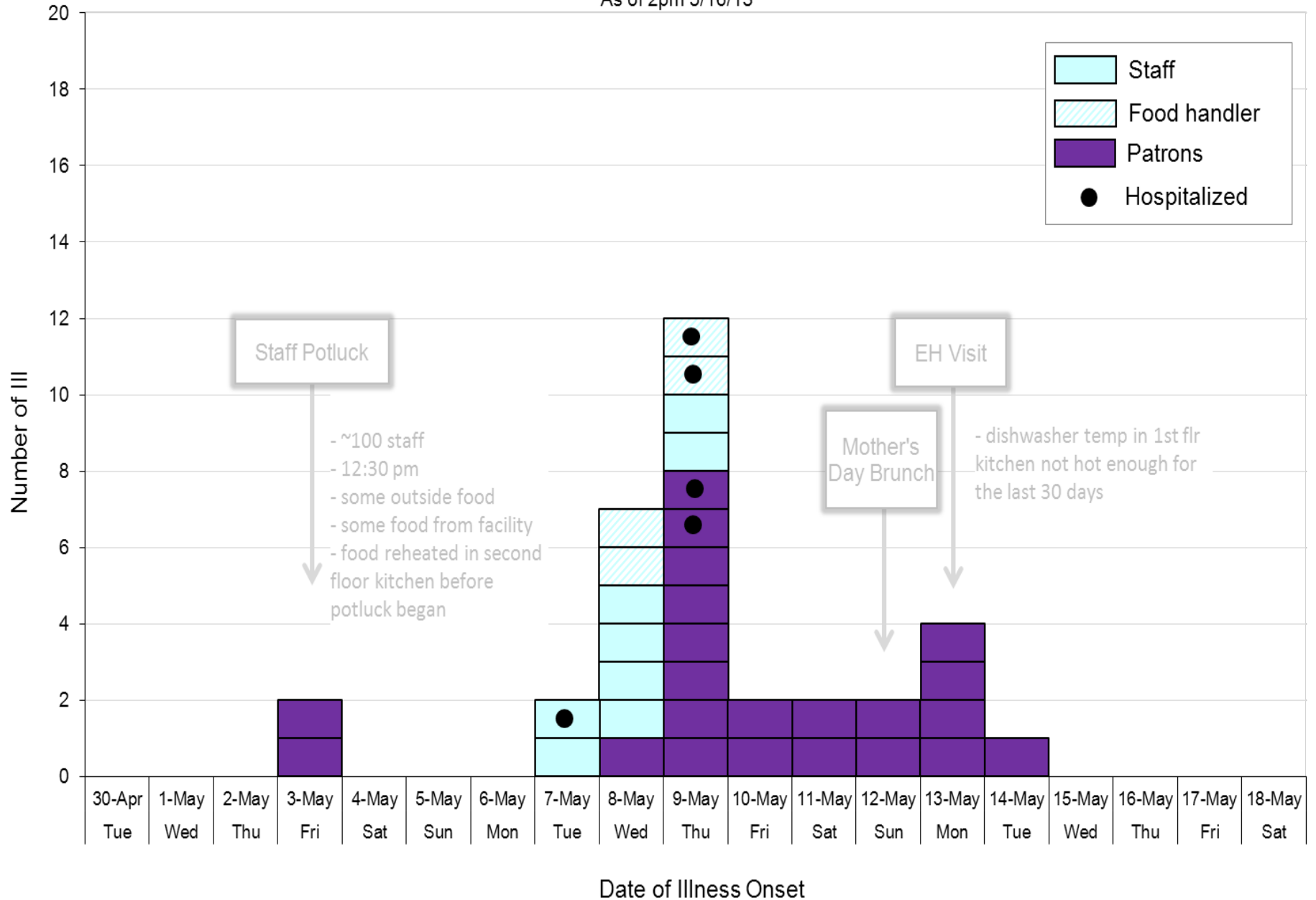
Day 4 (Thur, May 16)

- Organizing and confirming Day 2 & 3 information
- Deciding next steps
- Finalizing questionnaire
- Gather a team for survey administration on Friday
- Coordinating a space for survey administration at the hotel
- Conference call with locals at 3pm

Number of Ill Patrons and Staff by Date of Illness Onset

Salmonellosis Outbreak: Cumberland County (n=34)

As of 2pm 5/16/13



Day 5



FRIDAY, MAY 17, 2013

Back on the road with a lot of other people





- **Comm Dz Branch**

- Mary Beth Cox (HIV/STD)
- Kathy Dail
- Lana Deyneka
- Braiden Eilers (HIV/STD)
- Jeanette Greene
- Mara Larson (HIV/STD)
- Nicole Lee
- Vivian Mears (TATP Nurse)
- Vicki Mobley
- Sandy Pace
- Susan Sullivan
- Jenna Waggoner

- **CSTE Fellows**

- Kathleen Creppage
- Grace Oguntebi

- **OEE**

- Nirmalla Barros
- Gregory Dang
- Annie Hirsch
- Adam Mannarino

- **Field Services Unit**

- Connie D Jones
- Kristen Patterson

Day 5 (Fri, May 17)

- Interview hotel staff
 - Misc: remove media from interview area
 - Misc: remove hotel insurance guy from interview area
- Goal: complete interviews for 70% of staff
- Final Count: 136 interviews completed
 - 5 additional interviews completed later



ANALYTIC STUDY AND RESULTS

Cohort Study

141 completed staff interviews

22 III

119 Well

Cohort Study

Ill (22)

Age:
20-58 (34.5 median)

Gender:
Male 11 (50%)

Employee Type

Well (119)

Age:
19-80 (37 median)

Gender:
Male 51 (43%)

Employee Type

Laboratory
Environmental Health
Epidemiology



RESULTS

Laboratory Results

- **54** specimens tested
 - 2 (4%) unsatisfactory
 - 27 (50%) negative
 - 25 (46%) positive
 - 25 (100%) *Salmonella typhimurium*
 - 25 (100%) had the same matching PFGE pattern



Environmental Health Results

- Environmental Assessments
 - Risk Factors
 - Employee Health
 - Personal Hygiene
 - Approved Source
 - Contamination
 - Holding
 - Cooking
- Interviews
- Trainings

Number of Ill Patrons and Staff by Date of Illness Onset

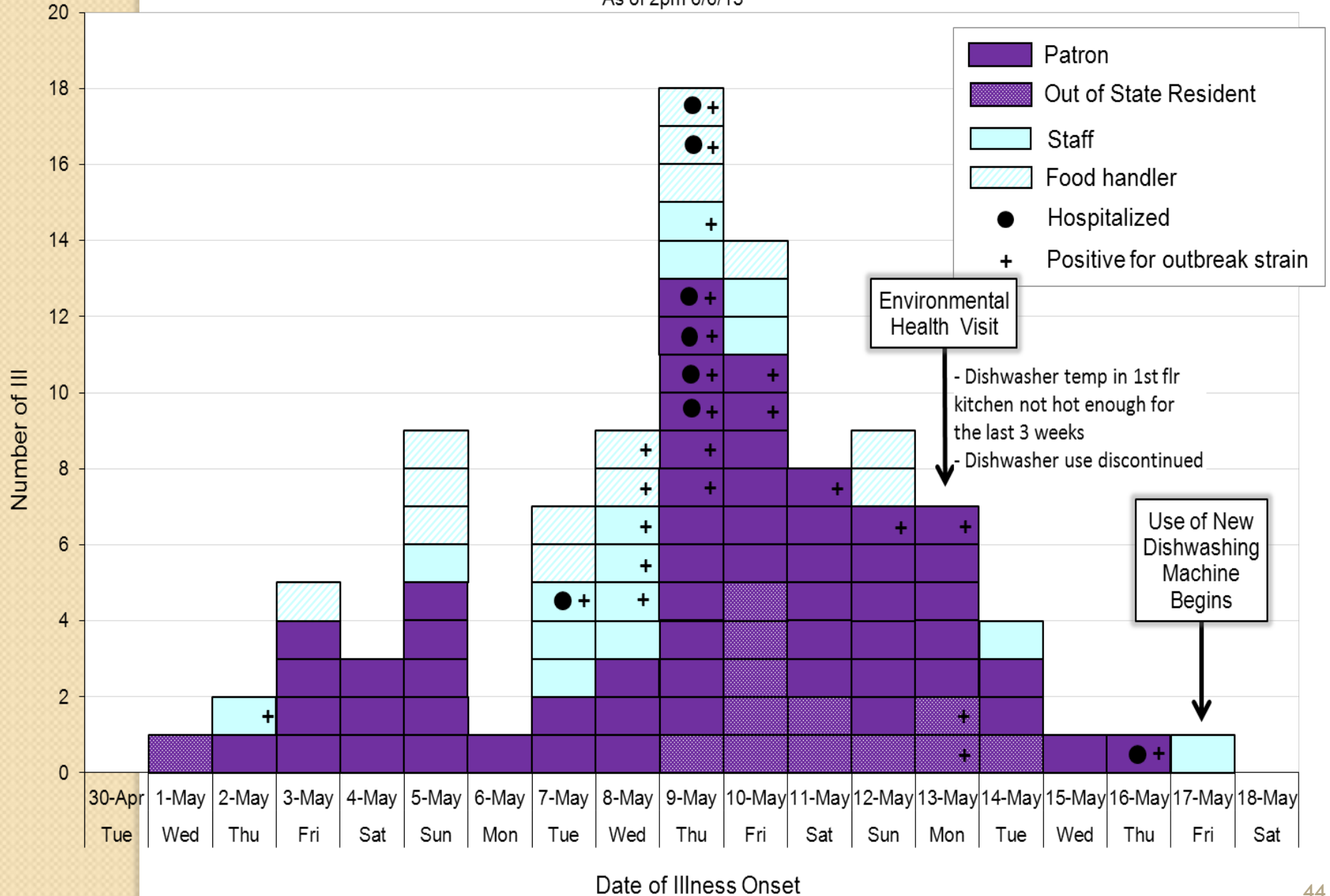
Salmonellosis Outbreak: Cumberland County (n=100)



Number of Ill Patrons and Staff by Date of Illness Onset

Salmonellosis Outbreak: Cumberland County (n=100)

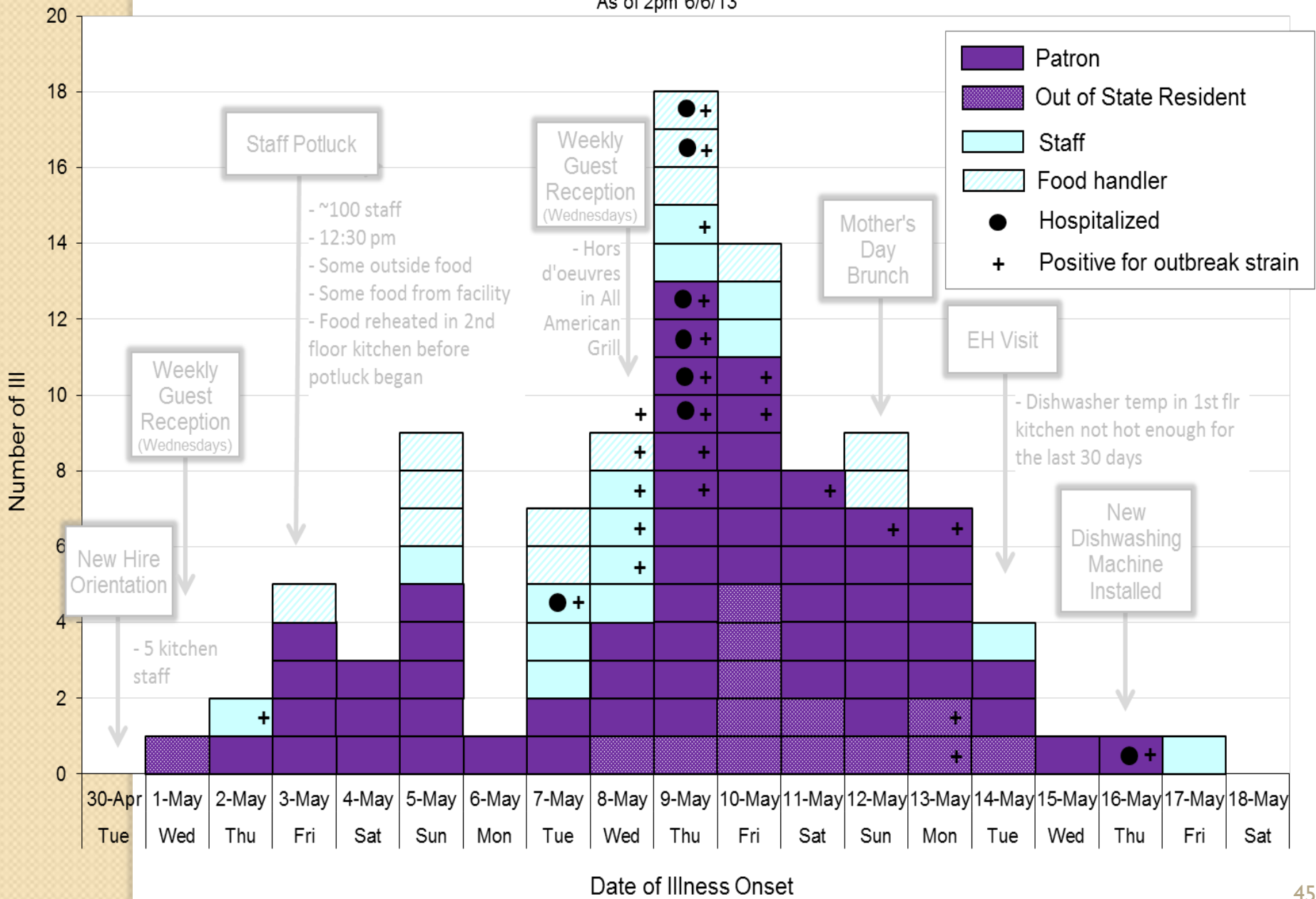
As of 2pm 6/6/13



Number of Ill Patrons and Staff by Date of Illness Onset

Salmonellosis Outbreak: Cumberland County (n=101)

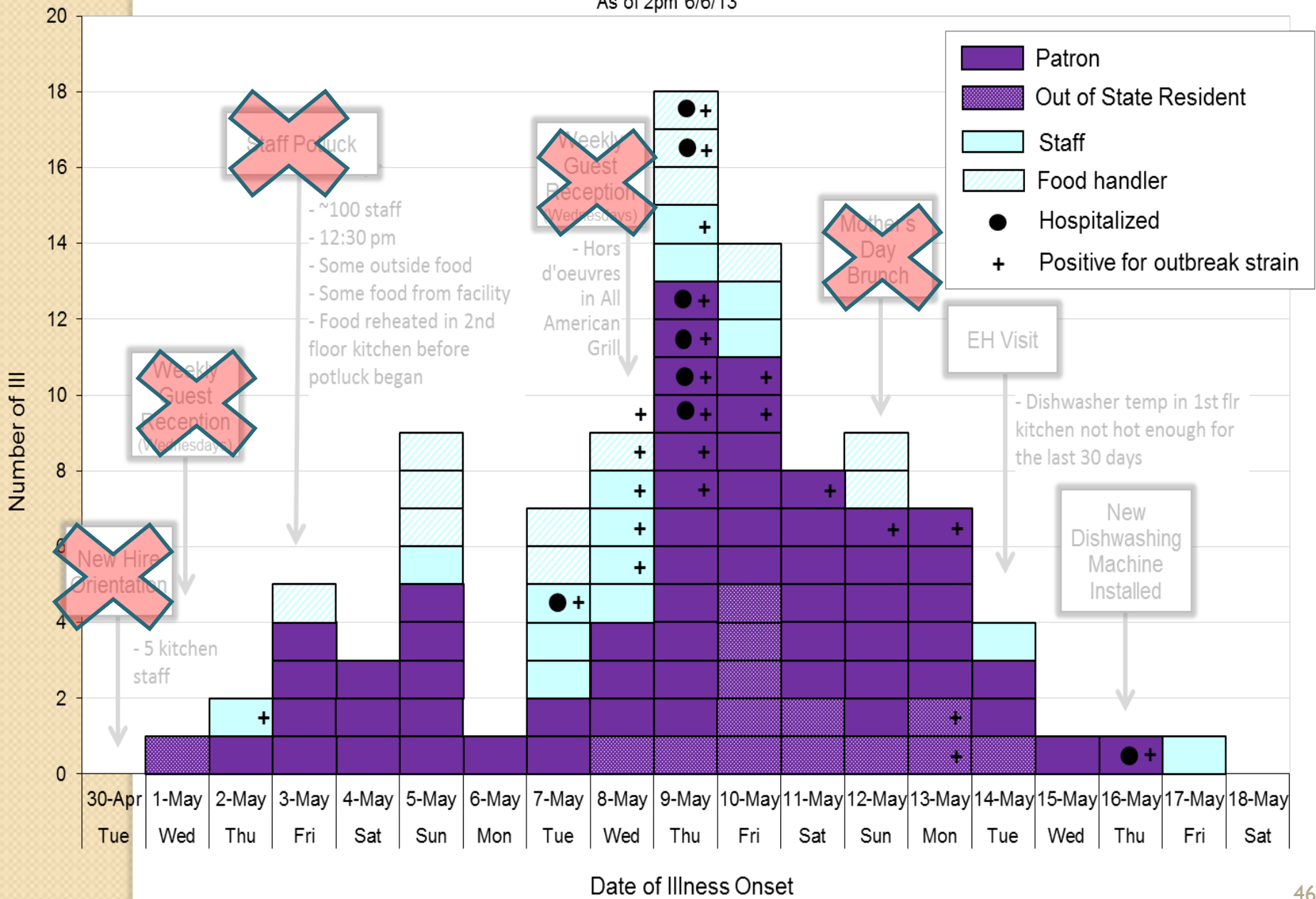
As of 2pm 6/6/13



Number of Ill Patrons and Staff by Date of Illness Onset

Salmonellosis Outbreak: Cumberland County (n=101)

As of 2pm 6/6/13



Results

Exposure	Relative Risk	Minimum Value	Maximum Value	P-value
FOOD				
Employee Potluck	0.62	0.2	1.7	0.46
Café Breakfast Buffet	0.89	0.4	2.0	0.78
Café Lunch Buffet	1.09	0.5	2.4	0.82
<i>All American Grill</i>	<i>3.6</i>	<i>1.7</i>	<i>7.7</i>	<i>0.001</i>
WORK TASK				
<i>All American Grill Supervisor</i>	<i>4.3</i>	<i>1.9</i>	<i>9.8</i>	<i>0.027</i>



What food item caused the outbreak?

Conclusion

- Something was happening in the All American Grill
 - Numbers were too small to implicate a specific food item
- Based on the epi curve, cross-contamination was the likely culprit
- No increase in cases after visit by Environmental Health
 - Better food handling practices implemented at that time

Acknowledgements

- **Cumberland County**
 - Amy Levy
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 - Communicable Disease Branch
 - HIV/Syphillis Field Services Staff
 - Office of Environmental Epidemiology



THANK YOU!