

Outbreak 2011-2150 Summary Report

Date August 15, 2011
Location Crowne Plaza Hotel, Portland
OHD leads Mathieu Tourdjman, June Bancroft, Tasha Poissant, Bill Keene
LHD leads Amy Sullivan, Christie SWEITZ

Background

On July 17, 2011, Multnomah County Health Department received a report from a local Emergency Department (ED) about a cluster of 3 cases of acute vomiting and diarrhea among attendees of the National Association of Counties (NaCo) conference, held in Portland from July 15-19, 2011. That conference gathered approximately 2,400 commissioners from all over the US. Initial interviews of the 3 affected patients revealed that they were all staying at the Crowne Plaza hotel in Portland. Two had onsets on 7/17, and one had onset on 7/13 and symptoms suggestive of a different medical history.

Methods

Patients were interviewed for possible common exposure.

Active case finding included 1) contacts with ED of the main hospitals in the Portland area, 2) contacts with NaCo attendees through the list of conference attendees provided by the conference organizers, and 3) contacts with other hotels where NaCo attendees were listed.

Initial interviews of the affected patients identified that all of them ordered eggs Benedict for breakfast at the Crowne Plaza on 7/17. The investigation then focused on food that was served for breakfast at the hotel that morning. A case was defined as onset of acute vomiting or diarrhea within 4 hours of eating breakfast at the Crowne Plaza hotel on 7/17.

We conducted a retrospective cohort study on a sample of hotel residents (NaCo attendees and non-NaCo attendees) who ate breakfast at the Crowne Plaza on 7/17 and charged the meal to their room accounts. Hotel residents were interviewed using a standardized questionnaire covering the breakfast menu items. For comparison purposes, we also attempted to interview the 13 persons who ate eggs Benedict on 7/16.

On 7/18, the hotel kitchen was inspected by Multnomah County Environmental Health team and ACDP epidemiologists. Food items, including ingredients that were used to prepare the hollandaise sauce that was served with the eggs Benedict, were collected for testing. None of the hollandaise sauce prepared on 7/17 was available.

On 7/20, all 11 hotel employees who either prepared food on the evening of 7/16 or on the morning of 7/17 were examined for skin lesions. Anterior nares swabs were obtained from all of them and minor hand lesions were swabbed from 3 of them. All swabs were cultured for *Staphylococcus aureus*.

Stool specimens were obtained from 2 hospitalized cases, and were tested for enteric pathogens, *S. aureus*, and norovirus.

All specimens were initially tested at the Oregon State Public Health Laboratory (OSPHL). *S. aureus* isolates identified at the OSPHL were shipped to the Center for Disease Control and Prevention (CDC) for enterotoxin testing. Pulsed field gel electrophoresis (PFGE) characterization of *S. aureus* isolates was done at the OSPHL.

Results

According to the hotel records, 239 breakfasts were served at the Crowne Plaza hotel on the morning of 7/17. Twelve persons had ordered eggs Benedict that morning. We were successful in contacting 8 of them. No identifiers were available for the other 4 persons.

Of the 8 persons who ate eggs Benedict on Sunday 7/17 for whom information was available, 7 (87.5%) became ill with vomiting or diarrhea on 7/17. The one who was not sick specifically requested to have the hollandaise sauce served separately, and did not eat it; thus, 7/7 who ate the hollandaise sauce were sick. Five cases were male and 2 were female. Six were NaCo attendees, 1 was an airline flight attendant whose only meal in

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Portland was the breakfast at the Crowne Plaza hotel on 7/17. Age range was 10-82 years. The symptom profile was as follows: vomiting 6/7 (87.5%), diarrhea 6/7 (87.5%; no bloody diarrhea), abdominal cramps 4/7 (57%), chills 4/7 (57%), fatigue 4/7 (57%), and subjective fever 3/7 (43%). Three of 7 were hospitalized for dehydration symptoms and fully recovered, 4 did not seek medical care. Incubation period ranged 1:45-3:45 hours (median 3:15).

From the list of hotel clients who ate breakfast at the Crowne Plaza on Sunday 7/17, we interviewed 18 persons who did not eat eggs Benedict. None of them reported any illness.

Eating hollandaise sauce or any eggs Benedict were both associated with being sick (OR_{ss} 126, 95% C.I. [10, 30630], and OR_{ss} 59.5, 95% C.I. [6.4, 4807] respectively).

None of the persons who ordered eggs Benedict on 7/16 reported any symptoms.

During the Multnomah County Environmental Health inspection, the kitchen was clean and organized, and all employees were cooperative. The hollandaise sauce was allegedly made on the morning of 7/17 at 5:45 AM and held in a stove. The temperature of the sauce was not monitored. It was reported that all leftover sauce was discarded at 11:00 AM.

The 2 stool specimens obtained from cases tested negative for typical enteric pathogens, including *Bacillus cereus* and norovirus, but respectively grew 1×10^5 and 2×10^5 CFU of *S. aureus*/gram of stool, which is consistent with a *S. aureus* foodborne illness.

No food samples tested positive for *S. aureus* (recall that there was no leftover sauce).

Five of the 11 kitchen employees were positive for *S. aureus* by nares culture. Four of 5 isolates were enterotoxigenic.

S. aureus isolates from 2 of 2 cases and 1 of 5 food handlers tested positive for enterotoxin A (SEA) and enterotoxin B (SEB) by Oxoid Reverse Passive Latex Agglutination Assay at CDC. By PCR, *sea*, *seb* and *seh* genes were detected on these 3 isolates only; this combination was unique to these 3 isolates. By PFGE, these 3 isolates were indistinguishable from each other; isolates recovered from all other persons tested (N = 4) appeared unique.

Conclusion

The investigation identified that toxigenic *S. aureus* was the cause source of the outbreak. Criteria for a *S. aureus* food poisoning were 1) short incubation period consistent with *S. aureus*, 2) stool testing from 2 cases consistent with a *S. aureus* food poisoning ($>10^5$ CFU/gram), and 3) identification of a toxigenic strain.

The epidemiologic investigation indicated that the hollandaise sauce served on the eggs Benedict was the vehicle for this outbreak.

The sauce was presumably inoculated by the food handler with the matching bacterial type. Presumably, subsequent improper food holding allowed *S. aureus* to multiply and to produce pathogenic levels of enterotoxin.

Noteworthy features include the high hospitalization rate of cases and the reportedly very short time for which the sauce was held before the first case was exposed.

Recommendations

High-risk foods should be held at temperatures low or high enough to prevent bacterial replication. Hot food should be held at or above 140°F. A calibrated probe food thermometer should be use to verify temperatures. Holding times should be minimized.

Double hand-washing after contacting body fluids including coughing, sneezing, or after using the restrooms should be observed by food handlers. Open cuts on hands should be covered with bandage and disposable gloves. People should avoid raw or lightly cooked egg dishes.

FBI Investigation July 17, 2011
Crown Plaza Hotel
1441 NE 2nd

EHS: Christie Sweitz, Mike Christman
State Epi: Dr. Mathieu Tourdjman, Tasha Poissant

Our investigation team met with Chef Scott Collins and Ziggy, General Manager of the hotel. We conducted an interview prior to the kitchen investigation. The investigation focused on the hollandaise Sauce/Eggs Benedict and Sliced Ham from the breakfast served on Sunday morning July 17, 2011. It was estimated that there were 239 breakfasts served that morning.

It was stated that there were no ill employees for the week prior to the illness. There were no employees available at the time of this investigation that worked on the breakfast to interview. One of the servers, Nicholas, has an injured cat at home that he is tending to. Chef Scott stated that he trains kitchen workers on proper hand washing but does not train the servers. He did not know if they washed their hands at the start of work. He will train all food service workers on proper hand washing from now on. They have a policy of no bare hand contact for ready to eat foods.

The night before (Saturday July 16) employees sliced the tomatoes, cheese, turkey, cut, cooked and cooled the potatoes, cooked and cooled the corned beef and portioned it. Corned beef comes in pre-brined and prepared 2 times a week – Saturdays is one of the days. The ham is commercially processed. Spinach, avocados and peppers are from Aloha Produce. All other foods are from FSA.

Sunday morning the Hollandaise sauce is made typically at 5:15 am. Chef Eldon made the sauce the morning of the 17th. It is made with liquid pasteurized egg yolks, lemon and butter. Chef Scott stated that the sauce is hot held but no temperatures are taken. At 11 all leftover sauce is discarded. There was no sauce available at the time of the investigation.

Maintenance maintains the restrooms and kitchen staff maintains the kitchen hand wash stations. All hand wash stations are fully stocked and have hot and cold water available. The dishwasher measured 159.9°F at the rack level. All refrigeration units are holding foods at or below 41°F. There were no foods hot holding or cooling.

Violations noted:

- 1) In the walk-in the pasteurized eggs were stored below the raw shell eggs.
- 2) The wall dicer by the walk-in is soiled with old food debris.
- 3) There was a metal insert pan in the bulk flour being used as a scoop.
- 4) The meat slicer was slightly soiled.
- 5) There was an open beverage cup on the dishwasher and a beverage cup with just a lid at the cook line.

Dr. Mathieu and Tasha gathered invoices of food deliveries, meal tickets, a copy of their sick employee policy, and a number of food samples.

Please refer to the FBI Module report for more details.

There was nothing in the way the food service workers handle food that jumped out at me that might cause an illness during the time of the investigation. The kitchen was generally clean and organized. The employees were cooperative. At the end of the investigation I instructed Chef Scott to have no bare hand contact for at least a week.

Update July 20, 2011

Dr. Mathieu, Tasha and I returned to the hotel and they gathered swabs from all employees that handled the breakfast foods both on the 16th and the 17th.

LAB TESTS RESULTS CONDUCTED AS PART OF 2011-2050 OUTBREAK INVESTIGATION

PHL_ID	PATIENT	OUTBREAK	SOURCE	TEST	TEST_RSLT	Oxid Reverse Passive Latex Agglutination assay (SET-seb, sec, sed, see, seh)	PCR for sea, seb, sec, sed, see, seh	PFGE
MM2011001279	LIQUID EGG YOLK, LOT 1152G	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Not consistent with Staphylococcus aureus foodborne illness	Negative		
MM2011001280	LIQUID EGG YOLK, LOT 1161G	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Not consistent with Staphylococcus aureus foodborne illness	Negative		
MM2011001281	PEPPERS/ONIONS,	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Not consistent with Staphylococcus aureus foodborne illness	Negative		
MM2011001282	CORNED BEEF, BUTTER,	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Not consistent with Staphylococcus aureus foodborne illness	Negative		
MM2011001284	POTATOES,	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Not consistent with Staphylococcus aureus foodborne illness	Negative		
MM2011001285	SPINACH,	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Not consistent with Staphylococcus aureus foodborne illness	Negative		
MM2011001286	CANADIAN BACON/HAM,	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Not consistent with Staphylococcus aureus foodborne illness	Negative		
MM2011001287	EGGS,	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Not consistent with Staphylococcus aureus foodborne illness	Negative		
MM2011001288	AVOCADO,	OB2011-2150	Food	Rule Out S. aureus foodborne illness	Specimen not processed	NA		
MM2011001289		OB2011-2150	Stool	Rule Out S. aureus foodborne illness	Consistent with Staphylococcus aureus foodborne illness	SEA, SEB	sea, seb, she	Match
		OB2011-2150	Stool	Rule Out S. aureus foodborne illness	Consistent with Staphylococcus aureus foodborne illness	SEA, SEB	sea, seb, she	Match
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	Staphylococcus aureus	SEB	seb, she	
		OB2011-2150	WND	Rule Out S. aureus foodborne illness	Staphylococcus aureus	SEB	seb	
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	Staphylococcus aureus	SEB	seb	
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	No Staphylococcus aureus isolated	NA	NA	
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	No Staphylococcus aureus isolated	NA	NA	
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	No Staphylococcus aureus isolated	NA	NA	
		OB2011-2150	WND	Rule Out S. aureus foodborne illness	No Staphylococcus aureus isolated	NA	NA	
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	No Staphylococcus aureus isolated	NA	NA	
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	No Staphylococcus aureus isolated	NA	NA	
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	Staphylococcus aureus	SEA, SEB	sea, seb, she	Match
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	No Staphylococcus aureus isolated	NA	NA	
		OB2011-2150	WND	Rule Out S. aureus foodborne illness	Staphylococcus aureus	SED	sed	
		OB2011-2150	WND	Rule Out S. aureus foodborne illness	Staphylococcus aureus	negative	negative	
		OB2011-2150	NAS	Rule Out S. aureus foodborne illness	Staphylococcus aureus	negative	negative	