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Salmonella Senftenberg Investigation Grant County Health District- Ephrata, Washington

Gerald Campbell, Environmental Health Director
Oct 5, 2007

Summary

This report describes the investigation of Salmonella; serotype Senftenberg which was carried out by the Grant County Health District during July and August 2007. A total of 17 patients were identified by stool samples submitted to the Washington State Public Health Laboratory for identification. Four of those found positive were employees of a fast service restaurant (Restaurant A) in Moses Lake, WA. The other cases had either eaten at Restaurant A or had contact with someone who had the illness. The common source of the infections appears to be the meat slicer from which a swab sample tested positive for the same serotype.

Environmental samples were taken for other areas of the restaurant. Inside the gasket around the center of the blade of the meat slicer was the only location where a swab sample tested positive for Salmonella.

Background:

June 28, 2007, GCHD administrator Peggy Grigg was notified by Marcia Goldoft, DOH epidemiologist that 5 of 8 cases of Salmonella reported in Grant County during 2007 had matching serotypes. The Health District public health nurse assigned to record and monitor reportable disease cases had also noted the similarity. Jackie Dawson, a regional epidemiologist, acting as liaison with DOH was requested to review the cases. The serotype, Senftenberg, is not a commonly reported serotype. Less than 10 cases are normally reported in a year throughout the state of Washington. At the time Ms. Grigg was notified there had been no other cases of the serotype reported in Washington during 2007.

Ms. Dawson agreed to review the cases. For each case, it had not been possible during the normal interview procedure to identify the source of the illness. After reviewing the information available for these cases, Ms. Dawson, contacted each of them and conducted a longer and more detailed interview, attempting to learn of a connection common to all of those affected. By July 10, three additional S. senftenberg cases had been reported in the county, providing additional opportunity for a detailed epidemiological investigation.

Epidemiological Investigation

On July 5, Jackie Dawson began using the “shotgun” interview form contacting the 11 cases known at that time. The interview questions were 5 pages in length attempting to locate a food source, animals, or other connection common to all those affected. The people contacted had a range of on set time from Thanksgiving 2006 to July 5, 2007. For some of those interviewed the period of exposure had been several weeks in the past and specific information regarding food eaten, restaurants visited, and exposure to common sources of Salmonella was difficult to recall (recall bias). The results of these interviews showed a possible connection to two fast food restaurants. Initially it appeared that the majority of the people interviewed, 6 of 11, had eaten at Restaurant B at some point in time. Further review of the interview information and additional contacts with the patients revealed that 9 of 11 had eaten at Restaurant A.

Environmental investigation

Methods.

On July 11, 2007, a decision was reached by the investigation team that sufficient evidence existed to begin environmental sampling. Based on the Health Officer directive issued on July 16, 2007, Grant County Health District made the initial investigation of Restaurant B which at the time appeared to be most common source of contact among those interviewed. Two public health nurses and 2 environmental health specialists contacted the manager to collect environmental samples, interview the manager and look for any conditions or food handling practices which would be a potential media for the growth of Salmonella. Twelve swab samples were collected from sinks and equipment surfaces. The manager was questioned about the policy regarding working when sick, which employees had recently been ill, sanitizing of work surfaces, hand washing, and other food preparation practices. Contact information regarding the employees was obtained and the manager was advised that stool samples may be required for all employees.

On July 19, 2007, a second visit was planned to Restaurant B to begin interviewing employees and distributing stool sample kits. During the morning, Jackie Dawson contacted the Health District to advise us that further interview information showed that Restaurant A was a more likely point of contact with 9 of 11 patients reporting the business as a place they had visited prior to becoming ill. Accordingly, the preparations for investigation were simultaneously directed to Restaurant A.

The investigation of Restaurant A began that afternoon. Janet Anderberg, Department of Health Public Health Advisor, conducted the interviews of employees. Two Environmental Health staff collected 8 environmental samples from equipment surfaces in contact with meat or frequently touched by food workers such as handles. The sample taken from the meat slicer was the only one positive for Salmonella.

In Restaurant A, 22 of 23 employees listed on the work schedule were available and interviewed. Initially only those preparing food were asked to submit stool samples. After one of those initial

samples was found to be positive and the meat slicer swab showed Salmonella, all employees were asked to submit a stool sample. The management of Restaurant A agreed to not allow anyone to work until laboratory results showed a negative result for Salmonella. .

During the interviews, several possible sources of the Salmonella were considered. One employee had eaten Que fresco cheese. Another employee lived on a farm and was in contact with cows. No connection could be found with these sources and the Senftenberg serotype.

Another employee had owned an iguana which was deceased at the time of the interview. This worker prepared food and was responsible to disassemble, clean, and reassemble the meat slicer. This person had worked with symptoms of diarrhea. Public health staff was unable to ascertain clear and specific information regarding the iguana's origin, duration of ownership by the employee, or its disposition. A swab sample of the holding area at the pet store where the iguana may have been purchased (3 or more months earlier) was taken; laboratory results showed Salmonella Group E, which does not include the Senftenberg serotype. Neither the iguana nor the glass enclosure in which it had lived was available to evaluate.

At the suggestion of Janet Anderberg, a second visit to Restaurant A was conducted on July 30, 2007 to isolate the location of the Salmonella on the meat slicer. During the initial visit on July 19th, the positive swab sample had been a composite taken from different areas of the meat slicer. During the second visit, the slicer was taken apart and a sample taken from under the silicone seal covering the handle. The seal appeared to be broken and microbial growth was evident around it.

On July 30, 2007, Restaurant B was revisited. 30 employees were interviewed. 7 stool samples were collected from employees who had been ill or who did the most food preparation.

Results:

Of the 21 stool samples collected from employees at Restaurant A, 4 were positive for the Senftenberg Serotype. This serotype was found both in the composite sample from the meat slicer taken July 19, 2007 and in the second swab sample of the area under the silicon seal adjacent to the handle collected on July 30. Other swab samples taken from equipment on July 19 were negative.

None of the stool samples taken from employees of Restaurant B were positive for Salmonella. Likewise the environmental swab samples collected July 16 were negative for Salmonella.

Prior to the investigation on July 7, a routine food inspection was conducted at Restaurant B. Total score was 80. 70 points were for critical item violations. A re-inspection was made July 26 during which the critical violations were found to be corrected.

For Restaurant A, a routine inspection was done July 17. The total score was 50 all of which were critical point violations. The problems found were not related to the meat slicer and were found to be corrected during the subsequent investigation.

The procedure for preparing roasts is to remove them from the walk-in refrigerator where they are thawed after removal from the freezing unit. The roasts are cooked to 150F with a thermometer in

each one to record the temperature. After reaching 150F, the meat is put in a hot holding unit and maintained at 140F. It is removed from the hot holding unit to be put on the meat slicer under a heat Lamp for 30 minutes during which the roast is sliced as ordered. After 30 minutes, the roast on the heat lamp is put back in the hot holding unit and replaced with another roast.

It appears that the silicon seal was not intact and allowed meat juice and particles to collect under it. The temperature of the heat lamp and the moist meat appeared to optimal conditions for growth of Salmonella. The meat slicer was cleaned by immersion in water with sanitizer, but it appears the material under the seal was neither removed nor disinfected.

Control Measures:

The management for both restaurants was cooperative throughout the investigation. Restaurant A agreed to restrict employees from the work schedule until they had submitted a stool samples which showed them to be negative for Salmonella. Individuals who tested positive for Salmonella were required to submit two negative stool samples before returning to work.

When the meat slicer swab lab results were known on July 27, the management replaced it with another model until it could be disassembled and commercially steam cleaned. A schedule was established for cleaning at 2-hour intervals and a log posted to record the time it was done. Following the slicer removal, no more cases of Salmonella senftenberg were reported in Grant County at the time of this summary with the last case reported Aug 6, 2007.

An employee log was also posted for employee hand washing and to record the strength and cleanliness of sanitizer solutions used to clean equipment.

Additional Recommendations:

1. Each food establishment should have a written policy regarding what employees are expected to do when they are sick. The restrictions for employees involved in food service and preparation are explained in Section 2-201.11 of the Washington State Food Code.
2. Food establishments with a meat slicer or other equipment that can be disassembled for cleaning should have a schedule for cleaning and disinfection of all parts.
3. Food preparation equipment that cannot be taken apart for cleaning should have a method for cleaning in place and disinfection that is scheduled frequently enough to prevent growth of bacteria that cause food related illness.
4. Provide test strips to test the strength of sanitizing solution used to clean food contact surfaces, utensils, and equipment.
5. The control measures established by Restaurant A hand washing log, log for cleaning of meat slicer, etc. should be maintained and reviewed for compliance during future routine food inspections.

Acknowledgements

This investigation was a joint effort of both personal health and environmental health staff, as well as clerical support staff of the Grant County Health District. Environmental Health staff made the majority of contacts with the staff and management of the Restaurants A and B. Personal health staff organized and evaluated data as it was collected, prepared the stool sample kits, and completed all shipment of samples. Clerical support staff guided communications from callers to specific staff, assisted other information flow, and distributed the sample kits.

Jackie Dawson, epidemiologist for Region 7, conducted all the extended telephone interviews at the beginning of the investigation. Information from these interviews directed the search to Restaurant A. She also had the role of liaison with the Department of Health Public Health Laboratory and was able to provide information regarding individual cases to GCHD staff as soon as the results were available.

Janet Anderberg, DOH Public Health Advisor, was also a valuable resource. She traveled from north Seattle to conduct the majority of the food worker interviews. As an educator and consultant for local health jurisdictions she was aware of a similar Salmonella investigation in Georgia. Based on the circumstances and findings she made the suggestion to look at the meat slicer more closely, resulting in identifying it as the reservoir of the infection.

Grant County Health Officer, Dr. Alexander Brzezny and Peggy Grigg, GCHD administrator should also be recognized for the support and leadership that made possible the allocation of resources and personnel to complete the investigation.

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