

TO: Chair and Members of the Board of Health

FROM: Christopher Mackie, Medical Officer of Health

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SALMONELLA TYPHIMURIUM OUTBREAK INVESTIGATION

Recommendation

It is recommended that Report No. 064-16 re “Salmonella Typhimurium Outbreak Investigation” be received for information.

Key Points

- From August 1 to September 30, 2016, 63 salmonellosis cases were reported to the Health Unit; 39 of these cases were related to a local food establishment. Based on historical data, the Health Unit would normally expect to be notified of 15 cases over this time period.
- Collaboration between staff and external partners resulted in rapid detection of a common source and implementation of control measures that prevented further disease in the community.

Epidemiological Summary

From August 1 to September 30, 2016, the Health Unit received reports of 63 potential salmonellosis cases (45 were confirmed, 14 were probable, and 4 did not meet case definition). An investigation into a potential cluster began on August 22, 2016 when six confirmed salmonellosis cases were reported to the Health Unit. The Infectious Disease Control (IDC) team lead investigator alerted Public Health Ontario (PHO) to determine if the increased number of cases was observed across the province.

A pizza and shawarma restaurant in London was identified as a common source for 39 locally reported cases (25 confirmed, 14 probable), in addition to five cases which were reported from other health units (4 confirmed, 1 probable). Symptom onset dates were from August 10 to Aug 28, 2016 (Figure 1, [Appendix A](#)). Exposures to this establishment were reported August 10 to August 26, 2016. The median age of outbreak-related cases was 27 years, with a range of 1 to 54 years. Females accounted for 52% of outbreak-related cases. Laboratory results indicated that the outbreak organism was Salmonella Typhimurium, Phage Type 108, PFGE STXAI.0312/STBNI.0022.

Case Investigation

Use of a unique interviewer to survey patients in the initial phase of the investigation allowed for the rapid identification of a potential link between clinical cases and a food premise. The investigator noted a common restaurant exposure that also had been identified by another health unit. Further case follow-up confirmed this establishment as a common exposure for several cases. Case addresses had also been mapped to identify potential geographic links before a common exposure had been identified (Figure 2, [Appendix A](#)).

Food Safety Investigation

Chicken shawarma was identified as the most likely source of the outbreak as it was the most commonly reported food item. It was hypothesized that the chicken was temperature-abused during transportation from the distributor to the restaurant and not cooked fully to a safe internal temperature before serving. Food

handling staff or contaminated equipment may have continued to infect the food and environment prior to an identification of the source of the outbreak being made. This may account for the extended exposure dates reported by cases. Following identification of the establishment as a common source, the Food Safety team supervised a thorough cleaning, after which no additional cases were reported. The operator of the establishment was cooperative throughout the investigation.

A weak link in the food production chain related to transportation and receiving of food deliveries was identified. Some independent food suppliers not associated with a manufacturer may not follow the same food safety standards as those suppliers who are directly associated with a manufacturer.

Internal and External Collaboration

Communication between the IDC team, Environmental Health Food Safety team, and the designated epidemiologist for this division, was instrumental in this outbreak response. Coordination between public health inspectors was efficient while conducting investigations at identified premises. This included collecting food samples, obtaining supplier information, and maintaining on-going surveillance at the identified establishment. Once the suspect source became evident, the IDC lead investigator coordinated with other members of the IDC team to contact the increased volume of identified cases. As well, the lead investigator and Epidemiologist worked closely to identify commonalities between cases and to prepare data to be shared both internally and with partner agencies. Internal communications also included immediate notification of the outbreak status to Medical Officer of Health and Senior Leadership Team.

The outbreak response involved coordination between Health Unit staff and partner agencies: Public Health Ontario (PHO), the PHO Laboratory, the Canadian Food Inspection Agency (CFIA), and the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA).

Transparency: Media Release

As it was difficult to establish a connection between cases in the early stages of the investigation, a [media release](#) indicating a spike in salmonellosis cases was issued on August 26, 2016 in advance of identifying a source. This was very effective in helping to identify additional cases which served to establish a more obvious linkage to the food establishment. A second [media release](#) was issued September 6, 2016 once the food establishment was identified as the likely source. The Health Unit received positive reviews for its proactive response and transparency with the community.

Next Steps

Food Safety staff are investigating alternative methods for cooking chicken shawarma, such as freezing the chicken prior to cooking, as well as addressing hand hygiene, sanitation, and internal cooking temperatures. Owners/operators will be encouraged to pay attention to food deliveries and thoroughly check the product before it is received; the Health Unit has created a webpage for owners/operators to access these recommendations: <http://www.healthunit.com/food-delivery>.

This report was prepared by Carrie Warring, Public Health Inspector, Food Safety Team; Joanne Dow, Public Health Nurse, Infectious Disease Control Team; and Theresa Procter, Epidemiologist, Foundational Standard.



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