

A Foodborne Illness and Its Impact

Crystal S. Graening

University of Mary

Introduction

A public health incident that has impacted the state of Minnesota recently is an outbreak of a multi-drug resistant *Salmonella* infection caused by raw turkey products (Centers for Disease Control and Prevention [CDC], 2018). While the CDC (2018) reports that it has become a nation-wide issue, now having affected 26 states, the most cases, 13, have been reported in Minnesota, much more than any other state. A total of 90 cases have been identified, including 40 of which requiring hospitalizations, but thus far, no reported deaths (CDC, 2018).

Public Health Implications

This particular outbreak fits into the epidemiologic triangle. As explained by Macha & McDonough (2012), studies on infectious diseases identify three crucial pieces involved in the transmission process, the agent, host, and environment. In this particular incident, the agent is the organism *Salmonella*, while the host is both live turkeys and products that contain raw turkey products. The environment is the contaminated areas in food prep areas that are not being cleaned properly and safe handling of food, including proper hand hygiene.

During public health surveillance in incidents as such, data is collected using various methods, typically either through passive or active surveillance (Macha & McDonough, 2012). Active surveillance was applied in this case. This involves the active search of cases and surveying of people directly to identify signs, symptoms, and other data needed to help further identify an outbreak (Macha & McDonough, 2012).

The CDC (2018) states that the investigation was carried out through interviews with the ill individuals. Through this process, it was discovered that 37 of the 61 interviewees had reported eating or preparing raw turkey products purchased from various stores and included

various brands of turkey products (CDC, 2018). Samples were also collected by the United States Department of Agriculture's Food Safety Inspection Service. Through those, the strain responsible for the outbreak was found in raw turkey pet food in Minnesota, raw turkey products collected from 19 different slaughter houses along with six places that process the turkeys, as well as from live turkeys (CDC, 2018). All of these factors are indicators that this is widespread within the turkey industry, especially since a single supplier or link has not yet been identified (CDC, 2018).

Other investigative methods were also used. Of particular interest, public health investigators used a system known as PulseNet to help identify possible illnesses related to the outbreak, which is a passive type of surveillance in monitoring outbreaks (CDC, 2018). PulseNet is a laboratory network that connects 83 public health and food regulation labs and collects data through the use of analyzing DNA fingerprinting of the bacteria possibly making people sick (CDC, n.d.). When people or food are identified in having that particular fingerprint, it flags it as being part of an outbreak (CDC, n.d.). According to the CDC (n.d.), because of the unique detection, outbreaks are quickly identified so that recalls and removal of contaminated products can be made, helping to halt outbreaks as well as keeping our food supply safer. Further analysis of the bacteria in the raw turkey product incident was also done to help identify what resistance the *Salmonella* had to any antibiotics (CDC, 2018). While six antibiotics were identified, it did not affect the antibiotic used to treat the individuals infected as they were not ones commonly used to treat *Salmonella* (CDC, 2018).

While 40 hospitalizations have occurred from this particular incident nationwide, there is an even greater burden that is brought on by foodborne illnesses, especially *Salmonella*, every year across the United States. Of the top five pathogens, *Salmonella* is the leader in both the

number of hospitalizations, 19,336 annually, and death, 378 per year (CDC, 2016). When the financial burden is considered, it has been estimated that *Salmonella* costs the US economy nearly \$11.4 billion every year (Scharff, 2012).

Health Intervention, Prevention, and Promotion

As already highlighted, surveillance was used to track the cases involved in this incident of raw turkey products causing an outbreak of *Salmonella* in Minnesota and other states. Once it was determined that there was a concern, an investigation of the disease and health event occurred and continues to occur. All of these are important components of the Public Health Interventions Wheel. To conclude, the remaining discussion will focus on a few other interventions from the wheel, including outreach, health teaching for the population, and policy development and enforcement.

Perhaps the top priority for the public in this incident encompasses outreach and teaching and promoting food safety. While food can be contaminated at any time between the point of production and distribution, foodborne illnesses like *Salmonella* occur due to mishandling of the food product in homes and food service facilities like restaurants (World Health Organization [WHO], n.d.b.). Because of this, it is important that we continue to be vigilant with helping individuals know how to prepare and handle the foods they make at home and monitor places such as restaurants for safe handling practices. Labels are on every food in which there is a concern with storage, handling and preparation. Consumers should be encouraged to follow those guidelines in addition to making themselves aware of the hazards posed by certain foods (WHO, n.d.b.). The WHO (n.d.b.) has a publication that identifies five keys to safer food in a poster format, which is available in 87 different languages to help promote safe food handling.

The posters identify the five keys as: keep clean, separate raw and cooked, cook thoroughly, keep food at safe temperatures, and use safe water and raw materials (WHO, n.d.a.).

The WHO also has suggestions on what policy-makers can do to help improve the safety of our food supply. Ideas include to continue to build upon systems like PulseNet and provide resources for these systems so that safety risks of food that are identified may be properly managed (WHO, n.d.b.). The WHO (n.d.b.) also recognizes that collaboration among public health, animal health, and agriculture needs to be promoted by lawmakers so that communication is effective and action can occur by all of those sectors working together and not against one another. More recognition should also be given to the programs and guidelines that are already in place (WHO, n.d.b.).

Lastly, when incidents as such do occur, we need to ensure that producers, especially farmers, are not made as the focus of the problem impacting their livelihood. Oftentimes how the incident is portrayed in media can scare the population to avoid a certain food like in this case, turkey. More efforts need to be made to educate the population on why outbreaks as such occur and how to ensure food is safely handled, so there is an understanding that it is safe to continue to consume such foods. An outbreak does in fact affect a community, but a community, with a strong public health presence can ensure that they protect themselves from future outbreaks.

References

- Centers for Disease Control and Prevention. (n.d.). *PulseNet saves lives and money*. Retrieved from https://www.cdc.gov/pulsenet/pdf/PulseNet-Economics-Factsheet_508_Final.pdf
- Centers for Disease Control and Prevention. (2016). *Burden of foodborne illness: Findings*. Retrieved from <https://www.cdc.gov/foodborneburden/2011-foodborne-estimates.html>
- Centers for Disease Control and Prevention. (2018). *Outbreak of multidrug-resistant Salmonella infections linked to raw turkey products*. Retrieved from <https://www.cdc.gov/salmonella/reading-07-18/index.html>
- Macha, K., & McDonough, J.(2012) *Epidemiology for advanced nursing practice*. Sudbury, MA: Jones and Bartlett Learning.
- Scharff, R.L. (2012). Economic burden from health losses due to foodborne illness in the United States. *Journal of Food Protection*, 75(1), 123-131. doi: 10.4315/0362-028X.JFP-11-058
- World Health Organization (WHO). (n.d.a.). *Five keys to safer food*. Retrieved from http://www.who.int/foodsafety/publications/consumer/en/5keys_en.pdf?ua=1
- World Health Organization (WHO). (n.d.b.). *Food safety*. Retrieved from <http://www.who.int/en/news-room/fact-sheets/detail/food-safety>