

# Salmonella enterica Serotype I 4,[5],12:i:- Illness Outbreak Associated with Rotisserie Chicken, 2016–17

## After-Action Review Report 2016-24

September 28, 2018

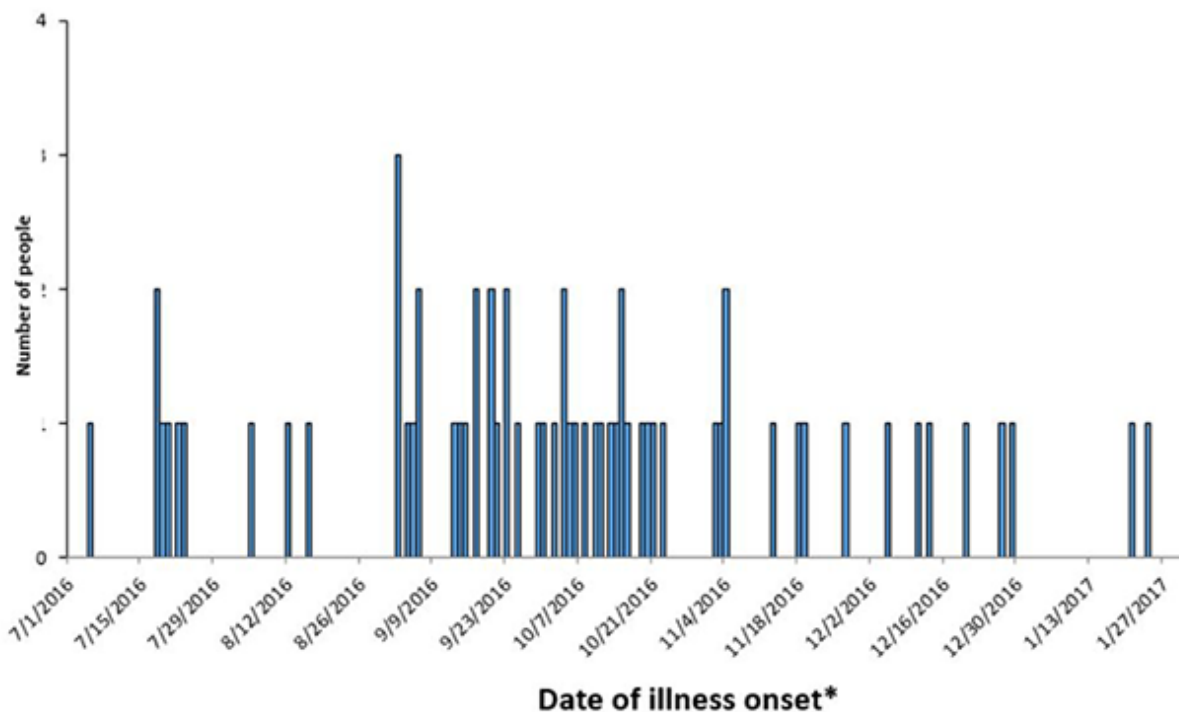
### Overview

During July 2016–March 2017, public health officials in California, Washington, the Centers for Disease Control and Prevention (CDC), and the Food Safety and Inspection Service (FSIS) investigated an outbreak of 63 *Salmonella enterica* serotype I 4,[5],12:i:- illnesses linked to rotisserie chicken products produced and sold at multiple stores under the same corporation (Retailer A). California, Washington, and FSIS officials conducted environmental assessments at Retailer A stores involved in the outbreak; findings indicated the potential for cross-contamination and inadequate cooking. On October 9, 2016, FSIS issued a [public health alert](#) for rotisserie chicken salad produced at one Retailer A store in Washington state. Available evidence did not support action at the chicken supplier level; however, multiple potential contributing factors at the retail level were identified. In response to this investigation, Retailer A made a number of changes to rotisserie chicken preparation. After Retailer A took these actions, illnesses associated with this outbreak were no longer reported. Lessons learned from this outbreak investigation indicated potential ways to improve outbreak investigations and safe cooking and handling of rotisserie chicken.

### Epidemiology

- During September–October 2016, the CDC notified FSIS of three clusters of *Salmonella* I 4,[5],12:i:- illnesses; based on epidemiology and molecular sub-typing, all three clusters were considered to be part of the same outbreak.
- A total of 63 confirmed case-patients from 13 states were reported, with an illness onset range of July 2016–January 2017 (Figure).
- Among case-patients with available information, 55% were female; 27% were hospitalized.
- Among 51 case-patients with exposure information, 45 (88%) reported any chicken exposure; among these case-patients, 34 (76%) ate or purchased chicken products from multiple Retailer A stores and 27 (60%) ate or purchased rotisserie chicken or an item containing rotisserie chicken from Retailer A.

**Figure: People infected with the outbreak strains of *Salmonella* I 4,[5],12:i:- (n=63), by date of illness onset\***



\*If the illness onset date was not reported, the onset date was estimated using the following formula: isolation date minus 3 days.

## Traceback

- For the 24 case-patients who provided Retailer A shopper card numbers, shopper card records indicated that 22 (92%) had purchased a chicken product and that 21 (88%) had purchased a rotisserie chicken product from 8 Retailer A stores in 3 states (1-AK, 3-CA, 4-WA).
- Raw chicken used for rotisserie by Retailer A was supplied by establishments in California and Louisiana.

## Environmental Assessment

- During September–December 2016, FSIS, California, and Washington public health officials separately visited multiple Retailer A stores in California and Washington to conduct environmental assessments regarding the preparation of rotisserie chicken products. Overall, the observations indicated the potential for cross-contamination and undercooking. Findings included:
  - Temperature monitoring and recording practices did not consistently follow Retailer A Standard Operating Procedures (SOPs) for rotisserie chicken preparation. For example: the temperature of the largest bird in the rotisserie oven was not always monitored; the location of temperature used for monitoring varied (e.g., breast, thigh, or both); and the depth of temperature measurement varied between surface and internal temperature measurements.
  - The underside of the chicken (near the thigh) was sometimes inadequately cooked.
  - Thermometers used to take the temperatures of cooked rotisserie chickens were not calibrated at hot temperatures, only cold.
  - Employee practices and equipment cleaning created scenarios in which cross-contamination could occur. For example: Thermometers used to take the temperatures of cooked rotisserie chickens were not sanitized correctly or stored according to Retailer A established procedures; contact was noted between smocks and aprons used for ready-to-eat (RTE) production and those used for raw production; employee traffic between raw and RTE areas was not well controlled; and cleaning of equipment, floors, and drains was not conducted according to the SOPs.
  - Overall, there was poor training of employees regarding the SOPs and prevention of cross-contamination.

## Product Sampling

- FSIS collected and analyzed 31 chicken products (cooked rotisserie chicken, chicken salad, chicken soup, and chicken enchiladas) from four Retailer A stores in California and Washington; all were negative for *Salmonella*.
- Washington public health officials collected and analyzed a raw whole chicken, a cooked rotisserie chicken, rotisserie chicken salad ingredients, and packaged chicken salad from a Retailer A store in Lynnwood, WA; all these products were negative for *Salmonella*.

## Public Health Actions

- Shopper card records indicated that case-patients had purchased rotisserie chicken salad within a relatively narrow date range at the Retailer A store in Lynnwood, Washington. On October 9, 2016, FSIS issued a [public health alert](#) for this product produced during August 26–September 2, 2016 at this Retailer A store.
- Findings from the environmental assessments were discussed with Retailer A officials.
- California public health officials sent a regulatory letter containing details of the findings from their environmental assessments to the Retailer A corporate office.

## Industry Actions

- In response to this investigation and concerns about inadequate cooking and cross-contamination, Retailer A made a number of changes to rotisserie chicken preparation, including:
  - Increased the minimum internal temperature to which rotisserie chicken parts must be cooked (breast: 183 °F; thigh: 170 °F).
  - Began using only high-pressure–processed rotisserie chicken in cold items (e.g. wraps and chicken salad); began marking items made with harvested, in-store–cooked, rotisserie chicken with an orange sticker, provided instructions for the consumer to reheat the item to 165 °F.
  - Began retraining all employees on rotisserie chicken SOPs.
  - Planned to implement new temperature monitoring procedures, including:
    - Adjusting temperatures in the chicken storage cooler to ensure chickens are thawed when placed in the rotisserie oven;
    - Using wireless thermometers for monitoring internal cooking temperatures without opening the rotisserie oven;
    - Calibrating thermometers at high (rather than at cold) temperatures.
  - Began working with Retailer A's suppliers of chicken for rotisserie cooking to sort chickens by size before shipping, which would promote greater consistency of internal cooking temperature and may prevent product loss due to overcooking.
- After Retailer A took these actions, illnesses associated with this outbreak were no longer reported.

## Lessons Learned/Model Practices Identified

- Some products sampled by FSIS that were packaged in thin, flexible, plastic containers leaked during shipping and were discarded without analysis because of the potential for ambiguous interpretation of laboratory findings. Future sampling of similar products should consider these challenges when planning for shipment.
- Shopper card numbers and records were shared quickly between partners, which facilitated the traceback investigation. Obtaining shopper card records from industry in a searchable spreadsheet format is considered a model practice for using shopper/loyalty card information during traceback investigations.
- Joint collaboration between investigating agencies regarding visits to retail stores increases efficiency and promotes timely information sharing between partners.

### **Policy-Related Actions**

- FSIS added rotisserie chicken–related research to the list of [FSIS food safety research priorities](#).
- FSIS submitted an issue regarding rotisserie chicken to the 2018 Conference for Food Protection (Issue Number: [Council III-022](#) ).

### **Additional Information for Consumers**

- [Public Health Alert, October 9, 2016](#)

*Last Modified May 20, 2020*