

FSIS Foodborne Illness Outbreak Investigations, Fiscal Year 2017

Introduction

The United States Department of Agriculture's Food Safety and Inspection Service, Office of Public Health Science, Applied Epidemiology Staff coordinates the FSIS response to foodborne illness outbreaks that may involve FSIS-regulated products. This includes outbreaks that involve four foodborne pathogens that most frequently affect FSIS-regulated products – *Salmonella*, Shiga toxin-producing *Escherichia coli* (STEC), *Listeria monocytogenes* (*Lm*), and *Campylobacter*.

FSIS collects and evaluates epidemiologic, laboratory, and traceback information to determine if there is an association between an FSIS-regulated product and human illnesses. Epidemiologic information includes details like the foods ill people ate, where they purchased these foods, and where they live. Laboratory information includes comparing bacteria in FSIS samples and ill people to see if they are genetically similar or have similar characteristics. Traceback activities may include determining the location (e.g., grocery store, deli counter, or restaurant) where the product was sold or the source of a product (e.g., the federally-inspected slaughter or processing facility). Depending on the evidence collected during an investigation, FSIS may have enough detailed exposure and product information to take one or more actions to prevent additional illnesses. These actions may include requesting that a company remove product from commerce and issuing a press release announcing that a federal establishment is voluntarily recalling product(s) linked to human illnesses or notifying the public of potential food safety concerns through the issuance of a public health alert.

This report summarizes outbreaks that FSIS investigated during October 1, 2016 through September 30, 2017, Fiscal Year 2017 (FY 2017).

Fiscal Year 2017 in Review

During FY 2017, FSIS investigated eight outbreaks in coordination with local, state, and federal public health partners that involved approximately 300 illnesses and over 100 hospitalizations. The Centers for Disease Control and Prevention (CDC) informed FSIS about six (75.0%) of these outbreaks and six (75.0%) outbreaks involved illnesses in more than one state.

Of the eight outbreaks investigated by FSIS in FY 2017, *Salmonella* (6, 75.0%) was the most common pathogen, followed by STEC (1, 12.5%) and *Lm* (1, 12.5%) (Figure 1). Serotypes involved in the FY 2017 *Salmonella* outbreaks included Enteritidis, Newport, and I 4,[5],12:i:-. Among the six *Salmonella* outbreaks, beef, chicken, and pork products were associated with illnesses (Figure 2). Due to lack of information for the six *Salmonella* outbreaks, FSIS could not take further action on a product or recommend actions for consumers or industry.

There were two additional outbreaks investigated during FY 2017, one each caused by STEC and *Lm*.

Investigation and available evidence did not implicate FSIS-regulated products as the source of illnesses in these outbreaks.

Table 1 depicts characteristics about these outbreaks, including information on the serotype/serogroup, product of interest, if FSIS samples were determined to be related to human illnesses, and if the available outbreak information resulted in a recall of FSIS-regulated products.

Figure 1. FY 2017 Outbreaks by Pathogen, N = 8 (%)

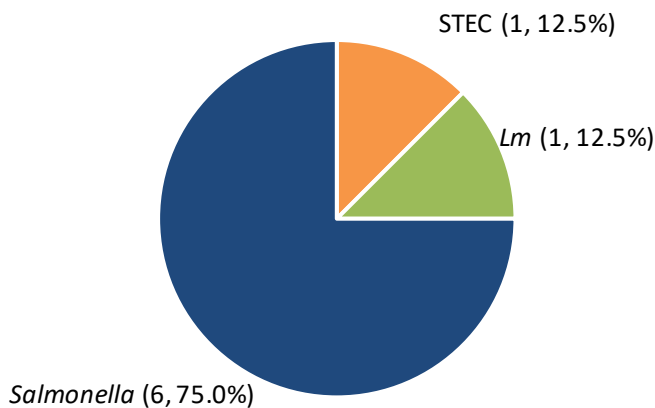
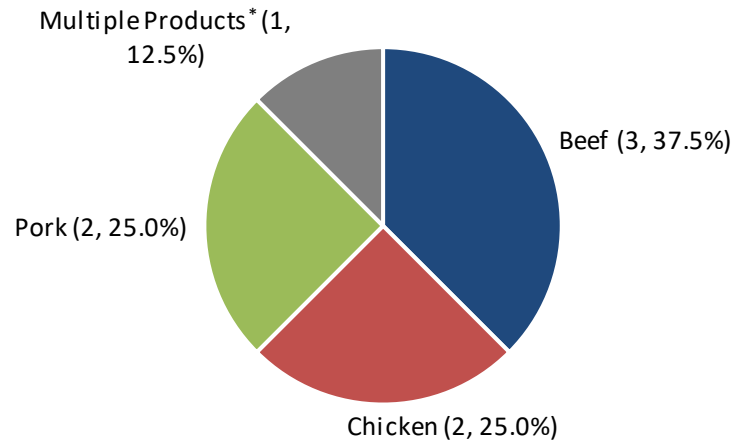


Figure 2. FY 2017 Outbreaks by Product of Interest, N = 8 (%)



*Multiple FSIS-regulated products were investigated and a single suspect food was not identified

Table 1. FY 2017 Outbreak Characteristics

Pathogen	Serotype/Serogroup	Product ^A	FSIS Isolates ^C	Non FSIS Isolates ^D	Recall ^E
STEC	O157:H7	Beef	No	Yes	No
<i>Lm</i>		Multiple Products ^B	No	Yes	No
<i>Salmonella</i>	Enteritidis	Chicken	Yes	No	No
	Newport	Beef	Yes	Yes	No
	Newport	Beef	Yes	No	No
	Newport	Pork	Yes	No	No
	I 4,[5],12:i:-	Chicken	No	No	No
	I 4,[5],12:i:-	Pork	No	No	No

- A) Product investigated by FSIS as possible, likely, or confirmed cause of illnesses during outbreak investigation
- B) Multiple FSIS-regulated products were investigated and a single suspect food was not identified
- C) Isolates recovered from FSIS product (or cecal) or environmental testing found to be related (either by whole genome sequencing or pulsed-field gel electrophoresis) to clinical isolates and are included in the outbreak cluster
- D) Isolates recovered from non-FSIS product, live animal, or environmental testing found to be related (either by whole genome sequencing or pulsed-field gel electrophoresis) to clinical isolates and are included in the outbreak cluster)
- E) Based on available evidence, FSIS-regulated product was determined to be the cause of human illnesses and a company voluntarily recalled product from commerce

Learning from Outbreaks

Assessment of outbreaks associated with FSIS-regulated products is crucial to FSIS' mission to prevent foodborne illness and to protect public health. FSIS routinely conducts after-action reviews (AARs) at the conclusion of foodborne outbreak investigations to identify lessons learned that can help improve outbreak response and prevent future illnesses. Applying and sharing outbreak lessons learned may lead to improved food safety policies and improved investigation processes with public health partners.

FSIS conducted AARs for several FY 2017 outbreak investigations. For example, an AAR was conducted for a *Salmonella* I 4,[5],12:i:- outbreak associated with rotisserie chicken investigated in both FY 2016 and FY 2017; the AAR identified several concerns about cooking practices for rotisserie chickens at retail and the need for research. FSIS submitted an issue regarding rotisserie chicken outbreaks to the 2018 Conference for Food Protection (Issue Number: [Council III-022](#)). The Conference for Food Protection recommended no action on this issue, however, FSIS also developed [food safety research priorities](#) that may be of interest to researchers related to *Salmonella* and rotisserie chicken in retail. A [summary of this outbreak investigation](#) is posted on the FSIS website.

To see additional posted FSIS AAR reports and examples of how FSIS has applied outbreak lessons learned toward illness prevention, visit [Foodborne Outbreak Investigation Outcomes - Response and Prevention](#).

Contact and Questions

For more information, contact [askFSIS](#).