

## *Salmonella*

# Multistate Outbreak of *Salmonella* Enteritidis Infections Linked to Bean Sprouts (Final Update)

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This outbreak appears to be over. However, sprouts are a known source of foodborne illness. CDC recommends that consumers, restaurants, and other retailers always follow [food safety practices](#) to avoid illness from eating sprouts.

## Highlights

- [Read the Advice to Consumers and Retailers »](#)
  - This outbreak appears to be over.
  - A total of 115 people infected with the outbreak strains of *Salmonella* Enteritidis were reported from 12 states.
    - Twenty-five percent of ill persons were hospitalized. No deaths were reported.
  - Collaborative investigation efforts of state, local, and federal public health and regulatory agencies indicated that bean sprouts produced by Wonton Foods, Inc. were the likely source of this outbreak.
    - In interviews, 61 (72%) of 85 ill persons reported eating bean sprouts or menu items containing bean sprouts in the week before becoming ill.
  - In November 2014, Wonton Foods Inc. agreed to destroy any remaining products while they conducted a thorough cleaning and sanitization and implemented other *Salmonella* control measures at their firm. The firm resumed shipment of bean sprouts on November 29, 2014.
    - Contaminated bean sprouts produced by Wonton Foods, Inc. are likely no longer available for purchase or consumption given the maximum 12-day shelf life of mung bean sprouts.
  - CDC's [National Antimicrobial Resistance Monitoring System \(NARMS\)](#) laboratory conducted antibiotic resistance testing on *Salmonella* Enteritidis isolates collected from three ill persons infected with the outbreak strains.
    - All three isolates were susceptible to all antibiotics tested on the NARMS panel.
  - Although this outbreak appears to be over, sprouts are a known

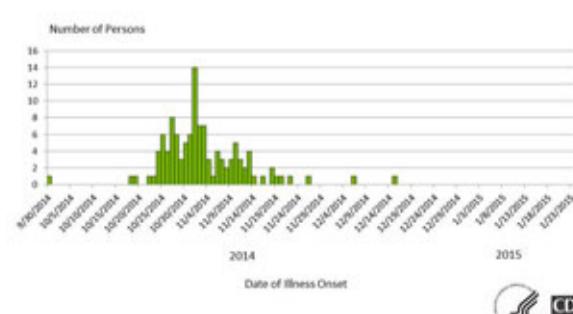
## At a Glance:

- Case Count: 115
  - States: 12
  - Deaths: 0
  - Hospitalizations: 25%
  - Recall: No

#### More Information:

- Advice to Consumers and Retailers
  - Clinical Features / Signs & Symptoms
  - Key Resources

## CLICK TO VIEW FINAL EPI CURVE GRAPHS.



**CLICK TO VIEW FINAL  
CASE COUNT MAPS**

source of foodborne illness. CDC recommends that consumers,

restaurants, and other retailers always follow [food safety practices](#) to avoid illness from eating sprouts.

- Be aware that children, older adults, pregnant women, and persons with weakened immune systems should avoid eating raw sprouts of any kind (including alfalfa, clover, radish, and mung bean sprouts).
- Cook sprouts thoroughly to reduce the risk of illness. Cooking sprouts thoroughly kills any harmful bacteria.



## Outbreak Summary

### Introduction

CDC collaborated with public health officials in several states and the U.S. Food and Drug Administration (FDA) to investigate a multistate outbreak of *Salmonella* Enteritidis infections. Results from this investigation indicated that bean sprouts produced by Wonton Foods, Inc. were the likely source of this outbreak.

Public health investigators used the PulseNet system to identify illnesses that were part of this outbreak. PulseNet is the national subtyping network of public health and food regulatory agency laboratories coordinated by CDC. DNA “fingerprinting” is performed on *Salmonella* bacteria isolated from ill persons using a technique called [pulsed-field gel electrophoresis](#), or PFGE. PulseNet manages a national database of these DNA fingerprints to identify possible outbreaks. Two PFGE patterns were included this investigation. Both PFGE patterns are rarely reported to the PulseNet database. On average, fewer than 10 types of *Salmonella* bacteria with these PFGE patterns are reported to PulseNet each year. [Whole genome sequencing](#), a highly discriminatory subtyping method, was also performed on 16 of the clinical isolates, and all 16 were determined to be highly related to one another.

A total of 115 persons infected with the outbreak strains were reported from 12 states. The number of ill people identified in each state was as follows: Connecticut (8), Maine (4), Maryland (6), Massachusetts (36), Montana (1), New Hampshire (6), New York (22), Ohio (3), Pennsylvania (18), Rhode Island (7), Vermont (3), and Virginia (1). The one ill person from Montana traveled to the Eastern United States during the period when likely exposure occurred.

Illness onset dates ranged from September 30, 2014, to December 15, 2014. Ill persons ranged in age from younger than 1 year to 83 years, with a median age of 32 years. Sixty-four percent of ill persons were female. Among 75 persons with available information, 19 (25%) were hospitalized, and no deaths were reported.

This outbreak appears to be over. However, sprouts are a known source of foodborne illness. CDC recommends that consumers, restaurants, and other retailers always follow [food safety practices](#) to avoid illness from eating sprouts.



## Investigation of the Outbreak

In interviews, ill persons answered questions about foods eaten and other exposures during the week before they became ill. Of 85 ill persons for whom information was known, 61 (72%) reported consuming bean sprouts or menu items containing bean sprouts in the week before they became ill. This proportion was significantly higher than results from a survey  [PDF – 29 pages]  of healthy persons in which 6% reported eating bean sprouts in the week before they were interviewed. Most ill persons reported consuming bean sprouts at Asian-style food service establishments.

In this investigation, state and local officials identified five clusters of illnesses in three states: Massachusetts, Rhode Island, and Vermont. Among the ill persons who were part of these illness clusters, all reported consuming menu items that contained bean sprouts. Investigating clusters of illnesses can provide critical clues about the source of an outbreak. A cluster of illnesses is defined as more than one unrelated ill person (i.e., they do not know or live with each other) who report eating at the same restaurant location, attending a common event, or shopping at the same location of a grocery store before becoming ill. If several unrelated ill persons ate or shopped at the same location of a restaurant or store within several days of each other, it suggests that the contaminated food item was served or sold there. In addition, traceback of suspected food items to identify a common point of contamination may be facilitated by records kept at these locations.

State and local public health officials, along with FDA, performed traceback investigations on the source of bean sprouts for all five illness clusters as well as for several individual ill persons. Traceback from all of the establishments indicated that all received bean sprouts from Wonton Foods, Inc. of Brooklyn, New York. Although some restaurants also received bean sprouts from other suppliers, Wonton Foods, Inc. was the only supplier common to all of the restaurants and was the sole supplier of bean sprouts to at least two of the restaurants.

On November 21, 2014, Wonton Foods, Inc. agreed to destroy any remaining products while they conducted thorough cleaning and sanitization and implemented other *Salmonella* control measures. On November 24, the firm completed cleaning and sanitization and restarted production of bean sprouts. The firm resumed shipment of bean sprouts on November 29, 2014. Contaminated bean sprouts produced by Wonton Foods, Inc. are likely no longer available for purchase or consumption given the maximum 12-day shelf life of mung bean sprouts.

CDC's National Antimicrobial Resistance Monitoring System (NARMS) laboratory conducted antibiotic resistance testing on *Salmonella* Enteritidis isolates collected from three ill persons infected with the outbreak strains. All three isolates were susceptible to all antibiotics tested on the NARMS panel.

January 23, 2015	+
December 4, 2014	+
November 25, 2014	+
Initial Announcement	+

