



Salmonella

Outbreak of *Salmonella* Heidelberg Infections Linked to Tyson Brand Mechanically Separated Chicken at a Correctional Facility (Final Update)

Posted February 24, 2014 3:30 PM ET

This outbreak appears to be over. However, *Salmonella* is an important cause of human illness in the United States. More information about *Salmonella*, and steps people can take to reduce their risk of infection, can be found on the [CDC *Salmonella* Web Page \(/salmonella/index.html\)](/salmonella/index.html).

At a Glance:

- **Case Count: 9**
- **States: 1**
- **Deaths: 0**
- **Hospitalizations: 22%**
- **Recall: [Yes \(/salmonella/heidelberg-01-14/advice-institutions.html\)](/salmonella/heidelberg-01-14/advice-institutions.html)**

More Information:

- [Recall & Advice to Institutions \(/salmonella/heidelberg-01-14/advice-institutions.html\)](/salmonella/heidelberg-01-14/advice-institutions.html)
- [Signs & Symptoms \(/salmonella/heidelberg-01-14/signs-symptoms.html\)](/salmonella/heidelberg-01-14/signs-symptoms.html)
- [Key Resources \(/salmonella/heidelberg-01-14/key-resources.html\)](/salmonella/heidelberg-01-14/key-resources.html)

Highlights

- **[Read the Advice to Institutions » \(/salmonella/heidelberg-01-14/advice-institutions.html\)](/salmonella/heidelberg-01-14/advice-institutions.html)**
- A total of nine persons infected with the outbreak strain of *Salmonella* Heidelberg were reported from Tennessee.
 - Two (22%) of nine ill persons were hospitalized, and no deaths were reported.
 - All of the ill persons were incarcerated at a single correctional facility located in Tennessee.
- This strain of *Salmonella* Heidelberg is commonly reported to [PulseNet \(http://www.cdc.gov/pulsenet/index.html\)](http://www.cdc.gov/pulsenet/index.html). Twenty-three additional persons infected with this same strain were identified from 15 other states.
 - Investigations determined that these ill persons were not related to the outbreak in Tennessee.
 - Sources of the infections in these 15 states were not identified.
- Epidemiologic and traceback investigations conducted by Tennessee and federal officials indicated that consumption of Tyson brand mechanically separated chicken was the source of the outbreak of *Salmonella* Heidelberg infections at the Tennessee correctional facility.
- On January 10, 2014, Tyson Foods, Inc. [recalled \(http://www.fsis.usda.gov/wps/portal/fsis/topics/recalls-and-public-health-alerts/recall-case-archive/archive/2014/recall-001-2014-release\)](http://www.fsis.usda.gov/wps/portal/fsis/topics/recalls-and-public-health-alerts/recall-case-archive/archive/2014/recall-001-2014-release) [Ⓔ \(http://www.cdc.gov/Other/disclaimer.html\)](http://www.cdc.gov/Other/disclaimer.html)

approximately 33,840 pounds of mechanically separated chicken products that may be contaminated with *Salmonella* Heidelberg.

- Institutions that purchased recalled chicken products should not serve them.
- The recalled products were not available for consumer purchase in retail stores.
- CDC's NARMS (<http://www.cdc.gov/narms/index.html>) laboratory conducted antibiotic resistance testing on *Salmonella* Heidelberg isolates collected from nine ill persons in Tennessee infected with the outbreak strain and one isolate collected from leftover mechanically separated chicken product.
 - Of the nine isolates collected from ill persons, two (22%) were multidrug-resistant (defined as resistant to at least one antibiotic in three or more antibiotic classes) and seven (78%) were pansusceptible (susceptible to all antibiotics tested).
 - The one isolate collected from leftover mechanically separated chicken product was pansusceptible.
- It is not unusual for raw poultry from any producer to have *Salmonella* bacteria. CDC and USDA-FSIS recommend institutions follow food safety tips (</features/salmonellachicken/index.html>) to prevent *Salmonella* infection from raw poultry produced by any brand.
- This outbreak of *Salmonella* Heidelberg infections was not related to the multistate outbreak (</salmonella/heidelberg-10-13/index.html>) of multidrug-resistant *Salmonella* Heidelberg infections linked to Foster Farms brand chicken.

Outbreak Summary

Introduction

CDC collaborated with public health officials in Tennessee and the United States Department of Agriculture's Food Safety and Inspection Service (USDA-FSIS) to investigate an outbreak of *Salmonella* Heidelberg infections at a Tennessee correctional facility. Results from Tennessee's investigation indicated that mechanically separated chicken produced by Tyson Foods, Inc. was the source of the outbreak at the Tennessee correctional facility.

Public health investigators used DNA "fingerprints" of *Salmonella* bacteria obtained through diagnostic testing with pulsed-field gel electrophoresis, or PFGE, to identify additional cases of illness that may be part of this outbreak. They used data from PulseNet (</pulsenet/>), the national subtyping network made up of state and local public health laboratories and federal food regulatory laboratories that performs molecular surveillance of foodborne infections. This strain of *Salmonella* Heidelberg is common in the PulseNet database. Four to eight cases of this strain are reported to PulseNet every month.

A total of nine ill persons infected with the outbreak strain of *Salmonella* Heidelberg were reported from a Tennessee correctional facility. CDC identified 23 additional persons infected with this same strain from 15 other states with illness onset dates ranging from October 21, 2013 to January 29, 2014. Investigations determined that these ill persons were not related to the outbreak in Tennessee. Sources of the infections in these 15 states were not identified.

Among persons in Tennessee for whom information was available, illness onset dates ranged from November 28, 2013 to November 29, 2013. Ill persons ranged in age from 22 years to 50 years, with a median age of 36 years. All ill persons were male. Among nine ill persons for whom information was available, two (22%) were hospitalized. No deaths were reported. All of the ill persons were incarcerated at a single correctional facility in Tennessee.

This outbreak appears to be over. However, *Salmonella* is an important cause of human illness in the United States. More information about *Salmonella*, and steps people can take to reduce their risk of infection, can be found on the CDC *Salmonella* Web Page (</salmonella/index.html>).


Investigation of the Outbreak

Epidemiologic and traceback investigations conducted by officials in Tennessee and USDA-FSIS indicated that consumption of mechanically separated chicken products produced by Tyson Foods, Inc. was the source of this outbreak of *Salmonella* Heidelberg infections. Mechanically separated chicken is a paste-like meat product produced by forcing the meat through a sieve to separate the bone from the edible meat tissue.

In interviews, ill persons at the Tennessee correctional facility answered questions about foods consumed and other exposures during the week before becoming ill. Nine (100%) of nine ill persons interviewed reported consuming foods containing mechanically separated chicken in the week before becoming ill. Investigations at the correctional facility determined that the chicken served during the exposure period was Tyson brand mechanically separated chicken.

CDC's National Antimicrobial Resistance Monitoring System (</narms/index.html>) (NARMS) laboratory conducted antibiotic resistance testing on clinical isolates collected from ill persons in Tennessee infected with the outbreak strain of *Salmonella* Heidelberg. Not all human isolates exhibited the same antibiotic resistance pattern. Of nine human isolates tested, two (22%) were multidrug-resistant (defined as being resistant to at least one antibiotic in three or more antibiotic classes) and seven (78%) were pansusceptible (susceptible to all antibiotics tested). Both multidrug-resistant isolates collected from ill persons showed resistance to ceftriaxone, an antibiotic that is commonly used to treat serious *Salmonella* infections. These two isolates also showed resistance to combinations of the following additional antibiotics: ampicillin, cefoxitin, ceftiofur, amoxicillin/clavulanic acid, sulfisoxazole, tetracycline and trimethoprim/sulfamethoxazole. Resistance to some of these antibiotics may be associated with increased risk of hospitalization or development of a bloodstream infection.

The CDC NARMS laboratory also conducted antibiotic resistance testing on one food isolate collected from leftover mechanically separated chicken from the Tennessee correctional facility. The isolate tested was pansusceptible (susceptible to all antibiotics tested).

On January 10, 2014, Tyson Foods, Inc. recalled (<http://www.fsis.usda.gov/wps/portal/fsis/topics/recalls-and-public-health-alerts/recall-case-archive/archive/2014/recall-001-2014-release>)  (<http://www.cdc.gov/Other/disclaimer.html>) approximately 33,840 pounds of mechanically separated chicken products that may be contaminated with *Salmonella* Heidelberg. The chicken products were produced on October 11, 2013, and shipped for institutional use only nationwide. The product was not available for consumer purchase in retail stores.

This outbreak of *Salmonella* Heidelberg infections was not related to the multistate outbreak (</salmonella/heidelberg-10-13/index.html>) of multidrug-resistant *Salmonella* Heidelberg infections linked to Foster Farms brand chicken.

Progression of the Outbreak Investigation

February 24, 2014

Final Case Count Update

A total of nine ill persons infected with the outbreak strain of *Salmonella* Heidelberg were reported from a Tennessee correctional facility. CDC identified 23 additional persons infected with this same strain from 15 other states with illness onset dates ranging from October 21, 2013 to January 29, 2014. Investigations determined that these ill persons were not related to the outbreak in Tennessee. Sources of the infections in these 15 states were not identified.

Among persons in Tennessee for whom information was available, illness onset dates ranged from November 28, 2013 to November 29, 2013. Ill persons ranged in age from 22 years to 50 years, with a median age of 36 years. All ill persons were male. Among nine ill persons for whom information was available, two (22%) were hospitalized. No deaths were reported. All of the ill persons were incarcerated at a single correctional facility in Tennessee.

This outbreak appears to be over. However, *Salmonella* is an important cause of human illness in the United States. More information about *Salmonella*, and steps people can take to reduce their risk of infection, can be found on the [CDC Salmonella Web Page \(/salmonella/index.html\)](http://salmonella/index.html).

Investigative Update

January 24, 2014

CDC's [NARMS \(/narms/index.html\)](http://narms/index.html) laboratory continues to conduct antibiotic resistance testing on *Salmonella* Heidelberg isolates collected from ill persons infected with the outbreak strain. Not all human isolates exhibited the same antibiotic resistance pattern. Of three isolates tested to date, two (67%) were multidrug-resistant (defined as being resistant to at least one antibiotic in three or more antibiotic classes), and one (33%) was pansusceptible (susceptible to all antibiotics tested). To date, both multidrug-resistant isolates collected from ill persons have shown resistance to ceftriaxone, an antibiotic that is commonly used to treat serious *Salmonella* infections. These two isolates have also shown resistance to combinations of the following additional antibiotics: ampicillin, cefoxitin, ceftiofur, amoxicillin/clavulanic acid, sulfisoxazole, tetracycline and trimethoprim/sulphamethoxazole. Resistance to some of these antibiotics may be associated with increased risk of hospitalization or development of a bloodstream infection.

Initial Announcement

January 14, 2014

CDC is collaborating with public health officials in Tennessee and the United States Department of Agriculture's Food Safety and Inspection Service (USDA-FSIS) to investigate an outbreak of *Salmonella* Heidelberg infections at a Tennessee correctional facility. Results from Tennessee's investigation indicate that mechanically separated chicken produced by Tyson Foods, Inc. is the likely source of the outbreak at the Tennessee correctional facility.

Public health investigators are using DNA "fingerprints" of *Salmonella* bacteria obtained through diagnostic testing with pulsed-field gel electrophoresis, or PFGE, to identify additional cases of illness that may be part of this outbreak. They are using data from [PulseNet \(/pulsenet/\)](http://pulsenet/), the national subtyping network made up of state and local public health laboratories and federal food regulatory laboratories that performs molecular surveillance of foodborne infections. This strain of *Salmonella* Heidelberg is common in the PulseNet database. Four to 8 cases of this strain are reported to PulseNet every month.

A total of 9 ill persons infected with the outbreak strain of *Salmonella* Heidelberg have been reported from a Tennessee correctional facility. CDC has identified 19 additional persons infected with this same strain from 12 other states with illness onset dates ranging from October 22, 2013 to December 15, 2013. Investigations are ongoing to determine if these cases are related to the outbreak in Tennessee or if they are part of the expected number of illnesses reported during this time. The names of these states will not be released until it is determined if they are part of this outbreak.


Among persons in Tennessee for whom information is available, illness onset dates range from November 28, 2013 to November 29, 2013. Ill persons range in age from 22 years to 50 years, with a median age of 36 years. All ill persons are male. Among 9 ill persons with available

information, 2 (22%) reported being hospitalized. No deaths have been reported. All of the ill persons are incarcerated at a single correctional facility in Tennessee.

Investigation of the Outbreak

Epidemiologic and traceback investigations conducted by officials in Tennessee and USDA-FSIS indicate that consumption of mechanically separated chicken products produced by Tyson Foods, Inc. is the likely source of this outbreak of *Salmonella* Heidelberg infections.


Mechanically separated chicken

([http://askkaren.custhelp.com/app/answers/detail/a_id/903/~/what-is-mechanically-separated-poultry-\(msp\)%3F](http://askkaren.custhelp.com/app/answers/detail/a_id/903/~/what-is-mechanically-separated-poultry-(msp)%3F))  (<http://www.cdc.gov/Other/disclaimer.html>) is a paste-like chicken product produced by forcing the poultry through a sieve to separate the bone from the edible tissue.

In interviews, ill persons at the Tennessee correctional facility answered questions about foods consumed and other exposures during the week before becoming ill. Eight (89%) of 9 ill persons interviewed reported consuming foods containing mechanically separated chicken in the week before becoming ill. Investigations at the correctional facility determined that the chicken served during the exposure period was Tyson brand mechanically separated chicken.

CDC's National Antimicrobial Resistance Monitoring System (/narms/) (NARMS) laboratory is currently conducting antibiotic resistance testing on clinical isolates collected from ill persons infected with the outbreak strain of *Salmonella* Heidelberg. Results of this testing will be reported when they become available. NARMS is a U.S. public health surveillance system that tracks antimicrobial resistance in foodborne and other enteric bacteria found in people, raw meat and poultry and food-producing animals. NARMS is an interagency partnership among the CDC, the US Food and Drug Administration (FDA), the USDA, and state and local health departments. The NARMS human surveillance program monitors antibiotic resistance in *Salmonella*, *Campylobacter*, *Shigella*, *Escherichia coli* O157, and *Vibrio* bacteria isolated from clinical specimens and submitted to NARMS by public health laboratories.

On January 10, 2014, Tyson Foods, Inc. recalled

(<http://www.fsis.usda.gov/wps/portal/fsis/topics/recalls-and-public-health-alerts/recall-case-archive/archive/2014/recall-001-2014-release>)  (<http://www.cdc.gov/Other/disclaimer.html>)

approximately 33,840 pounds of mechanically separated chicken products that may be contaminated with *Salmonella* Heidelberg. The chicken products were produced on October 11, 2013, and shipped for institutional use only nationwide. The product is not available for consumer purchase in retail stores.

CDC and state and local public health partners are continuing laboratory surveillance through PulseNet to identify additional ill persons and to interview ill persons about foods eaten before becoming ill. USDA-FSIS is continuing to work closely with CDC and state partners in this investigation.

This outbreak of *Salmonella* Heidelberg infections is not related to the multistate outbreak (/salmonella/heidelberg-10-13/index.html) of multidrug-resistant *Salmonella* Heidelberg infections linked to Foster Farms brand chicken.

Page last reviewed: January 14, 2014

Page last updated: February 24, 2014

Content source: Centers for Disease Control and Prevention

National Center for Emerging and Zoonotic Infectious Diseases (NCEZID)

Division of Foodborne, Waterborne, and Environmental Diseases (DFWED)

Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA
30333, USA
800-CDC-INFO (800-232-4636) TTY: (888) 232-6348 - Contact CDC-INFO

