



Centers for Disease Control and Prevention
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Salmonella

Multistate Outbreak of *Salmonella* Typhimurium and *Salmonella* Newport Infections Linked to Cantaloupe (Final Update)

Posted October 5, 2012 3:15 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) and the [CDC Vital Signs Web Page \(/VitalSigns/FoodSafety/\)](/VitalSigns/FoodSafety/).

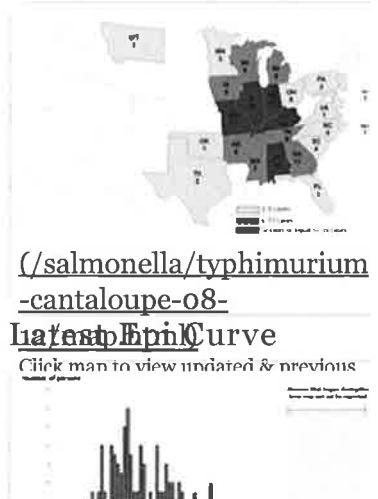
At a Glance:

- **Case Count: 261** (</salmonella/typhimurium-cantaloupe-08-12/epi.html>)
- **States: 24** (</salmonella/typhimurium-cantaloupe-08-12/map.html>)
- **Deaths: 3**
- **Hospitalizations: 94**
- **Recall: Yes** (</salmonella/typhimurium-cantaloupe-08-12/advice-consumers.html>)

More Information:

- [Recall & Advice to Consumers \(/salmonella/typhimurium-cantaloupe-08-12/advice-consumers.html\)](/salmonella/typhimurium-cantaloupe-08-12/advice-consumers.html)
- [Signs & Symptoms \(/salmonella/typhimurium-cantaloupe-08-12/signs-symptoms.html\)](/salmonella/typhimurium-cantaloupe-08-12/signs-symptoms.html)
- [Key Resources \(/salmonella/typhimurium-cantaloupe-08-12/key-resources.html\)](/salmonella/typhimurium-cantaloupe-08-12/key-resources.html)

Latest Case Count Map





[\(/salmonella/typhimurium-cantaloupe-08-12/epi.html\)](/salmonella/typhimurium-cantaloupe-08-12/epi.html)

Click on the map to view updated & previous epi curve graphs.

[\(/salmonella/typhimurium-cantaloupe-08-12/epi.html\)](/salmonella/typhimurium-cantaloupe-08-12/epi.html)

Read the Advice to Consumers » [\(/salmonella/typhimurium-cantaloupe-08-12/a](/salmonella/typhimurium-cantaloupe-08-12/a)

- A total of 261 persons infected with the outbreak strains of *Salmonella* Typhimurium (2 reported from 24 states.
 - 94 ill persons were hospitalized. Three deaths were reported in Kentucky.
- Collaborative investigation efforts of state, local, and federal public health and regulator Chamberlain Farms Produce, Inc. of Owensville, Indiana, was the source of this outbreak.
 - On August 22, 2012, the U.S. Food and Drug Administration (FDA) announced a re (<http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm316665.htm>) [↗](#) (<http://www.chamberlainfarms.com>)
 - On October 3, 2012, the U.S. Food and Drug Administration (FDA) issued a docum (<http://www.fda.gov/downloads/AboutFDA/CentersOffices/OfficeofGlobalRegulatoryOperatio>) [↗](#) (<http://www.cdc.gov/Other/disclaimer.html>) made by the FDA investigators during the
- This particular outbreak appears to be over. However, *Salmonella* is still an important c information about *Salmonella* and steps people can take to reduce their risk for infection c (</salmonella/general/prevention.html>) and the CDC Vital Signs Web Page (</vitalsigns/FoodSafe>

Outbreak Summary [↑ \(#top\)](#)

Introduction

CDC collaborated with public health officials in many states and the U.S. Food and Drug Administration (FDA) to investigate a multistate outbreak of *Salmonella* Typhimurium and *Salmonella* Newport infections linked to cantaloupe originating from Chamberlain Farms Produce, Inc. of Owensville, Indiana.

Public health investigators used DNA "fingerprints" of *Salmonella* bacteria obtained through diagnostic testing with pulsed-field gel electrophoresis (PFGE) to identify cases of illness that may be part of this outbreak. They used data from [PulseNet \(/pulsenet/\)](/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. Since the PFGE pattern of *Salmonella* Typhimurium connected with this outbreak is fairly common (typically associated with 10 to 15 cases of foodborne illness per month in the United States), a second test, Multiple-Locus Variable-number tandem repeat Analysis (MLVA), was used in addition to PFGE to define the outbreak strain.

A total of 261 individuals infected with the outbreak strain of *Salmonella* Typhimurium and *Salmonella* Newport were reported from 24 states: Alabama (25), Arkansas (6), Florida (1), Georgia (13), Illinois (36), Indiana (30), Iowa (9), Kentucky (66), Maryland (1), Michigan (8), Minnesota (2), Mississippi (7), Missouri (17), Montana (1), New Jersey (2), North Carolina (5), Ohio (5), Oklahoma (1), Pennsylvania (2), South Carolina (4), Tennessee (8), Texas (2), Virginia (1), and Wisconsin (9). The number of ill persons reported declined in certain states from previous reports since MLVA is now being used to define the outbreak strain of *Salmonella* Typhimurium.

Among 257 persons for whom information was available, illness onset dates ranged from July 6, 2012 to September 16, 2012. Ill persons ranged in age from less than 1 year to 100 years, with a median age of 47 years. Fifty-five percent of ill persons were female. Among 163 persons with available information, 84 (51%) reported being hospitalized. Three deaths were reported in Kentucky. Results of antibiotic susceptibility testing indicated that this strain of *Salmonella* is susceptible to commonly prescribed antibiotics.

This particular outbreak appears to be over. However, *Salmonella* is still 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 \(/salmonella/general/prevention.html\)](http://salmonella/general/prevention.html) and the [CDC Vital Signs Web Page \(/vitalsigns/FoodSafety/index.html\)](http://vitalsigns/FoodSafety/index.html).

Investigation of the Outbreak

Investigation of *Salmonella* Typhimurium Infections

Epidemiologic, laboratory, and traceback investigations conducted by officials in local, state, and federal public health, agriculture, and regulatory agencies linked this outbreak to cantaloupe originating from Chamberlain Farms Produce, Inc. of Owensville, Indiana.

In interviews, ill persons answered questions about foods consumed and other exposures during the week before becoming ill. Eighty-one (65%) of 123 ill persons interviewed reported consuming cantaloupe in the week before their illness began.

Laboratory testing conducted by the Kentucky Division of Laboratory Services isolated the outbreak strain of *Salmonella* Typhimurium from two cantaloupes collected from a retail location in Kentucky. Traceback investigations indicated that these cantaloupes originated from Chamberlain Farms.

From August 14-16, 2012, [FDA investigators collected samples from surface areas at the farm as well as samples of cantaloupe at Chamberlain Farms \(http://www.fda.gov/Food/FoodSafety/CORENetwork/ucm315879.htm\)](http://www.fda.gov/Food/FoodSafety/CORENetwork/ucm315879.htm) [and \(http://www.cdc.gov/Other/disclaimer.html\)](http://www.cdc.gov/Other/disclaimer.html). Samples of cantaloupe collected at Chamberlain Farms showed the presence of *Salmonella* Typhimurium bacteria with a DNA fingerprint that matched the outbreak strain.

On August 22, 2012, Chamberlain Farms, Inc. voluntarily recalled cantaloupe grown on its farm (<http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm316665.htm>) [and \(http://www.cdc.gov/Other/disclaimer.html\)](http://www.cdc.gov/Other/disclaimer.html). Records available at the time indicated that the product was initially shipped to Indiana, Kentucky, Missouri, Tennessee, Ohio, Illinois, and Wisconsin, although further shipment was likely.



Investigation of *Salmonella* Newport Infections

During August 2012, CDC began collaborating with public health officials in several states and the U.S. Food and Drug Administration (FDA) to investigate a multistate outbreak of 33 *Salmonella* Newport infections. The geographic distribution, dates of illness onset, and initial interview information suggested a possible connection between the *Salmonella* Newport outbreak and the *Salmonella* Typhimurium outbreak linked to Chamberlain farms.

Among 21 people in the *Salmonella* Newport outbreak for whom information was available, 13 (61%) reported eating cantaloupe in the 7 days before illness. As part of the ongoing investigation at Chamberlain Farms, FDA collected and tested samples of cantaloupe. One of

the samples yielded *Salmonella* Newport with a PFGE pattern indistinguishable from the cluster of *Salmonella* Newport infections described above. Based on an epidemiologic link and results of laboratory testing, CDC combined these two investigations and grouped the two associated PFGE patterns together as the "outbreak strains."

Also as part of the ongoing investigation at Chamberlain Farms, the State of Indiana collected and tested samples of watermelon grown at the farm. One of the samples yielded *Salmonella* Newport with a different PFGE pattern. This pattern was indistinguishable from another cluster of 25 ill persons with *Salmonella* Newport infections in 8 states. Interviews did not identify a clear link between these illnesses and consumption of melons.

On October 3, 2012, FDA issued a document that lists observations  [PDF - 2 pages] (<http://www.fda.gov/downloads/AboutFDA/CentersOffices/OfficeofGlobalRegulatoryOperationsandPoli>  (<http://www.cdc.gov/Other/disclaimer.html>) made by the FDA investigators during the inspection of Chamberlain Farms.

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

Progression of the Outbreak Investigation (#onpage)

October 5, 2012

Final Case Count Update

Since the PFGE pattern of *Salmonella* Typhimurium connected with this outbreak is fairly common (typically associated with 10 to 15 cases per month in the United States), a second test, Multiple-Locus Variable-number tandem repeat Analysis (MLVA), was used in addition to PFGE to define the outbreak strain.

A total of 261 individuals infected with the outbreak strain of *Salmonella* Typhimurium and *Salmonella* Newport were reported from 24 states: Alabama (25), Arkansas (6), Florida (1), Georgia (13), Illinois (36), Indiana (30), Iowa (9), Kentucky (66), Maryland (1), Michigan (8), Minnesota (2), Mississippi (7), Missouri (17), Montana (1), New Jersey (2), North Carolina (5), Ohio (5), Oklahoma (1), Pennsylvania (2), South Carolina (4), Tennessee (8), Texas (2), Virginia (1), and Wisconsin (9). The number of ill persons reported declined in certain states from previous reports since MLVA is now being used to define the outbreak strain of *Salmonella* Typhimurium.

Among 257 persons for whom information was available, illness onset dates ranged from July 6, 2012 to September 16, 2012. Ill persons ranged in age from less than 1 year to 100 years, with a median age of 47 years. Fifty-five percent of ill persons were female. Among 163 persons with available information, 84 (51%) reported being hospitalized. Three deaths were reported in Kentucky.

September 13, 2012

Case Count Update

A total of 270 individuals infected with the outbreak strain of *Salmonella* Typhimurium and *Salmonella* Newport have been reported from 26 states. The 66 new cases are from 18

states: Alabama (3), Arkansas (1), Georgia (5), Iowa (2), Illinois (10), Indiana (11), Kentucky (7), Maryland (1), Michigan (1), Missouri (8), Mississippi (2), Montana (1), North Carolina (2), Ohio (4), Oklahoma (1), South Carolina (2), Virginia (1), and Wisconsin (4).

Among 270 persons for whom information is available, illness onset dates range from July 6, 2012 to August 30, 2012. Ill persons range in age from less than 1 year to 100 years, with a median age of 49 years. Fifty-five percent of ill persons are female. Among 196 persons with available information, 101 (52%) reported being hospitalized. Three deaths have been reported in Kentucky.

Illnesses that occurred after August 20, 2012 might not yet be reported due to the time it takes between when a person becomes ill and when the illness is reported.

Investigation Update

During August 2012, CDC began collaborating with public health officials in several states and the U.S. Food and Drug Administration (FDA) to investigate a multistate outbreak of *Salmonella* Newport infections. Epidemiologic, laboratory, and traceback investigations conducted by officials in local, state, and federal public health, agriculture, and regulatory agencies indicate that cantaloupes grown by Chamberlain Farms in Indiana are a likely source of this outbreak of *Salmonella* Newport infections. Among 30 persons for whom information is available in this outbreak, illness onset dates range from July 9, 2012 to August 18, 2012. Ill persons range in age from 4 years to 80 years, with a median age of 60 years. Forty-three percent of patients are female. Among 23 persons with available information, 11 (47%) reported being hospitalized. No deaths have been reported. The geographic distribution, dates of illness onset, and initial interview information suggested a possible connection between this outbreak and the *Salmonella* Typhimurium outbreak linked to Chamberlain farms. Among 21 people in the *Salmonella* Newport outbreak for whom information is available, 13 (61%) reported eating cantaloupe in the 7 days before illness.

As part of the ongoing investigation at Chamberlain Farms, FDA collected and tested samples of cantaloupe. One of these samples yielded *Salmonella* Newport with a PFGE pattern (pattern .0807) indistinguishable from the cluster of *Salmonella* Newport infections described above. Based on an epidemiologic link and results of laboratory testing, CDC has combined these two investigations and grouped the two associated PFGE patterns together as the "outbreak strains."

Also as part of the ongoing investigation at Chamberlain Farms, the State of Indiana collected and tested samples of watermelon grown at the farm. One of these samples yielded *Salmonella* Newport with a different PFGE pattern (.0149). This pattern is indistinguishable from another cluster of 25 ill persons with *Salmonella* Newport infections in 8 states currently being investigated by state and federal officials. Investigations are ongoing to determine if there is a link between these illnesses and consumption of melons.

August 30, 2012

Case Count Update

A total of 204 individuals infected with the outbreak strain of *Salmonella* Typhimurium have been reported from 22 states. The 26 new cases are from 12 states: Arkansas (2), Florida (1), Georgia (1), Illinois (3), Indiana (4), Iowa (1), Kentucky (7), Minnesota (1), Missouri (1), North Carolina (2), Ohio (1), and Tennessee (2).

Among 149 persons for whom information is available, illness onset dates range from July 7, 2012 to August 18, 2012. Ill persons range in age from less than 1 year to 100 years, with a median age of 50 years. Fifty-nine percent of ill persons are female. Among 149 persons with available information, 78 (52%) reported being hospitalized. Two deaths have been reported in Kentucky.

Illnesses that occurred after August 7, 2012 might not yet be reported due to the time it takes between when a person becomes ill and when the illness is reported.

August 28, 2012

Environmental Sampling Update

From August 14 to 16, FDA investigators collected samples from surface areas at the farm as well as samples of cantaloupe at Chamberlain Farms. Samples of cantaloupe collected at Chamberlain Farms show the presence of *Salmonella* Typhimurium bacteria with a DNA fingerprint that matches the outbreak strain.

August 23, 2012


Case Count Update

A total of 178 individuals infected with the outbreak strain of *Salmonella* Typhimurium have been reported from 21 states. The 37 new cases are from 13 states: Alabama (6), Georgia (2), Illinois (4), Indiana (5), Kentucky (6), Massachusetts (2), Minnesota (1), Mississippi (3), Missouri (3), New Jersey (1), Ohio (1), Texas (1), and Wisconsin (2). Since the last update cases have been reported from one additional state, Massachusetts.

Among 121 persons for whom information is available, illness onset dates range from July 7, 2012 to August 9, 2012. Ill persons range in age from less than 1 year to 100 years, with a median age of 48 years. Fifty-nine percent of ill persons are female. Among 121 persons with available information, 62 (51%) reported being hospitalized. Two deaths have been reported in Kentucky.

Illnesses that occurred after July 31, 2012 might not yet be reported due to the time it takes between when a person becomes ill and when the illness is reported.

Recall

On August 22, 2012, Chamberlain Farms Produce, Inc. of Owensville, Indiana voluntarily [recalled cantaloupe](http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm316665.htm) (<http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm316665.htm>)  (<http://www.cdc.gov/Other/disclaimer.html>) grown on its farm, because it may be one source contributing to the multistate outbreak of *Salmonella* Typhimurium infections.

Records available currently indicate that this product was initially shipped to Indiana, Kentucky, Missouri, Tennessee, Ohio, Illinois, and Wisconsin, although further shipment was likely.

Initial Announcement

August 17, 2012

CDC is collaborating with public health officials in several states and the U.S. Food and Drug Administration (FDA) to investigate a multistate outbreak of *Salmonella*

Typhimurium infections. Joint investigation efforts indicate that cantaloupe grown in southwestern Indiana is a likely source of this outbreak. As a result of the initial investigations by the state health departments in Indiana and Kentucky, a farm in southwestern Indiana has contacted its distributors, which reach outside Indiana into other states, and is withdrawing its cantaloupe from the market place. The farm has agreed to cease distributing cantaloupes for the rest of the growing season... ([show more »](#)) (#)

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Content source: [Centers for Disease Control and Prevention](#)

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