



Salmonella

Multistate Outbreak of Human *Salmonella* Infections Linked to Live Poultry in Backyard Flocks

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At a Glance:

- **Case Count: 300** (</salmonella/live-poultry-05-14/epi.html>)
- **States: 42** (</salmonella/live-poultry-05-14/map.html>)
- **Deaths: 0**
- **Hospitalizations: 31%**

More Information:

- [Advice to Consumers](/salmonella/live-poultry-05-14/advice-consumers.html) (</salmonella/live-poultry-05-14/advice-consumers.html>)
- [Signs & Symptoms](/salmonella/live-poultry-05-14/signs-symptoms.html) (</salmonella/live-poultry-05-14/signs-symptoms.html>)
- [Key Resources](/salmonella/live-poultry-05-14/key-resources.html) (</salmonella/live-poultry-05-14/key-resources.html>)

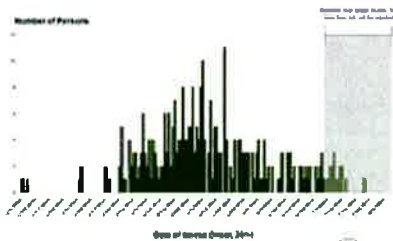
Latest Case Count Map



</salmonella/live-poultry-05-14/map.html>

[Click map to view updated & previous case count maps. \(/salmonella/live-poultry-05-14/map.html\)](/salmonella/live-poultry-05-14/map.html)

Latest Epi Curve



</salmonella/live-poultry-05-14/epi.html>

[Click graph to view updated & previous epi curve graphs. \(/salmonella/live-poultry-05-14/epi.html\)](/salmonella/live-poultry-05-14/epi.html)

Highlights

- **[Read the Advice to Consumers » \(/salmonella/live-poultry-05-14/advice-consumers.html\)](/salmonella/live-poultry-05-14/advice-consumers.html)**
- As of August 5, 2014, a total of 300 persons infected with the outbreak strains of *Salmonella* *Infantis*, *Salmonella* *Newport*, or *Salmonella* *Hadar* have been reported from 42 states and Puerto Rico.
 - 31% of ill persons have been hospitalized, and no deaths have been reported.

- Epidemiologic, laboratory, and traceback findings have linked this outbreak of human *Salmonella* infections to contact with chicks, ducklings, and other live poultry from Mt. Healthy Hatcheries in Ohio.
 - 80% of ill people reported contact with live poultry in the week before their illness began.
- Findings of multiple traceback investigations of live baby poultry from homes of ill persons have identified Mt. Healthy Hatcheries in Ohio as the source of chicks and ducklings. This is the same mail-order hatchery that has been associated with multiple outbreaks of *Salmonella* infections linked to live poultry in past years, including in 2012 (</salmonella/live-poultry-05-12/index.html>) and 2013 (</salmonella/live-poultry-04-13/index.html>).
- CDC's National Antimicrobial Resistance Monitoring System (</narms/index.html>) (NARMS) laboratory conducted antibiotic resistance testing on *Salmonella* isolates collected from 11 ill persons infected with the outbreak strains of *Salmonella* Infantis or Newport. Of the 11 isolates tested:
 - Two (18%) were drug resistant (defined as resistance to one or more antibiotics).
 - Nine (82%) were pansusceptible (susceptible to all antibiotics tested).
- Mail-order hatcheries, agricultural feed stores, and others that sell or display chicks, ducklings, and other live poultry should provide health-related information (</healthypets/resources/posters.htm#poultry>) to owners and potential purchasers of these birds prior to selling them. This should include information about the risk of acquiring a *Salmonella* infection from contact with live poultry.
 - Read the advice to mail-order hatcheries and feed stores (</salmonella/live-poultry-04-13/advice-consumers.html>) and others that sell or display live poultry.
- Consumers who own live poultry should take steps to protect themselves:
 - Always wash your hands thoroughly with soap and water right after touching live poultry or anything in the area where these birds live and roam.
 - Do not let live poultry inside the house.
 - Learn about additional recommendations (</Features/SalmonellaBabyBirds/>) to protect yourself and your family from *Salmonella* infections. These recommendations are important and apply to all live poultry, regardless of the age of the birds or where they were purchased.

August 8, 2014

Case Count Update

As of August 5, 2014, a total of 300 persons infected with the outbreak strains of *Salmonella* Infantis, *Salmonella* Newport, or *Salmonella* Hadar have been reported from 42 states and Puerto Rico. Since the last update on June 27, 2014, a total of 49 new ill persons have been reported from Alabama (2), Arizona (1), Colorado (1), Georgia (3), Idaho (2), Iowa (1), Massachusetts (1), Minnesota (1), Missouri (1), Nebraska (3), New Hampshire (1), New Jersey (1), New York (3), North Carolina (1), Ohio (3), Oregon (1), Pennsylvania (4), Puerto Rico (1), South Carolina (1), Tennessee (3), Vermont (1), Virginia (8), Washington (1), and West Virginia (4).

Among persons who reported the date they became ill, illnesses began between February 3, 2014, and July 10, 2014. Ill persons range in age from younger than 1 year to 95 years, and the median age is 28 years. Thirty-seven percent of ill persons are 10 years of age or younger. Fifty-four percent of ill persons are female. Among 206 ill persons with available information, 64 (31%) have been hospitalized. No deaths have been reported.

Illnesses that occurred after July 8, 2014, might not yet be reported due to the time it takes between when a person becomes ill and when the illness is reported. This takes an average of 2 to 4 weeks. Please see the Timeline for Reporting Cases of *Salmonella* Infection (/salmonella/outbreaks/reporting_timeline.html) for more details.

Investigation Update

Samples from live poultry and the environments where the poultry live and roam were collected from ill persons' homes in Vermont and Virginia. Testing of these samples yielded two of the outbreak strains of *Salmonella* Infantis. These birds were sourced from Mt. Healthy Hatcheries in Ohio.

The National Antimicrobial Resistance Monitoring System (NARMS) is a U.S. public health surveillance system that tracks antibiotic resistance in foodborne and other enteric bacteria found in people, raw meat and poultry, and food-producing animals. NARMS is an interagency partnership among CDC, the U.S. Food and Drug Administration (FDA), U.S. Department of Agriculture (USDA), and state and local health departments.

The [NARMS human surveillance program \(/narms/index.html\)](/narms/index.html) at CDC monitors antibiotic resistance in *Salmonella* and other bacteria isolated from clinical specimens submitted to NARMS by public health laboratories. CDC's NARMS laboratory conducted antibiotic resistance testing on a total of 11 isolates collected from ill persons infected with the outbreak strains of *Salmonella* Infantis (8 isolates) or Newport (3 isolates). Of the 11 isolates tested to date, 2 (18%) were resistant to tetracycline and 9 (82%) were pansusceptible (susceptible to all antibiotics tested). Tetracycline is not typically used to treat *Salmonella* infections. CDC's NARMS laboratory continues to conduct antibiotic resistance testing on additional clinical isolates collected from ill persons infected with the outbreak strains. Results will be reported when they become available.

The NPIP is a voluntary program that was initiated to eliminate certain diseases from poultry flocks that cause significant poultry illness and death. On August 8, 2014, [amendments \(http://www.gpo.gov/fdsys/pkg/FR-2014-07-09/html/2014-16037.htm\)](http://www.gpo.gov/fdsys/pkg/FR-2014-07-09/html/2014-16037.htm) [to the National Poultry Improvement Plan \(http://poultryimprovement.org/\)](http://www.cdc.gov/Other/disclaimer.html) [\(http://www.cdc.gov/Other/disclaimer.html\)](http://www.cdc.gov/Other/disclaimer.html) (NPIP) will take effect. One of these amendments to the NPIP provisions includes the addition of a new certification program for *Salmonella*, in which mail-order hatcheries have the opportunity to voluntarily participate. Participation in this program will certify their flocks are monitored for *Salmonella* organisms that may cause illness in humans. The intent of this program is to reduce the incidence of *Salmonella* in day-old poultry in the hatchery and give the poultry industry a better opportunity to reduce incidence of *Salmonella* in their products. In the future, consumers and retailers can choose to purchase their birds from mail-order hatcheries that participate in this additional program.

June 27, 2014

Case Count Update

Based on ongoing epidemiologic investigations, additional ill persons infected with a different serotype of *Salmonella*, *Salmonella* Hadar, reported contact with chicks, ducklings, and other live baby poultry sourced from Mt. Healthy Hatcheries, and this strain has been added to the outbreak investigation.

As of June 25, 2014, a total of 251 persons infected with the outbreak strains of *Salmonella* Infantis, *Salmonella* Newport, or *Salmonella* Hadar have been reported from 37 states. Since the last update on May 30, 2014, a total of 125 new ill persons have been reported from 32 states: Alabama (1), Arkansas (2), California (2), Colorado (1), Connecticut (1), Florida (1), Georgia (6), Iowa (2), Illinois (4), Indiana (2), Kansas (1), Kentucky (3), Maine (4), Maryland (1), Michigan (1), Mississippi (2), Montana (2), New Jersey (1), New York (15), North Carolina (13), Ohio (8), Pennsylvania (10), South Carolina (2), South Dakota (3), Tennessee (6), Texas (2), Vermont (3), Virginia (9), Washington (6), West Virginia (9), Wisconsin (1), and Wyoming (1).

Among the persons who reported the date they became ill, illnesses began between and February 4, 2014 and June 4, 2014. Ill persons range in age from younger than one year to 95 years, and the median age is 28 years. Thirty-nine percent of ill persons are 10 years of age or younger. Fifty-one percent of ill persons are female. Among 171 ill persons with available information, 54 (32%) have been hospitalized. No deaths have been reported.

Illnesses that occurred after May 28, 2014 might not yet be reported due to the time it takes between when a person becomes ill and when the illness is reported. This takes an average of 2 to 4 weeks. Please see the [Timeline for Reporting Cases of *Salmonella* Infection](/salmonella/outbreaks/reporting_timeline.html) for more details.

May 30, 2014

Case Count Update

As of May 27, 2014, a total of 126 persons infected with the outbreak strains of *Salmonella* Infantis or *Salmonella* Newport have been reported from 26 states. Since the last update on May 8, 2014, a total of 66 new ill persons have been reported from 18 states: Alabama (4), Colorado (1), Georgia (5), Illinois (1), Indiana (1), Kentucky (2), Maine (4), Montana (1), New Hampshire (1), New Mexico (1), New York (6), North Carolina (11), Ohio (7), Pennsylvania (7), South Carolina (3), Tennessee (5), Virginia (5), and West Virginia (1).

Among the persons who reported the date they became ill, illnesses began between and February 4, 2014 and May 15, 2014. Ill persons range in age from younger than one year to 95 years, and the median age is 28 years. Thirty-nine percent of ill persons are 10 years of age or younger. Fifty percent of ill persons are female. Among 81 ill persons with available information, 28 (35%) have been hospitalized. No deaths have been reported.

Illnesses that occurred after May 3, 2014, might not yet be reported due to the time it takes between when a person becomes ill and when the illness is reported. This takes an average of 2 to 4 weeks. Please see the [Timeline for Reporting Cases of *Salmonella* Infection](/salmonella/outbreaks/reporting_timeline.html) for more details.

Investigation Update

Epidemiologic, laboratory, and traceback investigations conducted by officials in local, state, and federal public health agencies indicate that contact with live poultry sourced from Mt. Healthy Hatcheries in Ohio is the likely source of this outbreak of *Salmonella* infections.

Interviews with newly reported ill persons about their exposures in the week before becoming ill continue to be conducted. To date, 72 (82%) of 88 ill persons interviewed reported contact with live poultry (e.g., chicks, chickens, ducks, ducklings) before becoming ill. Eight (11%) of 72 reported contact with only adult chickens and 5 (7%) of 72 reported contact with only ducklings. The median time from acquiring live poultry and illness onset was 24 days, with a range of 3 to 468 days. Samples from live poultry and the environments where the poultry live and roam were collected from an ill person's home in Vermont. Testing of these samples yielded one of the outbreak strains of *Salmonella* Infantis. These birds were sourced from Mt. Healthy Hatcheries.

Mt. Healthy Hatcheries sells birds to many different retailers. Fifty-two (90%) of 58 ill persons with available purchase information reported purchasing live poultry from seven different feed or farm store companies in multiple states. Ill persons reported purchasing live poultry for backyard flocks to produce eggs or meat, or to keep as pets.

May 8, 2014

Initial Announcement

CDC is collaborating with public health, veterinary, and agriculture officials in many states and with the U.S. Department of Agriculture's Animal and Plant Health Inspection Service (USDA-APHIS) to investigate an outbreak of human *Salmonella* infections linked to contact with live poultry. Public health investigators are using the [PulseNet \(/pulsenet/index.html\)](/pulsenet/index.html) system to identify cases of illness that may be part of this outbreak. PulseNet, the national subtyping network of public health and food regulatory agency laboratories coordinated by CDC, obtains DNA "fingerprints" of *Salmonella* bacteria through diagnostic testing with pulsed-field gel electrophoresis, or PFGE.

As of May 7, 2014, a total of 60 persons infected with the outbreak strains of *Salmonella* Infantis or *Salmonella* Newport have been reported from 23 states. The number of ill persons identified in each state is as follows: Alabama (1), Arizona (1), Arkansas (1), California (1), Colorado (2), Georgia (2), Idaho (2), Indiana (1), Kentucky (6), Maine (1), Maryland (2), New Hampshire (1), New Mexico (1), New York (6), North Carolina (3), Ohio (6), Pennsylvania (8), Tennessee (3), Utah (1), Vermont (3), Virginia (3), Washington (1), and West Virginia (4).

Among the persons who reported the date they became ill, illnesses began between and February 4, 2014 and April 21, 2014. Ill persons range in age from younger than one year to 95 years, and the median age is 29 years. Forty percent of ill persons are 10 years of age or younger. Fifty-seven percent of ill persons are male. Among 32 ill persons with available information, 10 (31%) have been hospitalized. No deaths have been reported.

This outbreak can be visually described with a chart showing the number of persons who became ill each day. This chart is called an [epidemic curve or epi curve \(/foodsafety/outbreaks/investigating-outbreaks/epi-curves.html\)](/foodsafety/outbreaks/investigating-outbreaks/epi-curves.html). Illnesses that occurred after April 11, 2014, might not yet be reported due to the time it takes between when a person becomes ill and when the illness is reported. This takes an average of 2 to 4 weeks. Please see the [Timeline for Reporting Cases of *Salmonella* Infection \(/salmonella/outbreaks/reporting_timeline.html\)](/salmonella/outbreaks/reporting_timeline.html) for more details.

Investigation of the Outbreak

Epidemiologic and traceback investigations conducted by officials in local, state, and federal public health agencies indicate that contact with live poultry sourced from Mt. Healthy Hatcheries in Ohio is the likely source of this outbreak of *Salmonella* infections.

In interviews, ill persons answered questions about contact with animals and foods consumed during the week before becoming ill. Thirty-one (82%) of 38 ill persons interviewed reported contact with live poultry (e.g., chicks, chickens, ducks, ducklings) before becoming ill. Mt. Healthy Hatcheries sells birds to many different retailers. Nineteen (90%) of 21 ill persons with available purchase information reported purchasing live baby poultry from five different feed or farm store companies in multiple states. Ill persons reported purchasing live poultry for backyard flocks to produce eggs or meat, or to keep as pets.

Findings of multiple traceback investigations of live baby poultry from homes of ill persons have identified Mt. Healthy Hatcheries in Ohio as the source of chicks and ducklings. This hatchery uses multiple source flocks to obtain eggs and chicks, so it is unclear at this time where the contamination originated. This is the same mail-order hatchery that has been associated with multiple outbreaks of human *Salmonella* infections linked to live poultry in the past, including in [2012 \(/salmonella/live-poultry-05-12/index.html\)](/salmonella/live-poultry-05-12/index.html) and [2013 \(/salmonella/live-poultry-04-13/index.html\)](/salmonella/live-poultry-04-13/index.html). Public health, veterinary, and agriculture officials continue to work with this hatchery and have made recommendations for improvement. This hatchery is a member of the USDA National Poultry Improvement Plan, a program that is intended to eliminate certain strains of *Salmonella* that cause illness in poultry breeding flocks and

hatcheries, but does not certify that these live poultry are free from other strains of *Salmonella* that may cause human illness.

Contact with live poultry can be a source of human *Salmonella* infections. Many ill persons in this outbreak reported bringing the live poultry into their homes, and others reported kissing or cuddling with the live poultry. These behaviors increase a person's risk of a *Salmonella* infection from contact with live poultry. People can get sick even if they do not have direct contact with the live poultry, but touch items and places that have been contaminated in the poultry's environment. Always wash hands thoroughly with soap and water right after touching live poultry or anything in the area where they live and roam. Adults should supervise hand washing for young children. These [recommendations \(/features/SalmonellaPoultry/\)](/features/SalmonellaPoultry/) are important and apply to all live poultry regardless of the age of the birds or where they were purchased.

Mail-order hatcheries, agricultural feed stores, and others who sell or display chicks, ducklings and other live poultry should provide [health-related information \(/healthypets/publications/index.html\)](/healthypets/publications/index.html) to owners and potential purchasers of these birds prior to the point of purchase. This should include information about the risk of acquiring a *Salmonella* infection from contact with live poultry.

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[Division of Foodborne, Waterborne, and Environmental Diseases \(DFWED\)](#)

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