

Outbreaks of *Salmonella* Infections Linked to Backyard Poultry

Final Update



Investigation Notice

Posted December 17, 2020 at 4:50 PM ET

This outbreak investigation is over. Although the investigation is over, people can still get a *Salmonella* infection from chickens and ducks in backyard flocks. Stay healthy around your backyard flock by washing your hands, keeping your birds outdoors, and supervising young children around your flock.

In 2020, CDC and public health officials in all 50 states investigated 17 multistate outbreaks of *Salmonella* illnesses linked to contact with poultry in backyard flocks. The number of illnesses reported this year was higher than the number reported during any of the past years' outbreaks linked to backyard flocks.

Final Outbreak Information

At A Glance

- [Reported Cases](#): 1,722
 - [States](#): 50
 - Hospitalizations: 333
 - Death: 1
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- As of December 17, 2020, a total of 1,722 people infected with one of the outbreak strains of *Salmonella* were reported from all 50 states.
 - 333 people (33% of those with information available) were hospitalized.
 - One death in Oklahoma was reported.
 - 24% of ill people were children younger than 5 years of age.
 - [Epidemiologic and laboratory evidence](#) showed that contact with backyard poultry was the likely source of these outbreaks.

- 576 (66%) of the 876 ill people interviewed reported contact with chicks and ducklings.
 - People reported obtaining chicks and ducklings from several sources, including agricultural stores, websites, and hatcheries.
 - Testing of backyard poultry and their environments (such as backyard coops) in Kentucky and Oregon found three of the outbreak strains.
- As of December 17, 2020, this outbreak investigation is over.

Advice to Backyard Flock Owners

Backyard poultry can carry *Salmonella* bacteria even if they look healthy and clean and show no signs of illness. You can get sick with a *Salmonella* infection from touching backyard poultry or their environment. Follow these tips to stay healthy with your backyard flock, even if there is not an ongoing outbreak:

Wash your hands.

- Always wash your hands with soap and water right after touching backyard poultry, their eggs, or anything in the area where they live and roam.
- Adults should supervise handwashing by young children.
- Use hand sanitizer if soap and water are not readily available. Consider keeping hand sanitizer near your coop.

Be safe around poultry.

- Don't kiss, snuggle, or touch backyard poultry and then touch your face or mouth.
- Don't let backyard poultry inside the house, especially in areas where food or drink is prepared, served, or stored.
- Set aside a pair of shoes to wear while taking care of poultry and keep those shoes outside of the house.
- Don't eat or drink where poultry live or roam.
- Stay outdoors when cleaning any equipment or materials used to raise or care for poultry, such as cages and containers for feed or water.

Supervise kids around poultry.

- Always supervise children around poultry and while they wash their hands after being around poultry.
- Children younger than 5 years of age shouldn't handle or touch chicks, ducklings, or other poultry. Young children are more likely to get sick from germs like *Salmonella*.

Handle eggs safely.

- Collect eggs often. Eggs that sit in the nest can become dirty or break.
- Throw away cracked eggs. Germs on the shell can more easily enter the egg through a cracked shell.
- Eggs with dirt and debris can be cleaned carefully with fine sandpaper, a brush, or a cloth.
- Don't wash warm, fresh eggs because colder water can pull germs into the egg.
- Refrigerate eggs after collection to maintain freshness and slow germ growth.
- Cook eggs until both the yolk and white are firm. Egg dishes should be cooked to an internal temperature of 160°F (71°C) or hotter. Raw and undercooked eggs may contain *Salmonella* bacteria that can make you sick.

For more recommendations on keeping poultry, visit the [Healthy Pets, Healthy People website section on backyard poultry](#).

Advice to Stores That Sell or Display Poultry

- Source poultry from hatcheries that have adopted the U.S. Department of Agriculture's (USDA's) best management practices to mitigate *Salmonella* contamination and those which voluntarily participate in the USDA's National Poultry Improvement Plan (USDA-NPIP) US *Salmonella* Monitored Program.
- Provide health information to owners and potential buyers of poultry before purchase. This should include information about the risk of getting a *Salmonella* infection from contact with poultry.
 - A sample flyer describing the risk of *Salmonella* infections from contact with poultry and prevention recommendations is available online.
- Place health information in clear view where poultry are displayed.
- Provide handwashing stations or hand sanitizer next to poultry display areas and tell customers to wash hands right after leaving these areas.
- Display poultry out of reach of customers, especially children, so customers cannot easily touch poultry.

- Clean and sanitize the areas where poultry are displayed between shipments of new poultry. Be sure to remove debris first so that the disinfectant is applied to a surface that is generally clean. Apply the disinfectant on the surface for the proper contact time listed on the disinfectant label.
- More information on displaying animals in public settings is in the 2017 Compendium of Measures to Prevent Disease Associated with Animals in Public Settings

Advice to Mail-Order Hatcheries

- Mail-order hatcheries should provide health-related information to owners and potential purchasers before they buy any poultry (see example below). This should include information about preventing *Salmonella* infections from contact with poultry.
 - A flyer describing the risk of *Salmonella* infections from contact with poultry and prevention recommendations is available online.
- Mail-order hatcheries should develop interventions to help prevent contamination and infection of poultry with *Salmonella*:
 - Best Management Practices Handbook: A Guide to the Mitigation of Salmonella Contamination in Poultry Hatcheries.
- Mail-order hatcheries should participate in the voluntary USDA-NPIP U.S. Salmonella Monitored Program, in which mail-order hatcheries certify their flocks are monitored for *Salmonella* bacteria 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 the incidence of *Salmonella* in their products.

Symptoms of *Salmonella* Infection

- Most people infected with *Salmonella* develop diarrhea, fever, and stomach cramps 6 hours to 6 days after being exposed to the bacteria.
- The illness usually lasts 4 to 7 days, and most people recover without treatment.
- In some people, the illness may be so severe that the patient needs to be hospitalized. *Salmonella* infection may spread from the intestines to the bloodstream and then to other places in the body.

- Children younger than 5 years of age, adults 65 and older, and people with weakened immune systems are more likely to have a severe illness.

Investigation Details

December 17, 2020

In 2020, CDC and public health officials in all 50 states investigated 17 multistate outbreaks of *Salmonella* infections linked to backyard poultry.

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 people by using a standardized laboratory and data analysis method called [whole genome sequencing](#) (WGS). CDC PulseNet manages a national database of these sequences that are used to identify possible outbreaks. WGS gives investigators detailed information about the bacteria causing illness. In this investigation, WGS showed that bacteria isolated from ill people were closely related genetically. This means that people in this outbreak were more likely to share a common source of infection.

As of December 17, 2020, a total of 1,722 people infected with one of the outbreak strains of *Salmonella* were reported from all 50 states.

Illnesses started on dates from [January 14, 2020, to November 27, 2020](#). Ill people ranged in age from less than 1 year to 95 years, with a median age of 35. Children younger than 5 accounted for 24% of ill people. Of ill people, 59% were female. Of 1,004 people with information available, 333 (33%) were hospitalized. One death in Oklahoma was reported.

If antibiotics were needed, some infections related to these outbreaks may have been difficult to treat with some commonly recommended antibiotics and may have required a different antibiotic choice. Whole genome sequencing performed on *Salmonella* bacteria isolated from 1,641 ill people and two environmental samples showed [predicted antibiotic resistance](#) to one or more of the following antibiotics for 848 isolates:

- amoxicillin-clavulanic acid (1.5%)
- ampicillin (3.2%)

- cefoxitin (1.5%)
- ceftriaxone (1.5%)
- chloramphenicol (0.7%)
- ciprofloxacin (0.1%)
- fosfomycin (2.1%)
- gentamicin (1.2%)
- kanamycin (0.5%)
- streptomycin (45.6%)
- sulfisoxazole (3.7%)
- tetracycline (46.0%)
- trimethoprim-sulfamethoxazole (1.7%)

There was no antibiotic resistance predicted for 795 (48.4%) isolates. Testing of 13 outbreak isolates using standard [antibiotic susceptibility testing](#) by CDC's [National Antimicrobial Resistance Monitoring System \(NARMS\)](#) laboratory showed resistance to streptomycin and tetracycline in 3 isolates and no resistance in 10 isolates (fosfomycin and kanamycin were not tested by this method).

Investigation of the Outbreaks

[Epidemiologic and laboratory evidence](#) showed that contact with backyard poultry (such as chicks and ducklings) was the likely source of these outbreaks.

In interviews, ill people answered questions about animal contact and other exposures in the week before they became ill. Of 876 people interviewed, 576 (66%) reported contact with chicks and ducklings before becoming ill.

Testing of backyard poultry and their environments (such as backyard coops) in Kentucky and Oregon found three of the outbreak strains.

Ill people reported buying poultry from many sources, including agricultural stores, websites, and hatcheries. No single store chain or hatchery could account for all of the illnesses.

Regardless of where backyard poultry are purchased, they can carry *Salmonella* germs that can make people sick. Backyard poultry owners should always follow [steps to stay healthy around their flocks](#).

As of December 17, 2020, this outbreak investigation is over. CDC will continue to work with partners to prevent *Salmonella* infections linked to contact with backyard poultry.