

Outbreak of Multidrug-Resistant *Salmonella* Infections Linked to Raw Turkey Products



Investigation Notice

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CDC and public health and regulatory officials in several states are investigating a multistate outbreak of multidrug-resistant *Salmonella* Reading infections linked to raw turkey products. The U.S. Department of Agriculture's Food Safety and Inspection Service (USDA-FSIS) is monitoring the outbreak.

Latest Outbreak Information

At A Glance

- [Reported Cases](#): 90
- [States](#): 26
- Hospitalizations: 40
- Deaths: 0
- Ninety people infected with the outbreak strain of *Salmonella* Reading have been reported from 26 states.
 - Forty people have been hospitalized, and no deaths have been reported.
- [Epidemiologic and laboratory evidence](#) indicates that raw turkey products from a variety of sources are contaminated with *Salmonella* Reading and are making people sick.
- In interviews, ill people report eating different types and brands of turkey products purchased from many different locations. Two ill people lived in a household where raw turkey pet food was fed to pets.
- The outbreak strain has been identified in samples taken from raw turkey pet food, raw turkey products, and live turkeys.
- A single, common supplier of raw turkey products or of live turkeys has not been identified.

- The outbreak strain of *Salmonella* Reading is present in live turkeys and in many types of raw turkey products, indicating it might be widespread in the turkey industry. CDC and USDA-FSIS have shared this information with representatives from the turkey industry and asked about steps that they may be taking to reduce *Salmonella* contamination.

Advice to Consumers and Retailers

Always handle raw turkey carefully and cook it thoroughly to prevent food poisoning. This outbreak is a reminder that raw turkey products can have germs that spread around food preparation areas and can make you sick.

CDC is not advising that consumers avoid eating properly cooked turkey products, or that retailers stop selling raw turkey products.

CDC advises consumers to follow these steps to help prevent *Salmonella* infection from raw turkey:

- **Wash your hands.** *Salmonella* infections can spread from one person to another. Wash hands before and after preparing or eating food, after contact with animals, and after using the restroom or changing diapers.
- **Cook raw turkey thoroughly to kill harmful germs.** Turkey breasts, whole turkeys, and ground poultry, including turkey burgers, casseroles, and sausage, should always be cooked to an internal temperature of 165°F to kill harmful germs. Leftovers should be reheated to 165°F. [Use a food thermometer to check, and place it in the thickest part of the food.](#)
- **Don't spread germs from raw turkey around food preparation areas.** [Washing raw poultry before cooking is not recommended.](#) Germs in raw poultry juices can spread to other areas and foods. Thoroughly wash hands, counters, cutting boards, and utensils with warm, soapy water after they touch raw turkey. Use a separate cutting board for raw turkey and other raw meats if possible.
- **CDC does not recommend feeding raw diets to pets.** Germs like *Salmonella* in raw pet food can make your pets sick. Your family also can get sick by handling the raw food or by taking care of your pet.

CDC will update the advice to consumers and retailers if more information comes available, such as a supplier or type of raw turkey product linked to illness.

Symptoms of *Salmonella* Infection

- Most people infected with *Salmonella* develop diarrhea, fever, and stomach cramps 12 to 72 hours after being exposed to the bacteria.
- The illness usually lasts 4 to 7 days, and most people recover without treatment.
- In some people, the diarrhea 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.
- In rare cases, *Salmonella* infection can cause death unless the person is treated promptly with antibiotics.
- Children younger than 5 years of age, adults older than 65 years of age, and people with weakened immune systems are more likely to have severe illness.
- For more information, see the CDC [Salmonella](#) website.

Investigation Details

July 18, 2018

CDC and public health and regulatory officials in several states are investigating a multistate outbreak of *Salmonella* Reading infections linked to raw turkey products. The U.S. Department of Agriculture's Food Safety Inspection Service (USDA-FSIS) is monitoring the outbreak.

Public health investigators are using the [PulseNet](#) system to identify illnesses that may be 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 techniques called [pulsed-field gel electrophoresis](#) (PFGE) and [whole genome sequencing](#) (WGS). CDC PulseNet manages a national database of these DNA fingerprints to identify possible outbreaks. WGS gives a more detailed DNA fingerprint than PFGE. WGS performed on *Salmonella* from ill people in this outbreak showed that they are closely related genetically. This means that the ill people are more likely to share a common source of infection.

As of July 11, 2018, 90 people infected with the outbreak strain of *Salmonella* Reading have been reported from 26 states. A list of the states and the number of cases in each can be found on the [Map of Reported Cases page](#).

Illnesses started on dates from [November 20, 2017, to June 29, 2018](#). Ill people range in age from less than 1 year to 91, with a median age of 41. Sixty-one percent are female. Of 78 people with information available, 40 (51%) have been hospitalized. No deaths have been reported.

Investigation of the Outbreak

In interviews, ill people answered [questions about the foods they ate and other exposures](#) in the week before they became ill. Of 61 people interviewed, 37 (61%) people interviewed reported preparing or eating turkey products that were purchased raw, including ground turkey, turkey pieces, and whole turkey. Ill people reported buying many different brands of raw turkey products from multiple stores. Also, two of the 61 ill people interviewed became sick after pets in their home ate [raw ground turkey pet food](#). Three of the 61 ill people interviewed worked in a facility that raises or processes turkeys, or lived with someone who did.

The outbreak strain of *Salmonella* Reading has been identified in samples from [raw turkey pet food in Minnesota](#), from raw turkey products from 19 slaughter and 6 processing establishments, and from live turkeys from several states. The samples collected by FSIS at these slaughter and processing establishments were part of FSIS' routine testing under the *Salmonella* performance standards. Furthermore, WGS showed that the *Salmonella* strain from these samples is closely related genetically to the *Salmonella* strain from ill people. This result provides more evidence that people in this outbreak got sick from preparing raw turkey products.

WGS analysis did not identify predicted antibiotic resistance in 68 isolates from 28 ill people and 40 food and animal samples. However, 33 isolates from ill people and 49 isolates from food and animal samples contained genes for resistance to all or some of the following antibiotics: ampicillin, streptomycin, sulfamethoxazole, tetracycline, gentamicin, and kanamycin. Testing of four outbreak isolates using standard [antibiotic susceptibility testing](#) by CDC's [National Antimicrobial Resistance Monitoring System \(NARMS\)](#) laboratory confirmed these results. This resistance likely will not affect the choice of antibiotic used to treat most people since these antibiotics are not normally used to treat *Salmonella* infections.

Available data indicate that this strain of *Salmonella* Reading may be present in live turkeys and in raw turkey products. A single, common supplier of raw turkey products or of live turkeys has not been identified.

CDC and USDA-FSIS shared the results of the investigation with representatives from the turkey industry to make them aware of the outbreak and resulting illnesses, and to ask them about steps they may be taking to reduce *Salmonella* contamination. Because investigation results suggest this strain of *Salmonella* Reading is present in both live turkeys and in raw turkey products, further investigation and interventions to reduce the prevalence of this strain should target both the live turkey industry and turkey processing facilities. Consumers should be aware that raw turkey may be contaminated with germs and consumers should always [follow steps to prevent Salmonella infection](#) from these products.