

## **Salmonellosis**

Agent: *Salmonella* (bacteria)

Mode of Transmission: Ingestion of food or water contaminated with animal or human feces. Infected persons can spread the bacteria to other persons by not washing their hands properly after going to the bathroom and then handling food that others will eat. Infection can also occur after eating, smoking, or touching one's mouth if hands are contaminated with the bacteria and not washed well. People can also be infected with *Salmonella* by the feces of some pets, including reptiles and young birds, if hands are not washed well after contact with sick or seemingly healthy infected animals.

Signs/Symptoms: Sudden onset of headache, fever, abdominal pain, diarrhea and sometimes vomiting. Dehydration, especially in older adults and young children, can be a severe complication.

Prevention: Preventive measures should include following proper sanitation methods for food preparation and water supplies, including preventing cross-contamination of food preparation surfaces; maintaining sanitary sewage disposal; excluding infected people from handling food or providing healthcare; and prohibiting the sale of small turtles and restricting the sale of other reptiles for pets. Proper hand hygiene should be practiced, including washing hands after toileting or diapering, before and after handling food, and after handling animals or their feces. Eggs and other animal food products should be cooked thoroughly.

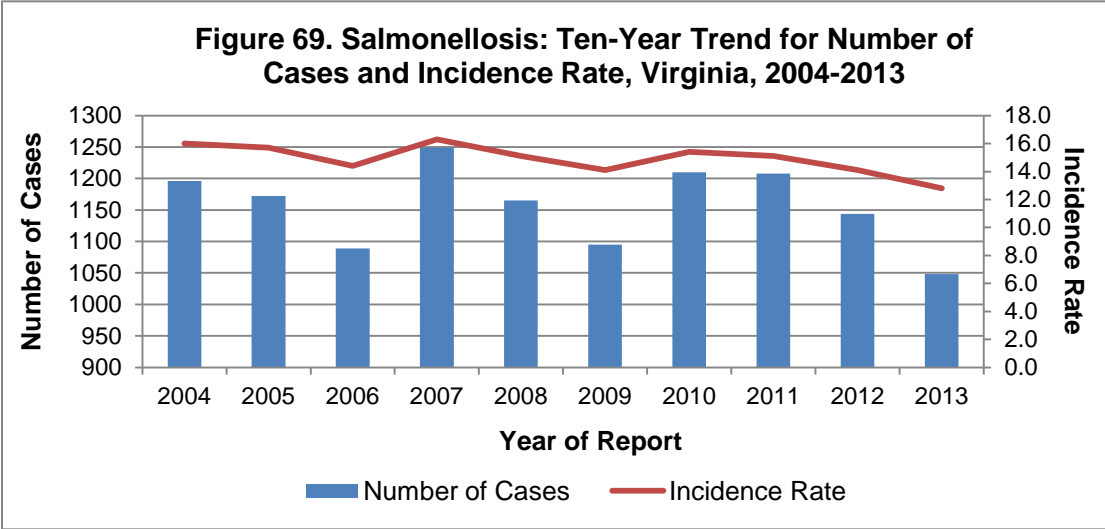
Other Important Information: With approximately 42,000 salmonellosis cases reported each year in the United States, *Salmonella* is one of the leading pathogens that cause foodborne illnesses and result in hospital admissions. The incidence rate is highest among infants and young children. Mortality rates are higher in infants, older adults and people with impaired immune systems.

Special Note about Salmonellosis: While more than 2,500 serotypes of *Salmonella* can cause human illness, two specific *Salmonella* serotypes (*S. Typhi* and *S. Paratyphi*\*) can lead to typhoidal illness (i.e., typhoid fever and paratyphoid fever, respectively). Typhoidal illness is found only in humans and often results in more serious infections than those seen in other *Salmonella* serotypes; up to 10% of people who are untreated for typhoidal illness may die. Cases of typhoid fever and paratyphoid fever are usually associated with foreign travel and are alike in regard to clinical features and measures necessary to control the spread of infection. However, despite their similarities, paratyphoid fever tends to be milder than typhoid fever, with a lower fatality rate. Due to its severity, typhoid fever is reported as a separate condition in Virginia (see the Typhoid Fever section of this report for more information), while cases of paratyphoid fever are included in the general salmonellosis report.

\* Paratyphoid fever can be caused by any of three separate strains of *S. Paratyphi*: *S. Paratyphi A*, *S. schottmuelleri* (also called *S. Paratyphi B*), or *S. hirschfeldii* (also called *S. Paratyphi C*). A separate strain of *S. Paratyphi B* (i.e., *S. Paratyphi B* var. L[+] tartrate [+]) causes illness that resembles non-typhoidal salmonellosis; these cases are treated as general salmonellosis and are not considered to be paratyphoid fever.

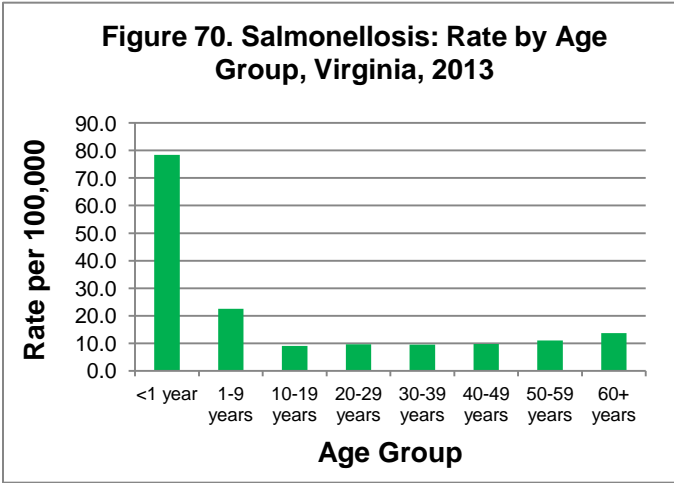
Salmonellosis: 2013 Data Summary	
Number of Cases:	1,048
5-Year Average Number of Cases:	1,164.4
% Change from 5-Year Average:	-10%
Incidence Rate per 100,000:	12.8

The 1,048 cases of salmonellosis reported in Virginia in 2013 is lower than the 1,144 cases reported in 2012, and represents a 10% decrease from the five-year average of 1,164.4 cases per year (Figure 69).

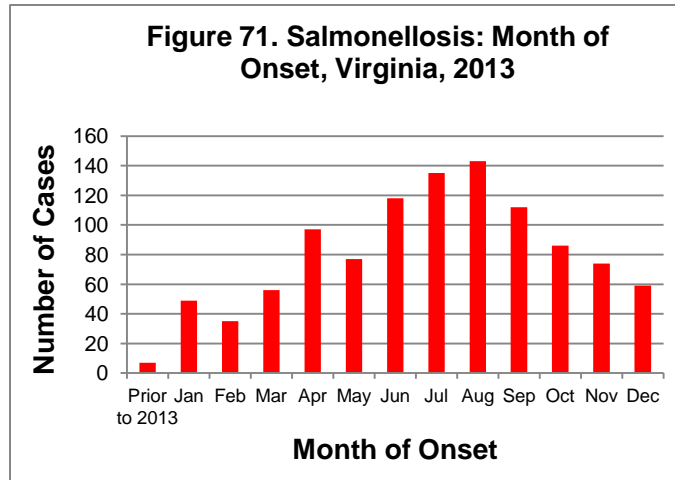


During 2013, infants had a higher incidence rate for *Salmonella* infection than any other age group (78.4 cases per 100,000). This was followed by children aged 1-9 years with a rate of 22.5 per 100,000 (Figure 70). Incidence rates in the other age groups ranged from 9.1 to 13.7 per 100,000. Race information was missing for 41% of all cases; among those with race reported, incidence was higher in the “other” race population (8.8 per 100,000) than the white and black populations (7.9 and 6.3 per 100,000, respectively). Females were infected with *Salmonella* more frequently than males (13.6 and 11.8 per 100,000, respectively).

As can be seen in the map below, cases of salmonellosis were reported from almost every locality in the state. The highest incidence rate was seen in the northwest health planning region (15.3 per 100,000) and the lowest rate was seen in the southwest region (10.6 per 100,000).



*Salmonella* infections peaked during the warmer months, with 48% of cases occurring between June and September (Figure 71). Three deaths occurred in persons infected with *Salmonella* during 2013. They occurred in a child <1 year of age, a male in the 50-59 year age group, and a male in the 60 year and older age group.



Ten confirmed salmonellosis outbreaks occurred during 2013, six of which were foodborne outbreaks. The number of Virginia residents affected in each foodborne outbreak ranged from 1 to 18. Six of the *Salmonella* outbreaks involving Virginia residents in 2013 were multi-state outbreaks. Three outbreaks were related to contact with live poultry (e.g., chicks, ducklings, and partridges), with three to seven Virginia cases per outbreak. One other salmonellosis outbreak occurred among four members of an extended family; the method of transmission for this outbreak could not be identified. See the Outbreaks section of this report for more information.

Illnesses identified during the 2013 salmonellosis outbreaks were attributed to several *Salmonella* serotypes; during some outbreaks, more than one *Salmonella* serotype was detected. The serotypes involved in the outbreaks included Braenderup, Heidelberg, Infantis, Javiana, Mbandaka, Newport, Saintpaul, Thompson, and Typhimurium. For all salmonellosis infections in 2013, including sporadic cases among Virginia residents, the most commonly detected serotypes were *Salmonella* ser. Typhimurium and *Salmonella* ser. Enteritidis (Table 12).

Table 12. Top Ten *Salmonella* Serotypes Reported to the CDC PulseNet System by the Division of Consolidated Laboratory Services, Virginia, 2013

Rank	Serotype Causing Infection	Number	Rank	Serotype Causing Infection	Number
1	<i>S. ser</i> Typhimurium	196	6	<i>S. ser</i> Bareilly	34
2	<i>S. ser</i> Enteritidis	192	7	<i>S. ser</i> Saintpaul	33
3	<i>S. ser</i> Newport	109	8	<i>S. ser</i> Braenderup	31
4	<i>S. ser</i> Javiana	62	9	<i>S. ser</i> Thompson	23
5	<i>S. ser</i> I 4,[5],12:i:-	57	10	<i>S. ser</i> Infantis	20

Four cases of paratyphoid fever (three *S. Paratyphi* A and one *S. Paratyphi* B) were reported in Virginia during 2013. This is similar to the three cases identified in 2012 but a decrease from the 16 cases identified in 2011. Three of the affected individuals travelled to India in the weeks prior to illness onsets; the fourth case-patient reported no history of travel.

# Salmonellosis Incidence Rate by Locality Virginia, 2013

