

## **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 using the bathroom and then handling food that others 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; prohibiting the sale of small turtles; and avoiding chicks, ducklings, turtles, and other reptiles as pets for small children. 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.

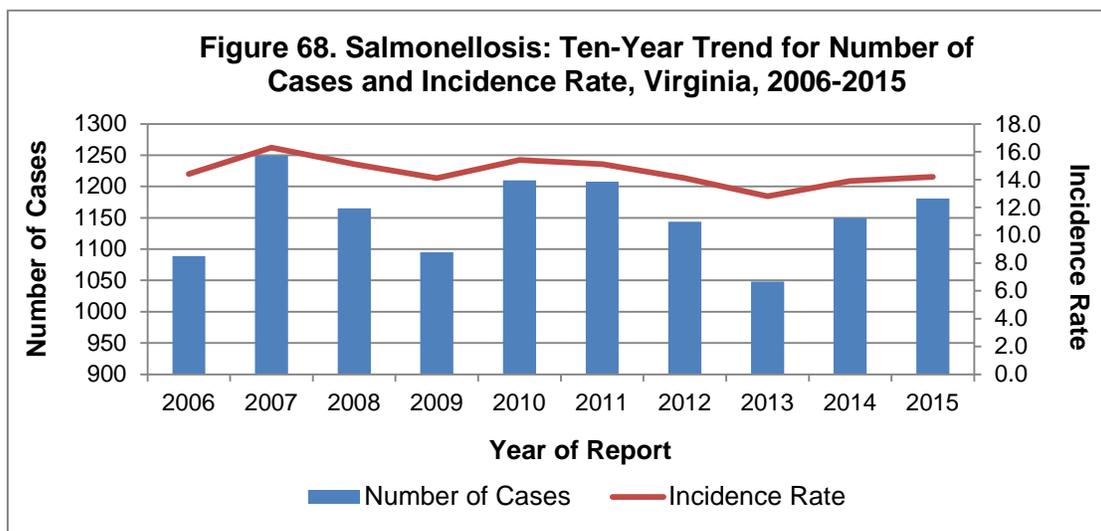
Other Important Information: With approximately 42,000 salmonellosis cases reported each year in the United States, *Salmonella* is one of the leading pathogens that cause foodborne illnesses, many of which result in hospital admissions. Incidence rates are highest among infants and young children. Mortality 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. ser Typhi* and *S. ser 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.

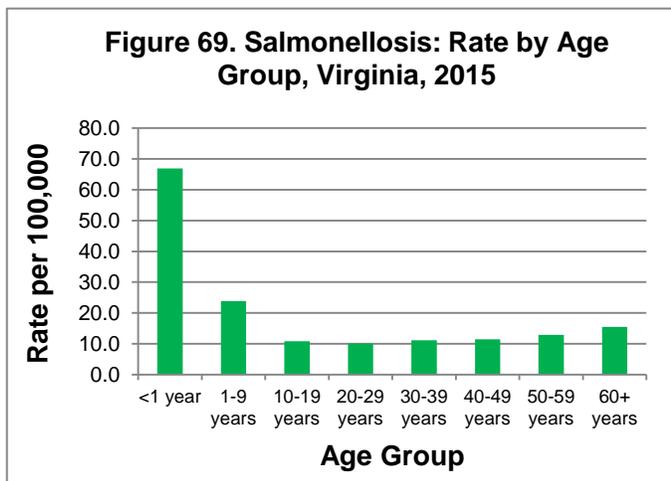
\* Paratyphoid fever can be caused by any of three separate strains of *S. ser Paratyphi*: *S. ser Paratyphi A*, *S. ser schottmuelleri* (also called *S. ser Paratyphi B*), or *S. ser hirschfeldii* (also called *S. ser Paratyphi C*). A separate strain of *S. ser Paratyphi B* (i.e., *S. ser Paratyphi 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: 2015 Data Summary	
Number of Cases:	1,181
5-Year Average Number of Cases:	1,152.0
% Change from 5-Year Average:	+3%
Incidence Rate per 100,000:	14.2

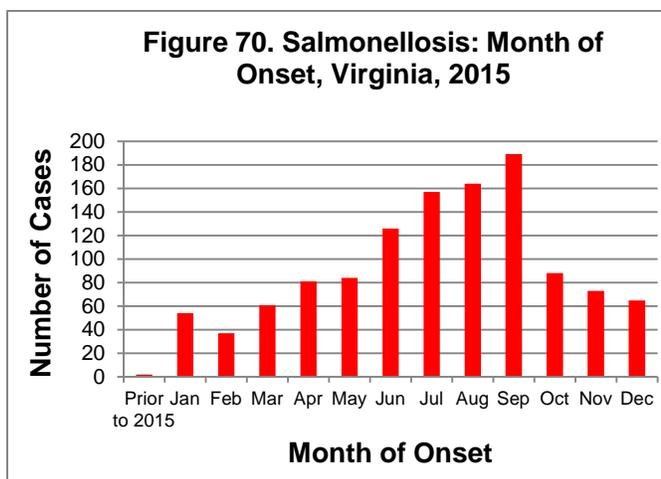
During 2015, 1,181 cases of salmonellosis were reported in Virginia. This is slightly higher than the 1,150 cases reported in 2014 and the five-year average of 1,152 cases per year (Figure 68).



According to the CDC, children under 5 years of age are the most likely to be infected with *Salmonella*. This was seen in Virginia in 2015, with an incidence rate among infants less than 1 year of age of 66.9 per 100,000, which was much higher than any other age group (Figure 69). The incidence rate among children 1-9 years of age was 23.8 per 100,000 while rates in all other age groups ranged from 10.1 to 15.5 per 100,000. Race information was not reported for 33% of cases. Among those where race was known, incidence was higher in the white population (9.9 per 100,000) than the black and “other” race populations (8.7 and 7.5 per 100,000, respectively). By sex, incidence rates were higher among females than males (14.7 and 13.8 per 100,000, respectively).



By region, the northwest region had the highest incidence rate in the state (16.3 per 100,000), followed by the central, eastern, and northern regions (15.7, 15.1, and 13.3 per 100,000, respectively). The southwest region had the lowest incidence rate at 10.8 per 100,000. For incidence rates by locality, please see the map below. While *Salmonella* infections were reported in every quarter of the year, the majority of cases occurred during the summer months, peaking in September (Figure 70). Six deaths were attributed to salmonellosis during 2015. The deaths occurred among four males and two females ranging in age from 43 to 103 years.



In 2015, nine confirmed salmonellosis outbreaks occurred, seven of which were multistate outbreaks. Of the nine outbreaks, five were foodborne, three were zoonotic, and for one the transmission type could not be identified. The number of Virginia residents affected during each outbreak ranged from 1 to 30. Of the foodborne outbreaks, one was linked to cucumbers imported from Mexico, one was associated with frozen tuna imported from Indonesia, and the other three were related to exposures at various restaurants. All three of the zoonotic outbreaks were attributed to contact with live poultry.

Salmonellosis cases identified in outbreaks and sporadic illness during 2015 were attributed to several *Salmonella* serotypes. The serotypes involved in the outbreaks included Enteritidis, Hadar, Muenster, Poona, and Paratyphi B var. L(+) tartrate + (Java). For all salmonellosis infections in 2015, including sporadic cases among Virginia residents, the most commonly detected serotypes were *Salmonella* ser. Enteritidis and *Salmonella* ser. Typhimurium (Table 14).

**Table 14. Top Ten *Salmonella* Serotypes Reported to the CDC PulseNet System by the Division of Consolidated Laboratory Services, Virginia, 2015**

Rank	Serotype Causing Infection	Number	Rank	Serotype Causing Infection	Number
1	<i>S. ser</i> Enteritidis	228	6	<i>S. ser</i> Bareilly	33
2	<i>S. ser</i> Typhimurium	194	7	<i>S. ser</i> Infantis	30
3	<i>S. ser</i> Newport	128	8	<i>S. ser</i> Saintpaul	29
4	<i>S. ser</i> Javiana	80	9	<i>S. ser</i> Braenderup	25
5	<i>S. ser</i> I 4,12:i:-	57	10	<i>S. ser</i> Thompson	23

Six cases of paratyphoid fever (five *S. ser* Paratyphi A and one *S. ser* Paratyphi B) were reported in Virginia during 2015. All of the affected individuals reported traveling internationally in the month prior to illness onset; countries visited by infected persons included India, Pakistan, Peru, and Myanmar.

# Salmonellosis Incidence Rate by Locality Virginia, 2015

