
Salmonella bacteria and salmonellosis

Frequently Asked Questions

1. **What is *Salmonella* and salmonellosis?**

Salmonella are Gram-negative bacteria of the Enterobacteriaceae family. *Salmonella* are divided into two main groups on the basis of the illness they cause - typhoidal and non-typhoidal *Salmonella*. Nontyphoidal *Salmonella* usually cause self-limiting gastrointestinal disease including diarrhoea and abdominal cramps. Persons with weak immune systems, such as those with advanced HIV/AIDS, may experience more severe disease. Occasionally *Salmonella* organisms invade beyond the gut and cause disseminated disease or infections such as meningitis or liver abscesses. Disease of any kind due to non-typhoidal salmonella is called 'salmonellosis'. Typhoidal *Salmonella* cause a distinct disease called typhoid fever, a potentially life-threatening febrile, systemic illness, which is discussed in a separate FAQ document.

2. **Who can get a *Salmonella* infection (salmonellosis)?**

Nontyphoidal *Salmonella* are normal bacterial inhabitants of the gut of certain animals particularly birds, domestic fowl, and reptiles. Humans and certain animals can get infection with *Salmonella* through eating contaminated food products of animals that normally carry *Salmonella* bacteria, such as meat, poultry, milk and eggs. Salmonellosis is a zoonosis – a disease acquired from animals.

3. **Where does salmonellosis occur in South Africa?**

Nontyphoidal *Salmonella* are widely found in South African agricultural industries. In specimens obtained across South Africa from livestock and poultry, meat at abattoirs, raw materials at feed mills, animal feed, and environmental sources (eg, poultry houses, abattoirs, feed mills, water) from 2012-2014, *Salmonella* bacteria were found in 9,031 (5%) of 180,298 specimens. Food-borne outbreaks, or person-to-person spread of *Salmonella* occur frequently in South Africa. When associated with outbreaks of gastro-enteritis, salmonellosis is a notifiable condition. Person-to-person transmission occurs more frequently in hot weather, and in poorer socio-economic conditions.

4. **How is *Salmonella* transmitted?**

Ingestion of *Salmonella* contaminated food products may lead to gastroenteritis, or more severe, disseminated disease especially if the size of the infecting dose is sufficiently large, or if a person has certain risk factors. These include being immunocompromised through HIV or other illness such as cancer chemotherapy, older age, or being a child under five years. Salmonellosis can also be acquired through transmission from person to person by the faecal-oral route.

5. **How does *Salmonella* affect animals?**

Salmonella bacteria live in the gut of domestic animals without necessarily causing illness. Animal carcasses may often remain contaminated with *Salmonella* organisms.

6. What are the signs and symptoms of salmonellosis?

Salmonella bacteria cause diarrhea, abdominal cramps and fever with occasional symptoms of chills, headache, nausea and vomiting. The onset of illness occurs 6-72 hours (12-36 hours) after eating contaminated food. Persons with mild illness recover completely without specific treatment within 2-7 days. Persons with disseminated or isolated organ disease present with fever, sepsis and symptoms related to localised infection. Meningitis, pneumonia and abscesses due to *Salmonella* are sites more commonly reported, and are occasionally life threatening.

7. How is salmonellosis diagnosed?

Diagnosis is based on isolation of *Salmonella* organisms from stool cultures, blood, urine and material from sites of infection. Isolates undergo serotyping and antimicrobial susceptibility testing.

8. How is salmonellosis treated?

Treatment of gastroenteritis due to *Salmonella* is mostly symptomatic with rehydration therapy and electrolyte replacement. Antibiotic treatment is not recommended for mild cases as it may prolong shedding of the organism in stool. Antibiotic therapy may be administered to those with moderate or severe disease (high fevers or dehydration), or to those with risk-factors for disseminated disease. Quinolones are the antibiotics of choice, but third generation cephalosporins are also adequate. A growing number of *Salmonella* bacteria are resistant to commonly used antibiotics.

9. How can infection with *Salmonella* bacteria be prevented?

Adherence to legislated control measures at all stages of the food preparation chain, including agricultural production, processing, transporting, and preparation will prevent salmonellosis. Adherence to guidelines on domestic food preparation such as the WHO "Five Keys to Safer Food" can assist to protect households from salmonellosis arising from contaminated food, or person-to-person transmission. These 'five keys' are hand hygiene, separation of raw and cooked foods, thorough cooking of poultry and meat before consuming, and the use of safe water and raw ingredients.

10. Where can I find out more information

For the Public:

http://ecdc.europa.eu/Health_topics/Salmonellosis/Index.html

<http://www.who.int/mediacentre/factsheets/fs139/en/>

<http://www.cdc.gov/salmonella/general/index.html>

<http://www.who.int/topics/salmonella/en/>

For Healthcare Workers:

Contact the NICD hotline after hours or in emergency situations: 082 883 9920

For more information contact:

Centre for Enteric Diseases

Dr Karen Keddy (Head: Bacteriology Division)

Tel: +27 11 386 6269 Email: karenk@nicd.ac.za