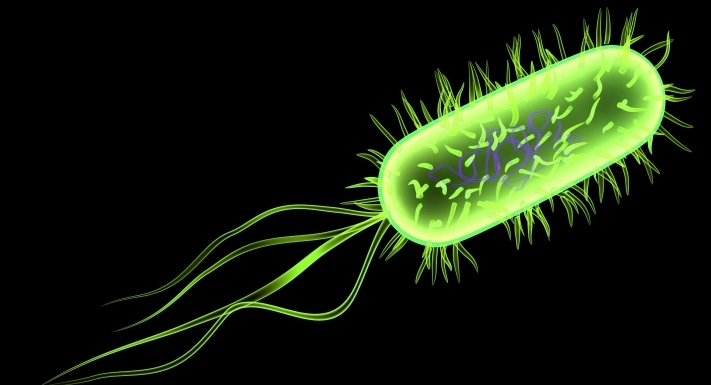
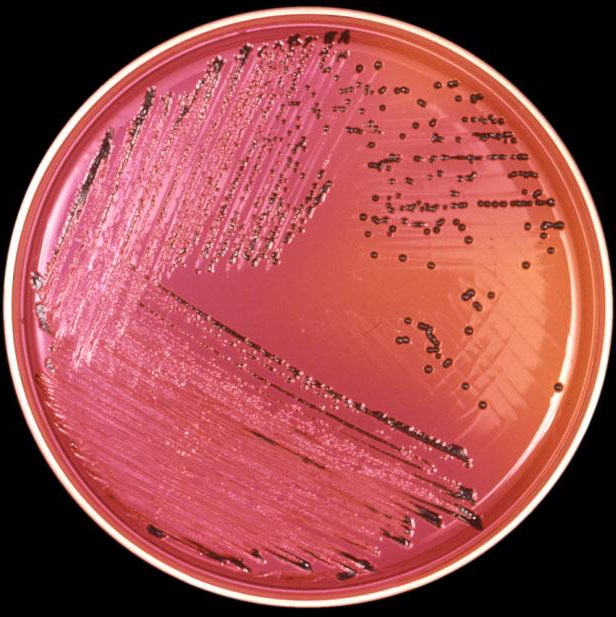
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**Salmonella**

Salmonella are germs (bacteria) that cause an infectious disease (called “salmonellosis”) of the bowel in humans and animals. Although the disease is usually limited to the bowel and most infected people do not have any serious medical complications, the salmonella germ can spread to other systems of the body, such as the blood and bone. This may cause serious complications in infants and in people who are very old or are immunocompromised.

*Salmonella* spp. are members of the family Enterobacteriaceae. They are Gram negative, facultatively anaerobic rods. *Salmonella* species are classified into serovars (serotypes) based on the lipopolysaccharide (O), flagellar protein (H), and sometimes the capsular (Vi) antigens. There are more than 2500 known serovars. Within a serovar, there may be strains that differ in virulence . most of the 5 subspecies of *S. enterica*, as well as in *S. bongori*, are referred to by their antigenic formulas.



***Subspecies and serovars important in human disease***

Most of the isolates that cause disease in humans and other mammals belong to *S. enterica* subsp. *enterica*. A few serovars - *Salmonella* ser. Typhi, Paratyphi *Salmonella*  are human pathogens. They are transmitted mainly from person to person and have no significant animal reservoirs. The remaining *Salmonella* serovars, sometimes referred to as non-typhoidal *Salmonella*, are zoonotic or potentially zoonotic. *S. bongori*, *S. enterica* subsp. *salamae*, *S. enterica* subsp. *arizonae*, *S. enterica* subsp. *diarizonae* and *S. enterica* subsp. *indica* are usually found in reptiles, amphibians and fish and in the environment. Some of these organisms are occasionally associated with human disease

**symptoms**

The most common symptoms are stomach cramps, diarrhea, fever, and sometimes vomiting. Symptoms can take up to three days to show up, but most often begin 12 to 36 hours after the germs are swallowed. Symptoms generally last for several days. salmonellosis varies from a self-limiting gastroenteritis to septicemia. Whether the organism remains in the intestine or disseminates depends on host factors as well as the virulence of the strain. Asymptomatic infections can also be seen.

**Transmission**

*Salmonella* spp. are mainly transmitted by the fecal-oral route. They are carried in the intestines or gall bladder of many animals, and are continuously or intermittently shed in the feces. They can also be carried in the mesenteric lymph nodes or tonsils; these bacteria are not shed, but can become reactivated after stress or immunosuppression. Fomites and mechanical vectors (insects) can spread *Salmonella*.

Vertical transmission occurs in birds, with contamination of the vitelline membrane, albumen and possibly the yolk of eggs. *Salmonella* spp. can also be transmitted *in utero* in mammals.

Animals can become infected from contaminated feed (including pastures), drinking water or close contact with an infected animal (including humans). Birds and rodents can spread *Salmonella* to livestock. Carnivores are also infected through meat, eggs and other animal products that are not thoroughly cooked. Cats sometimes acquire *Salmonella* Typhimurium after feeding on infected birds or spending time near bird feeders.

People are often infected when they eat contaminated foods of animal origin such as meat or eggs. They can also be infected by ingesting organisms in animal feces, either directly or in contaminated food or water.

The germs must be swallowed to cause disease. Usually this happens when someone eats food that has been contaminated with the germs and has not been properly handled, prepared or cooked. The germs can also spread when people do not wash their hands thoroughly with soap and water after using the toilet, changing diapers, or handling reptiles.

**Treatment**

Salmonellosis in humans can be treated with a number of antibiotics including ampicillin, amoxicillin, gentamicin, trimethoprim/sulfamethoxazole and fluoroquinolones. Many isolates are resistant to one or more antibiotics, and the choice of drugs should, if possible, be based on susceptibility testing. Antibiotics are used mainly for septicemia, enteric fever or focal extraintestinal infections. They also prolong the period of bacterial shedding and increase the development of antibiotic-resistant strains. .

**Diagnostic Tests**

Salmonellosis can be confirmed by isolating the organisms from feces or, in cases of disseminated disease, from the blood. *Salmonella* will grow on a wide variety of selective and non-selective media including blood, MacConkey, eosin-methylene blue, bismuth sulfite, Salmonella-Shigella, and brilliant green agars.

*Salmonella* spp. are identified with biochemical tests, and the serovar can be identified using serology for the somatic (O), flagellar (H) and capsular (Vi) antigens. Phage typing or plasmid profiling is also used for some serovars. PCR and other genetic techniques may also be available.