

Typhoid Fever

Typhoid fever, also known as **enteric fever**, is a disease caused by a bacterium called *Salmonella enterica* serotype Typhi (*Salmonella* Typhi). Although it can be life-threatening, there is a less than 1% death rate among infected persons in the United States. Infected persons can develop sustained fever of up to 104°F (40°C), weakness, stomach pain, and headache. A rash (rose spots) may accompany the infection. According to the Centers for Disease Control and Prevention (CDC), there are about 300 cases of typhoid fever in the United States each year. The majority are in persons returning from international travels. There are about 20 million cases of typhoid fever causing 200 000 deaths worldwide yearly. The August 26, 2009, issue of *JAMA* includes an article about antibiotic resistance in typhoid fever.

TRANSMISSION OF SALMONELLA

Salmonella Typhi bacteria are shed in the stool of infected persons. Transmission of typhoid fever is usually through food or drinks that are handled or served after poor hand washing or when contaminated sewage gets into drinking or hand-washing water. About 5% of sick persons recover from the infection but continue to carry the bacteria in their bodies and excrete it in their stool and urine. These people are known as carriers. Mary Mallon (aka Typhoid Mary) was the first person to be identified as a healthy carrier in the United States. She may have infected as many as 53 people during her career as a cook in New York City but never acknowledged the possibility that she could be a typhoid carrier. Typhoid researcher George Soper originally published findings about Mallon in the June 15, 1907, issue of *JAMA*. The term "Typhoid Mary" is now used to refer to any carrier of a dangerous disease who has become a danger to the public because of a refusal to take proper precautions.

PREVENTION

Typhoid fever is preventable through vaccination prior to traveling to areas where typhoid is common, and careful eating while there. The CDC recommends the following food and drink policy for travelers: "boil it, cook it, peel it, or forget it." CDC recommendations include drinking only bottled water or water that has been boiled for at least a minute, avoiding ice, eating well-cooked foods, avoiding raw vegetables and fruits that cannot be peeled, and avoiding foods and drinks from street vendors.

DIAGNOSIS

The only definitive way to diagnose typhoid fever is by isolating the causative bacteria from the patient, most often from blood, but also from urine, stool, or bone marrow.

TREATMENT

Treatment with appropriate antibiotics can prevent complications. Treatment with antibiotics usually results in improvement within several days. However, in untreated disease, symptoms can continue for weeks or months, with as many as 20% dying from the disease. Recent development of antibiotic resistance in parts of the world is a cause for concern.

FOR MORE INFORMATION

Centers for Disease Control and Prevention

- www.cdc.gov/ncidod/dbmd/diseaseinfo/files/typhoid_fever_FAQ.pdf
- www.cdc.gov/ncidod/dbmd/diseaseinfo/typhoidfever_t.htm
- www.cdc.gov/vaccines/vpd-vac/typhoid/downloads/typhoid-travelers-prevent-2004.pdf

INFORM YOURSELF

To find this and previous JAMA Patient Pages, go to the Patient Page link on JAMA's Web site at www.jama.com. Many are available in English and Spanish. A Patient Page on inappropriate use of antibiotics was published in the August 19, 2009, issue.

Source: Centers for Disease Control and Prevention

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