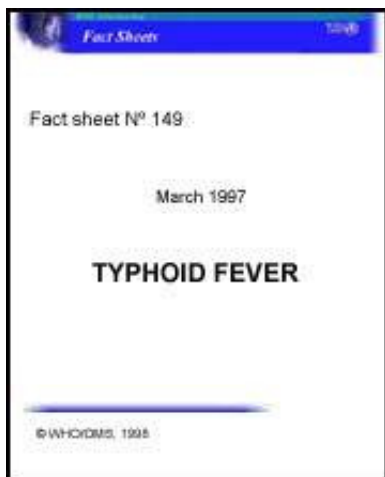


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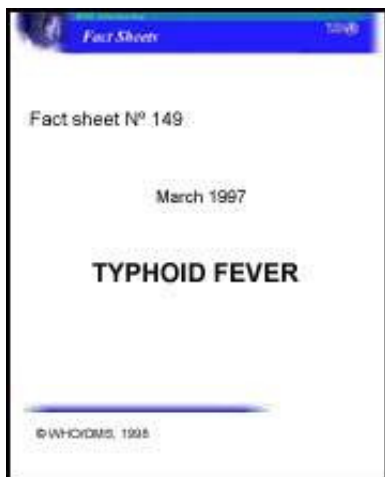


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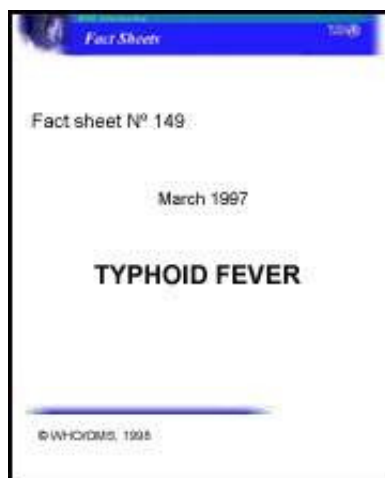
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## Fact sheet No 149: Typhoid Fever - March 1997 (WHO, 1997, 3 p.)

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### Typhoid Fever

## Typhoid Fever

**Typhoid fever** is contracted when people eat food or drink water that has been infected with *Salmonella typhi*. It is recognized by the sudden onset of sustained fever, severe headache, nausea and severe loss of appetite. It is sometimes accompanied by hoarse cough and constipation or diarrhoea. Case-fatality rates of 10% can be reduced to less than 1% with appropriate antibiotic therapy. **Paratyphoid fever** shows similar symptoms, but tends to be milder and the case-fatality rate is much lower.

The annual occurrence of typhoid fever is estimated at 17 million cases, with approximately 600,000 deaths. Some strains of *Salmonella typhi* are resistant to antibiotics.

## History

**In the mid-nineteenth century, Sir William Jenner undertook the first successful definition of typhoid, clearly delineating it from typhus, which is spread by lice and has differing symptoms. Karl J. Erberth isolated the first causal organism for typhoid fever in 1880, thus providing the basis for a definitive diagnosis.**

**It was difficult to establish an historical diagnosis prior to that time, but scholars working on the history of Jamestown, Virginia (USA) believe a typhoid outbreak was responsible for the deaths of over 6 000 settlers between 1607 and 1624. In the war against South Africa in the late 19th century, British troops lost 13 000 men to typhoid, as compared to 8 000 battle deaths. The best known carrier was "Typhoid Mary"; Mary Mallon was a cook in Oyster Bay, New York in 1906 who is known to have infected 53 people, 5 of whom died. After being identified as a carrier, she was forcibly detained for three years and released on the promise that she would never again handle food. Five years after her release, she was found to have been the source of 25 cases of typhoid at the Women's Hospital in Manhattan.**

**Until 1948, little other than supportive measures could be offered the typhoid patient, but with the discovery of the antibiotic chloramphenicol, mortality was markedly reduced. Drug resistance began to emerge in the early 1970s in Mexico and Vietnam, and within a few years, 75% of all cases in Vietnam were resistant. In industrialized countries, the resistance rates are around 5% of all cases.**

## **Identification**

**Typhoid fever is caused by *Salmonella typhi*, the typhoid bacillus. At present, there are 107 different strains of the bacteria. Typhoid fever is characterized by the**

**sudden onset of sustained fever, severe headache, nausea, severe loss of appetite, constipation or sometimes diarrhoea. Severe forms have been described with mental dullness and meningitis. Case-fatality rates of 10% can be reduced to less than 1% with appropriate antibiotic therapy.**

**Paratyphoid fever can be caused by any of three variations or bioserotypes of *S. enteritidis Paratyphi* A, B and C. It is similar in its symptoms to typhoid fever, but tends to be milder, with a much lower case fatality rate.**

## **Occurrence**

**Typhoid fever affects 17 million people worldwide every year, with approximately 600,000 deaths. The number of sporadic cases of typhoid fever has remained relatively constant in the industrialized world, and with the advent of proper sanitary facilities, has been virtually eliminated in many areas. Most cases in developed countries are imported from endemic countries. Strains resistant to chloramphenicol and other recommended antibiotics have become prevalent in several areas of the world. Multidrug resistant strains have been reported from Asia, the Middle East and Latin America.**

## **Transmission**

**Typhoid fever is transmitted by food and water contaminated by the faeces and urine of patients and carriers. Polluted water is the most common source of typhoid. In addition, shellfish taken from sewage contaminated beds, vegetables fertilized by nightsoil and eaten raw, contaminated milk and milk products have been shown as a source of infection.**

## **Communicability**

**People can transmit the disease as long as the bacteria remain in their system; most people are infectious prior to and during the first week of convalescence. About 10% of untreated patients will discharge bacteria for up to three months; 2 to 5% of untreated patients will become permanent carriers.**

## **Epidemic measures**

**An intensive search should be conducted for the case or carrier who is the source of the infection and for the means (water or food) by which the infection was transmitted. Routine use of vaccine is not recommended. Samples of blood can be taken immediately for confirmation, and testing for antibiotic sensitivity; samples of stool or urine may be taken after one week of onset for effective confirmation. Food and water samples should be taken from suspected sources of the outbreak for laboratory testing. It is also recommended to organize temporary water purification and sanitation facilities until longer term measures can be implemented.**

## **Disaster implications**

**With disruption of the usual water supply and sewage disposal, and of the elimination or reduction of controls on food and water, transmission of typhoid fever may occur if there are active cases or carriers. Efforts to restore safe drinking water supplies and sanitary disposal facilities are essential. Selective immunization of groups such as schoolchildren, prisoners and utility, municipal or hospital personnel can be helpful.**

## **Prevention**

- **Protect and chlorinate public water supplies. Provide safe water supplies and avoid possible back flow connections between sewers and water supplies.**
- **Dispose of human faeces in a sanitary manner and maintain fly-proof latrines.**
- **Use scrupulous cleanliness in food preparation and handling.**
- **Educate the public regarding the importance of handwashing: this is important for food handlers and attendants involved in the care of patients and/or children. Thorough and frequent handwashing is essential, especially after a bowel movement.**

## **Vaccination/Travel advisory**

**Immunization for typhoid fever is recommended for international travellers to endemic areas, especially if travel will involve exposure to unsafe food and water or close contact in rural areas and with indigenous populations. Immunization is not a mandatory requirement for entry into any country and is not routinely recommended in industrialized countries.**

**For further information please contact Health Communications and Public Relations, WHO, Geneva, telephone: (41 22) 791 2584, fax: 41 22 791 4858.**

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