

Mustafa Sbeih

# Typhoid Fever

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# Definition

- An infectious feverish disease caused by the bacterium *Salmonella typhi* and less commonly by *Salmonella paratyphi*.
  - The infection always comes from another human, either an ill person or a healthy carrier of the bacterium. The bacterium is passed on with water and foods and can withstand both drying and refrigeration.
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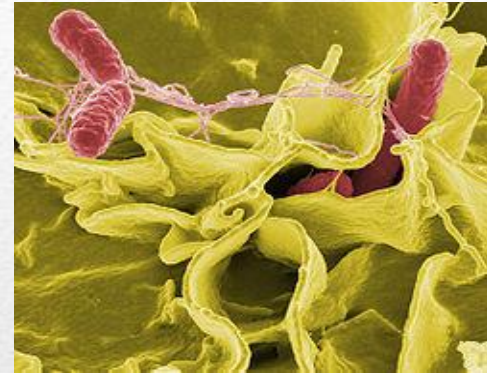
# Causes

1. Caused by the bacterium *Salmonella Typhi* .
  2. Ingestion of contaminated food or water.
  3. Contact with an acute case of typhoid fever.
  4. Water is contaminated where inadequate sewerage systems and poor sanitation.
  5. Contact with a chronic asymptomatic carrier.
  6. Eating food or drinking beverages that handled by a person carrying the bacteria.
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# Salmonella Entrica

- Member of the **genus *Salmonella***.
- Rod shaped, flagellated , aerobic, Gram negative bacterium..
- Infects cattle, poultry, domestic cats, hamsters, humans etc.
- Refrigeration and freezing substantially slow or halt their growth.
- Pasteurizing ,food irradiation kill *Salmonella* for commercially-produced foodstuffs containing raw eggs such as ice cream.
- Foods prepared in the home from raw eggs can spread salmonella if not properly cooked before consumption.



# How its work

- 1- Ingestion of contaminated food or water .
  - 2-Invade small intestine and enter the bloodstream.
  - 3-Carried by white blood cells in the liver, spleen, and bone marrow.
  - 4-Multiply and reenter the bloodstream.
  - 5-Bacteria invade the gallbladder, biliary system, and the lymphatic tissue of the bowel and multiply in high numbers.
  - 6-Then pass into the intestinal tract and can be identified for diagnosis in cultures from the stool tested in the laboratory.
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# Symptoms

- No symptoms- if only a mild exposure; some people become “carriers” of typhoid.
  - Poor appetite,
  - Headaches,
  - Generalized aches and pains,
  - Fever
  - Diarrhea,
  - Have a sustained fever as high as 103 to 104 degrees Fahrenheit (39 to 40 degrees Celsius),
  - Chest congestion develops in many patients, and abdominal pain and discomfort are common,
  - Constipation, mild vomiting, slow heartbeat.
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# Diagnosis

- Blood, bone marrow, or stool cultures test
  - Widal test
  - Slide agglutination
  - Antimicrobial susceptibility testing
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# Widal test

" A test involving agglutination of typhoid bacilli when they are mixed with serum containing typhoid antibodies from an individual having typhoid fever; used to detect the presence of *Salmonella typhi* and *S. paratyphi*."

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# Prevention



Two main typhoid fever prevention strategies:

## 1. Vaccination

### First type of vaccine:

- Contains killed *Salmonella typhi* bacteria.
- Administered by a shot.

### Second type of vaccine:

- Contains a live but weakened strain of the *Salmonella* bacteria that causes typhoid fever.
  - Taken by mouth.
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# Treatment

## Consultations

- An infectious disease specialist or surgeon should be consulted.

## Surgical Care

- Usually indicated in cases of intestinal perforation.
  - Most surgeons prefer simple closure of the perforation with drainage of the peritoneum.
  - Small-bowel resection is indicated for patients with multiple perforations.
  - If antibiotic treatment fails to eradicate the hepatobiliary carriage, the gallbladder should be resected.
  - Cholecystectomy is not always successful in eradicating the carrier state because of persisting hepatic infection.
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## Diet

- Fluids and electrolytes should be monitored and replaced diligently.
- Oral nutrition with a soft digestible diet is preferable in the absence of abdominal distension or ileus.

## Activity

- No specific limitations on activity are indicated.
- Rest is helpful, but mobility should be maintained if tolerable.
- The patient should be encouraged to stay home from work until recovery.

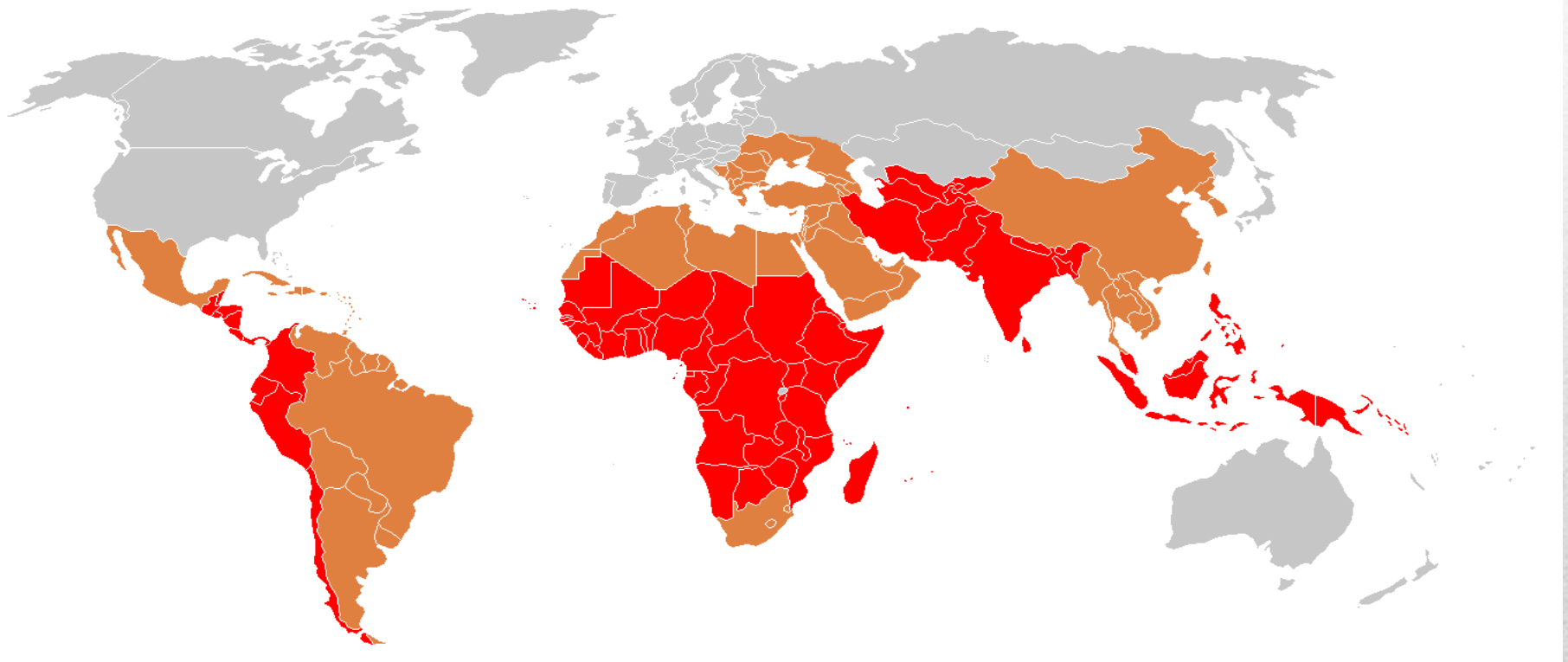
## Medication

### Antibiotics

- Antibiotics, such as ampicillin, chloramphenicol, fluoroquinolone trimethoprim-sulfamethoxazole, Amoxicillin and ciprofloxacin etc used to treat typhoid fever.
  - Prompt treatment of the disease with antibiotics reduces the case-fatality rate to approximately 1%.
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# Epidemiology



- ◆ strongly endemic
- ◆ endemic
- ◆ sporadic cases

# ***Paratyphoid fever***

- It is similar in its symptoms to typhoid fever, but tends to be milder, with a lower fatality rate.
  - It is caused by Paratyphi A, B, and C
  - Rash may be more abundant
  - May present as gastroenteritis specially in children
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# Salmonellosis

- An infectious disease
  - An infection caused by a bacteria called *Salmonella*
  - Salmonellosis is an infectious disease
  - Infants and young children are at the highest risk
  - Most commonly spread by unwashed hands, cross-contamination, and infected animals
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# How is Salmonellosis Spread?

- Animal feces
  - Contact with infected animals
  - Fecal-oral transmission
  - Unwashed hands
  
  - Raw poultry, eggs, and unpasteurized milk/cheese products
  
  - Cross-contamination
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# Symptoms of Salmonellosis

- ✓ Diarrhea
- ✓ Nausea
- ✓ Vomiting
- ✓ Stomach pain
- ✓ Headache
- ✓ Fever
- ✓ Onset 12-72 hours after infection

WHEN YOUR  
STOMACH  
IS  
UPSET



*When youngsters abuse their stomachs, don't make matters worse by giving overdoses of antacids, or harsh physics!*

*Try giving gentle, soothing PEPTO-BISMOL to help relieve stomach upsets caused by over-indulgence, change of diet, nervous, hasty eating, or bad combinations of food. It's pleasant to the taste! At all drug stores. If you do not get prompt relief, consult your physician.*

**Pepto-Bismol**

By the Makers of <sup>®</sup>Unguentine <sup>®</sup>Norwich

\* Reg. U. S. Pat. Off.

# Treatment and Care

- Usually lasts 4 to 7 days
    - most recover without treatment
    - fluid intake to avoid dehydration
  - Severe infections may require hospitalization/antibiotics
    - May spread from the intestines to the blood stream, and then on to other body sites, which can cause death unless treated with antibiotic
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# Diagnosis of Salmonellosis

- Laboratory tests identify Salmonella in the stools of the infected person
- Once Salmonella has been identified, further testing can determine the specific type, then antibiotics are given





# prevention

- Don't eat raw or undercooked food
  - Cross-contamination of foods should be avoided
  - Do not prepare food or pour water if you are infected with the bacteria
  - Wash hands, kitchen surfaces, and utensils with soap and water after they have come in contact with raw meat or poultry
  - Wash hands after contact with animal feces
  - Avoid direct/indirect contact between reptiles and infants
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