



Outbreak of Typhoid Fever in Malaysia by PRP Syafinas & Ms Izyan

BACKGROUND & HISTORY

An epidemic of typhoid fever has hit Malaysia October this year. In the first week of August alone, **7 cases** of typhoid fever were reported to Provincial Health Department of Wilayah Persekutuan Kuala Lumpur involving construction workers in Cheras and city center area. Since then, a sharp increase of typhoid fever cases were reported mainly in Kuala Lumpur and Selangor area with **71 cases** reported (data until 7th December 2015). According to Malaysian Guideline on Management of Typhoid Fever 2006, the outbreak can be declared over when no new cases reported within **42 days (2 times the incubation period)** from the date of onset of the last case. The last onset of new case was reported on 20th October 2015, hence it is safe to say that the outbreak has put to an end.

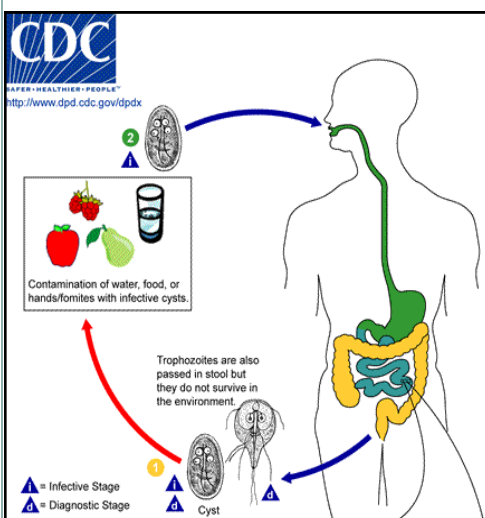
According to MyHEALTH Official Portal, typhoid fever incidence was in declining trend from 1995 until 2004 (**from 906 cases to 478 cases**). However, in 2005, the incidence increased exponentially to 1,072 cases with the highest incidence reported in Kelantan and Sabah. Generally, the incidence were more prevalent in endemic areas with limited coverage of clean water supply, poor sanitation and poor hygiene practices.

Typhoid fever was first discovered in 1906 when Mary Mallon, a domestic helper who was assigned as a cook for Warren's family who went for summer vacation. In total, **6 out of 11 people** in the house came down with typhoid. Further investigations found out that Mary is the carrier and since then she was famously known as "**Typhoid Mary**". Through out her life, 49 peoples were infected and 3 of them died due to the complication.



Salmonella typhi under microscope

MECHANISM OF INFECTION



Pathophysiology of typhoid fever

The disease is caused by a bacterium named *Salmonella typhi*. These bacteria will attach to the ileal tissue of gastrointestinal (GI) tract and survive in macrophages cell, which then reach to the lymphatic system. After some time, it will break out from the macrophages and enter the blood system. Some of the bacteria will reach gallbladder and pass through the GI tract; where some may excrete via the feces and others will infect the host through the GI tract.

Typhoid fever is contagious and may infect or spread to people by few ways;

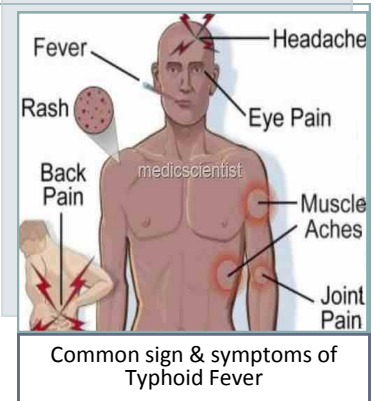
- Foods and drinks that cross-contaminated with excretion from human body (eg; urine, feces) or prepared by infected person
- Direct contact with person who is infected
- Poor sanitation and poor practice of hygiene lifestyle

Individuals at risk of having this type of fever should be more careful and aware that they have high risk of getting this infection. Individuals are at risk if they;

- Work or returned from endemic countries such as India, Southeast Asia, Africa, South America
- Handling *Salmonella typhi* bacteria or work as microbiologist
- Close contact with infected person that recently diagnosed with typhoid fever
- Consume water contaminated by sewage that contains *S. typhi*

SIGN & SYMPTOMS

Sign and symptoms of this Typhoid Fever can be seen in infected individuals **after 1-3 weeks** consumption of contaminated foods and drinks. Each individual may experience different kind of symptoms based on the reaction and the body response towards the infection. The common signs and symptoms are temperature of the body increases up to 40°C by slowly, headache, weakness or fatigue and abdominal pain. An infected individual may also experience diarrhea or constipation (constipation is more likely occur among adults and older children), dry cough, loss of appetite and weight, rash and extremely swollen of abdomen. If these symptoms prolong without proper treatment, it may lead to more severe complications such as bleeding, inflammation to the brain and GI tract, psychosis and also may also be life-threatening.



TREATMENT & MANAGEMENT

Below are the recommendations and treatment management for patients with Typhoid Fever.

Treatment Recommendation & Prevention

Pharmacological (Medications)	<p>PPUKM Antibiotic Guideline 2012: IV Ciprofloxacin 400mg q12H x 14 days (switch to PO 500mg q12H asap) OR Chloramphenicol 500mg q6H x 14 days Alternative: IV Ceftriaxone 2g OD x 14 days</p> <p>National Antibiotic Guideline 2014: PO Pefloxacin 400mg q12H x 5-7 days OR PO Ciprofloxacin 500mg q12H x 5-7 days OR PO Ofloxacin 400mg q12H x 5-7 days Alternative : PO Amoxicillin 75-100mg/kg/day</p> <p>Note: Previously, Chloramphenicol was the antibiotic of choice but due to higher of relapse and resistance cases, ciprofloxacin is now the preferred antibiotic.</p> <p>Prevention: Typhoid Vaccination: IM 0.5mL stat. Booster every 2 years for repeat travellers. Contraindicated in immuno-compromised hosts and children <6 years old</p>
Non-pharmacologicals	<p>i. Practice hygiene sanitation. Wash hands with soaps and follow the seven-steps of proper hand-washing. Make sure to wash hand before having meals, preparing food and after using the toilet. Practice use of hand sanitizer when water is not available.</p> <p>ii. Drink water that fully cooked. Avoid drink untreated water as it may be contaminated. When travelling, especially to countries that has high possibilities of this infection, drink water only from the bottled water.</p> <p>iii. Consume only cooked foods. Avoid consuming raw fruits and vegetables, especially fruits that has no skin to peel. Other than that, prevent from consuming foods from street hawker as it may contaminated.</p> <p>iv. Seek for medical attention if symptoms occurred. Symptoms may prolong and cause severe complication if not treated immediately.</p> <p>v. Clean all areas that encourage breeding of flies. Flies can spread the infection from foods to another foods after perched on human's waste products</p>

In conclusion, Typhoid Fever is a communicable but yet treatable and preventable disease. It is a water borne bacterial disease due to contaminated food and water. It can be prevented by good hygiene practice and sanitation, clean water supply, improve clean water supply as well as the effective use of the available typhoid vaccines.

References:

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