UNIT FARMASI KLINIKAL & MAKLUMAT DRUG
JABATAN FARMASI, HOSPITAL USM
EDARAN MAKLUMAT UBAT
August 2024, Volume 56; Issue 4

TYPHOID FEVER

- A **life-threatening** systemic infection caused by ingestion of food or water contaminated with Gram negative and rod shaped bacillus *Salmonella Typhi.* [3,4]
- Other Salmonella serotypes: Non-typhoid (self-limiting gastroenteritis). [3,4]

EPIDEMIOLOGY

- Typhoid is endemic in Malaysia with an average incidence rate of 0.76 per 100 000 population reported annually in recent years (2014-2019). The incidence rate was 0.53 per 100,000 population in 2018. [1]
- In 2022, the Ministry of Health (MOH) recorded 90 typhoid cases especially from Selangor, Sabah, and Kelantan. [2]
- Typhoid occurs predominantly in association with poor sanitation and lack of clean drinking water, in both urban and rural settings. [3]

TRANSMISSION [5]

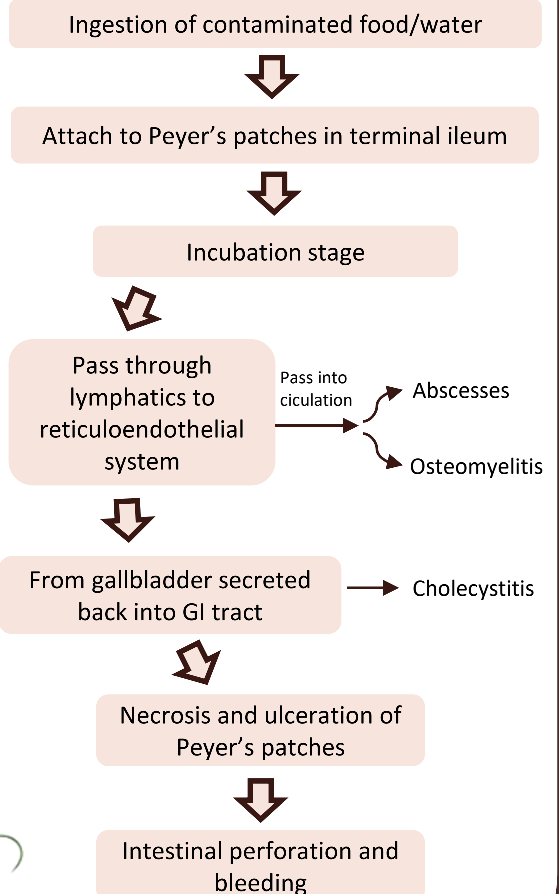
- Faeco-oral route (Common)
- Urine-oral route (Rare)

Either directly through hands/ carriers or indirectly by ingestion of contaminated food/ water/ flies.

SYMPTOMS [3,4,5]

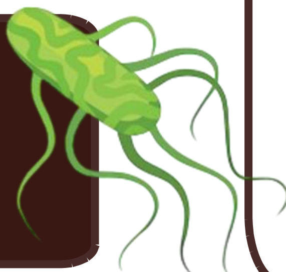
[Medium.com photo]

PATHOGENESIS [7]



RISK FACTORS [6]

- Limited access to clean water
- Poor sanitation
- Unhygienic food practices



[Shutterstock.com photo]

UPDATES ON PHARMACOLOGICAL TREATMENT [8]

MILD		
Preferred Ceftriaxone 50-75mg/kg/24h (2-4 g/day) IV q12-24h **OR** Cefotaxime 40-80mg/kg/24h (2-6 g/day) IV q8-12h	**Alternative*** Ciprofloxacin 500-750mg PO q12h **OR** Azithromycin 20mg/kg PO q24h (maximum 1 g q24h)	**Comments**** Duration: minimum 7-14 days *Notes: longer duration of fever defervescence may be observed in patients treated with cephalosporin.*
MODERATE TO SEVERE Severe sepsis or shock, gastrointestinal bleeding, intestinal perforation, encephalopathy, metastatic infection or other complications.		
Preferred Ceftriaxone 50-75mg/kg/24h (2-4 g/day) IV q12-24h **OR** Cefotaxime 40-80mg/kg/24h (2-6 g/day) IV q8-12h	**Alternative*** Ciprofloxacin 400mg IV q8-12h **OR** Azithromycin 20mg/kg IV q24h (maximum 1 g q24h)	**Comments**** Duration: 10-14 days. Consult ID Physician for complicated/severe typhoid or drug-resistant typhoid. In case of persistent fever after 5-7 days of effective antimicrobial therapy, re-evaluate and repeat culture. Longer duration of antimicrobial therapy may be necessary in the presence of metastatic or deep seated infection.
EXTENSIVELY DRUG RESISTANT Resistant to ceftriaxone, ciprofloxacin, amoxicillin, chloramphenicol and cotrimoxazole.		
Preferred Meropenem IV 1g q8h	**Alternative** --	**Comments** Consult ID Physician
CHRONIC CARRIER Individual excreting *Salmonella Typhi* in stool/urine for > 1 year after onset of acute illness.		
Preferred **Ciprofloxacin susceptible:** Ciprofloxacin 750mg PO q12h for 4 weeks **Ciprofloxacin resistant:** Trimethoprim/Sulphamethoxazole 160/800mg PO q12h for 6 weeks	**Alternative** --	**Comments** Consult ID Physician

*Refer susceptibility testing result before considering alternative treatment regime.
** IV to PO switch is recommended/may be considered once symptoms improve based on susceptibility testing result.

Note: For **moderate to severe typhoid**, **adjunctive corticosteroid** may be considered after consultation with an ID physician in severe typhoid with delirium, obtundation, coma or shock. In such cases, administer IV dexamethasone 3 mg/kg followed by 8 doses of 1 mg/kg every q6h for 48 hours. Monitor patients closely as corticosteroid use is associated with increased risk of gastrointestinal bleeding and perforation.

REFERENCES

1. Typhoid. Guideline for Adult Immunisation. Malaysian Society of Infectious Diseases & Chemotherapy (2024). Retrieved on 14/8/2024 from: https://adultimmunisation.msidc.my/typhoid/
2. Kes typhoid rintang antibiotik meningkat. Berita Harian14 Mac 2023 https://www.bharian.com.my/berita/nasional/2023/03/1076752/kes-typhoid-rintang-antibiotik-meningkat
3. Typhoid. World Health Organization (2024). Retrieved on 5/8/24 from: https://www.who.int/health-topics/typhoid#tab=tab_1
4. Bhandari, J., Thada, P. K., Hashmi, M. F., & DeVos, E. (2024, April 19). *Typhoid Fever*. StatPearls – NCBI Bookshelf. https://www.ncbi.nlm.nih.gov/books/NBK557513/
5. Typhoid fever. National Health Service (2024). Retrieved on 7/8/2024 from: https://www.nhs.uk/conditions/typhoid-fever/
6. Crump, J. A., Sjölund-Karlsson, M., Gordon, M. A., & Parry, C. M. (2015). Epidemiology, Clinical Presentation, Laboratory Diagnosis, Antimicrobial Resistance, and Antimicrobial Management of Invasive Salmonella Infections. Clinical microbiology reviews, 28(4), 901–937. https://doi.org/10.1128/CMR.00002-15
7. World Federation of Societies of Anesthesiologists. 2024. Typhoid Enteric Fever (Part 1). Retrieved on 6/8/2024 from: https://resources.wfsahq.org/atotw/typhoid-enteric-fever-part-1/
8. National Antibiotic Antimicrobial Guideline 2024. 4th Edition. Ministry of Health Malaysia

Prepared by
Asyraf Bin Suhaimi
Mohamad Amir Ashraf Shamsuddin
Arif Ismail
Syahira Afiqah Mohamad Pauzi
Nurul Fatihah Zainuddin

Edited by
Khairul Bariah Johan @ Rahmat