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(T.T) Tracking Typhoid: Is Typhoid Eradication Possible?

Madeline Camilleri

Binghamton University--SUNY

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(T.T) Tracking Typhoid: Is Typhoid Eradication Possible?

Presenter: Madeline Camilleri

BACKGROUND

Typhoid Fever is an acute generalized infection caused by the bacterium *Salmonella Typhi*. The virus is commonly spread through sewage contamination of food or water and through person-to-person contact. Often referred to as enteric fever, the understanding of the disease only began in the 1830s. The history of typhoid fever is complicated as it is difficult to distinguish between other fevers with similar symptoms such as typhus or malaria. Such symptoms include prolonged fever, headache, abdominal pain, nausea, and constipation. Typhoid Fever became more prevalent through increased industrialization in Europe, however, through medical advancements in developed countries, typhoid was quickly eradicated. This can not be said for developing countries, who are still actively suffering from typhoid fever. Due to improper medical facilities, ineffectiveness of diagnostics and lack of high standards in diagnostic laboratories typhoid fever not only contaminates millions of people but also largely goes unreported due to poor surveillance systems, sanitation systems, and testing. According to WHO it is estimated that there are about eleven to twenty million cases of typhoid fever annually, with about 128,000 to 161,000 deaths. In one study it was discovered that about 17.8 million cases of typhoid fever that occur each year come from low-income countries, countries like Central Africa having the highest rate (Antillón et al., 2017).

METHODS

My research is in the form of a literature review. Sources range from scholarly articles, health organizations such as WASH, CDC, and WHO, and first-hand accounts of individuals who contracted typhoid fever or were impacted by typhoid fever. Each source is credited and thoroughly analyzed to help frame my conclusion.

KEY WORDS

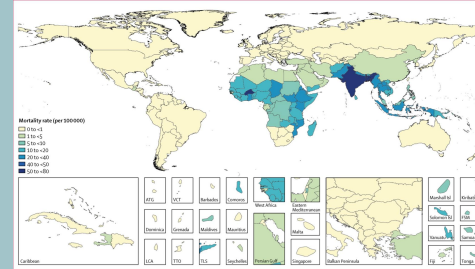
- Typhoid Fever
- Multi Drug Resistance
- Surveillance Testing (Blood Culture)
- Sanitation Systems

PURPOSE AND RATIONALE

WASH (water, sanitation, and hygiene), an organization that works to improve global access to fresh water, adequate sanitation, and improved sanitation, reports that approximately 2 billion people worldwide do not have access to basic sanitation, and 3 billion people lack access to adequate facilities to wash their hands. Each of these individuals is susceptible to typhoid fever (Centers for Disease Control and Prevention). With billions of people able to fall victim to such a deadly disease, these numbers call to attention the action that needs to be taken and put into perspective that not enough is being done to prevent the high number of typhoid cases. My research focuses on why typhoid fever remains a problem and looks at the plausibility of typhoid fever eradication in endemic countries.



“There are lots of difficulties when someone in the family is not feeling well. One of the members give all of his time to take care of the sick. If that person goes to study, then his studies are hampered. If he is a job holder, then he might lose his job... so there might be economical difficulties... whenever there is a sick person in the house then it is difficult for the whole family” (Rural PHC).



RESULTS AND DISCUSSION

As a result of slow/minimal eradication efforts, Typhoid Fever is unlikely to be eradicated in developing countries.

- Currently, there are only two vaccines available. However, both do not "provide long-lasting immunity" (World Health Organization). As of 2017, WHO has recommended a typhoid conjugate vaccine for children six months and older and infants. One study showed the vaccine's effectiveness was 55% against typhoid and 95% against blood culture typhi (Khanam et al., 2015). However, the vi conjugate vaccine is not commercially available (Owais et al., 2011).
- According to one study looking at typhoid in children in Pakistan, there is "limited population-based surveillance data available for the burden of typhoid fever... among children under two years old" (Owais et al., 2011).
- In studies in South Asia, some families "opt to skip treatment, as they cannot afford the burden of cost" (Kregar, 2020). These families who can not afford proper medical care instead have to face the burden of losing a life. In a study looking at the families' overall costs for medical treatment, medicine, etcetera, the average private cost of a non-hospitalized case was significantly higher than the average income in various endemic areas (Kregar, 2020).
- The main form of diagnosis for typhoid fever is blood culture. Blood culture is costly, timely, and requires a lot of technical skills to administer (Carey et al., 2019). Implementing such practice in endemic areas is difficult. Other test options such as The Widal Test, developed by Georges-Fernand Widal, was the original test to diagnose typhoid fever in 1896 (Adler, 3). It is not performed in developed countries as they are no longer combating typhoid and endemic countries due to limited resources; implementation of the test is slim (Widal, 2019).

LIMITATIONS

- One study on Typhoid Fever pulled information on typhoid fever "previously unavailable data" (Lancet, 2017).
- There are not many scholarly studies on typhoid fever, and a lot of the information is not publicly available. While I found many studies to help contribute to my conclusion, many gaps are still present. More information is needed in various fields of typhoid fever, such as looking at the long-term impact of typhoid fever, how typhoid fever economically impacts communities, and more.

CALL TO ACTION

- Typhoid Fever is still considered a "nationally notifiable disease" (Centers for Disease Control and Prevention). It is a "serious health threat in the developing world" (Mayo Clinic, n.d), so why isn't more research being done?
- Modeling efforts predict that typhoid elimination is unlikely to be achieved from vaccinations alone. Typhoid Fever needs to start being looked at and treated as a priority health threat! Organizations such as WASH and WHO should work closely with endemic countries to build financial support. To help provide treatment, combat antibiotic resistance, improve sanitation, surveillance, and vaccination efforts, and perform more tests to get more epidemiological data to further enhance our knowledge of typhoid fever.

REFERENCES

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