

KENYA MEDICAL RESEARCH INSTITUTE



In Search of Better Health

POLICY BRIEF

Saving urban informal settlements from Typhoid

*Could making the typhoid vaccine available at a subsidized cost
be the solution?*

Key Message:

Typhoid disease has become a major public health crisis especially in urban informal settlements (slums). Although there is an existing Typhoid disease vaccine, it is costly and inaccessible to the common mwananchi. Universal health coverage is a primary health initiative which targets preventive and promotive health conditions associated with water, sanitation and hygiene. Typhoid disease is a preventable public health condition and one strategy is to request the government to avail the parenteral Vi polysaccharide (ViPS) vaccine especially to populations living in urban informal settlements.

Introduction:

The global estimate of typhoid disease burden according to WHO is approximately 17 to 21 million cases and 500,000– 600,000 deaths yearly (WHO, 2018). This places the infection amongst the critical diseases especially in developing countries where the disease is endemic (WHO, 2018). Typhoid disease has become a major public health crisis especially in urban informal settlements (slums). Symptoms vary broadly in severity and are characterized by sudden onset of fever, severe headache, abdominal pain and malaise (Mbae *et al.*, 2020).

Diarrhea is mainly observed in younger children while older ones and adults suffer serious constipation. About 10% of serious complications are recorded in patients who have been ill longer than 14 days without receiving proper treatment (Moser-van der Gees *et al.*, 2019). There is notable evidence that the disease mainly affects children and young adults (0-16yrs) (Kavai *et al.*, 2018, Kariuki *et al.*, 2021), however ongoing studies are showing that typhoid disease is now affecting all age groups (unpublished data). Common complications include: gastrointestinal bleeding, intestinal perforation (in up to 3% of hospitalized cases), neuropsychiatric disturbances (such as stupor and delirium), and shock (WHO, 2000, 2003). In most cases, the illness lasts for several weeks and even months, occasionally. A study carried out in Delhi, India indicates that the average duration of fever was 14 days amongst the population (Bahl, *et al.*, 2004). Countries like Pakistan are facing the world's largest outbreak of extensively drug-resistant (XDR) Typhoid (Qamar, *et al.*, 2020). Guangxi Province in Southern China also experienced an outbreak typhoid fever which led to enrolment of typhoid fever mass vaccination campaigns (Yang, *et al.*, 2005). In Kenya, typhoid disease is endemic in the informal urban settlements due to poor sanitation and lack of clean water. The current recommended treatment for typhoid disease in this country has been ciprofloxacin and ceftriaxone. Unfortunately, there has been a rise in cases of patients not recovering after treatment with these antibiotics. Hence, we are advocating for alternative ways to reduce typhoid disease such as rolling out the typhoid vaccine to the urban informal settlers at a subsidized cost towards achieving UHC.

Methodology:

Evidence informed research was based on synthesized primary research articles published online for countries that have enrolled and embraced mass immunization strategy against typhoid fever.

Policy Options

In an attempt to achieve UHC; rolling out the typhoid vaccine at a subsidized cost (at least 100ksh) to urban informal settlements who make up a significant population of the country, will not only save millions of lives but also the government, billions of monies spent on purchasing antibiotics that continue to be ineffective against typhoid. According to recent studies carried out in Kenya, there is reliable evidence that targeting to vaccinate pediatrics will reduce the number of typhoid cases in the next few years. Two vaccines have currently been licensed and recommended by WHO for typhoid fever – a live oral Ty21a vaccine and a parenteral Vi polysaccharide (ViPS) vaccine - use in Sub- Saharan Africa since 2000.

Implication

Rolling out the typhoid vaccine to urban informal settlements will greatly reduce the number of the typhoid cases and thus indirectly saving the economy through lost-work days' productivity. Typhoid vaccines should be considered in humanitarian programs informed by the risk assessment in the endemic areas..

Recommendation

The government should consider target funding of programmatic use of typhoid vaccine in controlling the endemic disease. Following the high burden of typhoid fever and the increasing antimicrobial resistance of *Salmonella* Typhi, and with the informed evidence on safety, affordability, efficacy and feasibility of the licensed typhoid conjugate vaccine, this issue brief re-emphasizes on the importance of availing and subsidizing the typhoid vaccine to urban informal settlement population where the disease is endemic.

References

1. Samuel Kariuki, Zoe A Dyson, Cecilia Mbae, Ronald Ngetich , Susan M Kawai, Celestine Wairimu , Stephen Anyona, Naomi Gitau, Robert Sanaya Onsare , Beatrice Ongandi , Sebastian Duchene , Mohamed Ali , John David Clemens , Kathryn E Holt , Gordon Dougan; Multiple introductions of multidrug-resistant typhoid associated with acute infection and asymptomatic carriage, Kenya, 2021 Sep 13;10:e67852. doi: 10.7554/eLife.67852
2. Cecilia Mbae, Moses Mwangi, Naomi Gitau, Tabitha Irungu, Fidelis Muendo, Zilla Wakio, Ruth Wambui, Susan Kawai, Robert Onsare, Celestine Wairimu, Ronald Ngetich, Frida Njeru, Sandra Van Puyvelde, John Clemens, Gordon Dougan, Samuel Kariuki; Factors associated with occurrence of salmonellosis among children living in Mukuru slum, an urban informal settlement in Kenya. *BMC Infectious Diseases* (IF 2.688) Pub Date : 2020-06-17 , DOI: 10.1186/s12879-020-05134-z
3. Kawai S, Kangogo M, Muigai A, Kariuki S: Analysis of Trends in Resistance to Fluoroquinolones and Extended Spectrum Beta-Lactams among Salmonella Typhi Isolates Obtained from Patients at Four Outpatient Clinics in Nairobi County, Kenya. *Advances in Microbiology* 2018, 8:578-588.
4. Moser-van der Geest, N., Schibli, A., & Huber, L. CME: Typhoid Fever - Clinical Manifestation, Diagnosis, Therapy and Prevention. *PLoS One*, 2019, 937-943.
5. Bahl , R., Sinha, A., Poulos, C., Whittington, D., Sazawal, S., Kumar, R., et al.. Costs of illness due to typhoid fever in an Indian urban slum community: implications for vaccination policy. *Journal of Health Population and Nutrition*, 2004, 304-10.
6. Qamar, F., Yousafzai, M., Khaliq, A., Karim, S., memon, H., Junejo, A., Adverse events following immunization with typhoid conjugate vaccine in an outbreak setting in Hyderabad, Pakistan. *Vaccine*, 2020, 3518–3523.
7. WHO. (2018). Typhoid vaccines. *Weekly Epidemiological Record*, 257-264 .
8. WHO. (2003). *Background document: The diagnosis, treatment and prevention of typhoid fever*. Geneva: WHO press.
9. Yang, J., Acosta, C., Si, G.-a., Zeng, J., Li, C.-y., Liang, D.-b., A mass vaccination campaign targeting adults and children to prevent typhoid fever in Hechi; Expanding the use of Vi polysaccharide vaccine in Southeast China: A cluster-randomized trial. *BMC Public Health*. (2005)

Produced by Kenya Medical Research Institute

P.O. Box 54840-0200,

Off Raila Odinga Way

Nairobi, Kenya.

Tel: +254 722205901