

## Potential of typhoid conjugate vaccines in Indonesia

Typhoid, a serious enteric fever spread through contaminated food and water, is a substantial public health issue that disproportionately impacts children and marginalized populations in Asia and sub-Saharan Africa. The Global Burden of Disease (GBD) study estimates that, in 2019, there were more than 9 million typhoid cases and more than 110,000 typhoid deaths worldwide.<sup>1</sup> Additionally, strains of drug-resistant typhoid are spreading, causing global concern.<sup>2</sup>

### TYPHOID CONJUGATE VACCINES

Typhoid vaccination can reduce the need for antibiotics, slow expansion of drug-resistant strains, and save lives. Typhoid conjugate vaccines (TCVs) are licensed, prequalified by the World Health Organization (WHO), and have advantages over earlier typhoid vaccines. TCVs provide longer-lasting protection, require only one dose, and are safe and efficacious for children over 6 months.

Three large Phase 3 efficacy studies conducted in Bangladesh, Malawi, and Nepal showed that TCV prevented 85, 84, and 79 percent of typhoid cases in children 9 months to 16 years old, respectively. These results demonstrate that TCV is protective across diverse settings in Africa and Asia.

### WHO RECOMMENDATION

In March 2018, WHO recommended TCV as the preferred typhoid vaccine because of its improved performance and suitability for younger children. WHO recommends the introduction of TCV be prioritized in countries with the highest burden of typhoid disease or a high burden of drug-resistant typhoid. WHO encourages routine administration to be accompanied by catch-up vaccination campaigns for children up to 15 years of age, where feasible and supported by data. Several countries have already introduced TCV into their routine immunization programs including Liberia, Nepal, Pakistan, Samoa, and Zimbabwe. More than 40 million children have been vaccinated with TCV.



Children sitting together in Nepal after receiving TCV. PATH/Rocky Prajapati

### AN OPPORTUNITY FOR INDONESIA

TCVs could have a substantial benefit in Indonesia, where typhoid inflicts a significant public health burden. The latest GBD analysis estimates that, in 2019, Indonesia had:

- **591,905 typhoid cases** or **228 cases per 100,000 population**, 39 percent of which were among children under 15 years of age; and
- **5,828 typhoid deaths**, 44 percent of which were among children under 15 years of age.<sup>1</sup>

Typhoid also imposes an economic burden in Indonesia. An analysis found that in North Jakarta, Indonesia, one hospitalized case of typhoid costs families more than 100% of the average monthly income.<sup>3</sup> Existing data demonstrate that vaccination with TCV in a variety of strategies and settings is cost-effective. WHO recommends cost-effectiveness analyses be part of the country decision-making and planning process to initiate programmatic use of typhoid vaccines.<sup>4</sup>

### References

1. GBD Results Tool. Available at: <http://ghdx.healthdata.org/gbd-results-tool>.
2. Wong VK, Baker S, Pickard DJ, et al. Phylogeographical analysis of the dominant multidrug-resistant H58 clade of *Salmonella* Typhi identifies inter- and intracontinental transmission events. *Nature Genetics*. 2015;47:632-639.
3. Poulos C, Riewpaiboon A, Stewart JF, et al. Cost of illness due to typhoid fever in five Asian countries. *Tropical Medicine & Intl Health*. 2011;16(3): 314-323.
4. WHO. Typhoid vaccines: WHO Position paper – March 2018. *Weekly Epidemiological Record*. 2018;13(93):153-172.

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