

## Potential of typhoid conjugate vaccines in India

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 AND GAVI SUPPORT

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. Gavi, the Vaccine Alliance has provided financial support for eligible countries to introduce TCVs since 2018. Several countries have already introduced TCV into their routine immunization programs including Liberia, Nepal, Pakistan, Samoa, and Zimbabwe. More than 36 million children have been vaccinated with TCV.



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### AN OPPORTUNITY FOR INDIA

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

- **4.8 million typhoid cases or 345 cases per 100,000 population**, 54 percent of which were among children under 15 years of age; and
- **50,737 typhoid deaths**, 57 percent of which were among children under 15 years of age.<sup>1</sup>

Typhoid also imposes an economic burden in India. A study in Kolkata, India, found that the total treatment costs per blood culture-confirmed typhoid hospitalization averaged US\$129, or 35 percent of average monthly household income.<sup>3</sup> An economic analysis predicted that routine TCV infant vaccination would potentially be very cost-effective and cost-saving in Kolkata and Delhi, respectively.<sup>4</sup>

In 2018, Navi Mumbai launched the world's first public sector TCV campaign. The campaign was successful and TCV had a strong safety profile in the population.<sup>5</sup>

#### References

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