

## Potential of typhoid conjugate vaccines in Pakistan

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. A study in Hyderabad, Pakistan found TCV to be 97% effective against extensively drug-resistant (XDR) typhoid in an outbreak setting.<sup>3</sup>

### 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 Pakistan, Liberia, Samoa, and Zimbabwe. Nearly 30 million children have been vaccinated with TCV in Pakistan since 2019.



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### AN OPPORTUNITY FOR PAKISTAN

The TCVs now in Pakistan's routine immunization schedule are projected to have a substantial benefit against the country's significant public health burden of typhoid, particularly as it deals with XDR typhoid.<sup>4</sup> The GBD analysis estimates that, in 2019, Pakistan had:

- **1,181,392 typhoid cases** or **527 cases per 100,000 population**, 53 percent of which were among children under 15 years of age; and
- **17,395 typhoid deaths**, 64 percent of which were among children under 15 years of age.<sup>1</sup>

Typhoid also imposes an economic burden in Pakistan, with the average cost for one case of typhoid at US\$55.<sup>5</sup> An economic analysis predicts that Pakistan's catch-up campaign and subsequent routine childhood immunization with TCVs will likely be cost-effective, even in the absence of a Gavi subsidy.<sup>5</sup>

### References

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