

## The potential of typhoid conjugate vaccines in Malawi

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



*According to the STRATAA study, Malawi has a typhoid incidence rate of 444 cases per 100,000 population per year.*

already introduced TCV into their routine immunization programs including Liberia, Pakistan, Samoa, and Zimbabwe. More than 36 million children have been vaccinated with TCV globally.

### AN OPPORTUNITY FOR MALAWI

TCVs could have a substantial benefit in Malawi, where typhoid inflicts a significant health burden. A large typhoid surveillance study called the Strategic Typhoid Alliance across Africa and Asia (STRATAA) was conducted in Blantyre and estimated a rate of 444 typhoid cases per 100,000 people per year. The bacteria that cause typhoid, *S. Typhi*, was the primary cause of blood-stream infection in people with fever in the surveillance study. Additionally, children 5-9 years old had the highest typhoid incidence rate of all age groups in the study.<sup>3</sup> Malawi has also seen a significant increase in multidrug-resistant typhoid since 2011, resulting in a sharp rise in overall typhoid incidence starting in 2013.<sup>4</sup>



Bill & Melinda Gates Foundation/Sam Reinders

Typhar TCV® is a typhoid conjugate vaccine that was prequalified by the World Health Organization in December 2017.



Sabin Vaccine Institute

Four-year-old Golden Kondowe was the first child in Africa to receive a vaccine as part of the TyVAC effectiveness study in Malawi, February 2018.

Typhoid also imposes an economic burden. Analyses from settings in sub-Saharan Africa have found that the average cost of a typhoid case borne by families can amount to two months of family income.<sup>5</sup> An economic analysis predicts that, even in the absence of a Gavi subsidy, a catch-up campaign followed by routine childhood immunization with TCVs would potentially be cost-effective in Malawi.<sup>6</sup> The Government of Malawi plans to introduce TCV into its routine childhood immunization program in 2022.

### TyVAC EFFECTIVENESS STUDY IN MALAWI

To build evidence of the effectiveness of TCVs in protecting children from typhoid, researchers with the Typhoid Vaccine Acceleration Consortium (TyVAC) conducted four different studies in Bangladesh, Burkina Faso, Malawi, and Nepal. In Malawi, TyVAC and project partners found that TCVs have 84 percent efficacy against blood culture-confirmed typhoid in children between 9 months and 12 years of age and have a strong safety profile.<sup>7</sup>

While WHO already recommends TCV introduction in all typhoid-endemic countries, this additional evidence helps inform ongoing decisions about TCV vaccination in low- and middle-income countries.

### REFERENCES

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