Together We Can
Take on Typhoid

The potential of typhoid conjugate vaccines in Nepal

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.[1] Additionally, strains of drug-resistant typhoid are spreading, causing global concern.[2]

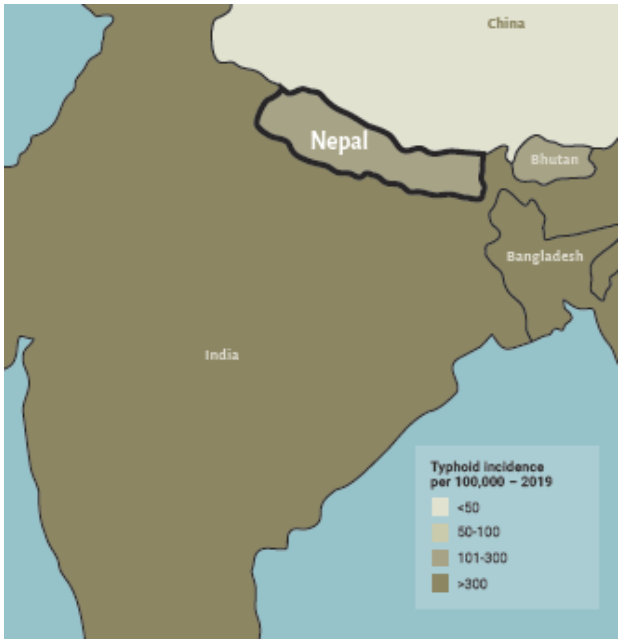
TYPHOID CONJUGATE VACCINES

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 strong protection for at least 4 years, require only one dose, and are safe and effective for children older than 6 months.

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

WHO RECOMMENDATION AND GAVI SUPPORT

In March 2018, WHO recommended TCVs 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 Nepal, Malawi, Liberia, Pakistan, Samoa, and Zimbabwe. More than 56 million children have been vaccinated with TCV globally.



According to GBD estimates, Nepal had a typhoid incidence rate of 271 cases per 100,000 population in 2019.

AN OPPORTUNITY FOR NEPAL

The TCVs now in Nepal's routine immunization program are projected to have a substantial benefit against the country's significant public health burden. The GBD study estimates that, in 2019, Nepal had:

- **82,449 typhoid cases** or **271 cases per 100,000 population**, 60 percent of which were among children under 15 years of age; and
- **919 typhoid deaths**, 64 percent of which were among children under 15 years of age.[1]

Children line up to receive TCV at their school, April 2022. PATH/Rocky Prajapati

The burden of typhoid may be even higher than GBD estimates. A surveillance study conducted near Kathmandu found 1,062 cases of typhoid per 100,000 people.[4]

Typhoid also imposes an economic burden in Nepal. One study in Kathmandu found that average total costs for a hospitalized typhoid patient were US$233, one third of the average Nepali family's annual income.[5] Findings from an economic analysis predict that, even in the absence of a Gavi subsidy, a catch-up campaign followed by routine childhood immunization with TCVs could be cost-effective in Nepal.[6] The Government of Nepal introduced TCV into its routine immunization program in 2022.

A mom waits with her daughter to receive TCV during Nepal's introduction campaign in April 2022. PATH/Rocky Prajapati.

REFERENCES

1. Institute for Health Metrics and Evaluation. Global Burden of Disease. 2019. Accessed via: 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(6):632-639.
3. Shakya M, Voysey M, Theiss-Nyland K, et al. Efficacy of typhoid conjugate vaccine in Nepal: Final results of a phase 3, randomised, controlled trial. *The Lancet Global Health*. 2021;9(11):e1561-1568.
4. Meiring JE, Shakya M, Khanam F, et al. Burden of enteric fever at three urban sites in Africa and Asia: a multicentre population-based study. *The Lancet Global Health*. 2021;9(12):E1688-E1696.
5. Kaljee LM, Pach A, Garrett D, et al. Social and economic burden associated with typhoid fever in Kathmandu and surrounding areas: A qualitative study. *The Journal of Infectious Diseases*. 2017;jix122.
6. Bilcke J, Antillón M, Pieters Z, et al. Cost-effectiveness of routine and campaign use of typhoid Vi-conjugate vaccine in Gavi-eligible countries: A modelling study. *The Lancet Infectious Diseases*. 2019; 19(7):728-739.

Learn more and join the effort at www.takeontyphoid.org.

#TakeOnTyphoid