

The potential of typhoid conjugate vaccines in Burkina Faso

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 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 GBD estimates, Burkina Faso had 356 typhoid cases per 100,000 population in 2019—the highest typhoid incidence rate in Africa and the second highest in the world.

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 BURKINA FASO

TCVs could have a substantial benefit in Burkina Faso, where typhoid inflicts a significant health and economic burden. The GBD study estimates that, in 2019, Burkina Faso had:

- **80,672 typhoid cases** or **356 cases per 100,000 population**, 69 percent of which were among children under 15 years of age; and
- **1,530 typhoid deaths**, 84 percent of which were among children under 15 years of age.¹

A recent modeling study³ shows that a catch-up campaign up to 15 years of age followed by routine immunization is the preferred strategy and likely to be cost-effective in Burkina Faso.*

*At a willingness-to-pay threshold of 100% per capita GDP or more to avert one disability-adjusted life-year (DALY).



Bill & Melinda Gates Foundation/Sam Reinders

Tybar TCV® was prequalified by the World Health Organization in December 2017. A second TCV, TYPHIBEV, was prequalified in December 2020.



Groupe de Recherche Action en Santé

9-month-old Ibrahim was the first child vaccinated as part of the TyVAC safety and immunogenicity study in Burkina Faso, December 2018.

TyVAC STUDY IN BURKINA FASO

In order 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 Burkina Faso, TyVAC and project partners studied how well TCVs produce an immune response to typhoid in children between 9 months and 2 years of age as well as the safety of the vaccine when given alone or alongside other routine childhood vaccines. The study found that TCV can be successfully co-administered to children with yellow fever, meningococcal A, and measles-rubella vaccines.^{4,5} While WHO already recommends TCV introduction in all typhoid-endemic countries, this additional evidence will help inform ongoing decisions about TCV vaccination in low- and middle-income countries.

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. 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.
4. Sirima SB, Ouedraogo A, Barry N, et al. Safety and immunogenicity of Vi-typhoid conjugate vaccine co-administration with routine 9-month vaccination in Burkina Faso: A randomized controlled Phase 2 trial. *International Journal of Infectious Diseases*. 2021;108:465-472.
5. Sirima AB, Ouedraogo A, Barry N, et al. Safety and immunogenicity of co-administration of meningococcal type A and measles-rubella vaccines with typhoid conjugate vaccine in children aged 15-23 months in Burkina Faso. *International Journal of Infectious Diseases*. 2021;102:517-523.

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

#TakeOnTyphoid