TyVAC Typhoid Vaccine Acceleration Consortium

Accelerating typhoid conjugate vaccine introduction

WHY TYPHOID

Typhoid, a serious enteric fever caused by *Salmonella* Typhi, is spread through contaminated food and water and is a substantial public health issue in much of Asia and sub-Saharan Africa. The burden of typhoid is likely underestimated due to difficulties in surveillance and diagnostic challenges, but current estimates indicate that each year there are more than 7 million cases and more than 93,000 deaths, with infants and children younger than 15 years old disproportionately impacted. Though treatable with antibiotics, the rate of cases resistant to the available antibiotics is increasing.

A TROUBLING TREND

Extensively drug-resistant (XDR) first emerged in Sindh Province, Pakistan, in 2016. These strains are resistant to five classes of antibiotics, including ceftriaxone, the standard IV treatment in many parts of the world, and all but one oral antibiotic for typhoid. These strains are increasingly challenging and costly to treat. Most typhoid cases in Sindh Province are now XDR. Bangladesh has reported cases of azithromycin-resistant typhoid as well, meaning typhoid is showing resistance to all available oral antibiotics.

This trend underscores the urgency to deploy existing, proven interventions—typhoid conjugate vaccines (TCVs) and water, sanitation, and hygiene (WASH) improvements—to prevent typhoid infections, reducing the need for antibiotics and limiting the spread and evolution of drug resistance. Modeling analyses project that TCV introduction can drastically reduce the number of drug-resistant typhoid cases and deaths. TCVs are projected to be one of the most impactful vaccines for preventing drug resistance-associated deaths in children younger than 15 years old.

TYPHOID CONJUGATE VACCINES

Prequalified TCVs are safe and highly protective for at least 4 years across diverse settings in Africa and Asia. Results from large efficacy studies in Bangladesh, Malawi, and Nepal show that a single dose of TCV prevented 79-85% of typhoid cases in vaccinated children. The World Health Organization (WHO) recommends the introduction of prequalified TCVs be prioritized in countries with a high burden of typhoid disease or a high burden of drug-resistant typhoid. WHO also recommends that TCVs be introduced into routine childhood immunization programs as a single dose for infants and children 6 months of age and older, accompanied by catch-up vaccination campaigns for children up to 15 years of age, where feasible. Gavi, the Vaccine Alliance supports eligible countries with TCV introduction.

Since 2019, seven countries—Pakistan, Liberia, Zimbabwe, Samoa, Nepal, Malawi, and Tuvalu—have introduced TCV into their routine immunization programs with more than 64 million children vaccinated in campaigns.

TyVAC'S APPROACH

TyVAC works closely with local and global stakeholders to accelerate the introduction of TCVs in Gavi-eligible countries and facilitate access in the most at-risk and marginalized communities.

Our approach is multidisciplinary—at the global level, we work closely with WHO, Gavi, and other partners to ensure sufficient data and evidence to inform global guidelines, financing decisions, and a sustainable vaccine supply. Similarly, TyVAC works with local partners to support program preparation, ensure evidence-based policy decisions, and provide technical assistance for TCV introduction.

TyVAC assesses existing data and generates further evidence on TCV safety, effectiveness, and co-administration, disease burden, drug resistance, cost-effectiveness, and health impact studies. We conduct country-level analyses on cost and economic value of vaccines to inform decision-makers at the national level.

TyVAC is committed to ensuring typhoid prevention and control is a global health priority. By taking an integrated approach that includes TCVs and improved WASH, we can mitigate typhoid's substantial and detrimental impact.

University of Maryland School of Medicine Center for Vaccine Development and Global Health | University of Oxford | PATH

The Typhoid Vaccine Acceleration Consortium (TyVAC) is led by the Center for Vaccine Development and Global Health at the University of Maryland School of Medicine, the Oxford Vaccine Group at the University of Oxford, and PATH. TyVAC is funded by the Bill & Melinda Gates Foundation.

Learn more at: www.takeontyphoid.org | July 2024