

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 nearly 11 million cases and more than 116,000 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 OUTBREAK

Pakistan's current outbreak, which has infected more than 850 people, is the first-ever reported outbreak of ceftriazone-resistant typhoid and represents an alarming trend in the spread of drug-resistant typhoid. Not only is the strain resistant to ceftriazone, the standard treatment in many parts of the world, but it is also resistant to all but one antibiotic for typhoid, making it increasingly challenging and costly to treat. To help control this outbreak, Typbar-TCV®, the World Health Organization (WHO)-prequalified typhoid conjugate vaccine (TCV), is being used as part of the response. This outbreak underscores the urgency of deploying existing, proven interventions—vaccines and water, sanitation, and hygiene (WASH) improvements—to prevent typhoid infections and therefore reduce the need for antibiotics.

TYPHOID CONJUGATE VACCINES

TCVs have the potential to overcome many of the challenges that impeded uptake of earlier vaccines, including longer-lasting protection, fewer doses, and suitability for children under two years of age, allowing

for inclusion in routine childhood immunization programs. In 2018, WHO recommended that typhoid-endemic countries introduce prequalified TCVs into routine childhood immunization programs as a single dose for infants and children over 6 months of age, accompanied by catch-up vaccination campaigns for children up to 15 years of age, where feasible. Gavi, the Vaccine Alliance also earmarked US\$85 million to support eligible countries with the introduction of TCVs into their routine immunization programs.

TyVAC'S APPROACH

TyVAC works closely with local and global stakeholders to accelerate the introduction of TCVs in low-income countries and facilitate access to typhoid vaccines 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 there are 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 and ensure evidence-based policy decisions.

TyVAC assesses existing data and generates new evidence related to typhoid disease burden, drug resistance, cost-effectiveness and health impact analyses. We conduct country-level analyses to understand cost and economic value of vaccines and inform decision-makers at the national level.

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



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.