

# World Health Organization (WHO)-prequalified and Gavi, the Vaccine Alliance supported typhoid conjugate vaccines

## Programmatic characteristics

|                                                                                                                                                        | Typbar TCV®                                                                                 | TYPHIBEV®                                                                                | ZyVac® TCV                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|  <b>MANUFACTURER</b>                                                   | Bharat Biotech, India                                                                       | Biological E, India                                                                      | Zydus Lifesciences Limited                                                                  |
|  <b>VACCINE TYPE</b>                                                   | Vi polysaccharide from <i>Salmonella</i> Typhi conjugated to tetanus toxoid carrier protein | Vi polysaccharide from <i>Citrobacter freundii</i> conjugated to CRM197 carrier protein* | Vi polysaccharide from <i>Salmonella</i> Typhi conjugated to tetanus toxoid carrier protein |
|  <b>FORMULATION</b>                                                    | Liquid: ready to use                                                                        |                                                                                          |                                                                                             |
|  <b>ADMINISTRATION</b>                                                 | Intramuscular injection                                                                     |                                                                                          |                                                                                             |
|  <b>AGES</b>                                                           | ≥6 months to ≤65 years                                                                      | ≥6 months to ≤45 years                                                                   | ≥6 months to ≤65 years                                                                      |
|  <b>NUMBER OF DOSES REQUIRED</b>                                       | 1**                                                                                         |                                                                                          |                                                                                             |
|  <b>WHO-PREQUALIFIED PRESENTATION(S) AVAILABLE WITH GAVI SUPPORT</b> | 5-dose vial                                                                                 |                                                                                          |                                                                                             |
|  <b>COLD CHAIN VOLUME</b>                                            | 5-dose vial: 2.9 cm <sup>3</sup> /dose                                                      |                                                                                          | 5-dose vial: 2.62 cm <sup>3</sup> /dose                                                     |
|  <b>SHELF LIFE</b>                                                   | 36 months at storage temperature: 2-8°C                                                     | 24 months at storage temperature: 2-8°C                                                  | 36 months at storage temperature: 2-8°C                                                     |
|  <b>VACCINE VIAL MONITOR (VVM) TYPE</b>                              | Type 30                                                                                     |                                                                                          |                                                                                             |
|  <b>USE IN ROUTINE IMMUNIZATION PROGRAMS</b>                         | India (Navi Mumbai only), Liberia, Kenya, Niger, Pakistan, Samoa, Zimbabwe                  | Bangladesh, Burkina Faso, Malawi, Nepal                                                  | None to date                                                                                |

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\* Note: The Vi polysaccharide of *Citrobacter freundii* is structurally and immunologically the same as the Vi polysaccharide in *Salmonella* Typhi. (Rondini S et al. Evaluation of the immunogenicity and biological activity of the *Citrobacter freundii* Vi-CRM197 conjugate as a vaccine for *Salmonella enterica* serovar Typhi. *Clinical Vaccine Immunology*. 2011;18(3):460-468.)

\*\* Note: In countries with a high burden of typhoid or high rates of drug-resistant typhoid, WHO recommends a booster dose, particularly for children who received a first dose younger than 2 years of age.

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