

## Burden of Typhoid in

# Vietnam

Vietnam is a typhoid-endemic country. The Global Burden of Disease study estimated that, in 2019, there were at least:

**109,568** typhoid cases (114 cases per 100,000)

**1,291** typhoid deaths

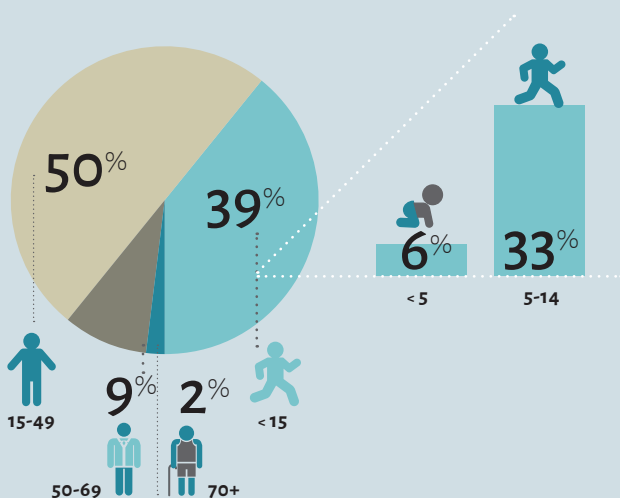
**87,143** disability-adjusted **life-years lost** to typhoid<sup>1</sup>

While typhoid is rarely fatal, the recovery is long and difficult. The disease takes time, money, and productivity from those infected and their families and is associated with numerous long-term complications.



More than a third of typhoid cases in Vietnam occur in children **younger than 15 years old.**

TYPHOID CASES IN VIETNAM BY AGE (2019)



**Drug-resistant typhoid strains** are a growing problem in Vietnam, regionally, and across the globe.



Global data show that the multidrug-resistant (MDR) H58 typhoid strain prevalence has **increased dramatically since 1992.**<sup>2</sup>



There is a significant burden of typhoid in the Mekong River delta region. Data show that 91% of isolates analyzed from this region in 2001-2005 were the H58 strain. Further, **98% of the isolates in the study were resistant to 4 classes of antibiotics, placing great pressure on the effective use of fluoroquinolones.**<sup>3</sup>



Another study conducted in 2008 showed that **84% of the isolates from Vietnam were MDR.**<sup>4</sup>



As drug-resistant typhoid becomes more common, it will become more difficult to treat and **force the use of more expensive and less readily-available** treatment options.

# Typhoid conjugate vaccines (TCVs) in Vietnam

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. Gavi, the Vaccine Alliance support for introduction is **available now**.

Prequalified TCVs are highly effective and safe for children as young as 6 months of age. Recent data from two large Phase 3 efficacy studies in Bangladesh and Nepal show TCV is safe and 79-85% effective in preventing typhoid in children.<sup>5,6</sup> TCVs:



Require **one dose**;



Are **more effective and may be longer-lasting** than other typhoid vaccines; and



Can be **co-administered with measles-rubella** vaccine.<sup>7</sup>

An analysis that modeled the cost-effectiveness of TCV introduction in five Asian countries predicts that routine vaccination would be cost-saving in Vietnam.<sup>8</sup>

## Let's Take on Typhoid in Vietnam

- ✓ Typhoid is endemic in Vietnam, with more than **109,000** cases per year.
- ✓ Vietnam has a high burden of typhoid in children **younger than 15** years old.
- ✓ Data show **MDR typhoid** is present in Vietnam.
- ✓ **TCVs** are safe, effective, and WHO-recommended for routine immunization as part of a cost-effective, integrated approach to typhoid prevention and control alongside safe water, sanitation, and hygiene interventions.
- ✓ **Gavi support** for TCV introduction is available **now**.

1. Institute for Health Metrics and Evaluation. Global Burden of Disease. 2019. Accessed via: [ghdx.healthdata.org/gbd-results-tool](https://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. Holt KE, Dolecek C, Chau TT, et al. Temporal fluctuation of multidrug resistant *Salmonella* Typhi Haplotypes in the Mekong River delta region of Vietnam. *PLoS Neglected Tropical Diseases*. 2011;5(1):e929.
4. Chiou C-S, Lauderdale T-L, Phung DC, et al. Antimicrobial resistance in *Salmonella enterica* Serovar Typhi isolates from Bangladesh, Indonesia, Taiwan, and Vietnam. *Antimicrobial Agents and Chemotherapy*. 2014;58(11):6501-6507.
5. 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.
6. Qadri F, Khanam F, Liu X, et al. Protection by vaccination of children against typhoid fever with a Vi-tetanus toxoid conjugate vaccine in urban Bangladesh: A cluster-randomised trial. *The Lancet*. 2021;398(10301):675-684.
7. 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.
8. Antillón M, Bilcke J, Paltiel AD, Pitzer VE. Cost-effectiveness analysis of typhoid conjugate vaccines in five endemic low- and middle-income settings. *Vaccine*. 2017;35(27):3506-3514.