Together We Can
Take on Typhoid

Burden of Typhoid in

Bangladesh

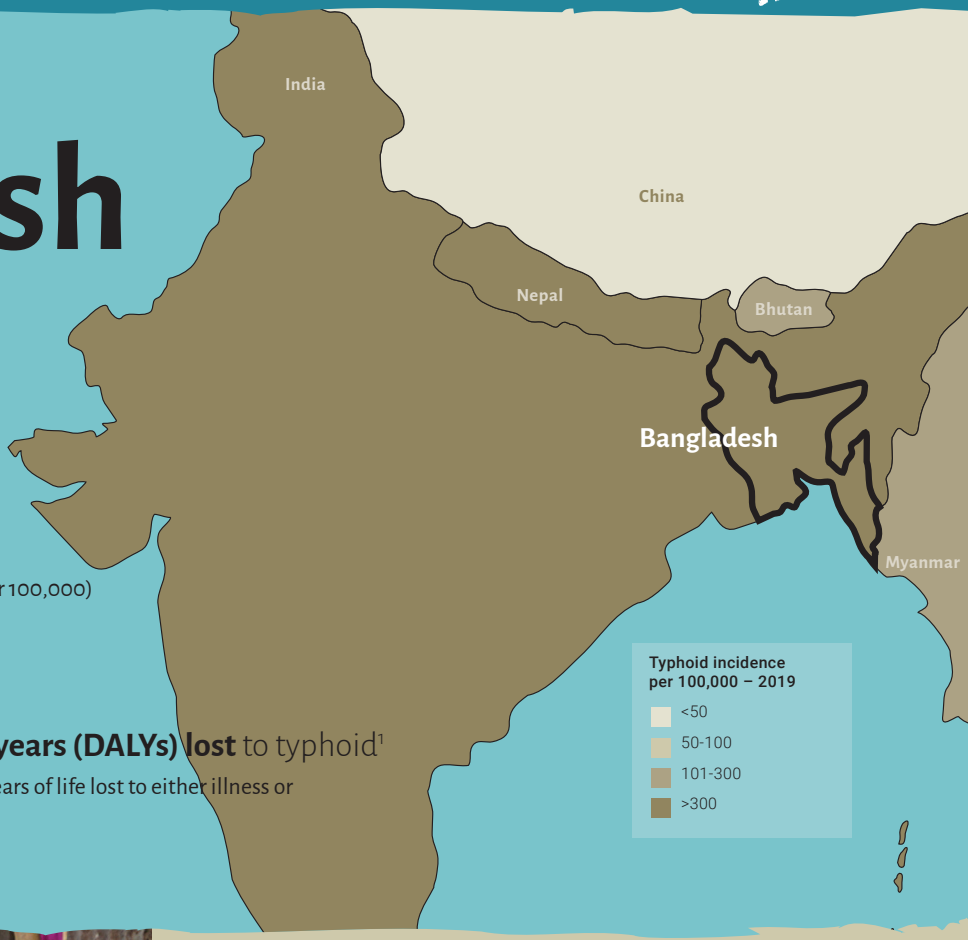
Bangladesh is a typhoid-endemic country. The Global Burden of Disease study estimated that, in 2019, there were at least:

485,564 **typhoid cases** (304 cases per 100,000)

7,567 **typhoid deaths**

570,695 disability-adjusted **life-years (DALYs) lost** to typhoid[1]

DALYs are a measure of healthy years of life lost to either illness or early death



Most typhoid cases and deaths in Bangladesh occur in children **younger than 15 years old.**

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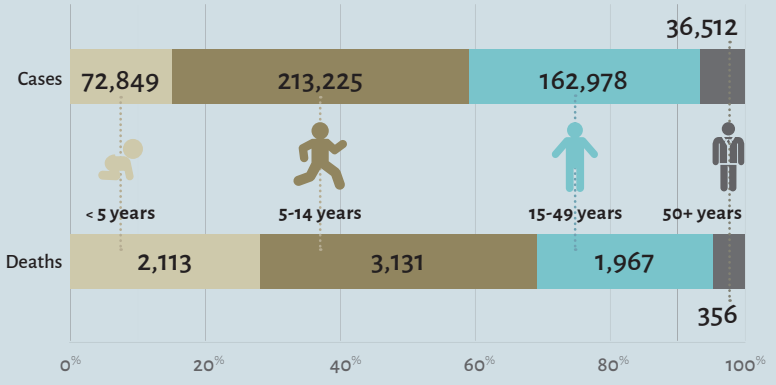
TYPHOID CASES AND DEATHS IN BANGLADESH BY AGE (2019)[1]

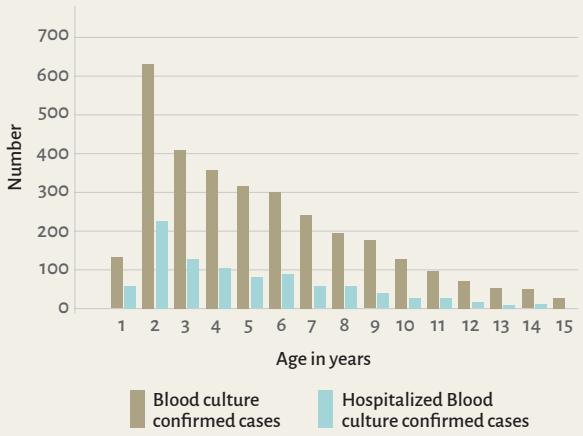


Typhoid is spread through contaminated food and water. In a recent study, 66 percent of tap water samples at study sites in Dhaka were positive for enteric fever,[2] demonstrating that water is a major source of typhoid infection in Bangladesh. Improvements to water and sanitation systems are important for long-term typhoid prevention and control, but can be costly and take time to implement. Typhoid conjugate vaccines can provide needed protection in the short-term.

Additionally, rapid urbanization has resulted in high population density in urban areas, which can raise the risk of typhoid transmission.[2]

High burden of typhoid among young children

Age distribution of blood culture confirmed typhoid cases identified at the SEAP sites in Dhaka, Bangladesh, 2016-2019 (n=3235).[3]



A surveillance study in Dhaka found 1,135 cases of typhoid per 100,000 people. The rate of typhoid cases identified from this study was highest in children 5-9 years old.[4]

The Surveillance for Enteric Fever in Asia Project (SEAP) found a high burden of typhoid among young children in Dhaka. More than 30 percent of blood culture confirmed typhoid cases are hospitalized, of which 72 percent are in children younger than 6 years of age.[3]

» This high rate of illness places a large economic burden on Bangladeshi families, as a single case of typhoid typically costs a patient almost 5473 Bangladeshi Taka (US$65), nearly double the average annual health expenditure per capita in Bangladesh.[3]

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.

Reflecting global and regional trends, drug-resistant typhoid strains are a growing problem in Bangladesh.

An analysis of typhoid isolates collected by SEAP found high levels of drug resistance. The proportion of isolates resistant to ciprofloxacin, a common antibiotic used to treat typhoid in the region, was nearly 100%, with high levels of multidrug-resistant (MDR) typhoid as well.[5]

Another analysis examining drug-resistant typhoid trends in Bangladesh using isolates from 1999-2013 found high rates of drug resistance to four of the most commonly used antibiotics.[6]

Children who contracted MDR typhoid had a longer duration of illness despite treatment,[7] placing further economic burdens on their families for their care.

Drug-resistant typhoid is more difficult to treat and forces the use of more expensive and less readily-available treatment options.

Typhoid conjugate vaccines (TCVs) in Bangladesh

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 a large Phase 3 study in Bangladesh show that TCV is safe and 85% effective in preventing typhoid.[8] 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.[9]

A recent modeling analysis shows that in Bangladesh, a catch-up campaign up to 15 years of age followed by routine immunization is the **preferred strategy and likely cost-effective** with support from Gavi.*[10]

** At a willingness to pay threshold of US$100 or more to avert one disability-adjusted life-year.*

Let's Take on Typhoid in Bangladesh

- Typhoid is endemic in Bangladesh, with more than ***485,000*** cases per year.
- More than half of Bangladesh's typhoid burden is borne by children ***younger than 15*** years of age.
- Data show an increase in ***drug-resistant typhoid*** in Bangladesh, regionally, and globally.
- ***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***.

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TyVAC Typhoid Vaccine Acceleration Consortium
CENTER FOR VACCINE DEVELOPMENT • OXFORD VACCINE GROUP • PATH

COALITION AGAINST TYPHOID a program of the Sabin Vaccine Institute