

Burden of Typhoid in

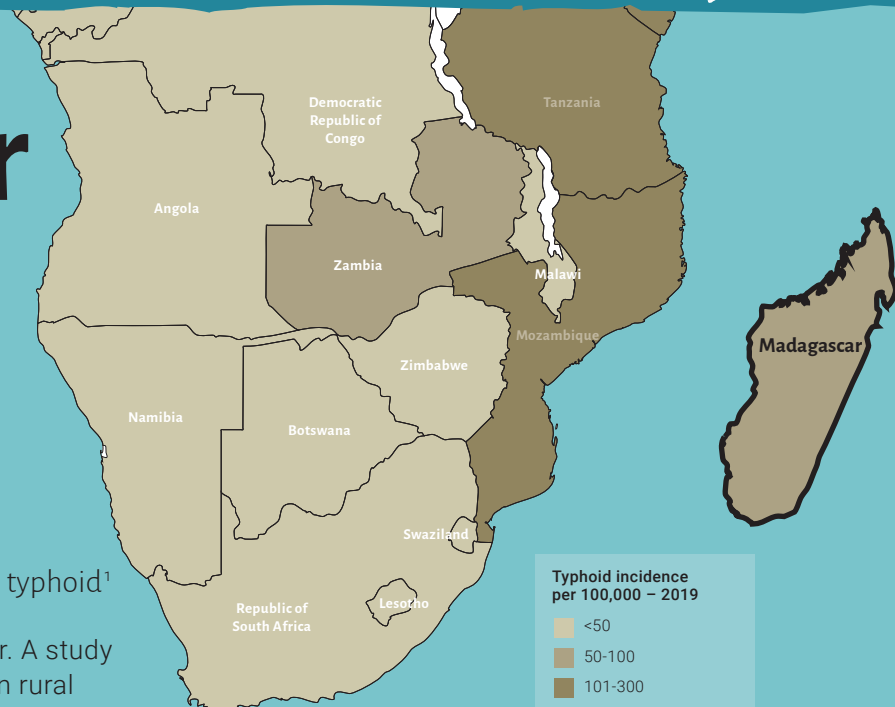
Madagascar

Madagascar is a typhoid-endemic country. The Global Burden of Disease 2019 study estimated that Madagascar experienced at least:

20,983 typhoid cases (79 cases per 100,000)
264 typhoid deaths
19,834 disability-adjusted **life-years lost** to typhoid¹

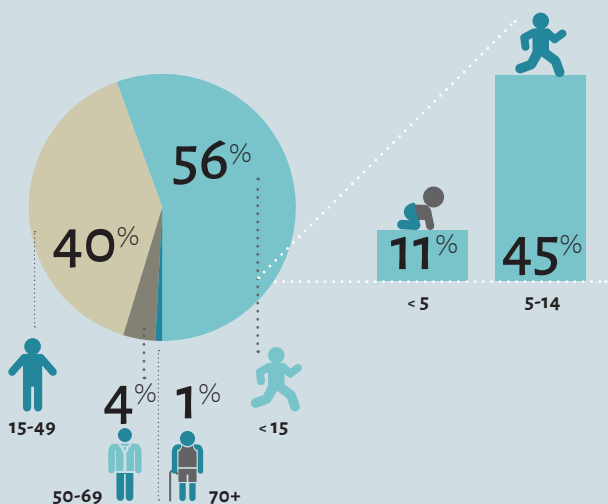
The country's true typhoid burden may be even higher. A study by the Typhoid Fever Surveillance in Africa Program in rural Imerintsiatosika, Madagascar, found an estimated incidence of 171 cases per 100,000.²

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



Most typhoid cases in Madagascar occur in children **younger than 15 years old**.

TYPHOID CASES IN MADAGASCAR BY AGE (2019)



The risk of typhoid may be increasing in Madagascar.



Global data show that multidrug-resistant (MDR) typhoid prevalence has **increased dramatically since 1992**.³ While only one drug-resistant typhoid isolate has been isolated in Madagascar,² drug-resistant typhoid has been extensively found in other East African countries.⁴ Diseases such as typhoid do not respect borders, and as drug-resistant typhoid becomes more common, **it will likely spread to Madagascar**, forcing **the use of more expensive and less readily-available** treatment options.



Madagascar ranks **112th of 117 countries investigated for water, hygiene, and sanitation (WASH) performance**. 40% of the population practices open defecation and, in rural settings, only 35% of the population have access to water. This drastically increases risk of typhoid infections.⁵



Health-care-seeking behavior in Madagascar is often limited due to low availability of medical personnel and curative medicines at health-care facilities. Data show that severely sick people often remain at home as **families cannot afford transportation and health-care costs**.⁵



Extreme weather events like cyclones have become more frequent and intense in Southern Africa due to climate change, risking displacement, **further disruption to water and sanitation, and increased infections** such as typhoid. Recent storms such as Cyclone Ana, which landed in Madagascar, have highlighted these countries' vulnerability.

Typhoid conjugate vaccines (TCVs) in Madagascar

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

Prequalified TCVs are highly effective and safe for children as young as 6 months of age. Recent data from Malawi show TCV is safe and 84% effective in preventing typhoid.⁶ TCVs:



Require **one dose**;



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



Can be **co-administered** with measles vaccine.^{7,8}

Findings from an economic analysis predict that, even in the absence of a Gavi subsidy, a catch-up campaign with TCV could be cost-effective in Madagascar.⁹

Let's Take on Typhoid in Madagascar

- ✓ Typhoid is endemic in Madagascar, with more than **20,000** cases per year.
- ✓ Madagascar's burden of typhoid is most heavily borne by children **younger than 15** years of age.
- ✓ Data show a global increase in **drug-resistant typhoid**, which could spread to Madagascar.
- ✓ **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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3. 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.
4. Park SE, Pham DT, Boinett C, et al. The phylogeography and incidence of multi-drug resistant typhoid fever in sub-Saharan Africa. *Nature Communications*. 2018;9(1):5094.
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7. Sirima SB, Ouedraogo A, Barry N, et al. Safety and immunogenicity of co-administration of meningococcal type A and measles-rubella vaccines with typhoid conjugate vaccine in children aged 15-23 months in Burkina Faso. *International Journal of Infectious Diseases*. 2021;102:517-526.
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