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Global Challenges of Enteric Fever: Gaps, Hurdles, and Hope

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Enteric fever, caused by *Salmonella enterica* serovars Typhi and Paratyphi, remains a pressing global health challenge. In 2021, the disease affected an estimated 9.3 million people and caused more than 100,000 deaths worldwide, with the greatest burden concentrated in South Asia and sub-Saharan Africa, particularly among children younger than five years. [1] The clinical overlap with other febrile illnesses continues to complicate timely diagnosis. [2] Simultaneously, the relentless spread of multidrug-resistant strains of *S. Typhi* threatens to erode existing treatment options and undermines global health security. [3]

Despite decades of recognition, several entrenched challenges impede progress. Diagnostic capacity in endemic regions remains profoundly limited. [4] Blood culture, the current standard, suffers from poor sensitivity and requires infrastructure that is often absent. [5] Chronic carriers frequently go undetected, perpetuating community transmission. At the same time, antimicrobial resistance (AMR) has escalated sharply, diminishing the effectiveness of first-line antibiotics and leaving clinicians with dwindling therapeutic options.

Typhoid conjugate vaccines (TCVs) represent a scientific success story: they are safe, effective, and recommended by the World Health Organization (WHO) for use in endemic regions. [5] Yet, vaccine uptake lags far behind need. Delays in adoption are linked to competing health priorities, limited political will, weak immunization systems, and inadequate public awareness. [6, 7] This mismatch between evidence and implementation highlights a systemic failure of global health governance.

The epidemiology of enteric fever is inextricably linked to structural inequities. Poor sanitation, unsafe water, and fragile health systems perpetuate transmission and hinder control. [8] Underinvestment is striking, relative to its burden, and enteric fever remains neglected in global health financing. While donor interest surges for high-profile epidemics, typhoid continues to struggle for visibility. This underfunding hampers diagnostics, vaccine rollout, and research into novel therapies.

Addressing enteric fever demands coordinated, multi-layered interventions. First, strengthening diagnostic infrastructure is imperative. Affordable, rapid diagnostic tests and molecular assays, alongside expanded access to blood cultures, would enable earlier detection and identification of asymptomatic carriers. [4] Second, robust antimicrobial stewardship programs and urgent investment in new therapeutic development are required to counter the accelerating AMR crisis.[4] Third, widespread deployment of TCVs

should be prioritized. [9] Evidence shows that routine infant immunization, combined with catch-up campaigns, is both highly cost-effective and capable of substantially reducing incidence. [10] Finally, sustainable improvements in water, sanitation, and hygiene (WASH) infrastructure are fundamental for long-term prevention.

National governments, multilateral agencies, and global health donors must act decisively. Endemic countries should integrate TCVs into routine immunization schedules without delay. International partners should provide financial and technical support for vaccine rollouts, laboratory strengthening, and WASH projects. Policymakers must also recognize that the fight against enteric fever is inseparable from broader goals of equity and health system resilience.

Further research, particularly into surveillance, novel diagnostics, and innovative therapies, remains critical. But evidence alone will not suffice. What is required is political commitment commensurate with the scale of the problem. Without urgent, coordinated action, the global community risks perpetuating a preventable disease that disproportionately affects the world's most vulnerable. With sustained investment and unified resolve, enteric fever can be controlled and ultimately consigned to history.

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