

ENTERIC DISEASES

Surveillance of enteric fever, 2019-2021, South Africa

Infection with *Salmonella* Typhi or *S. Paratyphi* A, B or C can result in the clinical syndrome of enteric fever. Enteric fever remains a global health concern, affecting millions of people annually and disproportionately impacting low-and middle-income countries where children bear the brunt of the disease. The emergence and dissemination of multidrug-resistant, fluoroquinolone-resistant and extensively drug-resistant strains of *S. Typhi* over the last two decades highlights the need for ongoing surveillance and antimicrobial stewardship. In addition, reports suggest that *S. Paratyphi* is responsible for an increasing proportion of enteric fever compared with *S. Typhi* in parts of Asia. In 2017, a Vi-tetanus toxoid typhoid conjugate vaccine was prequalified by the World Health Organization (WHO) and is recommended by the WHO for programmatic use from six months of age in typhoid endemic countries, prioritising countries with a high burden of typhoid fever or high rates of antimicrobial resistance.

Enteric fever is endemic in South Africa. The last major outbreak occurred in 2005 in Delmas, Mpumalanga Province, when over 400 laboratory-confirmed cases were identified. From 2006 through 2020, an average of 90 cases per year has been reported nationally. The annual incidence rate for the same period is an average of 0.2 cases per 100 000 population. Cases are observed throughout the year without any notable seasonality. The majority of cases are typically reported from Gauteng Province followed by Western Cape and KwaZulu-Natal provinces. Enteric fever is a category one notifiable medical condition (NMC) in South Africa. *S. Typhi* isolates are routinely referred to the Centre for Enteric Diseases (CED), NICD, from both public and private

laboratories. At the CED, isolates undergo confirmatory testing and whole-genome sequencing (WGS); WGS supports the identification of clusters and outbreaks

This report focuses on data from January 2019 to June 2021.

In 2019, a total of 123 cases was reported; this number decreased to 83 (33% decrease) in 2020. Fifty-two cases have been reported in the first half of 2021. *S. Typhi* accounted for 97% (251/258) of the total cases while *S. Paratyphi* accounted for 3% (7/258) (Figure 2). Isolates have been received for 87% (107/123) of the cases in 2019, 90% (75/83) of the cases in 2020 and 88% (46/52) of the cases in 2021. The age groups most commonly affected are children aged 6 to 10 years (19%, 48/258), followed by <5 years (17%, 43/258) and 11 to 15 years (10%, 25/258) (Figure 3). Gauteng Province accounted for 36% (94/258) of the cases followed by Western Cape (33%, 85/258) and KwaZulu-Natal provinces (10%, 27/258) (Figure 4).

Reference laboratory antimicrobial susceptibility testing includes ciprofloxacin, azithromycin, chloramphenicol and imipenem. Data from 2003 to date show a steady decrease in susceptibility to chloramphenicol, a former first-line antibiotic for treating typhoid fever, from 97% in 2005 to 16% in 2021. Susceptibility to ciprofloxacin decreased from over 90% in 2003 to just below 80% in 2021. All isolates tested to date have been susceptible to imipenem, and susceptibility to azithromycin is consistently above 98% (Figure 2). The trend of increasing resistance to ciprofloxacin, which is currently recommended as the treatment of choice for uncomplicated enteric fever, is definitely concerning and requires close monitoring.

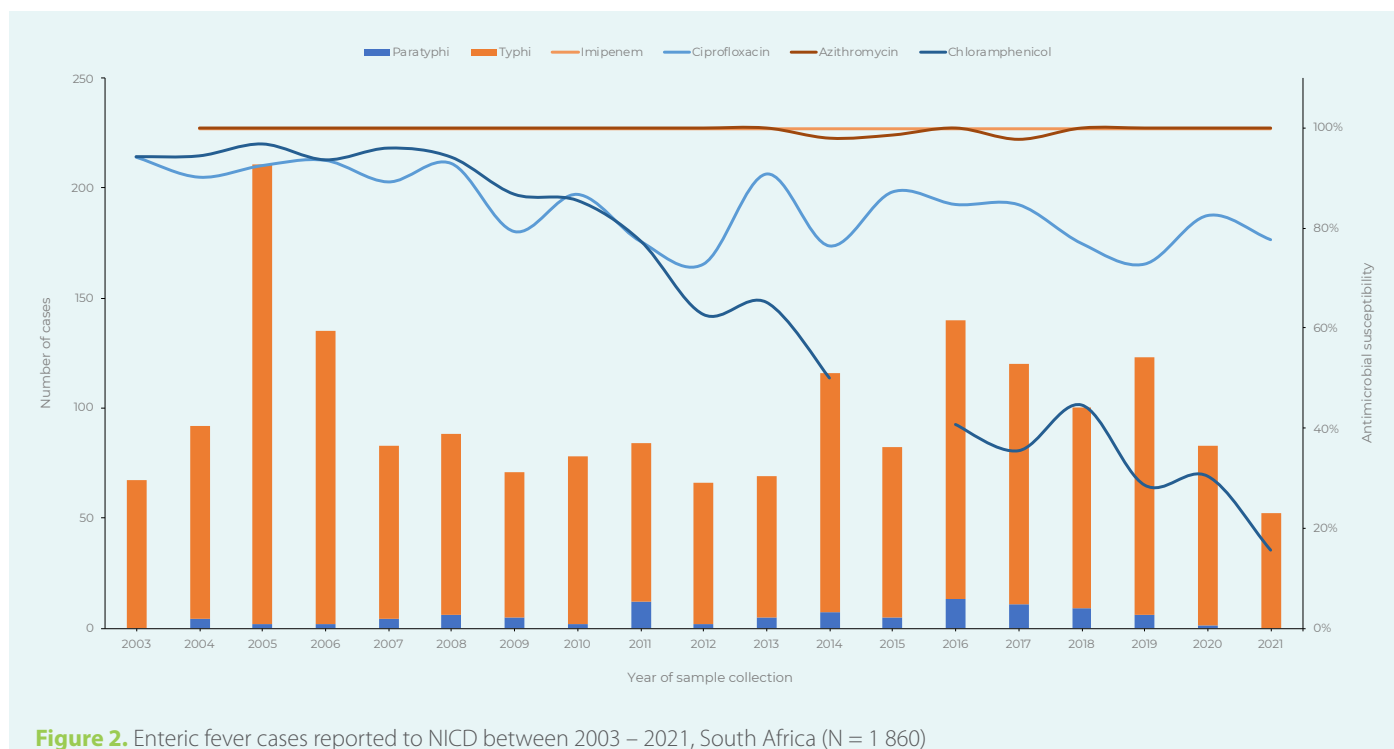


Figure 2. Enteric fever cases reported to NICD between 2003 – 2021, South Africa (N = 1 860)

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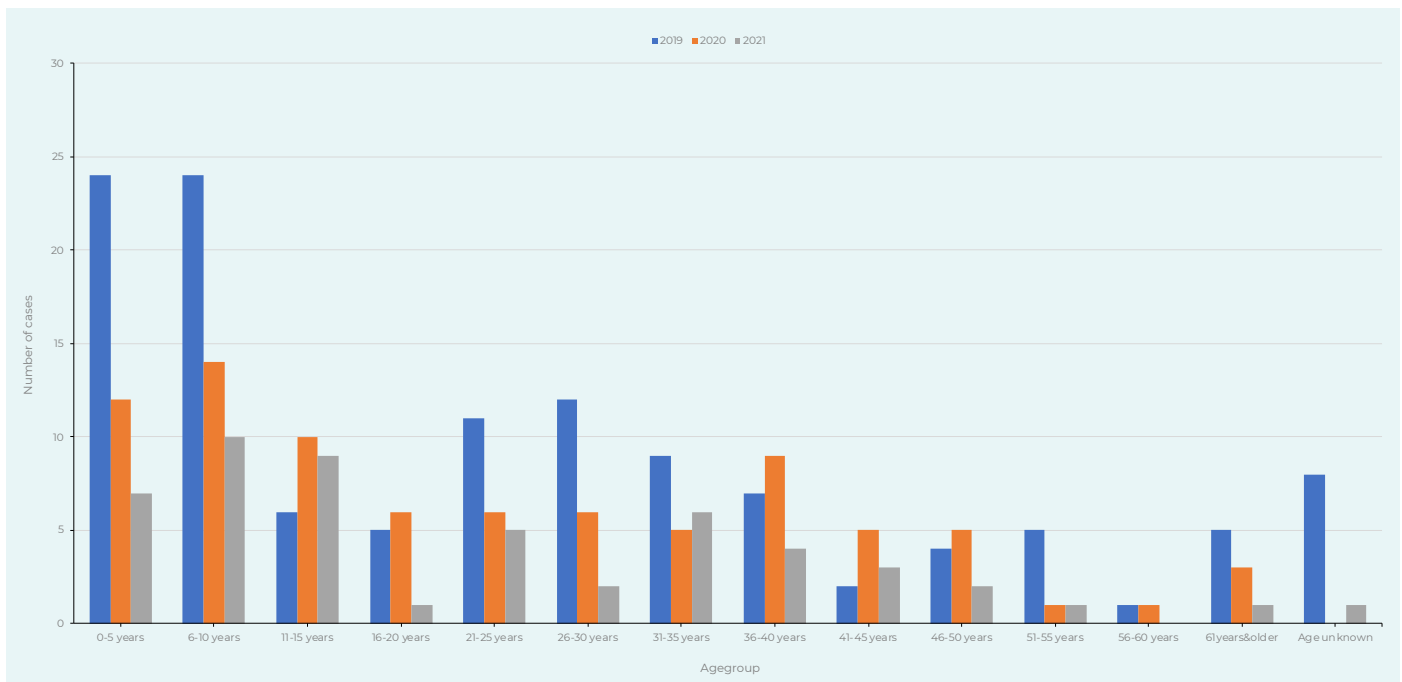


Figure 3. Enteric fever cases by age group, 2019 – 2021, South Africa (N = 258)

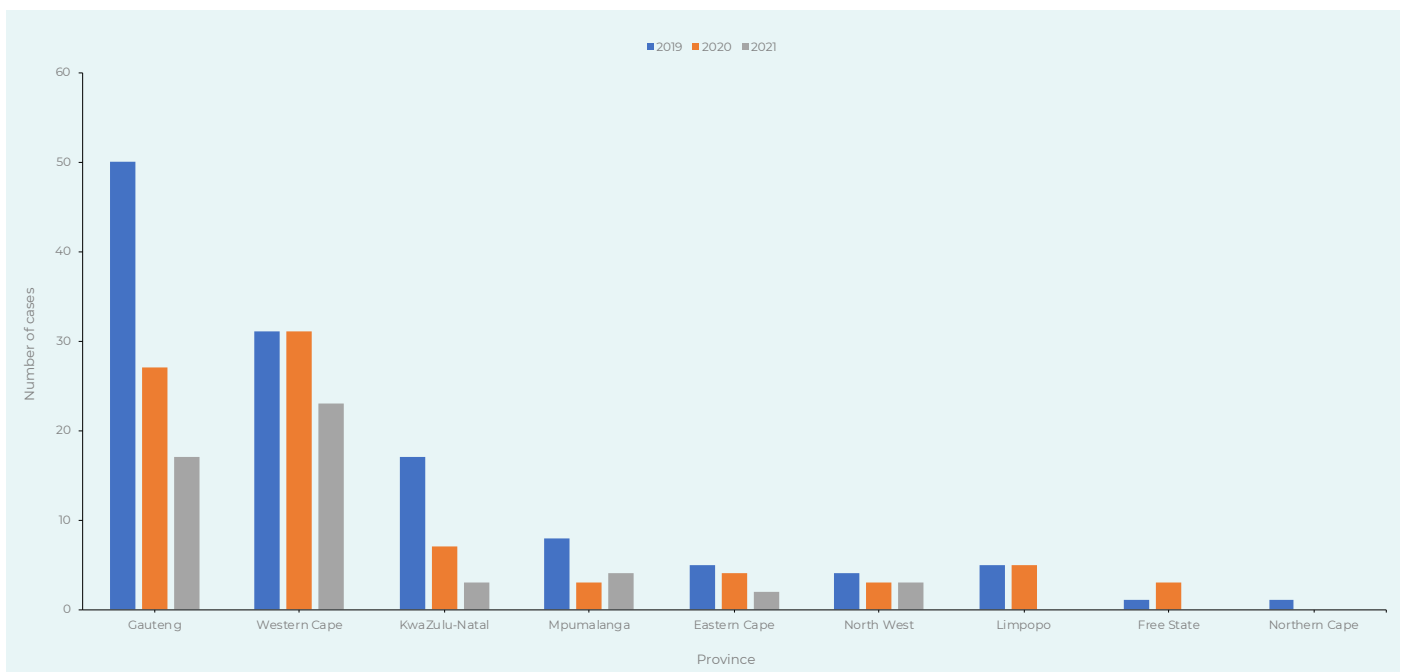


Figure 4. Enteric fever cases by province, 2019 – 2021, South Africa (N = 258)