

**TITLE:** Surveillance of three large cohorts for Typhoid Fever: The Strategic Typhoid Alliance across Africa and Asia.

**Authors:** Mila Shakya,<sup>1</sup> Deus Thindwa,<sup>2</sup> Farhana Khanam,<sup>3</sup> Merryn Voysey,<sup>4</sup> Buddha Basnyat,<sup>1</sup> Melita Gordon,<sup>2</sup> Firdausi Qadri,<sup>3</sup> Andrew J. Pollard<sup>4</sup> on behalf of STRATAA Study Consortium.

1. Oxford University Clinical Research Unit-Patan Academy of Health Sciences, Nepal
2. Malawi Liverpool Wellcome Trust Clinical Research Programme (MLW), Malawi
3. International Centre for Diarrhoeal Diseases Research, Dhaka, Bangladesh
4. Oxford Vaccine Group, Centre for Clinical Vaccinology and Tropical Medicine, Department of Paediatrics, University of Oxford and the National Institute for Health

**Background:**

Typhoid fever, predominant in South and South East Asia, causes 26.9 million cases and 269,000 deaths, while Non-typhoid Salmonellosis, prevalent in sub-Saharan Africa, causes 93.8 million cases and 155,000 deaths globally each year. Estimates of disease incidence and severity are not current. There are also knowledge gaps on carriage and transmission mechanisms, asymptomatic infections and infection-derived immunity. We aim to address these questions with surveillance of large population cohorts in three countries.

**Methods:**

The Strategic Typhoid Alliance across Africa and Asia (STRATAA) study has enrolled cohorts of individuals and their households from three urban settings in Dhaka (Bangladesh), Blantyre (Malawi), and Lalitpur (Nepal). Key demographic information on household members was obtained via an enumerator-administered tablet-based questionnaire. Individuals in the cohort with acute febrile illnesses suspected to be enteric fever are being assessed by passive surveillance.

**Results:**

A total of 26,119, 23,567 and 24,502 households with 110,731, 97,510 and 102,963 individuals were enrolled in Dhaka, Blantyre and Lalitpur respectively. Consent was denied by 20.8%, 5.1% and 6.1% of respective households. The average household size was 4.2(SD=1.8), 4.4(SD=2.1) and 4.2(SD=2.2) members in the respective sites. The median age was 25 years (IQR:13-37) in Dhaka, 19 years (IQR:9-31) in Blantyre, and 28 years (IQR:17-42) in Lalitpur. In 8 weeks of passive surveillance in Dhaka, 14/112(12.5%) blood culture positive fevers were detected. Similarly in 4 weeks in Blantyre, 4/54 (7.4%) fevers were positive; while 18/107 (16.8%) fevers were blood culture positive in Lalitpur in 18 weeks.

**Conclusion:**

We have successfully enrolled large cohorts in 3 countries totaling 311,204 individuals. Ongoing research will establish burden and transmission of typhoid from surveillance in healthcare facilities with community case-investigation and using serosurveys to estimate incident infection. Early data have already highlighted a considerable burden of disease and the need for preventive strategies.