

A Cross-Sectional Seroepidemiological Survey for Typhoid Fever in Fiji

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Background: Fiji, an upper-middle income state in the Pacific Ocean, has been experiencing an upturn in confirmed case notifications of typhoid fever. Important questions about typhoid in Fiji remain unanswered.

Methods: To characterize the epidemiology of typhoid infection and immunity in Fiji, we conducted a cross-sectional sero-epidemiological survey measuring IgG against the Vi antigen of *Salmonella enterica*, serovar Typhi by ELISA to estimate the effect of age, ethnicity and other variables on seroprevalence. Epidemiologically relevant cut-off titres were established using a mixed model analysis of data from recovering culture-confirmed typhoid cases.

Results: A total of 1787 participants were enrolled and successfully assayed, of which 1,531 from areas that had not been previously vaccinated (seropositivity 32.3% (95%CI 28.2 to 36.3%)) and 256 were from areas that had been previously vaccinated (seropositivity 71.5% (95%CI 62.1 to 80.9%)). There were no significant differences in seropositivity prevalences by ethnicity, which is in contrast to disease surveillance data in which the indigenous iTaukei Fijian population are disproportionately affected. Using multivariable logistic regression, seropositivity was associated with increased age (odds ratio 1.3 (95% CI 1.2 to 1.4) per 10 years) the presence of a pit latrine (OR 1.6, 95%CI 1.1 to 2.3) as opposed to a septic tank or piped sewer and residence in settlements rather than residential housing or villages (OR 1.6, 95% CI 1.0 to 2.7).

Conclusions: Increasing seropositivity with age is suggestive of low-level endemic transmission in Fiji. Improved sanitation where pit latrines are used and addressing potential transmission routes in settlements may reduce exposure to *S. Typhi*. Widespread subclinical infection suggests there may be a role for typhoid vaccination in Fiji, in addition to public health management of cases and outbreaks. Serosurveys using anti-Vi ELISA can be utilised to inform typhoid control.