

Estimating Case Fatality Rate of Blood Culture Confirmed Typhoid Fever in Dhaka, Bangladesh

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Background: Case fatality rate estimates for typhoid fever are central to estimating disease burden, but are scarce. Estimates range from 0-15%, with active population based surveillance reporting lower rates presumably due to early detection and hospital based surveillance with higher estimates given their sicker patients. We measured the case fatality rate among patients who had blood culture confirmed typhoid in Dhaka Bangladesh.

Methods: Between January and December 2010, we prospectively followed patients with blood cultures positive for *Salmonella* Typhi, identified from six private laboratories utilized by both hospitals and outpatient private practitioners throughout Dhaka, Bangladesh. We collected antibiotic resistance information from the laboratories. Study personnel interviewed patients via telephone 30 days after blood culture collection to obtain information on antibiotic use and complications.

Results: 1,336 patients were enrolled; 59% were male, 41% were female, with an average age of 15. 98% experienced fever, 25% required hospitalization and 4 patients died from *S. Typhi* (0.3%, 95% CI 0.28-0.32%). The four patients who died were all female and had an average age of 45 years old (range 40-65). 14% of isolates were resistant to chloramphenicol, ampicillin and co-trimoxazole; 38% were resistant to azithromycin. 47% started antibiotics prior to blood cultures, with another 17% starting antibiotics after cultures but before results were reported. Culture results caused 55% to switch antibiotics.

Conclusions: This study found a 0.3% case fatality rate for blood culture confirmed typhoid fever among a mixed population of sicker, hospitalized patients and healthier outpatients in urban Bangladesh. This assessment did not capture the experience of people too poor to secure a blood culture, but offers a low cost strategy to generate an empirical estimate and explore case fatality in other contexts. Future studies should track antimicrobial resistance and its impact on patient outcomes.