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Typhoid fever in the United States, 1999-2006.

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Abstract

CONTEXT: Typhoid fever in the United States has increasingly been due to infection with antimicrobial-resistant Salmonella ser Typhi. National surveillance for typhoid fever can inform prevention and treatment recommendations.

OBJECTIVE: To assess trends in infections with antimicrobial-resistant S. Typhi.

DESIGN: Cross-sectional, laboratory-based surveillance study.

SETTING AND PARTICIPANTS: We reviewed data from 1999-2006 for 1902 persons with typhoid fever who had epidemiologic information submitted to the Centers for Disease Control and Prevention (CDC) and 2016 S. Typhi isolates sent by participating public health laboratories to the National Antimicrobial Resistance Monitoring System Laboratory at the CDC for antimicrobial susceptibility testing.

MAIN OUTCOME MEASURES: Proportion of S. Typhi isolates demonstrating resistance to 14 antimicrobial agents and patient risk factors for antimicrobial-resistant infections.

RESULTS: Patient median age was 22 years (range, <1-90 years); 1295 (73%) were hospitalized and 3 (0.2%) died. Foreign travel within 30 days of illness was reported by 1439 (79%). Only 58 travelers (5%) had received typhoid vaccine. Two hundred seventy-two (13%) of 2016 isolates tested were resistant to ampicillin, chloramphenicol, and trimethoprim-sulfamethoxazole (multidrug-resistant S. Typhi [MDRST]); 758 (38%) were resistant to nalidixic acid (nalidixic acid-resistant S. Typhi [NARST]) and 734 NARST isolates (97%) had decreased susceptibility to ciprofloxacin. The proportion of NARST increased from 19% in 1999 to 54% in 2006. Five ciprofloxacin-resistant isolates were identified. Patients with resistant infections were more likely to report travel to the Indian subcontinent: 85% of patients infected with MDRST and 94% with NARST traveled to the Indian subcontinent, while 44% of those with susceptible infections did (MDRST odds ratio, 7.5; 95% confidence interval, 4.1-13.8; NARST odds ratio, 20.4; 95% confidence interval, 12.4-33.9).

CONCLUSION: Infection with antimicrobial-resistant S. Typhi strains among US patients with typhoid fever is associated with travel to the Indian subcontinent, and an increasing proportion of these infections are due to S. Typhi strains with decreased susceptibility to fluoroquinolones.

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