

National Enteric Disease Surveillance: Typhoid and Paratyphoid Fever Annual Summary, 2009

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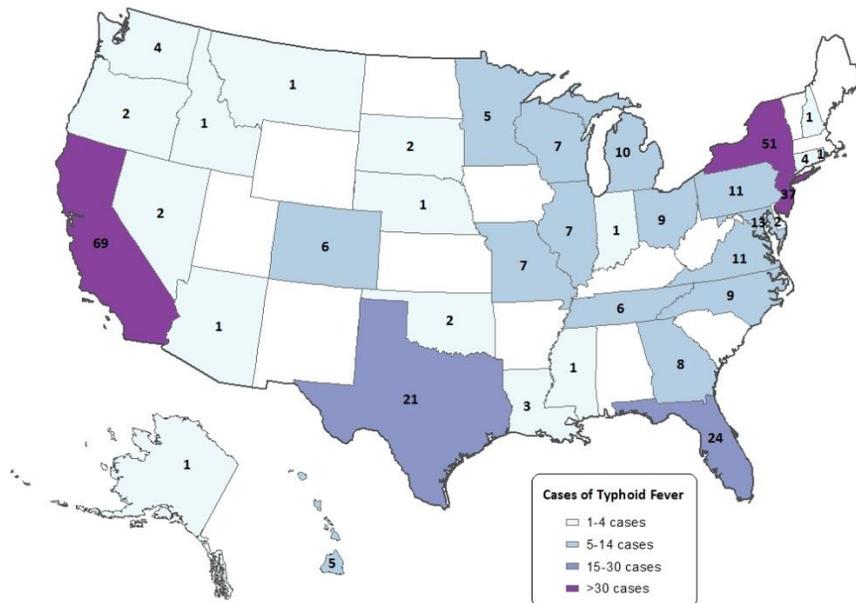
An overview of National Typhoid and Paratyphoid Fever Surveillance (NTPFS) system is available online http://www.cdc.gov/ncezid/dfwed/PDFs/typhi_surveillance_overview_508c.pdf.

National Typhoid and Paratyphoid Fever Surveillance Data

States reporting at least one typhoid or paratyphoid fever¹ case to the NTPFS during 2009 are shown in Figures 1 and 2.

- 37 states reported 347 typhoid fever cases (Figure 1)
- 22 states reported 78 paratyphoid fever cases (78 Paratyphi A) (Figure 2)

Figure 1. States reporting at least typhoid fever case to National Typhoid and Paratyphoid Fever Surveillance, 2009 (n=347)



¹ Paratyphoid fever is caused by *Salmonella* serotypes Paratyphi A, Paratyphi B, and Paratyphi C. Two distinct pathotypes of Paratyphi B are recognized; one is associated with paratyphoid fever and the other is associated with uncomplicated gastroenteritis. The two pathotypes have distinct virulence characteristics, and are differentiated based on the ability to ferment tartrate. The paratyphoidal pathotype is unable to ferment tartrate and is designated serotype Paratyphi B; the nonparatyphoidal pathotype ferments tartrate and is designated serotype Paratyphi B var. L(+) tartrate+. Only those laboratory-confirmed as not able to ferment tartrate are included in the annual NTPFS summary. For many Paratyphi B reports submitted to CDC, this information is not available; these reports are therefore excluded from the NTPFS summary.

Table 2. Demographic and clinical characteristics of patients with paratyphoid fever reported to National Typhoid and Paratyphoid Fever Surveillance, 2009 (N=78).

Characteristic (total number)	Count	Percent
Median age in years (range)	32 (11-64)	--
Female (n=78)	38	49
US Citizen (n=77)	39	51
Vaccinated* (n=73)	12	16
Site of isolation (n=76)		
Blood	68	88
Stool	6	8
Gall bladder	2	3
Other	0	0
Hospitalized (n=78)	62	79
Died (n=74)	0	0

*Received typhoid vaccination within 5 years before onset of illness

Travel destinations are shown in Table 3.

- 275 (79%) patients with typhoid fever and 66 (85%) with paratyphoid fever reported traveling or living outside the United States in the 30 days before illness onset
- Visiting friends or relatives was the most common reason for travel for patients with typhoid fever (69%) and paratyphoid fever (65%)

Table 3. Travel destinations reported to National Typhoid and Paratyphoid Fever Surveillance, 2009.

Travel Destination	Typhoid (n=275)	Paratyphoid (n=66)
	no. (%)	no. (%)
India	148 (54)	48 (72)
Bangladesh	32 (12)	10 (15)
Pakistan	30 (11)	3 (5)
Mexico	13 (5)	--
Haiti	10 (4)	--
Other	42 (15)	6 (9)

NNDSS Data

The National Notifiable Disease Surveillance System (NNDSS) collects and compiles reports of nationally notifiable infectious diseases, including typhoid fever. The 2009 NNDSS report is available at <http://www.cdc.gov/mmwr/PDF/wk/mm5853.pdf>

- Thirty-eight states and the District of Columbia reported 397 typhoid fever cases (1)

Antimicrobial Resistance Data

The National Antimicrobial Resistance Monitoring System (NARMS) monitors antimicrobial resistance among enteric bacteria (including *Salmonella* serotype Typhi and Paratyphi A, Paratyphi B, and Paratyphi C) from humans. In *Enterobacteriaceae*, resistance to nalidixic acid, an elementary quinolone, correlates with decreased susceptibility to ciprofloxacin (MIC ≥ 0.12 $\mu\text{g/mL}$) and possible fluoroquinolone

treatment failure. Multidrug resistance is described in NARMS as resistance to three or more classes of antimicrobial agents, as defined by the Clinical and Laboratory Standards Institute (CLSI).

The most recently published NARMS annual report is from 2010, available at <http://www.cdc.gov/narms/pdf/2010-annual-report-narms.pdf> (2). The 2009 data, as reported in the 2010, report showed the following:

For *Salmonella* serotype Typhi isolates

- 60% were resistant to nalidixic acid
- 3 % were resistant to ciprofloxacin
- 13% were multidrug resistant

For *Salmonella* serotype Paratyphi isolates

- 86% were resistance to nalidixic acid
- 0% were resistant to ciprofloxacin
- 1% were multidrug resistant

Outbreak Data

The Foodborne Disease Outbreak Surveillance System (FDOSS) collects reports of foodborne disease outbreaks from local, state, tribal, and territorial public health agencies. The 2009 annual summary of foodborne disease outbreaks is available at

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5931a1.htm> (3).

- In 2009, there were no outbreaks of typhoid or paratyphoid fever in the United States.

References

1. Centers for Disease Control and Prevention (CDC). Summary of notifiable diseases—United States, 2009. *MMWR* 2011; 58(53): 1-100
2. Centers for Disease Control and Prevention (CDC). National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS): Human Isolates Final Report, 2009. Atlanta, Georgia: U.S. Department of Health and Human Services, CDC, 2010.
3. Centers for Disease Control and Prevention (CDC). Surveillance for foodborne disease outbreaks—United States, 2009. *MMWR* 2010; 59(31):973-979

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