

# National Enteric Disease Surveillance: Typhoid and Paratyphoid Fever Annual Summary, 2008

## National Typhoid and Paratyphoid Fever Surveillance Annual Summary, 2008

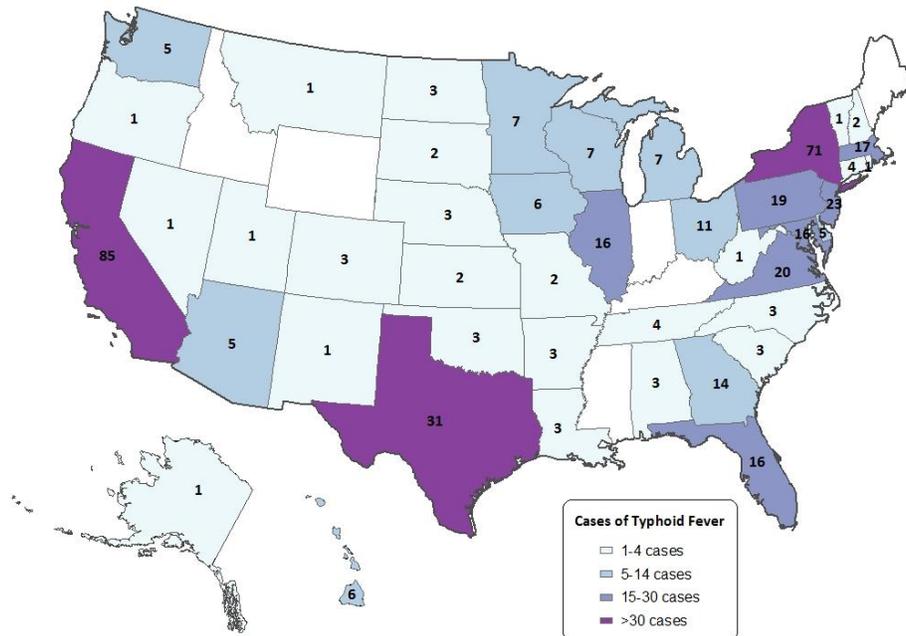
An overview of National Typhoid and Paratyphoid Fever Surveillance (NTPFS) system is available online [http://www.cdc.gov/ncezid/dfwed/PDFs/typhi\\_surveillance\\_overview\\_508c.pdf](http://www.cdc.gov/ncezid/dfwed/PDFs/typhi_surveillance_overview_508c.pdf).

### National Typhoid and Paratyphoid Fever Surveillance Data

States reporting at least one typhoid or paratyphoid fever<sup>1</sup> case to the NTPFS during 2008 are shown in Figures 1 and 2.

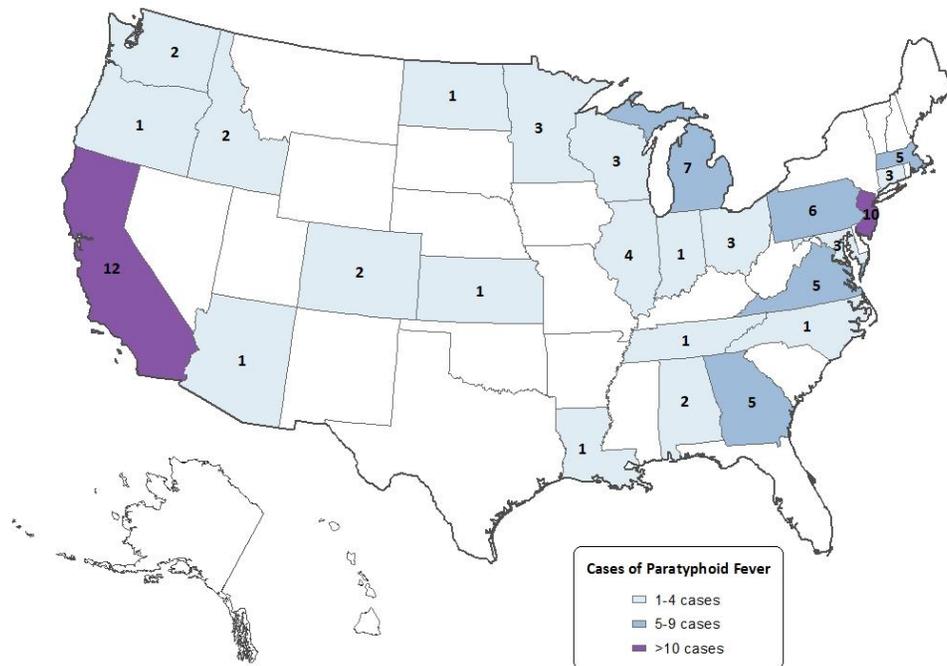
- 44 states reported 439 typhoid fever cases (Figure 1)
- 25 states reported 85 paratyphoid fever cases (84 Paratyphi A, 1 Paratyphi C) (Figure 2)

Figure 1. States reporting at least typhoid fever case to National Typhoid and Paratyphoid Fever Surveillance, 2008 (n=439)



<sup>1</sup> 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.

Figure 2. States reporting at least one paratyphoid fever case to National Typhoid and Paratyphoid Fever Surveillance, 2008 (n=85; 84 Paratyphi A, 1 Paratyphi C)



Demographic and clinical characteristics of patients with typhoid and paratyphoid fever are shown in Tables 1 and 2.

- The median age of patients with typhoid fever was 24 years
- The median age of patients with paratyphoid fever was 21 years
- No deaths were reported

Table 1. Demographic and clinical characteristics of patients with typhoid fever reported to National Typhoid and Paratyphoid Fever Surveillance, 2008 (n=439).

Characteristic (total number)	Count	Percent
Median age in years (range)	22 (<1-87)	--
Female (n=430)	206	48
US Citizen (n=393)	173	44
Vaccinated* (n=422)	25	6
Site of isolation (n=420)		
Blood	358	85
Stool	46	11
Gall bladder	15	4
Other	1	0.2
Hospitalized (n=438)	337	77
Died (n=408)	0	0

\*Received typhoid vaccination within 5 years before onset of illness

Table 2. Demographic and clinical characteristics of patients with paratyphoid fever reported to National Typhoid and Paratyphoid Fever Surveillance, 2008 (n=85).

Characteristic (total number)	Count (%)	Percent
Median age in years (range)	21 (1-74)	--
Female (n=83)	35	42
US Citizen (n=82)	38	46
Vaccinated* (n=77)	10	13
Site of isolation (n=84)		
Blood	78	81
Stool	3	4
Gall bladder	3	4
Other	0	0
Hospitalized (n=84)	59	70
Died (n=77)	0	0

\*Received typhoid vaccination within 5 years before onset of illness

Travel destinations are shown in Table 3.

- 360 (82%) patients with typhoid fever and 78 (91%) patients 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 (71%) and paratyphoid fever (64%)

Table 3. Travel destinations reported to National Typhoid and Paratyphoid Fever Surveillance, 2008.

Travel Destination	Typhoid (n=360)	Paratyphoid (n=78)
	no. (%)	no. (%)
India	197 (55)	57 (73)
Bangladesh	40 (11)	8 (10)
Pakistan	32 (9)	5 (6)
Haiti	11 (3)	--
Nigeria	10 (3)	--
Other	70 (19)	8 (10)

### ***NNDSS Data***

The National Notifiable Disease Surveillance System (NNDSS) collects and compiles reports of nationally notifiable infectious diseases, including typhoid fever. The 2008 NNDSS report is available at <http://www.cdc.gov/mmwr/PDF/wk/mm5754.pdf>.

- 44 states and American Samoa reported 449 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  $\geq 0.12$   $\mu\text{g/mL}$ ) 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 2008 data, as reported in the 2010, report showed the following:

For *Salmonella* serotype Typhi isolates

- 59% were resistant to nalidixic acid
- 0% were resistant to ciprofloxacin
- 14% were multidrug resistant

For *Salmonella* serotype Paratyphi isolates

- 87% were resistant to nalidixic acid
- 0% were resistant to ciprofloxacin
- 0% 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 2008 annual summary of foodborne disease outbreaks is available at <http://www.cdc.gov/mmwr/pdf/wk/mm6035.pdf> (3).

- In 2008, no outbreaks of typhoid or paratyphoid fever were reported in the United States.

### **References**

1. Centers for Disease Control and Prevention (CDC). Summary of notifiable diseases—United States, 2008. *MMWR* 2010; 57(54): 1-100
2. Centers for Disease Control and Prevention (CDC). National Antimicrobial Resistance Monitoring System for Enteric Bacteria (NARMS): Human Isolates Final Report, 2008. 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, 2008. *MMWR* 2010; 60(35):1197-1202.

### **Reference Citation:**

**Centers for Disease Control and Prevention (CDC). National Typhoid and Paratyphoid Fever Surveillance Annual Summary, 2008. Atlanta, Georgia: US Department of Health and Human Services, CDC, 2012.**