

Typhoid Fever

Current Situation

The Southern Nevada Health District (SNHD), Office of Epidemiology, has identified an unusual cluster of gastrointestinal illness caused by *Salmonella enterica enterica*, serovar Typhi, commonly known as typhoid fever or typhoid. This strain of *S. Typhi* isolated from all three Nevada cases in the current multi-state cluster is rarely seen during surveillance and has been identified only 22 times in the past ten years in the United States. For comparison, in the same time period, the SNHD reported seven confirmed *S. Typhi* cases, three of which match this rare strain. The first of three Clark County, Nevada cases in the current cluster was reported to SNHD on June 15, 2010 with subsequent reports in late June and July.

As of the date of this bulletin, there are a total of seven confirmed cases nationally. Of these, three have been hospitalized, and no deaths have been reported. Currently, this outbreak appears to be confined to the southwest region of the US, with ill persons residing in southern Nevada, California, and Texas. The age range of the cases is 7-31 years, and six of the seven individuals are females. Five of the seven cases are confirmed or suspected to be Hispanic, and only one case reported international travel during the incubation period. Although no direct links between cases have been identified, consuming food purchased at ethnic chain grocery stores and other risk factors are being evaluated for all cases. The SNHD has partnered with the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration, as well as public health agencies in California and Texas, to investigate this outbreak.

Clinical Presentation

Persons with typhoid fever usually have a sustained fever as high as 103° to 104°F (39° to 40°C). They may also have stomach pains, marked headache, malaise, relative bradycardia, splenomegaly, and anorexia. In some cases, patients have a non-productive cough in the early stage of the illness, a rash of flat, rose-colored spots on the trunk, or constipation in adults.

Transmission

Humans are the only host for *S. Typhi*, and infected persons can carry the bacteria in their bloodstream and intestinal tract. The bacterium is transmitted through food or water contaminated with the feces or urine of acutely infected persons or carriers. Shellfish (particularly oysters) from contaminated beds, raw fruits and vegetables, and contaminated milk or milk products have been identified as important vehicles for this organism.

The incubation period depends on the inoculum size and on host factors, with range 3-60 days (usually 8-14 days). The period of communicability is as long as the bacilli appear in the excreta, usually from the first week, throughout convalescence and variable thereafter. In 10% of untreated typhoid fever, patients discharge bacilli for three months after onset of symptoms, and 2-5% of those become permanent carriers.

Diagnosis

The causal organism can be cultured from blood early in the disease, and from urine and feces after the first week. Blood culture is the diagnostic mainstay for typhoid fever, but bone marrow culture provides the most sensitive method for bacteriological confirmation. Cultures can be performed at commercial or hospital laboratories. Microbiology laboratories in Clark County that isolate *Salmonella* in cultured material will send the organism to Southern Nevada Public Health Laboratory for serotyping and Pulsed Field Gel Electrophoresis (PFGE). Serological tests based on agglutinating antibodies (Widal) are of little diagnostic value due to their limited sensitivity and specificity.

Clinical Management

Thus far, the *S. Typhi* isolates related to the current multi-state outbreak cluster have been shown to be sensitive to penicillin. If local strains are known to be sensitive to traditional first-line antibiotics, oral chloramphenicol, amoxicillin, or trimethoprim-sulfamethoxazole (especially in

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children) should be used in accordance with local antimicrobial sensitivity pattern. Ciprofloxacin is also a commonly prescribed antibiotic for the treatment of typhoid fever. However, strains that are prevalent in several areas of the world, such as southern and southeastern Asia, the Middle East, and northeastern Africa, have shown to be resistant to chloramphenicol and other recommended antibiotics.

Infection Control

Patients with suspected *S. Typhi* infection should be managed with standard precautions with careful attention to hand hygiene practices. Patients should be advised to practice strict hand-washing techniques and to avoid preparing food for others during the course of their illness. Infected persons whose employment involves foodservice, caring for small children, or providing patient care will be restricted from resuming their work until the SNHD has determined that they are no longer shedding *S. Typhi*.

Both injectable and oral vaccines are available. However, routine immunization for typhoid fever is not recommended in non-endemic areas, with the exception of those with unusual occupational exposures to enteric infections (i.e. clinical microbiology technicians), and household members of known carriers on a prolonged basis.

Reporting

The Nevada Administrative Code 441A specifies that all known or suspected cases of typhoid fever should be reported to the Southern Nevada Health District Office of Epidemiology at (702) 759-1300, option #2. This number is available 24-hours a day, seven days a week. Please contact the Office of Epidemiology if you would like additional information or have questions about typhoid fever.

References

- CDC. Disease Listing. Typhoid Fever.
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<http://wwwnc.cdc.gov/travel/yellowbook/2010/chapter-2/typhoid-paratyphoid-fever.aspx>
- Heyman DL. Control of Communicable Diseases Manual. 19th edition. American Public Health Association, 2008. Pp. 664-671.
- Olsen, SJ, Bleasdale SC, Magnano AR, Landrigan C, Holland BH, Tauxe RV, Mintz ED, and S. Luby. (2003). Outbreaks of typhoid fever in the United States, 1960–99. *Epidemiology and Infection*. 130: 13–21.
- Southern Nevada Health District. Health Topics: Typhoid Fever.
<http://www.southernnevadahealthdistrict.org/health-topics/typhoid-fever.php>