

## Salmonellosis associated with pet turtles

### Current Situation

The Southern Nevada Health District (SNHD), Office of Epidemiology, has investigated 5 reports of salmonellosis associated with aquatic turtles. All of the turtles were purchased within the last 8 months. The newest case, in a 5-month-old patient, came to our attention on May 31.

Three particular *Salmonella* organism/strain combinations have caused the Clark County patients' illnesses. All Clark County cases are linked to multi-state outbreaks, which have affected patients in 16 states. In these outbreaks, more than 2/3 of the patients were reported to have had recent exposure to red-eared slider turtles having shell (carapace) lengths less than 4" or to their habitats. Different *Salmonella* organism/strain combinations are currently associated with 2 other multistate turtle-associated outbreaks. As of the date of this bulletin, at least 124 ill persons have been associated with the 5 multistate outbreaks. More information about these outbreaks can be found on the Centers for Disease Control and Prevention (CDC) website.<sup>1</sup>

In Clark County, the 5 infected individuals range in age from 5 months to 4 years of age with a median age of 1.2 years. Eighty percent of patients are male. Among the 5 ill persons, none has been hospitalized and no deaths have been reported.

Due to the delay from illness onset to diagnosis and health district notification, additional Clark County residents could already have developed turtle-associated illnesses that have not yet been reported.

Of note, in 1975 it became illegal in the U.S. to sell turtles with smaller than 4" shells because of their association with disease.<sup>2</sup> The infected turtles in the recent Clark County cases were most commonly purchased from street vendors or flea markets but some were purchased at pet stores.

Transmission of *Salmonella* resulting in human illness has been associated with many different animals

including reptiles and amphibians, not just turtles.<sup>3</sup>

### Clinical Presentation

Most persons infected with *Salmonella* bacteria develop diarrhea, fever, and abdominal cramps. Infection is usually diagnosed by culture of a stool sample. The illness typically lasts from 4 to 7 days. Although most people recover without treatment, severe infections may occur. Infants, elderly persons, and those with weakened immune systems are more likely than others to develop severe illness. When severe infection occurs, *Salmonella* bacteria may spread from the intestines to the bloodstream and then to other body sites and can cause death unless the person is treated promptly with antibiotics.<sup>4</sup>

### Transmission via turtles and other reptiles

*Salmonella* bacteria can be on the bodies of reptiles, even those that seem healthy. It can also be on cages, aquariums, terrariums, the water reptiles and amphibians live or swim in, and other containers that house them. Anything that reptiles and amphibians touch should be considered possibly contaminated with *Salmonella*. Infection can develop after people ingest the bacteria. This would be most likely if they have touched the bacteria then put their hands into their mouths or eat food they had touched with their bare hands before properly washing them.

The incubation period most commonly ranges from 12 to 36 hours, but can be longer, especially after low-dose exposures. The ill person is a potential source of person-to-person transmission for several days to several weeks.<sup>3</sup>

### Diagnosis

The causal organism is identified through testing of stool samples. 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 are not considered useful.<sup>4</sup>

## Clinical Management

*Salmonella* infections usually resolve in 5-7 days and often do not require treatment other than oral fluids. Persons with severe diarrhea may require rehydration with intravenous fluids. Antibiotics, such as ampicillin, trimethoprim-sulfamethoxazole, or ciprofloxacin, are not usually necessary unless the infection spreads from the intestines. Some *Salmonella* bacteria have become resistant to antibiotics, largely as a result of the use of antibiotics to promote the growth of food animals.<sup>5</sup>

## Prevention of salmonellosis associated with turtles or other reptiles

People reduce their risks of contracting salmonellosis if they avoid contact with reptiles (turtles, iguanas, other lizards, and snakes). People who choose to obtain pet reptiles should avoid those species most likely to transmit illness, such as pet turtles having shell lengths less than 4" in length. Ideally, reptiles should not be kept as pets in households with children under 5 years of age, the elderly, or immune compromised persons, who are most at risk of acquiring salmonellosis. It is important to remember that direct contact with the reptiles is not necessary for acquiring infection. Cases have been documented where transmission was most likely person-to-person from someone who handled a reptile to someone who did not.<sup>6</sup>

➔ Consider distributing CDC's educational flier to your patients/parents who have reptiles. It describes proper personal hygiene and other habits that can reduce the likelihood of acquiring *Salmonella* infection from these pets.<sup>7</sup>

➔ Consider advising patients/parents to remove turtles or other reptiles from their homes if any household member is at high risk for salmonellosis. The following sometimes accept unwanted turtles:

- Pet retailers/pet stores
- Animal shelters
- Veterinarian — might know of other options

Turtles should never be released into the wild. They are unlikely to survive and can spread disease to wildlife.<sup>8</sup>

## Infection Control

Patients with suspected salmonellosis should be managed with standard precautions with healthcare

staff following good hand hygiene practices. Patients should also be advised to practice proper hand-washing 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 *Salmonella* bacteria.

## Reporting

The Nevada Administrative Code 441A specifies that all known or suspected cases of salmonellosis 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 salmonellosis or the turtle-associated outbreak.

## References

1. Centers for Disease Control and Prevention. Five Multi-state Outbreaks of Human *Salmonella* Infections Linked to Small Turtles. <http://www.cdc.gov/salmonella/small-turtles-03-12/>
2. Food and Drug Administration. CFR - Code of Federal Regulations, 21CFR1240.62. <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm?fr=1240.62>
3. Heyman DL. Control of Communicable Diseases Manual. 19th edition. American Public Health Association, 2008. Pp. 534—540.
4. Centers for Disease Control and Prevention. Human *Salmonella* Infections Linked to Small Turtles: Signs and Symptoms. <http://www.cdc.gov/salmonella/small-turtles-03-12/signs-symptoms.html>
5. Centers for Disease Control and Prevention. Salmonella: Diagnosis and Treatment. <http://www.cdc.gov/salmonella/general/diagnosis.html>
6. Centers for Disease Control and Prevention. Multistate Outbreak of Human *Salmonella* Typhimurium Infections Associated with Pet Turtle Exposure --- United States, 2008. <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5907a2.htm>
7. Centers for Disease Control and Prevention. After you touch amphibians or reptiles, wash your hands so you don't get sick! <http://www.cdc.gov/healthypets/resources/amphibian-reptile-poster.pdf>
8. Centers for Disease Control and Prevention. Human *Salmonella* Infections Linked to Small Turtles: Advice to Consumers. <http://www.cdc.gov/salmonella/small-turtles->