Occupational Health - Zoonotic Disease Fact Sheet

SALMONELLOSIS

KEY FACTS:

- Salmonella is a common bacterial cause of food-borne illness worldwide.
- Over 1800 food-borne serotypes of salmonella bacterium) exist. The prevalence of individual serotypes constantly changes.
- In the U.S., salmonella causes over 1 million cases of food-borne illness annually, with 19,000 hospitalizations and 380 deaths.

SPECIES: Salmonella inhabits the intestinal tract of many animals including birds, cattle, sheep, pigs, laboratory animals (rats, mice, hamsters, guinea pigs, nonhuman primates) and humans. The main reservoirs for human infection are poultry, cattle, sheep, pigs, and reptiles and amphibians.

CAUSATIVE AGENT: Salmonella bacterium, which causes salmonellosis.

TRANSMISSION: Infection in animals is maintained by recycling slaughterhouse waste as animal feed, fecal oral spread, and fecal contamination of hatching eggs. Animal feed containing animal by products continues to be a source of Salmonella contamination, especially if the diets consist of raw meal and have not undergone the pelleting process. Transmission to humans occurs when organisms, introduced into the kitchen in poultry carcasses, meat, unpasteurized milk, juice, contaminated eggs, cheese, and contaminated raw fruits and vegetables multiply in food owing to inadequate cooking, cross-contamination of cooked foods, and inadequate storage. Person-to-person spread is common in institutions such as hospitals. Indirect transmission via contaminated food and water are the most common sources but transmission may also be by direct contact. It is a common contaminant of sewage and is also found in many environmental water sources. Environmental contamination continues to be a potential source of infection for laboratory animals and secondarily for personnel handling those animals.

DISEASE IN ANIMALS: Subclinical infection is common and many animals may be intermittent or persistent carriers. However, cows may suffer with fever, diarrhea, and abortion. Calves undergo epizootic outbreaks of diarrhea with high mortality. Dehydration and septicemia may lead to death. In pigs, fever and diarrhea are less common than in cattle. Infected sheep, goats, and poultry usually show no signs of infection.

DISEASE IN HUMANS: The presence and severity of symptoms depends on the infecting dose. The incubation period is typically from 12-72 hours, and individuals present with diarrhea for 4-7 days, abdominal pain, vomiting, and low-grade fever. Septicemia and abscess formation are rare. Most infected individuals recover without treatment. However, in some cases, the diarrhea may be so severe that the patient needs to be hospitalized.

DIAGNOSIS: Diagnosing salmonella infections requires culturing salmonella from feces and suspected foods using selective media followed by serotyping and, if appropriate, phage typing. In order to diagnose animals, feces, postmortem tissues, and foods of animal origin should be cultured. Serological tests are of limited value as many noninfected animals have titers from past infections. *Please review current literature before prescribing diagnostic testing as recommendations may have changed.*

TREATMENT: Animals should be treated with antibiotics and sulfonamides. Individuals infected with salmonella should drink plenty of fluids and get rest. If symptoms persist or are severe, antibiotics may be necessary if the infection spreads from the intestines to the blood stream. *Please consult your physician for treatment options as recommendations may have changed.*

PREVENTION/CONTROL: Principles of control for animals include the following: maintain closed herds and flocks; keep animals in small groups; purchase replacements direct from the farm of origin; avoid mixing animals from different sources; sterilize ingredients of animal feed; provide clean drinking water for grazing livestock; prevent access of wild birds and rodents to animal houses; completely destock animals and thoroughly cleanse and disinfect housing between batches; monitor poultry breeding stock and remove excreters; disinfect hatching eggs and fumigate incubators. When individuals are working with animals, they should follow proper sanitation and personal hygiene practices, including washing hands, to mitigate risk. To prevent and control unintended infections, use uninfected animals for research, and isolate any animals used in clinical trials. Additionally, only conduct projects in laboratories with proper engineering controls and train staff members in the proper use of required personal protective equipment when they are in spaces containing live agent.

More information on salmonella can be found on the Centers for Disease Control and Prevention website at: https://www.cdc.gov/salmonella/