Salmonellosis

Disease Name: *Salmonella spp* enteritis or enterocolitis; often referred to as salmonellosis.

Disease Type: *Salmonella spp* is a bacterium found in the horse's gastrointestinal tract. It causes inflammation of the intestine (most often in the colon) and results in diarrhea, shock due to absorption of endotoxin and loss of fluid.

Transmission: Salmonella is transmitted by ingestion of feed, pasture or water contaminated with the organism. Transmission can also occur by contact with equipment, stalls, clothing, and contaminated people. Horses can be carriers and can shed the organism even though they are not affected. Salmonella can persist in the environment and potentially survive for years under adverse environmental conditions including:

- Withstanding freezing temperatures
- Multiplying in temperatures ranging from 44.6–111^{o} F (7–45^{o} C)
- Staying viable in soil after 300 days, water after 9 months, and dried feces up to 30 months
- Persisting on porous surfaces and difficult to clean areas (e.g., drains, corners, beneath rubber matting) where it can act as a persistent reservoir of infection

Frequency/Risk Factors: Once Salmonella has been ingested the following can increase the risk for infection:

- Antibiotic administration
- Feed change
- Concurrent illness
- Increased horse density: overcrowding, overgrazing, poor pasture management (fecal build-up), hospitalization
- Gastrointestinal disturbance, colic, or other illness
- Recent surgery: anesthesia may disturb gastrointestinal motility
- Transportation
- Environmental stressors: hot weather
- Wet barn floors
- Use of a proton pump inhibitor usage for gastric ulcer treatment and prophylaxis

Incubation period: Varies from 1-5 days. This depends on the virulence and amount of the organism ingested.

Carrier status: Clinically normal horses can transiently shed *Salmonella*, with shedding more common during:

- Concurrent illness: antibiotic administration, physiological disturbance
- Stress: transportation, social, nutritional
- Gastrointestinal disturbance: motility (especially colic), feed change
- Chronic intermittent shedding can occur.
- The organism can be shed for several days to extended periods (>30 days).

Latency: *Salmonella spp* can persist in the horse's intestine and lymph nodes.

Clinical signs and symptoms: The following are the most common signs:

- Diarrhea (soft feces to projectile, watery diarrhea) is most common, however, horses may have normal feces
- Fever (patient may have normal temperature, especially if treated with NSAIDs)
- Lethargy
- Lack of appetite
- Colic
- Localized infection (e.g., joint or bone infection)
- Sepsis/septic shock
- Laminitis is a common sequel to enterocolitis
- Abortion (rare)

Diagnosis: The diagnosis is made by fecal culture with serotyping and determining antibiotic susceptibility.

1. Due to the potential for intermittent shedding fecal samples are often collected up to 5 samples at 12- to 24-hour intervals. If several animals are affected, submit samples from as many animals as possible. Five (5) consecutive negative samples do not guarantee a horse is 'free' of *Salmonella* spp. Rather that the horse likely was not shedding the bacteria at the time of the sample collection
- PCR testing in conjunction with bacterial culture is commonly completed for more rapid identification of *Salmonella spp*

Treatment: Treatments depend on the severity of the infection. Horses often need intravenous fluid replacement, treatment for shock, and prophylaxis for laminitis. Severe cases often need to be a at a facility where intensive care with frequent monitoring us is possible.

Prognosis: The prognosis is dependent of the severity of the infection. Although the acute phase of the disease can be successful treated, chronic enteritis or laminitis can cause increase morbidity or be fatal.

Prevention: Maintaining sanitation in all parts of the horse's environment is the primary way to prevent infection.

Biosecurity: Isolation with quarantine of affected horses is primary way to mitigate and prevent spread of an infection.

- Quarantine horses that develop diarrhea and/or fever.
- Isolate horses at risk to reduce environmental contamination and potential exposure of other horses should *Salmonella* subsequently be recovered on fecal culture
- Prevent horses that have come in contact with known infected or clinical cases from mixing with the general population
- Contaminated stall and equipment should be disinfected after removing organic material.
- Pressure washers or hoses should not be used as they can aerosolize *Salmonella*, potentially contaminating other parts of the facility or infecting a susceptible horse or human
- No commercially available validated vaccine is currently available

- Release of affected horses from isolation should be based on a series of negative fecal cultures

Zoonosis: All *Salmonella* serotypes which cause disease in horses are potentially contagious to people and can cause serious disease or death.
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