

## **Salmonella**

Salmonella is a family of bacteria that is found in all environments. This bacterium can be shed in approximately 1-10% of normal, healthy horses. The percentage of healthy horses shedding Salmonella can vary due to the geographic location. Salmonella can be passed from horse to horse, or horse to humans through the feces, which are orally ingested. There are a variety of clinical signs associated with Salmonella, including diarrhea, endotoxemia, low protein, and fever, and a diagnosis is only made in approximately 20-30% of cases.

Salmonella was first discovered in 1885 in pigs. It has since been discovered to have over 2000 different strains which can infect a wide variety of species, including horses, cows, dogs, cats, pigs, and humans. Individuals are infected by contaminated feed, water, or from an infected host. The organism can survive for months in a wet, warm climate like we have in Florida. Once infected with Salmonella, the animal or human can become a long-term carrier and shed the bacterium when stressed. Horses are at increased risk of developing Salmonellosis if traveling, stressed, have gastrointestinal surgery, are on antibiotics, the diet has recently changed, have had anesthesia, have decreased immunity, or are hospitalized.

The disease is seen more frequently in late summer to fall, but can occur at anytime. There is a wide range of clinical signs of Salmonellosis, varying from none to septicemia/endotoxemia. Some Salmonella infections are associated with an acute onset of inflammation of the gastrointestinal tract. This results in depression, fever, decreased appetite, colic, and possible diarrhea. It can also decrease the white blood cell count. The most common form of Salmonella affects the large intestine, which results in large volumes of watery diarrhea. This, in turn, leads to dehydration, decreased appetite, colic, fluid accumulation in the limbs and lower abdomen due to protein loss, and

endotoxemia. The endotoxemia can cause fever, laminitis, abnormalities in red blood cell function, decreased intestinal motility, and decreased nutrient and fluid absorption. Due to the decreased ability to absorb water and the increased loss of water in the feces, the animal can become extremely dehydrated with electrolyte abnormalities. Septicemia can occur in all horses, but happens most commonly in foals. This can cause neurologic signs, infected joints and umbilicus, fever, and depression. If not treated appropriately and quickly, Salmonella septicemia can result in organ failure and death.

Diagnosing Salmonella can be performed by collecting 5 fecal samples in 5 consecutive days, which will be sent for bacterial culture and sensitivity. A horse is not considered free of Salmonella until 5 consecutive fecal samples test negative. A Polymerase Chain Reaction test can also be performed. This detects the DNA of the Salmonella organism if present; although, this test states some false positives. Due to this, the bacterial culture is the "Gold Standard" for diagnosing Salmonella.

The treatment for Salmonellosis includes aggressive fluid therapy, nonsteroidal anti-inflammatories such as Banamine, replacing lost electrolytes, gastrointestinal protectants, and probiotics to help replace the healthy bacteria in the gastrointestinal tract. Depending on the severity of the disease, plasma may be needed to provide vital proteins and other factors. Antibiotics are controversial in the treatment of Salmonellosis, as it has been found that use may lead to antibiotic resistance, and that oral antibiotics may prolong the shedding of the organism. Antibiotics are always used for the septicemic form of Salmonellosis.

If your horse is infected with Salmonella, it must be isolated from other animals and humans, especially those with a decreased immune system, such as the elderly and children. The infected animal's stall should be cleaned last

with its own cleaning equipment, and the horse handled last. Using bleach foot baths and making sure to wash your hands before and after handling the animal should help decrease the spread of Salmonella. (Gloves and isolation wear are recommended.)

Humans can become infected with Salmonella through animals, animal products (like chicken meat), or other humans with the disease by contact or ingestion. The symptoms are similar to those in horses, including abdominal cramping, fever, vomiting, diarrhea, and headache. Humans can also become carriers of the disease for life and can develop the septicemic form of Salmonellosis. To reduce the risk of developing Salmonellosis, wash hands, food, and surfaces that are used for food preparation thoroughly and often, cook food to appropriate temperatures, refrigerate food promptly, and handle animals properly while ensuring appropriate hand washing and fecal handling.

For the prevention of Salmonellosis, it is important to isolate all new animals to ensure they are not carrying the disease. Reducing stress, indiscriminate use of antibiotics, minimizing fecal contamination of water and feed, and feeding pelleted feed can help decrease the risk of your horse developing Salmonellosis.

Contact Brandon Equine Medical Center at 813-643-7177 or email [info@brandonequine.com](mailto:info@brandonequine.com) with any questions regarding this topic.