

## **Antibiotic Use in Horses**

With the increased use of antibiotics in veterinary medicine, there has also been an increase in the incidence of antibiotic-associated complications. Antibiotics are often misused and overused, or administered by owners without consulting a veterinarian. There are many important factors to consider when choosing an appropriate antibiotic, including the age and health of the horse, whether or not the horse is pregnant, the location of the infection, the duration of treatment needed, and the potential risks of administering the antibiotic. A complete examination is important when determining the appropriate antibiotic therapy to decrease the incidence of treatment complications. Horses can develop allergies to antibiotics and some therapies can be toxic to a horse if they have compromised kidney function. The most common complication is also the most severe and potentially life threatening: antibiotic-induced colitis (severe diarrhea). This article will discuss the cause, incidence, clinical picture and treatment of antibiotic-induced colitis.

**CAUSE:** Horses can develop diarrhea while on antibiotic therapy due to disruption of the normal gastrointestinal flora. Normal GI flora (anaerobic bacteria and streptococcus bacteria) protect the horse from pathogenic (disease-causing) bacteria by lining the intestinal walls, producing substances that are toxic to pathogenic bacteria and inhibiting their growth in the horse's GI tract. When antibiotics are administered, they can kill off the population of normal GI bacteria, allowing pathogenic bacteria to grow. The decrease of the normal bacteria in the intestine also decreases carbohydrate fermentation and production of fatty acids, which results in reduced absorption of sodium and water in the colon. Some antibiotics are irritating to the GI mucosa, resulting in inflammation, increased secretion and altered motility.

**INCIDENCE AND CLINICAL SIGNS:** Diarrhea secondary to antibiotic administration typically occurs within 7 days of starting antibiotic therapy but can occur several days after discontinuing antibiotics. Broad-spectrum antibiotics are more likely to result in antibiotic-induced colitis than narrow spectrum antibiotics. Also, antibiotics that are administered orally are more likely to cause diarrhea than those administered intravenously or intramuscularly. The reason for this is because horses have poor absorption of many orally administered drugs, resulting in large concentrations of active drug in the intestinal lumen. Clinical signs of disease range from cowpie stool to acute, severe diarrhea that is projectile and watery. Horses are anorexic, depressed, febrile, and typically have elevated heart rates and respiratory rates. The severe diarrhea can be life threatening – horses quickly become dehydrated and can develop sepsis (infection of the bloodstream affecting internal organs), endotoxemia (toxins in the bloodstream), laminitis and shock. Electrolyte and acid-base imbalances are also common.

**TREATMENT:** Treatment includes hospitalization, aggressive IV fluid therapy, anti-endotoxin therapy, anti-inflammatories, analgesia, nutritional management, frequent monitoring of bloodwork (for evaluation of hydration status, electrolyte

abnormalities, internal organ function, and protein levels), and oral medications to help decrease diarrhea. Treatment is expensive, often ranging from \$1000-1500 per day. Despite aggressive treatment, the mortality rate is high – 50-80% of horses do not survive.

**TAKE HOME MESSAGE:** Antibiotic therapy is not benign. It is important to be sure antibiotics are warranted prior to beginning treatment. The class of antibiotics (Penicillins, Cephalosporins, Erythromycins, Tetracyclines, SMZ-TMPs, Baytril) administered should be chosen based on the bacteria or type of bacteria that most likely is the source of infection. Your veterinarian should always evaluate your horse to determine the safest and most appropriate treatment for infection.

