

Clostridial Diarrhea in Adult Horses

Definition

Clostridial diarrhea is caused by the gram positive, anaerobic, spore-forming bacteria *Clostridium spp.*. While the most common isolates are *C. perfringens* and *C. difficile*, multiple others, including *C. septicum*, *C. cadaveris* and *C. sordellii*, have also been associated with enterocolitis.

Clostridial bacteria are present in the environment and in manure.

In adult horses clostridial diarrhea has been associated with factors that may alter the balance of the intestinal flora such as the administration of antibiotics, but can occur in the absence of any identifiable risk factors.

Clinical Signs

May occur as an individual case or cluster of horses with enterocolitis
Diarrhea onset may be peracute (w/ rapid progression to death), acute, or gradual
Diarrhea may be hemorrhagic, or dark and foul smelling
Colic
Fever, reduced appetite
Septic shock
Sudden death

Incubation

Not known, as bacteria can be present in low numbers in normal equine intestinal tracts without any clinical signs.

Antibiotic-induced clostridial diarrhea usually occurs within the first week after initial administration.

Transmission

While clostridial bacteria are considered to be part of normal equine GI flora, it is prudent to isolate any horse with acute diarrhea and take appropriate hygiene precautions.

Risk Factors

Disruption of intestinal microflora is thought to induce overgrowth of intestinal toxigenic clostridia, resulting in diarrhea. Factors which have been associated with this include:

- Stress
- Hospitalization
- Surgery
- Administration of antimicrobials
- Sudden dietary changes
- Deworming of horses having a heavy parasite load

Diagnostic Testing

Definitive diagnosis of clostridial colitis beyond *C. difficile* and enterotoxigenic *C. perfringens* is difficult.

Culture alone is not diagnostic as clostridia are often present in the intestinal tracts of normal animals.

C. difficile diarrhea diagnosis:

ELISA detection of toxins in fecal sample

Test should detect Toxins A and B, as opposed to A only

*Consult laboratory for testing capabilities prior to submitting samples

Minimum sample—1 gram of feces or intestinal contents

C. difficile toxins are shed early in disease; a single sample is thought to be adequate.

Ship samples cooled on ice packs.

C. difficile toxins are stable in equine feces for many days if kept cool {Weese J Vet Diagn Invest 2001}.

C. perfringens diarrhea diagnosis:

Culture followed by PCR genotyping of the isolated *C. perfringens* to

determine strain types can be useful in some circumstances, however the relevance of identification of most types in diarrheic feces remains unclear.

Type C strains seem to be more highly associated with disease and less common in healthy animals.

ELISA testing is available to detect presence of one *C. perfringens* toxin, called *C. perfringens* enterotoxin, in fecal samples.

Submit minimum 1 gram feces; ship on ice packs.

Some research laboratories perform testing for other lethal toxins of *C.*

perfringens—alpha, Beta 1 and Beta2 toxins—but these tests are rarely available at diagnostic laboratories.

Testing for other clostridial causes of enterocolitis is very difficult. Standard anaerobic cultures can be performed, but most clinical laboratories are not adequately equipped for anaerobic investigations. Interpretation of results remains difficult as it is often impossible to determine whether a *Clostridium* present in a single sample is causing disease or simply resident microflora.

Shedding Time of Organism Past Resolution of Clinical Signs

Unknown; bacteria can be present in the gut flora and feces of normal horses.

Environmental Persistence

Clostridial spores are impervious to environmental conditions but can be killed on very clean non-porous surfaces with bleach.

Specific Control Measures

Consider all diarrheic horses as contagious until proven otherwise.

Routine isolation and disinfection guidelines should be followed, including proper disposal of manure.

Clostridial diarrhea can cause increased bacterial shedding and toxin levels in feces. Bedding and manure should never be spread on pastures.

Release of Animals from Isolation

After clinically normal.

Biosecurity Issues for Receiving Animals

Routine isolation measures to prevent any contagious disease spread.

Zoonotic Potential

C. difficile is a known cause of diarrhea in humans and has been documented to be a nosocomial infection in human health care facilities. Infection of humans from horses is not documented but it is advisable to take hygiene precautions when working with any diarrheic patients.