



Clostridial Enterocolitis Disease in Adult Horses Guidelines

Definition

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

Clostridial bacteria are present in the environment and in feces, with it being common for these bacteria to be present in the GI tract of healthy horses.

In adult horses, clostridial diarrhea and enteritis have been associated with factors that may alter the balance of the intestinal flora (microbiome) such as the administration of antibiotics, feed changes, and transportation, but can also 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 (with rapid progression to death) or acute. Chronic/gradual onset is rare but possible. Diarrhea is often hemorrhagic (especially in foals), or dark and foul smelling, but may have any appearance.
- Lethargy
- Dehydration/hypovolemia
- Colic, with or without gastric reflux
- Fever
- Reduced appetite (hyporexia) or anorexia
- SIRS
- Sudden death

Common differential diagnoses include Salmonella, Coronavirus, Potomac Horse Fever, small strongyles, sand enteropathy, and NSAID toxicity

Incubation Period

Not known, as bacteria can be present in low numbers in normal equine intestinal tracts without any clinical signs; however, incubation periods of less than 24 hours with toxigenic *Clostridium* bacteria are possible.

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

Risk Factors

Disruption of intestinal flora (dysbiosis) is thought to induce overgrowth of intestinal toxigenic clostridia, resulting in diarrhea.

Factors associated with this include:

- Administration of antimicrobials
- Concurrent gastrointestinal disorders
- Stress
- Hospitalization
- Surgery
- Sudden dietary changes
- Gastric acid suppression has been implicated in human beings and foals

Transmission

- Fecal-oral
- Environmental

Up to 10% of apparently healthy adult horses may shed *C. difficile* into the environment as carriers. This percentage of shedding increases in horses with signs of enterocolitis, thus it is prudent to isolate any horse with acute diarrhea and take appropriate hygiene precautions. Outbreaks of clostridial diarrhea among horses and foals at farms and hospitals have been reported.

Diagnostic Sampling, Testing, and Handling

Definitive diagnosis of clostridial colitis beyond enterotoxigenic *C. difficile* and *C. perfringens* is difficult. More information regarding diagnosis of gastrointestinal disorders can be found in the [AAEP Acute Infectious Diarrhea - Field Diagnostic Guidelines](#).

Culture alone is not diagnostic as clostridia are often present in the intestinal tracts of normal animals; however, antibiotic sensitivity patterns obtained from cultures may identify resistant strains (particularly to metronidazole). Additionally, the culture sensitivity for *C. difficile* is low.

Shipping fecal samples

*Consult laboratory for testing capabilities prior to submitting samples as some toxins may be labile and require special handling.

- Minimum sample. 1–2 grams of feces or intestinal contents
- Ship samples cooled on ice packs

C. difficile diarrhea diagnosis:

- Quantitative PCR fecal screening for Toxins A and B
- RT-PCR fecal screening for Toxins A and B
- ELISA detection of Toxins A and B in fecal sample
 - Test should detect Toxins A and B, as opposed to A only
 - *C. difficile* toxins are shed early in disease; a single sample is thought to be adequate



- *C. difficile* toxins are stable in equine feces for many days if kept cool

C. perfringens diarrhea diagnosis:

- RT-PCR fecal screening (available toxin testing varies depending on laboratory)
 - *Clostridium perfringens* enterotoxin (CPE), Alpha (CPA), Beta (CPB), Beta2 (CPB2), or necrotizing enterotoxin F (NetF) toxins

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. Type C presence in foals is considered abnormal (uncommonly found in normal flora).
- Additionally, these animals may be culture negative for *C. perfringens* but ELISA positive for CPB.
- ELISA testing is available to detect presence of *C. perfringens* enterotoxin, fecal samples.
 - Commercial ELISA for NetF is not available at this time.
 - Finding NetF in culture also does not hold much value as it is found in normal horses.
 - NOTE: Some practitioners may opt to submit samples of gastric reflux for testing via Type C strains seem to be more highly associated with disease and less common in healthy animals. Type C presence in foals is considered abnormal (uncommonly found in normal flora).
 - Additionally, these animals may be culture negative for *C. perfringens* but ELISA positive for CPB.

NOTE: Some practitioners may opt to submit samples of gastric reflux for testing via PCR in suspect horses without diarrhea.

Shedding of Bacteria Following Resolution of Clinical Signs

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

Treatment

Treatment is consistent with other causes of enterocolitis and may include:

- Supportive care: intravenous fluid therapy, colloid support, cryotherapy of feet, gastroprotectants, anti-inflammatories, anti-diarrheals, probiotics, and transfaunation.
- Antimicrobial selection: As clostridial colitis may be secondary to dysbiosis from antimicrobial use (individual sensitivity, prolonged use, rapid changes), continuation of antimicrobial therapy is controversial and should be considered on a case-by-case basis. Some clinicians will select metronidazole or penicillin when managing a case of confirmed clostridial diarrhea.



Environmental Persistence

Clostridial spores are impervious to environmental conditions (including UV light, low and high temperatures and desiccation) but can be killed on non-porous surfaces free of organic matter with chlorine bleach (5% bleach diluted 1:10) and accelerated hydrogen peroxides.

Specific Control Measures

Consider all diarrheic horses as shedding contagious organisms 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

Affected horses are often released from isolation upon return to clinical normalcy (normal physical exam, normal manure, etc.). Horses with positive Clostridial toxin assays should ideally be re-tested and confirmed negative before release.

Biosecurity Issues for Receiving Animals

Routine isolation of newly introduced horses. Horses with loose manure or diarrhea should be evaluated prior to release from isolation. See [AAEP Biosecurity Guidelines](#) for further information.

Reviewed and revised by: Amanda Trimble, BVMS, MS, MScVetEd, DACVIM

Supported and reviewed by: AAEP Infectious Disease Committee