

Rotavirus in foals

About Rotavirus.

Rotavirus diarrhea is a very serious, life threatening disease in foals usually caused by Rotavirus Group A viruses. Adult horses are not typically affected by it. Rotaviruses are highly contagious between susceptible animals. Vast numbers of virus particles are shed in the diarrhea of affected animals, but only small numbers of virus particles are needed to cause disease via fecal-oral transmission. Typically, different rotavirus groups and strains infect specific species, however, it has been documented that strains can 'jump' species, making it possible for strains not typically associated with humans to infect people. As such biosecurity precautions should always be taken when working with animals with diarrhea.

Clinical Signs

Rotavirus diarrhea in susceptible foals causes watery diarrhea, anorexia as the foal stops nursing, abdominal distention usually due to gut inflammation, transient gut stasis, and often colic. Massive fluid and electrolyte loss through diarrhea, as well as not nursing, causes rapid and severe dehydration and electrolyte derangements that can be fatal. Susceptible, infected foals will show signs of disease as young as 24-48 hours of age.

Rotavirus effects on the gut

The virus damages the mature cells of the small intestine at the tips of the villi (microscopic fingerlike projections that increase gut surface area for digestion and absorption). This massively reduces the foal's ability to digest milk, especially the milk sugar, lactose, leading to maldigestion and malabsorption. It can also create an environment in the gut that can allow pathogenic bacteria to overgrow, possibly creating other problems.

The severity of disease depends on the foals age, immune status, and the number and virulence of rotavirus particles ingested. Typically, younger foals are more severely affected.

Treatment of rotavirus diarrhea

Treatment is supportive with the mainstay of treatment being intravenous fluid therapy. This allows foals to maintain their hydration and electrolyte balance, and are administered by or under the guidance of your veterinarian. In very young foals your veterinarian may also place the foal on prophylactic antibiotics to help prevent bacteria in the gut translocating across the inflamed gut wall and causing a joint infection, for example. Since rotavirus is a viral infection antibiotic therapy does not treat the infection directly. Your veterinarian may also place the foal on gastric protectants to reduce the chance of gastric ulcer development. In some cases, not allowing or strictly limiting nursing can be beneficial but **must only be done in conjunction with your veterinarian or at a veterinary hospital** because such young foals are so dependent

Rotavirus in foals

on nursing for their hydration on energy needs, and they require intensive care should nursing be restricted.

Prevention

Strict hygiene and biosecurity are essential to prevent the spread of rotavirus among foals. No 'one size fits all' biosecurity protocol exists and as such designing one for your farm is a team effort between you and your veterinary team.

Common basic hygiene which includes wearing gloves and clean protective clothing to handle foals, using foot dips with an appropriate disinfection outside stalls, dedicated footwear for foaling barns, reducing animal, human and vehicular traffic in barns and between barns, not using leaf blowers or power washers in barns with horses in them, are just a few items among many to consider in a protocol.

Disinfectants

Bleach is **not** an appropriate product to use in a farm/barn situation. Its activity is too easily destroyed by organic material to be in any way shape or form effective.

Peroxygen compound or Phenolic compound disinfectants are recommended. A list of such compounds may be found here

<https://www.cfsph.iastate.edu/Disinfection/Assets/CharacteristicsSelectedDisinfectants.pdf> but it is important to read the instructions. Examples of such disinfectants include *Rescue®*, *Oxy-Sept 333®*, *Virkon-S®*, *One Stroke Environs®*, *Pheno-Tek II* and *Tek-Trol*. (The University of Kentucky does not endorse or promote any commercial products. These names are for informational purposes only.)

Additional resources relating to biosecurity measures may be found on the Equine Disease Communication Center website here:

<https://equinediseasecc.org/biosecurity/disinfection>.

When thinking about disinfection please remember:

- to clean surfaces of grease and organic debris
- replace foot dip container disinfection solution frequently to prevent inactivation by organic debris
- to mix the correct dilution of disinfectant solution carefully – *stronger is not always better!*
- to allow sufficient contact time for disinfection.

Vaccination

Zoetis® offers a Rotavirus Group A [G3 strain] vaccine for the administration to mares using three doses given at months 8, 9 and 10 of gestation during each and every pregnancy. This vaccine has been immensely helpful in preventing neonatal Rotavirus Group A diarrhea in foals. However, we do see Rotavirus Group A (G3 and G14

Rotavirus in foals

strains) as a cause of diarrhea in older foals, aged 75-120 days of age. At this age the disease is typically mild and self-limiting with minimal veterinary intervention required.

Foals typically recover completely from rotavirus infections with timely veterinary care and supervision.

Equine Rotavirus B

During the season of 2021 a new rotavirus strain, Equine Rotavirus B, was identified in neonatal foals affected with severe watery diarrhea. The discovery of this virus was the result of a massive collaborative effort between our farm and veterinary community and researchers at the University of Kentucky Gluck Equine Research Center and Veterinary Diagnostic Lab.

Research into this virus continues with the ultimate goal of being able to generate a vaccine to help prevent rotavirus B neonatal disease in foals.

Our recommendations for the prevention and control of this disease are the same as for Rotavirus Group A (above) pending further information at this time. We cannot stress highly enough the need for proper biosecurity protocols on your farms as the critical tool to prevent and control infection.

Rotavirus Testing

Understanding rotavirus and its prevalence in our equine population is important for us to gain traction with this disease and gain leverage to win research grants to continue our work.

We encourage you to test fecal samples from foals with diarrhea in consultation with your veterinarian (please chill the sample and submit the same or next day). The University of Kentucky Veterinary Diagnostic Lab offers single or combined qPCR tests for Rotavirus A strains [G3 and G14], as well as the novel Equine Rotavirus B.

We wish you every success for the 2022 season. Please contact us if we can help you or your veterinarian.

Contact:

Gluck Equine Research Center: Dr Emma Adam, emma.adam@uky.edu