



# College of Agriculture, Food and Environment

*Veterinary Diagnostic Laboratory*

## Gluck Equine Research Center

### Research Update on Equine Rotavirus A and Rotavirus B (new variant) Research at the Gluck Equine Research Center

#### **Rotavirus in foals**

##### **About Rotavirus.**

Rotavirus diarrhea is a very serious, life threatening disease in foals that was, until recently, caused by Rotavirus Group A viruses. Adult horses are not typically affected. 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 foal's age, immune status, and the number and virulence of rotavirus particles ingested. Typically, younger foals are more severely affected.

##### **Typical treatment of rotavirus diarrhea**

Treatment is supportive with the mainstay of treatment being intravenous fluid therapy. This allows foals to maintain 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.



# College of Agriculture, Food and Environment

*Veterinary Diagnostic Laboratory*

## Gluck Equine Research Center

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

### Prevention

Rotavirus is spread via a fecal-oral route. It is estimated that a teaspoon of rotaviral diarrhea can contain up to half a trillion infective virus particles. It is also estimated that as few as 100 particles can cause disease in a susceptible neonate.

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. For tips: <https://gluck.ca.uky.edu/2021-rotavirus-workshop>

### 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 TekTrol. (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>.



# College of Agriculture, Food and Environment

*Veterinary Diagnostic Laboratory*

## Gluck Equine Research Center

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 3 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.

This vaccine does not appear to confer any protections against Equine Rotavirus B.

### Equine Rotavirus B – the urgent need for a vaccine

**All of this points to the dire need for a vaccine to control this problem and prevent outbreaks every few years.** The University of Kentucky's Gluck Equine Research Center continues to work on your behalf with this goal in mind.

Our industry is one that must help itself with its problems because we are a small industry compared to the pet, poultry, and food-producing animal industries. *We appreciate your help and support in our continued efforts to address our industry's research needs, respond to emergent issues and collaborate in to continue help our research to support the wellbeing of our industry stay strong and healthy.*

For further resources please visit: <https://gluck.ca.uky.edu/rotavirus>

**If you would like to help us achieve our vaccine goal by donating, please visit:**

<http://gluck.ca.uky.edu/content/gifting-opportunities>

***Thank you***