



AAEP EQUINE ROTAVIRUS A and B (ERVA and ERVB) GUIDELINES

Summary

Equine Rotavirus (ERV) is a cause of diarrhea in horses up to 6 months of age, and it is one of the most common causes of foal diarrhea in horse breeding centers worldwide. Rotaviral diarrhea is caused by a double-stranded RNA, non-enveloped virus of the family *Reoviridae*, genus *Rotavirus*. Disease severity is greatest in neonatal foals and generally lessens with increasing age, although this depends on the infectious dose of virus and immunological status. Until 2021, Rotavirus Group A (ERVA) was considered the only group infective to horses; however, Rotavirus Group B (ERVB) has since been identified in outbreaks of neonatal foal diarrhea. Due to their extremely contagious nature, rotavirus infections rarely occur as an individual case and are more frequently seen as a rapidly spreading diarrhea outbreak in naïve foal populations.

Clinical Signs

- Rotavirus damages the small intestinal villi and results in maldigestion, malabsorption, and osmotic diarrhea.
- Lethargy, anorexia, and watery, high-volume diarrhea are common.
- Dehydration and electrolyte imbalances can be sudden in onset, severe, and potentially fatal.
- Signs are generally more severe in neonatal foals, and those less than 1 week of age may also display signs of ileus, abdominal distention, and colic.
- Lactose intolerance may be present during disease and in the convalescent period as a result of villus tip damage, and presents as persistent diarrhea in the post recovery period.
- Fever is not typical, but may be present in acutely infected foals.
- Note: Hemorrhagic feces are not a characteristic of uncomplicated rotaviral diarrhea cases.

Incubation Period

12 to 24 hours

Risk Factors

- Foals born to mares not vaccinated with the rotavirus A vaccine; all foals are susceptible to ERVB
- Inadequate colostrum transfer of immunoglobulins
- Farms with histories of prior ERVA or ERVB outbreaks
- Farms with horse movement on and off property
- Inadequate biosecurity in foaling barns, e.g., overcrowding, poor hygiene, and inadequate cleaning and disinfection protocols.



Transmission

Both ERVA and ERVB are spread via the fecal-oral route. The viruses are highly contagious with estimates of diarrheic feces containing up to half a trillion virus particles per 5ml. Only 100–1,000 infectious particles are required to cause disease in a susceptible individual. Transmission can also occur via environmental contamination and fomite spread, especially through contaminated personnel and stall cleaning equipment. Clinically asymptomatic foals with resolved diarrhea may continue to shed virus for several days.

Diagnostic Sampling, Testing, and Handling

- Fecal samples or swabs should be submitted for both viral and bacteriological testing.
- Consult the laboratory for testing capabilities and sample/shipping requirements prior to submitting samples. ERVB detection via fecal PCR is a relatively new assay and is currently offered by a limited number of labs.
- Human antigen capture lateral flow kits represent an older method of diagnosis for ERVA. This method has not been developed to detect ERVB.
- Virus isolation is possible for ERVA but not ERVB at present.

Treatment

- Treatment is primarily supportive care aimed at rehydration and correction of electrolyte derangements.
- Severely affected foals may benefit from a period of restricted or no nursing in an attempt to ‘rest the gut.’ This practice must be performed in conjunction with intravenous fluid therapy containing electrolyte and glucose supplementation.
- While antimicrobial therapy does not address the viral infection directly, prophylactic antimicrobials can be helpful for reducing bacterial translocation from the intestinal tract in very young or severely affected foals.
- Gastroprotectants such as omeprazole and sucralfate may prevent gastric ulcer development.
- Lactase supplementation improves lactose tolerance during active disease as well as during the post-infection convalescence period.

Resolution of Clinical Signs

3 to 5 days with supportive therapy

Environmental Persistence

Can persist in the environment for up to nine months in most climatic conditions.

Specific Control Measures

Strict biosecurity measures should be employed in the face of ERVA and ERVB outbreaks, and all diarrheic animals should be considered as shedding contagious, and potentially zoonotic, organisms. Isolation and disinfection guidelines should be followed, including proper disposal of manure. Bedding and manure should never be spread on pastures. Rotavirus is a non-enveloped virus, and many disinfectants are ineffective against it. Accelerated hydrogen peroxides and some phenolic disinfectants can inactivate the virus. Bleach should not be



considered effective in a barn or clinic environment as it is too easily inactivated by organic material. Chlorhexidine is not effective.

Effective disinfectants for rotavirus include: **Rescue®**, **Oxy-Sept 333®**, **Virkon-S®**, **One Stroke Environs®**, **Pheno-Tek II** and **TekTrol**. Further detailed information regarding disinfectant classes and characteristics can be found at:

<https://www.cfsph.iastate.edu/Disinfection/Assets/characteristics-of-selected-disinfectants.pdf>.

Because of the high concentration of virus shed in diarrheic feces, thoroughly clean and disinfect all equipment after use with adequate contact time for disinfection. Separate equipment should be used in stalls of sick animals. Foaling mares outside with minimal to no contact has been an effective component of biosecurity programs that can stop an outbreak cycle. Hands-free temperature monitoring as part of a neonatal foal care program can be achieved with the use of bio-thermal chips implanted at day one of age.

For more information, visit: <https://gluck.ca.uky.edu/rotavirus>

Vaccination

Vaccination of the dam with the monovalent ERVA genotype G3 vaccine mitigates disease in neonates.

Zoonotic Potential

Rotaviruses are classified as zoonoses; however, human infections from horse contact have not been documented. Standard hygiene precautions and use of personal protective equipment should be utilized with any diarrheic patient due to risk of coinfection with zoonotic agents.

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