



## ROTAVIRUS

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<b>Definition</b>	Rotaviral diarrhea is caused by a double-stranded RNA, non-enveloped virus of the family <i>Reoviridae</i> , genus <i>Rotavirus</i> . This virus is one of the most common causes of foal diarrhea in horse breeding centers around the world. Infectivity and severity of disease generally decline with increasing foal age. It is not considered to be a cause of diarrhea in horses over the age of six months.
<b>Clinical Signs</b>	<ul style="list-style-type: none"> <li>• May occur as an individual case or as a rapidly spreading diarrhea outbreak involving the entire foal crop.</li> <li>• Signs are generally more severe in foals less than one week of age.</li> <li>• Diarrhea can range from watery to cow-pile consistency. Hemorrhagic feces is not a characteristic of uncomplicated rotaviral diarrhea cases.</li> <li>• Lethargy</li> <li>• Decreased nursing</li> <li>• Dehydration and electrolyte imbalances with severe diarrhea</li> <li>• Signs of weight loss</li> <li>• Fever is an inconsistent finding</li> <li>• Lactose intolerance may be present during disease and in the convalescent period</li> <li>• Some cases may be very mild</li> </ul>
<b>Incubation Period</b>	12 to 24 hours
<b>Risk Factors</b>	<ul style="list-style-type: none"> <li>• Foals born to mares not vaccinated with the rotavirus vaccine</li> <li>• Inadequate colostrum transfer of immunoglobulins</li> <li>• Prior occurrence of disease on farm due to environmental persistence</li> <li>• Inadequate biosecurity in foaling barns (overcrowding, poor hygiene and inadequate cleaning and disinfection protocols)</li> <li>• Exposure of new foals and mares to established herds without appropriate quarantine measures</li> </ul>
<b>Transmission</b>	Fecal-oral <ul style="list-style-type: none"> <li>• Environmental contamination</li> <li>• Fomite spread: contamination of personnel and utensils</li> <li>• During farm outbreaks, clinically unaffected foals may shed virus</li> </ul>



**Diagnostic Sampling, Testing, and Handling**

Fecal samples should be submitted for both virus and bacteriological testing.

Consult laboratory for testing capabilities and sample/shipping requirements prior to submitting samples.

In general, the minimum sample is 1-3 grams of feces. It is best to obtain fresh fecal samples (free catch or rectal.)

Many commercially available diagnostic assays are available to detect VP6 (virus protein 6) which is a group-specific inner capsid protein. These tests allow stall-side identification of the viral antigen. Examples include a variety of ELISA tests, both plate and lateral flow card types.

More sensitive detection of virus is available by using polymerase chain reaction (RT-PCR), however generally requires submission of samples to a diagnostic laboratory. These tests are best used to confirm ELISA test results, or if genetic analysis of the virus is a consideration.

Identification of virus is a critical element of control to prevent contamination of the environment or additional cohort foals.

Viral load in feces is variable and in outbreak situations three consecutive negative tests are warranted to confirm negative status of individuals.

**Other Tests Include:**

- Latex agglutination
- Immunochromatographic assay
- RT-LAMP
- Electron microscopy— lacks sensitivity

**Shedding of Virus Following Resolution of Clinical Signs**

On average, three days.

**Environmental Persistence**

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

**Specific Control Measures**

Routine isolation and disinfection guidelines should be followed, including proper disposal of manure. Bedding and manure should never be spread on pastures.

Because rotavirus is a non-enveloped virus, many disinfectants are ineffective. Accelerated hydrogen peroxides and some phenolic disinfectants can inactivate the virus in 5% organic matter (read disinfectant label for details). Bleach of appropriate concentration can be used as a disinfectant on clean, hard, non-porous surfaces.



Hand hygiene: Wear disposable gloves to minimize hand contamination, and wash hands after disposing the gloves. Hands contaminated with organic matter (feces, soil, etc.) should be washed with liquid hand soap and water prior to using a hand sanitizer such as 70% ethanol. Chlorhexidine is not effective.

All diarrheic animals should be considered as shedding contagious, and potentially zoonotic organisms.

Vaccination of pregnant mares ([see vaccination guidelines here](#)). Due to variation in antigenicity of field strains compared to commercially available vaccines, disease may occur despite a comprehensive vaccination program.

**Release of Animals from Isolation**

Three days after resolution of diarrhea and any other clinical signs, foals could be released from isolation.

**Biosecurity Issues for Receiving Animals**

Use strict isolation measures to reduce the risk of disease spread. Considering the environmental persistence of this virus, manure from isolation facilities housing diarrheic foals up to six months of age should not be spread on pastures.

Use disposable gloves and personal protective equipment (gowns, boot covers); wash hands thoroughly with liquid hand soap and water, followed by 70% ethanol hand sanitizer after handling sick animals.

Because of the high concentration of virus shed in diarrheic feces, thoroughly clean and disinfect all equipment after use. Separate equipment should be used in stalls of sick animals and not used with other horses.

**Zoonotic Potential**

No known zoonotic potential. However, standard hygiene precautions and use of personal protective equipment should be utilized with any diarrheic patient due to risk of coinfection with zoonotic agents.