

# Potomac Horse Fever

**Are you prepared? -- You can make the difference for your equid.**

## **What is it?**

Potomac horse fever (PHF) is a disease of equids best known for its gastrointestinal signs such as enteritis and diarrhea. This disease is caused by *Neorickettsia risticii*, an organism that lives inside several different cells of the equine body.

This disease has been referred to in the past as equine monocytic ehrlichiosis, or equine ehrlichial colitis.

## **What do we know about the organism?**

Potomac horse fever is caused by *Neorickettsia risticii*, an organism member of the *Erlchiaea* family.

According to the isolates obtained from clinical cases, there is diversity in the organism and each isolate has a different pattern of antigenic proteins.

Therefore, Potomac horse fever is caused by more than one strain of *Neorickettsia risticii*.

Current vaccines are only made using one strain, which likely explains its lack of efficacy in some cases.

Cases of Potomac horse fever have a seasonal presentation with the highest number of cases with clinical signs in July, August, and September.

## **What is the distribution in the country?**

Potomac horse fever is found throughout in North America and has been reported in most regions of the United States and Canada.

Studies have shown that 16 - 33 percent of horses with no history of having had the disease have evidence of having been exposed to *N. risticii*.

## **How does a horse get *N. risticii*?**

Several studies have been conducted to determine the route of infection and have revealed that a parasite, living in freshwater snails and aquatic insects, is a reservoir for *N. risticii*.

The parasites and *N. risticii* have been found in adult and immature forms of aquatic insects, such as caddisflies, mayflies, damselflies, dragonflies, and stoneflies.

Therefore, the seasonality of PHF is likely related to the seasonality of the flying insect.

But how does an equid become infected? These types of insects do not feed on warm blooded mammals; so, it is likely that an equid may ingest an aquatic insect or snail while grazing, or consume a flying insect that has landed in drinking water. It has also been suggested that the insects might be attracted to the barn area by outdoor lights during the night.

### **Can it be transmitted from horse to horse?**

Direct transmission from horse to horse does not occur.

### **What signs should a horse with PHF will show?**

The typical clinical signs observed in horses with PHF include: fever, anorexia (not eating), colic, depression, ileus (nonmotile gastrointestinal tract--the horse does not defecate), diarrhea, and laminitis.

Clinical signs and severity vary, but common to all cases of PHF is the manifestation of colitis (inflammation of the bowel). The onset of colitis can result in depression and anorexia, and may or may not be accompanied by a fever and/or diarrhea. However, some horses with PHF can pass normal-looking feces without showing any signs of colitis.

***The first prominent sign of PHF often observed by owners is a decrease in feed intake.*** In fact, some horses may not initially show any other clinical signs except not eating.

Usually this anorexia is followed by dehydration and toxemia characterized by very bright looking mucous and a bright red/purple line on the mucosal surface above the teeth (toxic line).

Many equids, upon becoming infected with PHF will develop a fever with an initial rise in temperature of approximately 103 - 106 degrees farhenheit, but the presence of this fever may go unnoticed as this initial fever resolves within hours. However, it is often followed by 3 - 7 days of persistent fever, along with other clinical signs.

Laminitis often develops in cases of severe endotoxemia, but in some occasions it can be the only clinical sign. Laminitis in most cases results in euthanasia of the equid within days of the onset.

***N. risticii*** can cause abortions, and it is related to placentitis and retained placenta in most cases. The aborted fetus will show signs of the infection as well.

### **Is there a test to diagnose PHF?**

Although the presentation, blood analysis and response to treatment can be suggestive of PHF, a blood test called polymerase chain reaction (PCR) and / or isolation of the organism in cultures is necessary to accurately diagnose the disease.

The PCR technique has been adapted to detect the organism from blood samples, as well as tissue and in some cases feces, and usually takes less than two days to perform.

### **Can other diseases have the same signs as PHF?**

Other diseases such as salmonellosis, clostridiosis, nonsteroidal antiinflammatory toxicity (banamine, bute, equiox), antimicrobial-associated enteritis, fungal colitis, toxic enteritis, etc. have similar signs or can coexist with the *N. risticii* infection.

When an equid is infected with other infectious organisms in addition to PHF, the result can be an increase in the severity of the clinical signs and a poor prognosis.

### **Is there a way to treat PHF?**

The drug of choice to treat *N. risticii* infection in equids is oxytetracycline.

The organism survives in the equid's body by hiding from the immune system within the macrophages (the body's natural defense cells) and controlling the defense mechanisms of the cell, thereby preventing the macrophages from destroying the infectious organism.

Oxytetracycline is able to interfere with the control mechanisms of *N. risticii* and allows the macrophage to eliminate the organism.

Oxytetracycline should be administered by a licensed veterinarian once a day for three to five days, and it is most effective when given in the early stage of the disease.

### **Should I isolate my equid if it develops diarrhea?**

Because clinical signs of PHF mimic other highly contagious diseases, such as salmonellosis, it is recommended to isolate affected equids.

### **What can I do to control or prevent exposure?**

Until modes of transmission are clearly known, and all sources of the infection (insects, etc.) are identified, attempts to prevent exposure may not be successful.

Although there is evidence that associates PHF with aquatic environments, equids have developed PHF without having access to such environments.

Turning off lights at night in the stable and barn area will decrease the amount of insects attracted to the area and contamination of feed and water.

### **Should I vaccinate?**

Several vaccines are commercially available in the United States, but their efficacy is questionable.

Research has shown that once an equid develops an infection with *N. risticii*, the equid can develop an immunity to that particular strain for as long as 20 months.

In contrast, vaccination has been associated with a poor immune response. Research has shown that only 50 percent of the vaccines are protective at six months after vaccination, and protection decreases to 33 percent after nine months.

Vaccination may decrease clinical signs but it will not prevent infection and illness.

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