



# River Valley Veterinary Clinic

## September 2018 Newsletter

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### Rainy Weather Brings Another Danger: Footrot

With all the rain we've had in the last few weeks, it's a good time to brush up on a disease in cattle, sheep and goats instigated by wet, muddy conditions: footrot.

**The Bugs** While footrot is caused by bacteria, it all starts when the skin of the interdigital space (between the toes) is injured. This is through either a direct wound or from the skin softening after constant soaking in wet, muddy pastures or pens without regular scraping. The bacteria are picked up from the environment contaminated from other infected animals, but can't pass beneath the skin and grow until there's an injury.

In cattle, *Fusobacterium necrophorum* is the most common culprit, but it can conspire with other bacteria to make the infection worse. Footrot in sheep and goats is from *F. necrophorum* and *Dichelobacter nodosus* together. *F. necrophorum* is a normal bacterium in the sheep or goat large intestine and is readily found in pastures. *D. nodosus* is also found on pasture but only from animals that have footrot, where it survives in the hoof for a long time. Once on pasture, *D. nodosus* only survives for about 2 weeks.

Both bacteria grow only in anaerobic environments, meaning somewhere without oxygen. Once they work beneath the interdigital skin, it takes about a week for the bacteria to create their ideal anaerobic environment, proliferate and create destructive molecules that kill nearby tissues, leading to the symptoms of infection.

**The Pain** In any species, consistently wet pasture with no dry spells leads to outbreaks. The animal will be suddenly lame, with increasing severity. Even in an early infection, footrot is incredibly painful and often results in an animal that is off-feed, with decreased production or weight gain.

Since many foot issues could cause lameness, especially in cattle, its best to pick up the foot and make sure it's not a heel wart, sole abscess or ulcer, or other injury. On closer inspection, a footrot infection will cause the skin between the toes and around the tops of both hooves to be swollen and inflamed. Compared to footrot, other foot issues will have local swelling on the affected side of the foot. Heel warts in cattle affect only the surface of the skin and are not between the toes but extend from the heel bulb up toward the dew claws.

Footrot infections will end up breaking the skin open and the tissue underneath will be necrotic and smell awful. As the infection progresses, it can work upward into the joints in the foot in cattle or inward toward the hoof in sheep or goats and cause irreversible damage.

In addition to these symptoms, sheep and goats will spend a lot of time laying down and end up rubbing the wool or hair off their flanks, brisket and knees.

Footrot infections in sheep and goats are much more complicated than in cattle: the severity of infection depends on which and how many of the 8 strains of *D. nodosus* the animal is infected with, if at all. The initial infection, called Benign Footrot (or Foot Scald) is caused by *F. necrophorum* alone. It can happen on any farm after a period of wet conditions and the interdigital skin is inflamed, but the hoof is not involved.

Benign Footrot is a precursor to the nasty form: Virulent Footrot, caused by both *F. necrophorum* and *D. nodosus* together. In this form, the bacteria invade the hoof and digest the sole. In really bad infections, the tissues connecting the foot to the hoof will be completely digested and the hoof will completely detach. Between the two species, sheep are more likely to get the virulent footrot than goats, who tend more to get foot scald only.

**The Fix** Treating footrot is all about exposing the bacteria to oxygen, since they can't survive in it, and removing the dead tissue.

In cattle, a piece of gauze can be used to 'floss' between the toes to remove the dead tissue, then wrapping with oxytetracycline powder (milkhold: 24hrs due to recent residue testing) for a few days. The wrap not only keeps the powder in place for a longer time, but prevents bacterial shedding into the environment. Anti-inflammatories like aspirin do well to relieve pain and make sure the cow continues to eat. More severe infections will likely require systemic antibiotics, and there are many that work well and are labelled for it, including any ceftiofur, the tetracyclines, penicillin, Draxxin or Nuflo.

Footrot in sheep and goats often affects much of the herd, and while penicillin and tetracyclines work well, they must be combined with whole flock management to truly eradicate the infections. If a few animals are infected in a large flock, they are often culled rather than risking infecting the rest. If culling is not an option, treatment involves foot trimming and footbaths. Infected animals need to be separated from the healthy and all necrotic tissue trimmed out. This is usually a very deep trim and can cause bleeding and even more tender feet, so deep bedding is important.

**The Future** The control and prevention of infections in all species involves reducing the time spent standing in wet areas and regular pen scraping.

In sheep and goats, footrot is incredibly infectious. Prevention starts by reducing the introduction of the bacteria. It's usually introduced to a herd through a purchased infected animal. New animals should be quarantined for 30 days and have their hooves trimmed before being introduced to the flock. The bacteria can also be spread on boots, truck tires, hoof trimmers or even the hands of the one doing the trimming.

Animals that are commingled at fairs or shows can also pick up and bring home infections. Excellent biosecurity and sanitizing hoof trimmers will reduce the risk. In severe cases, there are footrot vaccines, but they provide only 4-6 months of protection. After the outbreak is controlled, regular surveillance is key to find re-infections early. Also, trim hooves twice yearly and purchase animals from footrot free flocks.

Also important are foot baths! The baths dry out the skin and make it less hospitable to bacterial growth. The best drying agent for a sheep or goat footbath is 10% zinc sulfate. Infected animals

should soak in a foot bath for 20-30 minutes, 3-4 times per week until the symptoms resolve. Then infections prevented with a 15 minute soak every 5-7 days. Since the animals have to soak for a while, old water tanks or containers are a good way to contain the sheep or goats while they soak.

Footrot in cattle is controlled by walking the herd through a 5% copper sulfate footbath 3 times per week during an outbreak and then 1-2 times per week for maintenance. Since the cows are just walking through, it's important that the footbath is 10-12 ft long to make sure each foot is immersed 2-3 times. Too short, and a hindfoot may only get immersed once. Once the footbath looks more like manure than copper sulfate, the solution needs to be changed; otherwise it won't be effective.

In the next few days we can only hope that the rain gives us a break and things can start drying out. As they do, we might see an increase in footrot, so be ready!