

Foot Rot (Sore Foot, Foul Foot or Interdigital Necrobacillosis)

Footrot is a highly contagious disease affecting the interdigital (between the toes) tissue of ruminants. It is one of the most common causes of lameness in cattle and sheep and can result in serious economic loss. Once present in a herd/flock, footrot can be very difficult to control.

- ❖ The incidence is usually sporadic, but with outbreaks in high intensity operations it may be 25 percent or higher. It is estimated that foot rot accounts for 75 percent of all lameness diagnosed in beef cattle.
- ❖ High prevalence rate of severe liver abscesses can be recorded in infected cattle

Etiology/Pathogenesis:

Footrot is caused a combination of the bacteria *Fusobacterium necrophorum* and *Dichelobacter* (formally *Bacteroides*) *nodosus* (more common in sheep), and *Bacteroides melanogenicus* (more common in cattle).

- *Fusobacterium necrophorum* is a normal inhabitant of the ruminant digestive tract and may survive in soil for up to ten months. It produces a **leukocidal exotoxin** that reduces the protective white blood cells from ingesting bacteria (phagocytosis) and causes suppurative necrosis.
- *Bacteroides melanogenicus* produces **proteases** that damage the subcutaneous tissue and tendons.
- *Dichelobacter nodosus* can survive a maximum of two weeks in the environment. It produces an **enzyme** capable of **digesting the connective tissue** between the horn and flesh of the hoof, thereby allowing migration to areas under the horn.
- If footrot is not controlled, it may invade deeper structures of the foot, including joints which may lead to septic arthritis.
- Footrot tends to be seasonal, with the highest incidence occurring during the wet seasons.
- Cuts, bruises, puncture wounds, or severe abrasions of the foot due to sharp rocks, sticks, or frozen mud/ice will damage the skin in the interdigital space and predispose an animal to footrot by allowing bacteria to invade and multiply within the tissue.
- The bacteria cannot by themselves, gain entry to the skin and cause foot rot.

Clinical Signs:

1. Pain and sudden lameness are usually the first signs of an infected animal.
2. Lameness is typically followed by reddening of the interdigital tissue and coronet with swelling of the foot, causing spreading of the toes.

3. One or more feet may be affected simultaneously.
4. Spreading of the dewclaws due to swelling is a classic sign of foot rot.
5. Fever, loss of condition, reduced milk production (dairy cattle), loss of appetite and resulting loss of gain (beef cattle).
6. Cellulitis and liquefactive necrosis (tissue death) in the interdigital space accompanied by a foul odor.

Diagnosis:

Footrot is typically diagnosed by the distinctive lesions and odor. Any interdigital fissures and cracks with a characteristic odor should be treated as footrot. Bacterial culture can be done, but is rarely necessary.

Treatment:

- ✓ The interdigital tissue should be cleaned, debrided, and disinfected.
- ✓ One antibiotic treatment is usually adequate if administered on the first day of disease.
- ✓ Recovery is generally observed in three to four days.
- ✓ If treatment is not initiated until later in the disease process, multiple treatments may be necessary.
- ✓ Penicillin and oxytetracycline are effective antibiotics if started early in the disease process and given at the recommended dosage.
- ✓ Sulfonamides (either intravenously or as a bolus) work well too.
- ✓ If animals do not respond to treatment within 3 days, it is NOT “just foot rot” and additional action should be taken.
- ✓ Animals often have joint involvement that if addressed quickly can prevent loss of that toe.

Prevention:

- Environmental hygiene is a key component in preventing foot rot:
 - Keep lots free of hard objects such as stones, bricks, machinery, or anything that could bruise or cut the soft tissue of the foot.
 - Minimize abrasive surfaces, especially around feeding and watering areas.
 - Remove manure regularly.
 - Maintain maximum drainage of lots and around water tanks, feed bunks, and other busy traffic areas
- Footbaths: Feet should be trimmed and soaked in foot baths of zinc sulfate or copper sulfate.
- Good nutrition with adequate levels of Vitamin A, D and zinc.
- Isolating sick animals
- Management should also include regular herd checks focused on early detection.
- Vaccination should begin before the start of the wet season, followed by a booster six weeks later, then once every ten to twelve weeks.