

## *Protocols for on-farm diagnosis and initial treatment of lameness*

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*\*\*\*\*Simplicity and clarity are essential to developing treatment protocols for lameness\*\*\*\**

### **I. Diagnosis**

**Evaluation of foot swelling:** Since the hoof capsule is rigid and incapable of marked expansion, lay personnel should be instructed to examine the tissues at and immediately proximal to the coronet for evidence of swelling. To facilitate detection of swelling of the foot, lame animals should be moved, if possible, from areas of deep grass or mud onto a packed surface. Heavily soiled feet should be cleaned. Digital swelling can be readily visualized from behind the animal by comparing the distance between the dewclaws of the affected foot to that of unaffected feet. Because the dewclaws are loosely anchored in the soft tissues, they are spread further apart in the swollen foot versus the non-swollen feet. Also, when the affected foot is viewed from the rear, the width of the heel bulbs can be compared to determine if the swelling is more severe in one digit than the other.

#### **Is the affected foot swollen?**

Generalized swelling of the digit above the coronary band, involving the pasterns and fetlock and extending proximally for a variable distance, is commonly seen in cases of footrot and deep sepsis of the digit. If detected early, footrot is characterized by digital swelling and sole ulcers are not.

#### **Is the swelling symmetrical or asymmetrical?**

In our experience, dairy personnel frequently assume that all lame cattle with swollen feet are suffering from footrot; after examination by the herd veterinarian, a variable proportion of these animals have been determined to have deep sepsis of the digit. To differentiate between these two disorders, envision an imaginary line that begins in the interdigital space and extends up the foot, bisecting the foot into its two digits along the longitudinal (axial) midline. Because **footrot** begins in the interdigital skin, the swelling of soft tissues above the coronary band is usually **symmetrical relative** to the longitudinal (axial) midline of the foot. **Asymmetrical swelling of the foot** is usually seen in cases of **deep sepsis of a digit**. The majority of swelling is located on the side of the affected digit; in other words, the affected foot is asymmetrical swollen relative to the longitudinal (axial) midline of the foot. As stated above, the affected foot can also be viewed from the rear, and the width of the heel bulbs compared; deep sepsis of a digit is characterized by appreciable widening of the heel on the affected side. The reason for these findings is simple: The diseased bones, joints, and associated soft tissue structures are not located on the axial midline; therefore, the associated soft tissue swelling is greatest over the affected digit. While visible soft tissue swelling may be minimal in cases of septic osteitis of the third phalanx, swelling and erythema of the soft tissues above the coronary band is usually severe in cases of septic arthritis of an interphalangeal joint.

### **No Generalized Swelling:**

Causes of lameness that do not typically result in generalized swelling of the foot include uncomplicated cases of digital dermatitis (hairy heel warts), interdigital dermatitis, sole ulcers (pododermatitis circumscripta), laminitis, subsolar abscesses, white line disease, and injuries or diseases of the limb above the digit.

## **II. Protocols for treatment**

On many large dairies in the authors' region, herd personnel are taught by the attending veterinarian to identify, record, and properly treat lameness conditions. The criteria for each diagnosis should be clearly described and discussed with herd personnel. The authors have developed treatment protocols to guide detection and direct treatment of these common digital disorders. Particularly for antimicrobial therapy, the duration of treatment should be evidence-based and clearly defined. Cattle that fail to respond as expected within the defined treatment period can then be scheduled for veterinary examination. Because many of the farm workers in our region are more fluent in the Spanish language than in English, provision of bilingual protocols is necessary. On occasion, producers request flow charts with photos of example lesions to clarify the decision-making process for lay personnel. On some operations, each diagnosis is coded for easy entry into computerized herd health data systems; a code for lameness due to unknown causes is always included in such records systems to facilitate identification of the animal for prompt veterinary examination. In addition, lameness records are regularly reviewed by the herd veterinarian to monitor trends over time in lameness incidence, diagnosis, and treatment response rates. Digital cameras facilitate capture of both still and video images of problematic or unique cases for review with the herd veterinarian. We recommend that the herd veterinarian regularly examine acutely lame animals as well as longer-lasting, problematic cases with herd personnel, so that diagnosis and treatment issues can be discussed on a regular basis. Ultimately, well-defined treatment protocols should reduce the number of animals administered inappropriate antimicrobial drugs for inappropriate periods of time.

### **Summary**

The rules of thumb that form the basis for our lameness treatment protocols are summarized as follows:

1. Causes of lameness can be categorized according to the likely presence or absence of visible swelling of the soft tissues of the foot.
2. Because interdigital necrobacillosis is centered in the interdigital skin, early cases are characterized by swelling that is symmetrical relative to the longitudinal (axial) midline of the foot.
3. Deep sepsis of the digit is characterized by swelling that is asymmetrical relative to the longitudinal (axial) midline of the foot.
4. On-farm lameness treatment protocols should include an expected deadline for resolution – once the deadline is reached, if the animal has not recovered, the veterinarian should be consulted.
5. Cattle that become lame from digital wounds should be scheduled for prompt veterinary examination.