

Causes of Lameness

Nebraska veterinarian shares how to distinguish causes of environmentally induced lameness.

by **Troy Smith**

Back in the day, when much of the power behind our transportation system was fueled by hay and oats, the phrase “No hoof, no horse” was understood by hostlers, teamsters and anyone else who savvied horses. That timeworn phrase emphasized how important hoof health was to performance, whether a horse was used in harness or under saddle. But the old horseman’s axiom easily applies to the bovine brute as well, and for much the same reason. Cattle don’t perform well when they’re not sound all around.

Lameness in cattle is a fairly common thing, because a critter can become gimpy for a variety of reasons. Often, it’s a temporary condition resulting from some very minor injury — a bump, scrape or cut that might heal without any special attention. But it might not, so every case of lameness bears scrutiny. Under the right circumstances, even a minor injury can become serious and threatening to the affected animal’s welfare, as well as to its productivity and value.

Lameness can create a multilayered economic burden for cow-calf producers. When bulls or cows are affected, lameness can jeopardize reproductive rates, longevity in the herd and ultimate market value.

Some producers tend to forget about that latter item, but revenue from culled breeding stock typically represents about 20% of a cow-calf operation’s gross income. Of course, quite a few market cows and bulls limp onto a truck or trailer and end up selling at a discount. Results of the national



PHOTOS COURTESY DEE GRIFFIN, UNL-GPVEC

► Footrot usually becomes apparent one or two weeks after the soft tissue between the toes has been injured. A break in the skin can be caused by wire or other loose metal on the ground, but also by dry pasture stubble or rough, frozen mud. Bacteria always present in the soil can enter through a small wound, causing infection. Typically, the resulting inflammation and swelling causes the toes to spread.

,Non-fed (market cow and bull) Beef Quality Audit indicate that about 16% of cows and 31% of bulls exhibit lameness at delivery for slaughter.

In the worst cases, lameness advances and the animal never makes it to market. According to the most recent report from the U.S. Department of Agriculture Animal and Plant Health Inspection Service

(USDA-APHIS) National Animal Health Monitoring Service (NAHMS), 8.5% of mortalities among breeding stock were attributed to lameness or injury. The same causes account for 4.4% of deaths among calves older than 3 weeks of age, and 3.4% of deaths among calves that were younger than 3 weeks old. But even when calves recover, going through a period of lameness can have long-term effects — particularly reduced rate of gain.

Nebraska-based veterinarian Tom Edwards of Midwest Feedlot Services Inc. says lameness issues can reduce average daily feedlot gains by 0.70 pound (lb.) or more, and can result in the need for an additional five to 14 days on feed. He cites Nebraska data involving more than 1.8 million feedlot animals. The data indicate that of the 13% receiving treatment for health problems, 16% of those were treated for lameness. Edwards says the cost of treating lameness, including losses attributed to overhead, chronics and treatment expense, can exceed

Nutrition Plays a Role

The conscientious cattle producer knows nutrition is critical to cattle health and performance, but minerals and vitamins play particularly important roles in maintaining good hoof health. Connie Larson, research nutritionist for Zinpro Corp., says making sure cattle have adequate levels of trace minerals in their diets promotes immune system function and healthy tissue growth, helping ward off lameness issues.

“Manganese is critical for fetal skeletal development and maintaining soundness in growing and mature cattle. Zinc promotes cell replication. It’s necessary for synthesis of keratin (responsible for hoof strength and flexibility) and maintenance of skin integrity. It also promotes immune response for fighting infection,” states Larson, adding that copper is necessary to the health of tissue connecting bone to the hoof wall.

Larson says Selenium and Vitamin E work in tandem to protect hoof and other body tissue, but must be present in balance. Selenium in excess is toxic and can cause lameness.

Larson reminds producers that forages typically are low in trace minerals. She recommends analysis of feedstuffs to determine which nutrient levels fall short of animal requirements. Producers can then implement a cost-effective supplementation program.

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\$126 per head. And still, lameness issues result in a fairly consistent feedlot mortality rate of about 3%.

Managing the problem

The numbers show that lameness issues are a reality for all segments of cattle production, but good management decisions can minimize the impact. The key to effective treatment, says Edwards, is early and accurate diagnosis.

“We need to understand where the lameness is coming from. Determine the cause and whether it’s treatable. Then don’t wait. Make a decision,” emphasizes Edwards, adding that accurate diagnosis can also help the producer determine if steps can be taken to prevent future cases.

The first step to an accurate diagnosis is finding the location of the problem. That might seem simple, but in the absence of swelling or an obvious wound, an observer might be fooled. Edwards advises producers to watch the animal as it travels to determine which limb or foot is favored.

“Watch the head bob,” explains Edwards. “If the head bobs up, it’s an indication of lameness in a front foot, as the animal tries to take weight off the painful foot. If the head bobs down, the animal is trying to take weight off a rear foot. That’s a real simple way to tell, but one that’s not always understood.”

Edwards says 90% of all lameness is due to diseases of the foot. Other causes include septic joints, injuries to the upper skeleton or major muscles and injection-site lesions. The incidence of each cause is influenced by season and environmental conditions, as well as cattle handling and genetics.

Footrot

Footrot is a usual suspect when lameness is first observed, but Edwards says careful examination is necessary to confirm a diagnosis. The animal should be restrained so the affected foot can be picked up, washed clean and examined.

Footrot usually becomes apparent one or two weeks after the soft tissue between the toes has been injured. A break in the skin can be caused by wire or other loose metal on the ground, but also by dry pasture stubble or rough, frozen mud. Bacteria always present in the soil can enter through a small wound, causing infection. Typically, the resulting inflammation and swelling causes the toes to spread.

“Treatment involves washing the infected foot, applying a topical antiseptic and



Above & right: Toe abscess involves no visible swelling of the soft tissue. Concrete or other rough surfaces often cause injury to the sole of the hoof, through which bacteria enter. The resulting infection beneath the hoof wall becomes extremely painful.

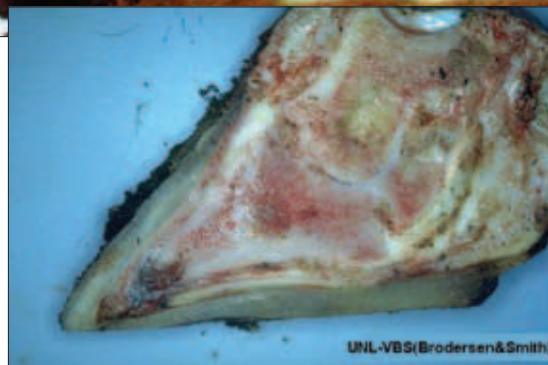
administration of antibiotics approved for footrot,” says Edwards.

Toe abscesses

In contrast to footrot, a toe abscess involves no visible swelling of the soft tissue. Edwards refers to this disease to “concrete toxicity” since concrete or other rough surfaces often cause injury to the sole of the hoof, through which bacteria enter. The resulting infection beneath the hoof wall becomes extremely painful. Young cattle coming off of lush pasture are susceptible to toe abscesses since their hooves are soft and subject to abrasion. Edwards says cases often become apparent three to seven days after animals arrive at a feedlot. Animals often suffer rapid and severe shrink and, due to the pain, may be prone to go on the fight.

“If the animal holds a foot to the outside, or holds a rear foot under its body (to take pressure off an affected toe), it’s a good indication that you’re dealing with a toe abscess,” says Edwards. “Treatment involves tipping the toe with small nippers — not so much that it bleeds —but taking about a quarter of an inch to let the toe drain and relieve the pressure.”

Edwards recommends tipping both



toes, administering a long-acting antibiotic and allowing the animal to recover in an environment with footing that won’t further aggravate the foot. Prevention of toe abscesses is best achieved by using low-stress cattle-handling techniques and trying to avoid situations where cattle “scramble” on rough surfaces.

Hairy heel wart

Hairy heel wart is a malady more common to dairies, but Edwards is seeing increased incidence in feedlot cattle — mostly among cattle on feed for 100 days or more and exposed to muddy conditions.

This bacterial dermatitis causes lesions with hair-like protrusions that appear on the back (bulbs) of the foot. Affected animals are reluctant to move about and often adopt a cocked-foot stance. Edwards says dairies often use a medicated footbath daily as a preventive measure. Walking cattle through a footbath every other day, for a total of three times, serves as a treatment.

“Treatment with topical antibiotics

offers mixed results and response to injectable antibiotics has been poor, in my experience. The best prevention is good pen maintenance,” offers Edwards.

Septic joints

Lameness due to a septic joint occurs when an infection settles in a fetlock, hock or elbow. It can follow an injury to the joint, or an infection of the foot that is not successfully treated may progress and settle in the joint. According to Edwards, there really is no effective treatment other than time and tender loving care.

In some instances, animals recover after four to six weeks of convalescence. In many cases, however, sale for salvage is the best option. If medications have been administered, appropriate drug withdrawal periods should be observed.

Laminitis

Laminitis or founder results from a digestive upset — rumen acidosis caused by the excessive intake of starch relative to fiber. Long story short, a toxic reaction causes a breakdown in structures attaching bone to the hoof wall. This allows an abnormal shift of bone, within the hoof, which puts painful pressure on the sole.

There is no effective treatment, so

Edwards stresses prevention through careful step-up of rations and attention to bunk management.

Hard to fix

The sad truth, says Edwards, is that lameness can be hard to fix. Diagnosed early enough, lameness caused by most of the infections described may be treated successfully. A veterinarian can help provide the most appropriate treatment protocol. But producers have to realize that when infections have progressed too far, or lameness is due to severe injury, there



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may be little or no chance of a satisfactory outcome.

“Have reasonable expectations and know when to quit,” says Edwards. “Knowing when to use humane euthanasia is also a part of good animal husbandry.”

Edwards reminds producers of another old saying that describes prevention as the best cure. He recommends keeping the environment clean and free of junk. Make sure working facilities are safe and in good repair to cut down on the cuts, abrasions, fractures, sprains and strains that can cause lameness. Edwards notes how rubber mats, when fastened down, provide good traction in processing areas, and conversion from crowding tubs to a “Bud Box” is showing favorable results in easing cattle handling.

“And slow down,” adds Edwards. “Quiet, calm cattle handling techniques can really make a difference.”



Author's Note: Veterinarian Tom Edwards and nutritionist Connie Larson discussed diagnosis, treatment and prevention of lameness during a Cattlemen's College® session of the 2011 Cattle Industry Convention in Denver, Colo. For more information, see www.4cattlemen.com.

Photos were provided by Dee Griffin, feedlot production and management veterinarian and professor at the University of Nebraska Great Plains Veterinary Education Center (UNL-GPVEC), Clay Center, Neb.