



# BEEF

Chapter 35

## Health Considerations: Beef Calves on Pasture

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## Introduction

Although the more severe health challenges to beef calves usually occur early in life (e.g., neonatal diarrhea) or around the time of weaning (e.g., respiratory disease), calves can encounter health problems in the interim as well. In addition, management strategies employed during this period can prepare the calf for a healthy transition at weaning to enter the feedlot or a future breeding herd.

## ***Health Issues Encountered By Calves On Pasture***

### **Clostridial infections**

#### **Blackleg**

Blackleg is a bacterial condition encountered by calves grazing during the summer months. During grazing, calves ingest the spore form of *Clostridium chauvoei*, which can be found in the soil or on grass in many pastures. These spores are then distributed throughout the calf's body, but usually remain dormant. Under the right conditions, such as an injury or bruise to muscles, the bacteria is activated and produces toxins that inflict severe damage to muscle tissue and result in organ failure and death. In most cases, signs of blackleg progress so rapidly they are not noticed – calves are simply found dead. Therefore, treatment is usually not an option, although vaccination and preventive antibiotics to the remainder of the calves on pasture may prevent future cases.

#### ***Clostridium perfringens Type A*** **(“enterotoxemia”/“overeating disease”)**

Cases of calf bloating, accompanied by abdominal discomfort, mild diarrhea, and sometimes abomasal ulcers and deaths have been observed by veterinarians and cow-calf producers. While the cause of these conditions is not yet clear, toxins produced by the bacteria *Clostridium perfringens* Type A have been associated with some of these cases. Similar to other clostridial organisms, this bacteria is common in manure and cattle environments and is readily picked up by calves. One theory about its pathogenesis is that when a larger-than-normal amount of high-nutrient foodstuffs spills over from the abomasum to the small intestine, the right conditions

## Key Points

- Young calves are susceptible to a variety of illnesses while nursing their mothers on pasture, including clostridial diseases, pinkeye, and respiratory disease, among others.
- Vaccines administered to calves prior to pasture turnout can aid in preventing disease conditions during the grazing season, as well as prepare the calf's immune system for weaning.
- Pre-weaning processing, including appropriate vaccinations, is best accomplished approximately 4 weeks prior to weaning. Revaccination or boosting of vaccines around the time of weaning, depending on the products used and timing of previous vaccines, may be required or advisable.
- Castration of bull calves is best accomplished prior to or at the time of pasture turnout. Local anesthetics and systemic pain relief are increasingly being used during castration and dehorning, and result in improvements in weight gain when used.

exist for the rapid growth of *C. perfringens* Type A and its subsequent toxin production. These toxins have an adverse effect on the abomasum, potentially resulting in bloating and ulcerations. The syndrome seems to be more prevalent in fast-growing calves, presumably with good-milking mothers. Preventing this syndrome has proven elusive. Some producers and veterinarians report success with *Clostridium perfringens* Type A vaccine, given either to young calves, or to gestating cows if the problem appears in very young (< six weeks) calves. Successful treatment involves prompt detection of cases and use of appropriate antibiotics and clostridial antitoxin.

### **Pinkeye**

Calves tend to be more susceptible to pinkeye on summer pasture than their adult counterparts. Pinkeye (infectious keratoconjunctivitis) is caused by *Moraxella bovis* and other related bacteria. Simple exposure to the bacteria is not sufficient to cause damage to the eye. Irritation through dust, tall grass, flies, or sunlight is also necessary, and allows the bacteria a foothold to induce disease. Pinkeye usually begins as a small defect in the central cornea, with an increase in cloudiness and redness as the disease progresses. If not treated, damage in the form of corneal opacity (white eye) or even rupture of the cornea may result in permanent blindness. Affected animals should be promptly treated with appropriate antibiotics and may benefit from protective measures such as eye patches or suturing of the eyelids.

### **Pre-Weaning Respiratory Disease**

Respiratory disease in pre-weaned calves on pasture has been increasingly identified in beef herds of all management levels. Comparatively little is known about the risk factors that predispose calves to pneumonia while on pasture. Speculated factors include: poor colostrum intake, loss of colostral immunity over time, exposure to older calves shedding infectious agents, dust, and other adverse weather conditions. Infectious agents associated with these cases are largely the same as those implicated in post-weaning pneumonia (*Mannheimia haemolytica*, *Histophilus somni*, Infectious Bovine Rhinotracheitis Virus [IBRV], Bovine Respiratory Syncytial Virus [BRSV], and others).

Signs of respiratory disease in pre-weaned calves do not always include breathing problems. Sluggishness,

a reluctance to keep up with the herd, and drooping of ears are commonly noted. In most cases, high fevers are present in affected calves. Treatment consists of the use of appropriate antibiotics and anti-inflammatories. These treatment attempts are frequently successful, but difficult to apply to individual calves in pasture situations. In cases late in the grazing season, pre-weaning vaccinations, along with antibiotics, can be administered to all calves if a high proportion of the herd is affected.

### **Management Considerations Prior To And At Pasture Turnout**

For spring-calving cow-calf herds, branding or turnout time offers producers the opportunity to protect the calf from potential hazards on summer pasture as well as to perform management procedures that will affect the calf later on in life. In fall-calving herds, these management decisions are geared toward protecting the calf through the winter months to the weaning period.

### **Vaccinations**

Vaccines administered prior to or at turnout time help protect calves from certain threats they will encounter while on pasture and in many cases are the initial step in protection against diseases they will encounter later in life. Cow-calf producers should consult their herd veterinarian for advice on vaccination programs, especially when changes to existing programs or products are contemplated.

### **Blackleg and other clostridial diseases**

Blackleg is a condition not uncommonly encountered by calves grazing during the summer months. While certain pastures and locations seem to be more prone to be sources, the spores causing blackleg are widely distributed on most pastures in the region. Blackleg in calves can be effectively prevented through vaccination with a bacterin-toxoid against *C. chauvoei*, a component of “7-way” clostridial vaccines. These “7-way” vaccines are also protective against a number of other clostridial disease conditions, including malignant edema and “redwater”.

*Clostridium perfringens* Type A infections are not covered by typical “7-way” vaccines. However, a vaccine specific to the toxins produced by this bacteria is available and is an option for use in herds

with Type A-related problems during the grazing season.

### Pre-weaning respiratory disease

Respiratory disease in pre-weaned calves on pasture has been increasingly identified in beef herds of all management levels. As an aid in enhancing the calf's immune system against respiratory disease during the grazing season, vaccination with modified-live viral (MLV) vaccines containing IBRV, BRSV, Parainfluenza-3, and Bovine Viral Diarrhea Virus (BVDV) is an option. Furthermore, some beef herds include vaccines against bacterial pneumonia pathogens such as *Mannheimia haemolytica*, *Pasteurella multocida*, and *Mycoplasma bovis* in turnout programs. Pre-weaning respiratory disease has been identified in calves extensively vaccinated at turnout time as well as those that have not. Clearly, more knowledge on this subject is needed.

### Pinkeye

Calves tend to be more susceptible to pinkeye on summer pasture than their adult counterparts. Commercial as well as farm-specific vaccines are available against the bacterial strains that cause pinkeye in calves and can be included in a turnout-time vaccination program. Use of these vaccines has not uniformly prevented problems, however. If pinkeye vaccines are used in calves, the use of vaccines containing multiple strains of bacteria is recommended.

### Anthrax

While a threat to cattle grazing pastures in many areas of South Dakota, anthrax almost exclusively affects adult cattle, so anthrax vaccine is not considered a critical component of pasture turnout vaccine programs for calves.

### Castration

Pasture turnout affords a good opportunity to castrate young bull calves. Calves at this age (less than 3 months) generally heal up quickly from castration and do not often exhibit ill effects from the procedure.

Castrating calves at this age should typically be done surgically. Surgical castration is accomplished by incising the scrotum and removing the testicles by cutting/crimping with an emasculator, or by

pulling the testicles out. Regardless of the method of removal, the incision should be large enough to provide proper drainage. For young calves (< 1 month), elastrator bands can be used to cut off blood supply to the testicle.

Pain relief during castration is becoming more widely practiced among veterinarians and cattle producers. Using a local anesthetic such as lidocaine and anti-inflammatory medications such as flunixin or meloxicam has been shown to reduce pain and improve weight gain. These medications require a valid veterinary-client-patient relationship be in place before use. In addition, a degree of technical skill is necessary when using local anesthetics during castration.

### Internal Parasite Treatments

Calves are susceptible to infestation by internal parasite larvae they encounter on summer pasture, adversely affecting their appetite and weight gain. Dewormers that have a residual activity will help protect the calf from infestation with stomach worm larvae that have overwintered on pasture, and will result in diminished numbers of new larvae shed from calves onto the pasture. Depending on the time of year, however, treatment at branding time may not be optimal to accomplish these goals. Treatment of calves a month or two into the grazing season, after overwintered larvae have succumbed to summer conditions – or use of a product that protects calves through this period – is recommended.

### Fly Control

Providing long-lasting fly control for calves on pasture is a challenge. Insecticide fly tags are an appropriate option for calves at turnout time, as pour-on products do not have long residual activity. Directing fly control to the cows and bulls on pasture will help reduce burdens on the calves.

### Pre-Weaning Processing

Calves in the latter portions of the grazing season are at the appropriate stage to prepare for weaning and entering the feedlot or heifer/bull development lot. Pre-weaning processing best occurs approximately 4 weeks prior to the desired weaning or shipping date.

### Vaccinations

A typical list of pre-weaning vaccines for calves

would include:

1. Viral respiratory pathogens – IBRV, BVDV, BRSV, PI-3
2. Bacterial respiratory pathogens – especially *Mannheimia haemolytica*, optionally *Pasteurella multocida* and/or *Histophilus somni*
3. Clostridial pathogens – as contained in typical “7-way” vaccines.

The best timing of vaccine administration will depend on the individual product used and previous vaccines received by the calf. In general, it is advisable to administer the first dose of these vaccines approximately four weeks prior to weaning. At or close to the time of weaning, booster doses of these vaccines should be given, if necessary. Some considerations for pre-weaning vaccine timing are:

- When MLV vaccines are used, it may not be necessary to give a booster at weaning. Some products do not require any boosters, while others require boosters for at least a portion (e.g. BRSV) of the vaccine. Some labels require revaccination if the initial dose is given when calves are less than six months of age. Killed virus vaccines require appropriately-timed booster doses. • Research indicates, however, that if MLV vaccines are given to a calf at branding time (approximately two months of age), boosting that dose once at weaning time was as effective as boosting a dose that had been given approximately four weeks prior.

### **Castration**

If bull calves have not been castrated earlier, it should be done at pre-weaning processing. As with castration at turnout time, surgical castration is typically the method of choice. Surgical castration results in quicker healing time with fewer lingering effects on weight gain. Proper technique and cleanliness is critical in order to promote proper healing and avoid infection.

As calves increase in size, using large banders for castration becomes a more attractive option. While excessive blood loss is averted with this method, the threat of tetanus increases dramatically, and weight gains are adversely affected until the scrotal tissue detaches from the body. If large banders must be used, tetanus vaccine should be administered at least

two weeks prior to banding, with a booster at the time of banding.

As with younger calves, pain mitigation is becoming more commonly practiced in conjunction with surgical castration. Providing relief from pain is even more important (and effective) in larger calves at pre-weaning processing. Using a local anesthetic such as lidocaine and anti-inflammatory medications such as flunixin or meloxicam has been shown to reduce pain and improve weight gain. These medications require a valid veterinary-client-patient relationship be in place before use. A degree of technical skill is necessary when local anesthetics are used during castration.

### **Dehorning**

The issue of horns on calves is best addressed by using polled genetics in the herd. If calves must be dehorned, branding or turnout time may be most optimal. Pre-weaning time offers a good opportunity to do so if not done earlier. Cutting or scooping horns with a Barnes-type dehorner is effective at this age. Care should be taken to remove all horn tissue, leaving a ring of haired skin around the removed horn. Local anesthetics are becoming more commonly used for dehorning, providing short-term pain relief for several hours after the procedure. To accomplish this, the veterinarian injects lidocaine in the area of the nerve supplying the horn tissue prior to dehorning. Systemic pain relief can be accomplished by administering anti-inflammatories such as flunixin or meloxicam. Use of these compounds necessitates a valid veterinary-client-patient relationship. Reducing pain associated with these procedures is not only beneficial to animal well-being, it results in better weight gains following those procedures.

### **Summary**

The interval between the calf's neonatal period and weaning affords a valuable time during which the calf can be primed for a successful transition to the feedlot or development into a member of the breeding herd. This period is not without potential health pitfalls itself, however, so care should be taken to prevent illnesses that could be present during the grazing season.

## References

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