



BEEF

Chapter 37

Health Considerations: The Cow Herd

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Introduction

The economic success of the cow-calf operation rises and falls with the productivity of the cows in the herd. The productivity of an individual cow depends on her becoming pregnant, carrying a calf to term, efficiently giving birth to and raising a healthy calf, and returning to estrus to begin a new cycle. For all this to occur, the cow must be in optimal health. Setbacks due to infectious diseases or other health conditions adversely affect the cow's ability to become pregnant and to successfully raise her calf. Therefore, knowledge of preventive medicine programs, along with an understanding of the various health problems that can affect the cow, are critical for the cow-calf producer. This chapter will focus on the health of females returning to the breeding herd after calving.

Specific Health Issues in the Cow Herd **Reproductive losses**

Normally, cow-calf producers can expect minimal reproductive losses (no greater than 2%) after the cow's pregnancy has been established 42 days. Many infectious and non-infectious conditions can result in pregnancy loss after that, however. Non-infectious causes include certain toxins, such as exposure to pine needles or high nitrate levels in feed or water.

Infection with certain viruses, bacteria, and protozoa can result in pregnancy loss. Viral causes of abortion include Bovine Viral Diarrhea Virus (BVDV) and Infectious Bovine Rhinotracheitis Virus (IBRV) infections. Both are commonly encountered in cattle populations. Infections with either virus can cause problems with the estrus cycle, early embryonic death and late-term abortions. In addition, BVDV is associated with the birth of calves persistently infected with BVDV and congenital birth defects.

Bacterial abortions can result from bacteria passed from other animals or encountered in the environment. Leptospirosis is caused by *Leptospira borgpetersenii* serovar *hardjo* type *hardjo-bovis* and *Leptospira interrogans* serovars *hardjo*, *canicola*, *pomona*,

Key Points

- Health of the mature cow is fundamental to her reproductive and maternal performance, and therefore to the productivity of the cow-calf enterprise. Maintenance of health and prevention of infectious disease outbreaks in the cow herd are critical to optimal herd performance.
- Cows can encounter infectious reproductive diseases through contact with other animals or the environment. A sound and safe pre-breeding vaccination program designed with veterinary input is important to help protect the cow herd against these conditions.
- Pre-calving vaccinations during late gestation offer an opportunity to enhance the cow's ability to produce high-quality colostrum when she calves.
- Cows should be closely evaluated at pregnancy-testing time for conditions that will inhibit their future productivity, including the next breeding season.

grippotyphosa, and *icterohemorrhagiae*. These infections can cause early embryonic death as well as late-term abortions and weak calves. The main source of the hardjo-bovis serotype is cattle, while the other serotypes are encountered through contact with wildlife species or contaminated environments on pasture. The bacterial disease vibriosis (caused by *Campylobacter fetus* subsp. *venerealis*) is transmitted during breeding by infected bulls and can result in fetal losses throughout gestation.

A wide variety of other bacteria encountered through the feed or the environment are also implicated in late-term abortions. These bacteria include *Trupeerella pyogenes*, *Bacillus* spp., and *Listeria monocytogenes*, among many others. Problems due to these infections tend to be sporadic rather than widespread within a herd. Abortions due to fungal infections (mycotic abortions) are not uncommon, and are typically sporadic as well.

Protozoal abortion diseases include trichomoniasis and neosporosis. Trichomoniasis is caused by the protozoal agent *Tritrichomonas foetus*, and is transmitted by bulls during the breeding season. Infection typically results in early embryonic death and late returns to estrus, however abortions later in gestation have also been observed. Neosporosis is caused by a protozoal organism that is transmitted to cattle when they eat feed that has been contaminated by feces from infected canines. The canines pick up the parasite when they ingest calf fetuses (or cleanings) that have been aborted due to *Neospora*.

It is not normally necessary to seek a diagnosis for every case of fetal loss, but once a herd approaches a 1-2% level of reproductive loss, a veterinarian should be consulted. Laboratory diagnosis of calf abortions is not uniformly successful, in part due to the lag time between infection and expulsion of the fetus. Diagnostic success is improved when tissues from the entire fetus and placenta are available and sent promptly to the veterinary diagnostic laboratory.

Pinkeye

Cows are not as commonly affected with pinkeye as younger animals, but cases in cows still occur nonetheless. Pinkeye (infectious keratoconjunctivitis) is caused by the bacteria *Moraxella bovis* and other related bacteria. Simple exposure to the bacteria is

not sufficient to induce disease: irritation through dust, tall grass, flies, or sunlight is also necessary, and allows the bacteria a foothold to cause damage to the eye. 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. Commercial as well as farm-specific vaccines are used to protect cattle against pinkeye; however their effectiveness is not dependable.

Cancer eye

Squamous cell carcinoma of the eye is the most common cancer condition of cattle. Older cows and bulls, especially white-faced animals, are most commonly affected. In its early stages, cancer eye usually manifests itself as a small, light-colored flat growth. These growths are most commonly found near the junction of the clear cornea with the white conjunctiva, but can be noted in the eyelids and third eyelid as well. If caught at this stage, cryotherapy (freezing) may arrest the development of the cancer. Once the lesion has grown and invaded other structures of the eye, surgical removal of the eye is indicated. Cows are not candidates for slaughter for the food supply once the cancer has spread to surrounding tissues or has resulted in destruction of the eye.

Footrot

Footrot describes the condition in which damaged skin between the toes has been invaded and damaged by *Fusobacterium nodosum* and other bacteria. The result is a painful, foul-smelling sore accompanied by lameness and symmetrical swelling above the hoof. The bacteria implicated in footrot are commonly found in cattle environments. In order for these germs to gain access to the underlying tissue, an injury (such as a puncture or abrasion) or continual exposure to wet conditions needs to occur. Prompt treatment with appropriate antibiotics is necessary to keep the infection from invading deeper tissues and causing long-term damage and lameness.

Anthrax

Anthrax is a bacterial disease caused by the spore-forming bacteria *Bacillus anthracis*. These spores are regularly encountered in soils and on vegetation in certain areas of South Dakota. Once a cow ingests the spores, they germinate inside the gut and produce toxins that are rapidly lethal for the animal. The clinical signs of anthrax progress so rapidly that affected animals are usually simply found dead on pasture. Cows and bulls are more likely than calves to be affected with anthrax. Clinical disease typically occurs during the hot summer months. While certain areas of South Dakota have a known history of anthrax, the disease has occurred in various locations over the years. Therefore it is difficult to designate any geographic area as “safe” from year to year.

Hardware Disease

Cows can inadvertently ingest a variety of foreign objects while feeding. If these objects are sharp, they can pierce the reticulum (second stomach) of the cow, resulting in local infection that can lead to an infected abdominal cavity (peritonitis) and infection around the heart (pericarditis) that may result in death (“hardware disease”). Signs in cows include pain in the lower chest area, low-grade fever, and reluctance to move or eat. Treatment consists of appropriate antibiotics and administration of a rumen magnet to help prevent the foreign object from moving and causing further damage. Cows are exposed to many potential hardware-causing objects. One documented source is wires emerging from worn-out tractor tires used as feeders. Producers should carefully inspect these feeders for wear, as well as the pasture or lot for other sources of hardware.

Vaginal Prolapse

Prolapse of the vaginal tissue typically occurs late in gestation as the enlarging fetus contributes to an increase in abdominal pressure, especially in cows with large, perpetually full rumens. Once the vaginal tissue is exposed to the outside environment, irritation and swelling result. The cow pushes in response to the irritation, setting up a vicious cycle of tissue irritation and straining. In some cases, excessive straining also results in prolapse of the rectum.

Successful calving is not possible through the prolapsed tissue, so while a vaginal prolapse is not a dire emergency, it should be addressed promptly. In mild cases where a small amount of vaginal tissue protrudes only when the cow lays down, it may be managed by isolating the cow and restricting hay intake. In cases where the prolapse remains out, it must be replaced and secured until calving. This involves a veterinarian giving the cow an epidural anesthetic and replacing the prolapse. The prolapse is then secured through a purse-string suture, a retaining “button”, or other method. If sutures are placed that occlude the vaginal canal, the cow must be closely observed and the sutures removed immediately before calving. Cows with vaginal prolapses are no more likely than other cows to prolapse their uterus following calving.

Once a cow has a problem with a vaginal prolapse, the condition will occur more readily prior to all subsequent calvings. For this reason, and because of the heritability of this condition, the cow should be culled from the herd before the next breeding season.

Cow Management Considerations Prior To Breeding

Vaccination

A number of infectious diseases can adversely affect reproduction in beef cattle. Infectious reproductive diseases can manifest themselves throughout the reproductive cycle, from disruptions of the estrus cycle to late-term abortions to the birth of stillborn and weak calves. Vaccines are available against some of these infectious agents. When used properly, these vaccines boost the immune system of the cow so that the effects of these germs, if encountered, will be minimized.

Reproductive vaccines against the viruses BVDV and IBRV are commonly used in cow-calf operations. Both modified-live virus (MLV) and killed vaccines are available against these common viruses.

Killed bacterins are available against the non-host-adapted *Leptospira* serovars *hardjo*, *canicola*, *pomona*, *grippotyphosa*, and *icterohemorrhagiae* (“5-way leptos” vaccines). Bacterins are also available for the host-adapted serovar *hardjo-bovis*, either as a separate vaccine or in combination with the other serovars. Leptospirosis vaccines are often marketed in

combination with vibriosis (“Lepto-vibrio” vaccines). The widespread use of vaccines against vibriosis is perhaps a reason why vibriosis is a relatively infrequent cause of reproductive failure in beef herds today.

Killed vaccines are available for trichomoniasis. They are not sufficiently effective in preventing infection in cows, but have been demonstrated to improve pregnancy rates in herds that are already infected. Trichomoniasis vaccine is not a substitute for measures to prevent introduction into the herd or to eliminate it if present in the herd.

Many different combinations of the above vaccines are marketed, in MLV and killed forms. Veterinary guidance should be sought when making decisions about products and timing, so that a program specific to the operation’s management and disease threats can be crafted.

Because of the potential effects these pathogens have on early pregnancies, cows should receive reproductive vaccinations before the breeding season. The exact timing of the pre-breeding vaccines should be guided by the product’s label directions. In general, if cows have not been previously vaccinated with the specific product, the initial dose of vaccine should be given no less than 4 weeks prior to breeding, with a booster dose given two to four weeks later. In the case of newly-purchased cows without a credible vaccine history, special care should be taken to avoid giving modified-live vaccines too close to breeding. In animals that have never been previously vaccinated, the IBRV portion of modified-live vaccines may disrupt the estrus cycle if given too close to breeding.

Cow Management Considerations At Summer Pasture Turnout Vaccinations

In addition to pre-breeding vaccinations previously described, in many areas of South Dakota cows should be vaccinated for anthrax prior to turnout on summer pasture. One dose of vaccine is considered protective through the grazing season. Vaccines to combat pinkeye and footrot are also available. Pinkeye vaccines are considered very strain-specific; therefore products containing multiple strains of bacteria are preferred over single strain vaccines.

Still, vaccination failures are not uncommon and questions about efficacy remain. Footrot vaccines contain antigens against *Fusobacterium necrophorum*, one of the bacteria implicated in footrot in cattle. Producers are best advised to seek information from their veterinarian whether these vaccines would be of benefit to cows going to summer pasture for a particular operation.

If multiple vaccines are used simultaneously in cows, attention should be paid to the number of vaccines against gram-negative bacteria. It is advised that no more than two of these vaccines be given to an animal at one processing. These vaccines include those against leptospirosis, vibriosis, pinkeye, and footrot.

Internal Parasite Control

Internal parasites such as the stomach worms *Ostertagia*, *Haemonchus*, and *Trichostrongylus* are commonly encountered on pastures. These parasites have the ability to overwinter on pastures and become sources of infestation for cows and calves upon turnout. When cows and calves encounter the emerging overwintered larval forms of the parasites, they multiply within the animal, adversely affecting appetite and performance while serving as a source for pasture contamination. Exposure to parasite larvae may be diminished if cattle are turned out to pasture after the overwintering juvenile worms have succumbed to summer conditions (late June or July in the Northern Plains). Alternatively, cattle may be treated with a deworming product that protects them from infection through this period, or delaying treatment until several weeks after turnout.

Increasingly, concerns about anthelmintic resistance of cattle stomach worms have been raised. It may become advisable on a long-term basis to leave cows (but not calves) untreated for internal parasites to encourage the establishment of a refugia (population of parasites that have not been exposed to deworming medications and that have not developed resistance) on pasture.

Fly Control

Horn flies and face flies can be significant sources of irritation and decreased production for cows on pasture, as well as a vector for disease conditions such as pinkeye. There are several strategies for

controlling flies in pasture cattle, with highly variable effectiveness. Many times multiple interventions are required for effective control.

Insecticide fly tags are used to help control face flies in cows. There are several different active insecticide ingredients available in fly tag form, and some tags combine chemical classes. Which fly tag to use in a given year will depend on product availability and may be governed by products used in years past, so consultation with a veterinarian prior to applying fly tags is recommended.

Pour-on insecticide products are widely available but lack residual effectiveness and need to be reapplied at frequent intervals (weekly or biweekly). Back-rubbers and dust bags that contain insecticide can be placed in the areas where cattle congregate. Periodic spraying or fogging of cattle on pasture with insecticide provides animals some relief in certain situations. Mineral formulations that include insect growth regulator compounds can also be fed. These feed-through products are deposited in the cow's manure, where they have larvacidal activity.

Cow Management Considerations Following The Breeding Season

Cattle producers are encouraged to employ set breeding seasons after which the bulls are pulled and cows are pregnancy tested. In most cases it is preferable to wait at least 40-45 days following the last possible breeding date before pregnancy testing, in order for late pregnancies to be accurately detected. If ultrasound is utilized to detect pregnancy, that waiting period could be as short as 30 days.

Cows not bred within the set breeding season should be marked for culling from the herd. At pregnancy-testing time, cows should also be evaluated for other conditions that will affect their future productivity. These conditions include, but are not limited to: udder conformation, eye problems, and chronic lameness or other musculoskeletal conditions affecting mobility. Older cows should have their teeth examined at this time. Cows missing all ("gummers") or some ("broken mouth") of their teeth should be carefully evaluated for their future inclusion in the breeding herd, as eventually their inability to maintain body condition will become a

concern. Productivity of the cow (ie, calf weaning weight) should also receive consideration as cows with various conditions are evaluated.

It's at pregnancy-testing time that cows should be marked for further treatment or evaluation of potentially treatable conditions such as abnormal hoof growth, lump jaw, or early indications of cancer eye. These conditions should be evaluated by a veterinarian and a prognosis for successful continuation in the breeding herd should be made.

Spring-calving cows coming off pasture in the fall should be treated with an internal parasiticide product that will eliminate any stomach worms or other parasites they picked up on pasture. It's also at this time that many producers will apply lice-controlling pour-ons. Applications of these products in early fall may not provide protection from lice infestation through the winter. Small numbers of lice are typically present on cattle at this time, but they are in a dormant stage, largely hidden under the legs or in the flanks. Even in treated animals, they may emerge later in the winter once haircoats are more favorable for their ecology, and closer contact with other cattle means an increased opportunity for transmission. Therefore, lice control treatments may need to be repeated later on in the winter, or delayed until significant numbers of lice emerge.

Many operations find it difficult to give reproductive disease vaccines immediately before breeding season, so these vaccines are administered at pregnancy-testing time. While convenient, it is not the optimal time immunologically to boost the immune system against disease conditions they may not encounter for nine more months. On the other hand, the practice likely results in better protection than not giving reproductive vaccines at all. If proper products are used and directions followed, it is a safe practice as well. Killed vaccines are safe for pregnant cows. Several MLV reproductive vaccines are labeled as safe to be given to pregnant cows provided they had been given the same vaccine no less than 12 months previously. When using MLV vaccines during pregnancy, failure to strictly adhere to these instructions can result in significant, sometimes disastrous, pregnancy loss. Moreover, there is sufficient concern over even the labeled use of these

products during pregnancy that the use of MLV vaccines in pregnant cows under any circumstances should be approached with extreme caution and is best avoided altogether.

Pre-Calving Health Management Considerations For The Cow Herd Vaccinations

Late gestation provides an opportunity for the cow-calf producer to enhance the cow's ability to produce high-quality colostrum once she calves. Vaccines containing antigens that stimulate the cow's immune system against neonatal diarrhea pathogens such as rotavirus, coronavirus, *Clostridium perfringens*, and pathogenic strains of *E. coli* can be given to cows in late gestation. The cow begins mobilizing antibodies from her bloodstream into colostrum production approximately five weeks prior to calving. Therefore, administering these vaccines five to seven weeks pre-calving is optimal. Labels on many of these vaccines indicate it is possible to give them earlier than this (for example, at pregnancy testing time), but waiting until later is probably more optimal immunologically.

Clostridium perfringens Type A has been increasingly associated with an increased incidence of stomach bloating, abomasal ulcers, and diarrhea in young calves. Vaccines against the toxin produced by this bacterial type are not present in currently marketed combination scours vaccines. It may be advisable to include Type A vaccine in the pre-calving vaccination program in herds experiencing these issues in young calves.

Cow-calf herds that experience an increased incidence in respiratory disease in young calves may wish to optimize colostrum protection by including vaccines against viral and bacterial respiratory pathogens in the pre-calving vaccine program. Extreme caution should be taken if MLV respiratory vaccines are considered in pregnant cows: producers should obtain veterinary advice about this practice.

Regardless of the specific vaccines used pre-calving, cows that have not been previously vaccinated should be initially vaccinated 4-6 weeks prior to the second dose described above. In herds with long calving seasons, it may be useful to give another booster to cows that have still not calved 4-6 weeks

later, especially if the herd is undergoing calf health issues that could be addressed by boosting colostrum immunity.

Summary

As the foundation of the cow-calf operation, mature cows are depended upon to perform reproductively as well as to raise a healthy productive calf. In order for all these process to successfully occur year after year, maintaining cow health and preventing infectious disease outbreaks should be a priority of the cow-calf producer.

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