

Managing to Prevent Scours

A total management approach — including cow-herd health and nutrition, sanitation, calving management and postcalving management — is the only way to successfully prevent scours.

Story and photos by
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Diarrhea, or scours, is the most common and costly disease affecting baby calves. It is the No. 1 cause of death in young calves. In addition to the economic losses suffered when calves die, scours increases veterinary bills and human effort expended in treating calves.

There are many ways ranchers can prevent or reduce the incidence of scours. Most involve management practices to minimize contamination at calving and to ensure calves obtain the necessary antibodies to protect against disease-causing agents.

Colostrum is crucial

Many veterinarians will tell you the most important thing needed for a calf to develop protection against pathogens it will face during its first weeks of life is to obtain adequate antibodies from

colostrum as soon as possible after birth. The cow has an immunity to most pathogens, and in some instances you can stimulate her to create additional antibodies by vaccinating her prior to calving.

Tom Besser, a veterinary bacteriologist at Washington State University, has done a great deal of work in the field of calf scours and vaccines. While some people try to vaccinate calves after birth with an oral product, he says, “the vaccines that work best — at least experimentally — are the ones where you vaccinate the cow before she calves.”

Still, says Besser, there’s not much point in vaccinating the cow if there’s no passive antibody transfer to the calf at birth. This refers to the calf’s absorption of antibodies from the cow’s colostrum, providing the calf temporary immunity. And it won’t work if the calf does not get

enough colostrum or if it doesn’t get the colostrum soon enough.

As long as there are no complications, the best way to ensure passive antibody transfer is to let nature take its course, interfering as little as possible, says Besser. “Anything that interrupts the normal process of bonding and nursing — anything that slows down this process — has an adverse effect on passive transfer.”

Those first minutes are important; the calf needs to get up and nurse as soon as it can. If you handle the calf, you slow down the bonding process. It will take longer for the calf to nurse, especially with first-calf heifers that may be timid or wild.

“In most cases, I don’t believe in ... grabbing the calf as soon as he’s born to give him a shot of selenium, weigh him, tag him or whatever,” says Besser. “It’s better to wait a day. You’ll get far better passive transfer by waiting. I think that even the five to 10 minutes it might take to jump in and process that calf has been shown to have a significant adverse effect on the nursing of colostrum.”

There are situations that do require intervention. Besser has a checklist of situations in which he would advise the producer to help Mother Nature. “These would be the only times I would get between the mother and the calf his first day of life,” he says.

1. **Dystocia (difficult birth).** If the cow or heifer has a malpresentation or is having trouble with the birth, get the calf delivered as soon as possible, then feed the calf yourself. After a hard birth, the calf is more stressed and is not going to get right up and nurse on its own. It is more at risk for scours, and you must get colostrum into the calf quickly.

“In that situation I like to milk out the cow myself and feed the calf — either with a bottle or force feeding,” says Besser, explaining you can’t tell how much colostrum the calf ingests when trying to get it to suckle.

2. **Bad teats.** “If everything else is normal, but it’s an older cow with distended teats that might be an obstacle to the calf, I make sure he gets the colostrum,” says Besser.

3. **Young, wild heifer.** “If I can tell that the heifer is not going to stick around long enough for the calf to nurse, I make sure it happens,” he adds.

4. **Anything else that might interfere** with the normal bonding, mothering and suckling.

“If you are going to assist, go all the way,” he advises. “Take the colostrum and make sure the calf gets it as soon as possible.”



If the weather has warmed up but the only place a calf has to sleep is in a puddle of snowmelt or on an ice sheet and if it’s using all its energy to stay warm, it won’t be able to fight off scours. “It really makes a difference if calves can get out of the wind and have a dry place to sleep,” says Idaho veterinarian Marie Bulgin.

INSIGHT:

Supplying supplemental colostrum

When a calf can't obtain colostrum from its dam, you need to provide it from another source. Tom Besser, a veterinary bacteriologist at Washington State University, says there are some new colostrum-replacement products that actually have enough antibodies to do some good.

"There have been colostrum products for a long time, but most of them don't have enough antibodies to make using them worthwhile. There is one now, however, that has 30 to 50 grams of IgG (immunoglobulin G), which is actually enough to make a big difference to a calf that otherwise does not get enough colostrum."

Besser says using fresh colostrum from another cow or frozen colostrum is even better than using a colostrum substitute, especially if the fresh or frozen colostrum is from a beef cow.

In terms of general biosecurity, it's safest to use colostrum produced from your own herd, says Besser. Using colostrum from your own herd will help ensure the colostrum contains antibodies to the pathogens to which your calves will be exposed.

"The typical beef cow produces very good colostrum. Dairy colostrum, with the large volume produced, is actually poorer quality. Using dairy colostrum may also be risky, for you might bring in salmonella or some other problem," he says.

You can pasteurize dairy colostrum if you're worried about bringing in new bugs, says Besser. "Pasteurization won't kill the antibodies. They are actually pretty tough."

Freezing has an adverse effect on antibodies, says Besser. Expect a 20% loss in quality through freezing and thawing.

Thawing frozen colostrum in the microwave will cause some loss of antibodies, but not much, he says. "When we tried thawing it in the laboratory, it didn't seem to matter if we put it in a bucket of hot water or microwave; it was absorbed by the calf about the same."

"If kept in the freezer a long time, it will lose some quality, but in the lab we couldn't measure any significant decrease in quality — at least not for a year or two. When faced with a choice of using 5-year-old frozen colostrum or none at all, use the old colostrum."

Keep your tubing equipment — whatever you use to force-feed colostrum or fluid to a calf — clean, reminds veterinarian Marie Bulgin of the University of Idaho's Caine Veterinary Teaching and Research Center, Caldwell, Idaho. Clean it after each use, whether between calves or with the same calf.

"I tell ranchers to buy a case of these [tubes]," she says. "If one develops a hole or breaks, you've always got a spare one. It's a good idea to throw away the old one you used last year; start clean the next calving season."

portant than diagnostics, treatment or vaccination when dealing with scours. You have to work at keeping the pathogens away from the calves, decreasing the pathogen load the calf picks up," he says. "No vaccines will work in the face of poor management."

Barrington says that most of the pathogens that cause calf scours — such as rotavirus, coronavirus, cryptosporidia and sometimes *E. coli* — are shed by the adult cows. The cows themselves have no symptoms because they have developed immunity to the pathogens, but the calf's immune system is too immature to handle them.

He says a few pathogens picked up by the calf will multiply in the gut, turning the calf into a pathogen factory and contaminating the environment. Soon you have a herd outbreak.

According to Barrington, there are certain risk factors that allow this to happen.

"If you have a lot of heifers in the herd, their immunity is different from that of a cow because they are younger," he says. "They are not going to be affected by the bug themselves, but they don't produce as high a quality colostrum. Their bodies are responding to all sorts of new antigens, so even if you vaccinate them, they don't respond to the vaccine as well as the adult cow; the heifers just haven't had the immune experience." A high proportion of heifers in a herd can be a risk factor.

Bulgin agrees. "Your first-calf heifers are often the ones that need the most management," she says. "They are shedding enough bugs into the environment to put other cows' calves — the ones that would not normally get sick — more at risk." She suggests calving the heifers last or keeping them and their calves separate from the rest of the herd.

Poor drainage, as when the ground is frozen, can be a problem, too.

"A lot of these organisms can live for months in a moist environment. Don't calve on your winter feeding area, especially if it's muddy," says Barrington. "The bugs can stay there a long time; it's highly contaminated."

Salmonella and *E. coli* can last a long time in the environment, says Bulgin, and they may overwinter in a damp place like a calving barn that didn't get cleaned out after calving season. "If a barn is wet and cool, the bug may still be there."

An intense stocking rate — too many cattle in a small area — can also be detrimental, contributing to more contamination, explains Barrington. "You need to closely monitor the calving situation, separating the heifers from the cows, and al-

Reduce contamination

Marie Bulgin, veterinarian at the University of Idaho's Caine Veterinary Teaching and Research Center, located at Caldwell, Idaho, reminds ranchers that if they put a cow or heifer in a chute to assist delivery, it's important to keep the chute area clean.

"A dirty chute is a good place to pick up bugs," she points out. A cow may go down while you're pulling the calf, getting manure and contamination on her sides and udder. When the calf nurses, it picks up pathogens from the dirty udder.

Bulgin strongly believes the calf picks up the "scour bug" the day it's born, maybe even before it nurses or before the colostrum is absorbed into its bloodstream. If the calf is born in a puddle, gets up and starts nosing around a dirty cow or sucks a dirty teat, the pathogens get to the gut before the antibodies do.

George Barrington, a veterinarian who works with the Field Disease Investigative Unit at Washington State University, says management factors "to prevent scours in the first place are more im-



Every sick pen (a separate area for a cow with a sick calf) should have a dry, well-bedded place for calves that is inaccessible to cows. A heat source to keep the temperature above 35° will prevent the sick calf from having to expend extra energy to keep warm.

INSIGHT:

Supply water and salt

Ranchers should make sure calves have access to salt and water, advises Marie Bulgin, veterinarian at the University of Idaho's Caine Veterinary Teaching and Research Center, located at Caldwell, Idaho. A calf with diarrhea needs to drink more fluid than it gets from milk alone, and it needs to replace the salts lost from its body.

"If given an opportunity, these calves will drink out of a water trough," she says. "A lot of people don't have water sources a calf can reach. If the calf can't reach the cow's drinking facility, he'll drink out of a puddle and get more bugs."

Fields with young calves should have water sources accessible to the calves, and sick pens always should have low troughs for calves.

A calf will eat salt to replace what it lost through diarrhea. Bulgin says you can mix loose salt. Three parts sodium chloride to one part potassium chloride makes a self-feeding electrolyte mix that calves will readily eat if they need it.

Keep the potassium chloride down to only one-fourth to one-third of the mix. Mixing it as strong as half-and-half will make it too bitter, and calves won't eat it as well.

so separating out the ones close to calving. If the heifers are separate, you can feed them better and also pay more attention to their calves. If you get something going in those calves, you may be able to slow it down.

"Split cattle into groups of 50 or less," he advises.

Bulgin tells producers to have enough land to move cows off their winter feeding areas to fresh ground to calve. "If you can move to a clean field just before calving starts, or just move the cows that are close to calving, then the calves won't pick up the bugs [built up in the previous pasture] when born; they won't be so exposed."

Producers should move the new pairs from the calving area soon after calving, so if a calf does come down with a coronavirus, for instance, it won't contaminate the calving area, says Bulgin.

"A sick calf excretes a thousand times more bugs than a carrier cow does. One calf can do the same amount of contamination as the whole cow herd. So get the calves out of there," she says. "If you move calves out as they are born, you can keep the calving area clean."

A carrier cow will give the bug to her calf — that's going to happen regardless of what you do, says Bulgin. "You can't do much about that; but if you can get her and her calf out of there so they don't contaminate the calving area, then when he comes down with it, he is contaminating an area where the other calves are older and stronger and better able to handle it."

Barrington advises separating and treating sick calves, removing them from the herd so they don't spread the bug, and scattering the rest of the herd on cleaner ground. "You can stop outbreaks of scours by changing area and using a clean place." He advises rotating calving grounds or moving cattle periodically by feeding in different locations, moving the feeders, salt blocks, etc. A wet, dirty calving area, where the cows have dirty teats, is a sure recipe for disaster.

"Right before they calve, move the cows to a clean, well-drained area where no cattle have been for a year," advises Barrington. "The cows should have at least 1,000 square feet (100 square yards) per cow, minimum; ideally it should be double that."

Besser concurs, and says that keeping the calving area as clean as possible is important in preventing all types of scours, especially in preventing a cryptosporidium problem. "If the calf's first exposure is high, he will be a lot more likely to get sick than if he just picks up a few pathogens — enough to cause an infec-

tion but not enough to damage the intestine. It takes these agents a while to amplify and do more damage."

Keeping the cattle on clean ground is crucial, he says, "but some years this can be difficult. ... It can be hard if you have a sea of mud or a 4-foot snowpack and cattle must be concentrated in a small area." In these instances, about all you can do is use lots of bedding and try to keep cows clean to reduce the bugs.

"You can't sterilize the environment, but if you have only one scouring calf per 5 acres instead of one per 50 square feet, this can really help," he says.

Shelter

"You need good bedding, and you also need a windbreak for the calves," says Barrington. It's probably better for a calf to be born out on a clean snowy field, if the wind isn't strong, than in a dirty pen or barn."

Windchill is something to keep in mind, however, since the wet newborn can chill quickly. He says 36° and windy is much harder on a calf than 20° on a sunny, still day. If weather is cold or windy, the calves will be better off born in a sheltered area or a barn.

Bulgin says shelter for young calves is important, especially when calving in high valleys or anywhere there might be cold, windy weather.

"It really makes a difference if calves can get out of the wind and have a dry place to sleep," she says. Even if the weather has warmed up, if the only place a calf has to sleep is in a puddle of snowmelt or on an ice sheet, and if it's using all its energy to stay warm, it won't be able to fight off scours.

She recommends movable calf shelters, constructed so they are inaccessible to the cows, in every field where there are young calves. New bedding should be put in frequently.

Bulgin says every sick pen (a separate area for a cow with a sick calf) should have a dry, well-bedded place inaccessible to the cow with a heat source to keep the temperature above 35° so the sick calf won't have to expend extra energy to keep warm.

Nutrition

Some scour outbreaks are nutritionaly induced, says Bulgin. "The cow herd may be nutritionally deficient before calving. This is a hard thing for some ranchers to understand. A lot of them realize they need to feed hay before calving and boost their cows' feed intakes, but they may not be aware that they have to have a pretty good protein and energy level in



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the feed. If the protein is deficient, there won't be as much colostrum when cows get ready to calve."

Many beef animals are nutritionally deficient when they come in from summer range in the fall, especially a dry fall, she says. If they are pastured on field aftermath, even alfalfa stubble fields, there will not be enough protein or vitamin A unless there's a lot of green regrowth in it.

"The cows may not have lost any weight, but they don't have enough protein in their diet to make a good immune response if you vaccinate them during that period," says Bulgin. "They won't make good colostrum."

"If the cow is deprived of adequate protein or energy, this has an adverse ef-

fect on colostrum, though it tends to reduce the volume she creates more than the quality," adds Besser. "What little she makes is still good; the cow has to be in bad shape nutritionally before there is not enough colostrum to protect the calf."

According to Bulgin, research has shown that cows given vitamin E 30 days before calving have more antibodies in their colostrum and give birth to stronger calves that get up sooner.

Adequate levels of selenium, copper and vitamin E are important to immune function and a big help to the calf, she says. If you live in a selenium-deficient area, for instance, you may want to supplement the cows, or give calves selenium at birth.

These veterinarians feel strongly that total management is the only way to successfully prevent scours.

"The main thing is to keep the bugs away from the calf," says Barrington. "You can boost specific immunity with vaccine, but don't put too much faith in the benefits of vaccine; cows will have some antibodies and specific immunity even if they're not vaccinated. It's most important to make sure you have a clean area for the cows, that they mother the calves, and the calves nurse as soon as they are born."

