

# Managing Calf Scours

Make the most out of prevention and early treatment options.

by Heather Smith Thomas

Neonatal diarrhea in calves, often called scours, is one of the most common and costly diseases in cow-calf operations. While not all forms are preventable, it is important to take steps to reduce the risk.

The major causes of scours are viruses, bacteria and protozoa. These can occur in combination.

## Bacterial scours

“The most common bacterium affecting newborn calves is *E. coli*, though many other bacteria can cause the disease,” says Robert Cope, DVM. “Salmonella, Enterobacter and several other bacteria can be involved, but they are less common and have so many varied serotypes that vaccines may not cover the necessary strains.”

There are also many strains of *E. coli*, which also affect vaccine efficacy.

“The strain of *E. coli* with the K99 antigen is most common among calves, but it’s not the only strain,” Cope says. “Since most *E. coli* vaccines only include the K99 strain, they may or may not protect calves from the specific organism present in their environment. As a result, vaccines may or may not be effective against bacteria on certain farms and ranches, and antibiotic treatment may be necessary.”

## Viral scours

Viral scours are common in some herds. Unlike bacteria, viruses do not live in the environment; they are only present in living animals.

“They are constantly present in carrier adults,” Cope says. “The two most common forms of viral diarrhea are caused by rotavirus or coronavirus. These viral diseases vary greatly in severity, with coronavirus infection being more serious.”

Both viruses damage the intestinal lining.

“The intestines are lined with microscopic, fingerlike structures called villi, which greatly increase the surface area of the gut, allowing more absorption of fluid,” Cope says. “Rotavirus causes villi to shrink, reducing the surface area, and fluid moves through



the gut instead of being absorbed, resulting in diarrhea. This diarrhea usually does not last more than a few days, and the calf generally recovers relatively quickly.”

This is not the case with coronavirus.

“Rather than causing the villi to atrophy, this virus causes total loss of the villi; there is almost no remaining ability to absorb water or nutrients. Unlike treatment for rotavirus, oral fluids are often ineffective in treating coronavirus diarrhea, since the calf has little ability to utilize fluids until the intestinal lining can replenish itself, which can take up to a week,” Cope says.

Rotavirus only affects the small intestine, but coronavirus affects both the small and large intestines, with more severe effects. Coronavirus is especially deadly during cold weather because the calf needs more energy to maintain body heat.

“Death may occur from starvation,” Cope says. “The calf can’t absorb sufficient nutrition to meet its needs.”

Diagnosis without laboratory confirmation is presumptive, but Cope explains the viruses are often fairly predictable.

“Although the age of incidence is variable, it is usually consistent within a herd,” Cope says. “Rotavirus most often occurs at 2 or 3 days of age and is usually a fairly mild disease that responds well to fluid and antibiotic therapy.

“Coronavirus is considerably different. Usually occurring at 7 to 10 days of age, affected calves do not respond to fluid therapy and quickly become depressed and near death, with severe signs of weakness and dehydration. While not a consistent sign, diarrhea sometimes is greenish in color. In either case, calf scours affecting calves in a herd at a consistent age is highly indicative of viral infection, whereas bacterial scours can occur at any age.”

There are some viral vaccines for rotavirus and coronavirus. These are effective, but not a panacea. Viruses are spread by carrier cows, and since they carry the virus throughout their lives, this means these viruses do not cause a strong immune response,” Cope says. He explains, “Vaccine cannot produce a strong immunity. Even so, the vaccine is designed to produce a level of antibodies in the colostrum sufficient to protect the calf from the number of viruses that are shed by the cow in her manure.”

If a calf does not get adequate colostrum, becomes chilled and does not absorb the colostrum antibodies or if the cow does not produce adequate levels of antibodies in her colostrum, the calf may not be protected.

## An anomaly: *Clostridium perfringens*

Some types of bacterial gut infections can produce deadly toxins, causing a calf to die before showing signs of diarrhea. The most common type of enterotoxemia in young calves is caused by *Clostridium perfringens*, which is found in the GI tract and passed in feces. These bacteria rarely cause gut infections in adult cattle but can cause sudden death in calves. If the bacteria starts multiplying rapidly, toxin production can damage the gut.

If this condition is not treated and reversed immediately, toxins exit the damaged gut wall into the bloodstream, causing the calf to go into shock and die within a few hours. If diarrhea does occur, it may contain blood or tissue.

This is different from most cases of scours. The onset of a clostridial gut infection is sudden. The calf may have a distended belly or acute gut pain — getting up and down, staggering around. In some instances, the calf may be dull and bloated and might not die as quickly.

Enterotoxemia is almost always caused by overgrowth of *Clostridium perfringens*: spore-forming, anaerobic bacteria commonly found in soil, water and the bovine intestinal tract. Diagnosis is difficult after a calf dies. Clostridial organisms normally living in the gut can multiply rapidly soon after death. For accurate results, samples must be taken immediately following death.

Accurate diagnosis is essential to determining how to prevent and control future incidence of disease. The best prevention against toxic infections caused by *Clostridium perfringens* is vaccination. **HW**

“Worse, if a calf that is unprotected develops viral scours, it multiplies the virus by millions and sheds them in diarrhea,” Cope says. “When this happens, even the calves with good antibody levels can’t withstand the numbers of viruses shed by the infected calf. A chain reaction of disease can happen.”

### **Protozoan scours**

Cryptosporidium is a protozoan organism affecting calves and humans — spread by protozoa in feces of infected animals. There are no vaccines for protozoal diseases.

“This is not a severe problem as long as the patient has an effective immune system. In humans, the disease can be fatal to cancer patients, people with organ transplants and those with AIDS,” Cope says. “In cattle, cryptosporidiosis can be fatal to calves with impaired immune systems due to BVD infection, selenium deficiency or protein malnutrition. Good herd health is necessary to prevent this disease, as treatment is ineffective in the presence of immune system deficiency.”

Coccidiosis is another intestinal diarrhea caused by protozoa that can damage the gut lining. It affects calves at least 3 to 4 weeks of age, and the most common symptom is bloody diarrhea. There is no vaccine, but these infections can be prevented if young calves are in a clean, manure-free environment.

### **Treatment**

“While antibacterial drugs are completely ineffective against viruses, they can help prevent secondary infections,” Cope says.

It is important to work with your veterinarian to know which antibiotics might be most effective in various situations.

For coccidiosis, drugs like Amprolium and certain sulfa drugs can be used for sick calves. With older calves, like those that are weaned, medication can be added to feed or water to help prevent sickness. When the whole group is treated, diarrhea development can be prevented.

Dehydration is an urgent problem in young calves with diarrhea. Regardless of the cause of scours, dehydration and resultant acid-base imbalance is often what kills the calf. A calf that becomes acidotic may eventually go into shock and die. The dehydration and imbalances need to be reversed before shock is severe and internal organs shut down.

Producers typically combat dehydration with oral fluid and electrolytes, but may use IV fluids if necessary. Getting fluids into the calf is crucial. Generally, if treatment is started early and before the calf is severely dehydrated and going into shock, oral fluids are sufficient, if administered often. Producers need to determine how dehydrated the calf is, to know if they can turn the animal around with oral fluids or IV fluids. When a calf is about 5% dehydrated, it will be dull and not quite as strong and perky.

Getting a calf to drink oral electrolytes is challenging, so most ranchers will administer fluid via an esophageal feeder or nasogastric tube. You should start reversing the problem before the calf is severely dehydrated. By about 12% dehydration, you could lose the calf. There’s a small window between 5% and 12%, and you must intervene early.

If a calf has scours but doesn’t appear dehydrated, you should still address fluid loss; the calf is losing more fluid than it’s taking in, especially if it feels sickly and doesn’t want to nurse.

Prevention and early action are key to herd health. **HW**

**Editor’s Note:** Heather Smith Thomas and her husband, Lynn, have ranched near Salmon, Idaho, for more than four decades. She also writes cattle articles that appear in numerous U.S. and Canadian cattle publications, including *Hereford World*. She is the author of numerous books, including “The Cattle Health Handbook.”