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Michigan State University Extension Service

Michigan Beef Production

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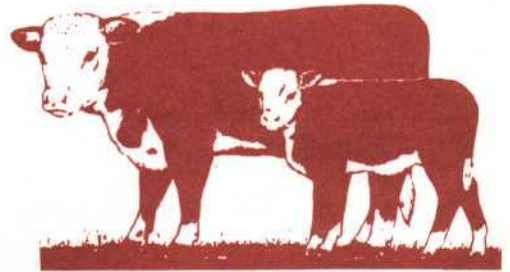
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MICHIGAN BEEF PRODUCTION



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Infectious Calf Scours

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Calf scours outbreaks and losses appear to be steadily increasing. In many herds, this condition has become the major disease problem with a high incidence almost every year. High mortality is reported in a few herds. This greater incidence is most likely due to vastly increased cattle movement which has spread the many different organisms causing scours to virtually all cattle areas.

Recent research has revealed this disease to be very complex, with many known causes, and undoubtedly, more yet to be discovered. Our knowledge of prevention and treatment is still deficient, although continuing research gives hope that more widely effective measures will eventually be found.

Causes

In general, scours occur when a calf's resistance is lowered by some stress enabling a virus and/or bacterium to establish an infection. The infection irritates and damages the gut resulting in diarrhea and, sometimes, extension of the infection to the blood system.

Every calf is repeatedly and often unavoidably subjected to stresses—the fatigue of birth, chilling from wind and/or wetness, severe temperature extremes, underfeeding and overfeeding.

Research has identified several viruses which specifically infect the gut. Rota, Corona (2 strains), and parvo are names of new viruses. The longer known viruses of BVD and IBR have recently been linked with calf scours. Possibly more viruses will yet be identified.

Once a virus is isolated and identified, vaccine development can be attempted. Such work has already led to effective vaccines for the IBR, BVD, rota and corona viruses.

Many types of bacteria are always present in a calf's surroundings, entering the digestive tract of the newborn as soon as it attempts to nurse. These bacteria usually set up secondary infection after a virus infection has damaged the gut. Sometimes, the bacteria can establish an infection directly after some stress has lowered resistance. One particular bacterium (*E. coli*) predominates in scours because it is present in virtually every animal's gut. Furthermore, it exists in many different strains including some that are especially virulent, damaging and resistant to many antibiotics. *E. coli* vaccines are now available.

In spite of this complex picture, the blanks in our knowledge, and the absence of a simple, magical cure, there are many preventive and treatment measures we can use to effectively reduce losses from infectious calf scours.

Preventive Measures

Various measures can be taken to help avoid serious scours problems.

1. Place cows in small groups (10 to 25 cows) well before calving begins. Avoid moving cows between groups and using same area for different groups. Avoid concentration of numbers and overcrowding.
2. Calve outside on protected, well-drained, clean sod, if available. Barns and small crowded lots are most likely places for heavy contamination with scour organisms.
3. If necessary to use barns, keep them scrupulously clean and disinfect as often as possible.
4. Assist calf to nurse or provide with 2 qts. colostrum as soon after birth as possible (best within 6

hours of birth). A calf is born with little specific immunity. Most of its protection is derived from antibodies in colostrum, but calves rapidly lose the ability to absorb antibodies. After 24 hours, the calf can no longer absorb antibodies. Keep a supply of frozen colostrum for emergency use when a calf is too weak to nurse or the mother has no milk or refuses to allow nursing.

5. Treat the navel and cord stump by dipping in strong iodine solution or tincture of iodine as soon after birth as possible. Other commercial products may be as good as iodine but none are better or cheaper. Aerosols and sprays do a very poor job of disinfecting the navel.
6. Do not overfeed calves, if hand feeding is necessary. A calf's total daily milk requirement is 10% of its weight (1 pint per 10 pounds). This amount should be divided into at least 2 to 3 feedings the first day of life.
7. Avoid using antibiotics routinely at birth to prevent scours, unless it is a specific antibiotic *known to be effective* against a specific organism and prescribed for such use by a veterinarian.
8. Observe calves frequently and closely for signs of scours. A full udder is often an early sign of a sick calf. Start full course of treatment immediately. Identify calf for treatment.
9. With multiple cow-calf groups, always feed and handle groups with scours last to prevent carrying disease to healthy groups.
10. Vaccinate cow herd for IBR and BVD and maintain vaccination with replacement heifers.
11. As an aid in preventing rota or corona viral scours, consider vaccinating cow herd twice prior to calving with rota-corona vaccine or vaccinating newborn calf orally within 12 hours after birth. Repeat annually.
12. As an aid in preventing *E. coli* scours, consider vaccinating cow herd with *E. coli* vaccine at 6 weeks and again at 3 weeks prior to calving. Repeat annually.

Treatment

To minimize losses from both deaths and slowed weight gain, it is imperative that proper treatment be administered immediately when a calf is first noticed scouring. Two types of scours occur: very sudden, severe scours in newborn calves during their first week of life, and a less severe form in older calves. The approach to treating these types differs.

Scours in newborn calves is extremely watery, resulting in severe dehydration and body mineral loss within 24 hours of onset. Affected calves become very dull, often refuse or cannot get up, and generally refuse to nurse even when assisted. Many of these calves will die within 12 to 36 hours without treatment.

Treatment of scouring newborn calves can markedly reduce deaths. The objectives of treatment are to stop the scouring by interrupting the infection, to replace the electrolytes lost and to promote healing of the intestine. Treatment consists of selectively using some or all of the following as needed:

1. Oral antibiotic to prevent and control secondary bacterial infection.
2. Oral administration of specific drugs to slow the gut and reduce diarrhea to minimize fluid and mineral loss.
3. Oral administration of fluids and minerals to correct dehydration and mineral imbalance (acidosis).
4. Withholding milk (but not fluids) for 24 to 36 hours to rest the gut and allow healing of damaged tissue to begin. Such starvation must be done early in the course of scours and accompanied by administration of fluids and minerals either orally or otherwise.
5. Administration of minerals and fluids intravenously, under the skin or into the body cavity, to replace those lost through scouring.
6. Administration of nutrients—sugar, protein, vitamins, and minerals—intravenously, under the skin, or into the body cavity to maintain the calf's strength, aid its ability to overcome the virus infection, and repair the damaged gut.
7. Supplying heat to maintain body temperature between 100.5 and 102°F.
8. Systemic antibiotic to help control blood infections.

All these drugs and nutritional supplements are locally available, although some are available only from veterinarians. The process of administration requires judgment and experience, but you can do it if adequate explanation, demonstration and guidance are provided by a veterinarian. Local veterinary practitioners have already successfully assisted many producers. Give it a try. It's worth it. But remember to get help immediately when scours first appear. No one can revive a calf 99% dead, and benefit to you is reduced if you have already lost several calves.

Scours in older calves (one week of age and older) is usually less severe but still requires immediate treatment with oral antibiotics to minimize loss. There are several oral antibiotic preparations locally available and many more available from practicing veterinarians. No one preparation is best in all cases or in all herds. The best approach is to use the product which has worked best for you in the past. If it should fail to give good results this year, change to another antibiotic, preferably with advice from a veterinarian.

Far too many calves are treated for too short a time. The scours may seem to improve with only one treat-

ment only to reoccur a few days later, or scours don't reoccur but the calf continues to do poorly. A good rule of thumb is to continue treatment for one to two days after the scours have cleared up.

If there isn't marked improvement within 48 to 72 hours of treatment, change to another antibiotic product immediately. A drug to slow the gut would be strongly indicated at this point. Such drugs are available through veterinarians and all local practitioners have them.

If the calf becomes dehydrated, dull, lies around and shows poor appetite after a day or two of scouring, then nutritional and replacement treatment as outlined for scours in the newborn calf is strongly indicated.

Dehydration and Its Symptoms

As mentioned above, it is important to prevent dehydration, which results from massive fluid loss, sometimes as much as 10% of body weight. Dehydration is often the cause of death in severe scour cases. In addition to water loss, other problems exist; acidosis and loss of electrolytes, glucose and amino acids. Outward symptoms of dehydration are: (1) sunken eyes; (2) skin fails to immediately rebound when pinched; (3) extremities (legs, ears, mouth) become cooler than normal; (4) haircoat appears dull and has a somewhat matted or displaced appearance in certain areas. These signs are the result of a marked reduction in blood volume.

Methods of Giving Fluids

There are three ways to give fluids to a dehydrated calf: (1) oral; (2) subcutaneous (underneath the skin); and (3) intravenous. If fluid therapy is started early, oral treatment is usually satisfactory. In severe cases, it may be necessary to use the subcutaneous or intravenous method. If the calf is comatose, intravenous therapy may be the only way to save its life. However, intravenous therapy is much more difficult and time-consuming to carry out.

Following are a few guidelines for administering fluids orally: (1) warm to body temperature; (2) give 6 to 8 qts. per day in 2-qt. doses; (3) use an oral calf feeder, which consists of a 2-qt. plastic bag connected to an esophageal tube that has a bulbous end, preventing the tube from entering the windpipe; (4) start fluid therapy early before the calf becomes severely depressed; (5) keep the calf in warm, dry quarters and supply supplemental heat if necessary; (6) in profuse scours cases, it may be advisable to shut the calf away from its dam's milk supply for 24 to 36 hrs. because milk is an excellent medium for the propagation of scours bacteria.

Composition of Oral Fluids

The ideal mix for oral fluid therapy should contain the following electrolytes: (1) sodium; (2) bicarbonate;

and (3) potassium. These electrolytes are the ones lost in large quantities in the scouring calf. For nutritional purposes, glucose (dextrose), neutral amino acids such as glycine, trace elements, and vitamins are also useful, especially if the calf is not nursing. Never use sucrose (table sugar), because the calf cannot digest it. Regardless of the precise formulation, there are numerous recipes that will provide good supportive therapy. The important point is to get them into the calf!

Formulas for Oral Fluids

In addition to commercial mixes, a number of home or drugstore formulations give excellent results. (Each formula represents 1 dosage.)

Formula I:

1 can beef consommé (Campbell's 10½ oz.)
1 package pectin (Sure-Jell)
2 teaspoons low sodium salt
2 teaspoons baking soda
Warm water to 2 quarts.

Formula II:

1 package pectin or 100 cc 50% dextrose solution
1 Tablespoon low sodium salt
1 Tablespoon baking soda
Warm water to 2 quarts

Formula III:

3 cans beef consommé
4 teaspoons baking soda
Warm water to 2 quarts

Formula IV:

½ cup light Karo syrup
½ Tablespoon baking soda
½ Tablespoon regular salt
Warm water to 2 quarts

Formula V:

¼ cup light Karo syrup
1 Tablespoon flour
1 Tablespoon baking soda
1 teaspoon regular salt
Warm water to 2 quarts

Formula VI:

1 teaspoon baking soda
1 teaspoon regular salt
1 teaspoon potassium chloride
½ cup light Karo syrup
Warm water to 2 quarts

Formula VII:

2 Tablespoons baking soda
½ cup light Karo syrup
Warm water to 2 quarts



Figure 1. This severely dehydrated calf has probably lost 10% of his body weight in the form of fluids due to scours. Fluid therapy is needed to prevent eventual death.

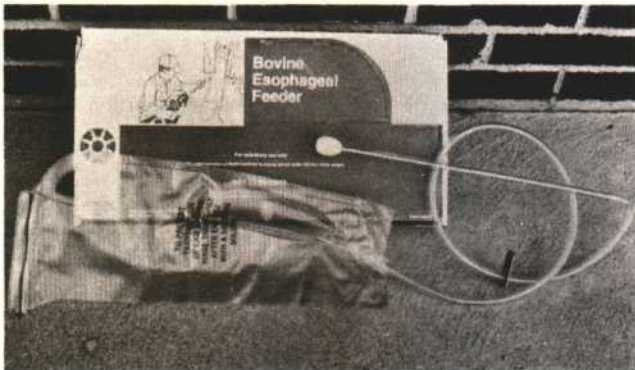


Figure 2. An esophageal feeder is the recommended vehicle for oral administration of fluids to scouring calves. It is also useful for dosing newborn calves with colostrum. The bulbous end of the esophageal tube prevents it from entering the calf's windpipe.

Other Scours — *Coccidiosis (Bloody Scours)*

The preceding discussion has dealt with scours caused by viruses and bacteria. Another common type of scours is a bloody diarrhea, which is usually symptomatic of coccidiosis. The causative agent is a protozoal parasite that invades the lining of the intestines, destroying tissue and resulting in mild to severe hemorrhaging. In addition to bloody diarrhea, a specific symptom of coccidiosis is continual straining and an arched back with no voiding of feces.

Coccidiosis infections in young calves can be a serious problem during the cool, wet months of fall, winter and early spring. It is the third most costly parasitic disease of cattle. Mortality is not usually high, but losses in the form of weight loss and poor performance can be very costly.

Calves are infected by ingesting the coccidial eggs in manure as a result of nursing dirty teats, drinking out of contaminated mud puddles, etc. If cows and calves can be moved to a clean, dry area, there is much less risk of infection. If a coccidiosis outbreak occurs, daily treatment of calves with sulfa drugs or amprolium is indicated. A veterinarian should be consulted for details on dosage level and duration of treatment.

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