



# Understanding Calf Scours

*Disease prevention is never dramatic and always costs money, but in the long run prevention is more economical than cure.*

*This circular discusses the available knowledge on calf scours, as an aid to prevention. Preventing scours will be an economic aid to everyone in Oregon's livestock business.*

Calf scours is a nonspecific term covering a number of noninfectious and infectious enteric (intestinal) diseases which can produce diarrhea, emaciation, dehydration, weakness, prostration, and death. Specific agents range from intestinal parasites to viruses. Occasionally nutritional imbalances, toxic substances, drugs, or stress also may be involved. Often there may be more than one cause. Such complexity makes it impossible to consider calf scours as a specific disease.

In management to control calf scours you must determine the probable cause (or causes). To do this, carefully examine sick animals and make post-mortem examinations of dead animals.

Specimens from sick animals, and fresh carcasses should be examined promptly by a veterinarian for parasitism, poisons, and disease organisms. This can aid treatment, control, and prevention.

A check list whether mental or written, is a useful aid to diagnosis:

1. What is the season of the year?
2. Does the infection follow the pattern of an infectious disease or poisoning?
3. Are the calves free or confined?
4. Is there overcrowding?
5. What are the ages of the affected animals?
6. Does the operation have sound principles of husbandry?
7. Is there adequate protection from weather?
8. Do calves receive colostrum in the first 6 hours of life?
9. How and what are the calves fed?
10. Have the calves been exposed to known pathogens or sick animals?
11. What are the sanitary arrangements, particularly in connection with feeding and housing?

Answers to these questions may suggest what contributing factors are involved. They may also indicate the actions needed to eliminate or control the disease.

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## SPECIFIC CAUSES

### Stress

Most calf scours can be reduced or controlled by management practices that reduce animal stress. Calves held in overcrowded, poorly drained lots or pens, with no shelter and ineffective manure disposal, may experience many scours outbreaks, especially in beef calves. Dairy calves held in close confinement, in crowded calf pens, in poorly ventilated barns with little or no exposure to direct sunlight, also are prone to scours. Improper care or attention during birth, failure to disinfect the naval cord, and failure of the calf to receive colostrum within the first 6 hours after birth promote stress and contribute to scours outbreaks. Poor feeding practices also make calves more susceptible to gut infections and scours.

Most beef calves are born in the late winter or early spring, in weather that promotes stress. On many ranches, cattle are brought together for supplemental feeding at this time and the combined effects of overcrowding, inclement weather, and unsanitary environment can result in explosive outbreaks of diarrhea.

Ranchers and dairymen should review and upgrade their management practices constantly to reduce stress on their animals. Improvement of the conditions under which calves are born and spend their early lives often will lower the severity and number of scours cases.

### Colostrum Deficiency

Newborn calves have no antibodies to prevent infectious diseases. Colostrum (first milk) provides these vital antibodies during the first few hours of life. They can be absorbed by the calf's intestine for only about 12 hours, hence the first day of life is a most critical period to protect the calf against infectious agents. Colostrum is vital. Fortunately, it can be preserved by freezing and fed weak or orphan calves as required.

### Vitamin A Deficiency

Scouring in calves can result from vitamin A deficiency in the cow during pregnancy. This condition usually is seen in conjunction with more severe clinical signs involving other births in the herd, such as abortions, retained placenta, and the birth of blind, deformed, or weak calves. Vitamin A problems can be expected when poor quality hay must be fed to pregnant cattle over a long period. Vitamin A may be administered to the pregnant cow via the feed or by intramuscular injection. The response often is dramatic and the expense is not great. The newborn calf

is devoid of vitamin A and must obtain this vitamin from colostrum or by injection.

### Nutritional Influences

The ration cows receive during gestation has a significant influence on viability and disease resistance of newborn calves. Adequate digestible nutrients and protein requirements should be satisfied; cows should be well fed but not fat.

A deficiency of phosphorus in the ration can contribute to scouring in young calves. The ratio of calcium to phosphorus should be on the order of 2:1. Mineral supplements should be fed to provide adequate amounts and proper ratio of these major mineral elements. Mineral supplementation should be adjusted to the major source of available winter roughage. Deficiency of trace mineral elements such as selenium and copper may occur and influence the general herd health and thus susceptibility to disease. In areas where selenium deficiency has been identified as a factor contributing to scours; calves should receive selenium injections, even though cows have been treated prior to calving. Trace elements should be added to the mineral supplement when it has been determined that their deficiency is contributing to poor health and weak calves.

### Milk Scours

Excessive milk consumption by young calves may contribute to scours outbreak in some herds. Undigested milk particles overload the intestines and promote the growth of bacteria that contribute to scouring.

A slight reduction in the cow's feed intake for a few days following calving will limit milk production and may assist in the control of scours in newborn calves. Cows should be on full feed by two weeks after calving. This practice will assure adequate milk production for the calf, and provide sufficient nutrients for early rebreeding of the cows.

### Umbilical Infections

When birth occurs, the navel cord is broken and remains wet and spongy for several hours. During this time micro-organisms can enter into internal organs of the calf if the cord is not treated with a germicide. Scouring is one of many disease signs that can result from navel infection. Disinfection of the umbilical stump soon after birth is very important. A liberal application of strong tincture of iodine is effective and inexpensive. This practice is particularly important where calves are born in a confined area.

## Coliform Scours

Coliform scours is perhaps the most common and most difficult diarrhea to handle. The disease is caused by bacterial organisms (Coliform bacilli) that normally live in the intestinal tract but have become pathogenic (disease causing) because of lack of body defenses. Coliforms multiply with great speed and if their number becomes excessively high, or when they occur outside the gut, they can cause disease. The feces of calves with coliform scours usually are fluid, light colored, and may become blood tinged. Day-old calves can become infected. The hair coat becomes rough, the nose is dry and crusty, and the eyes are sunken. Dehydration and secondary pneumonia are common. Death losses can be high. Coliform scours are hard to control, but the number of infected animals can be reduced by sanitation, and isolation of infected calves. Vaccines are available to help control scours due to *E. coli*. The cows are injected twice during late gestation and calves derive protection via colostrum.

## Salmonella or Paratyphoid

Salmonella or paratyphoid organisms are often found in calves with scours. These organisms can cause disease in animals and man, and constitute a potential public health problem. These infections usually involve animals moving through stockyards, salesyards, or other congested areas.

Replacement calves often are brought from salesyards to place on cows that have lost their calves. This practice ordinarily will not cause damage, but once in awhile the replacement calf will introduce an infection that can develop into a serious herd problem. To avoid this, the cow and the replacement calf should be isolated from the herd for 10 days and observed for disease signs. If none appear, the animals can be returned to the herd with relative safety.

## Enterotoxemia

Enterotoxemia occurs in many parts of Oregon. In young calves this disease usually is caused by *Clostridium perfringens* Type C. Vaccination can be effective when properly administered and should be done in areas where enterotoxemia is present. Although scouring is not an outstanding clinical sign, it may occur late in the course of the disease. When enterotoxemia is involved, a cattleman usually will find one or more of his best, fastest-growing calves dead, without having shown any signs of illness. Post-mortem examinations of these calves usually will reveal severe hemorrhages in the intestines. Prevention of this disease is the only effective method of control.

## Virus Infections

Several viruses are known to cause diarrhea in calves. This undoubtedly will become a large and complex field as more is known about viral disease. Virus infection is now known to affect coliform scours incidence and losses and to be a direct cause of certain other forms of calf scours. Viruses do not respond to antibiotic therapy, but may be controlled by vaccination. Viral vaccines now available protect newborn calves against specific viral diarrhea. Research may provide additional vaccines to protect against other viruses in the future. Usually viral diarrhea in cattle is relatively mild, but damage to the gut lining may allow entry of bacteria which are always present in the gut. Tests should be made by the diagnostic laboratory to determine if viruses are contributing to a scours outbreak.

## Coccidiosis

Coccidiosis is an important parasitic disease of calves and is quite widespread. It usually occurs in calves over three weeks of age. The outstanding sign is a profuse blood-streaked diarrhea. Since the lower bowel is mainly affected, the blood in the feces is quite red. The rear legs and tail are usually soiled with blood and manure. The parasite spends most of its life cycle in the intestinal lining cells, and destroys them. Response to treatment depends upon the number of cells affected. If the infection is extremely heavy and most of the lining cells are destroyed, the animal will not make a satisfactory recovery. Diagnosis usually can be made by microscopic examination of feces. Treatment by one or a combination of intestinal drugs is specific and has been quite satisfactory. Calves raised in confinement can receive coccidiostats in their feed and these are effective in preventing coccidiosis.

## CONTROL AND TREATMENT

### Control

Since scours in young calves is frequently a combined virus and bacterial problem, the greatest losses usually occur during the last half of calving season, and are more severe in heifers' calves. As the calving season progresses, the virulence and number of infectious agents increase, and disease outbreaks become more common. Even well-managed herds can have serious problems.

When scours occur in a beef herd, pregnant cows should be moved from the contaminated area and dispersed as much as feed and water facilities will permit. The dispersion of pregnant cows often will break the infection cycle and limit the outbreak. Under range conditions, any attempt to disinfect the contaminated area probably will be

futile. In dairy cattle the management techniques usually determine whether disinfection can or cannot be applied effectively.

Under range conditions, calving on sloping ground usually is more advantageous than calving on level areas. The slope usually provides drainage, and if the area remains reasonably dry, calves are not as apt to become devitalized or contaminated by exposure to infective material. A supply of clean water also is needed in the calving lots.

Scours often can be avoided by calving away from corrals, but to give appropriate assistance at calving time, the cattle must be watched as closely as possible. Likewise, if navels of newborn calves are to be treated, the cattle must be accessible. Usually there are areas where cows can be given adequate space during the calving season, and yet held under the control necessary for treating calves and giving other required assistance.

Small portable sheds with openings that will admit calves but not cows, and bedded with straw, provide excellent shelters. Size usually runs about 12 feet long and 8 feet wide. The roof should be high enough to allow the sun to shine on the covered area. Providing the calves with clean, dry quarters will go a long way toward preventing illness.

### Treatment

The "shotgun" approach to treatment of calf scours often is effective if it is applied when the disease first appears. First take fecal specimens for laboratory examination and then treat the sick animals with broad spectrum oral antibiotics, anti-diarrheals, and electrolyte solutions. It is a good policy to treat animals that are seemingly well if they are in close contact with the sick.

Loss of body fluid is the most frequent cause of death from scours. Water excretion is increased as much as 30 times normal. This loss leads to dehydration. In addition to water loss, electrolytes (the salts necessary for normal body function) are lost in large amounts when calves scour.

Treatment of severe scours in calves should be directed toward replacing the water and electrolyte loss, as well as destroying the causative agents. The most effective method of overcoming dehydration is by intravenous treatment. Up to two gallons of water and electrolytes may be administered to a calf intravenously over a 24 hour period. Many veterinarians throughout the west are saving calves with this treatment.

Simple home treatment given by mouth or stomach tube can assist in overcoming dehydration. Scouring calves may be given the following solution at least twice daily instead of milk:

- 1 can beef consomme soup (11 oz.)
- 1 pkg. jam & jelly pectin (2 oz.)
- 2 teaspoons table salt
- 2 teaspoons baking soda
- Add water to make 2 quarts

Calves should be fed this solution together with a suitable antibiotic. After two or three days treatment, or as soon as scouring ceases, the antibiotic is discontinued and milk is slowly introduced. With clinical recovery the calf can be returned to a normal milk diet. The calf's mother should be completely milked out prior to the return of her calf. At no time during treatment should the total fluid intake be below 8 pints daily.

There are several reasons why this system works:

1. The principal cause of death usually is dehydration and shock. Fluid and electrolyte therapy keeps calves alive long enough for antibiotics to overcome the infection. One pint of fluid for every 10 pounds of body weight is about normal daily fluid intake. Fluids may be given orally, subcutaneously (under the skin) or intravenous. It has been determined that fluids given in the abdomen can cause adhesions; therefore, this route is not recommended. Do not use home-made oral fluids other than by mouth; they are not sterile.

2. Do not feed milk during the first 24 hours of treatment. Ordinary milk is a good bacterial feed and continued intake of cows' milk could favor bacterial growth and prolong the scours.

3. Antibiotic or other drug therapy is compatible with fluids and can be directed at the causative agents.

Avoid prolonged use of antibiotics, since they interfere with normal digestive processes. If calves are medicated orally with antibiotics beyond a 48-hour period, it is advisable to feed *Lactobacillus acidophilus* culture after antibiotic medication is stopped.

Give young calves access to clean drinking water and a salt-mineral box. These can be located in a calf creep or shelter area. If they are readily available, sick calves may spontaneously replace some of their lost water and electrolytes.

Without doubt, there are many cases of calf scours where the cause is unknown. It is always worthwhile to examine each outbreak. Autopsy of dead or dying calves is recommended in order to identify factors responsible for the disease. With proper identification, many forms of scours can be effectively and quickly controlled. The saving in time, medication, and calves makes prompt action and thorough investigation of each outbreak economically worthwhile.