



Maximise your herd's potential

DISEASES CAUSING SCOURS IN CALVES.

Scours can be pathogenic i.e. caused by infective agents such as bacteria, protozoa & viruses, or nutritional; for now, let us focus on the infectious causes.

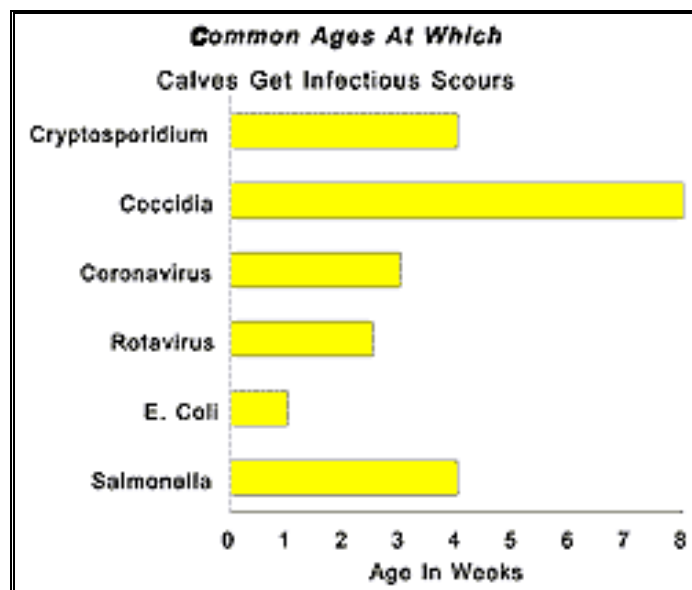
Zoonoses.

An important thing to realise is that several of the infectious agents causing scours in calves are zoonotic. This means that they can cause disease in humans, particularly those with compromised immune systems, such as infants, pregnant women, the elderly and those undergoing radio or chemotherapy. The organisms most likely to cause gastroenteritis in humans are *Cryptosporidium* & *Salmonella*, but precautions should be taken when handling with any sick calves. This is especially true if you are caring for calves and also someone with a compromised immune system.

Can I tell which pathogen is making my calves sick?

Pathogens (germs) causing calf scours can be viruses, bacteria or protozoa. Although the different infective agents tend to affect calves at slightly different ages, it is very difficult to tell what pathogen is causing the problem by looking at the scour material and assessing the clinical signs.

The following table gives the approximate ages at which calves are likely to be affected by different pathogens.



Jim Quigley, Dairy Herd Management, Know the organisms that cause scours September, 1995

Let us deal with these diseases in roughly the order they are likely to affect calves.

Escherichia Coli

This principally causes enteritis (inflammation of the gut) in calves from birth to 7 days of age. Many calves, particularly those who are left to suckle their dams, are exposed shortly after birth because *E. coli* are commonly found in the manure of healthy cows.

The bacteria attach to the lining of the intestine and then produce toxins which cause the intestine to secrete large amounts of fluid which results in diarrhoea, dehydration, and death.

Symptoms are:

- profuse, frequent foul-smelling, yellow/white watery diarrhoea often smeared over the hindquarters;
- rapid dehydration and weight loss,
- depression,
- anorexia (lack of appetite),
- weakness,
- temperature is not elevated initially and drops as the disease progresses.
- death can occur in 3-5 days. It is common for *E. coli* to occur in conjunction with rotavirus, corona virus or cryptosporidiosis.
- it can also cause sudden death in calves under two weeks due to septicaemia or toxæmia and can also infect the lungs, navel or joints.

E. coli is often the cause of “white scours” seen in young beef calves running with their dams. Environmental and nutritional stress (cold, wet windy weather, coupled with lack of available fodder) often precipitate the onset.

If *E. coli* is causing problems in calves it is worth discussing, with your vet, the benefits of vaccinating the cows at dry off.

E. coli can survive in a damp environment for months.

Rotavirus

Rota virus infections typically affect calves between 1 and 21 days old. The disease is characterized by sudden onset and rapid spread.

Symptoms are:

- anorexia,
- mildly depressed,
- watery, pale yellow diarrhoea, sometimes with mucus and blood flecks, which typically lasts only a few days.

If secondary infection does not occur, rotavirus infections are self-limiting. The severity of the disease is often worse in calves that have concurrent intestinal infections caused by other pathogens. Rotavirus is carried by healthy animals and is excreted in their manure. Rotaviruses can persist for months; survival is enhanced by cool temperatures & the presence of organic material.

Coronavirus

Calves most commonly affected by coronavirus range in age from 5-21 days. Coronavirus infections are similar to rotaviral infections except, usually, the clinical signs are a more severe diarrhoea with dehydration and moderate mortality. Calves up to 3 weeks old can be affected.

Clinical signs include:

- sudden onset of diarrhoea,
- moderate depression,
- passage of faeces containing mucus and milk curds.

Typically, corona virus is not the sole infective agent. Infected calves are the normal source of infection to other calves but some animals can become carriers and will continue to spread the virus. Coronavirus is also capable of infecting lung tissues and may produce respiratory signs. Concurrent infections by rotavirus or *E. coli* can escalate the disease.

Cryptosporidium

Cryptosporidium parvum is a protozoan parasite which typically affects calves from 1 -3 weeks of age. Transmission of cryptosporidia is by faecal-oral route.

Clinical signs include:

- loose, watery diarrhoea,
- straining,
- anorexia,
- weight loss,
- depression,
- dehydration.

Morbidity rates are typically high but mortality rates are usually low (i.e. a high percentage of calves become ill but few die). Affected calves begin excreting oocysts (eggs) within a few days and can infect other calves and also re-infect themselves.

Oocysts have a very thick wall and can survive in the environment for prolonged periods. They are resistant to most common disinfectants (including chlorine bleaches and alcohol) and can survive temperatures from 0°C to 65°C. They cannot withstand freezing.

Halocur, marketed by Intervet (Schering-Plough) is a product which has been available in Europe for some years and which has just been released into the Australian market, can aid in the treatment of cryptosporidiosis.

Clostridium

There are several strains of these bacteria which produce toxins that affect the whole body, and cause shock and cardiac arrest. *Clostridium perfringens* is another normal inhabitant of the digestive tract, existing in small numbers without causing disease. Some strains are also found in the soil. It can affect animals of any age and often occurs sporadically in a single animal or group of animals but does not spread between animals.

Abrupt changes in diet resulting in a sudden increase in protein or carbohydrates levels in the intestine, as occurs after over-feeding milk, or gorging on lush pastures or concentrates, disturbs the normal adaptive behaviour of intestinal microbes. This can lead to gut stasis, preventing the normal flushing of toxins and allowing resident bacteria to multiply rapidly and produce large amounts of toxin. Enterotoxaemia results when these toxins damage the intestines, and are absorbed into the bloodstream. The end result of this intoxication is usually rapid death. Often the first sign of a problem is finding a previously vigorous calf dead and bloated.

Death normally intervenes before clinical signs of illness are detected but calves may show:

- signs of bloating,
- abdominal pain (bellowing and kicking at abdomen),
- haemorrhagic (bloody) diarrhoea,
- listlessness or extreme weakness,
- occasionally, diarrhoea may occur, depending on the severity and length of the infection,
- temperature is usually normal or subnormal,
- central nervous system signs such as excitement, trembling, in-coordination, circling, headpressing, recumbency and convulsions lead to coma and death. Calves immediately before or after death lie on their side with the head and neck arched backwards.

Clostridium perfringens Type A has been associated with abomasal ulcers in calves. Control of this disease in young calves is best achieved by vaccinating cows with an appropriate vaccine at dry off; this allows the cow to concentrate large numbers of antibodies in her colostrum.

Salmonella

Salmonellosis usually affects calves between 10 days and 3 months of age.

There are over 2,000 types of Salmonella bacteria but the most common are *S. typhimurium* and *S. dublin*. Salmonella can be transmitted by faecal-oral contamination or aerosolised.

Typical clinical signs of acute salmonella enteritis include:

- fever,
- severe watery diarrhoea, which may contain blood and mucus and which is usually putrid,
- subsequent rapid onset of dehydration,
- initially, calves will have an elevated temperature but this falls rapidly as dehydration progresses.

Salmonella produce toxins that can contribute to gut damage and have systemic effects. If sufficient damage occurs to the intestinal lining, the bacteria may enter the bloodstream, resulting in septicemia, and the bacteria can spread to the brain, lungs, joints, liver and other organs. It can also result in ergot like symptoms, with extremities becoming gangrenous and sloughing off. Survivors of clinical cases of salmonella can become carriers.

Vaccinations are useful in controlling the disease. They should be given to cows at dry off but can also be given to very young calves and can help to mitigate symptoms of the disease.

Salmonella can persist for months in the environment, particularly in damp areas.

Coccidia

Coccidia have a 21 day lifecycle. Oocysts (eggs) must hatch before they become infective. This is why coccidiosis typically affects calves over 3 weeks of age. It, too, is transmitted by faecal-oral contact and typical signs are:

- diarrhoea,
- anorexia,
- dehydration,
- rough, stary coat,
- droopy ears,
- emaciation.

Mild cases have the first 2 signs and are lethargic for a few days.

More serious cases also have:

- straining,
- liquid faeces with blood, mucus and strands of intestinal lining,
- general weakness and lethargy which often make a calf unwilling to rise to defaecate; this results in manure caking the tail and hindquarters, sometimes resulting in flystrike.

Badly affected calves have a very long recovery period, due to the extensive damage done to the epithelial lining of the intestine. Severely affected calves may suffer permanent production losses and it may be more economic to cull them.

Farms which have a problem with coccidiosis should consider feeding a coccidiostat in the milk as well as in the grain, post-weaning.

Coccidia can survive for up to a year in shaded, damp areas. They are readily killed by hot, dry conditions and also by prolonged freezing.

In general

Calf scours are often caused by concurrent infections by two or more of these pathogens.

The duration and severity of illness is determined by:

- the pathogen type and the particular strain of that pathogen causing the disease. Certain strains of pathogens are more toxic than others;
- the infective dose – i.e. how many pathogens in the environment;
- the calf's ability to fight the infection. This is related to the level of immunity the calf derived from colostrum, its nutritional status, the weather, stocking rates and any other stressors affecting the calf at the time of infection;
- the extent of intestinal damage caused by the pathogens.

Ensuring that calves have adequate colostrum intake, are well nourished, have a clean environment and minimal stress will minimise the likelihood of illness.

The only reliable way to identify which organism(s) is causing sick calves on your farm is to take faecal samples and send them off to a lab for speciation. Your local vet should be able to help you do this.