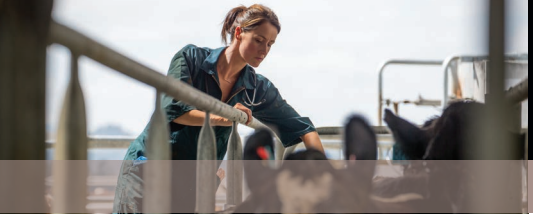


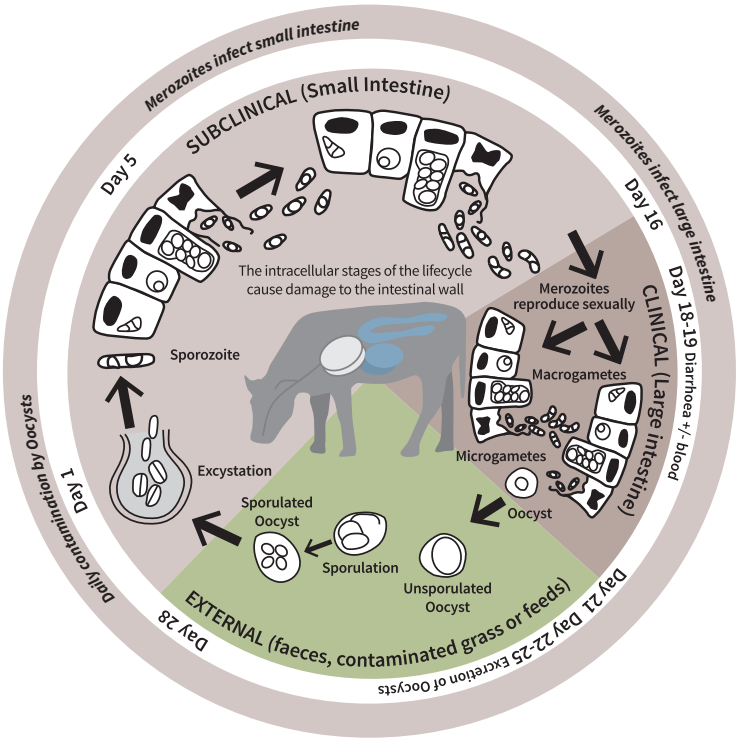


# COCCIDIOSIS IN NEW ZEALAND CALVES

Coccidiosis is an intestinal disease which occurs primarily in young calves aged 3 - 8 months of age. In heavily contaminated environments calves may show clinical signs as early as four weeks of age.

The source of infection is generally from faeces of infected animals that are shedding oocysts. The calves ingest oocysts from contaminated pasture, feed and water or by grooming each other. Dry conditions and high temperatures in the pasture will destroy oocysts within a few weeks. However, under favourable conditions characteristic of many New Zealand farms the oocysts can survive for up to two years.

## COCCIDIA LIFECYCLE




Coccidia are intracellular, protozoan parasites that infect the intestinal tract of many species of animals. *Eimeria zuernii* and *Eimeria bovis* are the most common pathogenic coccidiosis parasites in New Zealand cattle. The coccidia lifecycle is complex, including both asexual and sexual reproduction. The prepatent period is 16 - 22 days, after which sexual reproduction results in the formation of oocysts. These oocysts are passed in the faeces. Provided the environmental conditions are suitable (e.g. moist and cool), the oocysts sporulate within days, and after sporulation they become infective.

## Clinical symptoms

Typically, coccidiosis has high morbidity (sickness) and moderate mortality, with long term effects on growth rates in animals that survive. The gut mucosa becomes denuded and stripped of villi which results in possible haemorrhage and impaired water absorption. The severity depends on the level of infestation and the calf's immune response. The impact of coccidiosis may be heightened via stress, poor nutrition or concurrent diseases.

### Symptoms may be classified as:

Clinical coccidiosis: Blood and mucous stained faeces are often the first sign of disease. Infected calves go on to exhibit severe unproductive straining while defecating. Temperature is mildly elevated (39.0 - 39.5ºC). Dehydration and lack of appetite are common. Faecal staining of the tail, hind quarters and hocks is a strong indication of the presence of coccidiosis.

Severely affected calves typically undergo a convalescence of many weeks, during which feed intake and weight gains are reduced.

Subclinical coccidiosis: Mild and / or chronic cases typically show weight loss (or lower than expected weight gain), with possible anaemia and mild or no diarrhoea. Calves may have droopy ears and rough coats.

## Diagnosis of Coccidiosis

A definitive diagnosis can be made at post-mortem examination by collating gross findings with histology and impression smears.

Laboratory tests for coccidia oocysts are of limited use. The most common method is to use a salt flotation method. Oocyst counts > 5,000 /g are regarded as significant. However, it is worth considering the following points;

- There can be severe damage to the gastrointestinal tract but few oocysts in the faeces (as previously excreted)
- Non-pathogenic oocysts may be present in large numbers
- Oocyst numbers may be under-estimated because of the dilution effect of fluid faeces

Note: if there is a clinical picture consistent with coccidiosis but only small numbers of coccidia oocysts are detected in the faeces it could still be a coccidial infection.

## Coccidiosis outbreaks

Most calf meals contain a coccidiostat such as monensin or lasalocid (which suppress coccidia but do not kill them) so the infective coccidiosis challenge remains low. The calves have little opportunity to build up immunity against the parasite whilst they are fed meal containing adequate levels of the coccidiostat. The cessation of meal feeding (often at two to four months of age) is often associated with coccidiosis outbreaks approximately four weeks later. This is because naive calves are exposed to a high infective coccidiosis challenge especially if the same 'calf paddocks' (typically seeded with coccidial oocysts) are used each year.

Transport to grazing and an associated feed change may increase the stress on the calves, and the incidence of coccidiosis. Rotational grazing during the post weaning period reduces the challenge whilst the calf is building up immunity.

## Metaphylactic treatment with toltrazuril

The incubation time for coccidiosis is 2 - 4 weeks so both subclinical or clinical coccidiosis commonly occur approximately four weeks after weaning from meal. Prophylactic or metaphylactic drenching of calves with oral toltrazuril (e.g. Toltrox 5%) at weaning from calf meal is an effective preventative treatment for coccidiosis.

Toltrazuril is coccidiocidal and thus kills all the intracellular stages of the Eimeria parasite and is effective at reducing oocyst counts in treated calves to very low levels[1]. Even when faecal oocyst counts indicate a low level of infection with coccidia there is a consistent weight gain advantage of 3kg to 5kg during the five weeks after weaning in calves orally dosed with toltrazuril (20mg/kg)[1].

## Summary

Coccidiosis in calves is an important disease that has a damaging effect on the gastrointestinal tract. Animals eventually develop immunity to the parasite but there is a significant cost from infection that affects gut health and productivity of the young, growing animal.

Metaphylactic use of toltrazuril following weaning from meal kills all stages of the coccidia lifecycle, prevents disease, and maintains calf health and productivity over this important period.

## References

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[2]DairyNZ Calf Rearing Fact Sheet 2.9. Coccidiosis

[3]Laven, R. 2008. Clinical Forum: Coccidiosis in calves at grass: an intractable problem? UK Vet – Vol 13, No 2

[4]Mundt, C., Bangoura, B., Mengel, H., Keidel, J., Daugschies, A. 2005. Control of clinical coccidiosis of calves due to Eimeria bovis and Eimeria zuernii with toltrazuril under field conditions. Parasitol Res 97:S134–S142

[5]Veronesi, F., Diaferia, M., Viola, O., Fioretti, D. 2011. Long-term effect of toltrazuril on growth performances of dairy heifers and beef calves exposed to natural Eimeria zuernii and Eimeria bovis infections. The Veterinary Journal 190, 296–299

## About Toltrox

Toltrox is an oral suspension containing 5% toltrazuril for the treatment and prevention of coccidiosis in cattle up to 9 months of age caused by *Eimeria bovis* or *Eimeria zuernii*

Dose for cattle is 3mL Toltrox per 10kg liveweight, dosed orally

For the treatment of clinical disease, treat all affected and in-contact animals

For prevention of coccidiosis treat prior to the expected onset of clinical signs, or at weaning, when meal feeding ceases

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