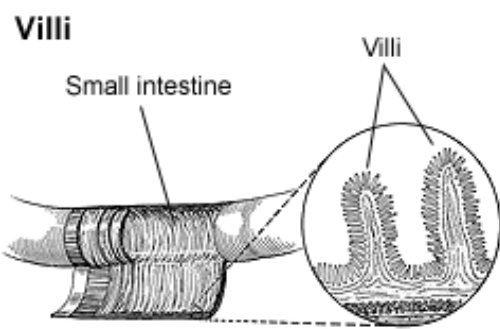


Rotavirus

On-Farm
Research

Key Points

1. Rotavirus is spread via faeces and can even be airborne. Infected calves scour out huge numbers of virus particles and the level of contamination may increase very rapidly.
2. It cannot be controlled by antibiotics.
3. Control strategies involve vaccinating cows, ensuring calves get colostrum and maintaining good spraying regimes and hygiene within the shed.
4. Critical to identify and start treatment early. Signs include a pale yellow scour and reluctance to feed.
5. Isolate sick calves if possible. Feed milk and electrolytes with at least two hours between a milk feed and feeding electrolytes. If necessary tube feed electrolytes.
6. Disinfect pens regularly.



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Calf Rearing Fact Sheet 2.4

General

- Rotavirus is the biggest animal health issue facing calf rearers with some experiencing death rates as high as 30%. It can be devastating and demoralising.
- Rotavirus is persistent in the environment, and can remain infectious for many months at room temperature. It can withstand low temperatures and high humidity on non-porous surfaces like plastic and concrete.

What is it and how does it kill calves?

- Rotavirus infects and destroys mature cells from the tip of the 'villi', which are the tiny, finger like projections on the surface of the small intestine that help absorb nutrients.
- Absorption of milk and electrolytes is reduced and the damage to the intestinal cells means that fluid is lost from the intestine, further compounding the dehydration. It is this dehydration that generally kills the calf.
- Scouring continues until the villi inside the small intestine are again covered with mature cells that allow normal digestive-absorptive processes to resume.
- Rotavirus also increases the concentration of calcium in the intestinal cells which acts like a toxin and leads to the characteristic pale yellow scour of Rotavirus.

How is it spread and what are the signs?

- Rotavirus usually affects calves less than 3 weeks old and is primarily spread by infected calves shedding large quantities of the virus. Other calves ingest faecal matter or inhale virus particles. Incubation time depends on the level of environmental challenge the calf is exposed to but is typically between 24 - 48 hours.
- The most obvious sign of Rotavirus in calves is a pale yellow scour, often rancid smelling. This scouring leads to fluid loss, electrolyte loss and dehydration.
- Initially Rotavirus will need to be confirmed with a lab diagnosis but experienced rearers generally make a diagnosis very quickly. The key to managing an outbreak is early identification of infected calves so that they can be isolated and treated promptly with electrolytes.
- During each feed it is important to cast an eye over each calf to identify any potential signs of illness. These may include-
 - Hanging back from the feeder/reluctance to come in and feed
 - Reluctant to drink, fussing with teat, coming off teat
 - Drinking slower than normal
 - Wet tail
 - Pale yellow scour – can sometimes be watery and/or bloody.

- Most calves that die, do so from loss of water and electrolytes, rather than from direct action of rotavirus itself. This means rapid treatment with electrolytes is critical.
- Animals may continue to shed the virus in their faeces even if they are not showing clinical signs.
- Calves do not become “immune to rotavirus” so they can get re-infected. However, because calves are older, the second infection is usually less severe.

Treatment

- Treatment with large volumes of electrolytes is labour intensive and time consuming- and not always effective particularly with younger calves. Even if the animals do recover, they will still shed large numbers of virus particles into the environment, potentially infecting healthy calves. Recovered calves may have slower growth rates and be more susceptible to other diseases.
- Feed large volumes of electrolytes but don't stop feeding milk as it is important to keep the calf's energy levels up. Many electrolytes contain sodium bicarbonate that alter the pH in the digestive tract and adversely affect milk absorption, so milk and electrolytes should be fed at least two hours apart.
- As a general rule, calves in the sick pen need as much electrolytes as you have time to get into them.
- While only small numbers of calves are infected isolate the calves being careful to disinfect any equipment used with sick calves. Don't go straight from the pens with sick calves to pens with healthy calves – clean boots and overalls.
- Spray pens with a virucide if sick calves have been removed. This should help protect the remaining calves in that pen.

How do we prevent Rotavirus?

- Unfortunately there is no silver bullet although vaccinating cows against rotavirus and then feeding calves with colostrum and milk from these cows certainly helps. The risk period for the incidence of Rotavirus infection generally occurs between 5 and 14 days of age when the passive immunity from the dam is wearing off and the calves own immune system has not fully developed. Antibodies in colostrum can continue to provide limited local immunity in the gut (even though they can't be absorbed through the calf's gut) so feeding of colostrum from vaccinated cows will help prevent the development of rotavirus.
- The timing of rotavirus on dairy farms often coincides with stored colostrum running out.
- Ensure the shed is thoroughly cleaned out at the end of each season and sprayed with a virucide solution. To reduce the virus contamination to a minimum, spray the shed every 3-4 days with a virucide solution throughout the risk period (i.e. until the youngest calves are at least two weeks of age).
- Many solutions are suitable for spraying over calves. Maintain a high standard of cleanliness in the shed and thoroughly clean and disinfect equipment such as feeders, especially equipment used in the sick pen.
- Avoid visitors to the calf shed. If calves are coming from a number of sources, pen calves from the same farms together and group calves according to age.

Our experiences

- One year we experienced a rotavirus outbreak on the 13th August. There were 435 calves in the shed ranging in age from new arrivals to calves which had been in the shed for 21 days. Within 3 days of the first case of rotavirus being diagnosed it had spread through the shed, with calves in all pens affected. Younger calves were hit the hardest but even the oldest calves were affected. However, older calves recovered and we had no deaths in the calves aged two weeks or older.
- In total, 46% of the calves were affected and at the peak we were treating over 80 calves.
- The shed was so contaminated that it became impossible to isolate calves so we stopped trying and concentrated on dealing with the problem. Most calves were on once a day milk feeding and we continued to feed milk in the mornings. At the morning feed, any suspect calf received a coloured neck band which meant it needed close monitoring. Any calf that had a wet tail got a different coloured neck band and was fed electrolytes in the evening from a bottle. In some cases, most calves in a pen had coloured bands and it was just as easy to feed electrolyte to all the calves in those pens. Any calf that was wobbly or couldn't feed received a different neck band and was taken to the sick pen. In total, 8% of calves were relocated to the sick pen and overall shed mortality was 5.4%. Calves in the sick pen were fed milk in the mornings and electrolytes at midday and in the evening (either by tube or bottle).
- Within 10 days we had worked our way through the worst of the outbreak but any new calves which were brought into the shed still went down within 48 hours in spite of regular spraying of the shed. We felt that we had a level of contamination within the shed which was even swamping good healthy calves.
- The only solution was to put new arrivals into a completely different shed.
- It is worth noting that in the same year we had 3 outbreaks of Salmonella. This was quickly recognised as being a different disease. Affected calves were treated with antibiotics and there were no Salmonella related deaths.