

Healthy calves: future of your herd

Ríona Sayers & Emer Kennedy
 AGRIC, Teagasc, Moorepark,
 Fermoy, Co Cork



The 2016 application forms and information packs will be posted towards the end of March

Rearing healthy calves is fundamental to a successful dairy-ing enterprise. Heifer calves represent the future of the herd and high mortality rates are detrimental to herd progress, both in terms of any planned expansion and genetic gain. Neonatal calf diarrhoea is the most common cause of mortality in calves, with calf pneumonia also a serious cause of both morbidity and mortality. Both can be prevented and treated successfully if appropriate measures are implemented.

Neonatal calf scour

Scour in calves results from inconsistent feeding regimes or an infection. Infectious causes of scour are most common and Table 1 outlines common causes and when clinical signs are most likely to occur.

The most important ways to prevent scour outbreaks are:

- Ensuring an adequate volume (three litres) of good-quality colostrum is fed within two hours of birth. Aim for approximately 8.5% of birth body weight, i.e. three litres for a 35kg calf. Use only the first milk from the freshly calved cow – subsequent milkings (transition milk) do not contain enough antibodies to develop the calf's immune system adequately and, as a result, the calf cannot fight off infection.
- Optimal daily feed requirements post-colostrum and transition milk feeding are approximately 15% of calf body weight, i.e. six litres/day for a 40kg calf; below this will lead to reduced growth rates and increased



susceptibility to disease.

c) Practicing excellent hygiene of calf pens and feeding utensils. Keep calf pens clean and freshly top up with dry bedding. A damp, cold calf will be more susceptible to infectious pathogens in the environment. Feed buckets must be kept clean in order to prevent build-up of bacteria.

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Treatment of calf scour

Treatment of neonatal calf scour will involve rehydration, correction of acidosis, and replacement of electrolytes (sodium (Na⁺), Potassium (K⁺), and Chloride (Cl⁻)). Initial treatment of diarrhoea using electrolyte solutions is predominantly carried out by farm personnel, often with little regard for the quality of the formulation or its acid buffering capacity.

Correction of the metabolic acidosis that accompanies episodes of diarrhoea is essential in achieving calf recovery. Some products, while assisting with rehydration and replacement of electrolytes, often fail to effectively correct acidosis, which is essential to recovery of the calf.

Products meeting these requirements will state that they are fit for the "stabilisation of water and electrolyte balance to support the physiological digestion". Products not conforming will state that they are "complementary feeds" only.

Therefore, it is important for dairy farmers to ensure that a product is



appropriate to their requirements, i.e. that it will treat a calf with scour.

Neonatal calf pneumonia

Many of the underlying contributors to calf scour, such as poor hygiene and inadequate colostrum intake, are also implicated in outbreaks of calf pneumonia.

Additionally, inadequate housing with poor or excessive ventilation leads to increased susceptibility of dairy calves to pneumonic pathogens. Good husbandry will greatly assist in preventing outbreaks and housing/management inadequacies should be corrected prior to taking any further preventative action.

Calf pneumonia is a highly complex and multifaceted condition, so much so that in veterinary circles, it is referred to as calf pneumonia complex. Often, multiple viral and bacterial pathogens are involved, which leads to a worsening of the condition. Causative pathogens of calf pneumonia complex are included in Table 2.

Prevention of calf pneumonia is greatly assisted by ensuring you have high-quality calf housing. Good ventilation must be provided and this can be judged by the odour level in housing.

Very strong odours often indicate a build-up of ammonia (from urine) in the calf's environment. Ammonia will damage the protective mechanisms in the calf's windpipe, which

Table 1: Common causes of calf scour on Irish dairy farms with approximate times of occurrence

Cause of calf scour	Age clinical signs commonly appear
Cryptosporidium parvum	First week of life
Escherichia coli	First week of life
Rotavirus	1 to 3 weeks of age
Coronavirus	1 to 3 week of life
Salmonella species	2 to 6 weeks of age
Coccidia	3 to 6 weeks of age

Table 2: Pathogens of calf pneumonia complex

Causative agent	Type of pathogen	Likely contributor	Vaccine available*
Bovine respiratory syncytial virus (BRSV)	Virus	Very likely	Yes
Parainfluenza 3 (PI3)	Virus	Very likely	Yes
Coronavirus	Virus	Likely	Yes
Bovine viral diarrhoea virus (BVD)	Virus	Unlikely**	Yes
Bovine herpesvirus-1 (IBR)	Virus	Likely	Yes
Pasteurella multocida	Bacterium	Very likely	Yes
Mannheimia haemolytica	Bacterium	Likely	Yes
Mycoplasma bovis	Bacterium	Likely	No
Haemophilus somnus	Bacterium	Unlikely	No

* Based on Irish licensing by the HPRA (www.HPRA.ie)

**Due to implementation of the Irish national BVD eradication scheme

prevent the infectious pathogens listed in Table 2 from reaching the lungs.

However, achieving good ventilation is a balance and calves should not be held in a draughty environment. Provision of a deep straw bed and partial pen-roofing to prevent down-draughts will ensure calves can employ avoidance mechanisms to keep themselves warm and dry, essential elements in decreasing the susceptibility of calves to pneumonia.

Probably, more so than calf scour, good biosecurity plays an important role in the prevention of calf pneumonia. A closed herd policy will help reduce the risk of disease introduction to the herd as a whole, particularly in preventing viral introduction.

Vaccines have a very important role to play in preventing and controlling calf pneumonia complex. These vaccines boost the immunity provided to the calf from colostrum and ensure protection should the colostrum provided not contain the required protective antibodies.

Treatment of calf pneumonia

If a case of calf pneumonia is suspected, the calf should be immediately isolated in a warm and dry environment. Calf pneumonia will always require veterinary intervention and the sooner the intervention takes place, the better the prognosis for both the sick calf and the remainder of the calf group.

Pneumonia resulting from viral infections will not be improved by antibiotics. However, it is often prudent to administer antibiotics as secondary

bacterial pneumonias often follow an initial viral infection. These secondary infections are more severe and the prognosis in such cases is poorer.

Finally, it should be remembered that pneumonia is a painful condition. Calves in pain will reduce their feed intake, which will contribute to a worsening of the overall condition. Therefore, pain relief (e.g. an anti-inflammatory) should always be administered with antibiotic treatment.

If feed intake is reduced during the pneumonic episode, an electrolyte supplement will be required. Unlike calf scour, a formulation which corrects acidosis is not required in this case and correction of dehydration is most important.

If it is necessary to assist the calf with feeding, it is essential to remember that these calves may have difficulty swallowing, which may lead to milk/fluids entering the lungs, again detrimental to the calf's condition. If required, feed sick calves slowly and carefully to avoid/minimise aspiration of fluids into the lungs.

CONCLUSION

Good calf husbandry (clean, warm, dry, ventilation, vaccination) will go a long way in preventing serious outbreaks of calf scour and pneumonia. If treatment is required, ensure appropriate products are administered and try to maintain feed intake throughout the period of illness if possible.



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Assessing Scouring Calves

Score	0	1	2	3	4
Demeanour	 Bright, alert, responsive	 Dull, possibly depressed, less responsive	 Dull, depressed, less responsive	 Dull, markedly depressed, markedly unresponsive	 Unresponsive to any stimulation
Ears	Alert and mobile	Slightly drooped	Drooped	Drooped and limp	Drooped and limp
Mobility	Actively mobile and able to stand without assistance or intensive encouragement	Capable of standing and walking independently with a little encouragement	Capable of standing and walking independently but encouragement required	Capable of standing with assistance but unable to walk	Recumbent
Interest in surroundings	Interactive when approached	Interactive when approached	Uninterested when approached	Uninterested when approached	Uninterested when approached
Suck Reflex	Good suck reflex	Diminished suck reflex	Markedly diminished suck reflex	No suck reflex	No suck reflex
Feed intake	Feeding well	Slow to drink and may not finish what is offered	Reduction in feed intake (not finishing what is offered)	No feed intake (not taking any of what is offered)	No feed intake (not taking any of what is offered)
Dehydration	Clear bright eyes	Eyes slightly sunken	Eyes sunken	Eyes markedly sunken	Eyes markedly sunken
Action	None	Isolate for monitoring and treatment Monitor hydration status Continue milk feeding	Isolate for monitoring and treatment Rehydrate Correct blood acidosis and electrolytes Continue to offer milk	Isolate for monitoring and treatment Rehydrate Correct blood acidosis and electrolytes Continue to offer milk	Isolate for monitoring and treatment Veterinary assistance required