Reference: Maier et al. 10.1016/j.vas.2022.100238

Causes

Neonatal calf diarrhea or "scours" is most commonly caused by:

 Exposure to intestinal pathogens

It is triggered or worsened by:

- Poor colostrum intake, failure of passive transfer
- Crowded calving area
- Dystocia and weak calves

Signs

- Diarrhea +/- blood or mucus
- Sunken eyes, cold legs (signs of dehydration)
- Low appetite
- Lying down, not keeping up with other calves, depression, weakness
- Severe disease can lead to death

RISK FACTORS



Difficult calving that requires assistance is more common in heifers or underconditioned cows.



Age

Calf: Younger calves are exposed to fecal pathogens shed by older calves in mixed age groups or overcrowded conditions.

Dam: Heifers should calve first; their calves are at higher risk of scours.



Inadequate colostrum intake Poor immunity from inadequate colostrum intake greatly increases disease risk.

GENERAL STRATEGY

- Work with your veterinarian to diagnose the cause of scours.
- Develop a plan to improve calf management, hygiene, nutrition, and immunity; supportive care, such as electrolyte fluids by mouth, is often preferred to giving antibiotics, unless calves have fever, depression or lethargy. Your veterinarian can help you determine the best treatment protocols for your needs.
- Vaccination works best when used in conjunction with other prevention measures in a herd management plan.



PREVENTION



Adequate cow nutrition

- Calving should occur with a body condition score (BCS) of 6/9 in heifers and at least a 5/9 for cows (Refer to pg. 5 for visual representations of BCS 5 and 6).
 - Malnourished cows and heifers are more likely to have difficult births; calves from difficult births are often more prone to scours.
- Ensure adequate mineral supplementation.
 - This could involve trace mineral status testing and modifying the diet when necessary.

Adequate colostrum intake

- Weak calves at birth that do not stand and nurse after 1-2 hours or calves with a weak suckle reflex may not drink enough colostrum.
- Consider tube feeding calves with colostrum if they have not nursed within 4 hours of birth.
- If colostrum from the dam is not available, feed frozen colostrum or a colostrum **replacer** product.

Note: A commercial colostrum **supplement** cannot fully replace maternal colostrum, as it is designed to only increase the amount of antibodies a calf receives after regular colostrum intake.



Good hygiene in calving area

- Shorten the breeding season duration to decrease the time for pathogen contamination of the calving area.
- Consider using the Sandhills calving system:
 - Move cows that have not yet calved to a different pasture after a percentage of calves are born, to separate calves by age; a good rule of thumb is to move calves to a separate pasture every 7-14 days.
 - Helpful resource: https://www.beefmagazine.com/cowcalfweekly/sandhills-calving-system-scours





Please note: Follow-up testing may be necessary to provide accurate pathogen identification

*bacteria, †viruses, ‡protozoa

	Typical age at onset (in days)	Clinical signs	Vaccine Availability	Notes
E. coli*	1-7	Causes fluid loss from diarrhea or fluid pooling in intestines	Vaccines are available for pregnant dams; oral antibodies are available for calves	Suspect when very young calves die suddenly. The most serious type of <i>E. coli</i> is enterotoxigenic <i>E. coli (identified as F5/</i> K99).
Cryptosporidium‡	5-30	Watery diarrhea, can see mucus, up to 7 days duration	No vaccines are available	Resistant to disinfectants; clean facilities with soap and water and expose to UV light
Coronavirus†	7-10	Severe diarrhea lasting 7-10 days; dehydration, weakness; may see blood in feces	Vaccines are available for pregnant dams and calves	High death rate if other pathogens are also involved
Rotavirus†	14-21	Non-bloody diarrhea lasting 4-8 days; calves may have a fever, be depressed, lie down	Vaccines are available for pregnant dams and calves	
Salmonella*	14-60	Diarrhea with fresh blood and mucus; may also see pneumonia or swollen joints	Vaccines are available but have not shown benefits in field trials. Anecdotally, vaccines for calves lead to improved outcomes.	Antibiotic resistance is common

					Typical	Age at Onset (in a	days)		
Pathogens Involved	E. Coli*	1-7							
	Cryptosporidium‡			5-3	30				
	Coronavirus†		7-10						
	Rotavirus†			14-	21				
	Salmonella*						14-60	0	
	1	5	 7 10	14	21	3	0	60)



Visual description of fecal consistency score. A score of ≥ 2 indicates the presence of diarrhea.

From: Renaud D.L. et al. Technical note: Is fecal consistency scoring an accurate measure of fecal dry matter in dairy calves? J Dairy Sci, 103 (11) 2020







Strive for a body condition score (BCS) of 5 (cows) or 6 (heifers) out of 9, as pictured below, when calving. Pictures and diagram courtesy of Dr. Gaby Maier.



Last 2 ribs visible





Last 2 ribs not visible





