



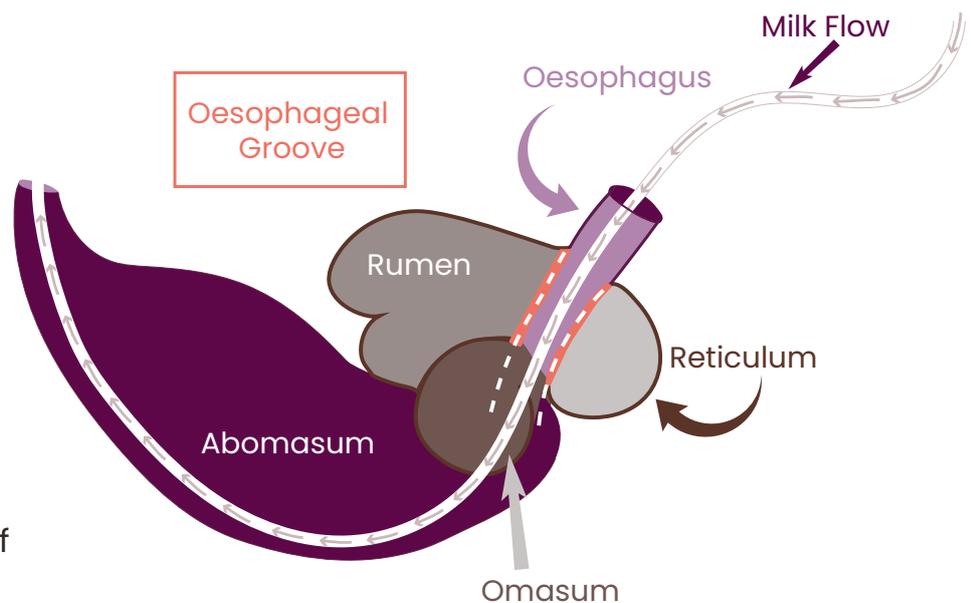
Bloat in Calves

What is Bloat?

Bloat is an over - expansion of the abomasum or rumen due to the gas, produced by normal fermentation of feed, building up and being unable to escape.

Calf Digestion

- When a calf drinks milk, the **oesophageal groove** directs milk into the **abomasum**, preventing it from directly entering the rumen
- Milk empties from the abomasum into the small intestine where the nutrients can be absorbed
- Milk and milk replacer both contain fermentable carbohydrate in the form of lactose (milk sugar) as an energy source



If milk is delayed from emptying out of the abomasum, the gas-producing bacteria present have more time to ferment the milk sugars and excessive gas is produced in the abomasum, resulting in abomasal bloat

If milk flows into the rumen, the gas-producing bacteria present ferment the milk sugars and excessive gas is produced in the rumen. Normal rumen contractions decrease and belching becomes impossible, preventing the gas from being released, resulting in ruminal bloat



Risk factors

Gas-producing bacteria are present in the calf's stomach at all times so other factors are involved. **It can be difficult to identify specific reasons for the causes of bloat but the risk can be reduced.**

Colostrum	
Risk Factor	Reducing the Risk
Inadequate colostrum intake (increases susceptibility to bacteria)	Feed 3L good quality colostrum within the 1st 2-3 hours (as a minimum)
Incorrect technique of inserting oesophageal tube (can damage the vagus nerve responsible for gas ejection)	Preferably use a teat & bottle to feed colostrum
Milk Feeding	
Risk Factor	Reducing the Risk
Failure of the oesophageal groove closure (milk will flow into the rumen)	External stimuli (teats, noises around feeding time - buckets, mixing) stimulate closure of the oesophageal groove
Incorrect mixing of milk powder resulting in the wrong concentration of particles in mixed milk (can slow abomasal emptying & / or cause calves to drink more milk)	Check & review mixing rates (follow manufacturers recommendations) Use weigh scales to make sure the correct amount of powder is being mixed with the water If using a scoop - check the amount on weigh scales regularly as the density of the powder can change Calibrate automatic & computerised feeders regularly
Poorly mixed milk replacer with lumps of unwetted particles present after mixing	Mix milk powder thoroughly
Overfeeding / overeating of milk (can slow abomasal emptying rate) Feeding a large volume of milk (>4 litres) in a single daily feed or intermittently (can result in abomasum overflow & overflow into the rumen)	If increasing milk volume, increase the amount gradually Feed large volumes of milk little & often throughout the day Feed a maximum of 3 litres of milk per meal
Cold milk (can alter milk intake as well as abomasal emptying rate)	Use water to mix milk powder at the manufacturers recommended temperature - ensure water is not too hot Feed milk at body temperature (about 40°C for calves) Use a consistent feeding temperature Check the temperature of the water used to mix the milk & the milk fed with a thermometer
Erratic / irregular feeding times (prevents stimulation of the oesophageal groove closure, & hungry calves will drink quickly or overeat leading to changes in digestion)	Be consistent - if feeding twice a day, it doesn't have to be exactly at 12h intervals but feed at the same time each day, e.g. 8am & 430pm
Diet changes (can slow abomasal emptying rate)	Be consistent & make any changes gradually



Feeding Equipment	
Risk Factor	Reducing the Risk
Worn/old teats with large holes (calves will drink more quickly which can flood the oesophageal groove & milk will enter the rumen)	Ensure feed equipment is in good condition - don't allow teats to develop large holes
Build-up of powder on scoops/mixing bowls of automatic machines (less powder will be mixed resulting in wrong concentration of particles in mixed milk which can slow abomasal emptying)	Ensure scoops are clean, & there is no powder build up on mixing bowls
Dirty, contaminated equipment (introduces & spreads unwanted organisms)	Clean & sterilise feeding equipment
Teat position / height from the ground affecting head position (affects efficiency of the oesophageal groove closure)	Regularly check teat position (66-70cm above floor). It may need altering as the amount of bedding around the feeders increases.
Water and Calf Starter Feed	
Risk Factor	Reducing the Risk
Water provided directly after milk or added to a bucket still containing milk (water will pass into the abomasum since the oesophageal groove will still be closed or will close again)	If using buckets to feed both water & milk - ensure there is no milk left in the bucket, & allow a minimum of 10 minutes after feeding, before replacing the milk bucket with the water bucket.
Unpalatable, dusty, old, wet starter feed (can reduce intakes & delay rumen development)	Provide dry, fresh & palatable starter from day 3
Starter with too much readily fermentable energy (can increase fermentation in the rumen & result in excessive gas production)	Use a specific calf starter feed (either pellet or coarse feed) with a crude protein content of at least 18%
Environment	
Risk Factor	Reducing the Risk
Wet weather (can result in rapid growth of gas-producing bacteria)	Be vigilant
Cold weather (increases susceptibility to disease as more energy is required to keep warm)	Minimise the impact of cold weather on animal health by feeding more milk &/or using calf jackets
Poor hygiene (can result in rapid growth of gas-producing bacteria)	Regularly clean & disinfect feeding equipment Regularly inspect / clean the water bowls
Microbial contamination of water (can encourage bloat causing organisms)	If a private water supply is used (e.g. borehole), consider testing for bacterial & mineral content

Health

Calves that succumb to repeated bouts of scours or respiratory problems are more likely to develop bloat. Discuss the health status of calves with your vet. Certain types of bacteria on farm can result in rapid growth of gas producing bacteria & excessive gas production.



Signs of abomasal bloat

- Normally less than 3 weeks of age – typically 5 to 10 days old
- Fairly rapid (within 1 hour after feeding)
- Primarily the right side (sometimes both sides)
- Refusal to drink milk / stop eating – a calf that doesn't drink its full milk feed should be immediately checked
- Occasional signs of colic (straining or kicking at the stomach)
- Calves may become lethargic, grind their teeth and salivate
- Calves may or may not have diarrhea

Signs of ruminal bloat

- Normally in calves over 3 weeks old
- Abdominal swelling behind the rib cage on the left flank (left side distension)



Risk factors

