

### Introduction

The goal of a grain-fed veal farmer is to achieve the desired finish on veal cattle at the right weight and age. Ideally, market-ready grain-fed veal cattle should weigh between 295 to 320 kg (650 to 705 lbs.) at 28 to 32 weeks (seven to eight months) of age. To achieve this goal, it is critical to have the right feed rations and ratios.

Veal is defined as cattle of any dairy breed or dairy crossbreed dressing no more than 190 kg (419 lbs.). This converts to a live weight of roughly 349 kg (769 lbs.), which is reached at approximately eight months of age. Producers are strongly encouraged to target a dress weight of 180 kg (397 lbs.) to maintain some flexibility within the system to manage veal carcass weights.

- Average daily gain (ADG) should be 1.2 kg (2.6 lbs.) or better. Targeting daily gains above 1.5 kg (3.3 lbs.) may require additional nutrient requirements.

Grain-fed veal cattle are fed a balanced ration based of grain (usually clean, whole-shelled corn) and pellets made of protein, vitamins, and minerals. A small amount of fibre should be offered daily to maintain rumen health. Cattle should also have continuous access to their feed, to encourage slower eating and stimulate chewing. Ensure there is adequate bunk space for each animal.

### Bloat

A variety of factors can contribute to bloating in cattle, including feed ingredients, feed temperature, changes in feed, dirty feeding equipment, the amount fed (gorging), feeding frequency, water availability, weather, fines, stress, and possibly pneumonia, although it is worth noting that any of these in themselves do not cause bloating.

Susceptibility to bloat is variable and genetics may play a role. Some cattle may be predisposed to the condition, with some of them becoming chronic bloaters. As the gut develops in the pre-weaned calf, bloat can affect either the abomasum (the last of the four stomach compartments) or rumen (the first of the four stomach compartments).

Abomasal bloat in the pre-ruminant calf often progresses rapidly and can be life-threatening. The rapid growth of organisms will result in the production of excessive quantities of gas that cannot escape the abomasum. This causes organs to become compressed and reduces blood flow, resulting in asphyxiation and heart failure. The abomasum may become distended within one hour of feeding and death can occur minutes later.

When adult cattle bloat, gas becomes trapped in the rumen. Often, passing a tube through the mouth into the rumen can release the gas and provide relief. However, when calves bloat, because gas is trapped in the abomasum, this means that tubing them will not help release the gas, as a tube cannot pass from the mouth through the entire stomach and into the abomasum. It is also ill-advised to insert a needle into the calf's side to release the gas, as this could cause stomach contents to leak into the calf's abdomen. This can lead to infection and sepsis (a bacterial infection in the bloodstream). Sepsis causes organ damage and inflammation throughout the body, which can kill the calf, sometimes very quickly. Work

with your veterinarian to create a protocol for managing bloat in calves, which may include instructions to call your veterinarian immediately if you notice a calf with signs of bloat. Not all calves will respond to treatment and catching cases before they turn deadly can be a challenge. Preventing bloat is the best way to prevent calf loss.

The common factors contributing to abomasal bloat include over-feeding milk or drinking milk too fast, combined with the presence of fermenting bacteria. When excessive gas is produced, the pH of the abomasum becomes more acidic as the sugars are processed and this results in deleterious effects on other bacteria. The result is an unbalanced gut condition that causes bloating.

## Prevention

While there is no consensus on exactly what causes bloat, there are several management practices that can increase or decrease the risk of calf bloat. Here are a few tips to prevent bloat on your farm:

### ***Milk and or milk replacer fed consistently***

The feeding amount, schedule, mixing, water temperature, and milk temperature at delivery (aim for 38°C) should all be consistent each day. Weigh the powder using a scale (don't measure in a cup), and measure water carefully. Make changes gradually when required and be sure all staff is trained to feed consistently.

### ***Milk replacer concentration***

High osmotic concentration (ratio of solids in a liquid) in electrolyte products and milk replacers can cause bloat. Adding more milk replacer powder than directed by the label can lead to high osmotic concentrations. Always follow label directions unless otherwise directed by your herd veterinarian or nutritionist.

If looking to increase milk replacer offered to calves to improve growth or to help them thrive in winter, switch to a milk replacer formulation specifically designed for that purpose. Do not just increase the amount of conventional powder in the same volume of water, this will affect the concentration, leading to nutritional scours.

### ***Feeding temperatures***

Milk and milk replacer should always be fed at body temperature, 38°C. In winter attention should be given to outside conditions. If calves are fed outside, milk and milk replacer will need to be prepared warmer than body temperature to adjust to cold temperatures. It is recommended to use a thermometer and check the milk temperature before feeding to ensure it is being fed at the correct temperature.

### ***Offer water***

The availability of fresh, clean water can reduce the risk of bloat.

### ***Feed multiple times a day***

A large, single daily feeding can upset calves' digestive tracts. Two feedings are better, but three or more smaller, consistent meals are best if this works with your operation's schedule. Automatic feeders are great for offering calves multiple meals without added labour.

### **Feed colostrum**

Failure of passive transfer can increase the risk of bloat. See [calfcare.ca](http://calfcare.ca) for many articles on the importance and benefits of colostrum.

### **Feed quality**

Feeding plant-based milk replacers could also cause digestive problems in calves. Calves less than three weeks old should be fed whey protein-based milk replacers, while older calves can be fed plant-based formulations with more success.

### **Careful electrolyte supplementation**

If calves are being fed electrolytes, the best practice is to add electrolyte feedings between milk meals. Do not mix milk/milk replacer and electrolytes. When calves are being fed electrolytes to replenish lost fluids, condensing milk replacer and electrolytes into one meal will not benefit the calf. Feed milk and electrolytes in separate feedings.

## **Ruminal bloat**

Talk to your herd veterinarian about detecting ruminal bloat and treatment options, which can be as simple as inserting a tube into the esophagus down into the rumen to release the gas or drenching with a baking soda-type product.

Tips to help control the onset of ruminal bloating include:

- Feeding 10 per cent roughage in the diet
- Using straw as a bedding source
- Routinely feeding a sodium bicarbonate product
- Never allowing the feed bunk to go empty

## ***Clostridium perfringens***

*Clostridium perfringens* (*C. perfringens*) is a bacterium in the gastrointestinal tract of calves. It is anaerobic, meaning it does not need oxygen to survive. It is passed through the feces and could be another cause of bloat.

It is naturally-occurring, always present in the gastrointestinal (GI) tract, and can rapidly reproduce and produce toxins in the gut, which can lead to shock when absorbed into the bloodstream.

*C. perfringens* can occur in calves less than two weeks of age up to two months of age, when calves are fed primarily milk.

For further information on *C. perfringens* refer to <https://bit.ly/GFVClostridium>.

## Conclusion

Bloat in calves is most frequently seen in the first one to two weeks of life. Calves may refuse milk, have a distended abdomen (right side or both sides), grind their teeth, kick at their belly, become depressed or lethargic, have droopy ears, and may die suddenly. The time between the first signs of bloat and death can be very quick. Any calf that dies suddenly without explanation should be necropsied (examined by a veterinarian after death) to determine the cause of death and prevent additional cases. In the case of bloat, there are several ways to adjust calf management to prevent additional cases as listed above.

Sudden deaths caused by bloat can be an avoidable if careful attention is paid to calves. Being sure to have set calf care routines and ensuring they are followed consistently and completely will improve overall calf health, welfare, and growth.

## For more information:

As part of your research into starting a grain-fed veal farm, you are encouraged to talk to experienced veal producers, visit their farms (while following strict biosecurity protocols), and attend industry events and meetings. No two veal farms are the same and a lot of valuable information will be learned from each visit and event.

Find VFO website producer resources here: <https://bit.ly/VFOProducerResources>

Find the *Code of Practice for the Care and Handling of Veal Cattle* here: <http://bit.ly/theVealCode>

Find Ontario Ministry of Agriculture, Food and Rural Affairs veal resources here: <https://bit.ly/OMAFRAVealBusiness>

*References available upon request.*

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[@Finishing grain-fed veal in Ontario](https://facebook.com/FinishingGrainFedVeal)

[@Marketing of male dairy calves in Ontario](https://facebook.com/MarketingOfMaleDairyCalves)

YouTube: [Calf Care Corner](https://youtube.com/CalfCareCorner)

[OntarioVeal](https://youtube.com/OntarioVeal)

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