

# When and How to Disbud Dairy Calves



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When *is* the right time to disbud? What methods are the least painful? Why bother with pain relief? This short article looks to answer these questions while providing some of the latest information on disbudding dairy calves. The main take-home message from this article is that disbudding should be performed on calves up to 7 days old with paste, or calves 1 to 6 weeks old with a hot-iron disbudder using short- and long-term pain management protocols developed with your veterinarian.

## Disbudding calves younger than 6 weeks old

Most dairy animals naturally grow horns that must be removed to prevent harm to people and other animals. Horns can be removed from calves while the horn is still in the bud stage (disbudding), or by method of amputation in older animals (dehorning).

The best method of removing horns in cattle is disbudding at the earliest possible age. Disbudding is the removal of the corium while still in the bud phase. The ideal time to disbud is when animals are very young and when the bud is just erupting. This reduces the likelihood of complications, such as infection or bleeding. However, the age that disbudding occurs is also dependent upon the removal technique. These include electric hot-iron disbudding and paste disbudding.

Horns begin to grow at or soon after birth. Horns grow from buds that float freely in tissue while the calf is young. However, at about 2 months of age, the horn bud attaches to the skull and grows as an extension of the skull. Once the horn is attached to the skull, part of the tender sinus above the eyes merges with the horn; consequently making hot-iron or paste disbudding no longer an option. The removal of horns in older animals—referred to as dehorning—is a more painful surgical procedure because of the fusion of the sinus and horn. Dehorning can lead to bleeding and a higher risk of infection. Additionally, if the procedure does not completely remove the corium (horn-growing cells), horn tissue will continue to grow.

The best time for paste disbudding is before 2 days of age, which is when the location of the bud can just begin to be felt. Paste disbudding is best performed as early as possible; after 2 days the calf is more likely to rub the paste off, and is able to balance on three legs to scratch its head. Paste disbudding should not be implemented on animals older than 7 days of age. When the calf is 1 to 6 weeks of age, the best method for disbudding is electric hot-iron disbudding; so it is completed before the horn attaches to the skull. At this young age it is the least painful time for this procedure because the horn is still free floating; however, short and long-term pain management is required.

## **Providing pain relief: anaesthetics and NSAIDs**

There is no doubt that disbudding is a painful procedure. After being subjected to acute pain, calves show increased behavioral responses, such as ear flicking, head shakes, and a change in resting, feeding behavior, and ruminating if older. The ‘stress hormone’ cortisol also increases during and after a painful procedure. Additionally, recent research suggests that calves experience a negative emotional response for up to 22 hours after disbudding. Additional research indicate that many of these behavioral and physiological responses can be reduced or avoided by providing suitable methods of pain relief.

No matter which method of disbudding is used, local anaesthetic and nonsteroidal anti-inflammatory drugs (NSAIDs) should always be used to alleviate pain during and after disbudding. Additionally, sedatives, such as xylazine, can be used before disbudding to ensure ease of handling, and to protect the person and animal from harm during the procedure. Sedatives, however, do not serve as pain relief, only to pacify behavior; therefore, a pain management protocol is still necessary. In the United States, in the absence of compounds specifically licensed for pain relief in cattle, extra-label drug use regulations allow for unapproved analgesic drugs to be administered by or under the supervision of a veterinarian provided such use does not result in a violative tissue residue. Welfare programs, such as the FARM program, require pain management protocols for painful procedures like disbudding.

Local anaesthesia and post-operative analgesics (such as NSAIDs) mitigate pain and drastically reduce the pain response in calves. The most common local anaesthetic is lidocaine, which is only effective in minimizing pain for a short period after injection (about 2 hours). Therefore, a long-acting NSAID such as ketoprofen or meloxicam, should be used to treat pain after the local anaesthetic wears off.

Some of the least painful methods of disbudding are electric hot-iron disbudding with a local anaesthetic at the cornual nerve and around the base of each horn, and paste disbudding with a local anaesthetic near the cornual nerve. Both methods should always be accompanied by a post-operative analgesic, such as meloxicam or ketoprofen (NSAIDs), to treat the longer-term pain after the immediate pain of the procedure has been addressed. Research indicates that calves receiving all 3 medications (sedative, local anaesthetic, and NSAID) have a reduced pain response to caustic paste or hot-iron disbudding procedures.

In summary, calves being disbudded should always have pain relief. We suggest developing a sedation and pain management protocol with your local veterinarian for the extra label use of drugs on calves for disbudding on your dairy farm. A veterinarian must prescribe any extra label use of drugs.

### **Take home messages:**

- Removing horn buds from a calf is much easier and less painful than removing the horn after it attaches to the skull.
- Aim to disbud calves before 2 days of age with paste, or calves 1 to 6 weeks old with a hot-iron disbudder.
- Always use sedatives, local anaesthetics, and NSAIDs when disbudding to improve animal welfare level.

- Develop a sedation and a pain management protocol or a calf care SOP with your local veterinarian.
- Consider using polled genetics.