

Using pain relief on dairy farms

This fact sheet is a reference for dairy farmers to encourage the best-practice use of pain relief products.

It does not constitute advice and in does not replace advice from your veterinary practitioner.

Why provide pain relief?

There is now extensive scientific evidence that husbandry procedures such as disbudding/dehorning, castration, branding and ear tagging are painful for cattle, as are many disease conditions such as lameness, moderate and severe clinical mastitis and dystocia (calving difficulties). Depending on the procedure or condition, pain may be:

- Immediate (phasic) – due to nerve damage at the site of the injury
- Inflammatory (tonic) – with a slower onset and longer duration, and/or
- Long-lasting (chronic; more than 6 weeks) due to damage to nerves and/or inflammation.

Pain relief is the administration of drugs that reduce the intensity and duration of these pain responses and may include local anaesthesia, sedation and anti-inflammatory medicines. General anaesthesia is rarely performed in cattle.

Whilst the use of pain relief is critical for maintaining dairy cattle welfare, practices which avoid the need for painful husbandry practices (e.g. use of polled genetics) and disease prevention should always be considered first.

What are the industry commitments?

The Australian dairy industry via the Australian Dairy Sustainability Framework has committed to the use of pain relief for conditions which are assessed to be painful and for an anti-inflammatory and where possible, pre-operative local anaesthetic to be used for disbudding.

Types of pain relief

Prescription pain relief options

Local anaesthetic (e.g. Lignocaine)

Local anaesthetic is injected close to the nerves that supply the skin and tissues where a procedure is intended to be carried out. It requires skilled administration either by a veterinarian or a trained person under veterinary supervision. Local anaesthetic blocks the immediate phasic pain during the procedure but only lasts for about four hours.

Anti-inflammatories (e.g. Meloxicam, flunixin, ketoprofen, tolafenamic acid)

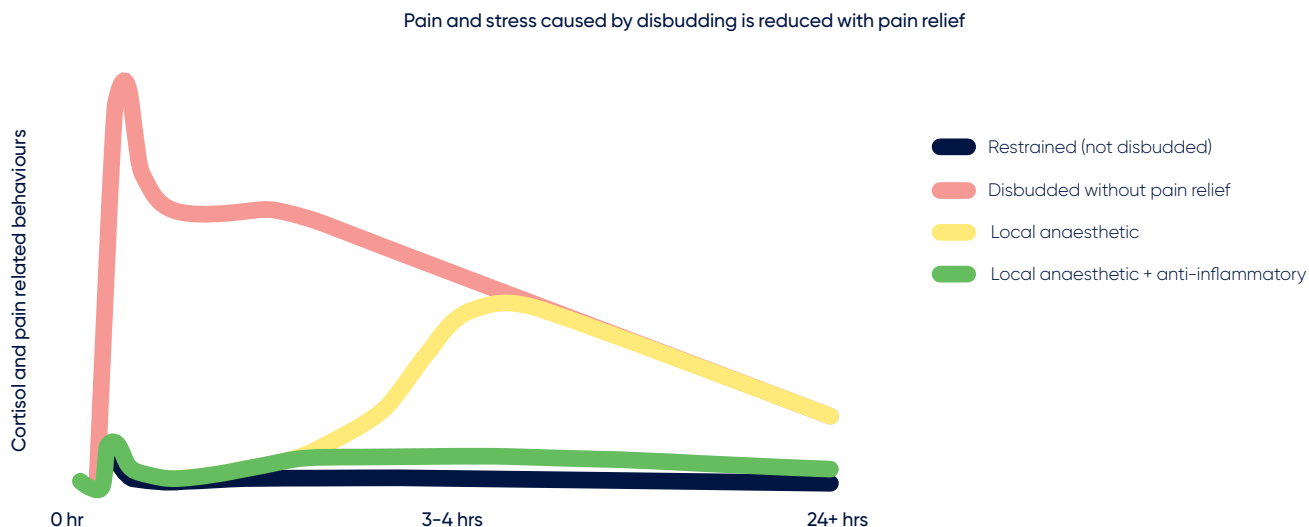
These are slower-acting medicines that are either injected under the skin, into the muscle or given orally in a gel. As the name suggests, anti-inflammatories address inflammatory pain associated with husbandry procedures and diseases such as lameness. They provide longer-lasting pain relief for up to three days. Ideally, anti-inflammatories should be administered prior to a husbandry procedure. Whilst they require a veterinary prescription to access, they do not need to be administered by a veterinarian.

Anti-inflammatories are not effective against immediate (phasic) pain that occurs during husbandry procedures, so pre-procedure local anaesthetic should be used together with anti-inflammatories.

Sedation (e.g. Xylazine)

Sedatives are a medicine that are usually administered by injection into the muscle and result in animals becoming very relaxed and, at higher doses, lie down. They are very effective for reducing stress of handling but also make extra tasks such as vaccination, checking for hernias, collection of genomic samples and removing spare teats easier. Side effects of sedatives include effects on the heart and lungs of treated animals and regurgitation so should only be administered by a veterinarian to healthy animals that have been fasted. Sedative medicines are also only partially effective for immediate (phasic) pain so combination with local anaesthesia is still required.

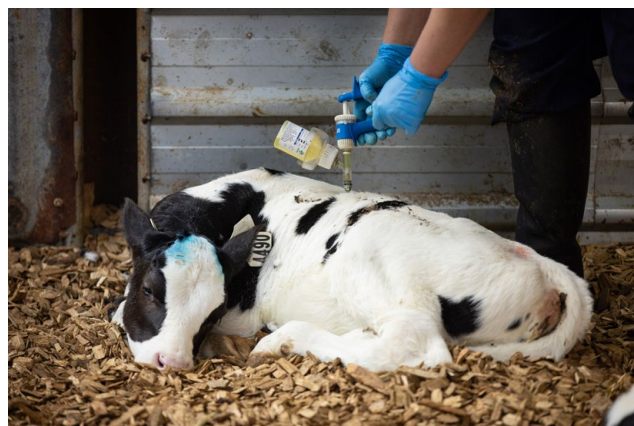
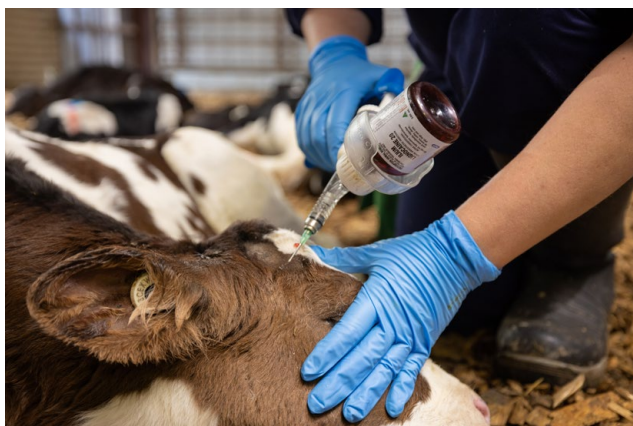
Figure 1 The effect of prescription pain relief options on blood cortisol (stress hormone) levels in calves following disbudding (Image credit: DairyNZ)



Non-prescription pain relief options

Topical anaesthetic (e.g. Trisolfen®)

A topical local anaesthetic product (Trisolfen®) is available without veterinary prescription from both veterinary clinics and rural retailers and is registered for disbudding in calves. The product formulation is a gel containing local anaesthetic, antiseptic and adrenaline (to reduce bleeding) that is sprayed onto the disbudding site after the procedure. It provides up to 24-hour pain relief and reduces the immediate (phasic) pain response rapidly when applied correctly. Because it is administered after the procedure, there is still some pain associated with the procedure, but it is an excellent option where access to pre-operative local anaesthetic is difficult.



























What is the cost benefit of using pain relief?

The use of pain relief does introduce an additional cost to husbandry procedures and treatment of disease. This cost is small (approximately \$2 per calf) for products such as Trisolfen® used for disbudding so cost should not be a barrier to use for this purpose.

In one New Zealand study involving 271 calves, the use of any form of pain relief increased growth rates of dairy calves in the two weeks after disbudding by 120g/day, and this effect lasted up to a month when the pain relief used contained a combination of sedation and local anaesthetic.

Table 1 Approximate cost and relative farm labour needs for various pain relief options for disbudding.

	Sedation + local + anti-inflammatory	Local± + anti-inflammatory	Local only*
Vet	   \$15-20*  	  \$10-15* 	 \$10* 
Technician	N/A	  \$10-15* 	 \$5-10 
DIY	N/A	  \$5-10  	 \$5-10  
Legend			
 Level of pain relief  farm labour needed * per hour ± depending on vet/client relationship			

For adult cattle, the cost of anti-inflammatory pain relief products for painful conditions ranges from \$10 to \$20 per dose depending on the product. The scientific evidence for production benefits is limited, although some studies have reported small improvements in reproductive performance, cure rates and the likelihood of culling in diseased cows treated with anti-inflammatories.

For further information

Bates, A., Laven, R., Chapple, F., & Weeks, D. (2016). The effect of different combinations of local anaesthesia, sedative and non-steroidal anti-inflammatory drugs on daily growth rates of dairy calves after disbudding. *New Zealand Veterinary Journal*, 64(5), 282–287. <https://doi.org/10.1080/00480169.2016.1196626>

S. McDougall, E. Abbeloos, S. Piepers, A.S. Rao, S. Astiz, T. van Werven, J. Statham, N. Pérez-Villalobos (2016). Addition of meloxicam to the treatment of clinical mastitis improves subsequent reproductive performance, *Journal of Dairy Science*, 99(3) 2016, 2026–2042, <https://doi.org/10.3168/jds.2015-9615>.