

## The importance of pain management in dairy cows

### What is pain?

Pain is defined as an unpleasant sensory or emotional experience associated with actual or potential tissue damage. Pain can be physiologic (i.e. pain experienced during calving) or pathologic (i.e. pain resulting from surgical procedure). Pain can also be acute (i.e. short duration that doesn't last any longer than the healing process) or chronic (i.e. long duration that lasts longer than the normal healing process).

### Do cattle feel pain?

It is widely accepted that cattle feel physical pain, however assessment of pain in cattle can be quite difficult. As cattle are considered prey species they are less likely to show signs of pain – it is in their natural instinct to hide signs of pain and illness to avoid being targeted by predators. Some general signs of pain in cattle include decreased feed intake, reduced milk production, isolation from group, getting up and down, vocalization, tail swishing, teeth grinding, shaking, appearing dull and depressed, holding their head low and having little to no interest in their surroundings. In order to help producers find painful cows in their herd during the daily rounds through the barn a pain score chart was developed by Gleerup et al. (2018) (see below a modified version of the pain score chart).

Score	0	1	3
Attention towards the surroundings	Active and attentive	Not attentive	
Head position	Head held high	Lower than withers	Very low
Ear position	Both ears forward/actively moving	Both ears back	Low ears
Facial expression	Attentive or neutral	Tense expression	
Response to approach	Look at observer, head up, ears forward or busy with activity (i.e. ruminating)	Look at observer, ears not forward, leave when approached	May/may not look at observer, head low, ears not forward and may leave slowly
Back position	Straight line	Slightly arched back	Arched back

### How can we manage pain in cattle?

There are different classes of pain medication that can help us manage pain in cattle. These include local anesthetics, non-steroidal anti-inflammatory drugs (NSAIDs), and sedatives. Depending on the case, these medications can be used alone or in combination to control and alleviate pain in cattle.

#### Local anesthetics

Local anesthetics act by blocking pain stimulus from travelling up the nerve. Lidocaine is the most commonly used local anesthetic in cattle. It is commonly used to “Freeze” a cow before a surgery or calves prior to dehorning.

## Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)

During an injury, prostaglandins are produced by COX enzymes. These prostaglandins are involved in the production of inflammation, swelling, pain and fever. NSAIDs act by inhibiting the COX enzymes and thus, preventing prostaglandin synthesis. NSAIDs decrease pain, swelling and fever and improve attitude and appetite. They are often used in cattle for the control of acute and chronic pain. Currently there are three NSAIDs licensed for use in cattle: Ketoprofen, flunixin meglumine and meloxicam.

## Sedatives

A sedative is a drug that depresses the central nervous system causing drowsiness and relaxation. The most commonly used sedative in cattle is Xylazine (Rompun), an  $\alpha_2$ -agonists. Xylazine produces sedation, pain-relief and muscle relaxation; it also offers pain relief by activating  $\alpha_2$  receptors in the brain and spinal cord which reduces the transmission of pain.

## **Why should we manage pain in cattle?**

Over the last decade there has been growing concern about the welfare of production animals by the general public. As a response, the most recent code of practice for the care and handling of dairy cattle has updated some of its requirements regarding pain control during painful husbandry procedures in order to maintain good animal welfare. It is now required to provide pain control during castration, tail docking and removal of extra teats, treatment of acute mastitis, an invasive hoof trim and a surgical procedure. Moreover pain control should also be considered following a difficult calving (cow and calf), during down cow treatment and when dealing with lame cows. In addition to providing pain control, the use of NSAIDs during treatment of diseases or painful procedures has been positively associated with improved production. For example, cows with mastitis that were treated with a NSAID had improved cure rate and fertility rate in the long run and calves provided with pain control at castration and/or dehorning had improved average daily gains. Happier cows and improved production are always good for business!

## References

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