

# Do Cows Experience Pain: All Aches Point to Yes!

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Pain in dairy cows can be difficult to assess. Unlike most people, cows cannot express how they feel. The same is true for babies, yet it is accepted that they experience pain. To assess pain in infants, doctors use cues like physiological indicators, behavioral changes or facial expressions. Dairy producers, veterinarians and researchers can use these same methods to assess painful experiences in cows.

Cows experience pain during parturition, dehorning, lameness and when injured or sick. Among humans, different people have different pain tolerance, and the same may be true for dairy cows. For example, while some cows spend more time laying down during parturition, others walk around and shift position frequently. Additionally, pain cannot be assessed simply by the size of an injury. Injuries can be under the surface or not easily seen, such as sole lesions. In cases of mastitis or disbudding, the pain area is a single quarter or a small spot on the head, but this does not indicate less pain.

Noticing early physiological and behavioral changes can help producers recognize problems before the pain becomes chronic or debilitating. For example, dehorned calves not provided pain management will flick their ears and shake their heads repeatedly to indicate pain. Noticing these behavioral changes, along with redness and warmth of horn buds, gives producers the opportunity to manage calf pain and decrease the risk of future health challenges, like scours. Additionally, a cow with early digital dermatitis modifies her gait slightly as an indication of pain. By recognizing physiological or behavioral changes early, a producer can trim treat the infection before it becomes clinical digital dermatitis. Although it can be difficult to know when cows are experiencing pain, it is important to use available tools to help detect changes associated with pain.

## Available Tools

### *Physiological Changes:*

- There are five symptoms of pain from inflammation: redness, swelling, warmth, pain and loss of function.
- In cows with mastitis, for example, a quarter with mastitis can be assessed by color, heat, swelling and decreased milk production, even if pain cannot be determined.
- Researchers in France observed that cows induced with *Escherichia coli*, a mastitis considered extremely painful, had increased stress and inflammatory response.
- Stress response can occur through two pathways: the adrenal-medullary system, which produces norepinephrine and epinephrine, and the hypothalamic-pituitary-adrenal axis, which produces cortisol.
- The adrenal-medullary system causes a flight-or-fight response and releases adrenaline during stressful or painful situations.

- Cortisol increases more slowly in response to a stressful or painful event but is associated with prolonged experiences.
- Inflammation response can also occur when an animal is stressed. In dairy cows, the response is measured primarily through serum amyloid A and haptoglobin.
- Changes in stress and immune response can also be seen in humans when they suffer a painful injury, such as breaking a leg.

### *Behavioral Changes:*

- Dairy cows are herd animals, so they may hide signs of pain or weakness, making it more difficult to detect acute or long-term pain.
- Researchers in Denmark observed that indicators of pain included:
  - Attentiveness.
  - Head and ear position.
  - Visibility of eye white.
  - Nasal discharge.
  - Chewing and tooth grinding.
  - Vocalizing.
  - Shivering.
  - Abdominal straining.
  - Approach response.
  - Shifting between feet, resulting in increased stepping and kicking.
- Researchers from New Zealand and California determined that disbudded calves and calves given local anesthesia played less than those that were not disbudded or those given an NSAID.

Recognizing pain behavior in a single cow may require previous knowledge of cows' behavior and recognition of changes.

### *Facial Expressions:*

- Facial expressions have been used to assess pain among cattle, horses, rats and rabbits.
- Six facial feature combinations may occur: eyebrows, eyelids, nose, lips, cheeks and ears.
  - For practice, if you pretend you are angry your facial expression includes: brows furrowed, eyes narrowed, nostrils flared and lips tight.
  - But, if you pretend you are in pain, your facial expression changes to: brows furrowed, eyelids partially closed, nose curled and lips tight.
- Researchers from Denmark suggested when cows are sick, they will appear with their eyes partially closed, nostrils drooped, cheeks puffed and ears drooped.
- Facial expressions are not sophisticated enough to distinguish disease from pain.
  - This determination may be challenging for cows with mastitis and lameness, because mastitis and lameness may be both a disease and painful.

## Practical Advice

- The easiest method to evaluate animal pain is through behavioral modifications.
  - Around Parturition — Monitor cows for signs of pain including frequent shifting from lying to standing, increased rubbing against walls, kicking, self-grooming and head turning.
  - When Dehorning — Monitor calves after disbudding/dehorning procedures (one, four, 12, 24 and 48 hours after disbudding/dehorning for changes) for ear flicks, longer lying times and less active calves.
  - Among Lame Cows — Monitor animals for frequent weight shifting, perching, abnormal gait, or increased lying or standing time.
  - With Mastitis — Touch quarter at each milking to assess heat. Watch for increased weight shifting, kicking or decreased quarter milk production.
  - When Sick/Injured — Monitor animals for increased lying or standing time, decreased feed intake, decreased milking time and amount, and abnormal separation from the herd.
- Talk with/train all staff to recognize normal cow behavior so deviations are more noticeable.
- Keep detailed management records to record pain management used and whether or not it was effective. Frequent evaluation of pain management protocol can help track and assess the efficacy of current programs.



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