

Prevention of Lameness: The 4C approach



The **4C approach (comfort, calmness, cleanliness, consistency)** is a set of principles that, when applied properly, can greatly reduce the impact, frequency, and severity of a variety of diseases on your farm, including lameness.

Comfort

Cow comfort is the state of physical ease and freedom from pain, restriction, stress, and/or distress¹. Comfortable cows tend to be healthier, more productive, and less prone to lameness than others.



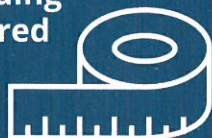
Ensure your cows are lying down an optimal amount of time per day, usually an average of 12 hours per day. A good indicator of cow comfort is making sure your cows are lying down **AT LEAST 12 hours per day**².

Bedding

Deep bedding is best. Comfortable stalls will reduce the development of lameness. Deep bedding also promotes lying for a longer duration and makes it easier for cows to get up and down². Aim for 12-18 inches (30-46 centimetres) of deep bedding with new bedding added at least twice per week (for sand, that's 20-80 pounds of sand per stall per day)².



Mattresses, water beds, gel mats, or rubber surfaces also need deep bedding (a good target is about 2-3 inches). This can substantially reduce lameness⁸. Be sure to provide comfortable stalls and bedding for heifers as well, as required by proAction[®].



Stall and Barn Design

Stall size and design can impact the way cattle use them, affecting lying time, their ability to easily stand up, and overall comfort. Stalls that are used appropriately can help to prevent the development of lameness and injuries. Below are some aspects of stall design that should be considered and monitored for cow comfort:

Brisket Locator or Front Curb:

- These help to locate the cow at the right depth in the stalls to keep them free of urine and manure

Adequate Forward Lunge Space:

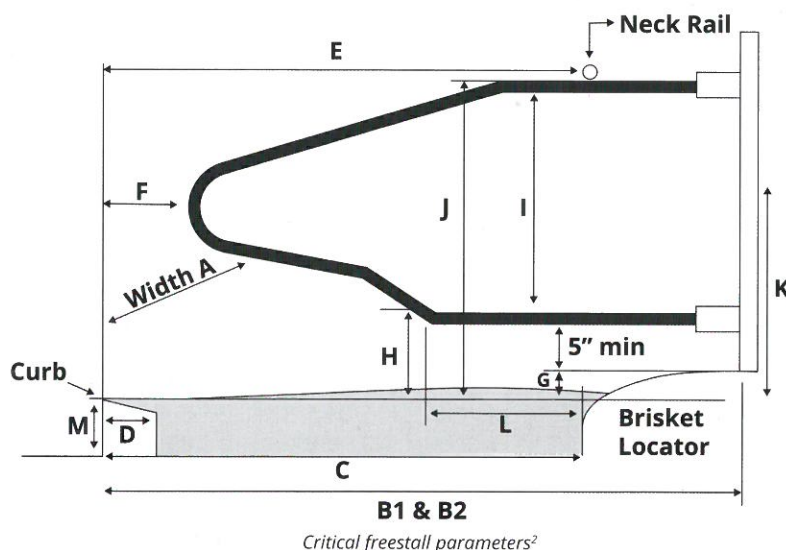
- Cows need space to lunge forward when they stand. When cows don't have enough forward space, they lie diagonally. They should have at least three feet of unobstructed space in front of them to facilitate head lunging²

Divider Loops:

- Loops guide the cow as to where she should lie in her stall and prevent her from side-lunging

Neck Rail:

- This railing ensures that the cow is properly positioned in the stall when she is standing



Monitor cow behaviour. Cows that spend a long time standing are experiencing discomfort. These animals are at an increased risk of developing lameness. Long periods of standing also contribute to hoof growth and are associated with sole ulcers.

Tips for Addressing Lameness on Your Farm

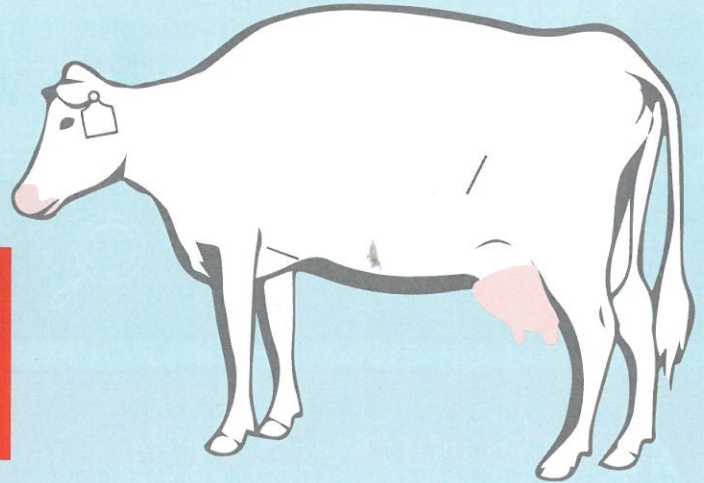


What is Lameness and How Common is It?

Lameness refers to any painful condition which causes a cow to change the way she walks to limit the amount of weight placed on an affected limb(s).



While the amount of lameness on farms varies, lameness continues to be an area farmers should continue to focus on to improve animal care. Cows are lame when they score 3, 4, or 5 using a gait score or showing at least 2 in-stall indicators of lameness in a tie-stall¹.



What is the Impact of Lameness?

Cows with lameness will demonstrate several changes in their behaviour and physiology.

Research shows that lame cows will²:



Spend less time eating and have a reduced number of meals per day



Reduce their overall dry matter intake



Be in pain

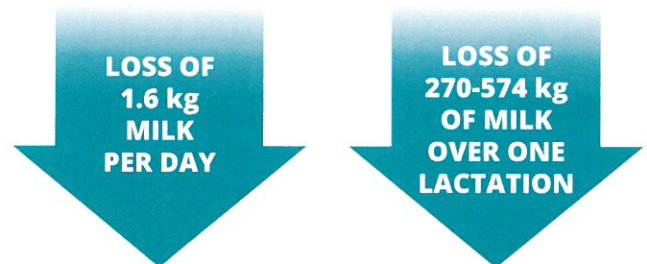


Be more likely to develop cystic ovaries and have delayed cyclicity

The Economics of Lameness

Identifying and treating lameness early can improve animal health and comfort. Due to the behavioural and physiological changes listed above, lameness can have a substantial economic impact. Some of the economic impacts include^{2,3}:

Reduction in milk production



Poorer reproductive performance

- 3-8 days longer period from calving to first service
- 11-12 days longer calving to conception interval
- An increase of 28 extra days spent open
- Lower conception rate

Researchers have calculated that these consequences lead to a total estimated cost of \$230⁴ per case of lameness.

A reduced price at auction has also been found for cows that were culled with an abnormal gait⁵.

Cows with severe lameness cannot be shipped.

Use of Pain Control



Certain animal health practices and conditions are necessary for animal and human safety throughout their productive life. Providing treatment to manage pain during these times is an important aspect of care for dairy cattle. Farmers should discuss pain mitigation strategies with their veterinarians to ensure everything is being done to minimize pain throughout the life of each animal. This factsheet describes some of the most common animal health practices and conditions that are painful for dairy cattle.

Disbudding & Dehorning

Pain is prevented during this procedure with the use of local anesthesia (lidocaine). **Local anesthetic applied using a cornual nerve block (freezing injected behind the eye) reduces the pain associated with the application of a hot disbudding iron/caustic paste/Barnes type dehorner^{1,2}.** Because animals also experience pain shortly after disbudding once local anesthetic has worn off, longer-term pain management is also needed¹.

Longer-Term Pain Management

Because short-term pain management wears off, the combined use of local anesthetic with an NSAID (such as meloxicam or ketoprofen) is necessary. NSAIDs help manage pain for up to 24 hours after the procedure. **An NSAID administered at the time of disbudding will reduce stress, pressure sensitivity, and pain behaviours post-disbudding.**



Pain control (local anesthesia + NSAID) is important regardless of whether you are disbudding or dehorning with a hot iron or with caustic paste or with a Barnes type dehorner. This is required by proAction and is a good animal care practice

Mastitis

Mastitis causes significant pain, discomfort, and illness. The use of an anti-inflammatory medication, in conjunction with treatment when needed, can aid in alleviating pain, slow tissue damage, and minimize the effects of inflammation.

The use of NSAIDs for cows with clinical cases of mastitis has been shown to yield several positive results, including³:



Reduced clinical signs of depression



Decreased rectal temperature



Increased rumination



Increased eating time

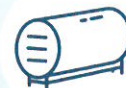


Reduced pain sensitivity in the udder

These benefits can be seen over a longer period of time, even in mild cases of mastitis. In mild cases, the use of an NSAID paired with an antimicrobial when compared to antimicrobial therapy alone lead to³:



Reduced risk of culling



Reduced somatic cell counts



Increased cure rates



Increased reproductive performance



The provision of pain control for clinical mastitis cases can improve production, performance, and longevity!

How Does Pain Affect Your Herd?



The Canadian dairy industry knows much more today than in the past about the impact that some of our management practices and common rearing conditions can have on animals. There is a better understanding now of potential pain mitigation strategies to prevent and treat it as well. **proAction® requires that all Canadian dairy farmers have a Standard Operating Procedure (SOP) for common animal health practices, such as disbudding and dehorning, branding (although very uncommon on Canadian dairy farms), and castration. Importantly, the use of pain management products are mandatory when carrying out these practices.** Extra teat removal does not require the use of pain control medication, but performing this procedure at the time of disbudding/dehorning ensures efficiency so that calves receive the benefit of pain control.



How Do We Know Animals are in Pain?

Cows that are in pain may not necessarily show a decrease in productivity, however, **this does NOT indicate that cattle are not in pain.** Some of the signs to look for are listed below.



Because cows are prey animals, their natural behaviour is to hide any signs of pain so they don't appear weak or easy targets for predators. However, science has helped us understand signs of pain and farmers have adopted ways to mitigate and control pain in animals for certain necessary procedures.

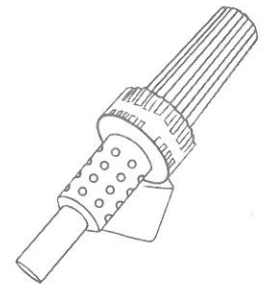
Many of the signs of pain are linked to changes in behaviour, such as a decreased intake of feed, or reduced grooming behaviour. If significant pain occurs, cattle will often appear dull and depressed, hold their heads low, and have little to no interest in their surroundings.

Some of the main areas of opportunity for pain management include:

- Disbudding and dehorning
- Surgical procedures
- Calving
- Mastitis
- Lameness

Disbudding and Dehorning

Disbudding and/or dehorning is a necessary procedure for the safety of farm personnel, and to prevent dairy cattle from harming one another.



Some of the pain indicators that calves display after disbudding or dehorning without pain mitigation include¹:

- Head shaking
- Ear flicking
- Head rubbing
- Hind leg kicking at the dehorning site

There is clear scientific evidence that disbudding and dehorning negatively impacts animals when no pain control is provided, and the negative outcomes can persist for at least 24 hours following the procedure. Farmers often report that adding pain control into their disbudding/dehorning strategy has a significant impact on calf comfort. Because of this, the provision of local anesthesia with the use of a nonsteroidal anti-inflammatory medication for hot iron, caustic paste, and gouging disbudding/dehorning is a proAction® requirement.

Preventing Down Cattle



Farmers work hard to provide excellent care for their cattle. However, cattle sometimes get sick or hurt, and can go down and be unable to get up. These situations are stressful for both animal and farmer, which is why it's important to do everything we can to prevent them.

Areas of Opportunity for Prevention

To prevent animals from going down on your farm and to facilitate their recovery, it is important to evaluate the following areas:



Housing



Cattle handling techniques



Calving management



Mastitis prevention



Calf disease management



Transition cow health and management

What's Causing Animals to Go Down?



Common causes of down cows are:

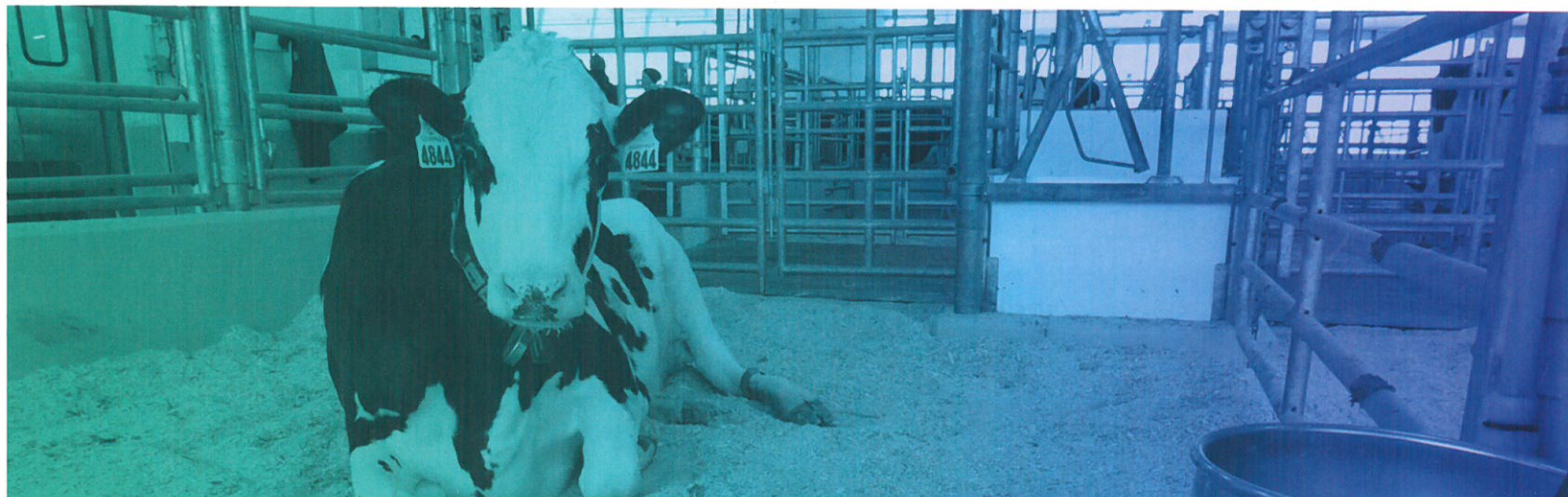
- Mastitis
- Hypocalcemia or milk fever
- Metritis
- Injury

Common causes of down heifers:

- Injury

Common causes of down calves are:

- Dehydration
- Injury
- Disease
 - Respiratory disease
 - Diarrhea
 - Navel infections





**DAIRY
FARMERS
OF CANADA**

The Dos & Don'ts of Down Cattle Care

Any animal (calf or adult, male or female) that is unable to stand should be treated as an emergency.

Cattle that cannot stand are either too weak, ill, or injured, and must be addressed immediately. Prompt diagnosis, appropriate treatment, and handling with great care will maximize the chances of recovery.

As per proAction® guidelines, every team member who handles cattle should be familiar with low-stress cattle handling techniques and husbandry practices to help prevent down cattle, and be trained in how to manage down cattle effectively to ensure the best chance of success. Have your team members and veterinarian provide input on your Standard Operating Procedure (SOP) so that everyone is prepared to provide the best possible care.

The next page includes some basic guidelines of what to do (and NOT do) when caring for down cattle.

Decision-Making for Down Cattle to Ensure Good Animal Welfare



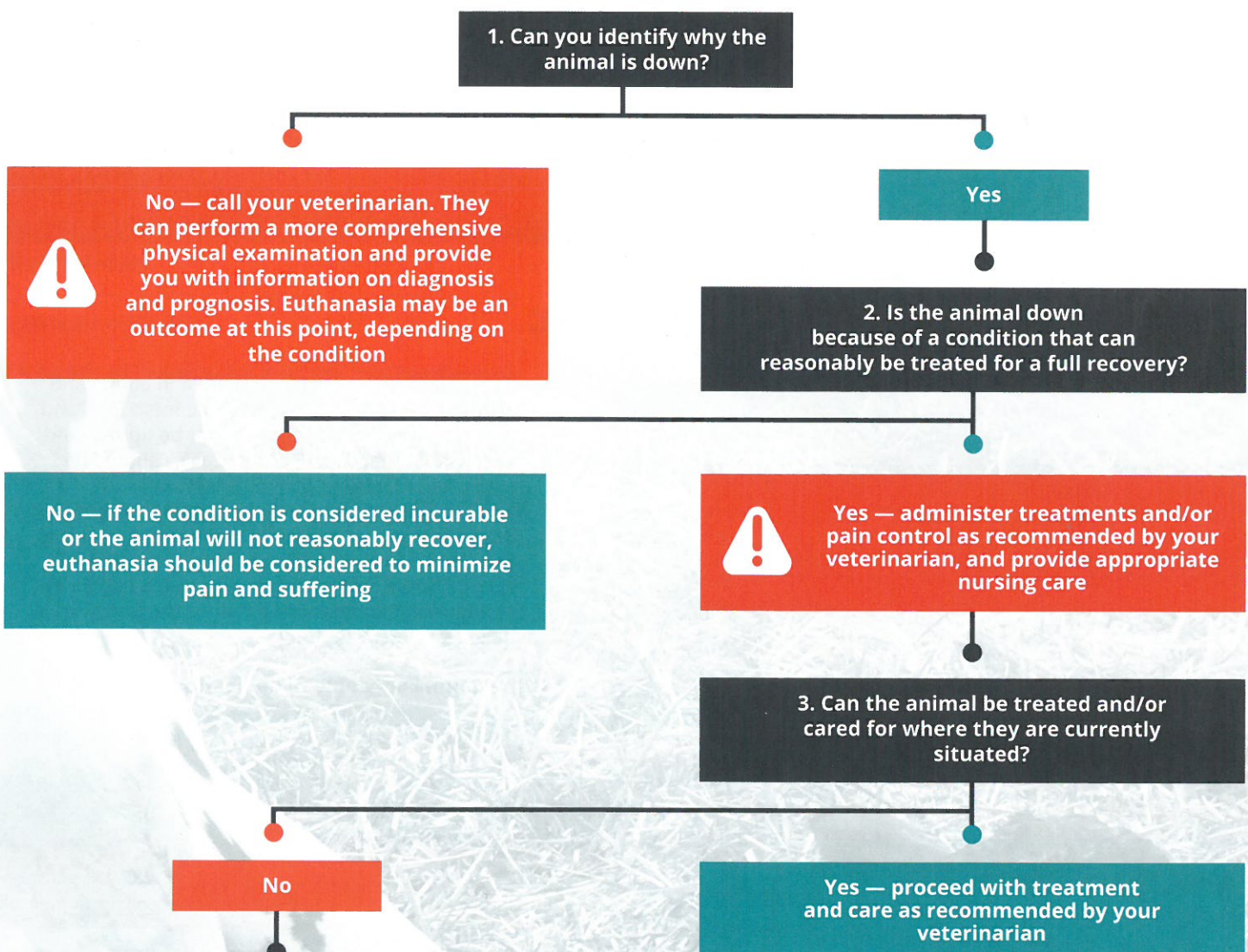
Quick intervention is key when it comes to down cattle, as early and appropriate management decisions can lead to an improved chance of recovery.

Have a Plan

proAction® requires that farmers provide prompt treatment to sick and injured cattle, have a Standard Operating Procedure (SOP) for managing down cows, have a separate area for housing sick and injured animals, and have developed an SOP for humane euthanasia. When developing your down cow SOP, it is important to include how animals should be managed, how they should be moved, and where they should be housed for recovery, but also consider: factors that might impact decisions to either proceed with treatment and nursing care, or opt for humane euthanasia.

Making a Decision

Here are some questions to consider to help you identify when efforts to help an animal are no longer effective and efforts should be directed to humane and timely euthanasia:



Continued on next page

Recommendations for Preventing and Treating Hock, Knee, and Neck Injuries in Cattle



Canada's dairy farming sector is committed to providing excellent cattle care, and part of this means ensuring dairy cattle are comfortable in their environment and their needs are being met. Hock, knee, and neck injuries may be due to poor barn design or maintenance. With proper management, these injuries can be prevented. Injuries remain an important area that Canadian dairy producers can focus on to improve animal care¹⁻⁴.

The Benefit of Preventing and Reducing Injuries

Injuries have been shown to negatively impact cattle health and productivity. Farmers and cattle will benefit from low injury rates, as minimizing injuries can^{5,6}:



Improve health and comfort



Improve production



Improve economic margin per cow

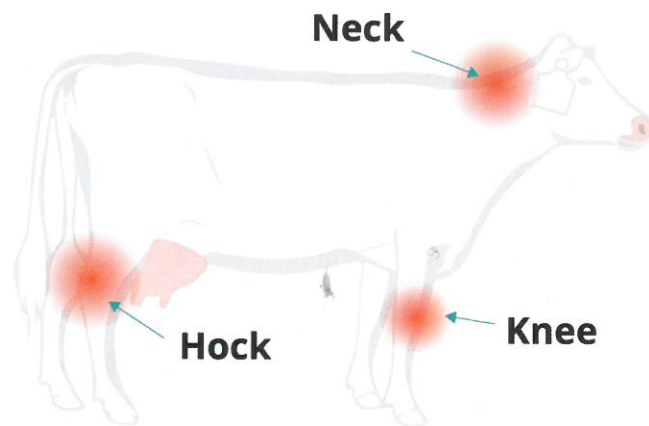


Increase time spent lying

Treating Hock, Knee, and Neck Injuries

What Does the Research Say?

A study evaluating the healing of hock injuries found that moving cows to sand bedding, bedded packs, or pasture led to faster resolution or healing⁷. This suggests that **using deep bedding or providing outdoor access may be the best method to resolve hock injuries, and likely knee injuries.** Additionally, many of these injuries take time to heal with a study finding that moderate hock injuries will resolve in about 2 months⁸.



Pain Control

Your veterinarian is the best source of advice for injury treatment. They can help you to develop a strategy for monitoring, identifying, housing, and providing prompt medical attention (as required by proAction[®]) to injured animals to maximize the chances of recovery, and reduce pain and suffering.

Some of the more severe injuries can be painful, especially when swelling and ulceration is present where walking and/or shifting weight can cause pain.

Work With Your Veterinarian

You should keep records of any treatments or corrective measures you take so you can analyze their effectiveness. This can also help to tailor monitoring programs for earlier detection, and identify aspects of housing and management that are working well or require improvement.

Assess Your Housing and Environment

The recommendations mentioned above are specific to individual animals, however, if a large proportion of the herd is affected, widespread changes in housing design and management may be warranted. The next section reviews some of the key areas to look into.

Animal Handling for Vulnerable Cattle



Good animal husbandry is the hallmark of Canada's dairy industry. Making sure all cattle, from the top performing to the most vulnerable, are handled with care reflects the high standards farmers strive to meet.

Which Animals are Vulnerable?

proAction® requires that prompt medical care should be provided to cattle that are sick, injured, thin, severely lame, in pain, or suffering. These animals should be housed separately to facilitate their recovery.

Vulnerable animals include those that:

- Have recently recovered from illness or injury
- Are weak or old
- May have lost body condition
- Are lame
- Have recently freshened
- Are calves that are inexperienced with handling



Vulnerable animals may not be able to sufficiently compete with herdmates to access resources that they require for health and production, so they will benefit from special care.

Managing Lame, Injured, Ill, and Thin Animals

More Space Supports Recovery

Adult cattle that are experiencing lameness, injury, and illness should be housed in clean, spacious (120 square feet per animal), deeply bedded packs, and have minimal competition for both food and water.

Animals that are in pain or compromised are less able and less likely to push between animals to access feed. They may also have less capacity to maintain steady footing while being moved in groups, or tolerate displays of dominance from their herdmates.

Housing these animals separately will reduce the distance they are required to travel for resources.



Vulnerable animals often require therapeutic care in the form of antimicrobial or anti-inflammatory medications, and need to be housed and handled in a manner that is conducive to their recovery and allows for separation of their milk, when needed.

This will also allow for close monitoring and treatments as required and directed by your veterinarian.

Quiet Handling is Key

Quiet, low-stress, and gentle handling should be employed at all times. Vulnerable cattle need extra care and empathy from farmers or farm workers. Ensure staff are aware of your expectations for handling vulnerable animals. They should also be aware of how animals show signs of pain and understand these animals may change their gait and/or be unsteady. They may also change their gait to accommodate an injury and therefore may be more unsteady.

Be Aware of Your Options

For animals that are lame, injured, ill, or thin, consider proactive culling before they become unfit to ship, or euthanasia if their condition does not improve. While difficult, these decisions can help to reduce or prevent suffering.

A Proactive Approach: Consider removing animals from your herd when they are better able to manage transportation, and arrive at the next stage of their journey healthy.

Prior to shipping, be sure to evaluate health factors that may change during transport (see next page):

Low-Stress Cattle Handling



The Principles of Low-Stress Handling

Skilled and experienced stockpeople move cattle quietly and with ease. They have learned to understand and anticipate cattle behaviour and how to use this behaviour to effectively move them. Low-stress handling aims to help facilitate a better understanding between cattle and stockpeople. This helps ensure cattle are cooperative and manageable.

Having all farm staff trained and practicing low-stress handling is a proAction® requirement, and is the safest form of handling for both humans and animals.

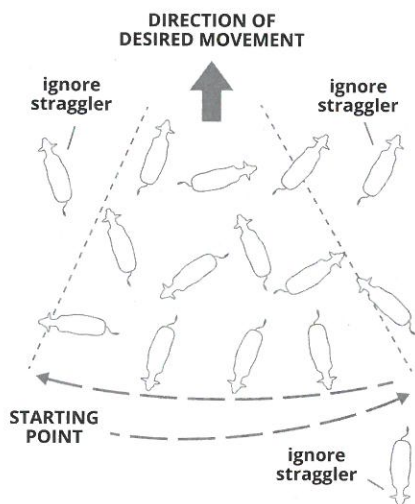
There are several keys to low-stress handling that anyone handling cattle should be familiar with:

- The cow's perspective (vision, blind spot, herd mentality, behavioural signs)
- Flight zone
- Point of balance

The Cow's Perspective

Vision

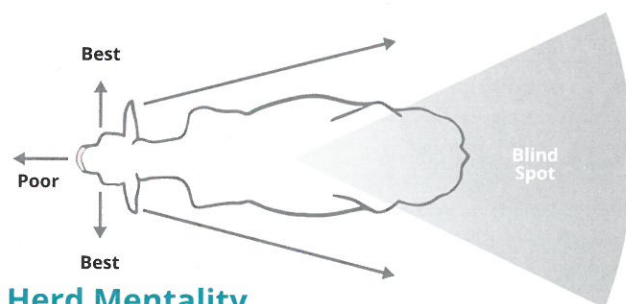
As herd animals, cattle have a panoramic field of vision. This means that they can see much of their surroundings without moving their heads to watch for potential threats. However, they are easily spooked by novel items in their path, deep shadows, and people that approach too quickly.



Blind Spot

While cattle are able to see approximately 300° around them, they cannot see directly behind them. The area directly behind them is their blind spot. They can become nervous when they know a potential threat has entered this area.

Remember: If a human were to stand in this blind spot, cattle will stop moving and turn to bring the person into their line of sight.



Herd Mentality

Cattle prefer to move as a herd. Cows will naturally follow a leader and stick with their group. Be mindful that they are nervous of new situations and unfamiliar objects. Practice patience and move animals at a slow walk. Animals that become nervous or excited are unpredictable and difficult to move, which increases their risk of slipping and falling. If handling an excited animal, take a moment to slow down, step back, and re-evaluate.

Ensure that when moving groups into pens and/or trailers, there is sufficient space for cattle to move freely. Tightly bunched animals can fall and/or become injured, particularly if they have no room to regain their footing.

