NATIONAL FARM ANIMAL CARE COUNCIL
CONSEIL NATIONAL POUR LES SOINS AUX ANIMAUX D'ÉLEVAGE

CODE OF PRACTICE

FOR THE CARE AND HANDLING OF

BEEF CATTLE

Canada

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Preface

The National Farm Animal Care Council (NFACC) Code development process was followed in the development of this Code of Practice. This *Code of Practice for the Care and Handling of Beef Cattle* replaces its predecessor developed in 1991 and published by Agriculture Canada.

The NFACC Code development process aims to:

- link Codes with science
- ensure transparency in the process
- include broad representation from stakeholders
- contribute to improvements in farm animal care
- identify research priorities and encourage work in these priority areas
- write clearly to ensure ease of reading, understanding and implementation
- provide a document that is useful for all stakeholders.

The Codes of Practice are national developed guidelines for the care and handling of farm animals. They serve as our national understanding of animal care requirements and recommended practices. Codes promote sound management and welfare practices for housing, care, transportation and other animal husbandry practices.

Codes of Practice have been developed for virtually all farmed animal species in Canada. NFACC's website provides access to all currently available Codes (www.nfacc.ca).

The Codes of Practice are the result of a rigourous Code development process, taking into account the best science available for each species, compiled through an independent peer-reviewed process, along with stakeholder input. The Code development process also takes into account the practical requirements for each species necessary to promote consistent application across Canada and ensure uptake by stakeholders resulting in beneficial animal outcomes. Given their broad use by numerous parties in Canada today, it is important for all to understand how they are intended to be interpreted.

Requirements - These refer to either a regulatory requirement, or an industry imposed expectation outlining acceptable and unacceptable practices and are fundamental obligations relating to the care of animals. Requirements represent a consensus position that these measures, at minimum, are to be implemented by all persons responsible for farm animal care. When included as part of an assessment program, those who fail to implement Requirements may be compelled by industry associations to undertake corrective measures, or risk a loss of market options. Requirements also may be enforceable under federal and provincial regulation.

Recommended Practices - Code Recommended Practices may complement a Code's Requirements, promote producer education and can encourage adoption of practices for continuous improvement in animal welfare outcomes. Recommended Practices are those which are generally expected to enhance animal welfare outcomes, but failure to implement them does not imply that acceptable standards of animal care are not met.

Broad representation and expertise on each Code Development Committee ensures collaborative Code development. Stakeholder commitment is key to ensure quality animal care standards are established and implemented.

This Code represents a consensus amongst diverse stakeholder groups. Consensus results in a decision that everyone agrees advances animal welfare but does not imply unanimous endorsement of every aspect of the Code. Codes play a central role in Canada's farm animal welfare system as part of a process of continuous improvement. As a result, they need to be reviewed and updated regularly. Codes should be reviewed at least every five years following publication and updated at least every ten years.

A key feature of NFACC's Code development process is the Scientific Committee. It is widely accepted that animal welfare codes, guidelines, standards or legislation should take advantage of the best available research.

A Scientific Committee review of priority animal welfare issues for the species being addressed provided valuable information to the Code Development Committee in developing this Code of Practice. The Scientific Committee report is peer reviewed and publicly available, enhancing the transparency and credibility of the Code.

The 'Code of Practice for the Care and Handling of Beef Cattle: Review of scientific research on priority issues' developed by the beef cattle Code of Practice Scientific Committee is available on NFACC's website (www.nfacc.ca).

Introduction

In 1980, the Canadian Federation of Humane Societies began coordinating the process of developing Codes of Practice for all livestock species. In 1991, the *Recommended Code of Practice for the Care and Handling of Animals - Beef Cattle* was developed from an original working draft contracted by the Ontario Cattlemen's Association to Dr. Frank Hurnik, Professor, Poultry and Animal Science, University of Guelph, Ontario. This draft was then submitted to all of the Canadian Cattlemen's Association's (CCA) provincial associations for review and input. Through agreement between the CCA and the Canadian Federation of Humane Societies and Agriculture Canada, a review committee chaired by Dr. Hurnik brought together individuals representing the industry, professional agricultural and veterinary associations, transporters, processors, and auction markets, research, Food Production and Inspection branches of Agriculture Canada, and animal care and welfare organizations.

Since 2005, the responsibility for developing and revising Canada's Codes of Practice has fallen under the mandate of the National Farm Animal Care Council (www.nfacc.ca). This revised *Code of Practice for the Care and Handling of Beef Cattle* was updated through a similar consultation and review process, by a committee representing a wide range of stakeholders (Appendix H), according to the Code development process developed by NFACC (www.nfacc.ca/code-development-process).

All herd sizes require adequate human resources to ensure proper care and well-being of the animals. Everyone handling cattle should be familiar with their normal behaviour and should use low stress, behaviour-based cattle handling techniques. The selection and training of personnel are the most important factors in ensuring that cattle will be managed humanely. All personnel working with cattle or managing cattle facilities should be experienced or properly trained regarding humane handling, equipment use, and livestock care. They should understand their responsibilities and ensure that routine cattle management practices promote animal well-being and avoid unnecessary suffering of cattle. Calm, healthy cattle have higher productivity and economic value than stressed or ill cattle. However, an equal standard of humane treatment must be provided to cattle that have less economic value (e.g. cull cows, downers and chronically ill cattle).

The Canadian beef industry involves seedstock and cow-calf producers, backgrounding and feedlot operations, transporters, sale yards and assembly stations, veterinarians and packing plants operating under diverse climatic and geographical conditions. Cattle care is practised all along the production chain and the well-being of beef cattle can be safeguarded under a variety of husbandry and management systems.

Most husbandry systems impose restrictions on some freedoms of cattle. However, producers should consider the following:

- shelter for protection and comfort
- feed and water to maintain optimal health
- freedom of movement, exercise, and opportunity to express most normal behaviours
- company of herd mates
- footing that reduces the risk of slipping
- disease prevention and control
- veterinary care, diagnosis, and treatment
- freedom from unnecessary pain and discomfort
- emergency preparedness for fire, mechanical breakdowns, and the disruption of feed supplies.

This Code focuses on the animal. Where possible, it is outcome-based, and is intended to achieve a workable balance between the best interests of the cattle, producers, and consumers. It recognizes the basic principle that the well-being of cattle is a prime consideration and that cattle treated well benefit producers. The Code aims to meet scientifically valid and feasible approaches to meeting cattle health and welfare needs throughout the production system contributing to a sustainable and internationally competitive Canadian beef industry.

This Code is not intended to describe all production and management practices relevant to each stage of beef production. Instead, principles applicable to all sectors of the industry are presented along with some sector-specific considerations.

Anyone building new, modifying or assuming management of existing cattle facilities will need to be familiar with local, provincial, and federal requirements for construction, environmental management, and other areas outside the scope of this document. Individuals requiring further details should refer to local sources of information such as universities, agricultural ministries, and industry resources (see Appendix G).

The Code is a guideline for the care and handling of beef cattle. All provincial and federal acts and regulations must always take precedence. Causing unnecessary pain or suffering or willful neglect is illegal under the *Criminal Code of Canada* and under most provincial statutes. It is of benefit to the whole Canadian cattle industry that anyone witnessing animal neglect or cruelty takes some action to remedy the situation, by helping to educate the producer, or by contacting the appropriate cattle producers' organization or animal welfare authorities.

The beef cattle Code of Practice reflects current beef management practices. It identifies welfare hazards, opportunities and methods to assure well-being. The authors recognize producers have more than one way to ensure welfare of their livestock.

In 2012, the World Organization for Animal Health (OIE) approved new production guidelines for beef cattle production, aimed at improving the health and welfare of beef cattle globally (Chapter 7.9 of the *OIE Terrestrial Animal Health Code* (1)). As a member of the OIE, Canada is committed to these guidelines, and the Code Development Committee has kept them in mind during the revision of this Code of Practice (1).

This Code pertains to cattle of all ages in beef production. Where special provisions for cattle under six months apply, the word calf has been used. This Code applies to male and female cattle being raised for their meat. It does not apply to associated industries (e.g. veal, dairy). However, cattle from other sectors, when brought into a beef production operation, are subject to this Code.

1 Animal Environment

Desired Outcomes:

- All cattle are kept under conditions conducive to their safety, health, comfort, nourishment, and humane handling.
- Cattle can express natural behaviour.
- Cattle are not adversely affected by extremes in weather, such as cold, floods, freezing rain, storms, and heat waves.

1.1 Protection from Extreme Weather

Beef cattle in Canada are housed in a variety of ways depending on age, size, and reproductive state. Systems may include range conditions, fields, corrals or yards, indoor pens or stalls. Treed areas or geographical features (such as coulees) can provide shelter from wind and sun (2).

Animals' ability to cope with sudden changes in weather or adverse weather events varies with many factors, such as:

- age (especially newborn calves)
- body condition score
- access to feed, water, and shelter
- degree of acclimation (e.g. winter hair coat)
- health status
- stress (such as newly-arrived feedlot cattle).

REQUIREMENTS

Cattle must have access to areas, either natural or man-made, that provide relief from weather that is likely to create a serious risk to their welfare.

Promptly assist individual cattle showing signs of not coping with adverse weather (see Sections 1.1.1 and 1.1.2 for lists of signs).

1.1.1 High Temperature and Humidity

Cattle are generally able to tolerate low temperatures better than high temperatures. Humidity levels and ventilation affect an animal's ability to cope with heat stress. Extreme heat is generally more stressful to cattle early in the summer season before they have had a chance to acclimate to the increased temperatures (3).

Signs of heat stress in cattle include (4-6):

- open-mouth panting with tongue protruding
- laboured breathing
- drooling or froth around the mouth.

Cattle are at risk of heat stress when combined temperature and humidity exceed a Humidex value of 40. However, factors such as shade, air movement and length of exposure all influence the impact of high Humidex values on cattle (3).

Heat stress can lead to reductions in feed intake, weight gain, reproductive efficiency and milk production. Severe heat stress may result in illness and death (7).

Water requirements are greater during hot weather.

RECOMMENDED PRACTICES

a. When cattle are showing signs of heat stress, consider the following strategies (3):
   - provide shade
   - avoid handling cattle
   - feed cattle at dusk or dawn
   - moisten the ground in part of the pen
   - sprinkle cattle with water.

1.1.2 Extreme Cold

Although cattle can generally tolerate colder temperatures if acclimatized, wet cattle (especially newborn calves), cattle in poor body condition, and cattle fed inadequate energy are less able to cope with cold temperatures (3). Cattle require additional feed resources during cold weather (8).

Signs that cattle are not coping well with extreme cold (hypothermia) include:

- shivering (cattle may stop shivering if hypothermia worsens)
- low core body temperature (less than 35 °C or 96 °F)
- cold mouth
- inability to get up
- no suckling reflex (in calves)
- frostbite (especially newborn calves).

REQUIREMENTS

Provide additional feed to meet animals' increased energy requirements when facing cold stress.

RECOMMENDED PRACTICES

a. provide bedding to insulate against bare ground and to reduce mud and manure build-up on hides, which can increase heat loss (3).

1.2 Facilities for All Cattle

The Canadian beef industry comprises the cow-calf, backgrounder and feedlot sectors. Production practices for all sectors have developed in response to Canada's diverse climatic and geographical conditions. Even though the areas involved may be large, facilities for pastured or range cattle still require monitoring and maintenance. It is beyond the scope of this Code to describe all shelter and housing facilities used in beef cattle production. Individuals requiring further details should refer to local sources of information, such as universities, agricultural and environmental ministries, producer organizations, and experienced beef producers (9) (see Appendix G).

Outcome-based measures that the livestock producer can use for assessing the suitability of housing and stocking density include morbidity and mortality rates for lameness and injuries, changes in normal cattle behaviour, such as bulling/riding, poor performance (e.g. body weight, average daily gain, feed efficiency, daily dry matter intake), and abnormal physical appearance (1).

REQUIREMENTS

All beef operations must have access to equipment or facilities for the safe handling, restraint, treatment, segregation, loading, and unloading of cattle.

Design or manage indoor and outdoor cattle facilities to provide well-drained, comfortable resting areas.

Provide traction in handling areas to minimize cattle slips and falls.

All cattle in a group must have sufficient space to adopt normal resting postures at the same time.

Cattle kept in groups must be able to move freely around the pen and access feed and water.

Stocking density must be managed such that weight gain and duration of time spent lying is not adversely affected by crowding.

Maintain indoor air quality and ventilation at all times (ammonia levels < 25ppm).

Provide cattle housed indoors that do not have access to natural light with supplementary lighting to allow natural behaviour patterns and monitoring of the cattle.

RECOMMENDED PRACTICES

a. ensure that all cattle facilities and areas are safe and free of hazards that can cause injury
b. provide a separate area with dry bedding for the recovery of severely sick or injured cattle
c. consider biosecurity measures when designing and managing cattle facilities
d. ensure restraint devices are used properly. Pressure that causes pain or discomfort can cause cattle to panic and should be avoided
e. minimize noise from handling equipment to facilitate movement. High-pitched sounds are especially disturbing to cattle
f. provide daily exercise for any cattle that are tethered. Tethering devices must be safe for the animals and should not interfere with the actions of standing up or lying down. Tethering devices should be regularly inspected for proper function and safety.

1.3 Additional Facilities for Calving Cows

Beef cows typically calve outside. If calving occurs during periods of extremely cold weather, sheltered, bedded calving areas (natural or constructed) can protect the cow and calf during this vulnerable time (3). Cows typically separate themselves from the rest of the herd as calving approaches. Isolating a calving cow or a cow-calf pair in an individual pen may benefit the cow and the calf if intervention is required.

Newborn calves are susceptible to disease, so calving facilities should be designed and maintained to minimize disease transmission. In particular, calf scours can be a problem, especially in confined calving areas, which can become progressively more contaminated as the calving season progresses. The risk of scours is reduced by maintaining dry conditions and preventing contact with infected cattle.

REQUIREMENTS

Provide an environment that is safe and clean for calving and that promotes calf survival.

RECOMMENDED PRACTICES

a. keep calving areas free of cattle until just prior to calving. This will minimize manure contamination and help reduce calf diseases
b. if calving indoors, be prepared to separate calving cows and heifers into pens with adequate bedding
c. maintain calving areas and areas housing cows with young calves in such a way as to reduce the contact of young calves with manure, noting that such areas become increasingly contaminated as the calving season progresses.

2 Feed and Water

Desired Outcome: Cattle are in optimum health and body condition.

2.1 Nutrition and Feed Management

Cattle need to be monitored on an ongoing basis and feed resources must be well-managed and readily-available according to the animals' changing needs and environmental conditions. Cattle that are not fed adequately will lose body condition, will not perform to their capacity, and are more likely to have reduced immune function (10-12). Signs that cattle are not able to access sufficient feed or water include increased vocalizing, roaming, and breaking through fences.

Body condition scoring (BCS) is an important tool for determining if an animal is too thin (BCS of less than 2 out of 5), too fat (BCS greater than 4 out of 5), or in ideal condition (Appendix A). Ideal body condition scores will vary depending upon stage of production (Table 2.1). Body condition scoring also allows producers to optimize the utilization of feed resources and animal productivity. Be aware that body condition scores are most applicable to mature cattle and may be of little use for cattle under one year of age. Note that the cause of poor body condition is not always nutritional.

Feeding space required depends on type of feed, feeding frequency, amount of feed, presence of horned cattle, animal size, and group size. Increased animal density in the pen increases competition among cattle for access to feed, water and resting areas. Reduced space per animal at the feed bunk also increases competitive interactions among cattle, reduces bunk attendance times, and increases the time spent waiting for access to feed. This might not cause problems for dominant cattle, but it does directly affect subordinate animals, and can result in uneven feed intakes and reduced growth.

Guidance on minimizing diseases associated with high-energy feeding is provided in Section 3.3.3.

Table 2.1 – Body Condition Score Targets for Beef Cattle (10) (assuming spring calving)

Stage of Production	Target BCS (out of 5)
30 days before start of breeding	2.5 - cows 3.0 - heifers 3.0-3.5 - bulls
Start of winter feeding program	3.0 - all females 3.0-3.5 - bulls
Calving	2.5 - mature cows 3.0 - bred and first-calf heifers

REQUIREMENTS

Monitor cattle behaviour, performance, body condition score and health on an ongoing basis and adjust the feeding program accordingly.

Ensure cattle have access to feed of adequate quality and quantity to fulfill their nutritional needs at all times, and maintain proper body condition, taking into account factors such as: age, frame size, reproductive status, health status, level of production, competition and weather.

Take prompt corrective action to improve the body condition score of cattle with a score of 2 or less (out of 5).

Take steps to prevent exposure of cattle to toxins (such as lead batteries, fertilizer, treated seed, antifreeze, nitrates) and to avoid feed with adverse physical qualities that could cause injury or limit intake.

RECOMMENDED PRACTICES

a. test nutrient content of feed ingredients used and balance rations as necessary. Consult a nutritionist for advice
b. become familiar with potential micronutrient deficiencies or excesses in your geographic area and use appropriately-formulated supplements
c. manage feedstuffs in a way to maintain quality and minimize spoilage
d. avoid sudden or extreme ration changes
e. provide a less competitive feeding environment for sick, injured, weak or convalescing cattle.

2.2 Water

Cattle need access to water of adequate quality and quantity to fulfill their physiological needs. Water availability and quality are extremely important for cattle health and productivity. Beef cattle will drink between 26-66L (5-14gal) per day (13). Water quality and palatability affect water consumption. Cattle may limit their water intake to the point of dehydration if the quality of drinking water is compromised (14).

Snow is used as a water source in some extensive western Canadian beef operations. There is scientific evidence that cattle can maintain body condition using loose snow for water under certain specific conditions (15). These conditions can be highly variable, and can result in risks to cattle welfare if they are not carefully monitored. These variables include snow conditions and quality, feed quality, cattle body condition and weather conditions.

It is extremely important to ensure there is a sufficient supply of loose, clean snow (15,16). Further, cattle with higher energy requirements (such as growing, lactating or in poor condition) risk losing excess energy when accessing and melting snow. It can take inexperienced cattle several days to learn to consume snow as a primary water source so they should be monitored during this acclimation period (17). Using snow as a sole winter water source is not appropriate in all geographic areas, even within the same province. Contact your local or regional beef cattle specialist or your veterinarian for advice (See Appendix G).

REQUIREMENTS

Ensure that cattle have access to palatable water of adequate quality and quantity to fulfill their physiological needs. Monitor water sources, feeding habits, behaviour, performance and health on an ongoing basis and be prepared to adjust the watering program accordingly.

Snow may only be used as a sole winter water source providing it is of sufficient quantity and quality to meet the animals' physiological requirements.

Snow must not be used as a sole water source for the following cattle:

- ***lactating, or***
- ***newly-weaned, or***
- ***that have a body condition score of less than 2.5 out of 5, or***
- ***that don't have access to optimal feed resources.***

Only adequate quantities of clean, loose snow may serve as the sole water source. Monitor snow conditions on an ongoing basis.

Have a back-up water source in the event of insufficient loose snow or an interruption in water supply.

RECOMMENDED PRACTICES

a. ensure that water sources are easy for cattle to locate and access
b. manage cattle and water sources to avoid competition that would limit access to water
c. check automated water sources daily to ensure they are dispensing properly
d. test water quality in the event of problems such as poor performance, reluctance to drink, or reduced feed consumption
e. if utilizing natural water sources, provide water in troughs or bowls wherever possible to ensure cleanliness of water supply and safe animal access
f. be aware of the signs of stray (tingle) voltage around water sources, such as reluctance to drink or reduced feed consumption
g. if using a frozen-over natural water source in winter, provide an area of open water and restrict cattle from areas of thin ice.

3 Animal Health

Desired Outcome: Optimum health and welfare are maintained through a combination of appropriate disease prevention and control measures and prompt treatment of illness, injury and disease.

3.1 Herd Health Management

Pain and discomfort caused by health issues impact an animal's well-being such that good animal welfare requires good animal health (14). Disease prevention is extremely important. Herd health management and biosecurity protocols can help prevent and contain diseases. Producers need to be able to promptly recognize and treat animal health issues in order to optimize animal welfare.

Veterinarians play a key role in helping producers meet these animal health obligations. Although the specific regulations vary among provinces, in order for veterinarians to prescribe some classes of medications and vaccines, they must have a valid Veterinarian/Client/Patient Relationship (VCPR).

A Veterinarian/Client/Patient Relationship exists when all of the following conditions have been met (18):

- the veterinarian has assumed the responsibility for making clinical judgments regarding the health of the cattle and the need for medical treatment, and the client has agreed to follow the veterinarian's instructions
- the veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of an examination of the animal(s) or by medically appropriate and timely visits to the premises where the animal(s) are kept
- the veterinarian is readily available for follow-up evaluation, or has arranged for emergency coverage, in the event of adverse reactions or failure of the treatment regimen.

An effective Herd Health Management Program contributes to cattle well-being by providing a strategy for disease prevention, rapid diagnosis and effective treatment.

REQUIREMENTS

Establish an ongoing working relationship (VCPR) with a licensed practicing veterinarian and develop a strategy for disease prevention and herd health.

RECOMMENDED PRACTICES

a. maintain accurate animal management and health records.

3.2 Sick, Injured and Cull Cattle

More frequent monitoring of cattle may be necessary during weather that may compromise animal welfare, calving and post-weaning periods, and when multiple stressors occur simultaneously (e.g. weaning, transportation, commingling, etc.). Adequate monitoring ensures timely detection and treatment of sick or injured cattle. Treatment may vary from therapeutic interventions to convalescent care. Some examples of convalescent care may include (but are not limited to): segregation, easier access to feed and water, reduced competition and increased monitoring.

Be aware that cattle may hide their expression of pain or suffering, and that this may affect your assessment of their condition in making decisions about treatment or euthanasia (19).

Cattle owners, veterinarians, and laboratories are required to immediately report an animal that is infected or suspected of being infected with a reportable disease to a Canadian Food Inspection Agency (CFIA) District Veterinarian. Reportable diseases are listed in the *Health of Animals Act* (www.laws.justice.gc.ca./eng/acts/H%2D3.3) and are usually of significant importance to human or animal health or to the Canadian economy.

REQUIREMENTS

Monitor cattle health on an ongoing basis to ensure prompt treatment or care.

Provide appropriate care, convalescence or treatment for sick, injured or lame cattle without delay.

Monitor the animals' response to therapy or care and, if the initial treatment protocol fails, then reassess treatment options or seek veterinary advice.

Euthanize (or cull*) without delay cattle that:

- ***are unlikely to recover, or***
- ***fail to respond to treatment and convalescent protocols, or***
- ***have chronic, severe, or debilitating pain and distress, or***
- ***are unable to get to or consume feed and water, or***
- ***show continuous weight loss or emaciation.***

****If culling, Requirements for transporting compromised animals must be followed (refer to Section 5 - Transportation). Suspicion of a reportable disease as defined by the* Health of Animals Act *(www.laws.justice.gc.ca./eng/acts/H-3.3) and various provincial acts must be brought to the attention of a veterinarian.***

RECOMMENDED PRACTICES

a. consult a veterinarian to address new, unknown, or suspicious illness or death losses
b. consult a veterinarian if the incidence of a known illness suddenly increases
c. consult a veterinarian for the most appropriate treatment options when an animal is sick
d. monitor the progress of treated cattle
e. dispose of dead cattle according to applicable provincial/municipal regulations.

3.3 Health Conditions Related to Feedlot Cattle

Feedlots are a site where cattle are frequently commingled. At certain times of the year, there is an increased risk of the transmission of disease due to multiple stressors, such as weaning and transportation. Feedlot managers need to be proactive in the prevention, early detection and treatment of illness.

3.3.1 Managing Risk of Bovine Respiratory Disease

Bovine respiratory disease (BRD) is a leading cause of sickness and mortality in the beef feedlot industry (3). Feedlot operators take a variety of management steps, including daily monitoring, to minimize the risk of BRD.

Some risk factors for bovine respiratory diseases are:

- non-vaccinated cattle
- recent weaning
- transportation and handling
- sudden or extreme changes in weather
- commingling of cattle from various sources.

Early detection and prompt treatment decrease chronicity and mortality due to BRD and other diseases (3).

REQUIREMENTS

Monitor the behaviour of newly-arrived feedlot cattle to facilitate the early detection of illness.

Have a disease prevention strategy for new arrivals into a feedlot.

RECOMMENDED PRACTICES

a. categorize newly-arrived cattle according to risk for BRD and other illness and apply appropriate receiving protocols (3)
b. whenever possible, buy calves of known source, vaccination history, and health status (3).

3.3.2 Lameness

There are multiple causes of lameness in cattle, including injury, nutrition and infection. An increased incidence of footrot is often associated with chronic wet conditions. A common cause of infectious arthritis is the bacterium *Mycoplasma bovis* which is also associated with bovine respiratory disease. Therefore, preventive measures for bovine respiratory disease may also help to reduce lameness caused by arthritis (3). Lameness due to injury can be reduced through good facility design and low-stress handling techniques, both of which help reduce slips and falls (refer to *Section 1 - Animal Environment* and *Section 4 - Animal Husbandry*).

REQUIREMENTS

Provide appropriate care, convalescence or treatment for lame cattle without delay.

Monitor the animals' response to therapy or care and, if the initial treatment protocol fails, then reassess treatment options or seek veterinary advice.

Promptly cull or euthanize lame cattle that have a poor prognosis for recovery, or that do not respond to therapy or care (See Appendix E).

RECOMMENDED PRACTICES

a. see Appendices D, E and F to assist in decision-making around culling and euthanasia
b. manage pen conditions to minimize mud and standing water
c. work with your veterinarian to identify and resolve sudden increases in the incidence of lameness.

3.3.3 Nutritional Disorders Associated with High Energy Feeding

Nutritional disorders associated with high energy feeding include acidosis (grain overload), liver abscesses, and laminitis. In most cases, acidosis is the predisposing factor to liver abscesses and laminitis (20-22).

Acidosis is the result of a complex interaction among meal patterns and quantity, diet fermentability, ruminal microorganisms, and mechanisms of acid removal by the animal (23,24). Acute acidosis causes overt illness and is potentially fatal in cattle, whereas cattle with sub-acute acidosis may not appear sick but have reduced or variable feed intake and weight gain (25).

REQUIREMENTS

Design, implement, evaluate and adjust your feeding program to reduce the risk of nutrition-induced disorders, and consult your veterinarian or a nutritionist when needed.

Transition cattle from high-forage to high-energy rations gradually to avoid abrupt dietary changes.

RECOMMENDED PRACTICES

a. monitor feed bunks to assess prior consumption and adjust feeding accordingly (3)
b. include forage of effective particle length in all diets to reduce sub-acute ruminal acidosis (3)
c. consider adjusting rations to prevent digestive disorders when cattle feed intake is interrupted (due to storm, power outage, machinery breakdown, etc.) (3).

3.3.4 Buller-Steer Syndrome

Buller-steer syndrome is an occasional behavioural problem among feedlot steers, where one steer (buller) is repeatedly mounted by a group of other steers (riders). If not promptly removed from the pen, the buller steer can become exhausted, have reduced feed and water intake, and develop traumatic injuries (3).

REQUIREMENTS

Bullers must be promptly removed from their pen.

RECOMMENDED PRACTICES

a. monitor closely for relapse if bullers are re-introduced to their home pen (26).

3.3.5 Managing Pregnant Heifers in the Feedlot

On occasion, pregnant heifers may end up in the feedlot. The feedlot environment and management is not always well-suited to deal with calving heifers. This may result in significant animal welfare problems for the heifers themselves and the resulting calves. Some feedlot operators may choose, in consultation with their veterinarian, to implement a strategy to terminate unwanted pregnancies in feedlot heifers. Other operators may elect to calve them out or to remove them from their operation.

REQUIREMENTS

Consult with your veterinarian to develop a program for managing pregnant heifers in a feedlot.

RECOMMENDED PRACTICES

a. prevent pregnancy in heifers destined for feedlots. If possible, inform feedlot buyers if there is a chance that heifers have been exposed to a bull
b. consult a veterinarian if considering spaying to prevent pregnancy in heifers destined for the feedlot. Spaying is a very infrequent practice; however, if done, it should be carried out by a veterinarian using appropriate pain management.

3.4 Safety and Emergencies

Emergencies may arise, and can compromise cattle welfare. Some pre-planning will assist producers in responding to such events in a timely and effective manner.

REQUIREMENTS

Have a current emergency response plan to provide feed, water and care for cattle in case of emergencies. Review this plan with all responsible personnel so it can be implemented. Ensure emergency contact numbers are readily accessible and current.

4 Animal Husbandry

Desired Outcome: Cattle experience minimal stress and discomfort, while necessary husbandry tasks are carried out properly, safely and in a timely fashion.

4.1 Handling and Moving Cattle

There is less risk of injury to both animals and handlers when cattle are handled quietly and calmly. Experienced handlers who are aware of cattle behaviour, including herd instinct, flight zone and point of balance, reaction to wind, noise, sudden movements, light contrast or shadows etc. will be able to move cattle more smoothly. This will minimize stress and promote cattle welfare.

REQUIREMENTS

Animal handlers must be familiar with cattle behaviour (through training, experience or mentorship) and use quiet handling techniques.

Electric prods must only be used to assist movement of cattle when animal or human safety is at risk or as a last resort when all other humane alternatives have failed and only when cattle have a clear path to move.

Do not use electric prods repeatedly on the same animal.

Do not use electric prods on the genitals, face, udder or anal areas.

Do not use electric prods on calves less than three months of age that can be moved manually.

Willful mistreatment or intentional harm of cattle is unacceptable. This includes but is not limited to: beating an animal; slamming gates on animals; allowing herd dogs to continue pushing cattle with nowhere to move; dragging or pushing cattle with machinery (unless to protect animal or human safety).

RECOMMENDED PRACTICES

a. adjust your handling techniques and positioning according to the response of the animals and the situation
b. take a course in cattle handling techniques
c. use handling tools, such as flags, plastic paddles or rattles, to direct animal movement
d. evaluate your cattle handling techniques regularly, and make improvements to them as needed (27). Factors to consider include the percentage of cattle:
   - falling (belly or torso touches the ground) during handling
   - stumbling or tripping (knee contacts ground) after being released from the chute
   - requiring the use of electric prods to move
   - running or jumping when leaving the chute
   - vocalizing as a result of restraint.

   Increasing levels of the above handling events may indicate a need for changes in lighting, noise levels, equipment, handling methods, or environment.

4.2 Reproduction and Calving Management

The majority of beef cows calve without assistance. However, careful monitoring of calving cows ensures that assistance, when needed, can be provided in a timely fashion. Knowing when and how to provide calving assistance is an important management skill that will protect both the cow and calf in the event of problems.

Calving is divided into three stages of labour:

1st Stage of Labour

- lasts 3-72 hours
- pelvic ligaments relax
- cervical mucous plug released
- cow is restless and may separate from herd
- tail elevated
- sniffs ground, may turn head toward flank
- may begin straining.

2nd Stage of Labour

- begins with appearance of "water bag"
- ends with expulsion of calf
- should last 0.5-3 hours.

3rd Stage of Labour

- expulsion of placenta
- usually expelled by 8-12 hours after birth.

To learn more about how a normal calving should proceed and how to assist the calving cow, including common post-calving complications, see Appendix C.

REQUIREMENTS

Calving cattle must be monitored to identify calving difficulties and ensure prompt assistance when required.

Monitor and promptly assist calves and recently-calved cows showing signs of distress.

Caesarean sections must be conducted by a veterinarian or qualified trained personnel using accepted surgical techniques and appropriate local anesthesia and post-operative pain control.

Spaying must be carried out by a veterinarian or qualified trained personnel. Consult your veterinarian on pain control when spaying heifers.

RECOMMENDED PRACTICES

a. plan a breeding period to assist in implementing other herd management practices, such as vaccination and nutrition programs
b. select sires carefully on the basis of predicted calving ease or the bull's birth weight to reduce the likelihood of calving difficulties. Sire selection should also take into account the breed, size, age, and previous calving record of the females
c. time the first breeding of heifers according to their overall physical development in order to prevent calving difficulties (dystocia) and other health problems. It is recommended that heifers be at least two-thirds of estimated mature body weight at first breeding, and 85% of mature body weight by calving (28)

d. ensure that cows and heifers are in suitable body condition at the time of calving (suggested targets: heifers 3; cows 2.5)
e. ensure proper use of equipment designed for pulling calves
f. observe young calves regularly (preferably daily) to ensure that they are adequately nourished and are healthy.

4.2.1 Colostrum Management

Colostrum has an important influence on the health and welfare of calves. The newborn calf is born with no maternal antibodies and must rely on intake of colostrum to receive passive immunity. The timing of first colostrum is particularly important since calves' ability to absorb colostrum is substantially reduced six to eight hours after birth. The ability of the calf to defend itself against infectious diseases is directly related to the amount (litres), quality (immunoglobulin level), and timing of colostrum intake. The result of inadequate colostrum intake is a low concentration of circulating immunoglobulin in the blood of the calf, a condition known as "failure of passive transfer". Calves with failure of passive transfer are 1.6 times more likely to become sick and 2.7 times more likely to die before weaning than calves with adequate serum immunoglobulin levels (29).

Certain cases require special attention, as calves are at a greater risk of not receiving adequate colostrum by suckling. These include: difficult calvings, mis-motherings, calves with hypothermia, or dams with udder conformation that complicates nursing. Assume all abandoned or mis-mothered calves have not suckled.

Signs that a calf may not have received adequate colostrum may include:

- weak or lethargic
- lack of suckling reflex
- cold mouth
- gaunt appearance
- dam has a full udder.

REQUIREMENTS

Monitor that newborn calves suckle their dams paying special attention to high risk cases.

Administer colostrum or a commercial colostrum substitute to any newborn calf showing signs of not having received it by suckling.

RECOMMENDED PRACTICES

a. administer two litres (1.8qt) of colostrum to calves that have not suckled within six hours of birth. In cold weather, intervene earlier to supplement calves
b. learn how to safely use an esophageal (tube) feeder, as it may assist in administering colostrum to calves that will not suckle
c. obtain supplemental colostrum from any of these sources: milked from the calf's dam; pooled colostrum from other cows in the herd; commercial colostrum substitute. For biosecurity reasons, avoid using dairy cow colostrum.

4.3 Identification

In Canada, all cattle must be identified by an approved radio frequency identification (RFID) ear tag when they leave the farm of origin (or earlier in some provinces).

Nationally, the incidence of branding (hot iron or freeze) has decreased significantly in the last decade. According to the 2010-2011 *National Beef Quality Audit* (30), fewer than 10% of Canadian cattle were branded, compared to 25% in 1999. However, branding remains a necessary form of permanent identification in some parts of Canada. Brands provide proof of ownership and easy identification of cattle at a distance, and may be required in some situations (e.g. some community pastures, in remote locations, for export, and by some lending institutions). Face branding is not legal in Canada.

Freeze branding is an alternative to hot branding on dark-coloured cattle. However, it is more difficult to do properly.

Scientific evidence indicates branding by any method causes short-term acute pain and stress (31-38). Practical methods of local anesthesia during branding are lacking (3).

Until practical alternatives to branding are available, producers can minimize the impact of branding on the animal by using correct techniques.

REQUIREMENTS

All cattle must be identified using an approved ear tag as stipulated by applicable regulations.

When branding is required for export, by policy, or as permanent proof of ownership, it must be performed with the proper equipment, restraint and by personnel with training or sufficient combination of knowledge and experience to minimize pain to the animal.

Do not brand wet cattle due to risk of scalding.

RECOMMENDED PRACTICES

a. brand size must be appropriate to the size of the animal
b. avoid re-branding cattle
c. replace surgical alterations of cattle for identification purposes (such as wattling, ear-splitting) with less invasive practices. Note that these are very rare practices
d. consult your veterinarian for advice on the availability and feasibility of controlling pain associated with branding
e. maintain all cattle identification equipment in good working order.

4.4 Disbudding and Dehorning

The horns of beef cattle are routinely removed to decrease the risk of injuries to workers and other animals, and to minimize economic losses due to carcass bruising. The proportion of beef cattle with horns has been steadily decreasing in recent years, as the availability and adoption of polled (hornless) genetics has increased (39). Most common breeds of beef cattle have polled lines available, and the use of homozygous polled genetics eliminates the need for disbudding or dehorning without affecting productivity (3,40-42).

Disbudding refers to the removal of the horn bud before attachment to the skull. The age of horn attachment varies, but occurs at approximately 2-3 months of age. Techniques for removing horn buds include removing the horn buds with a knife, thermal cautery of the horn buds with an electric or butane-powered disbudding iron, or the application of chemical paste to cauterize the horn buds (1). Horn removal after bud attachment is referred to as dehorning. Methods of dehorning involve cutting or sawing the horn close to the skull, sometimes followed by cautery to stop bleeding. Disbudding involves less tissue trauma when horn development is still at the horn bud stage and there is no attachment of horn to the skull of the animal (1). Disbudding and dehorning cause pain and distress for all cattle (3). Your herd veterinarian is a good resource for information on possible methods of pain mitigation during and after horn removal (43).

REQUIREMENTS

Dehorning must be performed only by competent personnel using proper, well-maintained tools and accepted techniques.

Seek guidance from your veterinarian on the availability and advisability of pain control for disbudding or dehorning beef cattle.

Disbud calves as early as practically possible, while horn development is still at the horn bud stage (typically 2-3 months).

EFFECTIVE JANUARY 1, 2016:

> ***Use pain control, in consultation with your veterinarian to mitigate pain associated with dehorning calves after horn bud attachment.***

RECOMMENDED PRACTICES

a. use homozygous polled bulls where practical to eliminate the need for disbudding or dehorning (3).
b. avoid dehorning at the time of weaning to reduce stress (3).

4.5 Castration

Castration prevents unwanted reproduction, reduces aggression towards humans and other cattle, and improves meat quality. Castration is performed using either the surgical method (knife) or non-surgical methods (burdizzo, elastrators/banding).

All methods of castration cause pain and distress, which can be minimized by castrating as early as possible, preferably within the first week of life. Early castration also facilitates restraint of the (smaller) calves, reduces the duration of the procedure and increases operator safety (3). Current techniques for local anesthesia during castration are not practical at a herd level. Research is currently underway in Canada to seek practical solutions to these challenges.

For individual animals castrated at older ages, there is a variety of pain control methods available from your veterinarian (3).

Only personnel skilled or trained in the particular method used should be allowed to castrate cattle as improper castration is unacceptable. Improper castration can cause a number of complications, including infection. “Belly bulls” (having one or both testicles trapped against the abdomen) are caused when young calves are improperly castrated with bands and only one (or neither) testicle is captured below the band. These cattle will still exhibit bull characteristics, and the testicles will require more complicated surgical removal at a later date.

REQUIREMENTS

Castration must be performed by competent personnel using proper, clean, well-maintained instruments and accepted techniques.

Seek guidance from your veterinarian on the optimum method and timing of castration, as well as the availability and advisability of pain control for castrating beef cattle.

Castrate calves as young as practically possible.

EFFECTIVE JANUARY 1, 2016:

Use pain control, in consultation with your veterinarian, when castrating bulls older than nine months of age.

EFFECTIVE JANUARY 1, 2018:

Use pain control, in consultation with your veterinarian, when castrating bulls older than six months of age.

RECOMMENDED PRACTICES

a. consult your veterinarian about pain mitigation strategies for castration (3)
b. avoid castrating at the time of weaning to reduce stress (3)
c. when castrating weaned cattle, use banding to reduce the risk of excessive bleeding, and for operator safety (3)
d. ensure that tetanus vaccinations are current when applying bands to castrate bulls over 180kg (400lbs) (3)
e. monitor calves after castration (3). Check calves frequently to ensure that they are nursing or eating, and that there are no signs of infection and/or abnormal post-surgical bleeding
f. identify and record improperly castrated cattle or those with undescended testicles for appropriate further management (3).

4.6 Weaning

Weaning is the process of eliminating milk from the calf's diet (44). Under natural conditions, a cow's milk output decreases gradually over several months. Under conventional beef production, calves are typically weaned at 5-8 months of age.

The loss of contact between cow and calf is stressful for both and the loss of milk is additionally stressful for the calf (3). Newly weaned calves are at an increased risk for getting sick, in particular when other stressors are added, such as transportation and commingling with unfamiliar calves (45).

Most weaning methods use some form of separation of the cow and calf. Weaning is usually accomplished by abruptly removing the calf from physical and visual contact with the dam. Fence-line weaning is a variation of abrupt weaning where calves are separated from their dams and placed in an adjacent pen or pasture so that auditory and visual contact is maintained. Two-stage weaning first prevents nursing by placing a nose-flap on the calf while still with the cow. In the second stage, the nose-flap is removed and the cow and calf are separated (3).

RECOMMENDED PRACTICES

a. develop a weaning strategy that minimizes stress (3)
b. consider preconditioning or pre-vaccinating calves as part of your weaning strategy (3)
c. consider a low-stress weaning strategy, such as two-stage or fenceline weaning (3)
d. be prepared to wean earlier if pasture resources are limited and cow body condition scores are below target levels (Table 2.1) (3).

4.7 Predator Control

Predation of livestock by wild or feral animals can have a serious impact on cattle welfare, causing undue stress, injury or death.

RECOMMENDED PRACTICES

a. producers should be aware of predation risks in their area so that they may better design and implement predator control measures. Check with local or provincial authorities for regulations or programs regarding predator control
b. predator control measures should not bring additional risk to the livestock being protected, such as potential exposure to poisons or traps.

4.8 Tail Docking

Tail docking is not a common practice in the beef industry, though it is occasionally done to prevent injury to and infection of the tail of cattle housed in high-density slatted-floor barns.

REQUIREMENTS

Beef cattle must not be tail docked unless on the advice of a veterinarian.

RECOMMENDED PRACTICES

a. when new facilities are being built, design them to prevent tail injury and subsequent infection
b. reduce stocking density in slatted-floor facilities to reduce tail injuries.

5 Transportation

Desired outcome: Cattle arrive at their destination in good condition.

Each person involved in various stages of cattle transportation in Canada has a role in ensuring that the transportation process (including loading, transport and unloading) does not cause injury, undue suffering, or death of the animals.

If you are responsible for transporting cattle, or arranging for cattle to be transported, you must follow the most current national and provincial animal transport requirements (46-48). The federal requirements for animal transport are covered under the *Health of Animals Regulations, Part XII* (48). They are enforced by the Canadian Food Inspection Agency (CFIA) with the assistance of other federal, provincial and territorial authorities. Some provinces also have additional regulations related to animal transport. If you do not comply with the regulations, you could be fined or prosecuted. If your actions or neglect are considered animal abuse, you could also be charged and convicted under the *Criminal Code of Canada* and/or provincial regulations.

The scope of the beef Code of Practice ends at the farm gate, but includes requirements and considerations that affect the transportation process. To avoid duplication, the Code of Practice - Transportation should be used as a reference document for the actual transportation process (49).

5.1 Pre-Transport Decision Making and Preparation for Transport

It is the responsibility of the party that is shipping (or causing to be loaded) the cattle to ensure that all animals are fit for the intended journey. Fit cattle are those in good physical condition and health that are expected to reach their destination in the same condition. Refer to Appendices D and E to determine if an animal is fit for transport and whether any special conditions apply. Note that the terms unfit and compromised are not interchangeable. Cattle that are unfit may not be transported under any conditions unless for veterinary diagnosis or treatment; whereas those that are compromised may only be transported with special provisions (refer to Appendices D and E). If you are unsure as to an animal's fitness for transport, consult your veterinarian.

Those responsible for arranging transportation services need to know how long the cattle will be expected to be in transit, including intermediate stops, such as auction markets, and whether the transporter needs to provide additional services (e.g. feed, water, rest, etc.) during transit. When in doubt, assume the longest possibly trip.

REQUIREMENTS

The following are all requirements under the* Health of Animals Regulations Part XII *(48):

Unfit cattle must not be transported unless for veterinary diagnosis or treatment under the advice of a veterinarian (refer to Appendix D for a list of conditions).

Compromised animals may only be transported with special provisions and directly to their final destination (refer to Appendix D for a list of conditions and special provisions).

Cattle must receive feed and water within five hours prior to loading if transport will exceed 24 hours.

Cows or heifers that are likely to give birth during the journey must not be transported, unless for veterinary diagnosis or treatment.

Ensure that any loading and unloading equipment, chutes or conveyances are free of hazards in order to minimize the risk of injury.

5.2 Arranging Transport

REQUIREMENTS

Transporters must follow the most current federal and provincial animal transport regulatory requirements (46,47,48).

Cattle must be transported by competent personnel (through training, experience, or mentorship) using safe, well-maintained equipment.

The right of the transporter to refuse to load cattle that s/he deems unfit for transport must be respected. The reason for refusal must be addressed.

Cattle producers and transporters must immediately report instances of inhumane handling to proper authorities.

RECOMMENDED PRACTICES

a. be familiar with the appropriate regulations and the Code of Practice - Transportation (49), even if you are not the one actually transporting cattle
b. respect the recommendation of an experienced transporter to adjust loading densities to current weather conditions and weight restrictions
c. ensure that all required documentation is completed to avoid unnecessary delays at inspection stations, borders, or other checkpoints
d. provide cattle transporter(s) with the telephone number of the home or office of the shipper and receiver to immediately report an emergency situation (appropriate numbers should be furnished by shippers). Avoid long distance transport in extremely hot, humid temperatures to prevent animal suffering
e. consider evening loading to avoid transport during the hottest hours of the day.

5.3 Loading and Receiving

When loading cattle, shippers should defer to the expertise of the transporter who has a general understanding of allowable weight and loading density allowable on each part of the trailer. Transporters are also aware of variations between provincial/state requirements.

General principles of good cattle handling apply to the loading and unloading of cattle (refer to *Section 4.1 - Handling and Moving Cattle*), and their use will reduce stress and injury for both handlers and cattle.

REQUIREMENTS

All Requirements under* Section 4.1 - Handling and Moving Cattle *apply here.

The following are all requirements under the* Health of Animals Regulations, Part XII *(48):

Do not load or unload livestock in a manner that is likely to cause injury or undue suffering.

Cattle must be able to stand in a normal posture without coming into contact with the roof or upper deck of the vehicle.

Cattle that arrive unable to rise and walk unassisted (non-ambulatory cattle/downers) must be examined on arrival and their likelihood of recovery assessed. Cattle must not be dragged from the vehicle while conscious; they must be humanely stunned or euthanized on the vehicle prior to unloading. Once unloaded, a stunned animal must be immediately confirmed dead or euthanized. If an animal is likely to recover, it may only be unloaded for veterinary treatment under the advice of a veterinarian.

Segregate cattle that are incompatible by reason of their nature, temperament, sex, weight or age.

Ensure that cattle have proper ventilation, are protected from extreme weather such as extreme cold, windchill or extreme heat.

Provide safe and secure footholds (footing) or adequate bedding to prevent cattle from slipping and falling.

RECOMMENDED PRACTICES

a. avoid loading cattle at densities greater than recommended in the current Code of Practice – Transportation (49). Appropriate loading densities will depend on a number of factors including, but not limited to, animal size and body condition, presence of horns, and weather conditions. Cattle should be provided with enough floor space in a vehicle to maintain their balance and change position within the compartment
b. eliminate gaps between the end of the loading ramp and the vehicle (49)
c. ensure that the loading area promotes smooth flow of cattle on or off the vehicle. Avoid significant changes in floor height or distractions. If a difference in height between the loading surface and the vehicle floor is significant enough to cause balking, a ramp should be used
d. during extreme weather, cattle waiting for loading or waiting for further actions after unloading should be able to access well drained, sheltered areas with access to water
e. schedule loading and transport to try to avoid long delays in transit (e.g. borders) or at the destination (e.g. packing plants)
f. locations receiving cattle should be equipped with personnel or facilities to meet the animals' needs upon arrival, such as water or feed.

6 On-Farm Euthanasia

Desired Outcome: Cattle are euthanized when necessary in a timely and effective manner.

Euthanasia is the humane termination of an animal's life. This may be necessary when a sick or injured animal is not responding favourably to treatment or has a poor prognosis. Euthanasia of an animal may also be necessary to ensure human safety, or for regulatory requirements associated with disease control. Be aware that cattle may hide signs of pain or suffering, and that this may affect your assessment of their condition in making a decision about euthanasia (19).

Having a euthanasia decision-making process and providing training in the techniques of euthanasia can help ensure that euthanasia is carried out in a timely manner. Cattle must be rendered unconscious with minimal pain or distress prior to the cessation of vital life functions. Depending on the method used, this may result from a single action (e.g. gunshot). In all cases, however, operators should be prepared to apply a second gunshot, or a secondary kill step (bleeding out or pithing) if the first application does not result in immediate unconsciousness and prompt death. This requires that all personnel involved in euthanasia be knowledgeable and competent in the techniques and equipment being used.

6.1 Euthanasia and Culling Decisions

Being prepared for on-farm euthanasia includes (50):

- competent personnel (through training, experience, or mentorship)
- access to proper equipment
- clear decision points for euthanasia (see Requirements below).

REQUIREMENTS

Euthanize (or cull*) without delay cattle that:

- ***are unlikely to recover, or***
- ***fail to respond to treatment and convalescent protocols, or***
- ***have chronic, severe, or debilitating pain and distress, or***
- ***are unable to get to or consume feed and water, or***
- ***show continuous weight loss or emaciation.***

** If culling, requirements for transporting compromised animals must be followed (see* **Section 5 - Transportation***).*

6.2 Methods of On-Farm Euthanasia

When choosing a method of euthanasia, consider the following (19):

- animal welfare
- skill level of the person performing euthanasia
- human safety
- carcass disposal
- potential need for brain tissue for diagnostic purposes.

REQUIREMENTS

An acceptable method for euthanizing cattle must be used (see Table 6.1).

Euthanasia must be performed by competent personnel (through training, experience, or mentorship).

Equipment used for euthanasia, such as guns or captive bolt devices, must be maintained according to manufacturers' instructions to ensure proper function.

Non-ambulatory cattle may not be dragged or forced to move prior to euthanasia.

Table 6.1 – Acceptable Euthanasia Methods for Cattle (adapted from 19,50,51)

Method	Suitable for	Procedure and Equipment
Gunshot	Calves (under 181kg [400lbs])	Requires a minimum of 407 joules (300ft-lb) muzzle energy (52). Examples of appropriate firearms include: centrefire high powered rifle or shotgun (20 gauge or greater, from no more than 10m [32ft]) (see Figure 6.2). Note: A standard .22 calibre long rifle only produces 119-138 joules (116-135 ft-lb) of muzzle energy and is not sufficient to humanely kill cattle.
	Yearlings, Cows and Mature Bulls	Requires a minimum of 1356 joules (1000ft-lb) muzzle energy (52). Examples of appropriate firearms include: centrefire high powered rifle or shotgun (20 gauge or greater, from no more than 10m [32ft]) (see Figure 6.2). Note: A standard .22 calibre long rifle only produces 135 joules (100ft-lb) of muzzle energy and is not sufficient to humanely kill cattle.
Penetrating Captive Bolt Device + Secondary Kill Step	All weight and age classes	Choose appropriate calibre, charge, and bolt length for animal size. Restraint if needed. A secondary method (bleeding out or pithing) may be required if the penetrating bolt device is designed only to stun the animal (see Appendix F).
Non-penetrating Captive Bolt Device + Bleeding Out	Young calves only	Restraint if needed. Bleeding out step required (see Appendix F).
Approved Euthanasia Drugs	All cattle	Must be administered by a veterinarian. Restraint if needed. Safe disposal of carcass when barbiturates are used.

Important - The following are some examples of methods that are **unacceptable** because they cause suffering (50):

- manually-applied blunt trauma to the head – does not consistently cause immediate loss of consciousness
- injection of chemical agents not approved for euthanasia into conscious cattle – does not cause immediate loss of consciousness
- air embolism – causes pain associated with cardiac arrest
- electrocution – causes pain associated with cardiac arrest after ineffective stunning
- exsanguination (bleeding out) without proper stunning first – causes pain and distress prior to loss of consciousness.

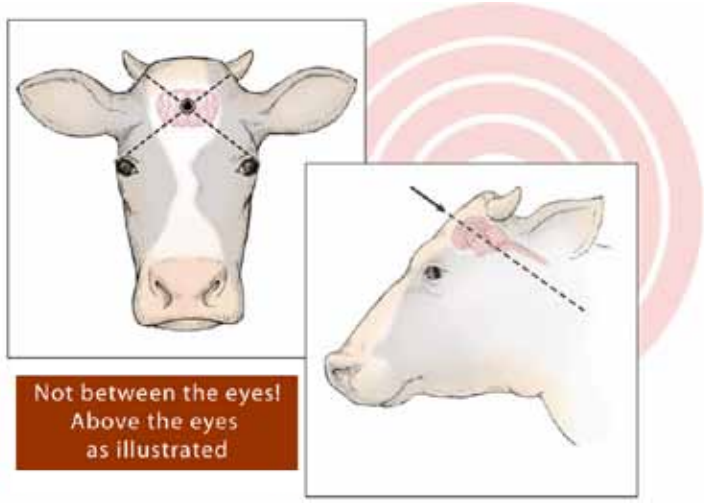

Figure 6.1 Location of the brain within the skull of a mature bovine and the correct placement and direction of shot or captive bolt penetration. Proper positioning of the firearm or penetrating captive bolt is necessary to achieve the desired results. The frontal target area is high up on the head of the animal, NOT BETWEEN THE EYES. An X can be made on the animals head by drawing imaginary lines between the outside corner of the eye to the horn (or where a horn would be for polled or dehorned cattle) on the opposite side. The firearm should be positioned so that the muzzle is perpendicular to the skull. There may be some differences in location of the shot based on the skull shape and horn mass of an animal (such as for bulls).

Reprinted with permission: J.K. Shearer and A. Ramirez, College of Veterinary Medicine, Iowa State University www.vetmed.iastate.edu/HumaneEuthanasia (53).

Figure 6.2 Calves' brains are larger relative to their body size than those of adult cattle. However, the forebrain of calves is also comparatively underdeveloped. Therefore the correct placement of the captive bolt or the aiming point of the firearm is lower as well. Tilt the gun back slightly to ensure destruction of the brainstem.

Adapted with permission from: www.facs.sk.ca/welfare_bovine_cf_euthanasia.htm.

RECOMMENDED PRACTICES

a. avoid moving or handling cattle more than necessary prior to euthanasia
b. restrain cattle as necessary for euthanasia, choosing the safest and least stressful method of restraint possible
c. consider, in consultation with your veterinarian, using sedation to facilitate the euthanasia of unmanageable or aggressive cattle (54)
d. consider pithing as an alternative secondary kill step where aesthetic or sanitary concerns make bleeding out unfeasible (54) (see Appendix F).

6.3 Confirmation of Insensibility and Death

Death does not occur immediately but is the result of respiratory and cardiac failure, which can take several minutes (52,54). It is therefore essential that animals be swiftly rendered insensible, and remain insensible until death has occurred. For this reason, euthanasia methods that affect the brain first (shooting or captive bolt) are usually preferred (54).

An animal has not been successfully rendered insensible if it shows any of the following signs (19):

- vocalizes
- attempts to rise or right itself
- lifts its head
- shows eye movements or blinks.

REQUIREMENTS

Evaluate the animal's consciousness immediately after the application of the appropriate euthanasia method by checking for a corneal reflex (see below).

Be prepared to immediately deliver a second application should the first attempt not render the animal immediately insensible.

Confirm death before moving or leaving the animal (see below).

Confirm insensibility:

- ***Touch the eyeball and note if the animal blinks (corneal reflex). An insensible animal will not blink.***

Confirm death: A lack of heartbeat and respiration should be used to confirm death (50):

- ***Evaluate heartbeat by physical palpation or by placing a stethoscope over the left lower chest area of the animal, just behind the elbow.***
- ***Evaluate respiration by observing the chest for any breathing movement. Note that breathing may be slow and erratic in an unconscious animal.***

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Glossary

The following definitions are used in the context of this document:

Abomasum: the fourth stomach of cattle (and other ruminants). Corresponds to the true stomach of single-stomached animals.

Abortion: premature birth of a dead fetus.

Abscess: collection of pus in a cavity or capsule resulting from the disintegration of the infected tissue.

Acidosis: an abnormally acidic condition of the rumen (pH 5.3-5.7). Typically due to rapid or over-consumption of highly digestible feeds. Can cause digestive upset or even death.

Acute: short term or short duration.

Ad libitum: free choice; feed is freely available, allowing cattle to eat as much as they want, whenever they want.

Afterbirth: fetal membranes that are expelled after the birth of a calf.

Analgesic: a drug that relieves pain.

Anesthetic: a drug that causes a loss of feeling or sensation. There are two kinds of anesthetic: general and local. (See: Anesthetic – general, Anesthetic – local).

Anesthetic – general: a drug that causes a state of unconsciousness. (Compare: Anesthetic – local)

Anesthetic – local: a drug that causes loss of feeling only in a limited area of the body. (Compare: Anesthetic – general)

Antibody: specific protein that is produced in response to the presence of a foreign protein (antigen) that has been introduced into the body.

Antigen: foreign substance (infectious agent) that, when introduced into the blood or tissue, triggers the formation of antibodies.

As fed: feeds that contain their normal amount of moisture. (Compare: Dry matter)

Average daily gain (ADG): amount of weight gained per day.

Backfat: the amount of fat cover on an animal's back. Usually measured at the twelfth to thirteenth rib.

Backgrounding: a growing program for feeder cattle from weaning until they are put on a finishing ration in a feedlot. Cattle may be grown on grass or fed harvested feed.

Barbiturate: a class of drugs that depress the central nervous system (brain and spinal cord).

Belly bulls: male cattle that have been improperly elastic or band castrated having one or both testicles trapped above the band/elastic against the belly. (See also: Belly nuts)

Belly nuts: testicles that are trapped against the animal's belly as a result of improper band or elastic castration. (See also: Belly bulls)

Biosecurity: measures taken to protect a population from potentially harmful illness or disease.

Bleeding out: a secondary kill step intended to ensure that an animal dies promptly following humane stunning. Allowing the majority of an animal's blood to leave the body through a deliberate wound, usually the severing of the jugular vein in the neck.

Bloat: abnormal distension of the rumen as a result of accumulated gases that cannot escape.

Body condition score: A subjective score of the amount of fat an animal has. In Canada, a 5-point scale is commonly used (there is also a 9-point scale). An important tool for monitoring feeding programs. (See: Appendix A)

Bovine: refers to the general family of cattle species.

Bovine respiratory disease: disease complex of the respiratory tract of young cattle, often caused by a combination of viruses and bacteria. Most often seen around weaning time. Sometimes referred to as shipping fever.

Branding: creating a permanent mark on the skin of an animal for the purposes of identification. (See also: Freeze branding, Hot iron branding)

Brisket: chest area of cattle.

Buller-steer syndrome: behavioural problem where a steer is repeatedly mounted by other steers in the group. Can result in poor performance or injury to the ridden (buller) steers.

Bunk: feed trough or container.

Caesarean section: delivery of a calf through an incision in the abdominal and uterine walls. Usually a result of calving problems.

Calf: male or female bovine animal under six months of age.

Calving difficulty: abnormal or difficult labour, resulting in problems delivering a calf. (See also: Dystocia)

Captive bolt: hand-held device used when euthanizing livestock. Captive bolt devices may stun or kill, depending on their design and power. Penetrating captive bolt devices pierce the animal's skull, whereas non-penetrating captive bolt devices deliver a powerful blow, rendering the animal unconscious without penetrating the skull.

Castrate: to remove the testicles from a male animal.

Chronic: long-term or long duration.

Colostrum: the first milk given by a cow after calving. It is high in antibodies that protect the calf from infection.

Compromised animal: an animal with reduced capacity to withstand transportation but where transportation with special provisions will not lead to undue suffering. Compromised animals may be locally transported with special provisions to receive care, be euthanized or slaughtered. (See Appendices D and E; Compare: Unfit for transport)

Corneal reflex: the reflex of blinking the eye when the surface of the eyeball (cornea) is touched.

Cow: sexually mature female bovine animal that has given birth to a calf.

Creep feeding: supplemental feeding of suckling calves in an enclosure (creep) that prevents larger cattle from entering.

Dam: female parent.

Dehorning: to remove the horns of an animal, after the horn buds have attached to the skull (at about 2-3 months of age). (Compare: Disbudding)

Digestibility: the extent to which a feed is able to be digested.

Disbudding: to remove the horns of an animal before the horn buds have attached to the skull. (Compare: Dehorning)

Dry matter: feedstuffs after the water (moisture) has been removed. (Compare: As fed)

Dry matter intake: the amount of feed consumed on a dry matter basis (excluding moisture). (See: Dry matter. Compare: As fed)

Dystocia: abnormal or difficult birth, resulting in problems delivering a calf. (See also: Calving difficulty)

Emaciation: being severely thin, as associated with starvation or illness.

Esophageal feeder: a device that allows the producer to safely deliver milk directly into a newborn animal's stomach (via the esophagus). Also called: stomach tube or tube feeder.

Euthanasia: the humane killing of an animal usually to prevent suffering or in the case of an untreatable illness or injury.

Feed bunk: trough or container used to feed cattle. (See also: Bunk)

Feed efficiency: ratio of feed required to produce a unit of weight gain.

Feedlot: cattle operation where cattle are typically housed in pens and fed stored feeds. Feedlots range in size from a few to thousands of cattle.

Feral: a domesticated animal that has become wild.

Finished cattle: cattle that are ready for slaughter.

Flight zone: the distance between an animal and a perceived threat (such as a human) at which the animal will move away.

Footrot: bacterial infection of interdigital skin of the foot, characterized by swelling of the foot.

Freeze branding: the permanent identification of animals using super-cooled instruments to destroy the pigment-producing cells of the skin (melanocytes), resulting in white hair regrowth.

Gestation: the period from conception to birth of a calf; typically 285 days in cattle.

Heifer: a young female bovine that has not yet given birth to a calf.

High energy feeding: a feeding regimen that relies on a nutritionally-balanced ration with a higher proportion of processed grains, premixes, and supplements and a lower proportion of forages such as hay or silage. Such diets are typically used to finish cattle prior to slaughter.

Homozygous polled genetics: cattle carrying uniform genetics for the absence of horns.

Hot iron branding: the permanent identification of animals using super-heated instruments to create a specific mark indicating ownership.

Humidex: a measure of effective environmental conditions that combines both temperature and relative humidity.

Hypothermia: low core body temperature.

Immunoglobulin: blood proteins produced by an animal's immune system in response to foreign proteins (antigens). Adult animals develop immunoglobulins normally as they are continually exposed to new antigens (active immunity). Calves are born without such immunoglobulins, which are too large to pass from the cow to the calf in utero. They must be passed to the calf through the cow's immunoglobulin-rich colostrum in the first 24 hours of life, after which time the calf's gastrointestinal tract is no longer able to absorb them. (See also: Colostrum, Antibody, Antigen, In utero, Passive immunity)

In utero: in the uterus, i.e. during gestation.

Infectious arthritis: joint inflammation resulting from infection.

Insensible: unconscious and unable to perceive pain.

Laminitis: foot disease in which the sensitive tissues of the hoof or claw become inflamed and painful. May be a result of ruminal acidosis.

Maternal antibodies: antibodies passed from the dam to her offspring, either during gestation or after birth via the colostrum. (See also: Antibody, Colostrum, Immunoglobulin, Passive immunity)

Metaphylaxis: administration of antibiotics to a group of cattle in order to prevent or treat latent infections. Often used as a strategy to prevent morbidity of cattle newly-arrived at a feedlot.

Micronutrient: a component of the diet that is required only in a very small amount.

Mis-mothering: failure of a cow to bond with its newborn calf.

Morbidity rate: a measure of the level of illness, typically expressed as the percentage of animals that become sick in a given period of time. (Compare: Mortality)

Mortality rate: the percentage of animals that die within a period of time. (Compare: Morbidity)

Non-ambulatory: Defined by the Canadian Food Inspection Agency (CFIA) as an animal that is unable to stand or walk without assistance.

Outcome-based measures of animal welfare: direct indicators of an animal's well-being, such as body condition score, morbidity and mortality rates, growth rate, reproductive performance.

Particle length: the length of forage particles in a feed ration.

Passive immunity: the acquisition of immunity from a donor animal; in this context, via the dam's colostrum. (See also: Antibody, Antigen, Colostrum, Immunoglobulin, Maternal antibodies)

Pithing: the destruction of the brain and brain stem by thrusting a blunt instrument into the skull. A secondary kill step in euthanasia. (See: Appendix F)

Point of balance: a term used when handling cattle referring to a point on the animal's body (usually the shoulder) where the animal perceives a person to be standing in front of them (causing it to back up) or behind them (causing the animal to move forward).

Polled: naturally (genetically) hornless.

Post-partum: occurring after birth.

Pre-conditioning: steps taken by a cow-calf producer to prepare calves for marketing and shipping. May include management procedures such as: starting calves on feed; vaccination; and weaning prior to shipping.

Rumen: the largest of the ruminant stomachs and the site of fermentation of fibrous feeds.

Ruminal epithelium: the lining of the rumen.

Scours: diarrhea.

Sire: male parent.

Spaying: to remove the ovaries to prevent pregnancy. Occasionally performed in the beef industry to prevent pregnancy in heifers that must be housed with bulls.

Special provisions for transport: defined by the Canadian Food Inspection Agency (CFIA) as measures taken to ensure the safety and comfort of a compromised animal during transport to slaughter or for veterinary diagnosis or treatment. These may include: local and direct transport only; providing extra bedding; loading the animal last and unloading it first; separating it from other animals in the shipment; or transporting it with a familiar animal to help it remain calm. (See: Appendix D)

Spinous vertebral processes: projections of bone that emerge from the vertebral column (backbone). Used as landmarks when body condition scoring. (Compare: Transverse vertebral processes; See: Appendix A)

Steer: a castrated male bovine.

Stray voltage: the accumulation of low levels of electricity in the metalwork of a barn or other farm infrastructure, such as watering devices. Usually a result of poor wiring or improper grounding of the electrical system. Can result in cattle receiving shocks when they drink or enter handling equipment. (Also called: Tingle voltage)

Stunning: rendering an animal unconscious prior to euthanasia or slaughter, usually with a captive bolt device.

Supplement: an addition to a livestock ration intended to make up for any nutritional deficiencies in the base ingredients.

Tail docking: the removal of part or all of an animal's tail.

Tethered: confining an animal by the neck, using a halter, collar, or stanchion.

Tingle voltage: the accumulation of low levels of electricity in the metalwork of a barn or other farm infrastructure, such as watering devices. Usually a result of poor wiring or improper grounding of the electrical system. Can result in cattle receiving shocks when they drink or enter handling equipment. (See also: Stray voltage)

Toe-tip necrosis: damage to and infection of the smallest toe bones in the foot, typically of the hind limb.

Transverse vertebral processes: projections of bone that emerge from the side of the vertebral column. Used as a landmark when body condition scoring. (Compare: Spinous vertebral processes; See: Appendix A)

Tube feeder: a device that allows the delivery of colostrum or milk directly into the stomach of a calf. (Also: Esophageal feeder)

Unfit for transport: an animal with reduced capacity to withstand transportation and where there is a high risk that transportation will lead to undue suffering. Unfit animals may only be transported for veterinary treatment or diagnosis. (See: Appendices D and E; Compare: Compromised cattle)

Weaning: the separation of calves from their dams and the removal of milk as a food source.

Weaning abrupt: complete and sudden separation of the cow and calf with no tactile, visual, or auditory contact.

Weaning – fence line: separation of the cow and calf to opposite sides of a fence, thereby having visual and auditory contact.

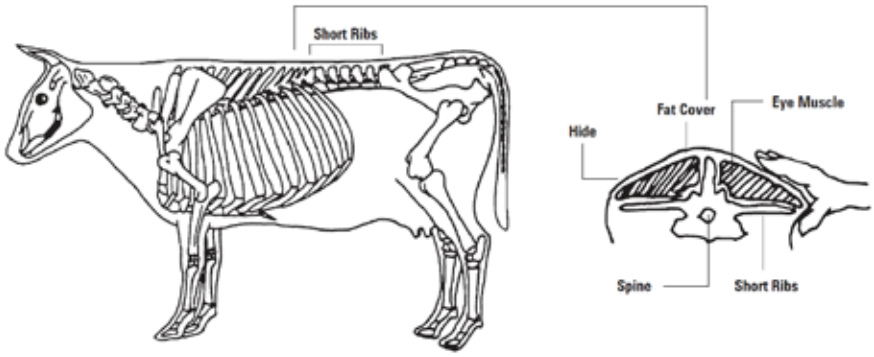
Weaning – two stage: Calves initially remain with their dams, but wear a nose-flap to prevent nursing for 5-7 days. Then the nose flaps are removed and the cow-calf pairs are separated.

Body Condition Scoring

Body condition scoring (BCS) is a hands-on method of assessing the amount of fat cover on an animal, and is an important tool in managing beef cattle and optimizing the use of feed resources. In Canada, we use a 5-point BCS system, originally developed in Scotland. American beef producers typically use a 9-point system.

BCS is determined by assessing the degree of muscle and fat cover at specific landmarks on an animal's body, specifically over the spinous (vertical) and transverse (horizontal) processes of the short ribs (loin) and (in fatter cattle) the tail head and ribs.

Be aware that body condition scores are most applicable to mature cattle and may be of little use for cattle under one year of age.



BCS 1

BCS 2

BCS 3

BCS 4

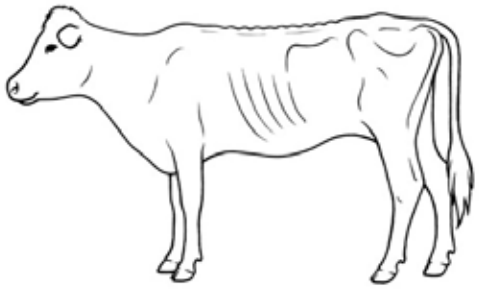
BCS 5

Adapted from: Alberta Agriculture and Food. *Body Condition: Implications for Managing Beef Cows*. Agdex 420/40-1. Available: www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex9622/$FILE/body-condition-implications-for-managing-beef-cows.pdf. Accessed October 2, 2012.
What's the Score: Beef Cow – Body Condition Scoring (BCS) Guide. Alberta Agriculture. Available: www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/agdex9622/$FILE/bcs-beef-cow.pdf

Body Condition Scoring (continued)

Overview of all the body condition scores of beef cows

BCS 1



ENTIRE ANIMAL

- Extremely thin
- No fat in brisket or tail docks
- All skeletal structures are visible
- No muscle tissue evident
- No external fat present
- Dull hair
- Survival during stress doubtful

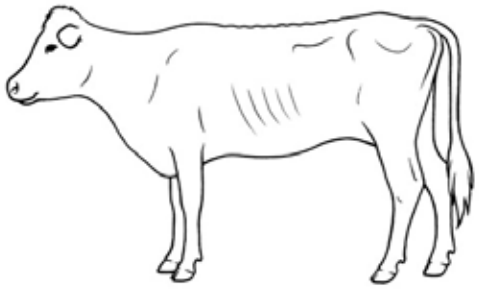
BACK BONE

- Individual vertebrae well defined, sharp
- Can place fingers between each vertebrae

SHORT RIBS

- Visually prominent
- No fat present
- Very sharp to the touch

BCS 2



ENTIRE ANIMAL

- Thin
- Upper skeleton prominent (vertebra, hips, pin bones)
- Muscle tissue evident, but not abundant
- Some tissue cover around the tail dock, over the hip bones and the flank

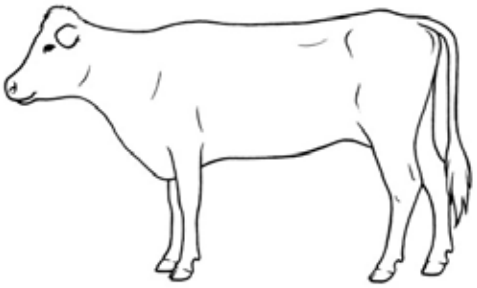
BACK BONE

- Individual vertebrae can be felt, but not as sharp
- Can't place fingers between vertebrae

SHORT RIBS

- Feel individual ribs, sharp rather than very sharp
- Identify individual ribs visually

BCS 3



ENTIRE ANIMAL

- Ideal flesh for calving
- Ribcage only slightly visible
- Hooks and pins visible, but not prominent
- Muscle tissue nearing maximum
- Fat deposit behind shoulder obvious
- Fat in brisket area
- Tail docks easily felt

BACK BONE

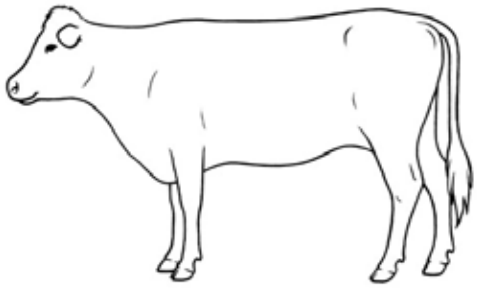
- Somewhat defined
- Difficult to feel top of vertebrae

SHORT RIBS

- Completely covered with fat, beginning to spread over rump
- Individual ribs only felt with firm pressure

Body Condition Scoring (continued)

BCS 4



ENTIRE ANIMAL

- Skeletal structure difficult to identify
- Obvious fat deposits behind shoulder, and at tail head
- Fat on brisket and over shoulder

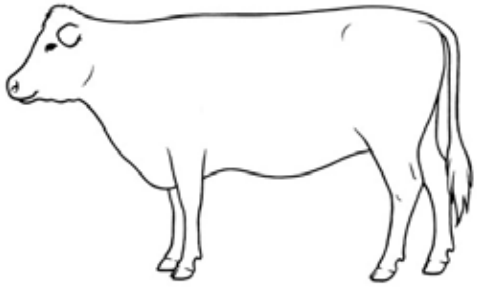
BACK BONE

- Flat appearance to the top line
- Can't feel individual vertebrae

SHORT RIBS

- Folds of fat beginning to develop over the ribs and thighs
- Can't feel individual ribs, even with firm pressure

BCS 5



ENTIRE ANIMAL

- Obese
- Flat appearance dominates
- Brisket heavy
- Bone structure not noticeable, "blocky" appearance
- Tail head and hips bones almost completely buried in fat and folds of fat

BACK BONE

- Flat back
- Can't feel backbone

SHORT RIBS

- Completely covered by fat
- Mobility impaired by large amounts of fat

Nutrient Requirement Guidelines for Beef Cows and Growing Beef Cattle

Table 1 - Nutritional Requirement Guidelines for Beef Cows (544kg [1,200lbs] body weight)

Class	TDN%	CP%	Ca%	P%
Dry Cow, Early to Mid-Gestation	48-52	7	0.26	0.16
Dry Cow, Late-Gestation	58	9	0.27	0.17
Lactating Cow	60-65	11-12	0.36	0.26
Nutritional requirements vary with body weight and stage of production. All rations should be balanced for energy, protein, vitamins and minerals				

Table 2 - Nutritional Requirement Guidelines for Growing Beef Cattle

Class	TDN%	CP%	Ca%	P%
Growth (226kg [500lbs] BW)	70	13	0.49	0.24
Finishing (362kg [800lbs] BW)	80	11	0.42	0.22
Nutritional requirements vary with body weight and stage of production. All rations should be balanced for energy, protein, vitamins and minerals.				

Adapted from: National Research Council. Nutrient Requirements of Beef Cattle: Seventh Revised Edition: Update 2000. Washington, DC: The National Academies Press, 2000. Available: www.nap.edu/catalog.php?record_id=9791.

Calving: When and How to Help

The basis of a cow–calf enterprise is a healthy cow with a healthy nursing calf. Knowing when and how to help is an important part of responsible calving management.

A Cow or Heifer is Having Difficulty When:

- the cow actively strains for 40 minutes with no progress
- 90 minutes have passed since the waterbag first appeared
- the legs emerge with the surface of the hooves pointing up
- only the head or tail emerges
- an uncalved cow is mothering another calf
- a cow has demonstrated greater than 5-6 hours of anxiety, e.g. walking about, tail extended, apparently looking for something.

To Examine a Cow that is Having Difficulty:

- restrain the cow either in a chute or in a safe and humane manner
- wash all manure away from around rectum and vulva
- soap your arm or use plastic sleeves with soap; hairy arms can bruise the birth canal
- explore the problem.

Calves Should Only be Pulled If:

- two front legs and a nose or two hind legs and the tail can be guided into the bony part of the birth canal.

  NOTE: To distinguish front and back legs, feel the joint above the one nearest the hoof. If it bends the same direction as the lower joint it is a knee–front leg. If it bends the opposite direction it is a hock–back leg.

If the Calf is Malpositioned:

Gently position the legs and head correctly. Gently push the calf back a little way to get some working room. Do not push against the cow's contractions–work with her, not against her. Cover the teeth and feet with your hand as you move them to reduce injury to the cow.

NOTE: If the position is too difficult to correct in 20 minutes, or two strong people cannot pull the calf–call your veterinarian or an experienced cattle producer.

Attach loops of soft nylon rope or surgical chain to the legs. By convention, place a loop above the fetlock joint as well as a half hitch below. A loop may also be placed around the head–over the poll behind the ears and under the mouth. NEVER attach a loop to the lower jaw.

Pull back and down on the ropes for a head-first calf, straight back for a tail-first calf. Pull alternately on either leg to angle the shoulders through the pelvis. Two strong people (pulling force of 250lbs maximum) should be able to pull a calf into the birth canal.

Use calf pullers with caution. Remember to release tension periodically. Allow cow to push calf out.

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502 - 45th Street West, 2nd Floor, Saskatoon, SK S7L 6H2
Phone: 306-249-3227 Fax: 306-244-4497
e-mail: facs@sasktel.net website: www.facs.sk.ca
FACS represents the livestock industry in advancing responsible animal care and handling practices in agriculture.

PROVIDING ASSISTANCE AT CALVING

When Should You Present a Heifer or Cow to a Veterinarian for Caesarian Section?

A) If the calf is too big! This is measured by the following:

- if the front feet fill the pelvis and you can't get your hand beside them
- if with gentle pulling, you cannot get the head and feet into the pelvis at the same time; two people using body weight only (e.g. 250lbs)
- if the heifer/cow has been actively straining for 30-40 minutes and hasn't been able to push the head and feet (or the tail head if coming backwards) into the bony part of the birth canal.

B) If there are other complications like:

- incomplete opening of soft tissues of the birth canal
- twisted uterus
- misshapen pelvis
- fetal monster.

The Most Common Post-Calving Complications:

A) Prolapsed Uterus

If the cow is straining badly and the uterus is very flaccid, she may push the uterus out through the birth canal, inside-out. This large solid mass of tissue with 2-3in long "buttons" on the surface where the membranes attach is the uterus "inside out."

Action Indicated:

- restrain the cow, the uterus is less likely to be damaged and is easier to be replaced in cows that are down
- if there is a delay, cover the uterus with a wet towel or blanket to protect from cold and keep moist
- keep other animals including cows away; they may eat or damage the uterus
- call your veterinarian.

B) Retained Placenta:

Normally the afterbirth will come away by 24 hours. There is no concern unless the cow is sick, e.g., with a high temperature and "off feed".

Action Indicated:

- daily antibiotic injections as directed by your veterinarian; if there is no response in three days, call your veterinarian.

This FACS initiative is funded by the Saskatchewan Beef Development Fund and endorsed by the Canadian Cattlemen's Association, Saskatchewan Cattle Feeders Association, Saskatchewan Dairy Association, Saskatchewan Livestock Association, Saskatchewan Livestock Markets and Order Buyers Association, Saskatchewan Stock Growers Association.

Transport Decision Tree

FIT ANIMALS

TRANSPORT

- Those that will arrive at their final destination in good condition
- According to the *Health of Animals Regulations Part XII* and CFIA policies
- Consult also *Code of Practice for the Care and Handling of Farm Animals: Transportation.*

*Special Provisions for Compromised Animals

Compromised animals, if loaded, must be transported **directly** to the nearest available place to receive care, treatment, be slaughtered or euthanized – but only with special provisions, such as:

- Local direct transport only
- Extra bedding
- Loading in a rear compartment
- Separation from other animals
- Penning with a familiar companion animal
- **Other measures as appropriate**, e.g. veterinary assessment prior to loading when unsure of the animal's capacity to withstand transportation.

COMPROMISED ANIMALS

TRANSPORT WITH SPECIAL PROVISIONS*

Compromised Animals Policy (Health of Animals Regulations Part XII)

Examples:

- Lameness, even if slight (may deteriorate quickly in transit)
- Cancer eye
- Bloated (if not weak or already down)
- Having given birth in the preceding 48 hours
- Acute frostbite
- Labored breathing
- Blindness in both eyes
- Open wound (depending on the severity of the wound, the animal may be unfit)
- Not fully healed after an operation, such as dehorning or castration
- Rectal or vaginal prolapse
- Lumpy jaw
- Left/right displaced abomasum (without weakness, toxicity)
- Abscess
- Acute penis injury
- Hardware disease with localized signs
- Unhealed broken tail or jaw
- Hobbled to prevent kicking, or
- Amputation or deformity (only if fully-healed and not painful).

UNFIT ANIMALS

DO NOT TRANSPORT

Other than for veterinary diagnosis or care

Examples:

- Unable to rise, remain standing, or move without assistance, reluctant to move (non-ambulatory)
- Severe lameness
- Fractured limb or pelvis
- Rupture of pre-pubic tendon (after splitting)
- Likely to give birth
- Uterine prolapse
- Severe cancer eye
- Arthritis in multiple joints
- Cancer/leukosis (extensive)
- Pneumonia (unresponsive with fever)
- Water belly
- Nervous disorder (e.g. rabies – must be reported to CFIA)
- Emaciation, dehydration or dehydration
- Fever, shock or dying.

Do not continue to transport an animal that becomes compromised or unfit beyond the nearest available place where it can receive care, be euthanized or slaughtered.

Source: This Appendix was developed by the Code Development Committee with input from the Canadian Food Inspection Agency.

Lameness Descriptions Rendering Animals Compromised or Unfit for Transport

Use these descriptions to determine whether an animal requires special provisions during transportation or whether it is unfit for transport.

TRANSPORT WITH SPECIAL PROVISIONS:

The animal has imperfect locomotion, a slight limp; the lame leg may not be immediately identifiable.

Rationale: Even a slight lameness is a condition that can deteriorate very quickly especially when the animal must negotiate ramps during the loading and unloading process justifying the need to avoid auction markets and assembly yards. This animal is at risk of becoming non-ambulatory during transport and can only be transported with special provisions to the nearest suitable place where it can be humanely slaughtered (local slaughter) or cared for.

DO NOT LOAD - UNFIT FOR TRANSPORT (except for veterinary treatment or diagnosis, using specialized equipment and in accordance with provincial regulations on the advice of a veterinarian):

- It cannot rise without assistance and is reluctant to walk, and exhibits halted movement. **This animal is non-ambulatory**. Treatment, euthanasia, or emergency on-farm slaughter is necessary.
- It is unable to rise or to remain standing without assistance. **This animal is non-ambulatory**. Treatment, euthanasia, or emergency on-farm slaughter is necessary.
- It cannot be transported without undue suffering because of lameness (*Health of Animals Regulations 138(2)(a)*), even if the animal can rise or remain standing without assistance because the animal demonstrates one of the following: obvious arched back and head bob; obvious limp with uneven weight bearing; not bearing any weight on one leg immediately identifiable i.e. inability to use a foot to walk or obvious shortened strides; or the animal must be strongly encouraged to move.

Note: In rare instances, where an animal has a deformity or an amputated limb that has fully healed and where the animal is NOT suffering due to the lameness, said animal can be transported to local slaughter or for care with special provisions as the deformity or healed amputated limb would render the animal compromised.

Source: This Appendix was developed by the Code Development Committee with input from the Canadian Food Inspection Agency.

Euthanasia - Secondary Kill Steps: Bleeding Out and Pithing

Bleeding out (Exsanguination)

Bleeding out should be performed using a pointed, very sharp knife with a rigid blade at least 15cm (6in) in length. Insert the knife through the skin of an **already insensible animal** just behind the point of the jaw and below the bones of the neck (see Figure 1). Draw the knife forward to sever the jugular vein, carotid artery, and the windpipe (19). Blood should flow freely, and death will occur in several minutes.

Figure 1. Exsanguination of an unconscious animal (previously stunned with captive bolt device or gunshot): Insert a sharp, single-sided blade, at least 15cm (6in) long into the neck below the neck bones and behind the jaw. Draw the blade forward to sever the major blood vessels (jugular vein and carotid artery) of the neck and the windpipe (trachea). Blood should begin to flow freely, and death occurs within minutes.

Illustration by: Juliane Deubner, Medical Illustrator, Western College of Veterinary Medicine.

Pithing

Pithing is the process of mechanically destroying the brain of a stunned, unconscious animal to prevent return to consciousness. It can also help reduce the involuntary reflex kicking shown by some stunned animals. Pithing is performed by inserting a rod or cane (approximately 1m [3ft] long x 5-10mm [0.2-0.4in] in diameter) through the hole in the skull created by gunshot or the penetrating captive bolt device (Figure 2) (55). The rod is then manipulated by the operator to destroy the animal's brain and spinal cord. Pithing rods are commercially available (e.g. www.pithingrods.com), or can be fashioned from a variety of materials, such as: steel rod, high tensile wire, or a discarded cattle insemination rod (19).

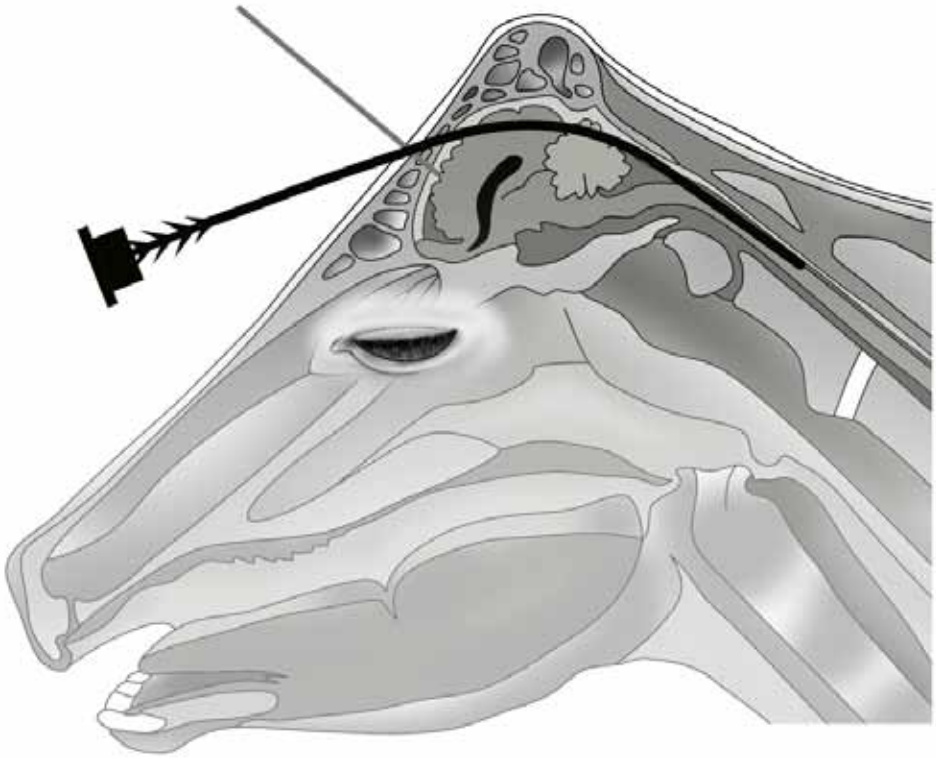

Figure 2. Pithing of a previously stunned animal. The line perpendicular to the animal's forehead shows the location for application of the captive bolt device. The curved pithing rod (shown only partially inserted) is inserted into the hole in the skull created by stunning with a penetrating captive bolt device. The rod is then manipulated, moving back and forth in approximate two-inch increments destroying the brain tissue and travelling through the brain to the top of the spinal cord, ensuring death.

Illustration by: Juliane Deubner, Medical Illustrator, Western College of Veterinary Medicine.

Resources for Further Information

More information on beef cattle production and welfare is available through federal and provincial ministries of agriculture, national or provincial cattle organizations, universities and colleges, animal welfare organizations, and veterinary organizations.

PRODUCER ORGANIZATIONS

Canadian Cattlemen's Association - (403) 275-8558 www.cattle.ca

National Cattle Feeders' Association - (403) 769-1519 www.nationalcattlefeeders.ca

Alberta Beef Producers - (403) 275-4400 www.albertabeef.org

Alberta Cattle Feeders' Association - (800) 363-8598 www.cattlefeeders.ca

Beef Farmers Ontario - (519) 824-0334 www.cattle.guelph.on.ca

BC Association of Cattle Feeders - (877) 884-4391 www.bcacf.com

British Columbia Cattlemen's Association - (250) 573-3611 www.cattlemen.bc.ca

Fédération des producteurs bovins du Québec - (450) 679-0540 www.bovin.qc.ca

Manitoba Beef Producers - (204) 772-4542 www.mcpa.net

Nova Scotia Cattle Producers - (902) 893-7455 www.nscattle.ca

New Brunswick Cattle Producers - (506) 458-8534 www.bovinsnbcattle.ca

Ontario Corn Fed Beef - (519) 539-6623 www.ontariocornfedbeef.com

Prince Edward Island Cattle Producers - (902) 368-2229 www.peicattleproducers.com

Saskatchewan Cattlemen's Association - (306) 665-2333 www.saskbeef.com

Saskatchewan Cattle Feeders Association - (306) 969-2666 www.saskcattle.com

Saskatchewan Stock Growers Association - (306) 757-8523 www.skstockgrowers.com

FARM ANIMAL COUNCILS

Alberta Farm Animal Care - (403) 662-8050 www.afac.ab.ca

BC Farm Animal Care Council - (604) 287-3276 www.bcfacc.ca

Farm and Food Care Ontario - (519) 837-1326 www.farmfoodcare.org

Farm Animal Council Saskatchewan - (306) 249-3227 www.facs.sk.ca

GOVERNMENT

Agriculture and Agri-Food Canada - www.agr.gc.ca

Canadian Food Inspection Agency - www.inspection.ca

Resources for Further Information (continued)

Veterinary Drugs Directorate (Health Canada) - www.hc-sc.gc.ca/ahc-asc/branch-dirgen/hpfb-dgpsa/vdd-dmv/index-eng.php

Alberta Agriculture and Rural Development - www.agric.gov.ab.ca

British Columbia Ministry of Agriculture - www.gov.bc.ca/agri

Manitoba Agriculture, Food and Rural Initiatives - www.gov.mb.ca/agriculture

New Brunswick Ministry of Agriculture, Aquaculture and Fisheries - www.gnb.ca/0027

Newfoundland and Labrador Department of Agrifoods - www.nr.gov.nl.ca/nr/agrifoods/index.html

Nova Scotia Department of Agriculture and Marketing - www.gov.ns.ca/agri

Ontario Ministry Agriculture and Food - www.omafra.gov.on.ca

Prince Edward Island Ministry of Agriculture and Forestry - www.gov.pe.ca/af

Québec Agriculture, Pécheries et Alimentation - www.mapaq.gouv.qc.ca

Saskatchewan Ministry of Agriculture, Food and Rural Revitalization - www.agriculture.gov.sk.ca

AGRICULTURAL COLLEGES AND UNIVERSITIES

Dalhousie University - Faculty of Agriculture - Bible Hill, NS www.dal.ca/faculty/agriculture.html

Lakeland College - Vermilion, AB www.lakelandcollege.ca

Laval University - Faculté des sciences de l'agriculture et de l'alimentation - Québec, QC www.fsaa.ulaval.ca

McGill University - Faculty of Agricultural and Environmental Sciences - Montreal, QC www.mcgill.ca/macdonald

Olds College - Olds, AB www.oldscollege.ca

Ontario Agricultural College, University of Guelph - Guelph, ON www.uoguelph.ca/oac/oac

University of Alberta - Faculty of Agricultural, Life and Environmental Sciences - Edmonton, AB www.ales.ualberta.ca

University of British Columbia - Faculty of Land and Food Systems - Vancouver, BC www.landfood.ubc.ca

University of Manitoba - Faculty of Agricultural and Food Sciences - Winnipeg, MB www.umanitoba.ca/afs/

University of Saskatchewan Agriculture and Bioresources College, University of Saskatchewan - Saskatoon, SK www.agbio.usask.ca

Resources for Further Information (continued)

COLLEGES OF VETERINARY MEDICINE

Atlantic Veterinary College, University of Prince Edward Island – Charlottetown, PE www.avc.upei.ca

Faculté de médecine vétérinaire, Université de Montréal, Montreal, QC - www.medvet.umontreal.ca

Faculty of Veterinary Medicine, University of Calgary - Calgary, AB www.vet.ucalgary.ca

Ontario Veterinary College, University of Guelph - Guelph, ON www.ovc.uoguelph.ca

Western College of Veterinary Medicine, University of Saskatchewan - Saskatoon, SK www.usask.ca/wcvm

ANIMAL WELFARE ORGANIZATIONS

Canadian Federation of Humane Societies - (613) 224-8072 www.cfhs.ca

Alberta Society for the Prevention of Cruelty to Animals - (780) 447-3600 www.albertaspca.org

British Columbia Society for the Prevention of Cruelty to Animals - (604) 681-7271 www.spca.bc.ca

New Brunswick Society for the Prevention of Cruelty to Animals - (506) 458-8208 www.spca-nb.ca

Nova Scotia Society for the Prevention of Cruelty to Animals - (902) 835-4798 www.spcans.ca

Ontario Society for the Prevention of Cruelty to Animals - (905) 898-7122 www.ontariospca.ca

Saskatchewan Society for the Prevention of Cruelty to Animals - (306) 382-7722 www.sspca.ca

VETERINARY ASSOCIATIONS

Canadian Veterinary Medical Association - (613) 236-1162 www.cvma-acmv.org

Canadian Association of Bovine Veterinarians - (306) 956-3543 www.cabv.ca

l'Association des Médecins Vétérinaires Praticiens du Québec - (418) 651-0477 www.amvpq.org

Ontario Association of Bovine Practitioners - www.oabp.ca

Western Canadian Association of Bovine Practitioners - (866) 269-8387 www.wcabp.com

OTHER

Canadian Animal Health Coalition - (519) 829-2242 www.animalhealth.ca

Canadian Beef Cattle On-Farm Biosecurity Standard - www.inspection.gc.ca/animals/terrestrial-animals/biosecurity/standards-and-principles/bovine-biosecurity-standard/eng/1347287842131/1347292248382

World Organization for Animal Health (OIE) - www.oie.int

Participants

Beef Cattle Code Development Committee Members

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	Alain Juneau	Cow-calf sector / Fédération des producteurs de bovins du Québec
	Ian McKillop (Chair)	Cow-calf sector
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The contributions of all participants is greatly appreciated.

Summary of Code Requirements

The following is a list of the Requirements within the beef cattle Code of Practice. Refer to the cited Code section for further context about the Requirements.

SECTION 1 Animal Environment

1.1 Protection from Extreme Weather

- Cattle must have access to areas, either natural or man-made, that provide relief from weather that is likely to create a serious risk to their welfare.
- Promptly assist individual cattle showing signs of not coping with adverse weather (see Sections 1.1.1 and 1.1.2).

1.1.2 Extreme Cold

- Provide additional feed to meet animals' increased energy requirements when facing cold stress.

1.2 Facilities for All Cattle

- All beef operations must have access to equipment or facilities for the safe handling, restraint, treatment, segregation, loading, and unloading of cattle.
- Design or manage indoor and outdoor cattle facilities to provide well-drained, comfortable resting areas.
- Provide traction in handling areas to minimize cattle slips and falls.
- All cattle in a group must have sufficient space to adopt normal resting postures at the same time.
- Cattle kept in groups must be able to move freely around the pen and access feed and water.
- Stocking density must be managed such that weight gain and duration of time spent lying is not adversely affected by crowding.
- Maintain indoor air quality and ventilation at all times (ammonia levels < 25ppm).
- Provide cattle housed indoors that do not have access to natural light with supplementary lighting to allow natural behaviour patterns and monitoring of the cattle.

1.3 Additional Facilities for Calving Cows

- Provide an environment that is safe and clean for calving and that promotes calf survival.

SECTION 2 Feed and Water

2.1 Nutrition and Feed Management

- Monitor cattle behaviour, performance, body condition score and health on an ongoing basis and adjust the feeding program accordingly.
- Ensure cattle have access to feed of adequate quality and quantity to fulfill their nutritional needs at all times, and maintain proper body condition, taking into account factors such as: age, frame size, reproductive status, health status, level of production, competition and weather.
- Take prompt corrective action to improve the body condition score of cattle with a score of 2 or less (out of 5).
- Take steps to prevent exposure of cattle to toxins (such as: lead batteries, fertilizer, treated seed, antifreeze, nitrates) and to avoid feed with adverse physical qualities that could cause injury or limit intake.

Summary of Code Requirements (continued)

2.2 Water

- Ensure that cattle have access to palatable water of adequate quality and quantity to fulfill their physiological needs. Monitor water sources, feeding habits, behaviour, performance and health on an ongoing basis and be prepared to adjust the watering program accordingly.
- Snow may only be used as a sole winter water source providing it is of sufficient quantity and quality to meet the animals' physiological requirements.
- Snow must not be used as a sole water source for the following cattle:
  - lactating, or
  - newly-weaned, or
  - that have a body condition score of less than 2.5 out of 5, or
  - that don't have access to optimal feed resources.
- Only adequate quantities of clean, loose snow may serve as the sole water source. Monitor snow conditions on an ongoing basis.
- Have a back-up water source in the event of insufficient loose snow or an interruption in water supply.

SECTION 3 Animal Health

3.1 Herd Health Management

- Establish an ongoing working relationship (VCPR) with a licensed practicing veterinarian and develop a strategy for disease prevention and herd health.

3.2 Sick, Injured and Cull Cattle

- Monitor cattle health on an ongoing basis to ensure prompt treatment or care.
- Provide appropriate care, convalescence or treatment for sick, injured or lame cattle without delay.
- Monitor the animals' response to therapy or care and, if the initial treatment protocol fails, then reassess treatment options or seek veterinary advice.
- Euthanize (or cull*) without delay cattle that:
  - are unlikely to recover, or
  - fail to respond to treatment and convalescent protocols, or
  - have chronic, severe, or debilitating pain and distress, or
  - are unable to get to or consume feed and water, or
  - show continuous weight loss or emaciation.

  ** If culling, requirements for transporting compromised animals must be followed (refer to Section 5 - Transporation). Suspicion of a reportable disease as defined by the Health of Animals Act (www.laws.justice.gc.ca./eng/acts/H-3.3) and various provincial acts must be brought to the attention of a veterinarian.*

3.3.1 Managing Risk of Bovine Respiratory Disease

- Monitor the behaviour of newly-arrived feedlot cattle to facilitate the early detection of illness.
- Have a disease prevention strategy for new arrivals into a feedlot.

3.3.2 Lameness

- Provide appropriate care, convalescence or treatment for lame cattle without delay.
- Monitor the animals' response to therapy or care and, if the initial treatment protocol fails, then reassess treatment options or seek veterinary advice.
- Promptly cull or euthanize lame cattle that have a poor prognosis for recovery, or that do not respond to therapy or care (see Appendix E).

Summary of Code Requirements (continued)

3.3.3 Nutritional Disorders Associated with High Energy Feeding

- Design, implement, evaluate and adjust your feeding program to reduce the risk of nutrition-induced disorders, and consult your veterinarian or a nutritionist when needed.
- Transition cattle from high-forage to high-energy rations gradually to avoid abrupt dietary changes.

3.3.4 Buller-Steer Syndrome

- Bullers must be promptly removed from their pen.

3.3.5 Managing Pregnant Heifers in the Feedlot

- Consult with your veterinarian to develop a program for managing pregnant heifers in a feedlot.

3.4 Safety and Emergencies

- Have a current emergency response plan to provide feed, water and care for cattle in case of emergencies. Review this plan with all responsible personnel so it can be implemented. Ensure emergency contact numbers are readily accessible and current.

SECTION 4 Animal Husbandry

4.1 Handling and Moving Cattle

- Animal handlers must be familiar with cattle behaviour (either through training, experience or mentorship) and use quiet handling techniques.
- Electric prods must only be used to assist movement of cattle when animal or human safety is at risk or as a last resort when all other humane alternatives have failed and only when cattle have a clear path to move.
- Do not use electric prods repeatedly on the same animal.
- Do not use electric prods on the genitals, face, udder or anal areas.
- Do not use electric prods on calves less than three months of age that can be moved manually.
- Willful mistreatment or intentional harm of cattle is unacceptable. This includes but is not limited to: beating an animal; slamming gates on animals; allowing herd dogs to continue pushing cattle with nowhere to move; dragging or pushing cattle with machinery (unless to protect animal or human safety).

4.2 Reproduction and Calving Management

- Calving cattle must be monitored to identify calving difficulties and ensure prompt assistance when required.
- Monitor and promptly assist calves and recently-calved cows showing signs of distress.
- Caesarean sections must be conducted by a veterinarian or qualified trained personnel using accepted surgical techniques and appropriate local anesthesia and post-operative pain control.
- Spaying must be carried out by a veterinarian or qualified trained personnel. Consult your veterinarian on pain control when spaying heifers.

4.2.1 Colostrum Management

- Monitor that newborn calves suckle their dams paying special attention to high risk cases.
- Administer colostrum or a commercial colostrum substitute to any newborn calf showing signs of not having received it by suckling.

Summary of Code Requirements (continued)

4.3 Identification

- All cattle must be identified using an approved ear tag as stipulated by applicable regulations.
- When branding is required for export, by policy, or as permanent proof of ownership, it must be performed with the proper equipment, restraint and by personnel with training or sufficient combination of knowledge and experience to minimize pain to the animal.
- Do not brand wet cattle due to risk of scalding.

4.4 Disbudding and Dehorning

- Dehorning must be performed only by competent personnel using proper, well-maintained tools and accepted techniques.
- Seek guidance from your veterinarian on the availability and advisability of pain control for disbudding or dehorning beef cattle.
- Disbud calves as early as practically possible, while horn development is still at the horn bud stage (typically 2-3 months).

EFFECTIVE JANUARY 1, 2016:

- Use pain control, in consultation with your veterinarian to mitigate pain associated with dehorning calves after horn bud attachment.

4.5 Castration

- Castration must be performed by competent personnel using proper, clean, well-maintained instruments and accepted techniques.
- Seek guidance from your veterinarian on the optimum method and timing of castration, as well as the availability and advisability of pain control for castrating beef cattle.
- Castrate calves as young as practically possible.

EFFECTIVE JANUARY 1, 2016:

- Use pain control, in consultation with your veterinarian, when castrating bulls older than nine months of age.

EFFECTIVE JANUARY 1, 2018:

- Use pain control, in consultation with your veterinarian, when castrating bulls older than six months of age.

4.8 Tail docking

- Beef cattle must not be tail docked unless on the advice of a veterinarian.

Summary of Code Requirements (continued)

SECTION 5 Transportation

5.1 Pre-Transport Decision Making and Preparation for Transport

- The following are all requirements under the *Health of Animals Regulations Part XII*:
  - Unfit cattle must not be transported unless for veterinary diagnosis or treatment under the advice of a veterinarian (refer to Appendix D for list of conditions).
  - Compromised animals may only be transported with special provisions and directly to their final destination (refer to Appendix D for list of conditions and special provisions).
  - Cattle must receive feed and water within five hours prior to loading if transport will exceed 24 hours.
  - Cows or heifers that are likely to give birth during the journey must not be transported, unless for veterinary diagnosis or treatment.
  - Ensure that any loading and unloading equipment, chutes or conveyances are free of hazards in order to minimize the risk of injury.

5.2 Arranging Transport

- Transporters must follow the most current federal and provincial animal transport regulatory requirements.
- Cattle must be transported by competent personnel (through training, experience or mentorship) using safe, well-maintained equipment.
- The right of the transporter to refuse to load cattle that s/he deems unfit for transport must be respected. The reason for refusal must be addressed.
- Cattle producers and transporters must immediately report instances of inhumane handling to proper authorities.

5.3 Loading and Receiving

- All Requirements under *Section 4.1 - Handling and Moving Animals* apply here.
- The following are all requirements under the *Health of Animals Regulations Part XII*:
  - Do not load or unload livestock in a manner that is likely to cause injury or undue suffering.
  - Cattle must be able to stand in a normal posture without coming into contact with the roof or upper deck of the vehicle.
  - Cattle that arrive unable to rise and walk unassisted (non-ambulatory cattle/downers) must be examined on arrival and their likelihood of recovery assessed. Cattle must not be dragged from the vehicle while conscious; they must be humanely stunned or euthanized on the vehicle prior to unloading. Once unloaded, a stunned animal must be immediately confirmed dead or euthanized. If an animal is likely to recover, it may only be unloaded for veterinary treatment under the advice of a veterinarian.
  - Segregate cattle that are incompatible by reason of their nature, temperament, sex, weight or age.
  - Ensure that cattle have proper ventilation, are protected from extreme weather such as extreme cold, windchill or extreme heat.
  - Provide safe and secure footholds (footing) or adequate bedding to prevent cattle from slipping and falling.

Summary of Code Requirements (continued)

SECTION 6 On-Farm Euthanasia

6.1 Euthanasia and Culling Decisions

- Euthanize (or cull*) without delay cattle that:
  - are unlikely to recover, or
  - fail to respond to treatment and convalescent protocols, or
  - have chronic, severe, or debilitating pain and distress, or
  - are unable to get to or consume feed and water, or
  - show continuous weight loss or emaciation.

  ** If culling, requirements for transporting compromised animals must be followed (see* Section 5 - Transportation*).*

6.2 Methods of On-Farm Euthanasia

- An acceptable method for euthanizing cattle must be used (see Table 6.1).
- Euthanasia must be performed by competent personnel (through training, experience or mentorship).
- Equipment used for euthanasia, such as guns or captive bolt devices, must be maintained according to manufacturers' instructions to ensure proper function.
- Non-ambulatory cattle may not be dragged or forced to move prior to euthanasia.

6.3 Confirmation of Insensibility and Death

- Evaluate the animal's consciousness immediately after the application of the appropriate euthanasia method by checking for a corneal reflex (see below).
- Be prepared to immediately deliver a second application should the first attempt not render the animal immediately insensible.
- Confirm death before moving or leaving the animal (see below).
- Confirm insensibility:
  - Touch the eyeball and note if the animal blinks (corneal reflex). An insensible animal will not blink.
- Confirm death: A lack of heartbeat and respiration should be used to confirm death:
  - Evaluate heartbeat by physical palpation or by placing a stethoscope over the left lower chest area of the animal, just behind the elbow.
  - Evaluate respiration by observing the chest for any breathing movement. Note that breathing may be slow and erratic in an unconscious animal.