



Humane Farm Animal Care
Welfare Standards

DAIRY CATTLE

Edition 23

DAIRY COWS

HUMANE FARM ANIMAL CARE

Humane Farm Animal Care is a 501(c)3 non-profit organization whose mission is to improve the lives of farm animals being raised for food and to assure consumers that certified products meet our welfare standards.

Initially, the standards were adapted from the RSPCA Assured program published by Royal Society for the Prevention of Cruelty to Animals in the UK. Since then, the Humane Farm Animal Care standards have been refined to provide standards for the rearing, handling, transport, and slaughter of food animals under the Certified Humane® program, now applicable worldwide. These dynamic documents are always informed and kept updated based on scientific research, veterinary advice, and the practical experience of the farming industry.

Animal welfare is improved when livestock managers adhere to the following:

- Access to wholesome and nutritious feed
- Appropriate environmental design
- Caring and responsible planning and management
- Skilled, knowledgeable, and conscientious animal care
- Considerate handling, transport, and slaughter

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Leading animal scientists, veterinarians, and producers work with Humane Farm Animal Care to develop the *Animal Care Standards* for humane farming and continue to work with Humane Farm Animal Care to continually review new information pertaining to improving the lives of farm animals.

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PART 1: INTRODUCTION

The Certified Humane® Label

The Certified Humane® program was developed to certify products derived from animals raised on farms that adhere to these standards. Upon satisfactory completion of the application and inspection process, farmers and ranchers are certified and given authorization to use the Certified Humane® trademarked logo. Program participants are inspected and monitored by *Humane Farm Animal Care* annually. Charges levied are to cover inspections and program costs.

Humane Farm Animal Care expects their certified farmers, ranchers and producers to adhere to all regional or national regulations governing husbandry, food production and environmental management as well as the Certified Humane® standards. If at times there is a conflict, the relevant rules set by the local or national authority will take precedence.

Guide to the Use of the Welfare Standards

- The broad objectives of the standard are described at the beginning of each section.
- The numbered requirements are the standards. Compliance with all of the standards is mandatory, except where a standard is deemed not applicable (these standards are written to cover facilities in varying geographic and temperate regions, and facilities using different systems; therefore, not all sections in these standards will apply to each facility).
- Boxed sections provide additional information or may highlight areas where the standards will be reviewed in the future.
- At minimum, HFAC requires compliance with any local, state, provincial, or national regulations for cattle production that affect the environment or safety of their product, as well as the veterinary protocols for their jurisdiction. Producers must meet both HFAC standards and the above regulations. If there is any overlap, the more stringent rule must be followed.

PART 2: NUTRITION - FOOD AND WATER

OBJECTIVES: Livestock must have access to fresh water and a diet formulated or assessed to maintain full health and promote a positive state of well-being. Feed and water must be distributed in such a way that livestock can eat and drink without undue competition.

A. Feed

FW 1: Wholesome, nutritious feed

- a. Cattle must be fed a wholesome diet that is:
 1. Appropriate for their breed, age, and stage of production;
 2. Fed in sufficient quantity to maintain good health; and
 3. Formulated or assessed to satisfy their nutritional needs.
- b. Cattle must not be maintained in an environment that is likely to predispose them to nutrient deficiency.
- c. Managers must be aware of nutrient deficiencies and excesses on the farm and correct these as appropriate.

FW 2: Free access to food

Cattle must have free access to nutritious food each day, except when directed otherwise by an attending veterinarian.

FW 3: Feed records

- a. Producers must have written records and/or labels of the feed constituents, the inclusion rate and constituents of compound feeds, and feed supplements, including those records from the feed mill or supplier.
- b. Feed records must be retained for at least one year.
- c. Feed records must be available to the Humane Farm Animal Care Inspector during the inspection and upon request.

FW 4: Substances prohibited in feed

- a. No feedstuffs containing mammalian or avian-derived protein sources are permitted, except for milk and milk products.
- b. Dairy cows must not be treated with rBST.
- c. Cattle must not be fed antibiotics, including ionophores, coccidiostats or other substances deliberately to boost growth, feed efficiency or milk production.
- d. Antibiotics can be used in individual cattle only therapeutically (i.e. disease treatment) as directed by a licensed veterinarian (records of which must be kept).

FW 5: Body condition

- a. Cattle must be fed so that they sustain full health during all life stages.
- b. Body condition change in cattle must be carefully planned, monitored, and maintained according to the stage of production.

- c. At all times, animals must have a body condition score of at least 2. See the chart below and Appendix 1 for Body Condition Scoring guides.
- d. No animal with a BCS of less than 2 may be transported or leave the farm unless for veterinary treatment.

It is recommended that cattle be fed to attain the following body condition scores:

Growing heifers: 2.75-3.25

Dry period cows and heifers at calving: 3.25-3.75

Early lactation (1-120 days): 2.5-3.25

Mid lactation (120-304 days): 2.75-3.25

Late lactation (305+ days): 3.0-3.5

| Score | Appearance | Condition |
|--------------|--|---|
| 1 | Severe under-conditioning (Emaciated) | Spinous and transverse processes prominent, no fat cover, deep cavity around tail-head, deep depression in loin. |
| 2 | Frame obvious | Spinous and transverse processes prominent but smooth, slight fat cover, shallow cavity around tail-head with some fatty tissue lining. |
| 3 | Moderate, frame and covering well balanced | Spinous and transverse processes rounded, muscle development full, no cavity around tail-head, slight depression in loin area. |
| 4 | Frame not visible as covering | Spinous processes evident only as a line, fat cover considerable but firm, transverse processes cannot be felt, tail-head rounded with fat, no depression in loin area. |
| 5 | Severe over-conditioning (Obese) | Spinous and transverse processes not detectable, fat cover dense and soft, tail-head buried under thick layer of fatty tissue. |

FW 6: Avoiding changes in feed

Efforts must be made to avoid sudden changes in the type and quantity of feed, except under the direction of a veterinarian.

FW 7: Providing fiber

- a. Feed or forage must contain sufficient fiber to allow rumination.
- b. Forage must be the appropriate quality and length to stimulate rumination and prevent acidosis.

FW 8: Pasture*

- a. Where climate allows for quality grazing, dairy cattle may be able to obtain a large proportion of their nutritional requirements by grazing pasture.
- b. When pasture quality is poor, nutritional maintenance through feeding of quality forage and concentrate is appropriate.
- c. Care must be taken to ensure that animals on pasture have an adequate, well-balanced, and complete diet, through pasture nutrient analysis and estimation of average dry matter intake when necessary.

***For 100% Grass-Fed Systems standards, see FW 24 through FW 28.**

FW 9: Easy availability of feed

- a. Cattle must be fed at or above floor level.
- b. Adequate bunk space must be provided so that cattle do not need to compete for feed and must allow most animals in a pen to feed simultaneously.
 1. At least 24 inches (61 cm) of feed bunk space must be provided per cow or heifer
 2. At least 30 inches (76 cm) per cow must be provided in pens housing pregnant dry cows and fresh cows (up to 21 days in milk).
- c. The feed itself must be pushed up regularly to ensure additional ease of access to feed.

FW 10: Clean feeding equipment

- a. Feed troughs/bunks or automatic systems must be kept clean; stale or moldy feed must be removed promptly.
- b. Feeding equipment must be designed, constructed, placed, and maintained so that contamination of the animals' feed is minimized.
 1. Automatic feed delivery systems (e.g., grain delivery systems in milking barns or in corrals) must be maintained in good working order.

FW 11: Avoiding unsuitable feedstuffs

Control practices must be in place to minimize:

- a. Livestock access to poisonous plants and unsuitable feedstuffs.
- b. Contamination of stored feeds by birds and other pests.

B. Food – Specific Provisions for Calves

FW 12: Diet requirements for calves

- a. Calves must be fed a wholesome diet that is appropriate for their age, weight, and behavioral and physiological needs.
- b. Antibiotics cannot be used except therapeutically (i.e. disease treatment) in individual animals as directed by a licensed veterinarian.
- c. All calves must have access to fresh water at all times.

It is recommended that all calves aged 3-28 days of age be offered a daily ration of at least 20% of their body weight (approximately 8 liters for larger breeds like Holstein calves) in milk or equivalent milk replacer. Milk temperature should be between 60°F

(15.5°C) and 104°F (40°C). Milk rations should be increased by 25% when the ambient temperature drops below 50°F (10°C) or rises above 80°F (27°C).

FW 13: Colostrum

- a. It is vital that every newborn calf, including bull calves, receive adequate, quality colostrum from its dam, another fresh cow, or a powdered or frozen colostrum source, as soon as possible after it is born and within the first 6 hours of life.

As a precaution to prevent the transmission of Johne's Disease, the pooling of fresh colostrum from multiple cows on the farm is strongly discouraged.

- b. At least 2 quarts of colostrum must be administered in two separate feedings within 12 h post birth, when the newborn calf has not nursed from her mother. The amount of colostrum must be appropriate to the breed and size of the calf.
- c. Twice per day over the subsequent 48 hours, calves must receive additional colostrum or whole milk in an amount that is breed and size appropriate.

FW 14: First feeds; fiber and water

- a. All calves must receive milk or milk replacer at least twice daily through the first five weeks of life.
- b. If calves are bucket fed, each calf must have access to an individual bucket.
- c. Water must be made available to calves after 3 days of age.
- d. Unweaned calves must have access to palatable calf starter after 8 days of age.
- e. Milk replacer must be mixed according to the manufacturer's instructions.
- f. Calves must not be weaned until they are eating adequate quantities of calf starter, which is at least 1.5 lbs. (680 g) per calf per day of a calf starter ration.
- g. A calf older than 30 days must have daily access to feed or forage material containing sufficient digestible fiber to stimulate rumen development.

It is recommended that all milk provided to calves be pasteurized, especially milk provided to calves while they are undergoing treatment care.

FW 15: Weaning

- a. Calves must not be weaned before five weeks of age. Nutritional weaning (ceasing to feed milk or milk replacer) must be accomplished gradually by either diluting the milk with water or reducing the milk volume over a period of at least 5 days.
- b. Removal of calves from individual pens into social groups must not coincide with weaning. Both practices are stressful to the animals and must be carried out separately.

FW 16: Brought-in calves

- a. On arrival, calves acquired to be raised as replacement heifers must not be mixed with calves from other sources until their health status has been determined.
- b. Acquired calves must be housed in comfortable conditions.

FW 17: Social groupings

- a. Individual stalls for suckling calves are acceptable until 8 weeks of age, provided they meet space requirements.
- b. The group socialization of calves must commence at latest by 8 weeks of age.

FW 18: Teat system of feeding

If a teat system of calf feeding is used, teats must be arranged so that a calf's neck is positioned at least horizontally or with a slight upward tilt.

FW 19: Preventing inappropriate suckling

- a. When suckling calves are housed in group pens, appropriate devices, such as artificial nipples, must be available to reduce inappropriate suckling behavior.
- b. Calves must not be muzzled or physically altered to prevent suckling. Weaning nose rings and nose-tabs are prohibited.

C. Water

FW 20: Water supply

All cattle must be provided with free access to an adequate supply of clean, fresh drinking water each day, except when directed by a veterinarian.

Providing water to calves promotes cooling in hot weather and helps prevent dehydration due to diarrheal disease.

FW 21: Watering equipment

- a. Water troughs must be kept clean.
- b. Water sources must be protected from freezing.
- c. Watering equipment must be designed, constructed, placed, and maintained so that contamination of the animals' water is minimized.
- d. Automatic systems must be checked daily to ensure that they are dispensing water effectively.
- e. Water troughs must not result in wetting/fouling of the bedded areas and must be accessed from non-porous and non-slip footing, when possible.
- f. The area around water troughs outdoors must be managed to avoid excessive accumulation of mud or moisture. If necessary, troughs must be placed on concrete aprons.

Troughs should be at a height comfortable for the cow to drink from (24 inches -30 inches). Ideally, water temperature should be between 62°F and 82°F.

FW 22: Water for cattle on pasture

- a. Clean, fresh water must always be available to cattle kept primarily on pasture.

- b. Water must be available around milking facilities so cows can access before milking, after milking, or both.
- c. Natural surface water sources are not recommended but, if used, care must be taken to avoid potential disease risk.
- d. Potential contamination of rivers, ponds, or streams with cattle feces must be taken into account when planning the water supply for cattle.
- e. Local, state, and federal laws must be adhered to when allowing cattle access to running or still water resources.

FW 23: Emergency water supply

Provisions must be in place to ensure an emergency supply of suitable drinking water in case normal supplies fail (e.g., due to freezing or drought).

D. Grass-Fed Systems – Optional

OBJECTIVES: Following the Animal Care Standards for Grass-Fed Systems is optional. Where cattle are grass-fed, the following animal welfare standards must be met in order to make a Grass-Fed claim.

Grass-fed programs must be designed intricately to ensure animal welfare while meeting consumer expectations. Certified Humane® is a welfare-oriented program with science-based standards. Therefore, all standards, including the standards for Grass-Fed Systems, are written with dedication to scientific information and animal welfare.

FW 24: Diet requirements

- a. Diet for cattle must consist exclusively of grass and forage, with permitted feed supplements as described in FW 26.
- b. Ingestion of seeds naturally attached to herbage, forage, and browse is considered incidental and therefore acceptable. Records of any potential ingestion of incidental ingredients must be kept and made available to the Humane Farm Animal Care inspector and at other times, upon request.
- c. Records (e.g., feed tags or invoices) must be kept of all feed, including nutritional supplements, given to cattle. These records must list all ingredients and be available for at least two years.

FW 25: Prohibited feedstuffs

- a. Providing grain, grain by-products, or any other form of feed concentrate is prohibited. This includes barley, corn, oats, rye, rice, triticale, wheat, millet, and sorghum.
- b. Urea as a feedstuff is prohibited.

FW 26: Feed and Dietary Supplementation

- a. If additional specific nutrients are needed to maintain the health and body condition of the animal, the producer must formulate a supplementation plan with the guidance of

their dairy nutritionist and/or veterinarian. The supplementation plan must be submitted to HFAC for approval if the animals are to maintain the Grass-Fed claim.

1. Supplementation must consider:
 - a) Nutritional value of the grass (ME, protein, etc.), with forage or grass analyses conducted as needed (e.g. seasonally) to ensure accurate supplementation; and
 - b) Age, life stage, and breed of animals.
- b. If prohibited substances other than carriers for vitamin and mineral supplements are provided to restore the health of the animal, the animal must be removed from the grass-fed program, with this segregation documented. However, grain or other prohibited substances must not be withheld from a sick or low-body-condition animal (see FW 5) to preserve the animal's grass-fed status.

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| <p><i>Molasses, kelp, and apple cider vinegar are acceptable vitamin and mineral supplements.</i></p> |
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FW 27: Pasture access

- a. Cattle must have continuous access to pasture by the time they are weaned.
- b. Introduction to forage is crucial for establishing the correct ruminal pH to facilitate rumen development in young calves. Therefore, calves require access to forage prior to weaning and by 30 days old at the latest in accordance with FW 15, in order to be ready to transition to the grass-fed diet.
- c. Cattle must not be raised in confinement after weaning.
- d. Animals must only be removed from pasture due to risk of animal health or safety, or if there is damage to pasture due to wet or drought conditions. Lack of access must be documented with reasons specified.

FW 28: Mixed herds

Grass-fed cattle intended for meat or dairy may be managed on the same farm as non-grass-fed animals, except for non-grass-fed lactating cows, as long as there is an identification system in place to prevent commingling and ensure traceability of cattle.

PART 3: ENVIRONMENT

OBJECTIVES: *The environment in which livestock are kept must support their welfare needs, be designed to protect them from fear, distress, and physical and thermal discomfort, and allow them to perform natural behaviors.*

A. Buildings

Where management systems, designs, or layout of facilities not covered in the HFAC Animal Care Standards are being employed or considered, these must be referred to and discussed with the HFAC staff before they can be considered for certification.

E 1: Records of facility features that promote animal welfare

For all buildings, the following key points must be documented and available at the inspection:

- a. Total floor area (ft² or m²);
- b. Number of freestalls or size of bedded area (ft² or m²);
- c. Maximum capacity of cattle in relation to age, weight, feeding and drinking, and bedding space.

If practical, this information could be documented at or near the entrance to each building.

E 2: Preventing injuries from environmental causes

- a. There must be no physical features of the environment that could cause avoidable injuries to the animals.
- b. In both indoor and outdoor systems, there must be no recurrent injuries on cattle that could be attributed to physical features of their environment (injury is defined as damage severe enough for the formation of granular scar tissue and to an extent significantly greater than would be caused by accidental bumps and scratches).
- c. Concrete flooring must be well-maintained in order to prevent foot care problems.

Excessive occurrence of the following may be indicators of environmental problems:

| | |
|-------------------------------------|--------------------------------|
| <i>Chronic scar tissue</i> | <i>Bruised soles</i> |
| <i>Neck calluses</i> | <i>Soft feet</i> |
| <i>Knee, hock, swellings/callus</i> | <i>Interdigital infections</i> |
| <i>Teat/udder injuries</i> | <i>Laminitis</i> |
| <i>Broken tails</i> | <i>Abscesses</i> |
| <i>Hematomas</i> | |

E 3: Handling Pens

- a. Handling pen floors must be made of non-slip material or be maintained to reduce the risk of slipping (and sand, mats, or other material applied when necessary).
- b. Floors must never be so rough that they cause hoof damage.
- c. Smooth concrete floors should be grooved approximately 1/3”- 1/2” or treated with a non-slip coating or belting.
- d. Handling pens must be well-maintained and free of broken parts and sharp edges.

It is recommended that rubber or ‘comfort’ flooring be used in areas where animals spend the most time standing – particularly in front of the feed-bunk, in the milking parlor, and in the parlor’s holding area.

E 4: Handling unit design

A cattle handling chute, if available, must be comprised of a collecting system and ending with a compassionate method of restraint. The unit must be appropriate to the type, environment, and number of animals being handled.

E 5: Limiting the use of toxic substances in buildings

- a. Cattle or calves must not come into contact with toxic fumes from surfaces with paints, wood preservatives, or disinfectants (this does not include livestock-specific insecticides or fungicides).
- b. Creosote must not be used in areas where the animals have direct contact with the material.

E 6: Electrical installations

All electrical installations at main voltage must be:

- a. Inaccessible to cattle;
- b. Well insulated;
- c. Safeguarded from rodents;
- d. Properly grounded; and
- e. Regularly tested for stray voltage.

E 7: Height of buildings

Building height must accommodate the normal expression of mounting behaviors during estrus.

E 8: Design of passageways

- a. Passages must be wide enough to allow two animals to pass freely.
- b. Alleyways and passageways must be designed so submissive or smaller animals cannot be trapped by dominant or more aggressive animals.
- c. Farm alleyways (e.g., holes or cracks) must be well-maintained to prevent damage to the animals’ hooves.

E 9: Cleaning and disinfection

Internal surfaces of housing and pens must be made of materials that can readily be cleaned, disinfected, or easily replaced when necessary.

B. Thermal Environment & Ventilation

E 10: Thermal conditions

The thermal environment must not be so hot or cold that it causes distress.

Appendix 2 contains the Temperature Humidity Index for lactating dairy cows, which contains the values at which cattle become distressed.

E 11: Ventilation

Buildings must be effectively ventilated to avoid high humidity, condensation, drafts, and entrance of rain and snow.

C. Aerial Contaminants

E 12: Air quality in indoor housing

- a. Provisions must be made to ensure that, when cattle are housed indoor, aerial contaminants do not reach a level at which they are noticeably unpleasant to a human observer.
- b. The ammonia must be routinely less than 10 ppm. Ammonia levels must never exceed 25 ppm except during a brief period if ventilation is adversely affected. Any such events of excessive ammonia concentrations must be documented with reasons and corrective actions.
- c. Ammonia at animal level must be objectively (i.e., via ammonia strips or an electric reader) recorded at least once every week and these records made available to Humane Farm Animal Care during inspections and at other times, upon request.
- d. Inhalable dust must not be excessive at animal height.

E 13: Relative humidity

Relative humidity inside the buildings must remain below 80% when ambient conditions permit.

The objective of ventilation is to provide a large volume of air and high ventilation rates to remove moisture produced by the stock and to reduce the number of airborne pathogens being passed from animal to animal.

Factors contributing to good ventilation include sufficient and correctly-positioned air inlets and outlets, and a correct air inlet-outlet height differential.

Professional advice should be sought if ventilation problems are encountered.

E 14: Partially roofed shelters

When cattle are housed in partially roofed units, they must be provided with:

- a. Effective protection from the wind; and
- b. A dry, comfortable lying area.

E 15: Shade

- a. During hot summer conditions (daytime temperatures consistently above 85°F or 29.4°C), a shaded area with proper ventilation must be accessible to all cattle simultaneously.
- b. If daytime summer temperatures are consistently above 85°F (29.4°C), the system must provide shade, fans, misting or fogging systems, or other cooling equipment.
- c. Shade structures must be designed to accommodate all animals simultaneously.

D. Lying Area/Space Allowances

E 16: Freedom of movement

- a. Except as noted in E21, all cattle must at all times have:
 1. Sufficient freedom of sideways movement to be able to groom themselves without difficulty;
 2. Sufficient room to lie down and freely stretch their limbs; and
 3. Sufficient room to rise and turn around.
- b. Tethering of cattle is prohibited.

E 17: Lying area and bedding

Lying area must be:

- a. Well-drained or well-maintained;
- b. Dry, comfortable, and free from contamination with feces or urine;
- c. Covered by bedding that is 3 inches (7.6 cm) deep, or a cow mattress designed for use in dairies;
- d. Of sufficient size to accommodate all cattle lying down together in normal resting posture without risk of being stepped on or kicked.
 1. Cattle must be able to change position from standing to lying down and vice versa in a normal manner without difficulty or injury.
 2. When lying, all of the animal's body must fit on the bed, including the hocks and udder.

When handled properly, many fibrous and granular bedding materials may be used, including long or chopped straw, hay, sand, sawdust, shavings, and rice hulls. Inorganic bedding materials (sand or ground limestone) provide an environment that is less conducive to the growth of mastitis pathogens. Sand bedding may also keep cows cooler than straw or sawdust.

E 18: Freestalls

- a. When using freestalls, the number of animals in the barn must not exceed the number of available freestalls.
- b. Individual free stalls must meet the lying area and bedding requirements.
- c. A ‘loafing’ area (see Part E) must be provided, and it must be always available to cows in freestalls.
- d. Unbedded areas must be slatted, concrete, rubber mats or packed earth, and manure must be removed from these areas at least once daily.
- e. Freestalls, including any slats, must be designed to, and must prevent injury to the cow or interference with adjacent cow.
- f. Cows nearing parturition must be offered 120% of the required space allowance for lactating cow (80% of the required stocking density as in E 18.a).

E 19: Compost bedded pack housing

If cattle are raised in a compost-bedded pack system, the following standards must be met:

- a. Producer must provide a written and implemented plan that requires that bedding:
 1. Be managed sufficiently to prevent mastitis and maintain air quality.
 2. Be devoid any material or objects that can cause injury, e.g., large pieces of rock, gravel, or wood.
 3. Consist of smooth, uniform substrate.
 4. Be maintained at a level that enables cattle to easily step into the feed alley. Therefore, bedding must be less than 8 inches (20 cm) below the base of the feed alley.
- b. Uniform airflow must be accomplished in the barn to avoid the congregation of cattle in higher-airflow areas and consequential buildup of manure.
- c. Cow cleanliness must be monitored daily and recorded weekly. Refer to Appendix 5 for proper hygiene scoring.
- d. Stocking density must meet E 20 and be informed by climate variations across regions to maintain sufficient quality bedding.

E 20: Space allowance

The space allowance for cattle housed in groups must be calculated in relation to the whole environment, the age, sex, live weight, and behavioral needs of the stock, taking into account the presence or absence of horns and the size of the group.

- a. Loose-housed, growing cattle must be grouped according to size and age.
- b. Minimum space allowance for all housing systems is 60 sq. ft. (5.6 m²) per mature cow, and all cows must be able to lie down simultaneously.

E 21: Confinement restrictions

Cattle must not be closely confined or restrained except in the following circumstances. On these occasions, confinement should not exceed 4 hours per day, unless directed by the veterinarian:

- a. For the duration of any examination, routine test, blood sampling, treatment, or operation carried out for veterinary purposes;
- b. While being cared for in hospital pens;
- c. While they are being fed on any particular occasion;

- d. For the purpose of marking, washing, or weighing;
- e. While facilities are being cleaned;
- f. During the procedure of artificial insemination;
- g. While awaiting entry into the milking parlor
- h. In the milking parlor; or
- i. While they are awaiting loading for transportation.

E. Exercise and Loafing Areas

E 22: Exercise areas

- a. Exercise areas must provide sufficient space for cows to move freely at least 30 or 40 feet in one direction.
- b. All cattle, regardless of location, must have access to exercise areas for 4 hours per day, weather permitting (not so hot or cold as to cause thermal stress – see Appendix 2 for the Temperature-Humidity Index).
- c. Exercise areas:
 - 1. Can be made solely of bare concrete as long as there is sufficient soft bedded lying area (see E17) to accommodate all animals.
 - 2. Must be available to the cows once they are added to the lactating herd.
 - 3. Must allow cattle full freedom of movement.
- d. Exercise and loafing areas can merge as long as the exercise area is then available 24/7.

E. 23: Loafing areas

- a. A loafing area is non-feed, non-lying, non-high traffic area that provides additional space for mounting during estrus, lower-ranking cows' ability to escape from dominant cows, and other social behaviors.
- b. Loafing areas must:
 - 1. Provide additional room for thermoregulation.
 - 2. Allow cows to roam freely.
- c. When loafing area is made of concrete, foot health must be monitored and recorded.

Loafing areas can be indoors or outdoors, and they can be made of dirt, pasture, or concrete.

F. Mud

E 24: Mud management

- a. Cows and calves must be kept clean.
- b. During periods of prolonged wetness, mud must be managed so the depth of mud in the loafing area or passageways is not excessive or sufficient to cause cattle difficulty walking to and from feeding and watering areas.
- c. Mud over fetlock (ankle) is not allowed in loafing areas, pathways, or areas adjacent to waterers or feeding areas.

There is a serious problem if more than 5% of the cows have soil on their bellies or udders. Bedding must not transfer soil onto the cows.

G. Housing Structure

E 25: Housing or protected area design

- a. Housing animals in tie stalls or stanchion barns is prohibited.
- b. Natural shelter with windbreaks or sunshades/shade cloth is acceptable for cattle, including calves.
- c. All fencing, including gates, must be adequately inspected, and maintained.
 1. In particular, electrical fences must only cause momentary and non-injurious discomfort to the cattle.
- d. Indoor housing must provide environmental enrichment (e.g., hanging ropes, hay bales, or brushes).
- e. Passageways in all housing areas must be non-slip.

Tie stall barns may be used for milking procedures carried out in accordance with the standards.

E 26: Design of freestalls

- a. The stalls must be constructed so that they prevent the animals from standing so far forward that they consistently soils the back of the stalls.

A 4% slope downward from front to rear is recommended.

- b. A forward lunging area must be provided of a minimum of 2 feet (0.66 meters). See E17 for bedding requirements.
- c. Freestall design must align cows properly to prevent interference with or injury to a cow's neighbor or herself.

E 27: Step design

The step between the freestall bed and the dung passageway must be an ample and a safe height to prevent slurry being pushed into the bed during scraping and to encourage cows to enter the stall head-first without injury.

When problems exist with freestalls (e.g., animals refusing use, becoming stuck in or lying half-in and half-out of them, or recurring animal injury due to poor design), professional advice must be sought.

H. Lighting

E 28: Sufficient light in buildings

Adequate lighting must be available for use when inspecting housed animals.

E 29: Light intensity for cows housed indoors

Housing must provide lighting equivalent in intensity to natural light during seasonal daylight hours.

I. Calving Environment

E 30: Calving areas

- a. Cows must calve in clean, dry areas with free access to water.
- b. Close-up cows must be moved to the maternity area before parturition.
- c. When housed indoors, there must be enough calving space (as in E 18) to accommodate the total number of cows that are calving.

E 31: Calving pen design

When calving cows are housed in a building, the cows must:

- a. Be provided with a clean, dry bedded area that is equipped with a means of restraint and adequate lighting that permits a person to attend the cows and their calves safely if necessary;
- b. Have access to feed and water;
- c. Have the opportunity to distance from other animals in the herd, if they are close-up (i.e. the last three weeks of dry period before calving).

E 32: Environmental conditions

Insulation, heating, and ventilation of buildings must ensure that air circulation, dust levels, temperature, relative humidity, and gas concentrations are controlled and kept within limits that are not harmful to calves.

E 33: Surfaces suitable for cleaning

Internal surfaces of calving and hospital pens must be made of materials that are easily cleaned. Surfaces must be smooth and impervious.

J. Milking Parlor

E 34: Milking parlor hygiene

The highest standards of hygiene must be practiced in the parlor to reduce risk of infection:

- a. Udder, teats, and flanks should be clean, dry, and free from sores on entry into the parlor;
- b. Parlor staff must have clean hands when handling teats and udders.
 1. Disposable or clean gloves must be used for milking cows clean.

2. Single-use udder cloths should be used to clean and dry udders;
- c. Cows with mastitis must be marked and milked last with milk discarded or pasteurized. Alternatively, they may be milked with a separate cluster and bucket;
- d. Milking machinery must be properly maintained;
- e. All teats must be treated with an approved teat disinfectant. An emollient must be used when teats are dry, chapped, or cracked;
- f. Routine “foremilk” (fore-strip) examination must be made at least weekly to identify early cases of mastitis.
- g. Following completion of milking, cows must be encouraged to remain standing for approximately half an hour to allow the teat canal sphincter to close;

E 35: Milking machines

- a. Milking machine testing must be carried out at least once every 6 months.
- b. Proper application, function, and maintenance of the milking machinery must be ensured by practicing the following:
 1. Avoid under- and over- milking;
 2. Select appropriate teat cup liners;
 3. Check teat cup liners daily and replace damaged or rough teat liners;
 4. Exchange liners according to manufacturer’s recommendations;
 5. Ensure correct pulsation rate and a correct release/squeeze ratio; and
 6. Ensure the vacuum regulator is functioning correctly and prevent vacuum fluctuation.

L. Bull pens

E 36: Bull pen management

- a. Bulls must have auditory, visual, and olfactory interaction with other cattle and general farm activity.
- b. Bulls must be monitored at least daily by the farm staff.

E 37: Bull pen design

- a. The lying area for an adult bull must be at least 6 sq. ft. (0.55 m²) for each 100 lbs. (45,4 kg) of live weight.
- b. Bulls must be able to change position from standing to lying down and vice versa without difficulty or injury.
- c. An exercise area must be provided at no less than 300 sq. ft. (91.5 m²) per bull.
- d. The service area must have a non-slip surface.

M. Handling facilities

E 38: Passageways in handling area

- a. Alleyways and gates must be designed and operated so as not to impede the movement of cows.

- b. When operating gates and catches, every effort must be made to reduce excessive noise, which may cause distress to the animals.
- c. If noise from the equipment is causing the animals distress, noise reduction mechanisms must be installed.
- d. Flooring must be non-slip.

N. Specific Provisions for Calves

E 39: Dairy calves

On-farm killing or euthanasia of healthy dairy bull and heifer calves is prohibited.

E 40: Managing hypothermia in calves

- a. Caretakers must take proper precautions to prevent and manage the risks of hypothermia in young calves.
- b. Hypothermia and additional stress must be minimized in susceptible calves by housing them in a well-ventilated building, by using thick, dry bedding and by avoiding drafts or providing supplemental heat.

While healthy young calves can tolerate low air temperatures, some calves are particularly susceptible to hypothermia. Susceptible animals include sick calves, newborn animals, and calves that have been transported or deprived of food.

E 41: Quarantining calves

When there is a high risk of infectious disease, caretakers must consider quarantining calves for a period as recommended by the veterinarian.

E 42: Light requirements for calves

- a. Calves must not be kept in total darkness.
- b. To meet calves' behavioral and physiological needs, appropriate natural or artificial light must be provided; if the latter, it must mimic natural lighting cycles.
- c. Light intensity must be bright enough to allow calves to be inspected at any time.

E 43: Locating calf pens for quarantine

Location or placement of individual calf pens used for quarantine must allow calves to see and hear other calves.

Group housing or pair housing of calves as early as two weeks is encouraged. Calves are social herd animals and group pens provide them with the opportunity to socialize and exhibit normal behaviors. Freedom of movement and exercise are also enhanced in group pens.

E 44: Access to exercise

After weaning, calves must be housed in groups of similar age and size and be allowed regular access to exercise areas, which can be outdoors, conditions permitting.

O. Calf housing

E 45: Calf hutches or group housing

- a. Calf hutches or group housing must:
 1. Be of a size appropriate for the age, size, and breed of the animals.
 2. Not be used to house calves older than 8 weeks of age, if housed individually.
 3. Allow calves to stand up, turn around, lie down, rest, and groom themselves without hindrance. If calves outgrow (i.e., cannot perform the behaviors listed) the size of the pen prior to 8 weeks, they must be moved to roomier housing.
 4. Be made of an appropriate material or lined with ample bedding to minimize heat stress and protect against extreme temperature fluctuations and drafts.
 5. Be arranged so that calves may see and hear other calves in neighboring if housed in individual hutches.
 6. Be sufficiently ventilated to remove excess humidity, ammonia, and condensation.
 7. Be sited in a sheltered location, affixed to the ground, or otherwise protected from prevailing winds and weather extremes.
- b. Tethering of calves is prohibited.
- c. Calves must have access at all times to a lying area that is:
 1. Of solid construction (i.e. not perforated or slatted);
 2. Bedded to provide a comfortable, clean, dry area; and
 3. Sloped as necessary to provide drainage.
- d. There must be enough bedding to combat any drafts, if necessary, to keep the calves clean, and to be dry enough to reduce instances of soiled bellies.
- e. An outdoor exercise space must be provided, climate conditions permitting.

PART 4: MANAGEMENT

OBJECTIVES: A high degree of caring and responsible management is vital to ensure good animal welfare. Caretakers must be thoroughly trained, skilled, and competent in animal husbandry and HFAC Animal Care Standards.

A. Managers

M 1: Operations records

Operations records must be kept up-to-date and made available to the inspector. These records include, at a minimum:

- a. Operational checklists;
- b. Health plans;
- c. Contingency plans;
- d. Farm pest control plans;
- e. Written standard operating and emergency procedures;
- f. Regulatory directives and certificates;
- g. Policies; and
- h. Publications.

M 2: Access to the program standards

- a. Those in management must be able to access a copy of the HFAC Animal Care Standards for Dairy Cattle.
- b. All caretakers must be made aware of the requirements stated in the HFAC Animal Care Standards for Dairy Cattle:
 1. They must be familiar with the standards;
 2. They must understand its content.

M 3: Emergency management

Managers must:

- a. Provide emergency contact information to all caretakers; and
- b. Develop and implement a written Emergency Action Plan, sited in an easily accessible location, highlighting the procedures to be followed in an emergency such as a disease outbreak, accident, interruption of supplies, fire, flood, or power failure.

M 4: Understanding and addressing welfare problems

The caretakers must:

- a. Understand the times and circumstances in which cattle are prone to welfare problems on their unit.
- b. Be aware of the welfare implications of all practices, including calving, weaning, injection, oral dosing, dehorning, identification procedures, castration, foot trimming, breeding procedures, and extra teat removal.
- c. Be aware of welfare concerns related to breeding, particularly the selection of suitable bulls, semen, and embryos used in heifers.

- a. Be able to demonstrate competence in recognizing and dealing with welfare problems.

M 5: Training and compassionate care

- a. Managers must implement and document a suitable training program for caretakers covering how to comply with HFAC standards overall and demonstrate compassionate care. This should include a plan for training on updated material as necessary.
- b. Prior to being given specific welfare responsibilities, individual caretakers must be trained and demonstrate their aptitude. Training should be documented. When required in their position, a caretaker must be able to:
 - 1. Recognize signs of normal behavior, abnormal behavior, and fear;
 - 2. Understand common diseases, including signs, prevention, and treatment, and know when to seek veterinary help;
 - 3. Conduct body condition scoring;
 - 4. Understand the functional anatomy, care, and treatment of hooves, teats, and udders;
 - 5. Implement best practices for newborn calf care;
 - 6. Understand what contributes to proper nutrition in cattle;
 - 7. Understand the requirements for good parlor hygiene and a well-maintained milking machine.
 - 8. Understand the fundamental principles of cattle breeding and genetics;
 - 9. Ensure that humane and compassionate methods of handling and loading are used; and
 - 10. Perform methods of humane euthanasia.
- c. Caretakers must be able to demonstrate their proficiency in procedures that have the potential to cause discomfort (e.g., injections, foot trimming, identification, dehorning, castration, marking, and euthanasia).

M 6: Complaints to Operators

- a. To be certified, an Operation must maintain systems for receiving, responding to, and documenting complaints alleging the Operation's failure to comply with *Humane Farm Animal Care* standards.
- b. Whenever an Operator receives a complaint, the Operator must record:
 - 1. Date
 - 2. Complaint format (written or verbal)
 - 3. Complainant
 - 4. Description of complaint
 - 5. Action taken to resolve the complaint
 - 6. Results of action taken
 - 7. Supervisor initials
- c. Written records must be retained by the Operation for a minimum of 3 years from the date of the records' creation.

The complaints log should be used if someone makes a complaint to a producer about their compliance with the HFAC Standards.

B. Handling

M 7: Competency in handling and compassionate treatment

- a. Caretakers must be able to demonstrate competence in handling animals in a positive and compassionate manner.
- b. Animals must be handled with care and in such a way that minimizes possible stress.
- c. When moving cattle, facility design and the surrounding environment must be considered.
- d. Handlers should strive to move cattle at a slow, comfortable pace.
- e. Handlers must refrain from using loud noises to move cattle or hitting them in a manner that might cause injury or fear.
- f. Before handling animals, handlers must understand and identify the likely stressors that cattle may be subjected to. They must know how cattle react toward other cattle, humans, and strange noises, sights, sounds, and smells. Handlers must minimize these stressors, where possible.

Dairy cows have the following behavioral characteristics, which must be taken into consideration when cows are moved:

- *They have a wide field of vision and may startle if they see moving objects, even at long distances.*
- *They have acute hearing, so they should not be subjected to loud noises.*
- *They are herd animals and, if possible, should not be left in isolation.*

M 8: Benign handling

- a. Sticks and flags may be used as benign handling aids (i.e., as extensions of the arm).
- b. Sticks must not be used for hitting cattle.
- c. Animals must not be pulled or lifted by the tail, skin, ears, or limbs.
- d. Aggressive tail twisting (i.e. jacking) is prohibited as it can cause tails to break, especially in young animals.
- e. Calves may only be moved by lifting or walking them, or other conveyance. Pulling or dragging is specifically prohibited.
- f. Use of electric prods or any type of electric handling tools is prohibited except when animal or human safety is in jeopardy, and only as a last resort. In the case of such emergency use, a detailed explanation must be documented in the farm records.

M 9: Handling in passageways

- a. Cattle must not be driven unless the exit or the way forward for the lead cow is clear.
- b. Cattle must not be rushed or run along alleyways, passageways, or through gateways.

M 10: Monitoring introduced animals

Heifers should be closely monitored when introduced into an established herd of cows.

M 11: Preparation for calving and milking

Cows, especially heifers, must be adequately prepared for calving and subsequent milking by early introduction to pre- and post-calving housing, as well as the production ration.

M 12: Calving aids

- a. Calving aids must only be used to assist in a delivery and not to produce a calf as quickly as possible.
- b. Before any type of calving aid is used, the cow must be examined to ensure that the calf is of a size and orientation where natural delivery can be reasonably expected, without causing undue pain and distress to either the dam or the offspring.

M 13: Dipping navels

Newborn calves' navels must be dipped in or sprayed with an effective antiseptic solution as soon as possible after birth.

M 14: Rapid diagnosis and treatment

- a. All efforts must be made to ensure a rapid and proper diagnosis and treatment of any sick animal.
- b. Euthanasia must be considered without delay if the animal is unable to respond to treatment.

C. Identification

M 15: Identification equipment

- a. If neckbands, tail bands, ear tags or leg bands are used for identification purposes, they must be fitted with care and adjusted as required to avoid unnecessary pain or distress.
- b. Face branding of any type is prohibited.
- c. Ear notching is prohibited (unless required for health testing by the state veterinarian, a government mandate, or critical breeding management).
- d. Wattling (waddling) and ear splitting are prohibited.

M 16: Marking

- a. Marking of cattle for identification and other purposes must be done with care by trained, competent operators so as to avoid unnecessary pain or distress to the animals, both at the time of marking and subsequently.
- b. Methods used for temporary marking must be non-toxic (e.g., crayons, paint, and chalk markers especially developed for livestock).

Research has shown that while both hot branding and freeze branding are painful procedures, there is some indication that freeze branding may be less painful.

D. Equipment

M 17: Using equipment

When equipment is installed that affects animal welfare, managers must be able to:

- a. Demonstrate their ability to operate the equipment;
- b. Demonstrate their ability to carry out routine maintenance;
- c. Recognize common signs of malfunction; and
- d. Demonstrate knowledge of actions to be carried out in event of a failure.

M 18: Automatic equipment

- a. All automatic equipment must be thoroughly inspected by a caretaker or other competent personnel at least daily to confirm that all equipment is in operation.
- b. When a malfunction is found in automatic equipment:
 1. The malfunction must be rectified promptly.
 2. In the meantime, to safeguard livestock from harm or distress due to the malfunction.

M 19: Ventilation equipment

When automatic equipment includes a ventilation system:

- a. There must be an alarm that will give an immediate warning of a system failure and will operate even if the principal electrical supply has failed.
- b. Auxiliary ventilation equipment must be readily available to augment the primary ventilation source if needed or substitute for it if that equipment has failed.

E. Inspection

M 20: Monitoring frequency

Caretakers must inspect their livestock and the equipment they depend on at least daily.

F. Farm Dogs

M 21: Managing farm dogs

- a. Dogs (including working dogs) must be properly trained, must not cause injury or distress to cattle, and must be kept under control at all times.
- b. Dogs are not permitted in the milking parlor.

PART 5: HEALTH

OBJECTIVES: The environment in which livestock are raised must be conducive to supporting good health. All producers must develop a health plan in consultation with their veterinarian.

A. Health Care Practices

Producers must develop and implement a written Animal Health Plan that covers the following areas that is regularly updated in consultation with a veterinarian:

- 1. Tolerance limits on herd performance parameters*
- 2. Biosecurity of incoming animals and disposal of carcasses*
- 3. Hospital pens*
- 4. Non-ambulatory animal management*
- 5. Lameness/Footcare*
- 6. Reproductive health*
- 7. Mastitis prevention*
- 8. Emergency health events*

In addition, producers are required to maintain the following records:

- 9. Care of sick or injured animals*
- 10. Parasite control*
- 11. Navel care*
- 12. Vaccinations and treatments*
- 13. Physical alterations*

Recommendation: Health records can be logged in any form (e.g., spiral notebooks, checklists, phone applications) depending on what works for the producer, as long as the required information is recorded and can be provided to HFAC or the inspector upon request.

H 1: Herd performance

- a. The herd must be continually monitored for performance, including production diseases, infectious diseases, and injury as a result of housing/husbandry/handling, such as:
 1. Metabolic Disorders (e.g., hypocalcemia, hypomagnesemia, ketosis, displaced abomasum, laminitis, bloat, acidosis, etc.)
 2. Septicemia
 3. Enteritis
 4. Problems at calving
 5. Repetitive physical injury
 6. Lameness
 7. Calf scours

8. Mastitis
9. Respiratory/infectious diseases
10. Poor body condition
11. Non-ambulatory animals

Tolerance limits on herd performance or behavioral parameters for the above conditions must be delineated in the Animal Health Plan.

- b. If any herd performance parameters fall below the tolerance limits identified in the Animal Health Plan, the veterinarian must be informed and the Health Plan revised to attempt to remedy the problem.
- c. Managers must maintain and make available to HFAC inspector, records of annual Certified Humane® production data (in lbs. or kg).

H 2: Biosecurity of incoming animals and disposal of carcasses

- a. Producers must implement a reliable biosecurity plan that prevents disease outbreaks.
- b. Animals brought in from other sources must be quarantined and/or appropriately treated before mixing with the group.
- c. HFAC must be consulted in order to determine if any incoming animals being integrated into the existing herd can be included in the Certified Humane® program.
- d. All federal and state health and disease monitoring regulations must be complied with.
- e. All local, state, and federal environmental regulations must be followed for carcass burial or composting, and a record of the carcass disposal method must be kept.

H 3: Hospital pens

- a. Hospital pens must be of a size that is appropriate for the age, size and breed of the animal.
 1. The animal must be able to stand up, turn around, lie down, rest, and groom itself without hindrance.
- b. Urine and dung from hospital pens in which sick and injured animals are housed must be disposed of to prevent the spread of infection to other stock or humans.
 1. Pens must be constructed to facilitate effective cleaning and disinfection of surfaces and the possible removal of a carcass from the area.
 2. The cleaning and disinfection procedure must be delineated in the Animal Health Plan.
- c. Water, feed, shelter, and cleanly bedded lying conditions must be always readily accessible to sick animals, unless otherwise directed by the veterinarian.
- d. Provisions for milking segregated lactating cows must be made.

H 4: Non-ambulatory animal care

- a. All non-ambulatory and injured animals must be provided with deep bedding, secure footing, shelter from adverse weather, and accessible water and feed.
- b. No animal can leave the farm or be transported unless it is able to walk unassisted, unless for veterinary care.
 1. Cattle that require hobbling to walk must not be transported.
- c. All non-ambulatory animals must be promptly treated or euthanized.
- d. Where the prognosis for recovery of a non-ambulatory animal is poor, early intervention by euthanizing the animal on farm must be undertaken.

- e. Appropriate equipment (e.g., sling or harness, sled, bucket of a front-end loader, floatation tank, or stone boat) must be available on the dairy to move an injured or non-ambulatory animal.
- f. Regardless of the type of lifting gear used on a recumbent animal, it must provide complete body support. Hoisting by chain or dragging is prohibited. Care must be taken not to cause unnecessary pain, distress, or further physical damage to the animal.
- g. The use of hip-lifters is permitted only for emergency, short-term assistance.
 - 1. Cattle must never be left unattended when hip-lifters are in use.
- h. Hind leg hobbles (slitters) may be used when necessary to prevent cattle from becoming non-ambulatory.

H 5: Lameness and foot care

- a. Producers must demonstrate methods for prevention of acute hoof conditions. These methods include traditional footbaths, sponge baths, or individual spray therapy.
- b. Preventive hoof care practices must be addressed in the Animal Health Plan.
- c. Close attention must be given to the condition of the feet. The feet of all cattle must be inspected for signs of abnormal wear, infection, or excessive growth.
- d. It is essential that every animal be inspected for hoof condition and lameness at least once quarterly or as required. This inspection must be performed by a trained, competent individual.
- e. As an aid for assessing the status of lameness in the herd, locomotion scoring must be performed and recorded on a semi-annual basis. See Appendix 3, Locomotion Scoring Chart. The HFAC auditor will review locomotion scoring records.

Lameness in lactating cows should be under 5% of the cows. When scoring, a cow should be considered lame if she scores a 3, 4, or 5 using the ZinPro Locomotion Scoring Chart (Appendix 3).

Producers can reduce the occurrence of lameness in their herds by:

- *Minimizing exposure to concrete floors. In addition to increasing time on good quality, dry pasture, consider bedding pack and composting pack barns.*
- *Keeping all walking areas clean, dry, and free of slurry.*
- *Ensuring stalls are spacious and comfortable, that cows are lying in the stalls and that they are able to rise and lie down without encumbrance.*
- *Balancing the feed ration to prevent sub-clinical rumen acidosis and providing excellent bunk management with good feed access and frequent feed push-ups.*
- *Avoiding feeding large amounts of concentrate in a single feeding.*
- *Providing fresh feed often throughout the day.*
- *Developing a lameness prevention strategy with input from experts such as the producer's veterinarian and nutritionist.*

H 6: Reproductive health

- a. There must be a minimum dry period of 60 days.
- b. Induction of parturition must never be used as a routine management procedure, but as an individual cases and in accordance with the veterinarian's recommendations.

- c. Individuals performing rectal ultrasound pregnancy detection must have received appropriate training in the relevant techniques.

H 7: Mastitis Prevention

Measures must be in place to minimize the risk and incidence of mastitis in cows, including dry cows.

- a. All cases of mastitis must be treated promptly and underlying predisposing factors corrected;
- b. When the mastitis rate exceeds the target figure for a 2-month period, then the specific organisms involved must be identified;
- c. Herd somatic cell counts, individual clinical cases of mastitis, and mastitis tube usage must be monitored and recorded. Records must be kept of all medications used and withdrawal times observed;
- d. Measures must be in place to minimize the risk or incidence of mastitis in dry cows.

H 8: Emergency health events

- a. All sudden deaths, disease outbreaks, and humane killings of unfit cattle must be:
 - 1. Recorded;
 - 2. Reported to the veterinarian;
 - 3. Investigated appropriately; and
 - 4. The outcome and action recorded.
- b. The Animal Health Plan must describe the operation's plans in the case of an emergency health event.

H 9: Care of sick and injured animals

- a. Provisions must be made for segregation and care of sick and injured cattle, which allows visual contact with other calves, where possible.
- b. Any injured, sick, or distressed cattle must be:
 - 1. Segregated; and
 - 2. Treated without delay (including seeking veterinary care when needed); or
 - 3. If necessary, humanely euthanized according to euthanasia guidelines by a reputable source, such as the American Veterinary Medical Association.

Recommendation: In some circumstances, segregation is not feasible or may disrupt the social hierarchy or cause additional stress to the animal. The advantages of segregation should be weighed against its disadvantages, especially for mild illnesses or injuries that can be easily managed.

H 10: Controlling Parasites, Pests, and Predators

- a. It is essential that all practical measures be taken to prevent or control external and internal parasites, as set forth in the Animal Health Plan.
- b. When developing and implementing farm pest and predator control plans, physical exclusion methods and the removal of elements in the vicinity of livestock that might encourage the presence of pests and predators must be included.
- c. Any treatments used to control parasites must be recorded.

Recommendation: Methods of physical exclusion and discouragement of pests and predators may include:

- *Construction/maintenance of fencing appropriate for excluding the pests/predators in question*
- *Removal of shelter/cover (e.g., weeds) in the area surrounding livestock buildings*
- *Removal/protection of obvious food sources.*

H 11: Navel care

The navel of newborn calves must be dipped in disinfectant as soon as possible after birth and before transport.

H 12: Vaccinations and treatments

- a. At the minimum, records for vaccinations must specify the:
 1. Vaccination;
 2. Date of administration; and
 3. Identification (if applicable), age, and number of animals treated.
- b. At the minimum, records for any treatments (medications) given therapeutically for disease must specify the:
 1. Treatment used;
 2. Date of administration;
 3. The identification (e.g., ID numbers or group) and number of individuals treated;
 4. Reason for treatment; and
 5. Outcome.

H 13: Physical alterations

- a. Pain management must include the use of a medication or chemical intervention. Therefore, pain management must exceed and must not solely include the manual skills of the caretaker(s). Pain management medication, including dosage and route of administration, must be selected in conjunction with the herd veterinarian (please visit Our Standards Page on our website at CertifiedHumane.org and look for the Pain Management Chart under HELPFUL GUIDES & FORMS). It is acceptable for the veterinarian to prescribe off-label usage for these medications based on age and breed of animal.
- b. The only potentially injurious husbandry procedures permitted under the Humane Farm Animal Care *Animal Care Standards* are as follows (except those done for therapeutic purposes by a veterinarian):
 1. Removal of supernumerary teats may be performed up to 5 weeks of age using pain management.
 2. Disbudding may be conducted during the first 4 weeks of age, using a hot iron; pain management must be used.
 - a) Cautery paste may be used to disbud calves that are no older than 7 days of age, with the paste being applied by a person who is proficient in the process, and pain management must be used.

Great care must be taken in applying the paste: hair around the horn bud must be clipped, paste must be applied only to the horn bud and rubbed in well, and petroleum jelly must be applied in a ring around the horn bud to prevent the paste from running. It is not recommended to carry out this procedure in wet conditions.

- b) The following disbudding or dehorning methods are prohibited:
 - 1. Sawing
 - 2. Banding
 - 3. Embryonic wires; and
 - 4. Other methods not designed for the purpose of disbudding or dehorning.
- c) Depending upon de the breed, a surgical procedure by a veterinarian and under pain management may be required for disbudding after 6 weeks of age.
- d) The removal of horns from cattle over 6 months of age must:
 - 1. Only be performed by a veterinarian;
 - 2. Use a combination of sedative, local anesthesia, and anti-inflammatory; and
 - 3. Not be a routine procedure.

Use of polled sires avoids the need for dehorning.

- 3. It is strongly recommended that if bull calves are to be castrated, this should be performed at the earliest possible age.
 - a) Castration may be accomplished by the application of a band (rubber ring) up to 7 days of age.
 - b) Between 7 days and 6 months of age, other banding methods, such as “Calicrate” or “E-Z Bander” may be used only with pain management.
 - c) Calves up to 6 months of age may be castrated using surgical castration, emasculator, or spermatic cord crush (Burdizzo clamp). Pain management must be used.
 - d) Surgical castration of bulls over 6 months of age must be performed by a veterinarian using pain management and provisions for controlling bleeding.
- 4. Tail docking is prohibited. Switch trimming is allowed.
- 5. Wattling (waddling) and ear splitting are prohibited.
- c. All of these practices must be performed by trained and competent caretakers in a way that minimizes suffering.
 - 1. The above procedures must:
 - a) Not be performed on sick animals;
 - b) Only be performed using appropriate, properly-maintained equipment.
 - 2. Use of a nose lead as a sole form of restraint is prohibited.

H 14: Euthanasia

- a. Each farm must have provisions for timely and humane euthanasia of casualty cattle. This can be accomplished on-farm by a slaughterer, a veterinarian, or a named, trained, competent member of farm staff. The method of euthanasia that will be used in each age group of animals must be specified in the Animal Health Plan.
- b. If there is any doubt as to how to proceed, the veterinarian must be called at an early stage to advise whether treatment is possible or whether humane slaughter is required

to prevent suffering. If an animal is in severe pain that is uncontrollable, then the animal must be promptly and humanely euthanized.

Nothing stated here is intended to discourage the prompt diagnosis and appropriate treatment of any ill or injured animal. A copy of the AVMA Guidelines on Euthanasia is available on the HFAC website, www.certifiedhumane.org in the 'Standards' section.

H 15: Genetically modified or cloned animals

The use of genetically modified and/or cloned cattle and their offspring is prohibited.

PART 6: TRANSPORTATION

Objectives: Animal transport systems must be designed and managed to ensure livestock are not subjected to unnecessary distress or discomfort. The transport and handling of livestock must be kept to an absolute minimum (e.g., to final slaughter destination or between local farm sites if required). Personnel involved in transport and preparation must be thoroughly trained and competent to carry out the tasks required of them.

A. Transportation conditions

T 1: Loading ramps

- a. Loading facilities:
 1. Must provide a ramp of no more than 25% angle of incline/decline;
 2. Must be clean; and
 3. Must be well lit.
- b. Both loading ramps and tailboards must be fitted with means of preventing the cattle from slipping and falling off.
- c. Ramps must have non-slip footing.

Consideration must be given to providing a loading bay and/or ramp that is well lit and enables animals to walk straight into or out of the vehicle on a level or slight gradient.

T 2: Passageways

- a. Alleyways and gates must be designed and operated so as not to impede the movement of cattle.
- b. When operating gates and catches, every effort must be made to reduce excessive noise, which may cause distress to the animals.
- c. If noise from the equipment is causing the animals distress, noise reduction mechanisms must be installed.

T 3: Transport personnel

- a. Personnel in charge of cattle transporters must be able to demonstrate competence in handling cattle when loading and unloading them, and while in transit.
- b. Animal handlers must be knowledgeable about likely stressors and how cattle react toward other cattle, toward humans and to strange noises, sights, sounds and smells.

Dairy cows have the following behavioral characteristics, which must be taken into consideration when cows are moved:

- *They have a wide field of vision and may startle if they see moving objects, even at long distances.*
- *They have acute hearing, so they should not be subjected to loud noises.*
- *They are herd animals and, if possible, should not be left in isolation.*

T 4: Handling in passageways

- a. Cattle must not be driven unless the exit or the way forward for the lead cow is clear.
- b. The animal must not be rushed or run along alleyways, passageways, or through gateways.

T 5: Benign handling

- a. Sticks and flags may be used as benign handling aids, i.e., as extensions of the arm.
- b. Sticks must not be used for hitting cattle.
- c. Animals must not be pulled or lifted by the tail, skin, ears, or limbs.
- d. Aggressive tail twisting (e.g., jacking) is prohibited as it can cause tails to break, especially in young animals.
- e. Calves may only be moved by lifting, walking them, or other conveyance; pulling or dragging is specifically prohibited.
- f. The use of electric prods during transport is prohibited.

Recommendation: A more humane alternative to an electric prod is a non-electrified vibrating prod, as suggested by the AVMA Humane Slaughter Guidelines.

T 6: Pre-transport feed and water

- a. All cattle, including calves, must have access to water up to the point of transport.
- b. All cattle, including calves, must have access to food until at least 5 hours prior to loading onto the truck.

T 7: Transport time

- a. The timing of transport for any purpose must be planned between the transporter and producer, and slaughterhouse, if applicable, to minimize traveling and waiting time for the cattle.
- b. Transport of animals must not exceed eight hours.

Note: A derogation can be considered if a slaughter plant (inspected and approved for use under our standards) is not available within eight hours traveling distance from the farm.

T 8: Transport planning and records

- a. Producers must keep records of transport of all incoming and outgoing animals, including:
 1. Date of transport;
 2. Number of animals transported and their destination;
 3. Identification of animals;
 4. Regrouping and segregation planning, as needed;
 5. Trucking company; and
 6. Type of vehicle used (transportation by ship is prohibited).
- b. Alternative arrangements must be made and recorded for animals unfit for transport (e.g., cull cows, non-ambulatory animals). In some cases, on-farm euthanasia may be necessary.

T 9: Casualty animal transport

- a. A sick or injured ambulatory animal may only be transported:
 1. If it is being taken for veterinary treatment or it is being taken to the nearest available place for humane slaughter; or
 2. If the said animal is suitable for loading, traveling, and unloading (can walk unassisted).
- b. No animal with a BCS of less than 2 may be transported or leave the farm unless for veterinary treatment.

PART 7: PROCESSING AND CREAMERIES

P 1: Dairies selling Certified Humane® further processed milk products

- a. All processing systems, including creameries and further processing facilities where milk from Certified Humane® farms is to be manufactured (into dairy products such as milk, butter, cheese, yogurt, ice cream, etc.), must be inspected by HFAC for traceability to ensure that:
 1. There is no commingling with non-certified milk or milk products, and
 2. That the Certified Humane® logo is only being used on milk and milk products from Certified Humane® farms.
 3. HFAC will audit the plant for traceability according to the Policy Manual, which can be found at www.certifiedhumane.org, to ensure that all the products that are labeled with the Certified Humane® logo originate from Certified Humane® farms.

PART 8: SLAUGHTER

S 1: Dairies selling Certified Humane® Dairy Beef

- a. For dairies planning to process animals or selling them to a producer who will label and sell the meat as Certified Humane®, they must apply for approval of use of the slaughter and processing facilities.

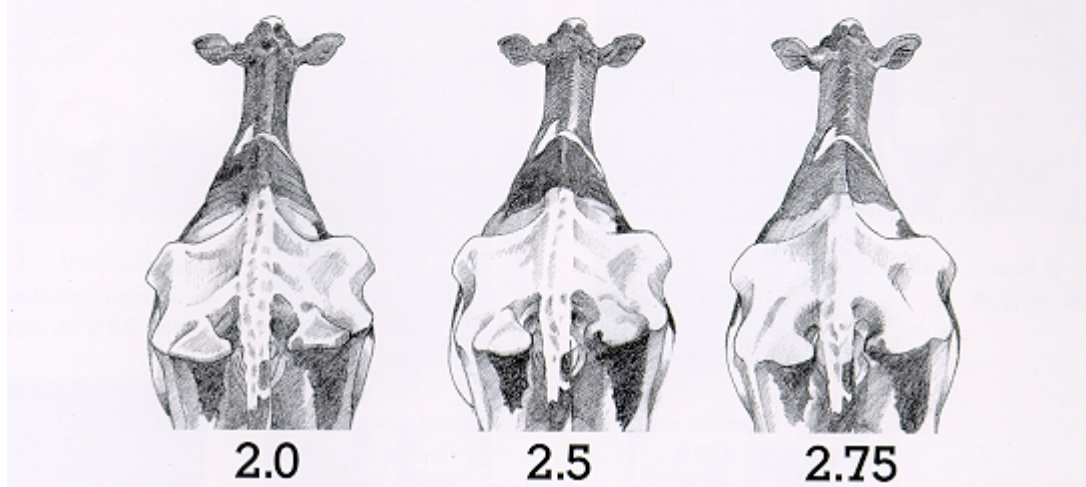
- b. Refer to the HFAC Beef Cattle animal welfare standards for transport requirements in addition to North American Meat Institute (NAMI) Guidelines for transport and slaughter procedures/audit forms.
- c. HFAC will also audit the slaughter plant for traceability according to the Policy Manual to ensure that all the products that are labeled with the Certified Humane® logo originate from Certified Humane® farms. All standards and guidelines can be found at www.certifiedhumane.org.

PART 9: APPENDICES

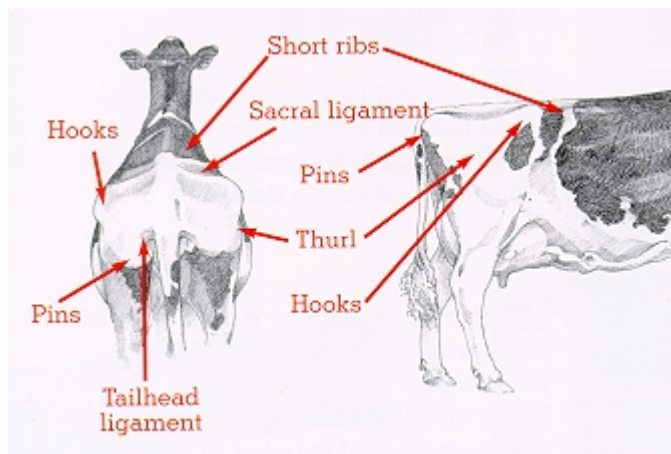
Appendix 1: Body Condition Scoring Guide

UC Davis Veterinary Medicine Extension

Body Condition Scoring in Dairy Cattle

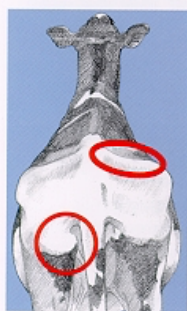
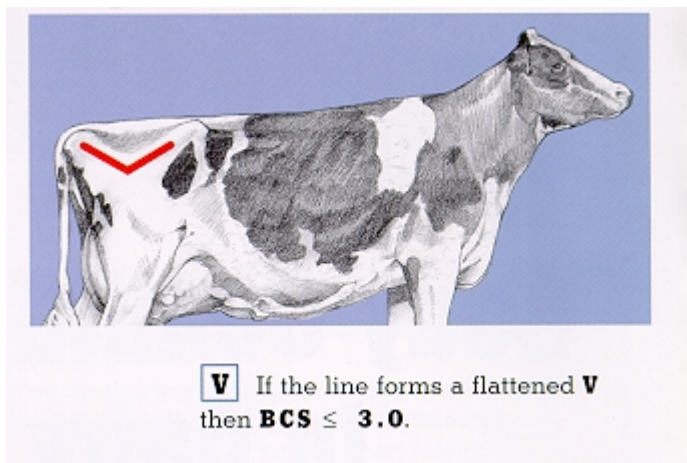


Begin by a review of the general names for the various body locations which will be referred to in the systematic approach to body condition scoring. Keep in mind that this system is designed to be performed from behind the animal. You may have to discard your old system of BCS, as the scores will probably be different. However, once this approach is accepted, it will allow repeatable BCS even when several different people do the scoring.



First view the pelvic area from the side.
Check line from hooks, to the thurl, to the pins.

Make a decision about the line over the thurl. This is the cut point between 3.0 or less and 3.25 or greater scores.

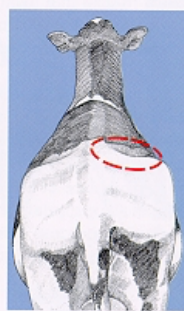


1 If sacral and tailhead ligaments visible **BCS** = **3.25**.

View from behind

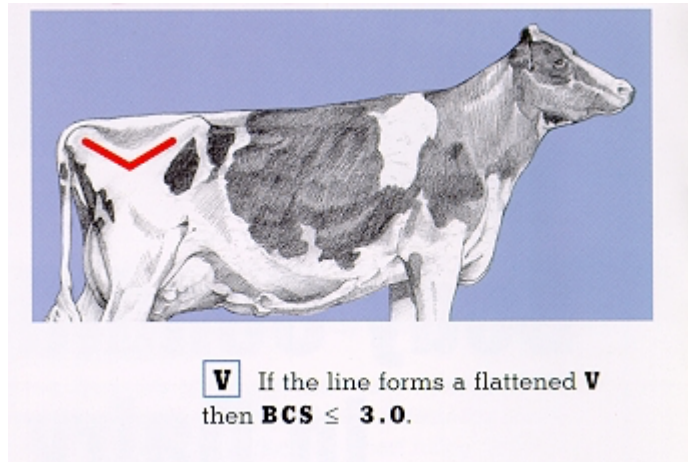


2 If sacral ligament visible and tailhead ligament barely visible **BCS** = **3.50**.

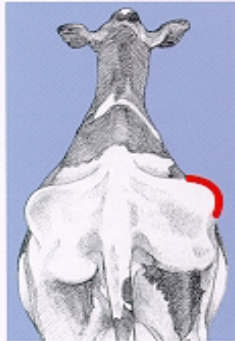


3 If sacral ligament barely visible and tailhead ligament not visible **BCS** = **3.75**. If sacral and tailhead ligament not visible **BCS** = **4.0**.

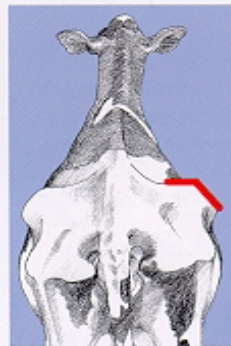
Then view from behind.



View from behind.



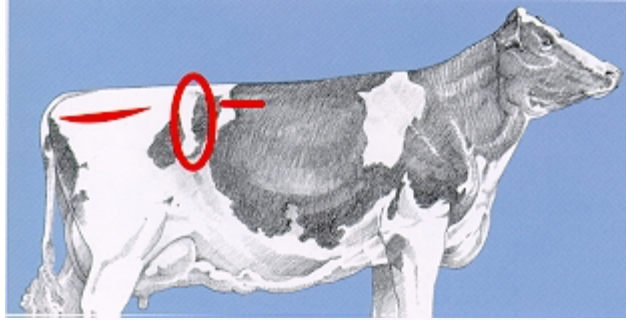
1 If hooks rounded
BCS = **3.0**.



2 If hooks angular
BCS < **2.75**.
Check pins. If pins padded **BCS** = **2.75**.

4 If no fat pad on pins **BCS** < **2.50**. View the short ribs. Look for corrugations along the top of short ribs as fat covering disappears. If corrugations visible 1/2 way between tip and spine of short ribs, **BCS** = **2.25**. If corrugations visible 3/4 way from tip to spine **BCS** = **2.0**. If thurl prominent and saw-toothed spine **BCS** < **2.0**.

4 If thurl flat **BCS** > **4.0**. If tip of short ribs barely visible **BCS** = **4.25**. If thurl flat and pins buried **BCS** = **4.5**. If hooks barely visible **BCS** = **4.75**. If all boney prominences well rounded **BCS** = **5.0**.



This system of body condition scoring in dairy cattle was developed with the support of Elanco Animal Health and referenced from their bulletin AI 8478 (Rev. 9/96).

Appendix 2: Temperature Humidity Index for Lactating Dairy Cows

| Temperature | | % Relative Humidity | | | | | | | | | | | | | | | | | | | | |
|-------------|------|---------------------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| °F | °C | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
| 72 | 22.0 | 64 | 65 | 65 | 65 | 66 | 66 | 67 | 67 | 67 | 68 | 68 | 68 | 69 | 69 | 70 | 70 | 70 | 71 | 71 | 72 | 72 |
| 73 | 23.0 | 65 | 65 | 66 | 66 | 66 | 67 | 67 | 68 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 71 | 72 | 72 | 73 | 73 |
| 74 | 23.5 | 65 | 66 | 66 | 67 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 74 | 74 |
| 75 | 24.0 | 66 | 66 | 67 | 67 | 68 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 75 | 75 |
| 76 | 24.5 | 66 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 75 | 75 | 76 | 76 |
| 77 | 25.0 | 67 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 72 | 72 | 73 | 73 | 74 | 74 | 75 | 75 | 76 | 76 | 77 |
| 78 | 25.5 | 67 | 68 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 72 | 73 | 73 | 74 | 74 | 75 | 75 | 76 | 76 | 77 | 77 | 78 |
| 79 | 26.0 | 67 | 68 | 69 | 69 | 70 | 70 | 71 | 71 | 72 | 73 | 73 | 74 | 74 | 75 | 76 | 76 | 77 | 77 | 78 | 78 | 79 |
| 80 | 26.5 | 68 | 69 | 69 | 70 | 70 | 71 | 72 | 72 | 73 | 73 | 74 | 75 | 75 | 76 | 76 | 77 | 78 | 78 | 79 | 79 | 80 |
| 81 | 27.0 | 68 | 69 | 70 | 70 | 71 | 72 | 72 | 73 | 73 | 74 | 75 | 75 | 76 | 77 | 77 | 78 | 78 | 79 | 80 | 80 | 81 |
| 82 | 28.0 | 69 | 69 | 70 | 71 | 71 | 72 | 73 | 73 | 74 | 75 | 75 | 76 | 77 | 77 | 78 | 79 | 79 | 80 | 81 | 81 | 82 |
| 83 | 28.5 | 69 | 70 | 71 | 71 | 72 | 73 | 73 | 74 | 75 | 75 | 76 | 77 | 78 | 78 | 79 | 80 | 80 | 81 | 82 | 82 | 83 |
| 84 | 29.0 | 70 | 70 | 71 | 72 | 73 | 73 | 74 | 75 | 75 | 76 | 77 | 78 | 78 | 79 | 80 | 80 | 81 | 82 | 83 | 83 | 84 |
| 85 | 29.5 | 70 | 71 | 72 | 72 | 73 | 74 | 75 | 75 | 76 | 77 | 78 | 78 | 79 | 80 | 81 | 81 | 82 | 83 | 84 | 84 | 85 |
| 86 | 30.0 | 71 | 71 | 72 | 73 | 74 | 74 | 75 | 76 | 77 | 78 | 78 | 79 | 80 | 81 | 81 | 82 | 83 | 84 | 84 | 85 | 86 |
| 87 | 30.5 | 71 | 72 | 73 | 73 | 74 | 75 | 76 | 77 | 77 | 78 | 79 | 80 | 81 | 81 | 82 | 83 | 84 | 85 | 85 | 86 | 87 |
| 88 | 31.0 | 72 | 72 | 73 | 74 | 75 | 76 | 76 | 77 | 78 | 79 | 80 | 81 | 81 | 82 | 83 | 84 | 85 | 86 | 86 | 87 | 88 |
| 89 | 31.5 | 72 | 73 | 74 | 75 | 75 | 76 | 77 | 78 | 79 | 80 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 86 | 87 | 88 | 89 |
| 90 | 32.0 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 86 | 87 | 88 | 89 | 90 | 91 |
| 91 | 33.0 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 |
| 92 | 33.5 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 |
| 93 | 34.0 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 80 | 81 | 82 | 83 | 85 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 |
| 94 | 34.5 | 74 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 86 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 |
| 95 | 35.0 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 |
| 96 | 35.5 | 75 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 |
| 97 | 36.0 | 76 | 77 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 91 | 92 | 93 | 94 | 95 | 96 | 97 |
| 98 | 36.5 | 76 | 77 | 78 | 80 | 80 | 82 | 83 | 83 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 98 |
| 99 | 37.0 | 76 | 78 | 79 | 80 | 81 | 82 | 83 | 84 | 85 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 98 | 99 |
| 100 | 38.0 | 77 | 78 | 79 | 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 98 | 99 | 100 |
| 101 | 38.5 | 77 | 79 | 80 | 81 | 82 | 83 | 84 | 86 | 87 | 88 | 89 | 90 | 92 | 93 | 94 | 95 | 96 | 98 | 99 | 100 | 101 |
| 102 | 39.0 | 78 | 79 | 80 | 82 | 83 | 84 | 85 | 86 | 87 | 89 | 90 | 91 | 92 | 94 | 95 | 96 | 97 | 98 | 100 | 101 | 102 |
| 103 | 39.5 | 78 | 79 | 81 | 82 | 83 | 84 | 86 | 87 | 88 | 89 | 91 | 92 | 93 | 94 | 96 | 97 | 98 | 99 | 101 | 102 | 103 |
| 104 | 40.0 | 79 | 80 | 81 | 83 | 84 | 85 | 86 | 88 | 89 | 90 | 91 | 93 | 94 | 95 | 96 | 98 | 99 | 100 | 101 | 103 | 104 |
| 105 | 40.5 | 79 | 80 | 82 | 83 | 84 | 86 | 87 | 88 | 89 | 91 | 92 | 93 | 95 | 96 | 97 | 99 | 100 | 101 | 102 | 103 | 105 |
| 106 | 41.0 | 80 | 81 | 82 | 84 | 85 | 87 | 88 | 89 | 90 | 91 | 93 | 94 | 95 | 97 | 98 | 99 | 101 | 102 | 103 | 104 | 106 |
| 107 | 41.5 | 80 | 81 | 83 | 84 | 85 | 87 | 88 | 89 | 91 | 92 | 94 | 95 | 96 | 98 | 99 | 100 | 102 | 103 | 104 | 106 | 107 |
| 108 | 42.0 | 81 | 82 | 83 | 85 | 86 | 88 | 89 | 90 | 92 | 93 | 94 | 96 | 97 | 98 | 100 | 101 | 103 | 104 | 105 | 107 | 108 |
| 109 | 43.0 | 81 | 82 | 84 | 85 | 87 | 89 | 89 | 91 | 92 | 94 | 95 | 96 | 98 | 99 | 101 | 102 | 103 | 105 | 106 | 108 | 109 |
| 110 | 43.5 | 81 | 83 | 84 | 86 | 87 | 89 | 90 | 91 | 93 | 94 | 96 | 97 | 99 | 100 | 101 | 103 | 104 | 106 | 107 | 109 | 110 |
| 111 | 44.0 | 82 | 83 | 85 | 86 | 88 | 90 | 91 | 92 | 94 | 95 | 96 | 98 | 99 | 101 | 102 | 104 | 105 | 107 | 108 | 110 | 111 |
| 112 | 44.5 | 82 | 84 | 85 | 87 | 88 | 90 | 91 | 93 | 94 | 96 | 97 | 99 | 100 | 102 | 103 | 105 | 106 | 108 | 109 | 111 | 112 |
| 113 | 45.0 | 83 | 84 | 86 | 87 | 89 | 91 | 92 | 93 | 95 | 96 | 98 | 99 | 101 | 102 | 104 | 105 | 107 | 108 | 110 | 111 | 113 |
| 114 | 45.5 | 83 | 85 | 86 | 88 | 89 | 92 | 92 | 94 | 96 | 97 | 99 | 100 | 102 | 103 | 105 | 106 | 108 | 109 | 111 | 112 | 114 |
| 115 | 46.0 | 84 | 85 | 87 | 88 | 90 | 92 | 93 | 95 | 96 | 98 | 99 | 101 | 102 | 104 | 106 | 107 | 109 | 110 | 112 | 113 | 115 |
| 116 | 46.5 | 84 | 86 | 87 | 89 | 90 | 93 | 94 | 95 | 97 | 98 | 100 | 102 | 103 | 105 | 106 | 108 | 110 | 111 | 113 | 114 | 116 |
| 117 | 47.0 | 85 | 86 | 88 | 89 | 91 | 93 | 94 | 96 | 98 | 99 | 101 | 102 | 104 | 106 | 107 | 109 | 111 | 112 | 114 | 115 | 117 |
| 118 | 48.0 | 85 | 87 | 88 | 90 | 92 | 94 | 95 | 97 | 98 | 100 | 102 | 103 | 105 | 106 | 108 | 110 | 111 | 113 | 115 | 116 | 118 |
| 119 | 48.5 | 85 | 87 | 89 | 90 | 92 | 94 | 96 | 97 | 99 | 101 | 102 | 104 | 106 | 107 | 109 | 111 | 112 | 114 | 116 | 117 | 119 |
| 120 | 49.0 | 86 | 88 | 89 | 91 | 93 | 95 | 96 | 98 | 100 | 101 | 103 | 105 | 106 | 108 | 110 | 111 | 113 | 115 | 117 | 118 | 120 |

Stress Threshold:
Respiration rate exceeds 60 BPM. Milk yield losses begin. Repro losses detectable. Rectal Temperature exceeds 38.5°C (102.2°F).

Mild-Moderate Stress:
Respiration rate exceeds 75 BPM. Rectal Temperature exceeds 39°C (104°F)

Moderate-Severe Stress:
Respiration rate exceeds 85 BPM. Rectal Temperature exceeds 40°C (104°F)

Severe Stress:
Respiration rate 120-140 BPM. Rectal Temperature exceeds 41°C (106°F)

Appendix 3: Locomotion Score

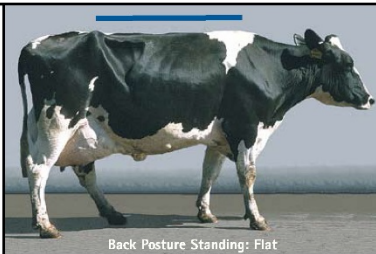
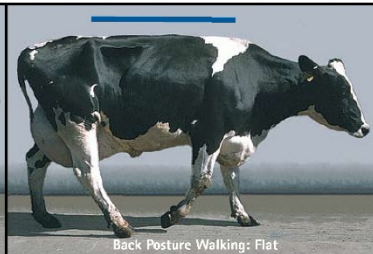
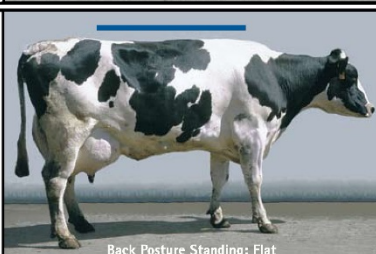
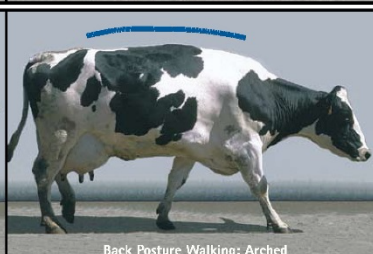
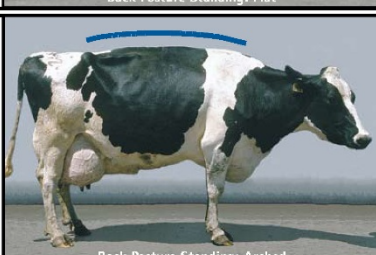

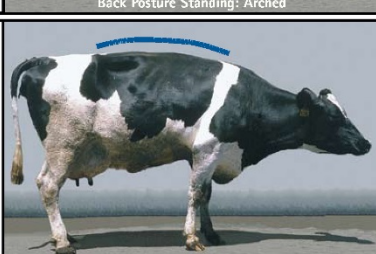
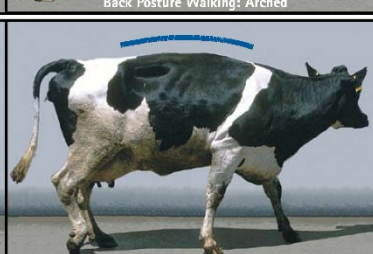
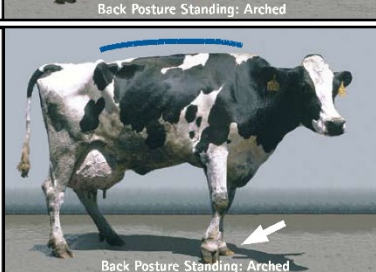
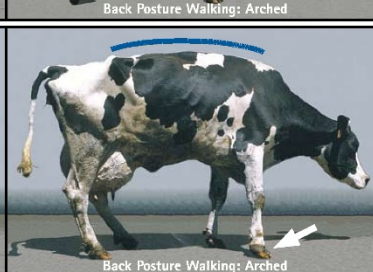


LOCOMOTION SCORING OF DAIRY CATTLE*

Locomotion scoring is based on the observation of cows standing and walking (gait), with special emphasis on their back posture. This system is intuitive and, therefore, easy to learn and implement. Use of locomotion scoring is effective for early detection of claw (hoof) disorders, monitoring prevalence of lameness, comparing the incidence and severity of lameness between herds and identifying individual cows for functional claw (hoof) trimming.

Animal observations should be made on a flat surface that provides good footing for cows. Cows scoring 2 or 3 should be examined and trimmed to prevent more serious problems. Trimming should be done by a competent trimmer with the goal of returning the claws to functional weight bearing and conformation.



| | | |
|--|--|--|
| <p>Locomotion Score 1</p> <p>Clinical Description: Normal</p> <p>Description: Stands and walks normally with a level back. Makes long confident strides.</p> |  <p>Back Posture Standing: Flat</p> |  <p>Back Posture Walking: Flat</p> |
| <p>Locomotion Score 2</p> <p>Clinical Description: Mildly Lamé</p> <p>Description: Stands with flat back, but arches when walks. Gait is slightly abnormal.</p> |  <p>Back Posture Standing: Flat</p> |  <p>Back Posture Walking: Arched</p> |
| <p>Locomotion Score 3</p> <p>Clinical Description: Moderately Lamé</p> <p>Description: Stands and walks with an arched back and short strides with one or more legs. Slight sinking of dew-claws in limb opposite to the affected limb may be evident.</p> |  <p>Back Posture Standing: Arched</p> |  <p>Back Posture Walking: Arched</p> |
| <p>Locomotion Score 4</p> <p>Clinical Description: Lamé</p> <p>Description: Arched back standing and walking. Favoring one or more limbs but can still bear some weight on them. Sinking of the dew-claws is evident in the limb opposite to the affected limb.</p> |  <p>Back Posture Standing: Arched</p> |  <p>Back Posture Walking: Arched</p> |
| <p>Locomotion Score 5</p> <p>Clinical Description: Severely Lamé</p> <p>Description: Pronounced arching of back. Reluctant to move, with almost complete weight transfer off the affected limb.</p> |  <p>Back Posture Standing: Arched</p> |  <p>Back Posture Walking: Arched</p> |

* Adapted from Sprecher, D.J.; Hostetler, D.E.; Kaneene, J.B. 1997. Theriogenology 47:1178-1187 and contribution from Cook, N.B., University of Wisconsin.

Appendix 4: Pain Management

Recommendations for Castration and Dehorning of Cattle

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Abstract

Pain associated with routine husbandry procedures such as dehorning and castration is increasingly being scrutinized by the public. The results of a survey of AABP and AVC members suggest that surgical castration with a scalpel followed by emasculator (>200 lb or 90 kg) or twisting (<200 lb or 90 kg) is the most common castration method used by practitioners in the United States. Risk of injury to the operator, calf size, handling facilities, and experience were the most important considerations in selecting a castration method. Non-surgical castration is perceived to cause more adverse events than surgical castration. One in five veterinarians currently report using anesthesia or analgesia at the time of castration. Ninety percent of veterinarians vaccinate and dehorn at the time of castration. The Barnes dehorning tool appears to be the most common method of dehorning used in the US. Results of studies that use plasma cortisol or weight gain to determine the optimal timing and method of castration and use of analgesia are often equivocal or conflicting. The preliminary findings of a study using electroencephalography to examine the effect of age at the time of castration on brainwave activity show a more prominent shift toward high-frequency, low-amplitude brain activity in older calves compared with six-week-old calves. Meloxicam tablets administered orally at 0.45 mg/lb (1 mg/kg) may provide a convenient and cost-effective means of providing analgesia in cattle. A mean peak plasma concentration (C_{max}) of 3.10 µg/mL (Range: 2.64 – 3.79 µg/mL) was recorded at 11.64 hours (Range: 10 – 12 hours) with a half-life (T_{½λz}) of 27.54 hours (Range: 19.97 – 43.29 hours) after oral meloxicam administration. In recent studies we found that meloxicam administered prior to dehorning at 0.23 mg/lb (0.5 mg/kg) IV significantly increased average daily weight gain in calves after dehorning. A second study found that calves receiving oral meloxicam 24 hours prior to surgical castration tended to have a lower incidence of bovine respiratory disease.

Résumé

La douleur résultant d'opérations routinières comme l'écornage et la castration retient de plus en plus l'attention du public. Une étude réalisée auprès des

membres de l'American Association of Bovine Practitioners (AABP) et de l'Academy of Veterinary Consultants (AVC) montre que la méthode de castration la plus employée par les vétérinaires américains est la castration chirurgicale, effectuée par incision au scalpel suivie de l'enlèvement des testicules avec l'émasclateur (sur les veaux de plus de 90 kg, ou 200 lb) ou par torsion (veaux de moins de 90 kg, ou 200 lb). Les facteurs les plus considérés dans le choix de la méthode de castration étaient le risque de blessures pour le manipulateur, la taille du veau, les installations et outils disponibles et l'expérience du manipulateur. La castration non chirurgicale est perçue comme une méthode causant davantage d'inconvénients que la castration chirurgicale. Actuellement, un vétérinaire sur cinq dit avoir recours à l'anesthésie ou à l'analgésie lors de la castration. De plus, 90 % des vétérinaires interrogés disent pratiquer la vaccination et l'écornage en même temps que la castration. L'écorneur Barnes semble être l'outil d'écornage le plus utilisé aux États-Unis. Les études visant à déterminer le meilleur moment et la meilleure méthode pour l'écornage et l'analgésie d'après le dosage du cortisol plasmatique du sang ou le gain de poids donnent des résultats souvent équivoques ou contradictoires. Les résultats préliminaires d'une étude par électroencéphalographie de l'effet de l'âge à la castration révèlent que les veaux plus âgés tendent à avoir une activité cérébrale de fréquence plus élevée et d'amplitude plus faible que les veaux âgés de six semaines. La méloxicame, administrée par voie orale sous forme de comprimés à une dose de 1 mg/kg (0,45 mg/lb), semble une méthode d'analgésie pratique et rentable chez les bovins. Dans le plasma sanguin, le sommet de concentration moyen (C_{max}) de la méloxicame était de 3,10 µg/mL (pour une variation de 2,64 à 3,79 µg/mL) et fut observé 11,64 heures (pour une variation de 10 à 12 heures) après l'administration orale de ce médicament, dont la demi-vie moyenne (T_{½λz}) était de 27,54 heures (pour une variation de 19,97 à 43,29 heures). Dans une étude récente, nous avons observé que les veaux recevant 0,5 mg/kg (0,23 mg/lb) de méloxicame par voie intraveineuse avant l'écornage affichaient, après l'écornage, un gain de poids quotidien moyen significativement supérieur. Une seconde étude a montré que les veaux recevant la méloxicame par voie orale 24 heures avant la castration chirurgicale étaient moins fréquemment affectés par le complexe respiratoire bovin.

Introduction

Castration of male calves is one of the most common livestock management practices performed in the United States, amounting to approximately 15 million procedures per year.¹⁹ Methods of castration are associated with either physical, chemical or hormonal damage to the testicles.¹⁶ In many production settings, physical castration methods are the most common. These are subdivided into procedures involving surgical removal of the testes, or methods that irreparably damage the testicles by interruption of the blood supply using either a castration clamp^a, rubber ring^b, or latex band^c.

Benefits of castration include reduction in aggression and mounting behavior of males, causing fewer injuries in confinement operations and reduced dark-cutting beef.^{20,21} Steers have higher quality meat with increased tenderness and marbling. Carcasses from steers therefore command higher prices at market when compared with bulls.¹ Castration also prevents physically or genetically inferior males from reproducing and prevents pregnancy in commingled pubescent groups.⁹ Although the benefits of castration are widely accepted, all methods of castration produce physiological, neuroendocrine, and behavioral changes indicative of pain and distress.¹⁶

Societal concern about the moral and ethical treatment of animals is becoming more common.¹⁴ In particular, negative public perception of castration and dehorning is increasing, with calls for the development of practices to relieve pain and suffering in livestock. Production agriculture is charged with the challenge of formulating animal welfare policies relating to routine management practices such as castration. To enable the livestock industry to respond to these challenges there is a need for data on management practices that are commonly being used in typical production settings.⁹

We conducted a web-based survey of members of the American Association of Bovine Practitioners (AABP) and Academy of Veterinary Consultants (AVC) who were asked to provide information about castration methods, adverse events, and husbandry procedures conducted at the time of castration. Invitations to participate in the survey were sent to e-mail addresses belonging to 1,669 AABP members and 303 AVC members. After partially completed surveys and missing data were omitted, 189 responses were included in the analysis. Surgical castration with a scalpel followed by testicular removal using manual twisting (cattle < 198 lb [90 kg]) or an emasculator (cattle > 198 lb [90 kg]) were the most common methods of castration. The potential risk of injury to the operator, size of the animal, handling facilities, and experience with the technique were the most important considerations used to determine the castration method. Swelling, stiffness, and increased

lying time were the most prevalent adverse events observed following castration. One in five practitioners reported using an analgesic or local anesthetic at the time of castration. Approximately 90% of respondents said they also vaccinate and dehorn cattle at the time of castration. Equipment disinfection, prophylactic antimicrobials, and tetanus toxoid are commonly used to minimize complications following castration. The results of this survey provide insight into current bovine castration and management practices in the US.

AVMA guidelines suggest that animals should be dehorned and castrated at the “earliest age practicable”. Everyone probably agrees that this is a good idea based on observations that animals castrated younger suffer less performance setback than those castrated at an older age. However, it is interesting to review the science supporting this recommendation. For the most part, this recommendation is based on studies evaluating plasma cortisol concentration and performance effects.

Reviewing the literature highlights several deficiencies. These include that age and method effects are rarely examined under the same set of experimental conditions. This requires extrapolation between studies done in six-week-old calves and studies done in three-month-old calves, which is very risky. Furthermore, the effect of performing dehorning and castration at the same time has not been evaluated until our group studied this fairly recently. The concurrent measurement of multiple novel indicators of pain and distress in the same population of animals is also currently deficient in the literature.

Age Effects

Table 1 shows the Cmax, which is the maximum cortisol concentration in serum, and the Tmax, which is the time after castration when maximum cortisol concentration occurred. When we consider rubber ring castration in six-day-old calves, we see the cortisol concentration was much lower and occurred much earlier than in two to four-month-old animals. However, the opposite is found for surgical castration, where there was a much higher cortisol concentration in six-day-old calves compared to two to four-month-old calves. This does not really fit with the hypothesis that surgical castration should be less stressful in younger calves. The literature suggests those six-day-old calves have a higher cortisol concentration than those older calves. This does not imply that we should wait and castrate them older, instead it illustrates that cortisol responses are an imperfect measure of pain associated with castration.

Table 2 shows the duration of plasma cortisol response elevation above pre-treatment levels. With rubber ring castration in six-day-old calves and two to four-month-old calves, the time above baseline cortisol

Table 1.

| Method | Age | | | | |
|----------------|--------------|-------------|--------------|-------------|-----------------|
| | 6 days | 21 days | 42 days | 2-4 months | 5.5 months |
| Rubber ring | 60 (36 min) | 45 (48 min) | 45 (60 min) | 76 (90 min) | |
| Latex band | | | | | 101 (30-60 min) |
| Burdizzo | 80 (24 min) | 50 (24 min) | 60 (24 min) | 64 (30 min) | 87 (30 min) |
| Surgery (pull) | 105 (24 min) | 65 (24 min) | 110 (24 min) | 68 (30 min) | |
| Surgery (cut) | | | | | 129 (30 min) |

Adapted from: Stafford K, Mellor D: The welfare significance of the castration of cattle: a review. *New Zealand Vet J* 53:271-278, 2005. (Reproduced with permission.)

Table 2.

| Method | Age | | | | |
|----------------|---------|---------|---------|------------|-------------|
| | 6 days | 21 days | 42 days | 2-4 months | 5.5 months |
| Rubber ring | 132 min | | 96 min | 132 min | 180 min |
| Latex Band | | | | 180 min | |
| Burdizzo | 60 min | 60 min | 72 min | 90 min | 90 min |
| Surgery (pull) | 132 min | 84 min | 132 min | 180 min | |
| Surgery (cut) | | | | | 360-600 min |

Adapted from: Stafford K, Mellor D: The welfare significance of the castration of cattle: a review. *New Zealand Vet J* 53:271-278, 2005. (Reproduced with permission.)

response is identical. The duration of cortisol response was the same in those two age groups of calves, even though we currently recommend doing them as early as possible. The take home message is that measurement of plasma cortisol is not a perfect measure of pain in animals. Cortisol measurement will not answer the questions we need answered to address animal welfare concerns. In Table 2 we see that surgical castration in six-day-olds produces a much shorter duration of cortisol response than surgical castration in two to four-month-old animals. This is, typically, what we would expect. However, there are also aspects of these data that do not fit with our hypothesis. For example, the AVMA backgrounder² states that elastrator rubber ring techniques have been associated with chronic pain and should be discouraged, but six-day-old calves had the same duration of cortisol as two to four-month-old calves.

Growth and Performance

Recently, Dr. Dan Thomson, Director of the Beef Cattle Institute at Kansas State University, concluded a study to evaluate the effects of surgical and banding castration on behavioral responses and growth characteristics of postpubertal bulls.¹⁵ Fifty mixed-breed bulls,

weighing 660 to 880 lb (300-400 kg), were randomly assigned to one of five treatment groups as follows: 1) untreated control (CONT); 2) band (BAND); 3) band with local anesthesia (BANDL); 4) surgical castration with twisting of cord utilizing the Henderson tool (SURG); and 5) surgical castration with twisting of cord utilizing the Henderson tool with local anesthesia (SURGL). Behavioral assessment of the cattle was conducted the day before castration, the day of castration, and every day post-castration for 30 days. Bulls were weighed on days 0, 7, 14, 21, and 28 to determine average daily gain (ADG). Data are in the early stages of analysis but initial findings are reported herein. This study found no interactions between local anesthetic treatments and castration methods. Scrotal circumference was similar between treatment groups. Vocalization was higher in the surgically castrated animals than the banded animals ($P = 0.03$). There was no difference in vocalization at the chute with animals treated with local anesthetic prior to castration relative to animals that did not receive local anesthetic ($P = 0.65$). There was no difference in overall feed intake between banded and surgically castrated animals ($P = 0.84$). Cattle that were castrated surgically had lower feed intakes than cattle castrated with bands for the first seven days ($P = 0.02$). However,

at day 14 of the study the intakes were reversed. Cattle that were banded tended to have lower feed intakes than cattle castrated surgically from day 14 to the end of the study ($P = 0.16$). At this point, 50% of the cattle that were banded had lost their scrotum from banding. The other 50% still had their scrotum. There was a marked behavioral pain response noted in animals when necrotic testicles were sloughing after banding.

Castrated cattle had significantly lower rate of gain than control cattle over the course of the study ($P < 0.05$). Cattle castrated surgically had overall higher ADG than cattle that were banded ($P = 0.08$). There was no difference in average daily gain due to castration method during the first week after processing ($P = 0.59$). Cattle surgically castrated had significantly higher ADG during the third week after processing ($P = 0.01$) relative to the banded cattle. This study shows the importance of observing animals for at least two weeks when doing castration studies. These preliminary data suggest that the effect of surgical castration is more pronounced over the first seven days after castration. Banding has a pronounced negative effect on performance during the later part of the feeding period. This coincides with the time when necrotic scrotums are sloughing. Due to the short study duration, the longer term relationship between surgical technique and ADG could not be determined in this study.

Production parameters are often too imprecise to reflect the pain experienced by animals following castration.¹⁶ Furthermore, weight gain following castration may be negatively influenced by a decrease in testosterone following removal of the testes.¹⁶ However, assessment of production parameters is critical if animal well-being research is to have relevance to livestock producers. These assessments may take the form of a cost-benefit analysis or a measure of animal performance. In some studies, Burdizzo or surgical castration had no effect on average daily gain (ADG) over a three-month period following castration.^{5,11} The ADG of seven-week-old calves during the five weeks following castration using rubber rings, clamp or surgery have been reported to be lower than non-castrated calves, but similar between the different castration methods.⁶ Rubber ring and surgical castration were reported to cause a decrease in ADG of 50% and 70%, respectively in cattle aged eight to nine months.²⁰ When eight, nine, and 14-month-old cattle were castrated surgically or using latex bands, cattle castrated later had poorer growth rates than those castrated at weaning. Cattle castrated with latex bands also had lower growth rates than those castrated surgically during the following four to eight weeks.^{7,12} In a study conducted by Oklahoma State University, 162 bull calves were used to determine the effects of latex banding of the scrotum or surgical castration on growth rate. Bulls that were banded at weaning gained less weight than bulls

that were banded or surgically castrated at 2 to 3 mo of age.¹³ In a second study, 368 bull calves were used in two separate experiments to examine the effect of method of castration on receiving health and performance. In the first experiment, latex banding intact males shortly after arrival was found to decrease daily gain by 19% compared with purchasing steers, and by 14.9% compared with surgically castrating intact males shortly after arrival. In the second experiment purchased, castrated males gained 0.58 lb (0.26 kg) more and consumed 1.26 lb (0.57 kg) more feed per day than intact males surgically castrated shortly after arrival.³

Recently, a Canadian group conducted a large, pen-level study to investigate the effect of castration timing, technique and pain management on health and performance of young feedlot bulls in Alberta.³ This study was conducted through close-out when cattle were harvested, therefore providing long-term comparison data between castration techniques are various attempts at pain control. A total of 956 feedlot bulls were assigned to eight castration groups receiving combinations of banding and surgical castration, epidural and systemic analgesia performed either on arrival or 70 days post-arrival. Bulls castrated on arrival tended to have a higher occurrence of undifferentiated fever ($P = 0.086$) and a higher proportion of Canadian yield grade 3 carcasses compared with calves castrated at 70 days. Bulls castrated with a band were found to have a lower occurrence of undifferentiated fever and improved ADG and carcass weight than bulls castrated surgically. There was no significant difference between animals receiving analgesia and anesthesia and those that did not. These findings suggest that band castration is superior to surgical castration and delayed castration is beneficial in bull calves at high risk of developing UF. This study failed to demonstrate any economic benefit to providing analgesia at the time of castration; however, it should be noted that the analgesic drugs used had a relatively short $T_{1/2}$ (< 12 hours).

Provision of Analgesia: Meloxicam

Meloxicam is a NSAID of the oxicam class that is approved in the European Union for adjunctive therapy of acute respiratory disease; diarrhea, and acute mastitis when administered at 0.23 mg/lb (0.5 mg/kg) IV or SC. Meloxicam is considered to bind preferentially to cyclooxygenase-2 (COX-2) inhibiting prostaglandin synthesis although definitive evidence of COX-selectivity in calves is deficient in the published literature. Heinrich *et al.*¹⁰ demonstrated that meloxicam IM (0.23 mg/lb) combined with a cornual nerve block reduced serum cortisol response for six hours in six to 12-week-old calves compared with calves receiving only local anesthesia prior to cautery dehorning. Furthermore, calves receiv-

ing meloxicam had lower heart rates and respiratory rates than placebo-treated control calves over 24 hours post-dehorning. Stewart *et al*¹⁷ found that meloxicam administered IV at 0.23 mg/lb mitigated the onset of pain responses associated with hot-iron dehorning in 33 ± 3-day-old calves compared with administration of a cornual nerve block alone, as measured by heart-rate variability and eye temperature. These findings indicate that administration of meloxicam at 0.23 mg/lb IV or IM decreases physiological responses that may be linked to pain and distress associated with cautery dehorning in preweaning calves.

The purpose of this study was to investigate the pharmacokinetics and oral bioavailability of meloxicam in ruminant calves.⁴ Six Holstein calves (319 to 374 lb or 145 to 170 kg) received either meloxicam IV at 0.23 mg/lb or oral meloxicam at 0.45 mg/lb (1 mg/kg) in a randomized cross-over design with a 10-day washout period. Plasma samples collected up to 96 hours post-administration were analyzed by LC-MS followed by noncompartmental pharmacokinetic analysis. A mean peak plasma concentration (C_{max}) of 3.10 ug/mL (range: 2.64 – 3.79 ug/mL) was recorded at 11.64 hours (range: 10 – 12 hours) with a half-life (T_{½ λz}) of 27.54 hours (range: 19.97 – 43.29 hours) after oral meloxicam administration. The bioavailability (F) of oral meloxicam corrected for dose was 1.00 (range: 0.64 – 1.66). These findings indicate that oral meloxicam administration could be an effective and convenient means of providing long-lasting analgesia to ruminant calves.

In the United States, meloxicam administered to cattle by any route constitutes extra-label drug use (ELDU). Under the Animal Medicinal Drug Use Clarification Act (AMDUCA), ELDU is permitted for relief of suffering in cattle provided specific conditions are met. These conditions include that 1) ELDU is permitted only by or under the supervision of a veterinarian, 2) ELDU is allowed only for FDA-approved animal and human drugs, 3) ELDU is only permitted when the health of the animal is threatened and not for production purposes, 4) ELDU in feed is prohibited, and 5) ELDU is not permitted if it results in a violative food residue. Therefore, use of oral meloxicam to alleviate suffering associated with dehorning and castration in calves in the United States would be required by law to comply with these regulations. Currently, the only NSAID approved for use in cattle in the United States is flunixin meglumine. The plasma elimination half-life of flunixin is reported to be three to eight hours, therefore requiring once-daily administration. Although this drug class is recognized as having analgesic properties, flunixin is only indicated for control of fever associated with respiratory disease or mastitis, and fever and inflammation associated with endotoxemia, rather than for control of pain. Studies demonstrating the analgesic effects of flunixin at the

approved dose of 1.0 mg/lb (2.2 mg/kg) are deficient in the published literature. Use of flunixin meglumine is further complicated by the requirement for intravenous administration, which is more stressful on the animal and involves more skill and training on the part of the operator. Several reports have suggested that the IM administration of flunixin may result in significant myonecrosis and tissue residues. In the absence of data demonstrating that flunixin reduces signs of pain and distress associated with dehorning and castration in calves, it could be argued that use of oral meloxicam for this purpose can be justified under AMDUCA. Meloxicam (20 mg/mL) is approved for use in cattle in several European countries with a 15-day meat withdrawal time and a five-day milk withdrawal time following administration of 0.23 mg/lb IM or SC. An oral meloxicam suspension (1.5 mg/mL) and injectable formulation (5 mg/mL) are approved in the United States for the control of pain and inflammation associated with osteoarthritis in dogs. Furthermore, an injectable formulation (5 mg/mL) is approved for the control of post-operative pain and inflammation in cats. Several generic tablet formulations containing meloxicam (7.5 and 15 mg) have recently been approved for relief of signs and symptoms of osteoarthritis in human medicine. The cost of administering IV meloxicam to calves in the present study was approximately US \$58.00/220 lb (100 kg) bodyweight and the cost of administering oral meloxicam was US \$0.30/220 lb bodyweight.

Conclusions

Pain associated with routine husbandry procedures such as dehorning and castration is increasingly being scrutinized by the public. The results of a survey of AABP and AVC members suggest that surgical castration with a scalpel followed by emasculator (>200 lb or 90 kg) or twisting (<200 lb or 90 kg) is the most common castration method used by practitioners in the United States. One in five veterinarians currently report using anesthesia or analgesia at the time of castration. Results of studies that use plasma cortisol or weight gain to determine the optimal timing and method of castration and use of analgesia are often equivocal or conflicting. The preliminary findings of a study using electroencephalography to examine the effect of age at the time of castration on brainwave activity show a more prominent shift toward high-frequency, low-amplitude brain activity in older calves compared with six-week-old calves. Meloxicam tablets administered orally at 0.45 mg/lb (1 mg/kg) may provide a convenient and cost-effective means of providing analgesia in cattle. A mean peak plasma concentration (C_{max}) of 3.10 ug/mL (Range: 2.64 – 3.79 ug/mL) was recorded at 11.64 hours (Range: 10 – 12 hours) with a half-life (T_{½ λz}) of 27.54

hours (Range: 19.97 – 43.29 hours) after oral meloxicam administration. In recent studies we found that meloxicam administered prior to dehorning at 0.23 mg/lb (0.5 mg/kg) IV significantly increased average daily weight gain in calves after dehorning. A second study found that calves receiving oral meloxicam 24 hours prior to surgical castration tended to have a lower incidence of bovine respiratory disease.

Endnotes

^aBurdizzo castration

^bElastrator rubber ring

^cCallicrate Bander, No Bull Enterprises LLC, St. Francis, KS

^dAVMA Policy, 2008: “Elastrator rubber banding techniques have been associated with increased chronic pain and should be discouraged.”

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Pain Management in Calves and Cattle

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Castration and dehorning are painful, but necessary husbandry procedures. Castration is necessary to reduce injuries in cattle associated with aggression and mounting behavior in males. It is also necessary to prevent mis-mating by genetically inferior males. Dehorning is required to avoid injury to animals and humans. Not all cattle have horns, but those that do quickly learn that they have a distinct advantage over their polled counterparts in battles over dominance. So, the question regarding castration and dehorning is not should we perform these procedures; but how should we perform them in a way that minimizes pain and distress to the animals?

Careful adherence to the procedures outlined in the Beef, Dairy and Young Dairy Beef standards will minimize the pain and discomfort associated with these important management practices. However, when conditions arise that make it necessary to implement pain management beyond local anesthesia, participants of the Certified Humane program should be cognizant of the following.

At the present time there are no drugs labeled for the control of pain in cattle. For example, Flunixin Meglumine (Banamine) is a non-steroidal drug labeled as having anti-pyretic (fever reducing) and anti-inflammatory activity in cattle, but it is not an analgesic (capable of providing pain relief). Furthermore, according to the label directions, Banamine is for intravenous use only. To use it for pain in cattle or by any other route than intravenously constitutes extra-label use of this drug (ELDU) which until passage of the Animal Medicinal Drug Use Clarification Act (AMDUCA) in 1996 was illegal. AMDUCA amended the Federal Food, Drug, and Cosmetic Act, legalizing extra-label drug use by and under the order of a licensed veterinarian within the context of a valid veterinarian-client-patient relationship. So, what does this mean? In short, it means that the use of Banamine or Meloxicam or any other drug used for pain that is not specifically labeled for use in cattle or for this purpose (i.e. ELDU) in the United States requires strict adherence to the provisions of AMDUCA which include the following:

Extra-label drug use (ELDU):

- Is permitted only by or under the supervision of a veterinarian.
- Is allowed only for FDA approved animal and human drugs.
- Requires a valid Veterinarian/Client/Patient Relationship as a prerequisite for all ELDU.
- Is for therapeutic purposes only (when the animal's health is threatened). It does not apply to drugs for production use.
- Rules apply to dosage form drugs and drugs administered in water. ELDU in feed is prohibited.
- Is not permitted if it results in a violative food residue, or any residue which may present a risk to public health.
- FDA prohibition of a specific ELDU precludes such use

When and if these conditions can be met, ELDU is permissible provided that the accurate records of the animals treated are maintained according to the following:

In addition, strict record-keeping of ELDU is required:

- Identify the animals, either as individuals or a group.
- Animal species treated.
- Numbers of animals treated.

- Conditions being treated.
- The established name of the drug and active ingredient.
- Dosage prescribed or used.
- Duration of treatment.
- Specified withdrawal, withholding, or discard time(s), if applicable, for meat, milk, eggs, or animal-derived food.
- Keep records for 2 years.
- FDA may have access to these records to estimate risk to public health.

Finally, whenever drugs are used in an ELDU manner, the bottle or drug container must include the following information on the label:

- Name and address of the prescribing veterinarian.
- Established name of the drug.
- Any specified directions for use including the class/species or identification of the animal or herd, flock, pen, lot, or other group; the dosage frequency, and route of administration; and the duration of therapy.
- Any cautionary statements.
- Your specified withdrawal, withholding, or discard time for meat, milk, eggs, or any other food.

In summary, castration and dehorning are health management procedures that cause discomfort in cattle. Conducting them at the earliest age practicable should be a primary objective. In those infrequent situations where these procedures may need to be conducted in older calves, pain management options should be considered keeping in mind that use of unapproved drugs must follow the AMDUCA regulations. Meloxicam tablets administered orally at the rate of 0.45 mg/lb. (1 mg/kg) are reported to be a cost-effective means of providing analgesia in cattle. In European countries where Meloxicam is approved a 15-day meat and 5-day withdrawal time for milk is recommended. Flunixin meglumine used as an anti-inflammatory in post-surgical conditions provides limited analgesia. It is important that if used for reducing inflammation that it be administered intravenously, otherwise it constitutes ELDU. The use of Flunixin meglumine by the intramuscular route causes significant damage to tissues at the injection site and may significantly alter withdrawal times for meat and milk. Persons considering ELDU should work closely with their veterinarians for appropriate guidance in the safe and proper use of drugs in livestock.

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**CODE OF PRACTICE FOR THE CARE AND HANDLING OF DAIRY CATTLE:
Review of Scientific Research on Priority Issues
March 2009**

PAIN RELIEF DURING AND AFTER SURGICAL PROCEDURES

Conclusions:

- 1. All surgeries are likely to be painful.**
- 2. A combination of treatments, including analgesics and anesthetics can greatly reduce this pain.**

The use of analgesics on farm animals is low for reasons that include fear of residues, legislation, cost, tradition, and lack of knowledge about their use (Stafford et al. 2006).

Pre-emptive analgesia is preferable to reactive analgesia when conducting surgical procedures, reducing or preventing hyperalgesia, allodynia, or wind-up. The most effective analgesia is often provided using a combination of agents that act on different pathways. For example, the use of an epidural containing local anesthetic and xylazine, combined with a systemic nonsteroidal anti-inflammatory drug (NSAID), provides appropriate analgesia in cases of dystocia (Hudson et al. 2008).

Non-steroidal anti-inflammatory drugs (NSAIDs) such as flunixin, meglumine, tolfenamic acid, ketoprofen, carprofen, and meloxicam are indicated for diseases likely to be associated with pain in cattle include respiratory disease, mastitis, periparturient inflammatory conditions such as metritis, and inflammatory limb lesions such as joint ill, sole ulceration, and white line disease (Barrett 2004). Traumatic insults and physiological states such as parturition may also be expected to result in the animal experiencing pain, as will surgical procedures such as laparotomy, foot surgery, castration, disbudding, and dehorning.

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Appendix 5: Hygiene Scoring

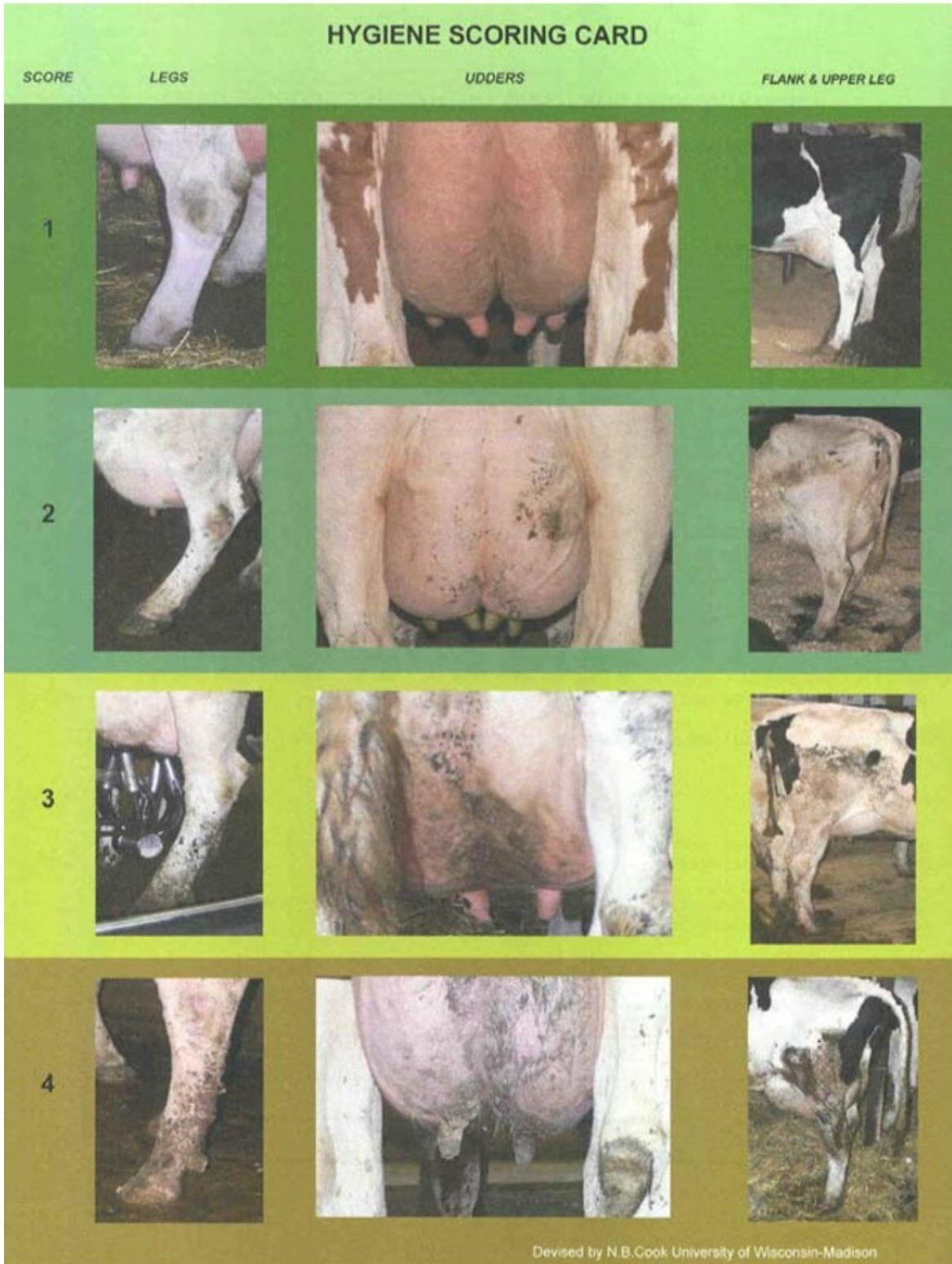


Chart by N.B. Cook, University of Wisconsin-Madison

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REVISIONS SINCE LAST PUBLICATION

| Edition | Section | Standard Number | Original Text Summary | Revision Summary |
|-------------------|-------------------------------|------------------------|---|--|
| Edition 22 | | FW 27 a. | Supplementation must not include any grain carriers or ingredients. | Veterinarian approved supplementation permitted. |
| | | FW 28 | N/A | Text clarification |
| Edition 23 | Overall | Throughout | n/a | Miscellaneous text clarifications and grammatical revisions |
| | D. Lying area | E 18 f. | New | Cows nearing parturition must have 120% of the required space allowance for lactating cow. |
| | E. Exercise and Loafing Areas | E 22 c. & d. | New | c. 1. Exercise area may be made of bare concrete as long as there is sufficient soft bedded lying area to accommodate all animals at the same time, 3. must allow cattle full freedom of movement d. exercise and loafing areas can merge as long as the areas are available 24/7. |
| | F. Mud | E 24 c. | New | Mud over fetlock height is not allowed in pasture access trails |
| | G. Housing Structure | E 25 a. & b. | Clarification | a. Housing animals in tie stall or stanchion barns is prohibited b. Housing animals using natural shelter with windbreaks and sunshades is acceptable |
| | | E 25 d. & e. | Additional standard | d. Indoor housing must provide environmental enrichment (e.g. hanging ropes, hay bales or brushes) e. Passageways in all housing must be non-slip |
| | | E 25 e. | Additional standard | Passageways in all housing areas must be nonslip |
| | | E 23 | Additional text for clarification | A loafing area is non-feed, non-lying, non-high traffic area that provides additional space for mounting during estrus, lower-ranking cows' ability to escape from dominant cows, and other social behaviors. |

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| | J. Milking Parlor | E 34 6. | New text | Routine “fore-milk” (fore-strip) examination must be made at least weekly to identify early cases of mastitis |
| | L: Bull pens | E 36 | clarification | All size animals must be able to stand-up or lie down in a normal manner w/o injury and have at least 6 sf/55sm for ea. 100 lbs./45 kg live weight |
| | O. Calf housing | E 45 a. 3 | Clarification | If calves outgrow the size of the pen prior to 8 weeks (i.e., cannot perform all movements w/o impediment), they must be moved to roomier housing. |
| | | E 45 a. 4 | New | Hutches or pens must be made of an appropriate material or lined with ample bedding to minimize heat stress and protect against extreme temperature fluctuations and drafts. |
| | | E 45 a. 7 | Hutches or pens must be sited in a sheltered location | Hutches or pens must be sited in a sheltered location, affixed to the ground, or otherwise protected from prevailing winds and weather extremes. |
| | A. Managers | M 5: Training | Clarification | There must be a comprehensive and well-documented training program that covers all Certified Humane® standards and handling responsibilities |
| | D. Equipment | M 17 Using Equipment | Clarification | Managers must demonstrate ability to use and maintain all equipment |
| | B. Handling | M14 b. | New text | Euthanasia must be considered without delay if the animal is unable to respond to treatment |
| | C. Identification | M 15 c. | Ear notching is prohibited unless required for health management | May also be used for critical breeding management |
| | Part 5: Herd | H 1: Herd performance | Clarifying Text | |
| | | H 2: Biosecurity of incoming & carcass disposal | Clarifying Text | |
| | | H 3 Hospital Pens | Clarifying Text | |

| | | | | |
|--|--|--|-----------------|---|
| | | H 8: Emergency Health events | Clarifying Text | |
| | | H 9: Care of sick and injured | Clarifying Text | |
| | | H 10: Controlling Parasites, Pests and Predators | Clarifying Text | |
| | | H 12 Vaccinations and treatments | Clarifying Text | |
| | | H 13: Physical alterations | Clarifying Text | |
| | | H 14: Euthanasia | Clarifying Text | |
| | | H 15: Genetically modified or cloned | Clarifying Text | |
| | Part 6: Transportation | T 1: a. 1. Loading ramps | | Ramps may not have a steeper than 25% angle of incline/decline |
| | Part 2: Nutrition A. Feed | FW 2: Free access to feed | Text | |
| | | FW 13: Colostrum | | Administration only required of newborn calf has not nursed from the mother |
| | B. Food | FW 14: First feeds; fiber and water | | Water must be provided to calves after 3 days of age |
| | C. Water | FW 21: Watering equipment | | Watering equipment must be designed to minimize contamination |
| | PART 3: ENVIRONMENT A. Buildings | E 4: Handling unit design | | Must be designed to facilitate compassionate handling |



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Welfare Standards
Edition 23

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