



Dairy Calf & Heifer Association Gold Standards III

Animal welfare standards for rearing dairy calves and heifers, from birth to freshening, across the United States

I. Veterinarian Involvement

An ongoing relationship with a practicing herd veterinarian is critical to ensuring the safety and well-being of all dairy animals.

- A. The veterinarian should physically visit the operation and observe animals at least monthly.
- B. The veterinarian should provide counsel, develop protocols and assist in employee training for all areas of management related to animal welfare.

II. Colostrum Management

Because calves are born without immunity against disease, good colostrum management is essential to maintain health and prevent infections. Colostrum delivery affects the health, well-being and productivity of dairy calves for their entire lives.

- A. Colostrum quality
 1. Dry-cow management procedures should include a vaccination protocol that is developed with the herd veterinarian and is appropriate to local conditions. Proper nutritional balance for dry cows – including energy, protein, vitamins and minerals – is critical.
 2. Adequate space for resting, eating and drinking water is essential for good pre-fresh cow health.
- B. Colostrum harvesting
 1. Harvesting procedures should result in clean, wholesome colostrum that is free of infectious pathogens and low in bacteria.
- C. Colostrum handling and feeding
 1. Handling procedures should promote clean colostrum with high antibody concentrations.
 2. Feeding procedures for newborn calves should be based on the biology of antibody absorption (feeding clean, high-quality colostrum equaling a minimum of 10% of body weight in the first 2 hours of life).
 3. In cases in which clean, high-quality maternal colostrum is not available, feed commercial colostrum replacer equivalent to maternal colostrum. For example, if the farm feeds 4 quarts of colostrum, feed 200 grams of IgG from colostrum replacer.
 4. If using an esophageal tube feeder to ensure that a calf receives adequate colostrum, this delivery method should be performed only by trained staff.
 5. Colostrum collection, handling and feeding equipment should be cleaned after each use.
- D. Colostrum collection, handling and feeding should result in adequate levels of immunity for the environment within which the calves are being raised. This can be assessed by how well the calves meet the standards for mortality, morbidity and growth described in the Gold Standards I. More specific information on colostrum management can be found in the Gold Standards I, www.calfandheifer.org/?page=GoldStandards.

III. Housing

Shelter is a critical welfare component for dairy animals of all ages. Because of their stage of physical development, heifers less than 600 pounds need greater protection from weather challenges than larger heifers.

- A. Housing of calves and replacement heifers of all ages
 1. Clean and well-bedded (6-10 inches of dry bedding, using long straw in cold climates)
 2. Dry
 3. Draft-free

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- B. Housing (indoor or outdoor) of wet calves 24 hours to 2 months of age
 - 1. Good air quality (indoor ventilation rate of 100 cubic feet per minute [cfm] in hot weather, 50 cfm in mild weather and 15 cfm in cold weather).
 - 2. Sized so the calf can turn around, with at least 24 square feet of resting space.
 - 3. Constructed of materials that promote optimum hygiene and will not harbor harmful pathogens or disease (Nonporous plastic is the recommended housing material.)
 - 4. Cleaned and sanitized between calves.
 - 5. In weather below calves' normal thermal threshold (see Gold Standards II, www.calfandheifer.org/?page=GoldStandardsII), provide deep bedding material to allow calves to nest and additional nutrients to compensate for energy expended to maintain body temperature.
 - 6. Group-housed calves should be monitored to make sure every calf receives scheduled feedings.
 - 7. Common milk or milk replacer feeding equipment in group housing should be cleaned and sanitized daily to keep bacteria levels consistently low.

- C. Housing for calves 2 to 6 months of age
 - 1. Good air quality (indoor ventilation rate of 130 cfm in hot weather, 60 cfm in mild weather and 20 cfm in cold weather)
 - 2. Skid-free footing surface
 - 3. Water intake space should be 1 linear foot for every 10 animals or at least 1 automatic waterer for every 20 animals, with a minimum of 2 waterers per group and an adequate water supply.
 - 4. Feeding space to allow all animals to eat at the same time (See Gold Standards II for target feeding space)
 - 5. Minimum resting space of:
 - a. Heifers 2 to 4 months of age: 34 square feet per animal
 - b. Heifers 4 to 6 months of age: 40 square feet per animal
 - 6. For heifers in free stall housing, provide at least one stall per animal.
 - 7. Cleaned and well-maintained between groups of calves

- D. Housing for heifers 6 months to freshening
 - 1. Good air quality
 - 2. Skid-free footing surface
 - 3. Water intake space should be 1 linear foot for every 10 animals or at least 1 automatic waterer for every 20 animals, with a minimum of 2 waterers per group and an adequate water supply.
 - 4. Feeding space to allow all animals to eat at the same time (See Gold Standards II for target feeding space.)
 - 5. Heifers should have shade any time the Temperature Humidity Index (THI) meets or exceeds:
 - a. 77 for heifers 6 to 12 months of age
 - b. 72 for heifers 12 months of age to freshening
 - 6. Heifers should have shelter from wind and precipitation any time windchill temperatures are 20°F or lower.
 - a. Heifers 6 to 12 months of age should have overhead shelter in these conditions.
 - b. Heifers 12 months of age to freshening should have a windbreak in these conditions.
 - 7. Minimum resting space (Holsteins):
 - a. 6 to 12 months of age: 45 square feet per head, or 1 free stall per animal
 - b. 12 to 18 months of age: 50 square feet per head, or 1 free stall per animal
 - c. 18 months of age to 2 to 4 weeks pre-freshening: 60 square feet per head, or 1 free stall per animal
 - d. 2 to 4 weeks pre-freshening: 100 square feet per head, or 1 free stall per animal
 - 8. Minimum free stall space (Holsteins):
 - a. 6 to 9 months of age: 30 x 54 inches
 - b. 9 to 12 months of age: 34 x 60 inches
 - c. 12 to 18 months of age: 36 x 69 inches
 - d. 18 months of age to 2-4 weeks pre-freshening: 40 x 84 inches
 - e. 2 to 4 weeks pre-freshening: 43 x 96 inches

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9. Housing should be cleaned and well-maintained between groups of heifers.

E. Isolation facilities may limit the risk of contagious disease transmission among heifers of all ages.

A wide variety of calf and heifer housing plans can be viewed at www.abe.psu.edu/extension/lip/DIPlevel2replacement.html.

IV. Nutrition

Nutrition plays a vital role in animal well-being, growth and immune system development.

A. Management of preweaned calf and older heifer nutrition should be appropriate for the environment in which the calves are raised. Working with a consulting nutritionist is recommended. The outcomes should meet the standards for mortality, morbidity and growth described in Gold Standards I and II.

B. Pre-weaned calves

1. Feeding procedures

- a. Provide enough clean milk or milk replacer to meet or exceed the goals for health and growth defined in the Gold Standards I.
- b. Consistently feed milk/replacer at the same temperature, time of day, volume and level of solids.
- c. Adjust solids content as needed to accommodate weather conditions and calf growth.
- d. Feed milk/replacer as close to body temperature as possible.
- e. Feed milk/replacer to preweaned calves at least twice a day.

2. Water feeding

- a. Clean water should be offered free-choice to calves within 1 week of age.
- b. Water should be neither frozen nor too hot to drink.
- c. Water supply should be checked at least twice daily and more frequently in extremely hot or cold environmental conditions.

3. Calf starter grain feeding

- a. A palatable, high-quality calf starter ration should be delivered consistently and available at all times for calves by 1 week of age.
- b. Feed should be kept fresh with attention given to ensure it does not become contaminated or moldy.

4. Weaning calves

- a. Weaning from milk or milk replacer should take place after calves have achieved necessary rumen development to meet their nutritional needs for maintenance and growth from calf starter grain.
- b. Typically, this level of rumen development is achieved after calves have been consuming concentrate for at least 3 weeks and are eating enough concentrate to meet size- and environment-specific maintenance and growth needs.
- c. Reduce stress at weaning time by spreading out the following:
 - Dehorning
 - Vaccinations
 - Socialization/regrouping
 - Feeding changes
 - Environmental changes

C. Post-weaned heifers

1. Heifers should be fed enough energy and protein to meet the environment-specific needs for maintenance and growth of at least 1.7 to 2.0 pounds per day.
2. Clean, free-choice water should be constantly available that is neither frozen nor too hot to drink.
3. Feed should be kept fresh with attention given to ensure it does not become contaminated or moldy.
4. Feed should be delivered consistently to keep animals' satiety levels steady.

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V. Handling

Humane handling reduces stress on animals while promoting the safety of the people working them.

- A. Handle all cattle as gently as possible and work to keep them calm at all times. Minimize noise level – no yelling or screaming when moving cattle.
- B. Handling aids only should be used when absolutely necessary, and then only by trained employees.
- C. NEVER strike an animal.
- D. Establish and demonstrate written and signed protocols for employees regarding acceptable and unacceptable cattle-handling practices; review quarterly.
- E. Establish a zero-tolerance policy for animal abuse, indicating automatic employee dismissal for inappropriate animal handling.
- F. Provide extra attention to animals that are sick and/or immobile.
 - 1. Immediately move sick animals to an isolation pen.
 - 2. Observe sick animals frequently throughout the day.
 - 3. If an animal is unable to walk, it should be moved only with a cart or sled.
 - 4. Care should be provided according to the prescribed directions of the herd veterinarian.

VI. Transportation

Transportation can be performed successfully with minimal stress on animals.

- A. Newborn calves should be dry, able to stand and at least 24 hours old before transporting.
- B. Wash and disinfect transport vehicles between hauls with a recommended disinfectant for animal facilities.
- C. Prepare floors of transport units to promote secure footing and absorption of urine and manure, using sawdust, wood shavings, straw or sand.
- D. Avoid scheduled procedures such as vaccinating or dehorning for at least 1 week prior to transport (except for intranasal vaccines, which can be administered to boost interferon levels and help in preventing respiratory disease at the time of shipping).
- E. Schedule trips to minimize number of hours cattle are on the truck.
- F. In hot weather, schedule hauling at night or in the cooler part of the day.
- G. If traveling for more than 24 hours with cattle 4 months of age or older, stop at a clean facility for a feed and water break for a minimum of 5 hours.
- H. For trips longer than 11 hours, employ tandem drivers to avoid keeping animals on the truck for extra hours of mandated driver rest.
- I. Avoid any unnecessary stops.
- J. When hauling in cold weather, cover up to 1/2 to 2/3 of the holes in the trailer to reduce windchill. However, do not cover all holes, which would be detrimental to air circulation and quality.
- K. Use as many gates as possible in the trailer to keep animals separated in small groups and avoid the possibility of bunching or piling during transportation.

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- L. When hauling baby calves (less than 10 days of age), stock trailer at 5.5 square feet per calf or greater. Bed deeply with long straw in cold weather.
- M. Ensure that cattle have access to clean water and high-quality feed immediately before loading and upon unloading.
- N. DCHA supports and endorses the animal hauling and transportation guidelines established by the United States Department of Agriculture, www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3008268.

VII. Vaccination

Vaccines help prevent diseases in animals and reduce pain and suffering caused by illness.

- A. Develop vaccination and health management protocols with herd veterinarian based on the age of animals, local conditions and best management practices.
 - 1. Successful vaccination programs should result in adequate levels of immunity for the environment in which the calves are being raised.
 - 2. Adequacy of immunity may be assessed by how well calves and heifers meet the standards for mortality, morbidity and growth defined in the Gold Standards I and II.
- B. Follow Beef Quality Assurance (BQA) guidelines, www.bqa.org/codeguidelines.aspx, for handling and administering all vaccines.
- C. Store, process and administer vaccines according to manufacturer's label and best management practices.
 - 1. Provide proper vaccine storage conditions (correct storage temperature, protection from sunlight and microwave radiation, free of disinfectants).
 - 2. Prepare vaccines according to label (mixing, shaking and rehydration).
 - 3. Ensure proper timing of vaccination, age of animal being vaccinated and adherence to other precautions on the label.
 - 4. Observe label recommendations for proper route of administration, needle size and dosage to animal.
 - 5. Booster vaccinations as required by label.
 - 6. Change needles every 5 to 10 injections, or at any time a needle becomes bent, burred or has evidence of blood.
 - 7. Never inject a needle back into a bottle of vaccine after it has been used to inject an animal.
- D. Avoid vaccinating during times of stress on animals.
- E. Do not vaccinate animals if the ambient environmental temperature exceeds 85°F (during the summer heat, consider vaccinating animals in the coolest part of the day – early morning).
- F. Avoid multiple (greater than 2 injections) vaccinations when possible, especially when Gram-negative bacterins are being administered.
- G. Keep epinephrine and flunixin (for vaccines containing siderophore receptors and porins [SRP]) in vaccine toolkit for ready availability while vaccinating (to treat adverse reactions).
- H. Discard expired vaccines and contaminated vaccine vials.
- I. Consult local and state health codes for proper disposal of needles, syringes and vaccines, as these regulations vary by state.
- J. Keep handwritten and/or computerized records of all vaccinations.

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VIII. Drug Therapy

Therapeutic agents can help treat infections, minimize pain and relieve suffering in sick animals.

- A. Use drug therapy as prescribed by the herd veterinarian to treat disease and relieve pain and suffering.
- B. Follow Beef Quality Assurance (BQA) guidelines for handling and administering all medications.
- C. Develop written, on-label treatment protocols with the herd veterinarian.
- D. Train new employees on diagnostic and treatment procedures and review protocols with veterinarian and employees quarterly.
- E. Follow label instructions for dosage, treatment frequency, route of administration, age restrictions, withdrawal times and storage recommendations.
- F. If animals do not respond to treatment protocol within 48 hours, seek veterinary examination.
- G. Discard expired or contaminated drugs.
- H. Keep handwritten and/or computerized records of all treatments.

IX. Parasite Control

Control of internal and external parasites is important for optimal growth, disease prevention and well-being of dairy replacements.

- A. Develop parasite control strategies with the herd veterinarian and pest management specialists. These protocols differ depending on geographic location, climate and time of year. Protocols should eliminate detrimental parasite loads and prevent development of parasite resistance.
- B. Incorporate integrated pest management strategies to manage parasites, including:
 - 1. Chemical control of internal and external parasites.
 - a. Anthelmintics
 - b. Insecticides
 - c. Insect growth regulators
 - d. Coccidiostats
 - 2. Biological control of external parasites (i.e. parasitic wasp for flies).
 - 3. Management practices that break parasite life cycles and reduce parasite breeding areas.
 - a. Insect growth regulators in feed for fly control
 - b. Removal of manure and other fly-breeding material in a timely fashion
 - c. Pasture rotation to reduce worm loads
 - 4. Biosecurity practices that prevent introduction of new parasites with incoming cattle.
- C. Use lab samples to identify and quantify parasites and determine susceptibility to anthelmintics and insecticides. Beware of insecticide use if also using parasitic wasps.
- D. Follow label directions on all products used on, in or around cattle. Restrictions may include age, frequency of application, dosage, method of application and withdrawals.
- E. Avoid use of products that are not labeled for parasite control in dairy heifers. Using products "off-label" may cause injury to livestock and people, parasite resistance development and meat residue issues.

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- F. Train new employees on diagnostic, treatment and safe handling procedures upon hiring and review protocols with veterinarian and employees quarterly.
- G. Inspect cattle weekly for adequacy of parasite control program.
- H. Discard expired or contaminated products, paying close attention to proper disposal of insecticides.
- I. Keep handwritten and/or computerized records of all treatments.

X. Elective Medical Procedures and Supportive Care

A number of measures can be taken to minimize pain during elective medical and surgical procedures and in sick animals.

- A. Provide housing and working environments that prevent injury, pain and discomfort to animals.
- B. Develop standard operating procedures for all procedures and train personnel in correct techniques upon hiring. Review with veterinarian and employees quarterly.
- C. Train all employees on proper handling and treatment strategies that minimize stress and reduce the likelihood of injury to animals.
- D. Use adequate, humane restraint when treating animals and performing surgical or medical procedures.
- E. Avoid elective surgical procedures during times of stress (weaning, prior to transport, severe heat or cold, inclement weather).
- F. Perform elective surgical procedures at a young age to reduce recovery time and complications.
 - 1. Horn removal
 - a. Disbudding (preferred) – cautery, less than 1 month of age with local anesthesia
 - b. Dehorning – cautery, less than 3 months of age with local anesthesia and sedation
 - 2. Bull-calf castration
 - a. Banding – less than 1 month of age
 - b. Excision (preferred) – less than 2 months of age
 - c. Excision with emasculation – 2 to 4 months of age, with sedation
 - 3. Extra teat removal – less than 6 months of age
 - 4. Tattooing – less than 6 months of age
 - 5. Tail-docking – should not be performed
- G. Use pre-operative, local anesthetics and sedation (as directed by the herd veterinarian) and post-operative analgesics for surgical procedures whenever possible.
- H. Provide supportive facilities and care to convalescing animals.
 - 1. Comfortable, low-stress environment
 - 2. Easy access to water and feed
 - 3. Other supportive care (analgesics, anti-inflammatory therapy, bandages, wound management, physical therapy)
- I. Seek veterinary examination when necessary.
- J. Administer anti-inflammatory drugs according to protocols following correct dosage, route of administration, age restrictions and withdrawals.
- K. Keep handwritten and/or computerized records of all procedures.

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XI. Euthanasia

There are instances in which euthanasia is the most humane option for a convalescing animal.

A. If an animal is in pain and suffering with no possibility of recovery, perform euthanasia.

B. DCHA supports and endorses the cattle euthanasia guidelines established by the American Association of Bovine Practitioners, www.aabp.org/resources/euth.pdf.

DCHA also supports and endorses the "Five Freedoms" of animal welfare developed by the Farm Animal Welfare Council in the United Kingdom, www.fawc.org.uk/freedoms.htm.

Additional Resources Related to Dairy Calf and Heifer Welfare

- DCHA Gold Standards I: Production standards for Holstein calves, from birth to 6 months of age, across the United States – www.calfandheifer.org/?page=GoldStandards
- DCHA Gold Standards II: Production standards for Holstein heifers from 6 months of age to freshening, across the United States – www.calfandheifer.org/?page=GoldStandardsII
- NMPF Farmers Assuring Responsible Management (FARM) Animal Care Manual – www.nationaldairyfarm.com/sites/default/files/AnimalCareManual_JUN_VIEW.pdf
- National Dairy Animal Well-Being Initiative, Principles and Guidelines for Dairy Animal Well-Being – www.dairywellbeing.org/pdfs/NDAWI%20Principles%20&%20Guidelines.pdf
- Guide for the Care and Use of Agricultural Animals in Research and Teaching, Third Edition – www.fass.org/docs/agguide3rd/Ag_Guide_3rd_ed.pdf
- Dairy heifer housing plans – www.abe.psu.edu/extension/ip/DIPIlevel2replacement.html
- Water for dairy cattle – http://aces.nmsu.edu/pubs/_d/D-107.pdf
- USDA animal transportation and hauling guidelines – www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3008268
- Beef Quality Assurance (BQA) guidelines – www.bqa.org/codeguidelines.aspx
- AABP euthanasia guidelines – www.aabp.org/resources/euth.pdf