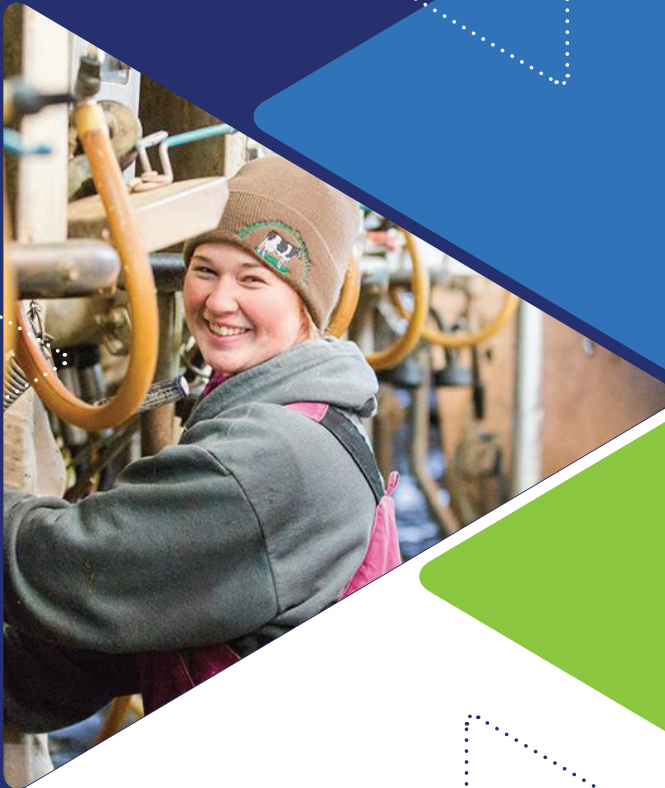


ANIMAL CARE REFERENCE MANUAL

▶ VERSION 5



July 2024 – June 2027

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This manual is not a legal document and is intended for educational purposes only. Producers are individually responsible for finding and complying with all requirements of local, state, and federal laws and regulations regarding animal care.

01



INTRODUCTION



Introduction

The National Dairy Farmers Assuring Responsible Management (FARM) Program is open to all farms, milk processors and cooperatives, and helps ensure the success of the entire industry by demonstrating to customers and consumers that U.S. dairy farmers are committed to producing the best milk with integrity.

National Milk Producers Federation (NMPF) with support from Dairy Management, Inc. (DMI), established the FARM Program in 2009. Through the Innovation Center for US Dairy, the dairy community has aligned behind FARM as the industry-wide, on-farm social responsibility program. Over the years, the FARM Program has expanded to provide resources and guidelines in five program areas: Animal Care, Antibiotic Stewardship, Biosecurity, Workforce Development and Environmental Stewardship.

The FARM Animal Care Program demonstrates that dairy producers are committed to taking excellent care of their animals and producing safe, wholesome milk by:

- Detailing science-based animal care guidelines that evolve with the latest dairy research;
- Providing on-farm evaluations by trained and certified Evaluators who work with farmers to identify strengths and, if necessary, outline improvements;
- Ensuring the integrity of the program with third-party verification by qualified dairy experts who evaluate a representative percentage of farms each year to demonstrate that FARM is working as intended.

Using this manual

This Animal Care Reference Manual has been designed as an easy-to use resource detailing the animal care and management guidelines of the FARM Program. It is an educational tool for all participating dairy farmers, co-ops, proprietary processors, trained second-party evaluators, and third-party verifiers. Along with the guidelines, this document provides extensive information, resources, and references that while thorough, are not exhaustive nor prescriptive for singular approaches toward meeting the guidelines of the program. This reference manual is not a legal or regulatory requirement for the dairy industry. It is intended to serve as a wide-ranging educational resource for the U.S. dairy industry. Best practices identified in the manual are not the only practices that can meet the identified guidelines. Application of management practices may vary due to regional norms, weather, or other conditions. Dairy farmers should work with their trusted advisors and management team members to develop appropriate management approaches to meet the identified guidelines.

Throughout this document, “animal welfare” will be used as the term to represent the concepts of not just its own meaning, but also those of animal well-being, and quality of life, which are often used interchangeably to reference the outcomes experienced by the animal. “Animal care” is used as the term to encompass all of the inputs influencing animal welfare outcomes, including housing environments and facilities, management practices, standard operating procedures or protocols, and direct human-animal interactions and handling.

FARM Program materials are living documents. Guidelines are reviewed every three years by the FARM governance committees and are subject to updates based on new, science-based animal care and well-being research. This is part of the FARM Program’s commitment to continuous improvement.

Who is this manual for?

Throughout this manual, personal pronouns, such as “you/your,” have been used to speak to the farmer audience directly. However, this manual has been written to be applicable to a variety of backgrounds and industry experience levels.

Management checklists

Management checklists can be found at the beginning of each section of this Reference Manual. The management checklist details the FARM Program standards within that section and is intended to be used by farmers to ensure they meet all criteria on their farms.

What to look for

Look for the following icons throughout this manual to designate corrective actions, call-outs, and important pieces of information.



PROTOCOL REVIEW

First, the evaluator determines if the facility has a written protocol that includes details on the farm’s practices. This is reviewed to determine if it meets the FARM standards.



ACTION REVIEW

Next, the evaluator collects evidence on-farm to determine whether the farm is implementing practices on the farm that meet the FARM standards. Evidence could be in the form of observing animals, reviewing records, speaking with employees, and/or looking at tools and equipment.

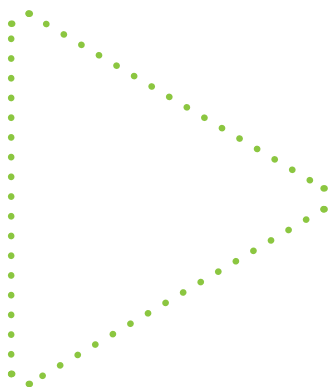


MATCHING

Finally, the evaluator determines whether the farm’s actions align with what is written in their protocol.

Where to go for more information?

The FARM program website (www.nationaldairyfarm.com) offers a number of specific templates and resources.



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Acronyms

AABP: American Association of Bovine Practitioners

AVC: Academy of Veterinary Consultants

AMDUCA: Animal Medicinal Drug Use Clarification Act

AVMA: American Veterinary Medical Association

BCS: Body Condition Score

CCA: Cow Care Agreement

CIP: Continuous Improvement Plan

DA: Displaced Abomasum

DM: Dry Matter

FARM: Farmers Assuring Responsible Management

FDA: Food and Drug Administration

FTPI: Failed Transfer of Passive Immunity

HHP: Herd Health Plan

MCAP: Mandatory Corrective Action Plan(s)

NAHMS: National Animal Health Monitoring System

NSAID: Non-steroidal Anti-Inflammatory Drug

RFID: Radio Frequency Identification

SCC: Somatic Cell Count

SOP: Standard Operating Procedure(s)

THI: Temperature Humidity Index

TNZ: Thermoneutral Zone

USDA: United States Department of Agriculture

VCPR: Veterinarian-Client-Patient Relationship

VFD: Veterinary Feed Directive


VOR: Veterinarian of Record



02

DOCUMENT REVIEW & INTERVIEW

This section of the reference manual describes the program standards that ask farms to provide documentation related to continuing education, antibiotic stewardship, and veterinarian review.



CHECKLIST

This section of the FARM Animal Care evaluation will focus on the following standards:

✓ **Cow Care Agreement**

- All family and non-family employees with animal care responsibilities have an annually signed cow care agreement (CCA) that has been signed within the last 12 months.

✓ **Continuing Education/Training**

- Stockmanship: All family and non-family employees with animal care responsibilities have documented annual continuing education/training in proper stockmanship (animal handling and restraint for all age classes of animals) that has been conducted, recorded, and signed within the last 12 months.
- Pre-weaned Calves: All family and non-family employees with pre-weaned calf management responsibilities have documented annual continuing education/training on the written pre-weaned calf management protocol that has been conducted, recorded, and signed within the last 12 months.
- Fitness to Transport: All family and non-family employees with determination of fitness to transport responsibilities have documented annual continuing education/training on the written protocol for fitness to transport that has been conducted, recorded, and signed within the last 12 months.
- Non-Ambulatory Animals: All family and non-family employees with non-ambulatory animal responsibilities have documented annual continuing education/training on the written non-ambulatory animal management protocol that has been conducted, recorded, and signed within the last 12 months.
- Euthanasia: All family and non-family employees with euthanasia responsibilities have documented annual continuing education/training on the written euthanasia protocols, identification of animals that are to be euthanized, and proper euthanasia techniques that has been conducted, recorded, and signed within the last 12 months.

✓ **Antibiotic Stewardship**

- All official samples of sold milk from the facility have tested negative for antibiotics in the last 3 years.
- All meat tissue samples from animals or carcasses have tested negative for violative residues in the last 3 years.

✓ **Veterinarian Review**

- The facility has a written Veterinarian-Client-Patient Relationship (VCPR) form signed by the farm owner/manager and the Veterinarian of Record (VOR) annually, that has been signed within the last 12 months.
- The Herd Health Plan (HHP) is reviewed and signed annually by the Veterinarian of Record (VOR) and the review has been conducted within the last 12 months.
- The facility maintains permanent (at least 2 years; written or electronic) treatment records, available for review by the Veterinarian of Record, for the treatment of the facility's common diseases that includes:
 1. Date of treatment
 2. Treated animal identification
 3. Name of the treatment used
 4. Disease/condition being treated
 5. Dosage administered
 6. Route of administration
 7. Duration of the treatment
 8. Specified withdrawal/withhold times for milk and meat to ensure food safety



COW CARE AGREEMENT

What is the standard?

- ✓ **All family and non-family employees with animal care responsibilities have an annually signed cow care agreement (CCA) that has been signed within the last 12 months.**

Background on this standard

- **What do we mean by “family”?**
 - An immediate family member is any grandparent, parent, in-law, spouse, partner, sibling, child, or grandchild of the legal owner(s) of the dairy operation over the age of 18
- **Does every employee have to have an individual record?**
 - All non-family employees must have individual CCAs signed
 - Family employees can have an individual CCA signed OR a farm owner may sign one CCA on behalf of all immediate family employees (18 years or older)
- **How often does the CCA need to be signed?**
 - The CCA should be signed by all relevant employees annually, not just on the year the facility is being evaluated. However, a corrective action will only be assigned if the CCA has not been signed within the last 12 months.
- **What should be included in a CCA?**
 - At minimum, a CCA should address the farm’s stance on animal abuse and neglect. Beyond this, the CCA should describe expectations, responsibilities, and commitments around animal care.

What is the rationale for this standard?

The CCA is a documented acknowledgement by all farm workers to abide by and uphold animal care on the farm. The CCA is one of the key steps to establishing a culture

of care on a dairy farm. It outlines specific expectations, responsibilities, and commitments around animal care for each employee. The CCA provides an excellent opportunity to discuss and review cow care expectations annually. Culture starts with demonstrated leadership and works its way throughout the operation.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Document Review:** Review of the farm’s paperwork for this standard.
- **Interview:** Discussion with the owner/herdperson and/or farm employees to understand the farm’s practices.

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met for any family or non-family employee, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in a maximum of nine months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Make review and signature of a CCA part of your onboarding process for new hires.
- Consider downloading and using the FARM templates OR create your own.
- Set an annual reminder to ask your employees to review and sign a CCA. Consider having this as part of an employee meeting.
- Ask your second-party evaluator to support you in creating your own CCA and/or reminding you that the annual review needs to be done.



CONTINUING EDUCATION/TRAINING

What is the standard?

- ✓ **Stockmanship:** All family and non-family employees with animal care responsibilities have documented annual continuing education/training in proper stockmanship (animal handling and restraint for all age classes of animals) that has been conducted, recorded, and signed within the last 12 months.
- ✓ **Pre-weaned Calves:** All family and non-family employees with pre-weaned calf management responsibilities have documented annual continuing education/training on the written pre-weaned calf management protocol that has been conducted, recorded, and signed within the last 12 months.
- ✓ **Fitness to Transport:** All family and non-family employees with determination of fitness to transport responsibilities have documented annual continuing education/training on the written protocol for fitness to transport that has been conducted, recorded, and signed within the last 12 months.
- ✓ **Non-Ambulatory Animals:** All family and non-family employees with non-ambulatory animal responsibilities have documented annual continuing education/training on the written non-ambulatory animal management protocol that has been conducted, recorded, and signed within the last 12 months.
- ✓ **Euthanasia:** All family and non-family employees with euthanasia responsibilities have documented annual continuing education/training on the written euthanasia protocols, identification of animals that are to be euthanized, and proper euthanasia techniques that has been conducted, recorded, and signed within the last 12 months.

Background on this standard

- **Are farm owners expected to complete continuing education/training along with employees?**
 - Continuing education/training is only required if an owner has responsibilities related to stockmanship, pre-weaned calves, fitness to transport, non-ambulatory animals, and/or euthanasia.
- **What do we mean by “family”?**
 - An immediate family member is any grandparent, parent, in-law, spouse, partner, sibling, child, or grandchild of the legal owner(s) of the dairy operation over the age of 18
- **How often does continuing education/training need to be conducted?**
 - Continuing education/training should be conducted annually, not just on the year the facility is being evaluated. However, a corrective action will only be assigned if continuing education/training has not been conducted within the last 12 months.
- **At what age are non-family employees expected to have a record of continuing education/training?**
 - All non-family employees 18 years of age and older are expected to have a continuing education/training record
- **Does every employee have to have an individual continuing education/training record?**
 - On facilities with family employees, family employees may be individually named in a continuing education/training record OR the individual who is managing the day-to-day operation(s) may complete and sign one continuing education/training record on behalf of all family employees (18 years or older) acknowledging that each family employee has been provided with continuing education in each required area; the topic of the continuing education/training must be specified for each family member.
 - All non-family employees 18 years of age and older must be individually named in a record to enable verification that each non-family employee has been provided with continuing education/training in each required area

- **What counts as continuing education/training?**

- Continuing education/training can take place in many formats and ways. Each facility may determine the type of continuing education/training that is most appropriate and effective for them. Some examples of continuing education and training include:
 - Discussions with on-farm dairy industry stakeholder specialists (e.g., veterinarian, nutritionist, university extension faculty, and employees)
 - Attending a dairy industry meeting
 - Completing a formal employee training program
 - Job shadowing with management on the farm
 - Completing a formal continuing education class or program
 - Reviewing print and digital media (e.g., reading a relevant article in Hoards Dairyman, or watching a stockmanship video on the FARM website or YouTube)

- **What needs to be included in a continuing education or training record?**

- Each training record must include:
 - One or more employee name(s) and signature(s)
 - Date the training was completed
 - Brief description of the training taken (i.e., title of article/course, topics covered during discussion)

- **Who needs to be provided with continuing education/training for each topic?**

- Only employees with responsibilities for each of the five topics listed above are required to have a record for all areas. If an employee does not have duties in a specific area, they are not required to have formal continuing education or training in that topic.

What is the rationale for this standard?

Ensuring optimal animal care requires valuable continuing education/training and a collective understanding of what is expected by all employees. While dairy farmers commit to and practice their craft every day, annual continuing education is just one of the ways the dairy sector commits to continuous improvement.

Routine continuing education on key animal care topics ensures individuals understand how to complete tasks to maintain the health and safety of both the worker and animals. It enables you and your team to stay current on best practices and the latest science, supports you in ensuring tasks are completed effectively and efficiently, and helps to mitigate risks.

Farming is incredibly complex, and science, technology, and practices are constantly evolving. Continuing education demonstrates that our industry has a commitment to staying current with best animal care practices.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Document Review:** Review of the farm's paperwork for this standard.
- **Interview:** Discussion with the owner/herdperson and/or farm employees to understand the farm's practices.

Corrective Action or Continuous Improvement Opportunity:

If these standards are not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in a maximum of nine months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Talk to your second-party evaluator from your co-op/processor and/or your other service providers. They can help identify simple and applicable continuing education/training resources
- Consider:
 - Reading a relevant article in a trade magazine
 - Searching the Resource Library on the FARM website (www.nationaldairyfarm.com)
 - Searching online for relevant information
 - Setting up an internal team discussion around a specific topic
 - Reaching out to your veterinarian, vendors, equipment manufacturers, and service providers about what opportunities they can provide
- Set a reminder annually to ensure you and your team have participated in a form of continuing education/training. Commit to establishing an annual continuing education/training routine.
- Ongoing education and calibration is recommended, especially if employees are new or if there are situations where the farm's protocols had to be changed (for example, if a new piece of equipment is purchased, or if there was a change in pain medication for disbudding).



ANTIBIOTIC STEWARDSHIP

What are the standards?

- ✓ **All official samples of sold milk from the facility have tested negative for antibiotics in the last 3 years.**
- ✓ **All meat tissues from animals or carcasses have tested negative for violative residues in the last 3 years.**

Additional standards related to treatment records are found on page 24.

Background on this standard

- **How is “drug” defined?**
 - A drug is defined as a health product that has an identified withdrawal/withhold time, requires a prescription and/or veterinary feed directive, and/or is associated with a milk or meat violative residue (not including vaccines or hormones).
- **What is the difference between antibiotics and antimicrobials?**
 - Antibiotics are specific drugs used to treat, or prevent, bacterial infections. Antimicrobials refer to a broader group of drugs used to treat infections caused by microbes, parasites, viruses, fungi, and bacteria as well.
- **How often is milk tested for residues?**
 - All milk is screened for antibiotics, and any load that tests positive for a drug residue is discarded and never sold. Since 2011, zero retail-ready milk products have tested positive for violative traces of antibiotics.
- **What are example causes of residues?**
 - Milking a treated cow into the bulk tank or not diverting milk from the bulk tank
 - Lack of a valid Veterinarian-Client-Patient Relationship (**VCPR**) to establish proper diagnosis and treatment of disease
 - Failure to keep accurate and complete drug use records
 - Failure to follow the manufacturer or veterinarian prescribed label directions for treatment or the appropriate withdrawal/withhold time
 - Inadequate identification of individual animals
 - Use of medicated milk replacers for calves sold as veal
 - The extra-label use of aminoglycosides (i.e., gentamicin) in cattle. The American Association of Bovine Practitioners (**AABP**) and the Academy of Veterinary Consultants (**AVC**) strongly discourage any use of aminoglycosides for the treatment of disease in all classes of cattle because of the significant risk of extremely long and unpredictable withdrawal/withhold times of these drugs from the kidneys of treated animals, resulting in great risk of generating violative tissue residues at harvest.
 - Use of sulfonamides (i.e., Sustain III Bolus) other than sulfadimethoxine (i.e., ALBON® Bolus) in lactating dairy cattle. Extra-label use of sulfonamides in lactating dairy cattle is prohibited by FDA regulation.
 - Reduced liver and kidney function, particularly in unhealthy animals where drug depletion may be prolonged, may result in significantly extended drug withholding times
 - Failure to extend the withdrawal/withhold period when a drug, not approved for use in lactating dairy animals, is used in an extra-label fashion

What is the rationale for this standard?

Antibiotics, vaccines, and other medications are critical to protecting the health and welfare of dairy cattle. When drugs are used, it is important to ensure that there are no drug residues present in meat (or milk, if applicable). The marketing of food products with drug residues, even unintentionally, is illegal and can result in financial and criminal penalties. The presence of drugs in products intended for human consumption can mean serious consequences for the producer. It is therefore critical for all farms to ensure good treatment protocols and records are in place.

While the presence of drug residues in meat and milk remains a key focus for the sector, antimicrobial stewardship is also a key focus with human and animal health implications.

The AABP defines antimicrobial stewardship as the commitment to reducing the need for antimicrobial drugs by preventing infectious disease in cattle, and when antimicrobial drugs are needed, a commitment that antimicrobials are used appropriately to optimize health and minimize selection for antimicrobial resistance.

How are these standards evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Document Review:** Review of the co-op's/processor's records (if accessible/available) and online records regarding violations.
- **Interview:** Discussion with the owner/herdperson and/or farm employees to understand the farm's practices.

Corrective Action or Continuous Improvement Opportunity:

These standards are not associated with a corrective action

What can you do to meet the standard or improve in this area?

- Always follow the meat and milk withdrawal/withhold times listed on the labels of any medications used in your animals.
- Review the FARM Program Milk and Dairy Beef Drug Residue Prevention Manual.
- Work with your herd Veterinarian of Record to discuss the use of antibiotics and other treatments in your herd to ensure you understand how to avoid residues in meat and milk.
- Establish clear treatment protocols that you and your employees can follow to effectively treat animals and avoid residue issues.
- Implement a preventative Herd Health Plan to reduce the incidence of disease.
- Implement continuing education/training to improve awareness and understanding of treatment protocols and the proper animal drug use.
- Keep detailed and easily accessible treatment records and consider visual indicators to identify cows that have been treated (i.e., leg band).
- If in doubt about residue status, do not market milk or meat from treated animals. Conduct antibiotic residue tests prior to marketing meat or milk.
- Ensure antibiotics are stored in a secure location and monitor for any suspicious activity.
- In addition, the following information, obtained from American Veterinary Medical Association (AVMA), AABP, and AVC guidance on appropriate veterinary antibiotic use, can be used as a guide to ensure judicious use of antibiotics:
 - **Prevent problems:** Preventing health challenges will lead to a reduction in the need to use antibiotics. Ensure appropriate husbandry and hygiene, appropriate nutrition, routine health examinations, and vaccinations.
 - **Adhere to FDA guidelines:** Follow label instructions and FDA guidance for the use of all antibiotics. If medically important feed grade antibiotics are used, they must be under the guidance of a Veterinary Feed Directive (VFD).
 - **Select and use antibiotics carefully:** Work with your veterinarian on the selection and use of antibiotics under the VCPR. Have a valid reason to use an antibiotic. Consider appropriate therapeutic alternatives prior to using antibiotic therapy.
 - **Use a laboratory to help you select antibiotics:** Cultures and sensitivity test results can be used to aid in appropriate antibiotic selection, whenever appropriate.
 - **Avoid inappropriate antibiotic use:** Avoid using antibiotics when inappropriate, such as for viral infections without bacterial complication. Only use antibiotics to treat, prevent, or control diseases they are clinically proven to treat.
 - **Treatment programs should reflect best-use principles:** Regimens for therapeutic antibiotic use should be optimized using current pharmacological information and principles.
 - **Treat the fewest number of animals possible:** Limit antibiotic use to sick or at-risk animals.
 - **Treat for the recommended time period:** Minimize the potential for bacteria to become resistant to antimicrobials.
 - **Avoid environmental contamination with antibiotics:** Steps should be taken to minimize antimicrobials reaching the environment through spillage, contaminated ground runoff, or aerosolization.
 - **Keep records of antibiotic use:** Accurate records of treatment and outcome should be used to evaluate therapeutic regimens and to always follow proper meat and milk withdrawals/withholds. Keep records for a minimum of two years (this is the FDA requirement) or longer, based on state and local regulations.
 - **Follow label directions:** Follow instructions printed on the label or extra-label instructions provided by your veterinarian.
 - **Extra-label antibiotic use must follow FDA regulations:** Prescriptions, including extra-label use of medications, must meet the Animal Medicinal Drug Use Clarification Act (AMDUCA). This includes having a valid VCPR.
 - **Medically important antibiotic use should be limited to treat, prevent, or control disease:** Medically important antibiotics should not be used if the principal intent is to improve performance.



VETERINARIAN- CLIENT-PATIENT RELATIONSHIP

What is the standard?

- ✓ The facility has a written Veterinarian-Client-Patient Relationship (VCPR) form signed and updated by the farm owner/manager and the Veterinarian of Record (VOR) annually, that has been signed within the last 12 months.

Background on this standard

• What is a VCPR?

- The VCPR is the basis for interaction among veterinarians, their clients, and their patients; it is critical to the health of animals. The American Veterinary Medical Association (AVMA) outlines that the VCPR exists when a veterinarian knows a farmer's animals well enough to be able to diagnose and treat any medical conditions. Your part of the VCPR is allowing your veterinarian to take responsibility for making clinical judgments about your animals' health, asking questions to make sure you understand, and following your veterinarian's instructions. Your veterinarian's part of the VCPR involves making those judgments, accepting the responsibility for providing your animals with medical care, keeping a written record of your animals' medical care, advising you about the benefits and risks of different treatment options, providing oversight of treatment, compliance (your follow-through on their recommendations) and outcome, and helping you know how to get emergency care for your animals if the need should arise.¹

• Who is the VOR?

- The VOR is the specific veterinarian responsible for making recommendations with respect to animal health on the operation, including appropriate oversight of drug use on the operation.



• What if a farm uses multiple veterinarians?

- The expectation is that each farm has at least one annually documented VCPR. Each farm is encouraged to work with as many qualified advisors as they see fit; therefore, a farm may retain the services of multiple different veterinary clinics if so desired. It is suggested that the farm establish a VCPR with each independent veterinary practice.

• How often does the VCPR need to be signed?

- The VCPR should be signed annually, not just on the year the facility is being evaluated. However, a corrective action will only be assigned if the VCPR has not been signed within the last 12 months.

• How do you establish a VCPR?

- While the specific expectations of what constitutes a VCPR differ somewhat by state, the American Association of Bovine Practitioners (AABP) outlines the expectations of a VCPR as follows²:
 - Establish a written agreement with your veterinarian that identifies the farm veterinarian who is accountable for drug use and treatments administered to the cattle on the farm operation. If more than one veterinarian or veterinary practice has a working relationship on the operation, then the agreement should establish which one is the VOR.
 - The VOR is the responsible party for providing appropriate oversight of drug use on the farm operation. Such oversight is a critical

component of establishing, maintaining, and validating a VCPR. This oversight should include, but may not be limited to, establishment of treatment protocols, training of personnel, review of treatment records, monitoring drug inventories, and assuring appropriate labeling of drugs. This oversight includes all drugs used on the farm regardless of how they are obtained. Regular farm visits are essential to a VCPR, and frequency should be determined by the VOR based on type and size of the operation.

- Protocols and treatment guidelines for commonly occurring, easily recognizable conditions should be established in writing, and agreed upon, signed, and dated by all parties involved. Training of personnel authorized to use drugs on the operation should be undertaken and periodically reviewed.
- Written/electronic treatment records of all animals or groups of animals treated are an essential component of maintaining and establishing the VCPR and decreasing the risk of violative drug residues. Such records should include, at a minimum, the date, identification of animal(s), drug(s) used, disease/condition being treated, dose, route (method of administration), duration of treatment, and appropriate meat/milk withdrawal/withhold intervals.
- Provision of drugs or drug prescriptions should be for specific time frames appropriate to the scope and type of operation involved and only for the management groups within the operation for which the VOR has direct involvement and oversight. Establishment of a VCPR for the sole purpose of the sale of drugs or increased sales of a particular brand of drug product is not a valid or ethical reason for having a VCPR.

What is the rationale for this standard?

Establishing a partnership with a trusted veterinarian is in the best interest of your herd and business. It is a cornerstone of the FARM program and is key to maintaining animal health and welfare. Veterinarians are trained animal health professionals and bring a wealth of knowledge and expertise on animal health and biosecurity. They can offer insights gained from visiting other similar facilities, which may help with troubleshooting. A VCPR is required by law,³ which means in order for a veterinarian to diagnose or treat your animals, and/or prescribe or dispense medications, a VCPR must be in effect. In addition to a VCPR, an on-farm management team, composed of consultants, veterinarians, nutritionists, and employees involved in decision-making and direct animal care, can be established to build a single team with excellent knowledge and expertise to improve animal health care at your facility.

Setting Goals and Protocols: Your veterinarian can be a valuable resource in establishing and reviewing protocols. They can help you to identify gaps in management and biosecurity, as well as protocol drift. They can help to identify how and where improvements might be made by providing objective observations with the goal of improving health and production.

Continuing Education/Training and Guidance: Use your veterinarian as a resource for continuing education/training employees in performing procedures to ensure they are correct. They can also help you and your employees identify signs of disease, establish a monitoring program, and develop appropriate medication protocols to optimize recovery and treatment outcomes, as well as ensure drug stewardship. This is extremely important for instances where extra-label drug use may be required, as well as for the reduction of violative residues in meat and milk. Using your veterinarian as a resource and partner can improve animal health, production, and welfare as well as benefit your business.

Extra Support: Your veterinarian may be skilled and proficient in new or evolving techniques beyond the skill or comfort level of your employees. For example, if euthanasia is a difficult task, consider involving your veterinarian to ensure the procedure is performed in a humane and timely manner to reduce animal suffering.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Document Review:** Review of the farm's paperwork for this standard.
- **Interview:** Discussion with the owner/herdperson and/or farm employees to understand the farm's relationship(s) with a veterinarian. If veterinarian is on site during an evaluation, discussion may also occur with the veterinarian.

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in a maximum of nine months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Speak with your herd veterinarian to discuss establishing a VCPR or ensuring that you have a VCPR form signed and documented annually. Consider setting a reminder during one of your herd health calls to have this signed.
- Don't have a veterinarian? Speak with your co-op/processor evaluator and/or FARM program staff and they can support you in identifying veterinarians in your local area through the AABP.

References

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3. Code of Federal Regulations. 2023. 21 CFR 530.3. Accessed May 3, 2024. <https://www.ecfr.gov/current/title-21/chapter-I/subchapter-E/part-530/subpart-A/section-530.3>.



HERD HEALTH PLAN

What is the standard?

- ✓ **The Herd Health Plan (HHP) has been reviewed and signed annually by the Veterinarian of Record (VOR) and the review has been conducted within the last 12 months.**

Background on this standard

• What is the Herd Health Plan?

- The HHP consists of a series of records, protocols, and procedures that document the key practices at the facility. Recordkeeping is required for identifying and monitoring trends in animal health and management. Written protocols and procedures are also critical to help guide animal management and care. These are key elements of a HHP and are also one of the cornerstones of animal care and responsible management.

• Does this standard evaluate the content of the Herd Health Plan?

- No, this standard is solely focused on evaluating whether the HHP has been reviewed by the VOR in the last 12 months, not the content of the HHP itself. The content within the HHP is covered in the Animal and Facility Management section of this manual.

• How often does the HHP need to be reviewed?

- The VCPR should be reviewed annually, not just on the year the facility is being evaluated. However, a corrective action will only be assigned if the HHP has not been reviewed within the last 12 months.

What is the rationale for this standard?

A farm's HHP is an important document to ensure consistent care and management of animals on the facility. Having an established HHP can help you prepare for unexpected events on your farm (such as disease), as well as common practices (such as transporting or vaccinating animals). The protocols outlined in your HHP not only ensure your farm has a plan for common on-farm events, but they also help ensure consistency in on-farm management. Establishing a set of protocols for all farm employees to follow when performing duties, such as treating disease and preventing and treating lameness, creates consistency in how animals are managed, how treatments are applied, and how protocols are followed.

A comprehensive HHP should include written protocols for all primary areas of dairy cattle health management and provide enough detail to ensure all family and non-family employees with animal care responsibilities can perform those duties accurately and consistently. Typically, your HHP will focus on prevention, accurate and early diagnosis, and steps to follow to ensure quick decision-making on necessary treatment and care of all sick animals. A licensed veterinarian should help you develop and implement this plan on the farm. Your written HHP should be reviewed by your VOR annually, if not more frequently, to ensure protocols remain up to date and that they are developed and updated in conjunction with the VOR's guidance and oversight.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Document Review:** Review of the farm's paperwork for this standard.
- **Interview:** Discussion with the owner/herdsperson and/or farm employees to understand the farm's practices.

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in a maximum of nine months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Speak with your herd veterinarian to set an annual appointment to review your HHP and sign to acknowledge that it has been reviewed.
- Reviewing the HHP with your veterinarian is a great opportunity for continuing education.
- Don't have a veterinarian? Speak with your co-op/processor evaluator and/or FARM program staff and they can support you in identifying veterinarians in your local area through the AABP.

TREATMENT RECORDS

What is the standard?

- ✓ **The facility maintains permanent (at least 2 years; written or electronic) treatment records, available for review by the Veterinarian of Record (VOR), for the treatment of the facility's common diseases that includes:**
 1. Date of treatment
 2. Treated animal identification
 3. Name of the treatment used
 4. Disease/condition being treated
 5. Dosage administered
 6. Route of administration
 7. Duration of the treatment
 8. Specified withdrawal/withhold times for milk and meat to ensure food safety

Background on this standard

• How is “treatment” defined?

- A treatment is defined as the administration of a drug for therapeutic use, with the goal of preventing, controlling, and/or minimizing or resolving clinical signs of disease in an animal or group of animals.

• How is “drug” defined?

- A drug is defined as a health product that has an identified withdrawal/withhold time, requires a prescription and/or veterinary feed directive, and/or is associated with a milk or meat violative residue (not including vaccines or hormones).

• What types of drugs must be recorded in treatment records?

- Any drug administered for therapeutic use, with the exception of vaccines or hormones. While, vaccines and hormones are an exception to this standard and do not need to be recorded, best practice is to keep these records as part of a comprehensive herd management strategy.

• Do non-FDA approved products have to be recorded?

- Not unless the product in question meets one or more of the criteria listed above in the FARM definition of therapeutic drug use

• How is “permanent” defined?

- Facilities are expected to maintain at least two years' worth of written or electronic records to qualify.

• What information needs to be recorded?

- The following eight items need to be recorded for each animal treatment:
 - ✓ Date of treatment
 - ✓ Animal ID
 - ✓ Name of treatment used
 - ✓ Disease/condition being treated
 - ✓ Dosage administered
 - ✓ Route of administration
 - ✓ Duration of the treatment
 - ✓ Specified withdrawal/withhold times for milk and meat to ensure food safety

• Does all of the information pertaining to a single treatment need to be included on one record?

- No, the information pertaining to the eight required elements for each treatment administered on the farm (date of treatment, treated animal identification, name of treatment used, disease/condition being treated, dosage administered, route of administration, duration of the treatment, and specified withdrawal/withhold times for milk and meat) do not need to be found in one central place (e.g., a master protocol, specific protocol referenced in a cow card, etc.). However, ALL of this information must be able to be found on the facility (e.g., in written records, on an office computer, in dairy management software, etc.).



What is the rationale for this standard?

The Food and Drug Administration recommends that facilities maintain permanent written treatment records, and have an expectation that these are kept for a minimum of two years.^{1,2} Additionally, maintaining excellent treatment records can help to reduce liability and prevent residues, enable assessment of trends through periodic and timely review with your veterinarian, and help identify mistreatments and save money.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Document Review:** Review of the farm's paperwork for this standard.
- **Interview:** Discussion with the owner/herdperson and/or farm employees to understand the farm's practices.
- **Observation:** If there is evidence of animals being treated, and for the presence of medications on the farm.

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met, the farm will receive a Continuous Improvement Plan (CIP), which must be resolved in a maximum of three years. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Your veterinarian is an excellent resource and should aid in the development of treatment protocols and associated recordkeeping to oversee the use of treatments at your facility. Wherever possible, include as much detail about preferred treatments within treatment records. Many of the details required for treatment records can be contained within these protocols, ensuring that only animal-specific information needs to be written down when a treatment is administered.
- If utilizing a record-keeping software (e.g., DairyComp 305, PC Dart, Bovisync, robotic milking software systems), speak with company representatives to learn how to use these systems efficiently to record and track treatments.
- Best practice would be to also indicate the name of the person treating the animal(s), in addition to the other required elements, to facilitate conversation and accountability among farm employees.

References

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FACILITY

OBSERVATIONS

This section of the reference manual describes the program standards that ask farms to have emergency contact information displayed; provide animals with access to water and feed, daily exercise, protection from heat and cold; and considers housing characteristics, flooring, and facility design, electrical currents, adequate lighting, and ventilation.



CHECKLIST

This section of the FARM Animal Care evaluation will focus on the following standards:

- ✓ **The names and telephone numbers for emergency services, emergency contacts (e.g., the owner, veterinarian, milk handler, equipment dealers and/or power company, etc.), and the site address are posted in a prominent place on the facility in the language(s), which the family and non-family employees with animal care responsibilities understand.**
- ✓ **Apart from pre-weaned calves, all other age classes of animals have access to clean water appropriate for climatic conditions.**
- ✓ **All age classes of animals have access to sufficient quantities of feed for maintenance, health, and growth.**
- ✓ **All age classes of animals have a method of daily exercise (weather permitting, if outdoors).**
- ✓ **All age classes of animals are provided with protection from heat and cold for typical climatic conditions.**
- ✓ **Housing allows all age classes of animals to easily stand up, lie down, and have visual contact with other cattle without risk of injury.**
- ✓ **All age classes of animals have a resting area that is clean, dry, provides adequate cushion at all times, and does not pose risk of injury.**
- ✓ **Facilities are designed to prevent injuries, slips, and falls of animals.**
- ✓ **Facilities are designed to prevent unnecessary contact with electrical currents.**
- ✓ **Animal facilities are designed to have adequate lighting for animal observation and for the safety of family and non-family employees with animal care responsibilities.**
- ✓ **The facility provides proper ventilation throughout all housing facilities that reduces odors, dust, and/or noxious gas.**



EMERGENCY CONTACTS

What is the standard?

- ✓ **The names and telephone numbers for emergency services, emergency contacts (e.g., the owner, veterinarian, milk handler, equipment dealers and/or power company, etc.), and the site address are posted in a prominent place on the facility in the language(s), which all family and non-family employees with animal care responsibilities understand.**

Background on this standard

- **What emergency contacts need to be included?**
 - Any relevant emergency services (e.g., 911, local veterinarian, feed dealer, milk handler/field representative, milk hauler, milk equipment dealer, machinery dealer, etc.)
 - Any relevant emergency contacts for the farm (e.g., owners, managers, veterinarian, milk handler, equipment dealers, power company, etc.)

What is the rationale for this standard?

Ensuring everyone on the dairy understands how to access essential services during times of emergency leads to better outcomes. Posting the names and telephone numbers of emergency contacts in a prominent place and in the employees' preferred language allows for better communication and response times. This practice also allows farms to proactively prepare for on-farm emergencies and ensures that all farm employees understand who to call in the event of an emergency.

Remember, while employees may have these details included in their personal phones, this is not sufficient to meet the requirements of this standard. It is best practice to ensure that these contacts are clearly posted within the facility. This ensures that this information is available in the event someone does not have access to their phone, or a visitor to the facility needs this information.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Document Review:** Review of the farm's paperwork for this standard
- **Interview:** Discussion with the owner/herdperson and/or farm employees to understand the farm's practices

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

- Ensure emergency numbers are posted in a noticeable spot(s) within the facility.
- Review your farm's emergency contacts and verify that they address possible emergency events (e.g., fire, extreme weather, unexpected absences, etc.) and review contacts with employees.





ACCESS TO WATER

What is the standard?

- ✓ **Apart from pre-weaned calves, all other age classes of animals have access to clean water appropriate for climatic conditions.**

Note: a standard for water access for pre-weaned calves is found in the Pre-Weaned Calves section (page 82).

Background on this standard

- **Does water need to be available at all times?**
 - Water does not need to be available at all times, but it must be offered routinely and as appropriate for climatic conditions and noted as such in a protocol, and to ensure animals' biological needs are met.
- **What is considered "clean"?**
 - Water that is significantly soiled and/or contaminated with feces, dirt, mud, or manure, and/or has algae growing would be considered too dirty. For calves, milk contaminates fresh drinking water.

What is the rationale for this standard?

Fresh, clean water is essential for the health and well-being of the animals. Access to waterers (e.g., large tanks, troughs, buckets, or fountains) is essential for cattle to satisfy their need for water. Waterers should be convenient to access and the number, size, and capacity should accommodate the number of animals in the group. Continuous access to water is best practice. However, when continuous access is not possible (i.e., in freezing climatic conditions), water should be made available to allow animals to drink to satiation at least twice per day.

What does the science say?

The water consumption requirements of dairy cattle depend on milk yield, size, dry matter intake and feed moisture level, temperature and relative humidity, and the availability and quality of water.¹ A review of 55 studies predicted cows would drink 20.7 gallons/day and that they would consume 0.7 gallons of water for every 0.26 gallons of milk produced.²

Water requirements are greatly impacted by environmental temperatures. The hotter the temperature, the more water that is needed. Water loss from an animal is continuous through metabolic processes and respiration. This loss increases during heat stress due to an increase in evaporative water loss.³

Cattle are suction drinkers and prefer open sources like troughs or buckets, where they can submerge their nose and mouth while consuming water.³ They are also sensitive to contamination of water. They can detect and will avoid even small amounts of manure in their drinking water.⁴ They will also drink less when water is contaminated with manure⁴ or dissolved minerals.⁵

Water is critical for youngstock. It is needed for hydration and rumen development. Providing water early in life leads to more intake of solid feed or calf starter.⁶ Calves will drink more water in the colder months if the water is warm. There is variability in how much milk-fed calves will drink. In one study, calves consumed only 0.79 qt of water/d during the first 16 days of life when on a milk allowance of 6.3 qt/d,⁶ whereas in another study, calves consumed 3.6 qt of water in weeks 5-8 of life⁷ when offered a similar amount of milk. However, most calves offered milk allowances from 4.2 to 6.3 qt/d drank between 1.1 and 2.6 qt/d of water from birth.¹ What is notable is that consumption of water begins from the first day of life⁸ to 4 days of age,⁹ when offered. Offering water from birth also tends to improve growth.⁶

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Document Review:** Review of the farm's paperwork for this standard.
- **Interview:** Discussion with the owner/herdperson and/or farm employees to understand the farm's practices.
- **Observation:** Observing all watering mechanisms for access and cleanliness (must pass visual cleanliness test). Water does not have to be offered continuously; however, if continuous access is not offered, the frequency of offering must be noted in the protocol.

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in nine months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Ensure waterers are located near feed troughs and near stalls.
- Offer water to calves as soon as possible to encourage consumption.
- Monitor and maintain water cleanliness through routine cleaning.
- Provide access to water in return alleys from the milking parlor to promote consumption immediately after milking.

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ACCESS TO FEED

What is the standard?

- ✓ **All age classes of animals have access to sufficient quantities of feed for maintenance, health, and growth.**

What is the rationale for this standard?

Nutritional management is key to achieving optimal health, welfare, and productivity. All animals should have consistent, daily access to adequate feed according to their specific requirements. Rations should provide the required nutrients for maintenance, growth, stage of lactation, health, and pregnancy based on an animal's life stage. Nutritional management is particularly important for dry and fresh cows as a prevention strategy for transition diseases, e.g., milk fever, displaced abomasum (**DA**), ketosis. Body condition scoring is a valuable outcomes-based measure that can be used to monitor the nutritional condition of the herd.

What does the science say?

Animals should be provided feed on a continuous basis with new feed delivered several times daily or replenished through a push-up process. Management practices that promote feed access for lactating cows are associated with higher production and less feed sorting.^{1,2} These practices include increased bunk space, feeding twice a day instead of once, and frequent feed push-ups. Non-consumed feed should be removed daily as this ensures freshness, prevents mold and spoilage, and aids in insect control. This is a particularly important practice with high-moisture feeds like silage. Reducing the space available for cows to eat increases competition,^{3,4} as well as aggressive interactions, particularly for subordinate cows.⁵ Providing a head lock feed barrier reduces the effects of aggression, particularly for subordinate cows.⁴

Considerations for calves

As with adult animals, calves must be provided with a sufficient diet to support their health and growth, including colostrum/replacer, milk/replacer, and starter feed. When calves are offered high planes of milk (> 20% body weight/d) compared to restrictive planes of nutrition (10% body weight/d), calves have higher preweaning growth rates and improved preweaning feed efficiency.⁶⁻⁸ This higher level of growth has been shown to increase first lactation milk yield, likely due to physiological differences in mammary cells that result when higher levels of nutrients are fed in the preweaning phase.^{9,10} High planes of milk nutrition has been shown to improve immune function, with calves demonstrating a better recovery response to disease,^{11,12} as well as reduced incidence of disease.^{13,14} Milk feeding programs that limit the volume of milk fed place feed restrictions on calves, increasing hunger, and restricting their ability to express natural feeding behavior.¹⁵ These disadvantages, in terms of calf welfare, are evident in the poorer growth rates (as highlighted above) as well as behavioral signs of hunger.

Please see the following sections for additional information on calf feeding:

- Colostrum (page 87)
- Milk Feeding (page 94)
- Calf Starter (page 100)

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe body condition score (BCS) of each age class of animal. The farm does not meet this standard if the BCS benchmark of 99% scoring a 2 or higher is not met for any age class of animal.

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in nine months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Work with a dairy nutritionist to evaluate the feeding program to ensure it meets the animals' nutritional requirements for maintenance, growth, production, health, and reproduction.
- Qualified dairy nutritionists can assist with the following services:
 - Formulate rations that meet nutritional requirements
 - Check that feed ingredients are carefully mixed and formulated according to the animals' dietary needs
 - Adjust rations to assure the correct content of protein, energy, fiber, macro-minerals and micronutrients in feed whenever forages are changed
 - Periodically assess dry matter intake
 - Adjust diets to support the level of production
 - Check feed ingredients for nitrates, mycotoxins and other soil or climate-induced problems
- Evaluate calves to ensure they are receiving adequate nutrition in the form of colostrum/replacer, milk/replacer, and starter feed throughout the pre-weaning, weaning, and post-weaning phases.

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DAILY EXERCISE

What is the standard?

- ✓ **All age classes of animals have a method of daily exercise (weather permitting, if outdoors).**

Background on this standard

- **What is considered exercise?**
 - Exercise is defined as the ability for all age classes of animals to freely locomote.
 - For pre-weaned calves, exercise includes the ability to easily turn around, which means they can physically turn around (360° turn in both directions) without touching the sides of their enclosure.
- **What is "weather permitting"?**
 - If the facility utilizes an outdoor area, weather conditions may impact daily access to exercise. This is acceptable, so long as daily opportunity for movement is offered except for on individual days when weather conditions are poor.
 - Facilities that only allow animals to have exercise for certain months or seasons of the year do not meet this standard (i.e., not offered daily).

What is the rationale for this standard?

Exercise provides opportunities to express natural behaviors, social grooming behaviors, and improves health outcomes. Research suggests that exercise as freedom of movement should be considered a basic standard of care for all animals. Access to exercise for tied cattle can be provided in the form of pasture, a dry-lot, paddock, or bedded pack.

What does the science say?

Systems that offer more space for movement or incentives to move, such as grazing on pasture, expressing estrus behavior or social activities, increase the level of locomotor activity performed by cows.^{1,2} For calves, more space results in greater expression of play behavior, which can be interpreted as an indicator of positive welfare.^{3,4} Permitting movement opportunities for cattle housed in tie-stalls (e.g., outdoor access) has been associated with improved locomotion.⁵ Increased movement is associated with increased blood flow to the feet and legs, which improves nutrient and oxygen transport to the horn-producing area and aids in maintaining overall hoof health.⁶ Cattle are also motivated to move and locomote more after longer periods of restraint.⁷ The benefits of exercise for tied cattle depend on the quality of the exercise area, for example, an ideal area will have adequate space, soft lying surface, good traction, and low pathogen load. When untethered, cattle use this time to groom parts of the body that they cannot reach while tied^{2,8} and interact with other cows.^{2,7}

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe all age classes of animals to confirm facility management allows for the ability to fully turn around (calves) or locomote daily (all additional age classes).
- **Interview:** If animals are tied, ask about the process for providing an opportunity for exercise daily and observe area(s) where exercise can occur.

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

- For pre-weaned calves, monitor the size of the calves in their respective housing systems to ensure they can easily turn around without touching the sides of their housing. As calves grow, move them to housing that accommodates their size and exercise needs.
- The quality of the exercise area is important and, in best practice, minimizes any risk for injury.
- In best practice, tied cattle have daily exercise (weather permitting, if exercise space is outdoors) and the quality of the area provided for this is clean, dry, and has appropriate flooring material.

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PROTECTION FROM HEAT & COLD

What is the standard?

- ✓ All age classes of animals are provided protection from heat and cold for typical climatic conditions.

Background on this standard

- What is considered protection?
 - The farm provides facilities, makes use of mitigation tools (e.g., misters, fans, calf coats, shade cloth, etc.), and manages both animals and facilities to ensure all age classes of animals are free from discomfort due to typical weather conditions.

What is the rationale for this standard?

Environmental temperature affects an animal's comfort, which then affects their behavior, metabolism, and performance. With elevated environmental temperatures, cows show an increase in thirst, malaise, and frustration, as well as a decrease in milk yield.¹ Cattle experiencing cold stress show decreased milk yield,² as well as increased maintenance energy requirements.³ Cattle will seek shelter to avoid wind and rain in winter conditions, and when they cannot avoid it, they are likely to put their heads down, turn tail to the direction of the wind, and spend time in postures that reduce the amount of surface area exposed to the elements.⁴ They will also avoid wet, muddy conditions when they have the opportunity.⁵

What does the science say?

Ensuring cattle are housed in environments within their thermoneutral zone (**TNZ**) ensures they don't need to expend energy to stay warm or cool. The thermoneutral zone for newborn calves is 50°-78° F; for adult cattle the TNZ is typically 32°-73° F. This means that newborns

and young calves need protection below 50° F. Protection from cold for young calves and adults exposed to extreme conditions includes deep bedding, wind breaks, overhead shelter and, in the case of calves, heat lamps and coats. Direct protection from heat gain (i.e., shade) and methods to dissipate heat from the animals (fans, soakers) are typically needed for all age classes of animals in warm and hot conditions.

Indeed, compared to humans, cattle become heat stressed at lower temperatures. To account for the impact of both temperature and relative humidity, the Temperature Humidity Index (**THI**) is used. Production losses from heat stress are observed at THI of 68 to 74.⁶ However, cattle experience discomfort, and thus some negative welfare impacts, even in milder ambient conditions and seek out heat abatement such as shade or soakers.^{7,8} High producing cows are more affected by heat than low producing cows because of higher metabolic heat production,⁶ but cattle of all age classes can experience heat stress.

Signs of Heat and Cold Stress in Cattle

- Animals experiencing **heat stress** may exhibit the following:
 - Increased respiratory rate
 - Open-mouth panting
 - Excessive drooling
 - A drop in feed intake¹
 - Aggression and/or fighting for access to shaded areas or water^{9,10}
 - Spend more time standing and less time lying down⁵
 - Seeking shade if the opportunity is available
- Animals experiencing **cold stress** may exhibit signs of the following:
 - Shivering, particularly in calves
 - Standing with their head down and tail in the direction of the wind⁴
 - Seeking shelter if the opportunity is available

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Interview:** Ask about mitigation strategies and management during potential times of heat and cold stress.
- **Observation:** Observe facilities for heat and cold protection/abatement in each age class, and observing animals for signs of cold or heat stress.

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

- Abate heat stress with shade, air movement, soaking, and misting.
- Consider monitoring cows' respiratory rates to determine if they are under heat stress. For lactating cows, a general rule is that additional intervention is needed when respiratory rates exceed 60 breaths/min in at least a quarter of cows sampled (usually aiming to sample no fewer than 20 animals and ideally more than 35) from a high-producing pen.
- Cows are quite cold tolerant but should be provided with adequate feed to maintain body condition along with protection from wind and moisture.
- Calves are more vulnerable to cold. Cold can be abated with curtains, windbreaks, and barns/sheds. Particular consideration should be given to newborn wet calves. Additional bedding should be provided for sufficient nesting. Calf jackets can be used to supplement, but not replace, deep bedding.^{11,12}



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HOUSING CHARACTERISTICS

What is the standard?

- ✓ **Housing allows all age classes to easily stand up, lie down, and have visual contact with other cattle without risk of injury.**

Background on this standard

- **How does this standard apply to calves?**
 - For calves, there is an additional expectation that their housing allows for them to easily turn around, meaning they can physically turn around (360° turn in both directions) without touching the sides of their enclosure

What is the rationale for this standard?

These minimum criteria are key to ensuring animals can rest comfortably and ensure best possible welfare and production outcomes. Providing appropriate housing for all animals can reduce the risk of injuries, lameness, and promote natural behaviors.^{1,2}

What does the science say?

Adequate space is important for calves, heifers, and adult cattle. Cows are highly motivated to spend time lying down;³ however, space allowance can impact lying time for cattle. Lying times are increased in wider stalls, compared to narrow stalls, as well as in longer stalls compared to shorter stalls.^{4,5} Wider stalls have also shown reduced risk of neck injuries and lameness,^{5,6} while longer stalls show reduced risk of knee lesions. Stalls that have impediments to the lunge space or restrictive neck rails are a risk factor for lameness.⁷

When resting spaces are restricted in size, behavior is affected and injuries can occur. Restrictive neck rail placement (lower, closer to the curb) discourages cattle from standing in the stall and limiting this possibility to stand on a non-concrete surface results in worsening locomotion.^{8,9} Improperly positioned neck rails also have the potential to impact the ease of which cattle are able to stand up from a lying position, as their ability to lunge forward is compromised.¹⁰ When cows are able to stand up and lie down easily, they are less prone to lameness.⁶ When the lying surface within the stall is too hard, cattle will get up and lie down less often than in well-cushioned stalls.³

Providing more space for calves results in greater expression of indicators of positive welfare, such as play behavior,^{11,12} while also improving calf hygiene, and improving aspects of immunity and health.¹³ As calves age, a greater change in patterns of rest is seen when space is restricted, which indicates that normal movement and comfort is impaired¹³ with restricted space.

In addition to providing adequate space for all age classes of animals, it is important to ensure that housing allows for visual contact with other animals. Cows are herd animals; therefore, when socially isolated, cattle show signs of stress.¹⁴ As a best practice, isolation of animals should be minimized and visual contact with other animals should be maintained, with exceptions to this only being when calves are newborn,¹⁵ when cows approach calving, and when animals are ill.¹⁶

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:**
 - Observe housing facilities for each age class
 - Observe if all age classes of animals can easily stand up, lie down, adopt normal resting postures, and if cattle can see other cattle easily
 - Ensure pre-weaned calves can also turn around easily

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

- Evaluate housing to look for obstructions that may impede an animal from easily standing or lying, e.g., broken stalls, objects protruding into lying spaces, overcrowding, housing/stalls incorrectly sized for the size of the animals.
- Evaluate cows and calves for any marks or injuries that indicate they are coming in contact with surfaces or objects that restrict their ability to lie down, get up, or stand comfortably.
- Evaluate housing (e.g., stall dividers and neck rails) to provide insight into what parts of the stall cattle touch on a regular basis.

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RESTING AREAS

What is the standard?

- ✓ **All age classes of animals have a resting area that is clean, dry, provides adequate cushion at all times, and does not pose risk of injury.**

Background on this standard

- **What types of outcomes are considered when evaluating this standard?**
 - Animal observations, such as hygiene, hock injuries, and knee injuries are used to help identify issues with resting area cleanliness and cushion. The presence of broken stalls or dividers or other objects in resting areas that might cause injury would not meet this standard.

What is the rationale for this standard?

Well-designed and maintained resting areas are critical for creating an environment where cattle can be free from discomfort and pain and have freedom to express natural behaviors. Cattle have increased lying time in well-bedded environments, which reduces the risk for lameness, improves rumination, production, and health outcomes.

What does the science say?

Cattle prioritize lying down over feeding, following deprivation of both or when time budgets are restricted in some way to make them choose one over the other. They will also show “rebound” rest after periods of prolonged standing.¹ Many factors are important to consider when evaluating resting areas and ensuring cows have adequate lying time, e.g., stall length, stall width, stall surface, type of bedding, bedding depth, overstocking, cleanliness, and dryness.^{1,2,3}

Adequate bedding keeps cows clean and offers cushion, traction, and helps mediate temperature (i.e., thermal insulation with straw for calves in winter, or sand bedding to keep animals cool in summer). Cattle spend less time lying down in wet bedding or mud and will avoid wet surfaces if given a choice. Dryness is also important for udder health, as well as for bedding to provide insulating properties. This is particularly important for young calves in cooler weather. Dairy calves also show a clear preference for drier bedding and aversion to concrete lying surfaces, indicating that access to dry bedding is also important for growing calves.

Longer and wider stalls are associated with increased lying time. Stall dimensions and lying time also impact the risk of lameness. Lying surface has been identified as an important risk factor, with mattresses or mats being associated with higher levels of hock injuries.⁴ The most critical practice associated with lower prevalence of hock injuries is ensuring stalls have sufficient bedding and are kept clean and dry.⁵

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:**
 - Observe if each age class of animal has resting areas that appear to be clean, dry, provide good cushion, and do not pose risk of injury
 - Use hygiene scores of each age class of animal as an animal-based measure of environment cleanliness
- **Interview:** Ask employees about the cleaning/bedding schedule and overall management of resting areas.

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

- Evaluate resting areas, look for hygiene concerns/injuries/rubbed metal:
 - Consider stall design, bedding frequency, bedding management, bedding material, dryness of resting areas, adequate bedding depth and coverage
- Deep loose bedding is ideal; especially sand for older age classes of cattle.
- Stalls should be sized to accommodate the size of the cows using them.

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FLOORING & FACILITY DESIGN

What is the standard?

- ✓ **Facilities are designed to prevent injuries, slips and falls of animals.**

What is the rationale for this standard?

Well-designed and maintained flooring is critical for creating an environment where cattle can have freedom to express natural behaviors and reduce injuries. A number of areas of the facility can cause injury if not carefully designed and/or maintained. Proper flooring, anti-slip tools, and regular maintenance is key to preventing injuries. Flooring surfaces should be appropriately designed (e.g., anti-slip, grooved, textured) to reduce the risk of animals slipping and a plan should be in place to minimize the impact of seasonal changes that reduce tractions, such as ice.

What does the science say?

Cattle walk more confidently on floors with better traction and walk more slowly on slippery surfaces, including those covered in feces.¹⁻³ High-traction, rubber flooring is desirable in areas of the facility where cows stand for prolonged periods (e.g., holding area), in transfer lanes to reduce hoof wear and in other areas to reduce the risk of slipping and injury, and has been shown to increase the walking pace of cows in comparison to concrete.⁴⁻⁶ Surfaces with increased traction are essential to reduce the risk of slips and falls and are particularly important in places like the maternity area.⁴ It is essential that all maternity areas have high traction flooring given the increased frequency of standing up and lying down during labor. Rubberized flooring improves surface traction⁴⁻⁷ and allows animals to rise and lie down with a reduced risk of slipping.⁷

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:**
 - Observe the facility flooring type and look for presence of anti-slip tools (for example, grooving or rubber flooring; regular cleaning to prevent build up of feces), protruding wires, headgates, and/or other items that could prevent OR might induce injuries, slips, and falls
 - Observe if animals commonly slip and fall while walking or while being handled by employees
- **Interview:** Ask about short-term methods used to keep floors from being too slippery (e.g., use of sand, straw, etc.) and/or management to prevent injuries, slips, and falls.

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

- Evaluate your farm for areas of flooring that may be inappropriate, slippery, or have hazards, particularly focusing on high-traffic areas, areas where cows are restrained, and the milking parlor.
- Ensure skid-resistant surfaces retain their non-slip characteristic after cleaning, scraping, or wear.
- All flooring types and other aspects of the facility may need maintenance or replacement if they are no longer suitable. If grooving a concrete floor, consider the groove dimensions, orientation, and configuration.
- Monitor cow hooves to ensure floors are not too rough (e.g., ragged groove edges or rough finished surfaces) and causing excess hoof wear.

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ELECTRICAL CURRENTS

What is the standard?

- ✓ **Facilities are designed to prevent unnecessary contact with electrical currents.**

What is the rationale for this standard?

Contact with electrical currents can lead to severe behavioral and physiological problems. Crowd gates, electric fences, and stall trainers are among the many sources of electrical currents on farms. This equipment should function properly and be regularly maintained. It should also be appropriately adjusted and correctly located, so that cows are not subject to unnecessary electrical current. Electric prods should not be used as standard practice; if needed, they should be reserved for emergency situations.

What does the science say?

Cattle find electric shock aversive.¹ They avoid cattle prods.² Electric shock from these devices¹ causes pain.^{3,4} Electric cow trainers reduce the amount of manure in the back of the stall and moisture in the hoof.⁵ However, using trainers has been positively associated with the prevalence of dirty cows on tie-stall farms, with dirty udders being more common in herds with electric trainers.⁶ Trainers have also been identified as a risk factor for mastitis.⁷ The association between trainers and cleanliness is possibly seen because trainers are viewed as a way to improve hygiene and used on farms where hygiene is already a challenge. In addition, trainers are also a risk factor for hock⁶ and soft tissue injuries.⁸

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:**
 - Observe crowd gates, electrical fences, cow trainers. Ensure these devices are located where constant contact with animals is not occurring. Trainers should not touch animals in normal standing positions (when not urinating or defecating).
 - Visually verify, where possible, that these items appear to be in working order and are functioning properly (i.e., look for obvious broken electric equipment that should be repaired or replaced)
 - Observe driving aids used during handling
- **Interview:** Ask what electrical equipment (e.g., crowd gates, fences, trainers) are used and how they maintain that equipment. Ask how certain equipment, such as crowd gates, is used and ensure that they minimize contact as much as possible. If electric prods are on the farm, asking about how and when they are used to assess appropriateness.

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

- If cows are coming in contact with electric crowd gates, electric fences, or electric stall trainers unnecessarily, consider other options to reduce stress and pain for cows, particularly during handling.
- Ensure all employees are trained in low-stress cattle handling so electric shocks are not needed.
- Have a procedure for evaluating and maintaining electrical equipment.

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ADEQUATE LIGHTING

What is the standard?

- ✓ **All animal facilities are designed to have adequate lighting for animal observation, and for the safety of family and non-family employees with animal care responsibilities.**

What can you do to meet the standard or improve in this area?

- Evaluate your facility for areas where animals are housed that are too dark to observe animals or conduct work safely.
- If needed, install more lights or increase opportunities for natural light where possible.

Background on this standard

- **What is considered adequate?**
 - Lighting must allow for all animal observations to be conducted without the use of an additional light source (e.g., a flashlight).

What is the rationale for this standard?

Good lighting is important for worker safety as well as for observation of animals.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe available lighting and its appropriateness for animal handling activities
- **Interview:**
 - Ask employees to verify appropriateness of light to conduct responsibilities
 - If there are outbuildings with no electricity, ask if there are temporary lights that are used

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.



VENTILATION

What is the standard?

- ✓ **The facility provides proper ventilation throughout all housing facilities that reduces odors, dust, and/or noxious gas.**

Background on this standard

• What is ventilation?

- Ventilation is the intentional introduction of outdoor air into an enclosed space and exchange of stale air out of the enclosed space.
- It can be mechanical (e.g., fans) or natural (e.g., windows, curtains).
- Ventilation may slightly change the indoor air temperature, but heat and cold mitigation strategies may still be needed depending on climatic conditions.

What is the rationale for this standard?

Adequate ventilation helps prevent respiratory and other diseases by removing heat, microbes, water vapor, air pollutants, and odors from an enclosed animal facility and replacing the contaminated air with fresh air.

What does the science say?

Ensuring a consistent source of adequate ventilation and clean, fresh air movement maximizes the production potential of dairy cattle.¹ Stale air can affect milk production, as well as milk quality, on dairy farms.¹ Ventilation helps to prevent pollution in the environment, reduces mold and microorganisms, enhances air quality, and subsequently, enhances animal wellbeing.² Adequate ventilation leads to better air quality, reduces harmful gasses, improves animal welfare, and is essential for maintaining the health and production of dairy cattle.²

Proper ventilation is also important for maintaining a comfortable in-barn temperature for cattle. Cattle generate a lot of heat, and while they are quite cold tolerant, they experience heat stress at much lower temperatures than humans.³ Air temperature within the barn is highly correlated with the ventilation rate.¹ Providing good ventilation results in reduced humidity and results in optimum within-barn temperatures.²

Barns should be ventilated to provide a minimum of four air exchanges per hour in the winter, and 40-60 air exchanges per hour in the heat of the summer.³ Air quality can be improved through manure management and good air movement provided by well-designed natural or mechanical ventilation systems such as tunnel-ventilation, cross-ventilation, or positive pressure ventilation systems.^{4,5} Natural ventilation is cost effective and often preferred, particularly for calf housing.^{2,6} Natural ventilation systems rely on thermal buoyancy (i.e., warm air rising when surrounded by cooler air) for ventilation when there is no wind. In winter months, calves do not produce enough body heat to sufficiently provide thermal buoyancy; therefore, natural ventilation systems require assistance in colder months.⁶ A positive pressure ventilation system works well to provide fresh air and distribute air evenly throughout a room, which makes it a good supplement to natural ventilation in calf barns.⁶

Every farm is different. Regardless of the ventilation system used, dairy farms should select a system that³:

- Provides target air speeds in the resting area
- Achieves adequate ventilation rates year-round
- Works well across all seasons

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:**
 - Observe air quality and ventilation system functionality
 - Observe methods of odor/gas reduction (e.g., scraping, flushing, etc.)
 - Observe signs that ventilation is working properly: no ammonia smell, fans are clean and working, and curtains are in working condition
- **Interview:**
 - Ask about manure management to control odors
 - Ask about ventilation practices in summer and winter

Corrective Action or Continuous Improvement Opportunity:

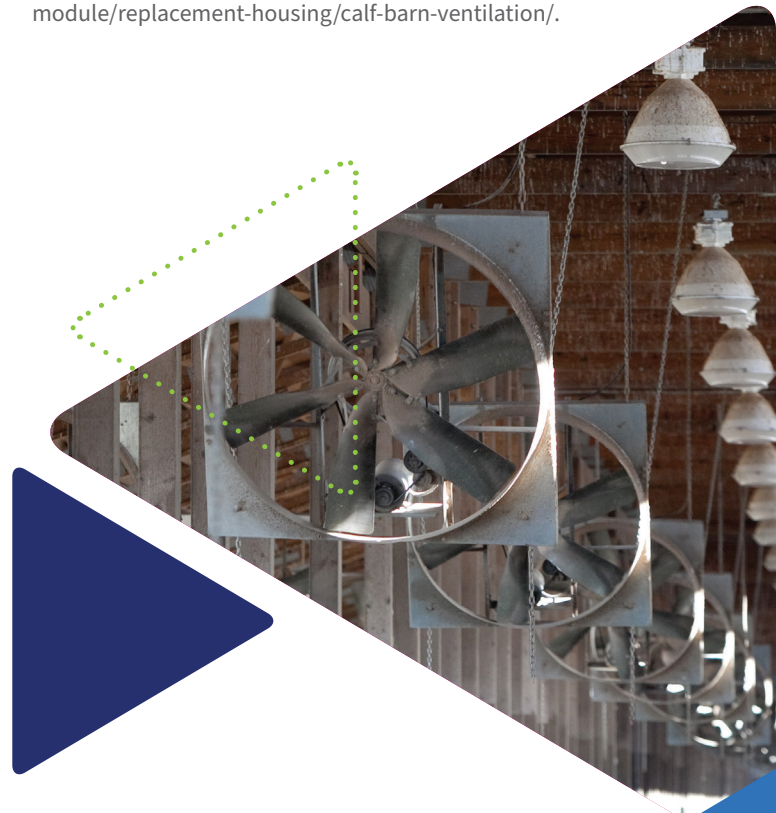
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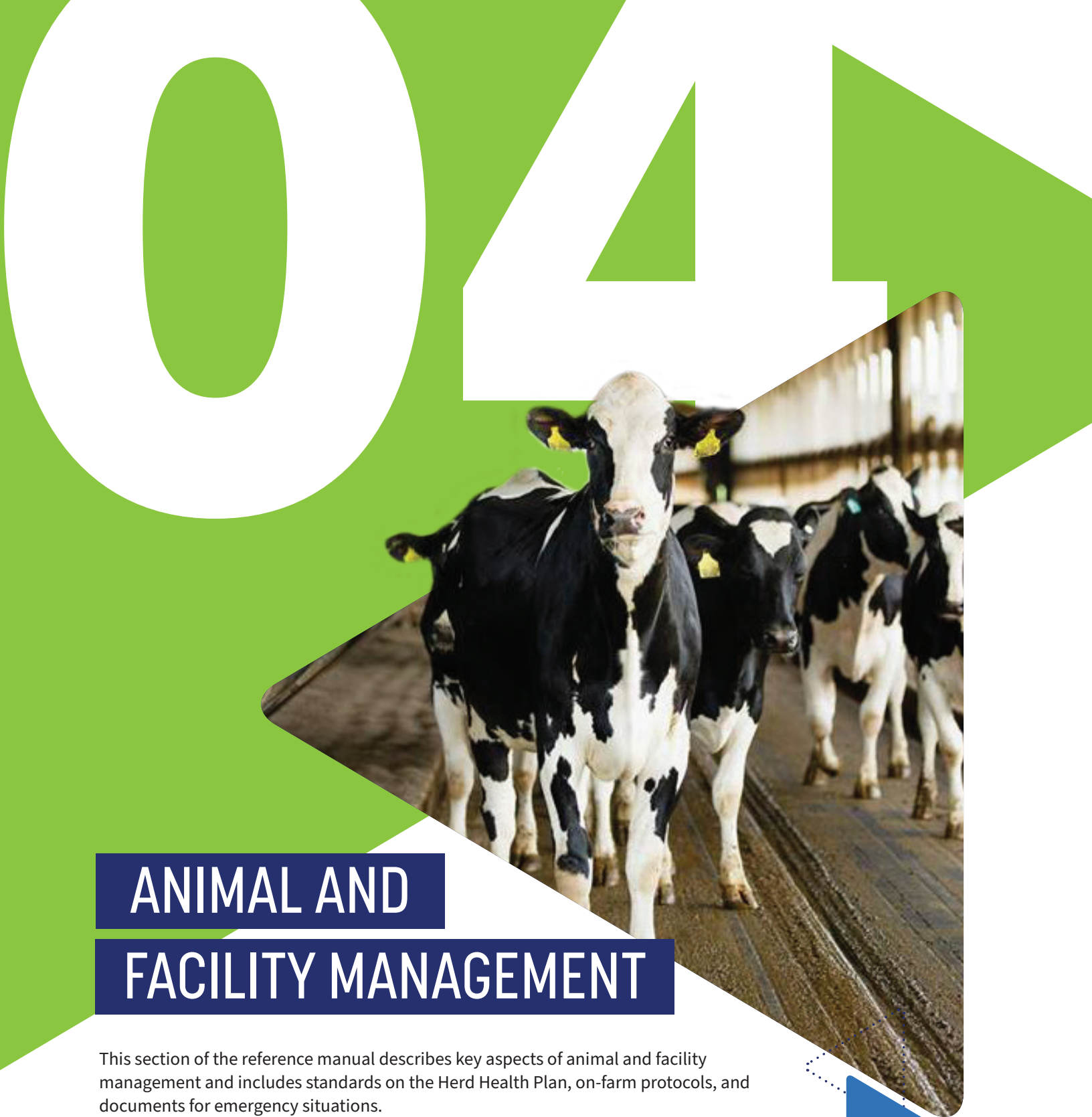
What can you do to meet the standard or improve in this area?

- Additional ventilation can be added through windows, curtains, chimneys, fans, inlets, ridge exhaust, or air tubes.
- For calves during winter, ventilation system should provide fresh air without causing drafts; a draft is defined as air moving at speeds greater than 60 feet per minute.

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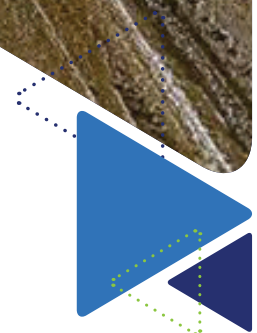
ANIMAL AND

FACILITY MANAGEMENT

This section of the reference manual describes key aspects of animal and facility management and includes standards on the Herd Health Plan, on-farm protocols, and documents for emergency situations.

What is the Herd Health Plan?

- The Herd Health Plan (HHP) consists of a series of records, protocols, and procedures that document the key practices and outcomes at the facility. Recordkeeping is required for identifying and monitoring trends in animal health and management. Written protocols and procedures are also critical to help guide animal management and care. These are key elements of a HHP and are also one of the cornerstones of animal care and responsible management.



CHECKLIST

This section of the FARM Animal Care evaluation will focus on the following standards:

- ✓ **The Herd Health Plan (HHP) includes written protocols for:**
 - The treatment of common diseases including:
 1. Diarrhea
 2. Displaced abomasum
 3. Ketosis
 4. Mastitis
 5. Milk fever
 6. Metritis
 7. Pneumonia, and
 8. Any additional routinely occurring diseases identified by the veterinarian
 - Vaccination that specifies:
 1. Age(s)/stage when vaccination given
 2. Product used
 3. Dosage administered
 4. Route of administration, and
 5. Withdrawal/withhold times
 - Lameness prevention and treatment
 - Assessing fitness to transport for all age classes that includes the definition of animals that are eligible to be transported and outlines adherence to milk and meat withdrawal/withhold times
 - Milking procedures
 - Pest, fly, and parasite control
 - Biosecurity
- ✓ **Facility management can effectively treat common diseases.**
- ✓ **Facility management can effectively vaccinate their animals.**
- ✓ **Facility management take proactive measures to prevent, and can effectively treat, cases of lameness.**
- ✓ **The facility can effectively assess and adheres to expectations related to fitness for transport.**
- ✓ **Facility management implements an effective procedure for milking lactating cattle.**
- ✓ **Facility management can effectively manage pests, flies, and parasites.**
- ✓ **Facility management can effectively manage biosecurity.**
- ✓ **The facility has a written Emergency Action/ Crisis Plan for potential emergency situations (e.g., employee injury, fire, biosecurity, natural disasters, temperature extremes, contagious disease outbreak, power failure, manure spills, etc.).**
- ✓ **Facility management can effectively manage emergencies or crises that may occur.**
- ✓ **All written protocols are translated as needed, into the languages understood by all family and non-family employees with assigned animal care responsibilities.**
- ✓ **Actions observed and described during the interview match written protocol.**



TREATMENT OF COMMON DISEASES

What is the standard?

- ✓ **The Herd Health Plan (HHP) includes a written protocol for treatment of the following common diseases: diarrhea, displaced abomasum (DA), ketosis, mastitis, milk fever, metritis, pneumonia, and any additional routinely occurring diseases identified by the veterinarian.**



Background on this standard

- **What needs to be included?**
 - Disease-specific protocols are expected to include, at minimum, a set of criteria for identifying, diagnosing, and treating the disease.
- **What is meant by “effective treatment”?**
 - An effective treatment is one that is promptly applied, reduces any pain associated with the disease, and successfully treats the symptoms of the disease.

What is the rationale for this standard?

Sick animals need to be rapidly diagnosed and treated accurately and consistently. An effective Herd Health Plan emphasizes prevention, rapid diagnosis, and quick decision-making on the necessary treatment of all sick animals. A licensed veterinarian should help a dairy farmer develop and implement a Herd Health Plan.

What does the science say?

Based on farmer reports, the most common diseases on US dairy farms are: mastitis, lameness, metritis, ketosis, diarrhea, milk fever, respiratory disease, and displaced abomasum (DA).¹ Common diseases represent a huge economic loss to the dairy industry. As disease is multifactorial, the prevention strategies used on farms are wide ranging.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm’s written protocol(s) to determine it meets the standard
- **Action Review:**
 - **Document Review:** Review treatment records to verify that treatments provided match the protocol
 - **Interview:** Interview employees responsible for/ knowledgeable about herd health management and inquire about common diseases on the farm, and ask about how they would treat and/or are treating a specific case
 - **Observation:** Observe the drug cabinet for presence/absence of drugs listed in the protocol
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

To best meet this standard:

- Ensure that your Herd Health Plan includes written protocols for the diseases mentioned above.
- Speak with your veterinarian to identify diseases that are common on your farm and their effective treatments.
- Work with your veterinarian to develop and implement treatment protocols for common diseases. Review the protocols at least annually with your veterinarian to ensure maximum effectiveness.

References

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VACCINATION

What is the standard?

- ✓ **The Herd Health Plan (HHP) includes written protocols for vaccinations that specify: age(s)/stage when vaccination given, product used, dosage administered, route of administration, and withdrawal/withhold times.**



What does the science say?

Improper use of vaccines can result in cattle that are not adequately immunized. Vaccination programs are specific to an individual herd and example factors to consider when designing a vaccination program include¹:

- Disease history
- Biosecurity
- Geographic location
- Management and housing
- Type of vaccine, such as killed or modified live
- Stage of production
- Costs and benefits

Background on this standard

- **What information should be included in a vaccination protocol?**
 - Age(s)/stage when any vaccination is given, product used, dosage administered, route of administration, and withdrawal/withhold times.
- **Do I need to vaccinate?**
 - An effective vaccination protocol is highly encouraged, but FARM standards do not outline a vaccination requirement. If you do not vaccinate, you do not need a protocol.
- **Do vaccines need to be recorded in treatment records?**
 - Vaccines are not required to be recorded in the facilities treatment records (though this is a best practice).

What is the rationale for this standard?

An effective vaccination protocol can help support the dairy in actively preventing disease and/or reducing the severity of disease. Vaccination is an important component of antimicrobial stewardship as preventing disease decreases the need for antimicrobial therapy.

A basic vaccination program should be used on every farm to enhance immunity to disease. Further vaccination strategies can be implemented based on the herd's disease history and farm risk, in consultation with the veterinarian.



How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standard
- **Action Review:**
 - **Document Review:** Review health records to verify that vaccines provided match the protocol
 - **Interview:** Interview employees with animal care responsibilities, asking about what and when vaccinations are provided to different age classes of animals
 - **Observation:** Observe the drug cabinet for presence/absence of vaccines listed in the protocol
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

To effectively meet this standard, consider the following:

- Ensure that your Herd Health Plan has an effective vaccine protocol that includes the necessary information.
- Work with your veterinarian to develop and implement an effective vaccination protocol.
- Ensure vaccines are stored correctly, mix vaccines carefully, and do not reconstitute too many doses at once and discard unused reconstituted vaccine.

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LAMENESS PREVENTION & TREATMENT

What is the standard?

- ✓ **The Herd Health Plan (HHP) includes a written protocol for lameness prevention and treatment.**



What is the rationale for this standard?

Lameness is a clinical sign of pain and/or a mechanical abnormality in how an animal walks. Lameness interferes with normal resting behavior, movement to and from the milking area, and feeding activity. Lameness also limits the expression of estrus and influences general health. Due to the negative impact on welfare, lameness should be a management priority for all dairy herds. The foot lesions most associated with dairy cattle lameness include infectious lesions like digital dermatitis (hairy heel wart) and foot rot, as well as non-infectious lesions like white line lesions and sole ulcers. Two major management strategies for preventing lameness are routine hoof trimming and foot bathing.

Background on this standard

- **What is lameness?**
 - Lameness is impaired locomotion due to a pathologic condition (i.e., foot rot or digital dermatitis), injury, or pain. In dairy cows, it is most commonly caused by hoof lesions from infectious agents, or internal and external factors.
- **What is meant by an “effective” protocol?**
 - An effective protocol for lameness prevention and treatment includes actions that successfully reduce the incidence of lameness on your farm and treat lameness cases when they arise. Meeting the benchmark for severe and moderate locomotion scoring is a good indication that your lameness protocol is effective.

What does the science say?

Lameness within the dairy industry has an estimated prevalence of 24.2% for North America.¹ The condition of lameness is most often characterized by abnormal gait or abnormal weight bearing across one or more limbs.² A number of behavioral and physiological changes have been associated with lame cows, including reduced consumption of feed dry matter (**DM**), reduced meals per day, reduced milk production, increased likelihood of cystic ovaries and delayed cyclicity, poorer reproductive performance, and increased chance of being culled,³⁻⁴ in addition to being in pain and distress.⁵ Due to these changes, lameness can have a substantial economic impact on dairy farms, with reported cost estimates between \$120 and \$216 USD per case.⁶

What causes lameness?

As lameness can have multiple causes, there are many risk factors associated with lameness, including housing, management, and cow-level factors. Housing type, access to pasture, barn flooring characteristics (slats, grooving, slippery), stall design (e.g., lunge space, distance from neck-rail to rear curb, brisket board height), bedding type (e.g., mattresses versus sand), stall base (e.g., mattresses, concrete), and bedding depth in particular have all been identified as important risk factors.^{7,8} More specifically, deep bedding with organic material or sand, rubber flooring in alleyways, and pasture access are consistently associated with lower levels of lameness, whereas the use of mats or mattresses in lying areas is consistently associated with a higher level of lameness.

Management has also been identified as being an important factor to consider with respect to lameness, where herd size and biosecurity status (open versus closed herd), frequency of hoof trimming and foot bathing, environmental cleanliness, time out of stall, stocking density, time to treatment, and breed have been identified as important factors.⁷⁻⁸ Specifically, stalls that were wet or had higher levels of fecal contamination, less preventative hoof trimming or preventative management practices, longer time away from the pen for milking, and higher stocking density have all been associated with higher lameness prevalence.

Lastly, for cow-level factors, lower body condition score (< 2.5), older parity (> 1st lactation), presence of hoof lesions, overgrown claws, injured hocks, previous cases of lameness, and longer days in milk have been associated with a higher prevalence, whereas higher milk production has been associated with a lower prevalence of lameness.⁷⁻⁸

It is important for dairy farms to have a system in place to detect lameness. Research has shown farmers consistently underestimate the prevalence of lameness on their herd, particularly mild cases of lameness.⁹ Education, training, and good recordkeeping can help farms accurately detect and diagnose lameness.

Strategies for Prevention and Treatment.

Key preventative approaches for lameness include routine preventative and corrective hoof trimming, improving hoof cushioning and traction through access to pasture or adding rubber flooring, deep-bedded stalls, sand bedding, ensuring appropriate stocking densities, reduced holding times, and the frequent use of routine footbaths.⁷

One of the major strategies for the control of lameness is routine hoof trimming, with the goal of maintaining correct weight bearing and minimizing and preventing the development of claw-horn lesions.¹⁰ Hoof trimming is beneficial for lameness management, as well as improving the welfare and production of dairy cows.¹¹ Depending on the lesion type and severity level, hoof trimming may induce immediate painful sensation, stress, changes in lying down activities and reduction in milk yield, but the positive impacts were more evident at later stages of lactation following improvement in locomotion score.¹¹ Therapeutic trimming consists of the removal of all necrotic and loose or undermined horn to create an aerobic environment and minimize the possibility of abscess formation. This is followed by adjusting weight bearing on diseased or damaged claws.¹² Therapeutic trimming of cows identified with lameness leads to high recovery from lameness; however, recovery is dependent on the severity of the lameness, with severely lame cows being less likely to recover.¹³ This is why early identification of lameness is critical to improve the outcome of the lameness case.

Concrete walking surfaces are a risk factor for lesions; a number of strategies have been investigated to reduce lesions in dairy cattle. Allowing pasture access has been reported as one strategy for improving hoof health.¹⁴ Improved resting time achieved through deep-bedded stalls,¹⁵ sand bedding, prevention of overcrowding, proper stall design, and reduced time standing waiting to be milked¹⁶ or held in headlocks, are each thought to reduce the levels of claw horn lesions.¹⁷ Therefore, ensuring that resting time is maximized can aid in preventing lesions of the claw.

With respect to digital dermatitis, several control strategies have been recommended for digital dermatitis, including maintaining a clean, dry environment, individual topical treatment of affected cows, and footbathing.¹⁸⁻²⁰ Footbaths have been demonstrated to be effective in controlling digital dermatitis, with copper sulfate being effective in reducing prevalence.²¹⁻²³

In addition to managing pain through corrective trimming and hoof blocks, the use of analgesics (non-steroidal anti-inflammatory [**NSAIDs**]) drugs in particular, such as Ketoprofen,²⁴⁻²⁷ flunixin meglumine,²⁸ oral meloxicam,²⁹⁻³¹ has been demonstrated to aid in recovery of lameness.³²⁻³³

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**

- Review the farm's written protocol(s) to determine it meets the standard

- **Action Review:**

- **Interview:** Interview employees with animal care responsibilities, asking about how they prevent and treat cases of lameness
- **Observation:**
 - Consider the results of animal observations for lameness

- Observe the facility for presence/absence of tools and equipment (e.g., chute, footbath, footbath chemicals) that are used

- **Matching:**

- Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

To effectively meet this standard, consider the following:

- Ensure that your Herd Health Plan has an effective protocol for the prevention and treatment of lameness.
- Work with your veterinarian, hoof trimmer, and/or other farm advisors to implement an effective prevention, detection, and treatment protocol for lameness on your farm.
- Lameness may be reduced by:
 - Routine surveillance for lame cows coupled with prompt, effective treatment
 - Routine use of foot baths
 - Improved flooring
 - Providing adequate time for daily rest by minimizing time out of the pen
 - Avoiding overstocking
 - Maintaining TNZ
 - Preventive hoof trimming

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FITNESS TO TRANSPORT

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for assessing fitness to transport for all age classes that includes the definition of animals that are eligible to be transported and outlines adherence to milk and meat withdrawal/withhold times.**



Background on this standard

- **Does this standard apply to all age classes?**
 - Yes. While the focus of this standard has typically focused on those animals that are being shipped to slaughter, and the importance of food safety, the principles of fitness to transport apply to all age classes of animals on the farm including calves.
- **Are expectations different for animals being transported to locations other than slaughter?**
 - Animals should always be evaluated for fitness prior to any journey. While the intended destination may not be slaughter, adherence to milk and meat withdrawal/withhold times should always be considered prior to transport.
- **Are fitness to transport requirements different for calves compared to adult animals?**
 - Young animals are at greater risk for illness or injury during transport. Given the vulnerability of calves, extra considerations should be given when assessing their fitness for transport. The transportation guidelines outlined below should be applied to all age classes of animals; however, it is important to recognize the importance of safely transporting fit calves and particular attention should be paid to this group.

What is the rationale for this standard?

Good animal care includes ensuring that welfare is a priority at all stages of animal life, including when they leave your facility and are transported elsewhere. Transport can be a stressful experience for cattle; therefore, extra attention should be given to animals when being transported to and from locations. Careful consideration should go into deciding which animals can and cannot be transported, and ensuring safety and comfort during transport.

What does the science say?

Factors such as duration of transport, weather, proximity of transport to stressful procedures, and conditions of transport should be considered when transporting animals. Research demonstrates that risk of mortality and morbidity increases with longer animal transport times, particularly for calves and compromised animals, as they are at an increased risk of experiencing challenges during transport.^{1,2} For trips longer than 19 hours, consider stopping and providing electrolytes and feed, as it has been shown to reduce dehydration especially in calves.³ In fact, the Twenty-Eight Hour Law stipulates that if animals are transported for longer than 28 consecutive hours, they must be offloaded for at least 5 consecutive hours.⁴

The transport experience should be made as comfortable as possible for animals in transit. This includes transporting all animals in a trailer that is clean, safe, secure, and that has sufficient space for the number of animals being transported.^{5,6} Handling during transport can be a cause of stress for cattle.⁷ Therefore, there is a need for proper management and handling during transport and the the process of loading and unloading animals should be conducted in such a manner to minimize stress on the animals.⁸

Special Considerations for Calf Transport

The American Association of Bovine Practitioners (AABP) transportation guidelines⁹ specify that calves should be sufficiently fit prior to transportation, which includes newborn calves having received colostrum or colostrum replacer, and young calves having received milk, water, and feed. The AABP also states that calves should be dry, well hydrated, able to stand without assistance, and healthy (free from illness and injury).

Calves are more susceptible than adult cattle to the stressors encountered during transport. The stress associated with aspects of transportation, such as physical restraint, commingling, dehydration, and extreme thermal environments, can lead to inflammation and immunosuppression in calves, which increases disease susceptibility and compromises calf well-being.¹⁰

The impact of transport-related stressors is impacted by various factors, such as calf age, distance of travel, season, and commingling.⁹

Longer duration of transport in calves (16 hours vs. 6 hours) resulted in greater incidence of diarrhea and respiratory disease in the 14 days after transport¹¹ and negatively affected their lying time, resulting in more fatigue.¹² Beyond the duration in transit, the age at which calves are transported has also been found to impact their risk of disease. Specifically, a study in Canada found that calves transported at greater than one week of age experience improved health and growth following transport,¹¹ whereas a study in the Netherlands found that calves transported at 28 days of age had greater growth and lower mortality and disease treatment compared to calves transported at 14 days of age.¹³



Determining Fitness to Transport

When assessing animals for fitness to transport, consider an animal unfit to transport if the answer to any of the following questions is “yes”:

Is the animal dehydrated? Transport should be delayed for any animals that appear to be dehydrated. Dehydrated calves in particular are at greater risk of disease during transport.

Is the animal non-ambulatory or is there a good chance they may become non-ambulatory during transport? Animals cannot be marketed if they are non-ambulatory. Animals that are dehydrated, injured, or sick are at greater risk of becoming non-ambulatory during transport.

Does the animal have a poor Body Condition Score (i.e., BCS less than two)? Animals with poor BCS may be weak, injured, or ill and should not be transported without special considerations.

Is the animal severely lame? During transport, animals must continuously shift their weight to remain standing for the duration of the trip. Severely lame animals will be unable to do this without experiencing significant pain. If transportation is necessary for short distances, special considerations should be made.

Does the animal have any bone fractures of the limbs, injuries to the spine, or open wounds? Injured animals will be unable to shift weight to remain standing on a trailer without experiencing pain. Transport may also increase the risk of infection for open wounds.

Does the animal have an active case of disease? Symptoms of disease can be amplified during transport, stress associated with transport can reduce an animal’s ability to fight an illness, and transport increases the risk of exposure to new diseases.

Consider the following when making decisions related to culling and transporting dairy animals to market:

1. Do not move non-ambulatory animals to market under any circumstances.
2. Make the decision to treat, cull, or euthanize animals promptly. Sick and injured animals should be segregated from the herd.
3. Delay transport for animals that appear to be exhausted or dehydrated until the animal is rested, fed, and rehydrated.
4. Milk all cows that are still lactating just prior to transporting to a packing plant or processing facility.
5. Use a transportation company that is knowledgeable about your animal care expectations and provides for the safety and comfort of animals during transport.
6. Do not transport animals to a packing or processing facility until all proper treatment withdrawal/withhold times have been followed.
7. Do not transport animals with a poor body condition (BCS less than two).
8. Do not transport heifers or cows where calving is imminent and likely to occur during transportation or marketing process.
9. Do not transport animals that require mechanical assistance to rise and walk, except to receive veterinary treatment.
10. Do not transport animals with bone fractures of the limbs or injuries to the spine .
11. Do not transport animals with conditions that will not pass pre-slaughter inspection. These conditions⁸ include, but are not limited to:
 - Cancer eye, blindness in both eyes
 - Drug residues
 - Fever greater than 103° F
 - Peritonitis
 - Cows that are calving or have a high likelihood of calving during transport
 - Fractures or lameness (three or greater on the FARM locomotion scale)
 - Distended udders causing pain and ambulatory issues
 - Unreduced prolapses
 - Visible open wounds
 - Suspected central nervous system symptoms

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standard
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, asking about how they assess fitness to transport in each age class
 - **Observation:** Observe animals that have been identified for transport (if applicable)
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Always consult with your veterinarian if you are unsure if an animal should be transported.
- Use the criteria above, listed in the "Determining Fitness to Transport" section to determine if your animals are fit to be transported.
- **Do not transport animals:**
 - That are non-ambulatory
 - Until all proper milk and meat withdrawal/ withhold times have been followed
 - With bone fractures of the limbs or injuries to the spine
 - In poor body condition, generally a body condition score of less than two
 - With conditions that risk their well-being and are unlikely to pass pre-slaughter inspection. These conditions⁸ include, but are not limited to:
 - Cancer eye, blindness in both eyes
 - Drug residues
 - Fever greater than 103° F
 - Peritonitis
 - Cows that are calving or have a high likelihood of calving during transport
 - Fractures or lameness (three or greater on the FARM locomotion scale)
 - Distended udders causing pain and ambulatory issues
 - Unreduced prolapses
 - Visible open wounds
 - Suspected central nervous system symptoms

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MILKING PROCEDURE

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for milking procedures.**



Background on this standard

- **What should a protocol for milking procedures include?**
 - Protocol should include milking steps (e.g., forestrip, dip, wipe, attach, postdip), requirements for milkers (e.g., wear gloves), timings, as well as expectations for cattle handling.

What is the rationale for this standard?

Proper milking is important for animal welfare, animal health, and product quality.

Milking is a critical procedure on dairy farms with numerous considerations, including milking equipment and maintenance, sanitization, cleanliness, pre-milking preparation, unit attachment and alignment, timings, and cattle handling.

All milking equipment should be regularly maintained and checked for vacuum level, pulsation rate and pulsation ratio. The timing of milkings should be such that ideally the total time out of the pen for each milking is less than one hour for the last cow milked. Cattle handling is key to successful milking, and all animal caretakers with milking responsibilities should behave in a calm and controlled manner throughout the milking process.

What does the science say?

A farm's milking routine can create multiple daily interactions between cows and their caretakers. Animal caretakers should never display aggressive or aversive behavior towards cattle. Numerous studies have found a fear of humans decreases productivity in dairy cows.^{1,2}

Properly maintained milking equipment and appropriate milking procedures can prevent disease transmission and improve milk quality.³ Milking practices associated with lower herd somatic cell count (**SCC**) include: wearing gloves during milking, using automatic take-offs, using post-milking teat dipping, milking problem cows last, and annual milking system inspections.⁴

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standard
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, asking about the typical milking procedure
 - **Observation:** Observe if employees are calm, quiet, and following the steps outlined in the protocol
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

- Work with your evaluator, veterinarian, or other trusted advisors to prepare a protocol and review best management practices to maximize milk quality, efficiency, and low-stress cattle handling during milking.

Consideration for cattle handling during milking:

- The preparation routine that signals the beginning of milking should be consistent and as low stress to the cow as possible.
- Avoid medical examinations or unpleasant experiences from being associated with the place of milking.
- Cows should be moved without excessive vocal or physical interaction, resulting in calm movement in the parlor.
- Animal handlers should walk against the flow of cows coming into the parlor, paying attention to the reaction of the cattle and adjust for balking or stopping.
- Gates and restraining equipment should operate smoothly, quietly, and safely.
- The pre-milking holding area on farms with a parlor is typically the place with the highest animal density on the farm:
 - Design the holding area's flooring, space, sidewalls, and entrance to the milking parlor to be comfortable for the cows and to prevent injuries.
 - Use the crowd gate (if present) appropriately, without pushing the cows too hard.
 - Use fans, sprinklers, or other technology to ensure cows are comfortable in the holding area.

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PEST, FLY, & PARASITE CONTROL

What are the standards?

- ✓ **The Herd Health Plan (HHP) includes a written protocol for pest control.**
- ✓ **The Herd Health Plan (HHP) includes a written protocol for fly control.**
- ✓ **The Herd Health Plan (HHP) includes a written protocol for parasite control.**

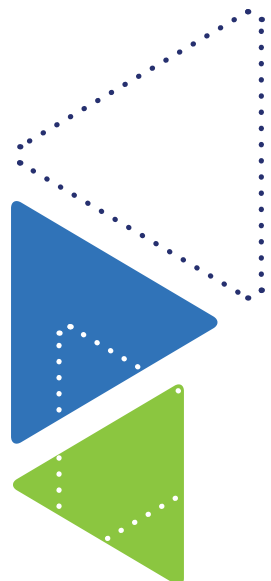


Background on these standards

- **Are three separate protocols required to meet these standards?**
 - One protocol that specifies direction for the control of all three areas (pests, flies, and parasites) is sufficient; three separate protocols would also be acceptable
- **Are there additional expectations if chemicals and/or medications are used for pest, fly, and parasite control?**
 - If chemical methods are used, the protocols for use must adhere to state regulations. Antiparasitic medication must follow veterinarian advice, as well as considerations for any meat/milk withdrawals/withholds; these should also be recorded in treatment records.

What is the rationale for these standards?

Controlling pests, parasites, and flies on your farm is an important part of a thorough and effective herd health program. Parasites, pests, and flies are carriers and transmitters of diseases, which can impact the health of you and your animals. Additionally, the presence of flies, pests, and parasites interferes with the comfort of animals and the humans caring for them.



How is these standards evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, asking about pest, fly, and parasite control strategies
 - **Observation:**
 - Observe facilities and animals for pest presence (e.g., droppings, bags of feed that have been chewed, evidence of mange or lice, etc.)
 - Observe facilities and animals for fly presence
 - Observe that cows are not bothered by flies
 - Observe animals and health and treatment records for parasite issues
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

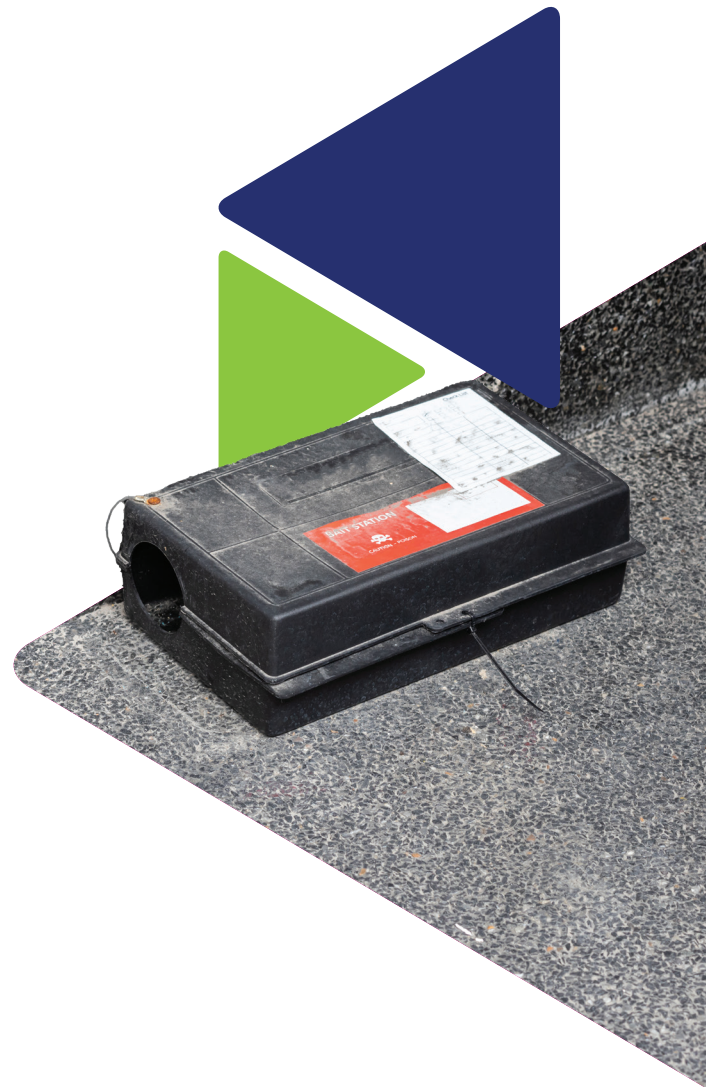
Corrective Action or Continuous Improvement Opportunity:

These standards are not associated with a corrective action.

What can you do to meet these standards or improve in this area?

In order to meet this standard, consider the following:

- Ensure that your facility has a protocol in place for controlling pests, flies, and parasites, and that the protocol is implemented correctly.
- Exercise caution to avoid contaminating feedstuffs when implementing pest control, as contaminants may pass into the animals' bodies and milk.
- A certified pesticide applicator or a pesticide service may be used.
- Read and follow label directions for all pesticide products.



BIOSECURITY

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for biosecurity.**



Background on this standard

- **What is biosecurity?**
 - Biosecurity refers to management practices that are used to prevent and/or reduce the introduction or spread of disease.

What is the rationale for this standard?

Biosecurity can prevent the introduction and spread of disease on your farm, which is an important part of protecting the health and welfare of you and your animals. Preventing incidence of disease on your farm can protect humans from zoonotic diseases, as well as animals from harmful pathogens. Sound biosecurity protocols demonstrate a commitment to animal health and food safety. As part of an effective Herd Health Plan, all farms should have a written biosecurity protocol that has been developed in consultation with their herd veterinarian.¹⁻⁴

What does the science say?

Biosecurity on a dairy farm includes three key parts: preventing the introduction of disease, preventing the spread of disease within a farm, and preventing the spread of disease to other farms, humans, or wildlife. Infectious diseases threaten the health and welfare of humans

and animals, as well as dairy production, farm efficiency, and dairy product quality¹. Biosecurity measures are necessary at both the individual farm level, as well as the national level, to prevent the introduction and spread of infectious diseases.¹⁻²

Common risks for disease introduction and transmission include³:

- The introduction of new animals, or animals from other locations, into the herd.
- Feed that has been contaminated by manure or water being spread on fields.
- Vehicles and/or people coming onto the farm.
- Contaminated drinking water.

Biosecurity risks, such as purchasing cattle without performing diagnostic testing, are common.⁵ If you need to introduce new cattle to a herd, consider performing disease testing before purchase, requesting health information (e.g., vaccination, treatment records, hoof trimming) for all new cattle, and having a plan for separating and monitoring incoming cattle.

Biosecurity practices effectively limit the spread of disease within an infected herd, particularly when focused on management of sick cows, manure, and the calving area.¹ Practices to control within-herd disease spread include: vaccination, calving pen management (e.g., ample bedding, disinfect regularly, remove calves promptly), good ventilation, clean and disinfect calf housing, minimize the contact young calves and heifers have to manure from cows, and keeping sick cows separate from fresh cows.^{4,5}

Four key aspects of a sound biosecurity program include^{6,7}:

1. Hazard identification
2. Exposure assessment
3. Risk characterization
4. Risk management

Disease-specific monitoring and control programs have also been developed for common infectious diseases, such as bovine viral diarrhea, Johne's disease, and salmonellosis.¹

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, asking about biosecurity strategies
 - **Observation:**
 - Observe biosecurity management throughout the facility
 - Observe if employees and visitors are following farm protocols
 - Observe for signs posted to alert any visitors of the biosecurity protocols
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

In order to meet this standard, consider the following:

- Ensure your facility has a written protocol for biosecurity that includes all components relative to your farm
- Review FARM Biosecurity for more information and additional resources on best practices for implementing biosecurity on your farm.
- Items to consider in developing a biosecurity protocol may include:
 - Animal health and disease monitoring (including feed, water)
 - Animal movements and contact (including pest control)
 - Animal products
 - Vehicles and equipment (including carcass, manure management)
 - Personnel
 - Cleaning and Disinfection
- Train all employees on biosecurity protocols to ensure that measures are being implemented correctly on-farm.
- Speak with your veterinarian to identify areas of risk on your farm that can be mitigated with implementing biosecurity measures.
- Some suggestions for managing biosecurity on your farm include:
 - Buy animals from herds with a verified health status
 - Test cattle from outside sources for common diseases
 - Separate new, returning, and sick animals from the rest of the herd
 - Limit livestock contact to people who follow your biosecurity steps
 - Provide handwashing stations and gloves for all animal handlers



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ABOUT FARM BIOSECURITY

The National Dairy Farmers Assuring Responsible Management (FARM) Biosecurity Program provides producers with the steps to get started and build additional protections for their cattle. FARM Biosecurity has two parts: Everyday Biosecurity for common disease threats and Enhanced Biosecurity for highly contagious foreign animal diseases (FAD). The FARM Biosecurity resources aim to protect cattle, build resiliency, and ensure future business continuity opportunities for the dairy industry.



Everyday Biosecurity

The FARM Biosecurity – Everyday program includes a manual, worksheets, and a biosecurity plan template for producers to demonstrate the steps they take daily to protect the health of their animals. The Everyday Biosecurity Manual builds on the foundation for animal health described in the FARM Animal Care program. The Manual includes practical and effective management practices to protect cattle and people from disease exposure. The Step 1 worksheet identifies movement risks. The Step 2 checklist finds biosecurity strengths and gaps. The Step 3 template guides producers through writing an everyday biosecurity plan specific to their farm. All resources align with the Enhanced Biosecurity steps. The goal of FARM Biosecurity – Everyday is to prevent or lessen the impact of common disease threats like contagious mastitis, respiratory infections, and calf scours. More information at: <https://nationaldairyfarm.com/dairy-farm-standards/farm-biosecurity/>

Enhanced Biosecurity

The FARM Biosecurity – Enhanced program includes an online database to develop an enhanced biosecurity plan (EBP). Stronger, or enhanced, levels of biosecurity will be needed to protect cattle against the highly contagious foot-and-mouth disease (FMD) found in two-thirds of the world. One FMD case in the U.S. could shut down movement of cattle and their products across the nation for at least 72 hours. The Secure Milk Supply (SMS) Plan for Continuity of Business was developed to help the dairy industry prepare for this situation. The SMS Plan provides enhanced biosecurity guidance for producers to voluntarily prepare before an outbreak. This is the basis of the FARM Database – Enhanced Biosecurity. Creating a dairy-specific plan and putting it in place will be needed in an FMD outbreak to prevent exposure. The database also gives producers the option to share a completed copy of their SMS EBP with state officials for review. More information at: <https://securemilksupply.org/>





EMERGENCY ACTION/ CRISIS PLAN

What is the standard?

- ✓ **The facility has a written Emergency Action/Crisis Plan for potential emergency situations (e.g., employee injury, fire, biosecurity, natural disasters, temperature extremes, contagious disease outbreak, power failure, manure spills, etc.).**



Background on this standard

- **What is an emergency?**
 - Serious and unexpected situations that require immediate action; examples of emergencies include: employee injury, natural disasters, temperature extremes, contagious disease outbreak, power failure, manure spills, etc.

What is the rationale for this standard?

Having a plan for how to act and who to call during times of emergency is the key to minimizing impact. Planning for emergencies is an important component of ensuring your animals are well cared for even in times of crisis. Having an emergency action/crisis plan in place will help you feel prepared for whatever situation may occur, and ensures that appropriate action will be taken to care for you, your farm, and your animals in the event of an emergency.

Emergency Action Plans should include:

- Identification of potential emergency situations.
- The following components for each potential emergency situation:
 - Actions to take in an emergency situation
 - Designated people in charge of performing those actions
 - Individuals given authority to perform specific action when emergency occurs
 - Communication flow for quick and accurate information sharing
 - Data and information related to: site, utilities, evacuation routes, road conditions, equipment/materials involved, injuries, and locations of resources
 - Emergency supplies and equipment
 - Training and documentation of the training on the execution of the emergency plan for all involved, including employees and first responders
 - Response scenarios options
 - Sheltering in place
 - Note: Plan should be relevant to the area – if the area is prone to forest fires or hurricanes, procedures to follow in the event of these occurring should be included

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, asking about any recent emergencies and how they would respond in the event of certain emergencies
 - **Observation:** Observe facilities indicators of emergency/crisis preparedness (e.g., signs, fire extinguisher, clearly posted exit areas, etc.)
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

In order to meet this standard, consider the following:

- Ensure your facility has a written emergency action plan.
- Ensure that all employees are made aware of the emergency action plan and are familiar with the contents, protocols, and procedures within the plan.
- Consider providing additional training and/or practice examples of emergency situations for all farm employees to practice implementing the emergency action plan.
- Consider creating a map of your farm that identifies key areas around the facility. This map can be posted in an easily visible area to help guide emergency personnel if needed.



TRANSLATING PROTOCOLS

What is the standard?

- ✓ **All written protocols are translated as needed, into languages understood by family and non-family employees with animal care responsibilities.**

Background on this standard

- **Do protocols need to be translated for roles which employees do not have responsibilities for?**
 - Protocols must only be translated for roles that employees have responsibilities for. Only protocols for which a given employee has responsibilities must be available in a language that is understood by that employee. For example, calf care protocols will only need to be translated for employees that have calf care responsibilities.

What is the rationale for this standard?

To ensure the best understanding of job expectations, protocols should be translated into languages understood by those with animal care responsibilities. Best practices for animal health and welfare can only be implemented if the individuals responsible for animal care have a strong understanding of their roles, responsibilities, protocols, and expectations.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Interview:** Determine what languages employees speak/read.
- **Document Review:** Confirm that the relevant protocols are translated into relevant languages that can be understood by all employees.

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

In order to meet this standard, consider the following:

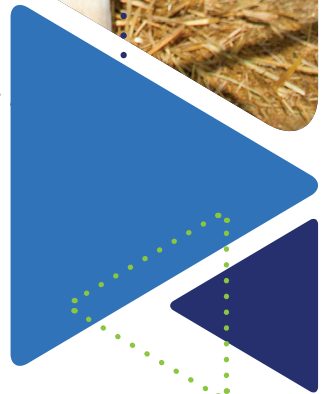
- Ensure that all written protocols are translated into languages that can be understood by the relevant employees.
- Ensure that all employees are made aware of the protocols available for their role and in their preferred language.
- Written protocols can utilize images or other learning tools to enhance the understanding of the content of a protocol.





PRE-WEANED CALVES

The pre-weaned calf section of this manual outlines animal care standards focused on calf health and welfare. This section focuses on calves in the pre-weaning period, with standards evaluating facilities and calf management, calf feeding, and calf care. Maintaining good care, health, and welfare of all calves is important. Calf care should be consistently provided for all calves, both bulls and heifers. Unless otherwise stated, the standards within this section apply to both pre-weaned heifer and bull/steer calves.



CHECKLIST

This section of the FARM Animal Care evaluation will focus on the following standards:

- ✓ **The Herd Health Plan (HHP) has a written protocol for pre-weaned calf care that includes language specific to:**
 - Difficult calvings (dystocia)
 - Moving calves by lifting, walking, or the use of clean, properly designed transport devices
 - All pre-weaned calves (heifers and bulls) receiving an adequate volume and quality of colostrum or colostrum replacer within 6 hours after birth, even if immediately transported off of the farm
 - All pre-weaned calves (heifers, bulls, and steers) having access to clean, fresh water appropriate for climatic conditions by day 3
 - All pre-weaned calves (heifers, bulls, and steers) receiving a volume and quality of milk or milk replacer to maintain health, growth, and vigor until weaned or marketed
 - All pre-weaned calves (heifers, bulls, and steers) being offered fresh, palatable starter feed by day 3 to maintain health, growth, and vigor
 - Calves being disbudded before 8 weeks of age using caustic paste or cautery (if performed on-farm)
 - Calves receiving pain mitigation for disbudding (if performed on the farm)
- ✓ **Facility management effectively manages difficult calvings (dystocia).**
- ✓ **All pre-weaned calves (heifers, bulls, and steers) are moved by lifting, walking, or the use of clean, properly designed transport devices.**
- ✓ **All pre-weaned calves (heifers, bulls, and steers) receive a volume and quality of colostrum or colostrum replacer within 6 hours after birth, even if immediately transported off of the farm.**
- ✓ **All pre-weaned calves (heifers, bulls, and steers) receive a volume and quality of milk or milk replacer to maintain health, growth, and vigor until weaned or marketed.**
- ✓ **All pre-weaned calves (heifers, bulls, and steers) have access to clean, fresh water appropriate for climatic conditions by day 3.**
- ✓ **All pre-weaned calves (heifers, bulls, and steers) are offered fresh, palatable starter feed by day 3 to maintain health, growth, and vigor.**
- ✓ **Calves are disbudded before 8 weeks of age using caustic paste or cautery (if performed on-farm).**
- ✓ **Pain mitigation is provided for disbudding (if performed on-farm).**
- ✓ **The calving area is clean, soft, dry, well-lit, and well-ventilated.**
- ✓ **Actions observed and described during the interview match written protocol.**

DIFFICULT CALVING (DYSTOCIA)

What is the standard?

- ✓ The Herd Health Plan (HHP) includes a written protocol for difficult calvings (dystocia).



Background on this standard

- What is “dystocia”?
 - Dystocia is a difficult or abnormal calving that can happen at any stage of labor.

What is the rationale for this standard?

Difficult calvings, also known as dystocia, have significant health and welfare impacts on both the dam and the calf. During a dystocia, intervention may be required to help with delivery. However, the outcome is often dictated by how and when an intervention is provided. When considering perinatal mortality (death of the calf within 48 hours of calving), dystocia is the most important risk factor.¹ In fact, when a dystocia occurs, the risk of perinatal mortality is six times higher. This risk increases as the grade of dystocia increases, meaning that as the level of calving assistance increases (easy pull to hard pull to veterinarian assistance to cesarean section), the risk of perinatal mortality increases as well.¹

What does the science say?

Dystocia is important to consider, as it impacts the health and welfare of both calves and their dams in direct and negative ways. Consequences of dystocia for calves include an increased risk^{1,2} of:

- Mortality
- Treatment for respiratory disease
- Treatment for diarrhea
- Hypothermia
- Mortality up to 30 days of age

Cows also experience significant impacts of dystocia, such as reduced conception rate and milk production,^{1,3} as well as an increased risk^{1,3,4} of:

- Culling
- Mortality
- Retained placenta
- Metritis
- Mastitis
- Hypocalcemia
- Experiencing dystocia in subsequent calvings

Dystocia is modifiable, meaning that there is opportunity to influence the risk of a dystocia occurring. The following factors¹ are associated with dystocia, some of which can be managed to reduce the risk of dystocia:

- **Calf birth weight.** This is one of the most important predictors of dystocia risk. With every 1 kg increase in body weight, the odds of dystocia increase by 13%.
- **Calving body condition score.** Cows calving at a body condition of three or higher are more likely to experience dystocia.
- **Genetics.** Genetics can influence birth weight and subsequent risk of dystocia.
- **Parity.** First-time calvers have the highest risk of dystocia, likely due to small pelvic size at calving and a greater risk of having a pelvic diameter that is not large enough for the calf to easily pass through.

- **Abnormal fetal position.** Most influenced by the presence of twins. With strong calving supervision and effective intervention, the impact of dystocia can be reduced.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, asking about how difficult calvings are managed
 - **Document Review:** Review health records of animals that have experienced a difficult calving and discuss how it was managed with employees
 - **Observation:** Observe calving area for presence of tools (e.g., calf jack) that may be used for assisted calving
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

- Know the risks associated with dystocia and how to identify signs of a difficult calving.
- Be prepared with support systems to act quickly if a dystocia occurs (e.g., trusted veterinarian that is available for emergency situations).
- Keep records of all instances of dystocia, including the severity of the pull for each case. Records can be kept in the maternity area to help identify trends and/or inform management decisions.

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What can you do to meet the standard or improve in this area?

It is important that you are prepared to manage a dystocia if it were to arise on your farm. Some things to consider are:

- Consult with your veterinarian and employees to develop a protocol for managing dystocia that works well for your farm.
- Conduct dystocia training for employees in consultation with your veterinarian.

MOVEMENT OF CALVES

What is the standard?

- ✓ The Herd Health Plan (HHP) has a written protocol for pre-weaned calf care that includes language specific to moving calves by lifting, walking, or the use of clean, properly designed transport devices.



Background on this standard

- **What are acceptable methods of transporting calves?**
 - Calves should be transported by lifting, walking, or using clean, properly designed transport devices.

What is the rationale for this standard?

Calves must be moved in a calm, controlled, and gentle manner to prevent stress and reduce the risk of injury. If used, equipment used to transport calves should always be clean to prevent the spread of pathogens.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, asking how calves are moved
 - **Observation:**
 - If possible, observe calves being moved from the maternity pen to the calf housing area
 - Observe maternity/calving area and any other location where pre-weaned calves are handled for the presence of calf movement equipment
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

Ensuring that calves are moved in an appropriate, safe way is important for animal safety and welfare.

- Create a protocol for how to best move calves in an acceptable manner that works for your facility.
- All calf care employees should be trained on how to properly handle and move calves using the method identified in your farm's protocol.

▶ COLOSTRUM

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for pre-weaned calf care that includes language specific to all pre-weaned calves (heifers and bulls) receiving a volume and quality of colostrum or colostrum replacer within 6 hours after birth, even if immediately transported off of the farm.**



Background on this standard

• What is colostrum?

- Colostrum is the first milk produced by the dam directly after giving birth to her calf. Good colostrum management is often referred to as the most important factor for improving and sustaining calf health¹. Colostrum is so important for calf health because it includes a variety of compounds that are instrumental for strong development of the calf's immune system and gut microbiome. Colostrum contains high levels of immunoglobulin G, which is critical to protect the calf against disease, as well as other components that can assist the calf with healthy development, such as hormones and growth factors.

• What are acceptable methods of feeding colostrum?

- Bottle feeding, nursing from the dam, tube feeding.

• How is colostrum quality defined?

- Farms must have a meaningful way of assessing the quality of the colostrum being fed. This can include: bacteria count, refractometer, colostrometer, or visual observation. Indirect measures, such as calf morbidity and mortality measurements, could help convey that quality is adequate.

• How can farms demonstrate that they meet this standard?

- Farms may demonstrate compliance with the “action” component of this standard in two different ways. Evaluators will also work with the farm to collect information using the chosen option to determine whether the farm meets the requirements. Farms can choose which option they use, providing flexibility in how they meet the standard.

1. Provide Evidence of Successful Transfer of Passive Immunity: While not the sole option to satisfy the standard, one method is if a farm is able to provide evidence of successful transfer of passive immunity (90% or more of calves that have been tested have successful passive transfer), as demonstrated through recent records (completed within the last eight weeks). Sampling calves for testing would involve choosing calves between 24 hours to nine days of age. A minimum of 12 calves should be sampled. This is done by obtaining and testing a blood sample. There are a number of different methods that can be used to evaluate the blood parameters to assess whether successful transfer of passive immunity has occurred. A sample that falls into the “Fair” category or better in the table³ below would be considered as having successful transfer of passive immunity.

2. Meet Quantity, Quality, and Timeliness Guidelines. While the outcome is transfer of passive immunity, providing evidence of successful transfer of passive immunity may not be possible or preferred on some farms (e.g., due to costs, logistics, personal preferences). Another approach to assessing this standard is to collect information on proxy indicators of what research suggests is important to achieve a high rate of transfer of passive immunity. Farms wishing to use this option will need to provide evidence that they meet the following criteria:

- **Quantity.** Each calf is expected to receive roughly 8-10% of its birth weight in colostrum at the first feeding. For example, a 100 lb calf would need to receive five quarts or more of colostrum to achieve 10% of its birth weight.

- **Quality.** Farms must have a meaningful way of assessing the quality of the colostrum being fed: bacteria count, refractometer, colostrometer, or visual observation (farms must have at least one but not all methods). Indirect measures that could help convey that quality is adequate are calf morbidity and mortality.
- **Timeliness.** Standard operating procedure should be that calves must receive their first feeding of colostrum within the 6-hour time frame stated in the standard.



Category	Serum IgG (g/L)	Total Protein (g/dL)	% Brix	Target (% calves) ¹
Excellent	> 25.0	> 6.2	> 9.4	> 40
Good	18.0 – 24.9	5.8 – 6.1	8.9 – 9.3	~30
Fair	10.0 – 17.9	5.1 – 5.7	8.1 – 8.8	~20
Poor	< 10.0	< 5.1	< 8.1	< 10

What is the rationale for this standard?

Colostrum feeding is one of the largest influences on the long-term health and well-being of calves. The goal with colostrum feeding is to ensure that successful transfer of passive immunity from the dam to the calf is achieved. When calves receive colostrum, they are receiving essential components from the dam to help build their immune system. So, we feed colostrum to ensure that the calf's immune system is developed properly and as soon as possible. If this is unsuccessful, it is referred to as Failed Transfer of Passive Immunity (FTPI). Preventing FTPI is one of the most important components of calf management.

What does the science say?

Calves with FTPI have²:

- 2 x higher mortality
- 1.5 x higher diarrhea
- 1.75 x higher pneumonia
- 2 x higher treatment for disease

FTPI can be prevented by providing an adequate volume (4-5 quarts for a Holstein) of high-quality colostrum (50 or more g of IgG/L of colostrum) quickly after birth. Generally, adequate volume of colostrum would be approximately 10% of the calf's body weight of colostrum. Calves must receive colostrum by 6 hours after birth. Protocols exist for how to sample calves to test for FTPI.⁴ Work with your veterinarian to determine a sampling protocol that works for you and your farm.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, asking about colostrum management protocol
 - **Observation:**
 - Observe animal health records for morbidity and mortality
 - Observe calf housing and calf management area to observe calves receiving colostrum (if applicable), colostrum feeding tools and equipment, and/or colostrum replacer or frozen colostrum (if applicable)
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

If your calves are not meeting your goals for colostrum management, consider the following:

- Revisit your colostrum management plan to determine if it is still working for your farm by asking yourself:
 - Are your calves getting enough colostrum?
 - What is the quality of the colostrum that they are receiving?
 - How soon after birth are calves receiving colostrum?
- Consult with your veterinarian to determine where there might be improvements in your colostrum feeding protocol (e.g., feeding more colostrum, feeding better quality colostrum, feeding colostrum sooner after birth).
- Keep detailed calf records. Specifically, track calf morbidity and mortality and benchmark these data against your farm's previous records to identify changes in trends. Calf health records can also be reviewed to look for growth rates and/or body condition scores of weaned animals.
- Consider the various options for how to evaluate colostrum quality and select one that will work well with your farm.
- Use your calves as a guide to tell you how well your colostrum management protocol is working. Ask yourself the following:
 - Do your calves look healthy?
 - Do you experience significant health issues/immunodeficiencies with your calves?
 - Do your calves suffer from illness/disease?

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WATER ACCESS

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for pre-weaned calf care that all pre-weaned calves (heifers, bulls, and steers) having access to clean, fresh water appropriate for climatic conditions by day 3.**



Background on this standard

- **Does water need to be available at all times?**
 - Water does not need to be available at all times for all age classes (e.g. pre-weaned calves), but it must be offered routinely and as appropriate for climatic conditions.
- **What is considered “clean”?**
 - Water that is significantly soiled and/or contaminated with feces, dirt, mud, or manure, and/or has algae growing would be considered too dirty. For calves, milk contaminates fresh drinking water.

What is the rationale for this standard?

Water is an important part of the healthy development of pre-weaned calves. Feeding milk or milk replacer should not be a substitute for water. Providing water to calves immediately after birth can improve growth and development of calves pre- and post-weaning, by stimulating rumen development, and increasing starter intake and nutrient availability.¹ Water is the most essential ingredient in any livestock feeding operation.

What does the science say?

Water is needed for hydration and rumen development. Providing water early in life leads to more intake of solid feed/calf starter and increase in weight gain. Providing water to calves early in life, alongside calf starter, improves rumen development and increases starter intake, milk intake, body weight, and digestibility.^{1,2}

As calves increase their intake of starter feed, their need for water increases as well. For every one part of starter provided to calves, they should receive four parts of water. Calf water requirements are impacted by environmental temperature. The hotter it is outside, the more water calves will need. In the colder months, calves will drink more water if they are warm. Providing calves with water can reduce chronic stress and lead to less non-nutritive oral behavior, like cross-sucking. Most calves offered milk allowances from 4.2 to 6.3 qts/d drank between 1.1 and 2.6 qts/d of water from birth.³ What is notable is that consumption of water begins from the first day of life⁴ to 4 days of age,⁵ when offered. Offering water from birth also tends to improve growth.¹

Cattle are also sensitive to contamination of water. They can detect and will avoid even small amounts of manure in their drinking water.⁶ They will also drink less when water is contaminated with manure⁴ or dissolved minerals.⁷

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:**
 - Interview employees with animal care responsibilities, verify times when water is provided and that volume is appropriate to climatic conditions
 - Interview appropriate employees if water is not available during time of observation
 - **Observation:** Confirm water is available for calves. Observe all watering mechanisms for cleanliness (must pass visual cleanliness test).
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

What can you do to meet the standard or improve in this area?

Providing clean, fresh water to all pre-weaned calves by day three can be achieved by:

- Ensuring that all calf housing facilities are equipped with a method of providing water to pre-weaned calves, such as hanging buckets, individual water troughs, or automatic water systems.
- Provide water in vessels that are easy to empty and clean so that water can be changed regularly. Large, communal troughs are hard to empty, clean, and refill, so they are more likely to encourage bacteria build up.
- Test the water that is offered to calves and used for mixing milk replacers to make sure that the pH, mineral content, and bacterial counts are correct.

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

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1. Wickramasinghe, H.K.J.P, A.J. Kramer, and J.A.D.R.N. Appuhamy. 2019. Drinking water intake of newborn dairy calves and its effects on feed intake, growth performance, health status, and nutrient digestibility. *J. Dairy Sci.* 102:377-387. <https://doi.org/10.3168/jds.2018-15579>.
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MILK FEEDING

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for pre-weaned calf care that includes language specific to all pre-weaned calves (heifers, bulls, and steers) receiving a volume and quality of milk or milk replacer to maintain health, growth, and vigor until weaned or marketed.**



Background on this standard

- **What is meant by “health, growth, and vigor”?**
 - Calves (heifers and bulls) should be provided with a sufficient volume of high-quality milk or milk replacer to aid them in growth and development. The volume and quality of milk or milk replacer must be sufficient enough to ensure calves remain in good health (low instances of morbidity and mortality), grow at the appropriate rate for their age/breed, and have good physical strength and energy (vigor).

What is the rationale for this standard?

Feeding high planes of nutrition with milk or milk replacer is critical to getting calves off to a good start in life. Feeding greater amounts of milk or milk replacer in the pre-weaning period increases weight gain, improves immune response, and aids in healthy development. Calves fed more milk at an earlier age have reduced incidences of disease, improved growth and development, and a greater chance of positive outcomes later in life, such as production and longevity.

What does the science say?

Feeding a high plane of milk nutrition (8-12 quarts of milk per day) through the pre-weaning period leads to:

- Lower treatment for disease
- Improved recovery from diarrhea
- Improved immune function
- Reduced abnormal oral behaviors (e.g., cross-sucking)

This high plane of milk nutrition also has benefits beyond health including:

- Improved growth and feed efficiency
- Earlier age at sexual maturity and calving
- Improved mammary gland development



SEE THE SCIENTIFIC REVIEW ON PAGE 96 FOR MORE DETAILS.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:**
 - Employees with calf care responsibilities, verify times when milk/milk replacer is provided and that volume is appropriate to maintain health, growth, and vigor
 - Appropriate employees if not available during time of observation
 - **Observation:**
 - Review calf body condition scores
 - Standard is not met if BCS benchmark not met
 - Observe calves and determine if they appear to be thriving, versus dull, depressed, and thin throughout the pre-weaning period
 - Confirm milk/milk replacer is available for calves
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

What can you do to meet the standard or improve in this area?

Starting calves off on the right foot is critical for their growth, development, and health in all stages of life. You can improve the nutrition of your pre-weaned calves by:

- Ensuring that all calves (bulls and heifers) are receiving sufficient quantities of milk or milk replacer by evaluating their health and growth. Monitor calves for disease, mortality, and body condition.
- Use your calves as a guide to tell you how well your milk or milk replacer protocol is working. Ask yourself the following and consult your veterinarian and nutritionist if you are unsure:
 - Do your calves look healthy?
 - Do you experience significant health issues/immunodeficiencies with your calves?
 - Do your calves suffer from illness/disease?

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

▶ IMPACT OF HIGH MILK NUTRITIONAL PLANE ON HEALTH, GROWTH, AND WELFARE

SCIENTIFIC REVIEW

Executive summary

When feeding a high nutritional plane (typically defined as > 20% body weight (BW)/day (d) in milk) compared to a low nutritional plane (10% BW/day), many benefits have been found, including:

- **Growth and productivity**
 - Higher preweaning growth rates
 - Improved preweaning feed efficiency
 - Contributes to improved milk production in first lactation
- **Health**
 - Lower levels of diarrhea
 - Improved recovery from diarrhea
 - Reduced treatment for disease in the pre-weaning period
 - Improved immune function
- **Welfare**
 - Reduced cross-sucking
 - Lower signs of hunger (or unrewarded visits to an automated milk feeder)
 - Increased play behavior
 - Reduced number of vocalizations
 - Improved wound healing

Growth and productivity

There is agreement in the literature that when calves are offered high milk nutritional planes (> 20% BW/d) compared to restrictive planes of nutrition (10% BW/d), calves have higher preweaning growth rates (Table 1) and improved preweaning feed efficiency.^{1,2,3}

This higher level of growth has been shown to increase first lactation milk yield (every 2.2 lb of preweaning average daily gain (ADG) = +1,874 to 2,454 lb more milk in first lactation;⁷ every 0.22 lb/d increase of preweaning ADG = 342 lb more milk in first lactation,⁸ every 0.22 lb/d increase of preweaning ADG = 287 lb more milk in first lactation⁹). The mechanism for the increased milk production is likely due to physiological differences in mammary cells. Specifically, when higher levels of nutrients are fed in the preweaning phase, an increased mammary parenchymal mass and increased number of secretory cells and metabolic activity occurs in parenchymal tissue.^{10,11}



Table 1:

Average Daily Gain of Calves Fed on High Nutritional Plane (volume fed)	Average Daily Gain of Calves Fed on Low Nutritional Plane (volume fed)
1.87 lbs/d (ad lib) ⁴	0.79 lbs/d (10% BW/d) ⁴
1.72 lbs/d (ad lib) ⁵	1.05 lbs/d (10% BW/d) ⁵
1.98 lbs/d (13 qt/d) ⁶	1.69 lbs/d (6 qt/d) ⁶
1.76 lbs/d (11 qt/d) ¹	1.10 lbs/d (5 qt/d) ¹

Health

Plane of milk nutrition has been shown to impact immune function, especially in challenge studies. Ollivett et al. (2012) fed calves either 20% BW/d or 10% BW/d in milk replacer and inoculated calves with *Cryptosporidium parvum*.¹² Calves in the 20% BW/d group resolved diarrhea faster and gained more weight over the 21 days following challenge (0.95 lb/d vs -0.09 lb/d) compared to the 10% BW/d. In addition, Ballou (2012) found that a higher plane of milk nutrition (20% BW/d vs 10% BW/d) led to improved post-weaning innate immune responses.¹³ Other studies have shown a reduction in the number of cases of diarrhea. Specifically, Khan et al. (2007) found that calves on a high plane (20% BW/d) had a reduction in the number of cases of diarrhea at three and four weeks of age compared to calves fed a low plane (10% BW/d).¹⁴ Todd et al. (2017) found that ab lib fed calves tended to have a lower risk of preweaning disease (1% vs. 5%) compared to calves fed 6.3 qt/d.¹⁵ It is important to note that in other studies, no differences were found with respect to the level of disease;^{5,16} however, no studies have found an increase in diarrhea incidence.

Welfare

Programs that limit milk consumption (i.e., fed twice daily at 10% BW/d [by volume]) place feed restrictions on calves, increasing hunger and restricting their ability to express natural feeding behavior.¹⁷ These disadvantages, in terms of calf welfare, are evident in the poorer growth rates (as highlighted above) as well as behavioral signs of hunger, including increased non-nutritive sucking (cross-sucking¹⁸), less resting time (4.2 qt/d vs. ab lib¹⁶), higher number of unrewarded visits to feeder (a sign of hunger; [5.1 qt/d vs 9.7 qt/d];¹⁹ [10% BW/d vs ad lib];²⁰ [4.2qt/d vs. ab lib];¹⁶ [6.3 qt/d vs. 12.6 qt/d]³), decreased play behavior (6.3 qt/d vs. 12.6 qt/d),²¹ and increased vocalizations (5.3 qt/d vs. 8.5 qt/d).²² Cumulatively, research in this field points to low planes of nutrition compromising calf welfare due to hunger.

There is additional evidence that calves on a higher plane of nutrition have faster wound healing after disbudding. Reedman et al. (2022) fed calves up to 15.9 qt/d or 6.3qt/d of milk and disbudded calves at 18 to 25 days of age. Calves being fed 15.9 qt/d of milk had faster re-epithelialization (or healing) of the disbudding wound compared to calves fed 6.3qt/d.²³

Adoption of high milk feeding planes

The National Animal Health Monitoring System's (NAHMS) Dairy 2014 calf component study included 104 dairy operations in 13 states. In this study, Urie et al. (2018) found that the average amount of milk provided was 6 qt/d.²⁵ In the larger NAHMS study, which surveyed 1,261 operations across 17 states, the amount of milk fed was broken down into the following categories: < 4 qt per day (3.1%), 4-5 qt per day (53.3%), 6-7 qt per day (21.3%), 8-9 qt per day (16.2%), and 10 or more qt per day (6.1%).²⁴ Unfortunately, there are not any more recent published data across the United States describing the amount of milk fed. There is, however, a study completed in Wisconsin where 188 producers were surveyed in 2019. Overall, 58% of respondents reported feeding seven or more quarts of milk per day to 4-week-old calves and 40% reported feeding less than seven quarts per day.²⁶ When surveying feeding practices on dairy farms across the U.S., 50% of dairy farmers housing their calves individually, and 66% of dairy farmers housing their calves in groups or pairs, fed eight or more quarts to their 4-week-old calves.²⁷

In Canada, the National Dairy Study (similar to NAHMS) was conducted in 2015 and surveyed 1,373 dairy farms across Canada. The mean maximum amount of milk or milk replacer that was offered to calves per day was 8.7 qt,²⁸ with 33% of producers offering < 6.3 qt per day. A more recent study conducted using responses from 289 producers from Ontario and Atlantic Canada found that on average 8.5 qt of milk was offered per day and 22% offered less than 6.3 qt per day.²⁹

For additional details on this topic, see the following review:

Welk, A., N.D. Otten, and M.B. Jensen. 2023. Invited review: The effect of milk feeding practices on dairy calf behavior, health, and performance—A systematic review. *J. Dairy Sci.* 106:5853-5879. <https://doi.org/10.3168/jds.2022-22900>.

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STARTER FEED

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for pre-weaned calf care that includes language specific to all pre-weaned calves (heifers, bulls, and steers) being offered fresh, palatable starter feed by day 3 to maintain health, growth, and vigor.**



Background on this standard

- **What is meant by “health, growth, and vigor”?**
 - Calves (heifers and bulls) should be provided with starter feed to aid them in growth and development. The volume and quality of starter feed must be sufficient enough to ensure calves remain in good health (low instances of morbidity and mortality), grow at the appropriate rate for their age/breed, and have good physical strength and energy (vigor).

What is the rationale for this standard?

Starter feed is necessary for calves to support them in their growth and development, and assist them with meeting nutritional requirements. Feeding calf starter supports and enhances rumen development and is critical to supporting calves through the transition from pre- to post-weaning.

What does the science say?

Providing starter feed earlier in life has shown to be beneficial for rumen development and increasing nutrient digestibility post-weaning:

- Early consumption of starter feed and dry matter is important for preparing calves to be successful in the post-weaning period.
- Consuming starter feed earlier supports rumen development and size, metabolic activity, microbial colonization, and development of the gastrointestinal tract.^{1,2,3}

Calves eating even a small amount of starter feed is useful.^{4,5,6}

- The introduction of starter earlier in life allows calves to become better accustomed to solid feed, supports feed intake throughout the pre-weaning period, and can improve the transition from liquid to a dry matter diet.
- Feeding small amounts of starter at the initial stages (e.g., a handful) is recommended by industry professionals and nutritionists.



How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**

- Review the farm's written protocol(s) to determine it meets the standards

- **Action Review:**

- **Interview:**

- Employees with animal care responsibilities, verify times when starter is provided and that amount is appropriate to maintain health, growth, and vigor
- Appropriate employees if not available during time of observation

- **Observation:**

- Review calf body condition scores
- Standard is not met if BCS benchmark not met
- Observe calves and determining if they appear to be thriving, versus dull, depressed, and thin throughout the pre-weaning period
- Confirm starter is available for calves by day three

- **Matching:**

- Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Feeding calf starter early in life is important for health, growth, and rumen development. Feed small amounts of starter feed at the initial stages of calf life. Even a handful per day is a good start!

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AGE AT DISBUDDING

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for pre-weaned calf care that includes language specific to calves (heifers, bulls, and steers) being disbudded before 8 weeks of age using caustic paste or cautery (if performed on-farm).**



Background on this standard

- **What is disbudding?**
 - The AVMA and AABP identify disbudding as the destruction of horn-producing cells within the poll of young calves,^{1,2} which is typically performed using either caustic paste or a hot iron.
- **What is dehorning?**
 - The AABP defines dehorning as the removal of horns after the horn-producing tissue has attached to the skull.²
- **Is disbudding required?**
 - Disbudding is not a requirement of the FARM program. However, if a farm routinely removes the horns of their animals, this practice is expected to be done prior to eight weeks of age.
- **What disbudding methods are acceptable?**
 - For calves less than eight weeks of age, caustic paste and cautery are the only acceptable methods of disbudding.

What is the rationale for this standard?

Disbudding can be done with various methods; however, all methods are painful.^{3,4} Disbudding calves within the first eight weeks of life involves damaging the horn-producing cells around the calf's poll to prevent horn growth. After eight weeks of age, horns show evidence of attachment to the skull.^{5,6} Disbudding is shown to be less painful than dehorning because the process of horn removal at this age is less invasive.^{4,7} Therefore, disbudding calves within the first eight weeks of life is best practice.

What does the science say?

Caustic paste disbudding and cautery (or hot iron) disbudding are the two most common methods for disbudding calves⁸ and are the only acceptable methods of horn removal permitted under the FARM Program. Calves over the age of three months typically require horns to be removed by surgical amputation, which is more invasive and less common. Assessment of cortisol levels following disbudding is a common indicator of pain and stress in calves. Research shows that cortisol levels rise in the first 15–30 min post-disbudding and remain elevated for up to seven hours after the procedure.⁸ One study compared the rise in cortisol occurring in calves disbudded using cautery and by scooping, and clearly demonstrated that cautery caused less distress than the scoop method, even when pain control was offered.⁹ While cortisol levels increase regardless of the disbudding procedure used, amputation dehorning demonstrates a larger cortisol response than disbudding methods, with levels elevated for eight or more hours.⁸ In general, performing procedures earlier in life results in less tissue damage,¹⁰ which may result in faster healing times.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, verify when and how calves are disbudded
 - **Observation:**
 - Observe pre-weaned and post-weaned calves for evidence of disbudding; observe adult cattle for presence of horns
 - Observe facilities for presence of disbudding tools/equipment
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

What can you do to meet the standard or improve in this area?

If you're having trouble meeting this standard, here are some things to consider:

- Revisit your disbudding schedule to determine if it's still working for your farm. If you do not have a written disbudding schedule, consider working with your advisors and calf-management team to create a plan for disbudding your calves on a consistent, routine schedule, so you always meet the eight-week mark.
- If you experience a large number of your calves growing horns even after you disbud early in life, talk with your veterinarian about your disbudding method to see if there are better options for your farm. Changing your disbudding method, or disbudding process, could make a big difference in the success of your horn management program.

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

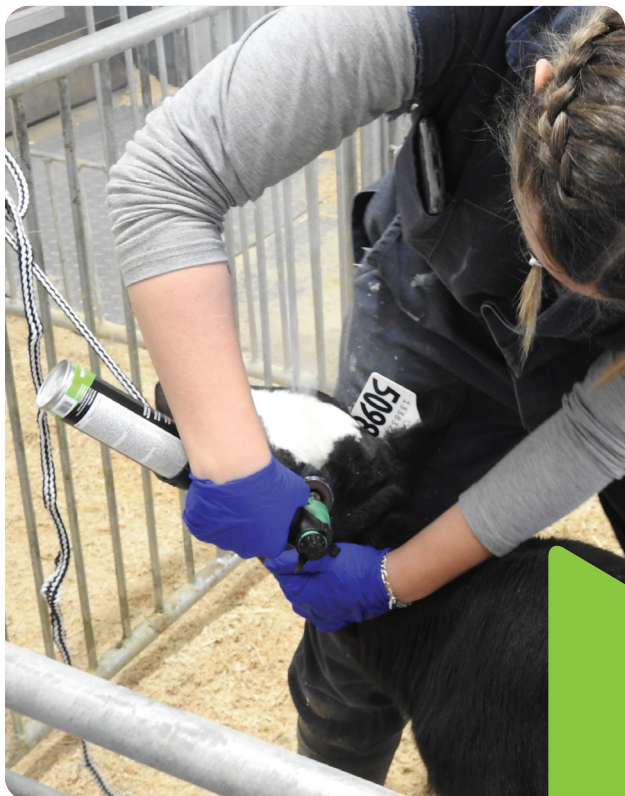
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PAIN MITIGATION FOR DISBUDDING

What is the standard?

- ✓ The Herd Health Plan (HHP) has a written protocol for pre-weaned calf care that includes language specific to calves (heifers, bulls, and steers) receiving pain mitigation for disbudding (if performed on-farm).



Background on this standard

- **What is disbudding?**
 - The AVMA and AABP identify disbudding as the destruction of horn-producing cells within the poll of young calves,^{1,2} which is typically performed using either caustic paste or a hot iron.
- **Which disbudding methods are acceptable?**
 - For calves less than eight weeks of age, caustic paste and cautery are the only acceptable methods of disbudding.
- **What is best practice for pain mitigation for disbudding?**
 - The use of a local anesthetic in combination with a non-steroidal anti-inflammatory drug (NSAID) has been shown to significantly reduce the cortisol response from disbudding procedures (caustic paste and cautery).³⁻¹⁰
- **What if my veterinarian recommends no pain management?**
 - As outlined by AABP¹ and AVMA², and further described below, all methods of disbudding, regardless of age and method, cause pain. It is therefore a requirement that all calves receive pain mitigation for disbudding.

What is the rationale for this standard?

While commonly done to improve the safety of humans and animals on the farm, disbudding is a painful process regardless of the method.^{11,12} Using pain control medication, however, can virtually eliminate the pain associated with this practice.³⁻⁸ All forms of disbudding and dehorning are painful for calves. Practicing pain management is one of the most important things you can do to improve the welfare of your calves during and after this procedure.

What does the science say?

Caustic paste disbudding and cautery (or hot iron) disbudding are the two most common methods for disbudding calves.⁹ Calves over the age of three months typically require horns to be removed by surgical amputation, which is more invasive and less common. Assessment of cortisol levels following disbudding is a common indicator of pain and stress in calves. Research shows that cortisol levels rise in the first 15-30 min post-disbudding and remain elevated for up to seven hours after the procedure.⁹ The use of a local anesthetic in combination with a non-steroidal anti-inflammatory drug (NSAID) has been shown to significantly reduce the cortisol response from disbudding procedures (caustic paste and cautery).³⁻¹⁰ Use of an NSAID in combination with a local anesthetic is considered best practice, as it has shown strong evidence of significantly reducing the pain response associated with hot iron and caustic paste disbudding.⁵⁻¹⁰

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, verify if pain mitigation is offered during disbudding
 - **Observation:** Observe drug cabinet and treatment records for presence/use of pain mitigation medications
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

Utilizing pain management is an important step in your disbudding protocol. To achieve better outcomes with this standard, here are some things you can do:

- Talk to your veterinarian about available pain management options that would work well for your farm. Research shows that best practice includes the use of a non-steroidal anti-inflammatory drug (NSAID) with a local anesthetic block to significantly reduce both long- and short-term pain.
- Make sure that you're always prepared to disbud with pain control by having medications in stock and up to date.
- Ensure that all calf care employees are trained on how to use pain control for disbudding and that training resources, protocols, and all necessary information is available in a common area.

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CALVING AREA

What is the standard?

- ✓ **The calving area is clean, soft, dry, well-lit, and well-ventilated.**

What is the rationale for this standard?

The area that a calf is born into will impact their health and welfare at the time of birth. A clean, soft, dry, well-lit, and well-ventilated calving area has many health benefits for newborn calves. Ensuring that the calving area is soft and well-lit creates a comfortable environment for the calf in their first hours of life. Providing a clean, dry, and well-ventilated area during and after birth will reduce the risk of calves contracting disease and benefits the health of newborn calves.

What does the science say?

Sufficiently bedding the calving area provides comfort, traction, insulation, and warmth.¹ Clean bedding also keeps the calving area dry, which helps to prevent the spread of disease. Research shows that removing old bedding from the calving area and routinely providing fresh bedding helps to reduce the incidence of illness in calves, such as diarrhea and Johne's disease.^{1,2} Sufficient space is required within the calving area, as adult cattle will seek seclusion to give birth.³⁻⁵

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:**
 - Evaluate the calving area to determine if it is clean, soft, dry, well-lit, and well-ventilated

- Observe the hygiene score of close-up, dry cows, and fresh cows
- Observe the hock and knee injury scores of close-up, dry cows, and fresh cows
- Observe signs that ventilation is working properly: no ammonia smell, fans are clean and working, and curtains are in working condition
- Observe available lighting and its appropriateness for animal handling activities

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

Providing a good start for calves in their first hours of life is critical. It is also important to consider the implications of the calving area on adult animals. To improve the outcome of this standard on your farm, you can:

- Ensure that your calving area has sufficient, clean, and dry bedding at all times.
- If the calving area appears to be poorly lit, identify areas where additional natural or artificial lighting can be added.
- Monitor the calving area to ensure that it is well ventilated and make necessary adjustments if the ventilation appears to be poor.
- Monitor the calving area frequently, especially close to expected calvings.
- Consider the number of animals in the calving area. If the stocking density within the calving area is too high, additional space should be provided. If there are too many animals within the given space allowance, this can contribute to the cleanliness of the calving area, as well as the available lying space.

References

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A black and white cow is lying down in a bed of straw. In front of the cow are two black bowls. The background shows a wooden fence and some hay. The image is partially obscured by a large green graphic on the left and a blue graphic on the bottom right.

NON-AMBULATORY ANIMAL MANAGEMENT

This section of the reference manual describes the standards for moving, managing, caring for, and housing non-ambulatory animals.

CHECKLIST

This section of the FARM Animal Care evaluation will focus on the following standards:

- ✓ **The Herd Health Plan (HHP) has a written protocol for non-ambulatory animal management that:**
 - Includes language specific to the proper movement of non-ambulatory animals, including the use of special equipment
 - Indicates they are provided with prompt medical care
 - Indicates they receive feed, water, protection from heat and cold for typical climatic conditions, isolation from other ambulatory animals, and protection from predators
- ✓ **Non-ambulatory animals are moved using proper methods including the use of special equipment.**
- ✓ **Non-ambulatory animals are provided prompt medical care.**
- ✓ **Non-ambulatory animals are provided access to feed, water, protection from heat and cold for typical climatic conditions, isolation from other ambulatory animals, and protection from predators.**
- ✓ **There is a location provided to segregate weak and/or injured animals.**
- ✓ **Actions observed and described during the interview match written protocol.**

PROPER MOVEMENT

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for non-ambulatory animal management that includes language specific to the proper movement of non-ambulatory animals, including the use of special equipment.**



Background on this standard

- **What is a non-ambulatory animal?**
 - The AABP defines non-ambulatory cattle as those that are disabled or compromised and unable to rise, stand, and/or walk without human assistance¹
 - Non-ambulatory cattle are also referred to as “downer”, “down” cattle, and/or recumbent cattle
- **What is considered “proper movement” of non-ambulatory animals?**
 - Acceptable methods of moving non-ambulatory animals include:
 - ✓ Sled
 - ✓ Belting with reinforced sides
 - ✓ Bucket loader/skid steer (must be large enough for the whole animal)
 - ✓ Sling
 - ✓ Palletted forklift with a supportive base
 - Hip lifts should never be used to move non-ambulatory animals beyond assisting them to reach a standing position.

What is the rationale for this standard?

Non-ambulatory cattle are a medical emergency. When cows are down, secondary muscle and nerve damage can occur due to the weight of the cow. Being non-ambulatory for prolonged periods can be painful and decreases the chance of a full recovery for the animal. Moving an animal incorrectly can lead to further injury and reduce the cow’s ability to recover.

What does the science say?

The initial cause of recumbency in cattle (e.g., hypocalcemia, infection, trauma) can be painful and cause primary damage for the animal. However, secondary damage can also occur due to cows being non-ambulatory for prolonged periods of time.²

Research shows that secondary damage is very common among down cows. In fact, secondary damage from being recumbent can be more important in determining a cow’s chance of recovery than the primary damage.³

Down cow recovery is positively impacted by the quality of care received. High-quality care improves the chances of a cow recovering from the original cause of her recumbency, and reduces the likelihood that secondary damage will occur.⁴

Secondary damage can be reduced and/or prevented by:

- Providing high-quality nursing care with access to feed and water³
- Periodically rolling and lifting the down cows to allow blood flow to the tissues¹

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, discussing how non-ambulatory animals are moved, and what specific equipment is used
 - **Observation:**
 - Observe facility for presence of equipment used for non-ambulatory animal movement
 - Observe any non-ambulatory animals being moved (if applicable)
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

Down cattle are an animal welfare emergency. In order to successfully meet this standard, consider the following when dealing with non-ambulatory cattle:

- Ensure that your facility is prepared by being equipped with the proper tools and equipment for moving down cattle.
- Always have a protocol in place for how to move non-ambulatory cattle in case of an emergency.
- Non-ambulatory cattle should be handled and moved by qualified personnel in a manner approved by a veterinarian that minimizes stress and trauma while providing assisted support (e.g., bucket, sled, or sling) over the shortest distance possible.¹
- Movement should not involve dragging unless it is determined to be absolutely necessary by a veterinarian and done according to an approved protocol.¹
- Hip lifts should never be used to move down cattle.
 - Hip lifts should not be used to move or lift an animal off all four feet.
 - Hip lifts should not be used for anything except for to lift animals to standing and switch positions.
 - Hip lifts should not be used to facilitate prolonged standing or for horizontal movement.
- It is unacceptable to use forks without a supportive base (e.g., un-palletted forklifts) to move down cattle.
- The herd veterinarian can help in determining the most common causes of down cattle and assist with developing the most cost-effective strategies to prevent them.
- Establish a down cow care team that works together to properly move cows when an animal goes down at the facility.

References

1. American Association of Bovine Practitioners. 2020. Care and disposition of non-ambulatory and injured ambulatory cattle. Accessed May 17, 2024. https://www.aabp.org/Resources/AABP_Guidelines/non-ambulatory2020.pdf.
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PROMPT MEDICAL CARE

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for non-ambulatory animal management that includes language that indicates they are provided with prompt medical care.**



Background on this standard

- **What is considered “prompt” medical care?**
 - Prompt medical care refers to care being applied at the earliest moment possible.
 - It is recommended that non-ambulatory animals are provided with medical care immediately upon discovery.

What is the rationale for this standard?

Non-ambulatory animals can experience pain due to primary damage associated with the cause of being recumbent, as well as secondary damage inflicted by being immobile. Chance of recovery, reduction in pain, and likelihood of experiencing secondary damage can be impacted by the quality and speed of receiving care.

What does the science say?

After 24 hours of being non-ambulatory, the odds of recovery are three times lower than cows that were recumbent for less

than 24 hours.¹ Down cattle can experience secondary damage due to being immobile for prolonged periods of time.² Recovery from recumbency is affected by the quality of and speed at which care is received. Higher-quality care will improve the chances of recovery and reduce the likelihood of additional damage occurring.³

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm’s written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, discussing how non-ambulatory animals are managed and when care is provided
 - **Observation:**
 - Observe the non-ambulatory animal care area and animals
 - Review treatment records to identify timelines of treatment of non-ambulatory animals reflect promptness of care
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times. If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

Down cattle are an animal welfare emergency. In order to successfully meet this standard, consider the following when dealing with non-ambulatory cattle:

- Evaluate your management plan for down cattle to ensure that you are able to provide medical care as soon as possible. Revise your management plan if necessary.
- Ensure that your facility is prepared by being equipped with the proper tools and equipment for providing prompt medical care to down cattle.
- Always have a protocol in place for how to assist down cattle.
 - Include protocols for when to treat, call for veterinary assistance, and/or euthanize a down cow
- Key questions to ask when determining how to best assist non-ambulatory cattle:
 - Are there obvious injuries or illnesses preventing her from standing?
 - If the answer is 'Yes'; who will provide treatment and how will they be contacted? The animal must be treated before asking her to stand.
 - Employees should be able to identify injuries and illnesses and determine the next immediate course of action. For example, everyone should know the clinical symptoms of milk fever.
 - Is the floor slippery or wet?
 - To help the cow attempt to stand, provide traction by spreading sand or bedding
 - Is there enough room for the cow to stand?
 - Make sure there is adequate front lunge room (four feet) before asking her to stand, and be sure the area you ask her to lunge into is better than the area she is currently positioned in.
 - How is the cow lying?
 - Is she lying normally or are her back legs split? Can she recover where she is?
- Your herd veterinarian can help determine the most common causes of non-ambulatory cattle in your herd and assist you with developing the most cost-effective strategies to prevent them.

References

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FEED, WATER, PROTECTION, ISOLATION

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for non-ambulatory animal management that includes language that indicates they receive feed, water, protection from heat and cold for typical climatic conditions, isolation from other ambulatory animals, and protection from predators.**



Background on this standard

- **What is meant by “provided access to feed and water”?**
 - Feed and water must be close enough for the animal to reach, and water must be replenished/offered routinely.

What is the rationale for this standard?

Non-ambulatory cows are compromised and need special attention if they are to recover. Providing down cattle with better quality care will improve their chances of recovery.¹

When non-ambulatory, cattle are vulnerable and at risk for further injury and/or damage.^{2,3} Effort should be made to ensure that down cows are made comfortable and cared for, such as by providing feed, water, shelter, isolation from ambulatory animals, protection from predators, and medical attention.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm’s written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, discuss how non-ambulatory animals are managed, and confirm all elements are provided
 - **Observation:** Observe the non-ambulatory animal care area and animals (if applicable) and determine if all elements are (or could be) met
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

Down cattle are an animal welfare emergency. In order to successfully meet this standard, consider the following when dealing with non-ambulatory cattle:

- Review your farm's protocols for handling situations with non-ambulatory cattle, and ensure that mechanisms are in place to provide animals with feed, water, protection from climatic extremes, protection from predators, and isolation from other ambulatory animals.
- Talk with your veterinarian to create a plan that works well for you and your farm.

References

1. Poulton, P.J., A.L. Vizard, G.A. Anderson, and M.F. Pyman. 2016. High-quality care improves outcome in recumbent dairy cattle. *Aus. Vet. J.* 94:173-180. <https://doi.org/10.1111/avj.12445>.
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3. McFarlane, W.J., D.L. Renaud, C.N. Reedman, T.F. Duffield, M.B. Van Camp, and C.B. Winder. 2022. A scoping review of the analytical literature concerning non-ambulatory dairy cattle. *J. Dairy Sci.* 105:2544-2557. <https://doi.org/10.3168/jds.2021-21046>.

SEGREGATION

What is the standard?

- ✓ **There is a location provided to segregate weak and/or injured animals.**

Background on this standard

- **What is considered a segregated location?**
 - A segregated area is distinctly separate from the area used to house healthy, ambulatory animals. The segregated location should be sufficient to physically separate weak and/or injured animals from the rest of the herd.
 - In tie-stalls, an animal kept in an individual stall is not sufficient to meet this standard. Segregated animals in tie-stall systems must be kept in an individual stall that is deliberately separated from the rest of the herd. Segregated tie-stall animals must have at least one empty stall separating them from neighboring cows (i.e., one empty stall on each side).

What is the rationale for this standard?

Non-ambulatory, weak, and/or injured cattle are compromised and vulnerable. In order to successfully recover, these animals need special care and attention.¹ In a compromised state, cattle will be unable to navigate their herd dynamic correctly and should be given segregated space to rest and recover as needed.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Interview:** Discuss where weak and/or injured animals are typically housed.
- **Observation:** Observe that there is an area where weak and/or injured animals can be housed.

Corrective Action or Continuous Improvement Opportunity:

No corrective action applies to this standard.

What can you do to meet the standard or improve in this area?

Down cattle are an animal welfare emergency. In order to successfully meet this standard, consider the following when dealing with non-ambulatory cattle:

- **Identify an area within your facility that can be used as a designated area to segregate weak and/or injured animals.**

References

1. American Association of Bovine Practitioners. 2020. Care and disposition of non-ambulatory and injured ambulatory cattle. Accessed May 17, 2024. https://www.aabp.org/Resources/AABP_Guidelines/non-ambulatory2020.pdf.





EUTHANASIA

Dairy producers strive for optimal health and welfare, but illness and injury from which animals may not reasonably recover are inevitable. While euthanasia can be a difficult decision to make, there are situations when it is appropriate, respectable, and a good animal welfare practice. It should not be considered a sign of failure or poor management. To provide an animal with a dignified death to relieve their pain, suffering, fear, and stress is a demonstration of compassion and can often be the best decision you make on their behalf.

This section of the reference manual describes the program standards that ask farms about the criteria and methods for performing euthanasia, as well as carcass disposal.

CHECKLIST

This section of the FARM Animal Care evaluation will focus on the following standards:

- ✓ **The Herd Health Plan (HHP) has a written protocol for euthanasia that includes language specific to:**
 - Criteria used to identify animals that are to be euthanized and outlines the immediate action of euthanasia when the criteria are met
 - The primary and secondary individuals responsible for euthanasia
 - Language specific to euthanasia method and confirmation of death that aligns with the approved guidelines from AABP and/or AVMA
 - Language specific to ensuring carcasses are disposed of using an appropriate method
- ✓ **Criteria for identification of animals to be euthanized are established, utilized in practice, and understood by caregivers.**
- ✓ **Euthanasia techniques and confirmation of death follow the approved methods of AABP and/or AVMA.**
- ✓ **Carcass disposal is conducted using the appropriate method.**
- ✓ **Actions observed and described during the interview match written protocol.**



CRITERIA FOR EUTHANASIA

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for euthanasia that states the criteria used to identify animals that are to be euthanized and outlines the immediate action of euthanasia when the criteria are met.**



Background on this standard

• What is euthanasia?

- The AVMA defines euthanasia as ending the life of an individual animal in a way that minimizes or eliminates pain and distress.¹

• What is considered “immediate”?

- Immediate euthanasia is defined as being performed within four hours from the point that a decision to euthanize has been made.²

• Are the AABP Guidelines a suitable protocol?

- No, the AABP Guidelines for the Humane Euthanasia of Cattle are an excellent resource, but do not represent a farm-specific protocol. You are encouraged to use this document as a resource when developing your own protocol with your Veterinarian of Record, which should specify your farm-specific practices.

• What are some suggested criteria for when euthanasia is generally the best option?

- The AABP Guidelines for the Humane Euthanasia of Cattle provide a list of examples, based on published research³⁻⁶ and professional opinion, for when euthanasia is generally the best option:
 - Fracture, trauma, or disease of the bony or soft tissue structures resulting in immobility or inability to bear weight on a limb

- Disease conditions for which no effective treatment is known (i.e., Johne’s disease, lymphoma)
- Diseases that involve a significant threat to human health (i.e., rabies)
- Disease conditions for which treatment will not be pursued due to cost
- Diseases for which the level of care to properly manage pain and distress and treat the disease is beyond the willingness or ability of the farm or facility
- Emaciation and/or debilitation from disease, age, or injury resulting in an animal being too compromised to be slaughtered on site, transported, or marketed
- Advanced neoplastic conditions (e.g., cancer eye, lymphoma)
- Congenital or acquired conditions that produce a level of pain and distress that cannot be managed adequately by medical or management methods
- Non-ambulatory cattle with signs of uncontrolled pain or distress
- Animals unfit for transport, not responding to treatment, declining quality of life/failure to thrive, exposure to toxins that would result in a food safety issue, behavioral problems, poor prognosis, non-ambulatory cattle not responding to treatment within 24 hours, and diseases that could threaten herd health are also situations that would often warrant euthanasia consideration.
- If ever in doubt about whether an animal should be euthanized, best practice is to contact a veterinarian for a professional opinion

What is the rationale for this standard?

Livestock caretakers have a duty to ensure the welfare of all animals under their care. In situations where animal welfare is compromised and suffering occurs, it is also the responsibility of these caretakers to make the decision to euthanize. Making timely decisions based on clear criteria can help to minimize suffering by ensuring the animal’s rapid loss of consciousness and death without undue distress to the animal.² Crucially, once a decision has been made, euthanasia should be provided as promptly as possible, and no longer than four hours between the time of the decision and performing the procedure.³

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees responsible for/knowledgeable about euthanasia and ask them to discuss the criteria for identifying an animal to be euthanized
 - **Observation:** Observe that there are no animals in any areas of the farm that are compromised to the point that they should be euthanized for ethical and humane purposes
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Your herd veterinarian is an excellent resource for assisting with decision-making and determining criteria for euthanasia, developing protocols, and training employees to ensure this procedure is being performed humanely.
- Ensure employees are routinely trained on euthanasia decision-making and clear lines of communication are established to inform those responsible for the procedure in a timely manner.
- Consider having a larger number of employees trained on the criteria for euthanasia than those that perform the procedure, which may ensure animals in need of euthanasia are identified as early as possible.

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METHODS OF EUTHANASIA

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for euthanasia that includes the primary and secondary individuals responsible for euthanasia and language specific to euthanasia method and confirmation of death that aligns with the approved guidelines from AABP and/or AVMA.**



Background on this standard

- **Who is responsible for performing euthanasia?**
 - The decision on who is primarily responsible for euthanasia is the individual farm's decision; however, they are expected to be trained and proficient in the farm-specific protocol, which must also align with AABP and/or AVMA guidelines
- **Farms must identify a secondary person who can perform euthanasia on the farm if needed. Why?**
 - In the event that the primary person responsible for performing euthanasia is unavailable, a secondary person/service provider (e.g., another trained employee, or farmer, veterinarian, renderer) must be identified to ensure that euthanasia can always be performed in a timely manner if required
 - Any backup or secondary euthanasia provider must be able to consistently meet the requirement for "immediate" euthanasia by being available to provide euthanasia within the reasonable four-hour window AND must be able to demonstrate proof of annual euthanasia training
- **What if an on-farm service provider is used to perform euthanasia?**
 - If a licensed veterinarian or trained renderer/deadstock provider is your preferred primary option for euthanasia on your farm, you must have at least one member of your farm employees trained to perform euthanasia as a secondary option. This is to ensure that, in the event of an unexpected delay in the off-farm service provider being able to perform euthanasia in a timely manner (i.e., within four hours of making the decision to euthanize), someone is available on the farm that can complete the task. Ultimately, the farm is responsible for all animal care that occurs on the facility, regardless of the provider. A role of this on-farm provider is also to provide oversight of the provision of euthanasia and confirmation of death performed by the off-farm service provider.
- **Is the AABP Guideline a suitable protocol?**
 - No, the AABP guidelines are an excellent resource, but do not represent a farm-specific protocol. You are encouraged to use this document as a resource when developing your own protocol with your Veterinarian of Record, which should specify your farm-specific practices.
- **Which methods are appropriate?**
 - The AABP and AVMA have developed guidelines for appropriate methods of humane euthanasia. It is vital that these guidelines are adhered to.
Acceptable methods of euthanasia include:
 - Gunshot of appropriate type and caliber in frontal location (no secondary step required)
 - Penetrating captive bolt followed by a secondary step (second shot in frontal sinus/poll, exsanguination, intravenous administration of potassium chloride or magnesium sulfate, or pithing)
 - Intravenous injection (these methods must be performed by a veterinarian due to the use of controlled substances). Intravenous administration of a lethal dose of barbiturates by a veterinarian or general anesthesia followed by intravenous administration of potassium chloride, magnesium sulfate, or intrathecal lidocaine

- The choice of method for euthanasia requires consideration of human safety, practicality, user skill, cost, carcass disposal, and animal welfare. There are a number of important factors to take into consideration for each approved method¹.
- **What are the considerations for using a firearm for euthanasia?**
 - Gunshot is the most common method of euthanasia used for cattle. It is important that farmers using this method have an appropriate firearm and shot/shell or bullet for the largest size of animal being raised at the facility to ensure this method is effective in the event of an emergency. Hollow point bullets are not effective at consistently producing humane euthanasia. Safety is of the utmost concern for all firearm users. Ensure employees are properly trained in using this method both for animal welfare and human safety, and that animals are restrained to ensure consistency and effectiveness. Also ensure that firearms are properly cleaned and maintained, and safely stored when not being used.
 - Effective firearms for adult animals (over 4 months of age):
 - .22 magnum or higher caliber with solid point bullet
 - 12 gauge shotgun slug
 - 16 gauge shotgun slug
 - 20 gauge shotgun slug
 - 12 gauge shotgun softshell
 - 16 gauge shotgun softshell
 - 20 gauge shotgun softshell
 - Effective firearms for calves (less than 4 months of age):
 - .22 magnum or higher caliber with solid point bullet
 - .22 long rifle solid point
 - 12 gauge shotgun slug
 - 16 gauge shotgun slug
 - 20 gauge shotgun slug
 - 12 gauge shotgun softshell
 - 16 gauge shotgun softshell
 - 20 gauge shotgun softshell



- **What are the considerations for using a penetrating captive bolt followed by a secondary method for euthanasia?**

- The other method of euthanasia that producers may use is a penetrating captive bolt gun. A high-powered bolt or pin generates a concussive force penetrating the skull, causing immediate unconsciousness. The use of adequate restraint is important for proper placement of the bolt as well as to perform secondary procedures.
- **Positioning.** The AABP provides detailed figures on where to aim when performing euthanasia using a gunshot or penetrating captive bolt (**Figure 1**).¹
- Poll position stunning with a penetrating captive bolt is not recommended as a primary method because research has shown that the depth of penetration and concussion in this

region is less than that observed with frontal sites. Furthermore, research indicates that the use of penetrating captive bolt at the poll is prone to operator error and misdirection of the bolt into the spinal cord instead of the brain.³ If using a gunshot behind the poll, the shot should be directed toward the base of the tongue.

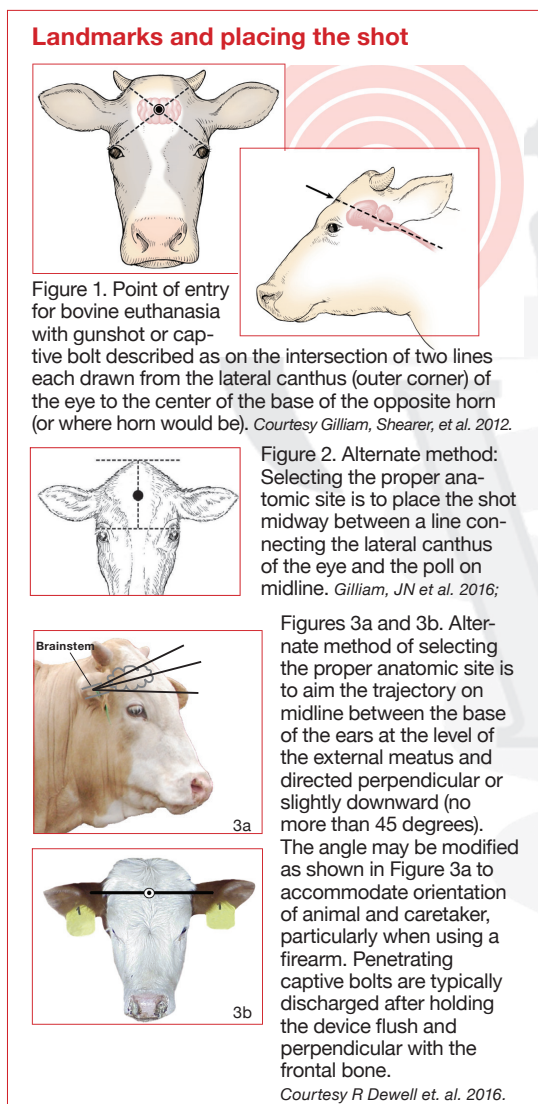
- **Penetrating vs. non-penetrating:** There are different types of captive bolt. A non-penetrating version exists,²⁻³ typically used for swine. This type does not puncture the skull. This is typically not of sufficient strength for appropriate euthanasia of cattle. Only penetrating captive bolt devices are approved for euthanasia of mature cattle and must not be used as the sole method of euthanasia. Penetrating captive bolts must be cleaned after each use and kept in good repair. If not, they will not have the appropriate strength and capacity to sufficiently stun animals. This could lead to animal welfare concerns in performing euthanasia.

- **Signs of unconsciousness (and therefore, appropriate use of the captive bolt gun) include:**

- Absence of corneal reflex
- If the animal is unconscious, there should not be any blinking or movement of the third eyelid if the surface of the eyeball is touched
- Absence of vocalization
- Absence of gag reflex
- No voluntary movements or swallowing
- Lack of rhythmic respiration (breathing)
- No coordinated attempt to rise or right itself

- **What are the appropriate secondary methods that can follow the use of a penetrating captive bolt for euthanasia?**

- There are four adjunctive or secondary methods¹ that can be used following administration of a penetrating captive bolt:
 - **Pithing**, where a long rod or implement is used in the puncture wound produced by the captive bolt to cause death by destruction of brain tissue after unconsciousness has occurred
 - **Exsanguination** (or bleeding out) is also an option following the use of a captive bolt gun if the animal is located in an appropriate area for this procedure. This is typically done by cutting



(Figure 1)

the blood vessels located on either side of the trachea (windpipe).

- **Rapid intravenous injection** of potassium chloride (KCL), Magnesium Sulfate (MgSO_4), or Magnesium Chloride (MgCl_2)
- Administering a **second shot** (penetrating captive bolt or gunshot) in the original frontal or poll location
- It is recommended that you consult your herd veterinarian when considering the use of these secondary methods, particularly when considering the use of chemicals or drugs
- **What are the considerations for having a veterinarian administer a drug for euthanasia?**
 - The final method involves having your veterinarian administer a drug (such as pentobarbital) directly into the bloodstream that depresses the central nervous system and induces death. Tissue residues of the barbiturate can be high, and care should be exercised to limit access of scavengers to the carcass.
- **What are some of the unacceptable methods of euthanasia?**
 - Failure to euthanize animals using a technique listed above, or euthanasia performed by personnel without proper training, may result in pain, suffering, and poor animal welfare. Examples of unacceptable methods include:
 - Blunt force trauma to the head on animals of any age
 - Thoracic compression
 - Suffocation
 - Hypothermia or hyperthermia
 - Drowning
 - Pithing or exsanguination as the primary method of euthanasia
 - Injection of medication unless directed by or under the direct supervision of your veterinarian
 - Methods that pose a risk to human safety
 - Administration of intravenous cardiotoxic agents in an animal that is not under general anesthesia. Sedation alone is not acceptable when administering saturated salt solutions or intrathecal lidocaine.

- **How can you confirm death?**

- After euthanasia is performed, confirmation of death is required to ensure the procedure was effective. If not, the animal does not experience a painless, humane death. This is a welfare concern. If the first attempt was not effective, the procedure should be repeated immediately, and death confirmed. The key criteria to confirming death are:
 - Lack of pulse or heartbeat if using a stethoscope for more than five minutes (it may take several minutes for this to occur)
 - Lack of breathing for more than five minutes

What is the rationale for this standard?

It is extremely important that all employees involved in the care of cattle at your facility are familiar with the protocols developed for euthanasia, including notifying the person responsible for euthanasia if animals are identified as in distress. There should be personnel present at the facility (or quickly available) at all times who are trained in the approved techniques to end an animal's life in the event of an emergency.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees responsible for/ knowledgeable about euthanasia and discuss how euthanasia is conducted
 - **Observation:** Observe any tools or equipment used to euthanize animals and confirm that the listed method(s) of euthanasia are possible on the farm (i.e., the equipment required is available, accessible, and in good working order)
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

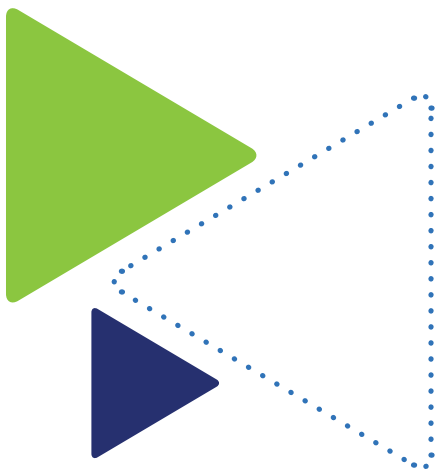
If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Your veterinarian is an excellent resource for assisting with decision-making and determining criteria for euthanasia, developing protocols, and training employees to ensure this procedure is being performed humanely.
- Review the AVMA⁴ and AABP¹ Guidelines.

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CARCASS DISPOSAL

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for euthanasia that includes language specific to ensuring carcasses are disposed of using an appropriate method.**



Background on this standard

- **What are the options for carcass disposal?**
 - Following euthanasia, animals should be disposed of according to state laws and guidelines. Options may include rendering, burial, composting, incinerating, and potentially landfills.
- **What are some important considerations for carcass disposal?**
 - Dead animals should be quickly and respectfully moved to a designated location away from healthy animals and away from public view. Where warranted and feasible, waste and bedding of an animal that has died should be removed from the facility to an area inaccessible to other animals. A postmortem examination on well-preserved animals can provide important animal health information and prevent further losses to the herd.

What is the rationale for this standard?

Dead animals, either euthanized or expired from natural causes, are potential sources of infection. Their carcasses must be promptly disposed of using appropriate methods, which may include rendering, burial, composting or incineration in accordance with applicable local ordinances. Of particular concern are carcasses of animals that have been euthanized with pharmaceuticals, which persist for long periods of time in the environment, posing a risk to scavenging wildlife or companion animals. The use of these chemicals therefore often limits carcass disposal options.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interviewing:** Interview employees responsible for/knowledgeable about euthanasia and carcass disposal practices and discuss how disposal occurs and their knowledge of local or state requirements
 - **Observation:** Observe any areas of the facility where carcasses are stored/disposed of to visually verify
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

If the action portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

If the documentation portion of this standard is not met, the farm will receive a Mandatory Corrective Action Plan (MCAP), which must be resolved in 9 months. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- Your veterinarian is an excellent resource for assisting with euthanasia considerations and may be able to provide guidance around carcass disposal options in your area.
- Consultation with local ordinances, extension agents, and the state veterinarian should be conducted to determine the appropriate method of disposal.
- A post-mortem examination on well-preserved animals can provide important animal health information and prevent further losses to the herd.

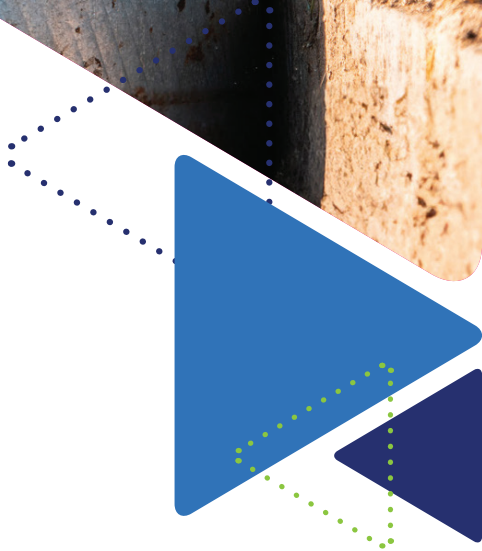


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ANIMAL

MANAGEMENT

This section of the reference manual describes the standards around tail docking, permanent identification, castration, and branding.



CHECKLIST

This section of the FARM Animal Care evaluation will focus on the following standards:

- ✓ **The facility complies with the ban on routine tail docking.**
- ✓ **Each animal is permanently identified with a tamper-resistant individual animal ID.**
- ✓ **If bulls are castrated on the facility:**
 - The Herd Health Plan (HHP) includes a written protocol for castration that includes language specific to the method used and the provision of pain mitigation
 - The facility effectively castrates animals and provides pain mitigation for castration
 - Actions observed and described during the interview match written protocol
- ✓ **If dairy cattle on the facility are branded:**
 - The Herd Health Plan (HHP) has a written protocol for branding that includes language specific to the method and age at which branding occurs, and the provision of pain mitigation
 - The facility effectively brands animals and provides pain mitigation for branding
 - Actions observed and described during the interview match written protocol

TAIL DOCKING

What is the standard?

- ✓ **The facility complies with the ban on routine tail docking.**

Background on this standard

- **What is tail docking and is it acceptable?**
 - Tail docking is defined as any physical manipulation, or permanent alteration, of the tail or switch that results in removal of, or damage to, tissue, bone, skin, musculature, or any other physical part of the tail. The practice of routine tail docking is unacceptable, but trimming of the hair on the tail is accepted.
- **What if a tail must be removed for medically necessary reasons?**
 - If deemed medically necessary for an individual animal, the procedure must be performed in accordance with guidance provided by the Veterinarian of Record. All instances of medically necessary tail docking must be recorded on farms. The information to be recorded is cow ID, date of the procedure, and reasoning for the procedure.
- **What about having cows on site that were docked before this ban?**
 - Animals with docked tails prior to 2017 are acceptable; however, tails should not be docked for cows born after 2017. The purchase of animals with docked tails is strongly discouraged. All purchased animals should be documented; failure to document them will result in a corrective action.
- **What about tail docking for calf raisers?**
 - It is the expectation that calves and heifers raised off-site are not docked

What is the rationale for this standard?

The National Dairy FARM Program opposes the routine tail docking of dairy cattle. The practice was phased out under FARM Program Version 3 standards as of January 1, 2017. The American Veterinary Medical Association, American Association of Bovine Practitioners and National Mastitis Council, among others, all oppose the routine tail docking of cattle. The only exception is in the extraordinary situation where this practice is medically necessary for the animal.

What does the science say?

There is wide scientific agreement that routine tail docking provides no significant benefit to the cow or quality of the milk that cannot be managed in other ways which do not involve removal of the cow's tail.¹⁻¹⁰ Furthermore, as summarized in a literature review, tail docking causes immediate pain and puts cows at risk for postoperative infections.¹¹ It also has the potential to result in the formation of neuromas at the end of the tail, which are associated with chronic pain (similar to post-amputation pain in humans).¹¹ It also reduces the cow's ability to control flies and express normal behaviors.¹¹

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe all age classes of animals for docked tails
- **Interview:** Interview employees if an individual cow has a docked tail and determine when it was docked. If it was docked after January 1, 2017, was docking the tail deemed medically necessary? Was the procedure performed in accordance with guidance provided by the Veterinarian of Record and was it documented?
- **Review:** Review any records of medically necessary tail docking and/or purchase records

Corrective Action or Continuous Improvement Opportunity:

If the standard is not met, the farm will receive an IAP (Immediate Action Plan) and will have to stop the practice within 48 hours with follow ups at 3 weeks and 3 months.

What can you do to meet the standard or improve in this area?

- Ensure good animal hygiene to prevent manure accumulation on the skin and hair.
 - Increase the frequency of cleaning and scraping of pens and housing areas, increase the amount of bedding provided
- Trim the switch.
 - Trimming of the hair on the tail is accepted
 - There are many switch trimming tools, including hand shears, scissors, and clippers. Regardless of method, all employees trimming switches should be appropriately trained.
- Be mindful of cows' full tails.
 - Prevent tails from being injured and watch for areas of potential injury e.g., scrapers, gates, slats, etc.
 - When attaching milking units, tails may need to be gently moved to the side to access the udder
 - Wear eye protection to protect eyes from foreign objects

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ANIMAL IDENTIFICATION

What is the standard?

- ✓ Each animal is permanently identified with a tamper-resistant individual animal ID.

Background on this standard

- **What identification is acceptable?**
 - The FARM Program recommends using 840-RFID ear tags. Other acceptable permanent individual animal identification include: brite tags, vaccination tags, visual tags (dangle/bangle), button tags, RFID tags, and tattoo.
- **When should this be done?**
 - Identification should be placed on all animals (heifers, bulls, and steers) by day three.

What is the rationale for this standard?

Animals need to be identified to record and track treatments, for traceability, and overall management. Animals also need to be identified for food safety, foreign animal disease threats, and bio/agro-terrorism concerns.

In 2012, the U.S. Department of Agriculture (USDA) finalized the Animal Disease Traceability Rule. Under the rule, all female dairy cattle, regardless of age, and all male dairy cattle, including dairy steers, are required to be officially identified by a device or method approved by USDA prior to interstate movement.¹ The FARM Program recommends using 840-RFID ear tags,² which USDA recognizes as an official identification device for the lifetime of an animal.

What does the science say?

Ear tags are the most commonly used individual animal ID on US dairy herds.³ Ear tagging can cause injury, and care is needed to follow best tagging practice and monitor tags after placement.^{4,5}

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe all age classes of animals for presence of tamper-resistant ID.
- **Interview:** Ask employees when and how animals are tagged/identified and ask about any cows found to be missing identification or that have non-permanent identification.

Corrective Action or Continuous Improvement Opportunity:

No corrective action applies to these standards.
Note: Animal Identification is a required component of the standard for Treatment Records (Page 24). The Treatment Records standard is associated with a Continuous Improvement Plan (CIP), which must be resolved in a maximum of 3 years. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

- If purchasing calves or bringing them back onsite from other facilities, consider establishing a traceability system for your facility by tagging calves upon arrival with unique identifiers that also indicate the source or supplier. This will aid in disease management and allow for the ability to trace groups of calves with higher levels of mortality or disease to the source or supplier.
- Use less invasive options (ear tags) over branding.

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▶ CASTRATION

What are the standards?

- ✓ **The Herd Health Plan (HHP) has a written protocol for castration that includes language specific to the method used and the provision of pain mitigation.**



Background on this standard

- **What is castration?**
 - The process of testicle removal or destruction. The most common methods of castration are surgical, banding, and Burdizzo (physical crushing of the cord).
- **Is castration required?**
 - Castration is not a requirement of the FARM program. However, if a farm performs castration, they are expected to have a protocol in their Herd Health Plan, which should include the provision of pain control.

What is the rationale for this standard?

Castration is performed to prevent unwanted reproduction and sexual behavior, such as aggression. Castrated animals that are less aggressive are easier to handle, which promotes animal and human safety. However, the procedure itself causes pain, which is a welfare concern.

What does the science say?

Castration should be performed as early as possible to minimize pain and stress associated with the procedure. Performing castration at the earliest age possible reduces stress associated with the procedure; within the first 24 hours of life up to three months of age is ideal.¹ A best management practice for castration may be to perform at the time of disbudding (prior to two months of age; see disbudding standard in the pre-weaned calf section of the manual). Calves will already be receiving pain control for disbudding practices and will also be restrained. Additionally, performing castration earlier has shown to be less stressful than at a later age.^{2,3} Castrating earlier shows reduced weight loss and stress, reduced impacts on performance in the days following the procedure,² and is associated with a shorter recovery time.¹

Those performing castration should be trained and competent in the procedure used to ensure it is performed safely, effectively, and humanely. Consider working with your veterinarian to ensure those performing this procedure are trained adequately.

There are many methods that could be used for castration, such as the use of a rubber ring or surgical removal. Scientific evidence shows castration is acutely painful regardless of the method used.^{1,3} Nonetheless, research has demonstrated that constriction (banding) methods may be most painful in the longer term compared to more surgical approaches (i.e., Burdizzo).⁴ Numerous studies have found that cattle show signs of pain for up to several months following the application of the band or ring. Surgical and Burdizzo castration may be better options from an animal care perspective. The advantage of these latter two methods is that pain can be minimized by providing immediate pain mitigation at the time of surgery, as well as postoperative analgesia. Research suggests that the application of local and systemic analgesics (such as NSAIDs) have the potential to minimize the pain and stress associated with all methods of castration.^{1,3}

Pain Control. As with disbudding (see disbudding standard in pre-weaned calf section), important considerations when providing pain management during castration are local anesthesia and systemic pain relief.

- **Local Anesthesia.** Use of a local anesthetic, such as a testicular block, spermatic cord block, or epidural immediately prior to castration can reduce the immediate pain associated with the procedure and provide short-term pain relief. The use of local anesthetic should be considered with both human and animal safety in mind. Sedatives may make the use of local anesthetic more practical. The local anesthesia protocol should be determined and prescribed by the VOR. Federal law restricts the use of local anesthetics to be used by, or on the order of, a licensed veterinarian.
- **Systemic Pain Relief.** Non-steroidal anti-inflammatory drugs (NSAIDs) will provide pain relief immediately after the procedure. Long-acting NSAIDs can also provide pain relief for an extended period of time. Meloxicam can minimize pain for up to 48 hours following a single dose of the drug, which will increase short-term weight gain and feed intake.¹ The use of NSAIDs in calves that were castrated at one week of age or older has been shown to reduce the risk of respiratory disease.⁵ Topical NSAID applications can make the administration of NSAIDs at the time of castration practical when oral or injectable administration is not possible. The type of NSAID used should be prescribed by the VOR.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, verify when and how calves are castrated, and whether pain control is offered
 - **Observation:**
 - Observe any male dairy calves on the facility for evidence of castration
 - Observe all animals on site for the presence of steers
 - Observe facilities for the presence of castration tools/equipment.
 - Observe drug cabinet and treatment records for presence/use of pain mitigation medications
- **Matching:**
 - Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

No corrective action applies to these standards.

What can you do to meet the standard or improve in this area?

- If you are castrating, work with your veterinarian to develop a castration protocol that includes the best method and appropriate pain management.
- Castration is painful no matter the method used, though constriction (banding) methods may be most painful in the longer term compared to more surgical approaches.

References

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BRANDING

What is the standard?

- ✓ **The Herd Health Plan (HHP) has a written protocol for branding that includes language specific to the method and age at which branding occurs, and the provision of pain mitigation.**



Background on this standard

- **What is branding?**
 - Searing an identifying mark into the hide of an animal by hot iron or freezing.
- **Is branding required?**
 - Branding is not encouraged by or a requirement of the FARM program. However, if a farm performs branding, they are expected to have a protocol in their Herd Health Plan, which should include the provision of pain control.
- **Is branding acceptable?**
 - Branding is acceptable but due to the pain caused by branding, it is strongly recommended that alternative forms of identification are used.
 - Pain from branding lasts for an extended period of time but acute pain can be decreased by working with the VOR to develop a pain management protocol (in cases where branding has been deemed necessary).

What is the rationale for this standard?

In rare cases, herd-level branding may be required by state law. States that require branding are Arizona, New Mexico and Utah; however, all three states offer exemptions from branding for certain classes of cattle.¹ Farms should work with their veterinarian to evaluate the necessity of branding, opting to use other forms of identification such as tamper-proof radio-frequency identification (RFID) if possible. A facility's Herd Health Plan should include a written protocol for branding if it is conducted at the facility. All methods of branding cause pain, which is a welfare concern.

What does the science say?

Best practice is to not brand and instead use other forms of identification. If branding is necessary, brands must never be applied to the face. Both hot and cold iron branding cause pain, with hot iron branding being more painful, which can result in indicators of pain and inflammation in cattle present for several weeks after the procedure.^{2,3} Little is known about how to alleviate the pain associated with hot iron and freeze branding. Recent research has shown that wounds incurred from branding are immediately painful regardless of anesthetics or non-steroidal anti-inflammatory drugs (NSAIDs) used at the time of the procedure and remain painful for at least 2.5 months afterward.^{4,5}

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Protocol Review:**
 - Review the farm's written protocol(s) to determine it meets the standards
- **Action Review:**
 - **Interview:** Interview employees with animal care responsibilities, verify when and how animals are branded, and that pain control is provided

- **Observation:**

- Observe all age classes of animals for the presence of brands; discuss any that are found to have brands
- Observe facilities for the presence of branding tools/equipment
- Observe drug cabinet and treatment records for presence/use of pain mitigation medications

- **Matching:**

- Confirm whether the protocol matches the actions observed and/or described by the facility manager/employees

Corrective Action or Continuous Improvement Opportunity:

No corrective action applies to these standards.

What can you do to meet the standard or improve in this area?

- If you are branding cattle, strongly consider stopping this practice and using other forms of identification, such as RFID tags. Consult with your veterinarian about best practices if branding is performed, in addition to alternative options for animal identification.

References

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2. Schwartzkopf-Genswein, K.S., J.M. Stookey, A.M. de Passillé, and J. Rushen. 1997a. Comparison of hot-iron and freeze branding on cortisol levels and pain sensitivity in beef cattle. *Can. J. Anim. Sci.* 77:369-374. <https://doi.org/10.4141/A96-127>.
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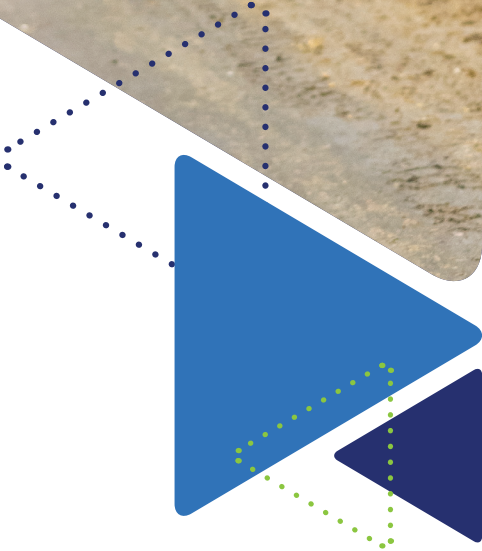
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ANIMAL

OBSERVATIONS

This section of the reference manual describes the standards that focus on direct observations of the dairy animals on the farm, which include body condition and hygiene for all age classes of animals, and injured tails, hock, and knee injuries, and lameness in lactating animals.



CHECKLIST

This section of the FARM Animal Care evaluation will focus on the following standards:

Body Condition

- ✓ 99% or more of pre-weaned calves (>2 days old) observed have a body condition score of 2 or greater on the FARM Body Condition Scorecard.
- ✓ 99% or more of weaned heifers observed have a body condition score of 2 or greater on the FARM Body Condition Scorecard.
- ✓ 99% or more of lactating cows observed have a body condition score of 2 or greater on FARM Body Condition Scorecard.

Lameness

- ✓ 5% or less of the lactating cows observed score 3 on the FARM Locomotion Scorecard
- ✓ 15% or less of the lactating cows observed score 2 on the FARM Locomotion Scorecard

Injured Tails

- ✓ 95% or more of lactating cows observed have uninjured tails.

Hock and Knee Injuries

- ✓ 95% or more of the lactating cows observed score 2 or less on the FARM Hock Scorecard.
- ✓ 95% or more of the lactating cows observed score 2 or less on the FARM Knee Scorecard.

Hygiene

- ✓ 90% or more of pre-weaned calves (>2 days old) observed score 2 or less on the FARM Hygiene Scorecard.
- ✓ 90% or more of weaned heifers observed score 2 or less on the FARM Hygiene Scorecard.
- ✓ 90% or more of pre-fresh heifers/dry cows observed score 2 or less on the FARM Hygiene Scorecard.
- ✓ 90% or more of lactating cows observed score 2 or less on the FARM Hygiene Scorecard.

BODY CONDITION

What are the standards?

- ✓ **This standard applies similarly to three age classes of animals:**

Pre-Weaned Calves: 99% or more of pre-weaned calves (>2 days old) observed have a body condition score of 2 or greater on FARM Body Condition Scorecard.

Weaned Heifers: 99% or more of weaned heifers observed have a body condition score of 2 or greater on FARM Body Condition Scorecard.

Lactating Cattle: 99% or more of lactating cows observed have a body condition score of 2 or greater on FARM Body Condition Scorecard.

Background on this standard

- **What are the scores in the FARM Body Condition Scorecard?**

- FARM's Body Condition Scorecard can be accessed here: <https://nationaldairyfarm.com/farm-animal-observations-scoring-guide/> and described in further detail below.



What is the rationale for this standard?

Evaluating body condition provides clear information directly from the animal on:

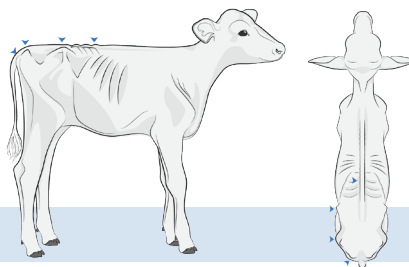
- Feed quality.
- Feed availability (enough feed/milk provided and at appropriate intervals).
- Feeding spaces (is there enough space to allow all animals to access the feed?).

Cattle with a BCS of less than 2 need special, and in some cases immediate, care.

CALVES AND PRE-WEANED CALVES

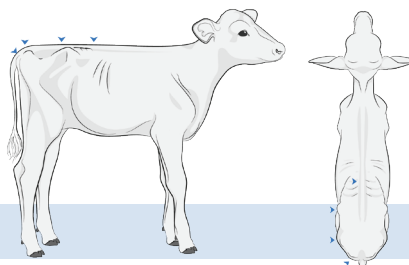
SCORE 1: GAUNT

Gaunt, emaciated animal, having little to no fatty tissue around tailhead and short rib region. Extremely pronounced back, hooks, and pins.



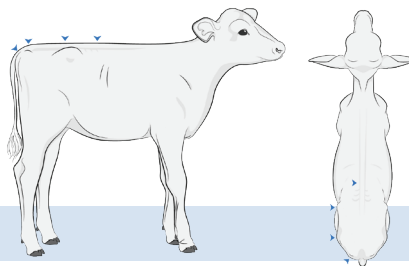
SCORE 2: THIN

Thin animal, with minimal coverage around the tailhead and short rib region. Minimal coverage over back, hooks, and pins.



SCORE 3: WELL-CONDITIONED

Good conditioned animal with coverage around the tailhead and short rib region. Back, hooks, and pins are not pronounced.



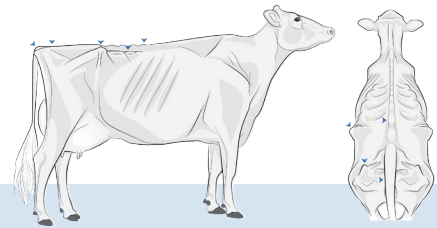
What does the science say?

Research shows that cattle with a low BCS have an increased risk of lameness,¹ decreased reproductive performance,^{2,3} increased risk of retained placenta and metritis,³ and decreased milk fat and protein production.³

POST-WEANED HEIFERS AND COWS

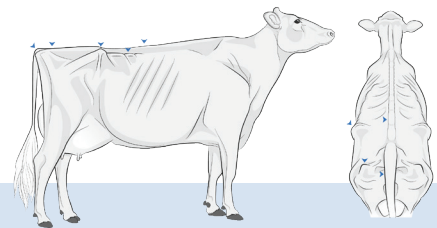
SCORE 1: GAUNT

Gaunt, emaciated animal, having little to no fatty tissue around tail head and short rib region. Extremely pronounced back, hooks, and pins.



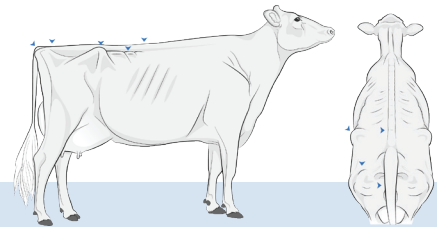
SCORE 2: THIN

Thin animal, with minimal coverage around the tail head and short rib region. Minimal coverage over back, hooks, and pins.



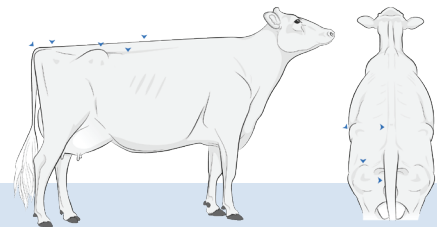
SCORE 3: WELL-CONDITIONED

Well-conditioned animal with coverage around the tail head and short rib region. Back, hooks, and pins are not pronounced.



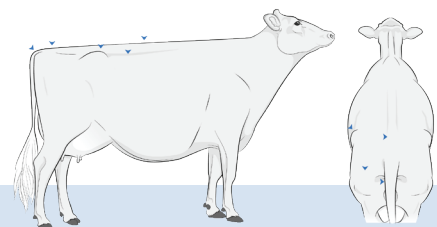
SCORE 4: SLIGHTLY OVER-CONDITIONED

Slightly over-conditioned animal with more than average coverage around tail head and short rib region, short ribs cannot be felt or seen. Back, hooks, and pins have more than average coverage and bone structure difficult to see due to amount of coverage.



SCORE 5: OVER-CONDITIONED

Over-conditioned animal with thick coverage around tail head and short rib region, short ribs cannot be felt or seen at all. Back, hooks, and pins have significant coverage and unable to see bone structure due to amount of coverage.



How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe and score animals to determine if the benchmark is met for each age class.

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met for any age class of animal, the farm will receive a Continuous Improvement Plan (CIP). Improvement towards meeting the standard benchmark must be made within three years. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

Body condition in cows, heifers, and pre-weaned calves can be improved in the following ways:

- Reduction in incidence of disease.
- Feeding higher planes of milk and colostrum (pre-weaned calves).
- Increasing plane of nutrition fed to heifers and lactating animals.
- Reducing stocking density to allow all animals to adequately feed from the bunk (if applicable).
- Speaking with your herd veterinarian and nutritionist to identify areas for improvement in nutrition, as well as opportunities to improve animal health in order to maintain body condition.

References

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LAMENESS

What are the standards?

- ✓ **There are three components to this standard:**

Severe Lameness: 5% or less of the lactating cows observed score 3 on the FARM Locomotion Scorecard.

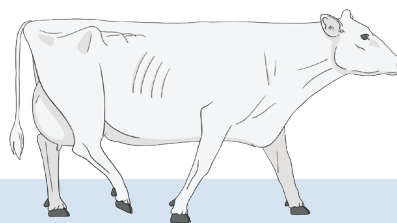
Moderate Lameness: 15% or less of the lactating cows observed score 2 on the FARM Locomotion Scorecard.

Background on this standard

- **Why are both severe (score 3) and moderate (score 2) lameness evaluated?**
 - While it is important to ensure that cases of severe lameness are evaluated, it is also critical to understand the prevalence of moderate lameness on farms. Moderate lameness is painful, can result in additional health concerns, and has the potential to progress towards severe lameness if not evaluated and addressed.
- **What are the scores in the FARM Locomotion Scorecard?**
 - FARM's Locomotion Scorecard can be accessed here: <https://nationaldairyfarm.com/farm-animal-observations-scoring-guide/> and described in further detail below.

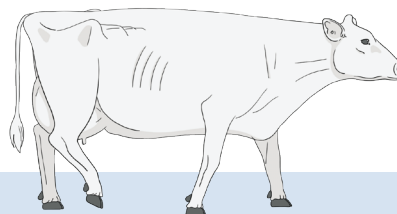
SCORE 1: NORMAL

Animal walks easily with no gait or only minor changes. Steps may be slightly uneven.



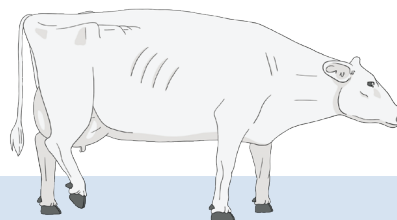
SCORE 2: MODERATE

Asymmetric gait. Exhibits any of the following: shortening of the stride, slight limp, weight transfer while moving, but may bear weight evenly while standing.



SCORE 3: SEVERE

Difficulty bearing weight on a limb and may also exhibit obvious back arch or head bob. Animals in this category may be unable to move or be extremely reluctant to move even when encouraged by a handler.



LOCOMOTION VIDEO

<https://nationaldairyfarm.com/farm-animal-observations-scoring-guide/>

What is the rationale for this standard?

Lameness is a painful condition affecting the ability of dairy cattle to move with a regular gait. It is caused by painful lesions to the limb or foot and compromises animal welfare. Lameness interferes with normal resting behavior, movement to and from the milking area, and feeding activity. Additionally, lameness limits the expression of estrus and influences general health. Lameness should be a management priority for all dairy herds. Foot lesions most associated with dairy cattle lameness include infectious diseases like digital dermatitis (hairy heel wart) and foot rot, as well as non-infectious diseases like white line lesions and sole ulcers.

In addition to the pain that lameness causes, it also has an impact on:

- Dairy cattle health and welfare
- Reproduction and fertility¹
- Milk production^{2,3}
- Reduction in time spent feeding³
- Increased risk of culling³

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe and score animals to determine if the benchmark is met.

Corrective Action or Continuous Improvement Opportunity:

If either standard is not met, the farm will receive a Continuous Improvement Plan (CIP). Improvement towards meeting the standard benchmark must be made within three years. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

Moderate and severe on-farm lameness can be reduced by:

- ✓ Routine surveillance for lame cows coupled with prompt, effective treatment
- ✓ Routine use of foot baths and improved flooring⁷
- ✓ Providing adequate time for daily rest by minimizing time out of the pen to less than three hours per day⁷
- ✓ Avoiding overstocking and unabated heat stress.
- ✓ Reducing the prevalence of hoof lesions, overgrown claws, injured hocks⁷.
- ✓ Maintain adequate body condition. Lower body condition score (≤ 2.5) is associated with increased incidence of lameness⁷
- ✓ Practicing preventive hoof trimming⁷.
- ✓ Increasing stall bedding. Cattle have increased lying time in well-bedded environments, which reduces the risk for lameness.^{4,5}
- ✓ Improving location of neck rails. Less restrictive neck rails that are higher and further from the curb allow for the cow to move fully into the stall and have been shown to reduce lameness.⁶
- ✓ Excellent housing management. Housing type, pasture access, barn flooring, stall design, bedding type, stall base, and bedding depth are all important risk factors for lameness.⁷ Specifically, loose-housing of cattle, providing access to pasture, rubber flooring in alleyways, large stalls with low curb height, sand bedding, and providing deep bedding in stalls, are all factors associated with reduced lameness.⁷ Presence of exposed aggregate can also cause injury resulting in lameness.

References

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INJURED TAILS

What is the standard?

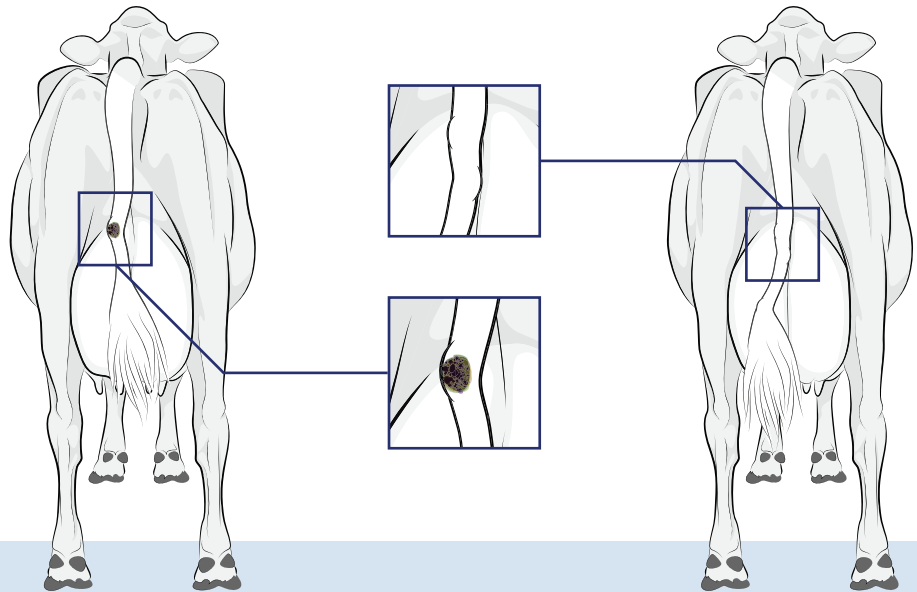
- ✓ 95% or more of lactating cows observed have uninjured tails based on the FARM Tail Scorecard.

Background on this standard

- What is considered “injured”?
 - A tail is considered injured if it has ANY swellings, if there are deviations in vertebrae that can be seen, and/or if there is any evidence of necrotic tissue in the tail
- What are the scores in the FARM Tail Scorecard?
 - FARM’s Tail Scorecard can be accessed here: <https://nationaldairyfarm.com/farm-animal-observations-scoring-guide/> and described in further detail below.

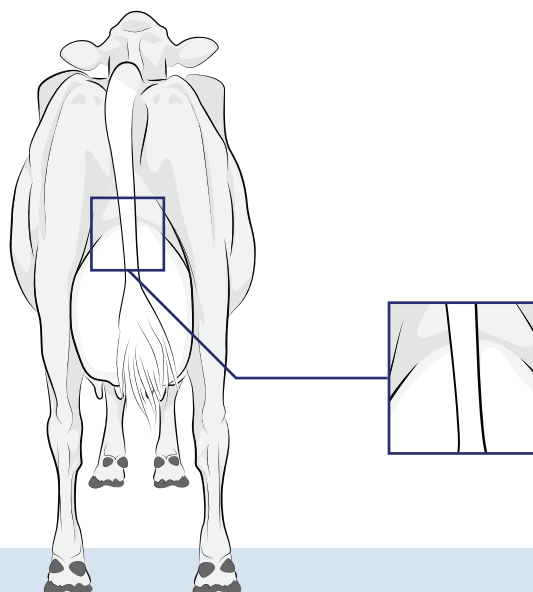
INJURED

Tail has ANY swellings, deviations in vertebrae that can be seen, or any evidence of necrotic tissue in the tail.



NOT INJURED

Tail does not have ANY swellings, deviations in vertebrae that can be seen, nor any evidence of necrotic tissue in the tail.



What is the rationale for this standard?

A cow's tail is an extension of their spine; therefore, it is made up of vertebrae and any injury and/or breaks in the tail are painful for the cow. Cattle use their tail for a variety of things, from swatting flies to communicating with their herd mates. Tail injury is painful given the impact on the appendage, but also due to the constant activity of the cow's tail. Therefore, tail injury and/or breaks compromise cattle welfare.

Tails can be broken, damaged, or injured from items within the facility, such as scrapers, doors, parlors, or a cow stepping on another cow's tail. However, tails can also be broken through inappropriate handling, such as tail twisting, bending, and applying excessive force. About 40% of the maximal force a human can apply results in breakage of a mature animal's tail – much less force is required to break a calf's tail. If cattle are handled following best practices and proper stockmanship, the force required to break a tail is unlikely to be applied accidentally.¹

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe and score animals to determine if the benchmark is met

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met, the farm will receive a Continuous Improvement Plan (CIP). Improvement towards meeting the standard benchmark must be made within three years. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

If your farm exceeds the required benchmark for broken tails, these are some things to consider:

- Conduct a root cause analysis with your advisors (e.g., veterinarian) to identify where the problem is occurring. Consider:
 - Observing the tails of animals in each age class on the farm and identifying where tail injuries start to appear. Observe the tails of animals that are returning to the farm from a calf or heifer ranch.
 - Observe whether employee handling (both employed or contracted), cow stocking density, or facilities (such as alley scrapers) have the potential to be the cause of injuries
 - Start tracking animals with injured tails to determine if you are making progress and help determine the cause
- If animal handling is determined to be a cause of injured tails on your farm, consider retraining your employees or having a conversation with contracted employees on appropriate stockmanship.
- If injured tails are being caused within the facility, consider:
 - Increasing stall size to allow cows to lie down more comfortably and reduce the likelihood of their tail being broken by herd mates stepping on tails
 - Changing, removing, or updating equipment
 - Reducing stocking density and/or providing additional resources that are located throughout the facility (e.g., shaded areas, feed and water access, etc.)

References

1. Laven, R.A., and M.C. Jermy. 2020. Measuring the torque required to cause vertebral dislocation in cattle tails. NZ. Vet. J. 68:107-11. <https://doi.org/10.1080/00480169.2019.1685019>.



HOCK AND KNEE INJURIES

What are the standards?

- ✓ **Hock Injuries: 95% or more of the lactating cows observed score 2 or less on the FARM Hock Scorecard.**
- ✓ **Knee Injuries: 95% or more of the lactating cows observed score 2 or less on the FARM Knee Scorecard.**

Background on this standard

- **What are the scores in the FARM Hock and Knee Scorecard?**
 - FARM's Hock and Knee Scorecard can be accessed here: <https://nationaldairyfarm.com/farm-animal-observations-scoring-guide/> and described on the following pages.

What is the rationale for this standard?

Cattle injuries tend to occur on areas that are in contact with housing elements, with the most common injuries observed on the knees and hocks. These injuries range from a small area of hair loss to open wounds and are sometimes accompanied by infection and swelling of the joint. A healthy hock is free from hair loss and swelling. Skin breakage provides an opportunity for infection to occur, which can lead to swelling, pain, and lameness.

What does the science say?

A series of studies shows that the risk of hock injuries can be greatly reduced by using deep bedding. Lesions are more common on farms using poorly bedded surfaces like mats and mattresses alone.^{1,2} Cattle have increased lying time in well-bedded environments, which reduces the risk for lameness.^{2,3} The most important indicator of an insufficient lying surface is the presence of hock injuries. Cows kept on deep, loosely bedded stalls of sand or dried manure solids, for instance, consistently have fewer hock injuries than those kept on sparsely bedded surfaces.⁴

Various risk factors^{5,6} have been identified as contributing to both hock and knee injuries. Housing, management, and cow-level factors have particular influence. Factors⁵ that have been associated with a reduction in hock and knee injuries include:

- Housing factors: deep bedding, access to pasture, use of sand bedding.
- Management factors: keeping stalls with sufficient bedding that is clean and dry is the most critical practice associated with reduced prevalence of injuries.

Factors^{5,6} that have been associated with increased incidence of both hock and knee injuries include:

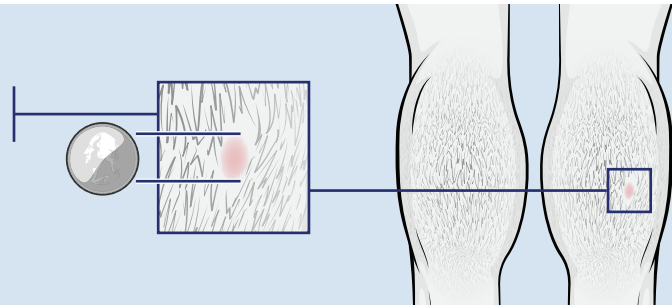
- Housing factors: herringbone parlors, stalls with mattresses, short stall lengths.
- Cow-level factors: lameness, low body condition score, and cows in higher lactation and days in milk.

KNEE SCORING

SCORE 1: NORMAL

Characterized by the following on either leg:

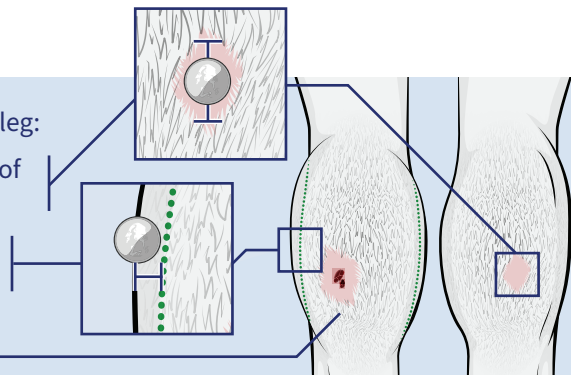
- **Complete hair loss** less than the size of a quarter (1" or 2.5 cm in length or width)



SCORE 2: MODERATE

Characterized by one or more of the following on either leg:

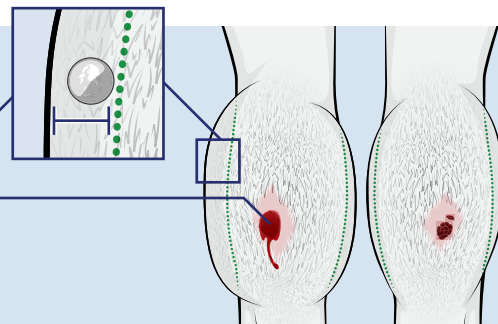
- **Complete hair loss** greater than or equal to the size of a quarter (1" or 2.5 cm in length or width)
- **Moderate swelling** less than or equal to a quarter in height (1" or 2.5 cm)
- **Dried scab** of any size



SCORE 3: SEVERE

Characterized by one or more of the following on either leg:

- **Severe swelling** greater than a quarter in height (1" or 2.5 cm)
- **Open or bleeding wound** of any size

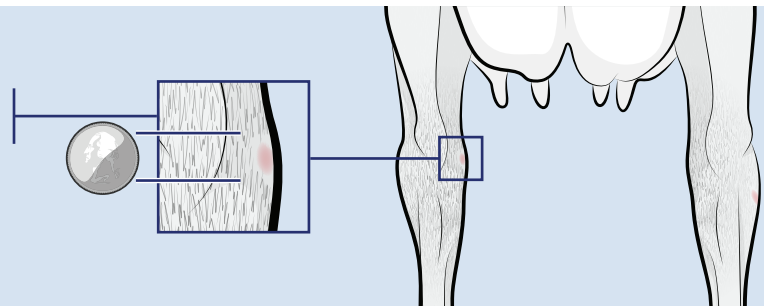


HOCK SCORING (BACK VIEW)

SCORE 1: NORMAL

Characterized by the following on either leg:

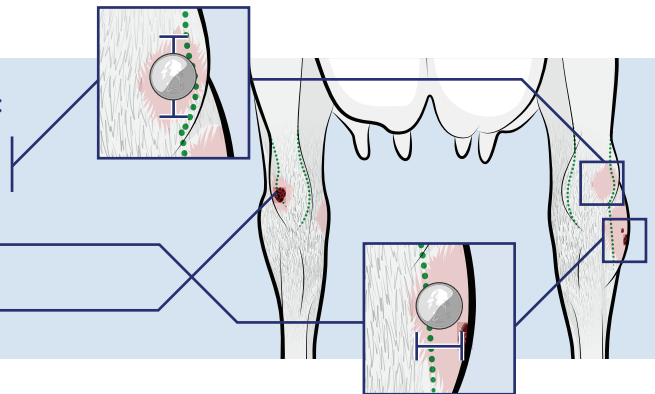
- **Complete hair loss** less than the size of a quarter (1" or 2.5 cm in length or width)



SCORE 2: MODERATE

Characterized by one or more of the following on either leg:

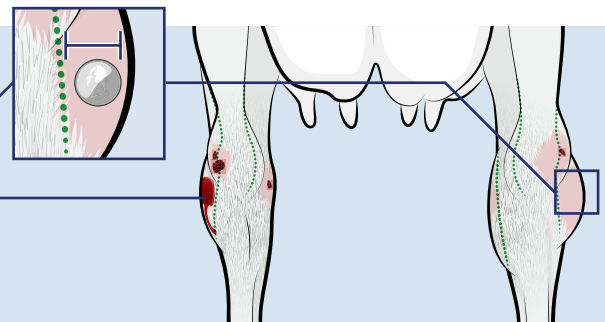
- **Complete hair loss** greater than or equal to the size of a quarter (1" or 2.5 cm in length or width)
- **Moderate swelling** less than or equal to a quarter in height (1" or 2.5 cm)
- **Dried scab** of any size



SCORE 3: SEVERE

Characterized by one or more of the following on either leg:

- **Severe swelling** greater than a quarter in height (1" or 2.5 cm)
- **Open or bleeding wound** of any size

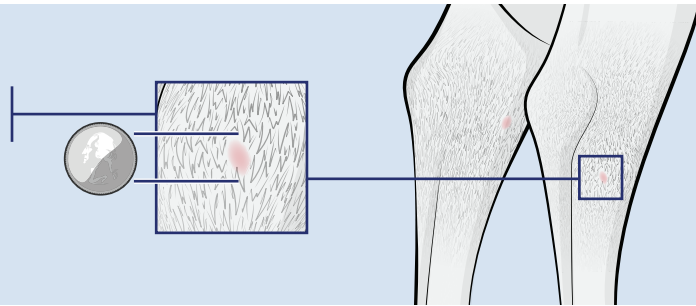


HOCK SCORING (FRONT VIEW)

SCORE 1: NORMAL

Characterized by the following on either leg:

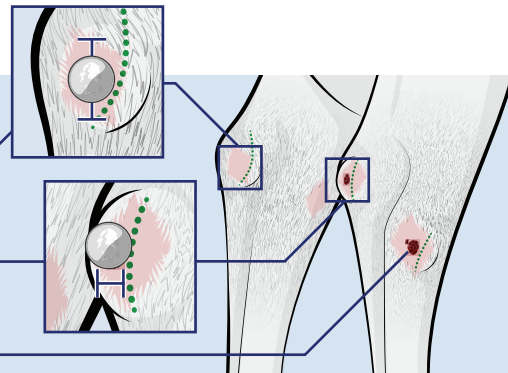
- **Complete hair loss** less than the size of a quarter (1" or 2.5 cm in length or width)



SCORE 2: MODERATE

Characterized by one or more of the following on either leg:

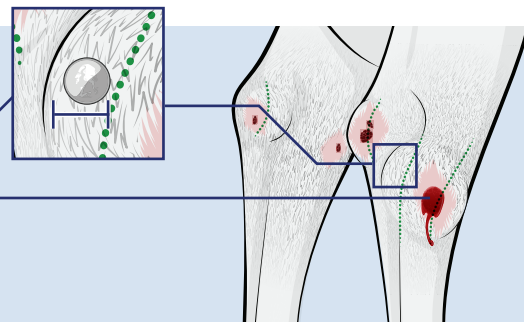
- **Complete hair loss** greater than or equal to the size of a quarter (1" or 2.5 cm in length or width)
- **Moderate swelling** less than or equal to a quarter in height (1" or 2.5 cm)
- **Dried scab** of any size



SCORE 3: SEVERE

Characterized by one or more of the following on either leg:

- **Severe swelling** greater than a quarter in height (1" or 2.5 cm)
- **Open or bleeding wound** of any size



How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe and score animals to determine if the benchmark is met

Corrective Action or Continuous Improvement Opportunity:

If this standard is not met for any age class of animal, the farm will receive a Continuous Improvement Plan (CIP). Improvement towards meeting the standard benchmark must be made within three years. Evaluators working alongside Program Participants may elect for shorter resolution times.

What can you do to meet the standard or improve in this area?

Hock and knee injuries in cattle can be improved in the following ways:

- Increase bedding depth.⁶
- Utilizing proper housing design to ensure stalls and lying areas minimize injury.⁶
- Minimize slick surfaces to reduce slips and falls. This will prevent injury and reduce the animals' need to get up and down on abrasive surfaces.
- Consider changing bedding type for something that is deep, loose, and will provide sufficient cushioning for cattle when lying down and getting up.
- Ensure lying surfaces (e.g., stalls, packs, etc.) are large enough for the size and number of animals occupying them.
- Consider availability of feed, or schedule of feed push-up, to minimize an animal's need to lunge for feed in the bunk, resulting in injury and hair loss to knees.

References

1. Munksgaard, L., M.B. Jensen, L.J. Pedersen, S.W. Hansen, and L. Matthews. 2005. Quantifying behavioural priorities-effects of time constraints on behaviour of dairy cows, *Bos taurus*. *Appl. Anim. Behav. Sci.* 92:3-14. <https://doi.org/10.1016/j.applanim.2004.11.005>.
2. Tucker, C.B., and D.M. Weary. 2004. Bedding on geotextile mattresses: how much is needed to improve cow comfort? *J. Dairy Sci.* 87:2889-2895. [https://doi.org/10.3168/jds.S0022-0302\(04\)73419-0](https://doi.org/10.3168/jds.S0022-0302(04)73419-0).
3. Cook, N.B., T.B. Bennett, and K.V. Nordlund. 2004. Effect of freestall surface on daily activity patterns in dairy cows with relevance to lameness prevalence. *J. Dairy Sci.* 87:2912-2922. [https://doi.org/10.3168/jds.S0022-0302\(04\)73422-0](https://doi.org/10.3168/jds.S0022-0302(04)73422-0).
4. Barrientos, A.C., N. Chapinal, D.M. Weary, E. Galo, and M.A.G. von Keyserlingk. 2013. Herd-level risk factors for hock injuries in freestall housed dairy cows in the Northeastern US and California. *J. Dairy Sci.* 96:3758-3765. <https://doi.org/10.3168/jds.2012-6389>.
5. DeVries, T., E. Vasseur, T. Duffield, D.M. Weary, C. Winder, D. Wiens, and ACER Consulting. 2020. Code of practice for the care and handling of dairy cattle: Review of scientific research on priority issues. Accessed May 17, 2024. <https://www.nfacc.ca/pdfs/codes/scientists-committee-reports/Dairy%20Cattle%20SC%20Report%202020.pdf>.
6. Roche, S.M., D.L. Renaud, J. Saraceni, D.F. Kelton, and T.J. DeVries. 2023. Invited review: Prevalence, risk factors, treatment, and barriers to best practice adoption for lameness and injuries in dairy cattle: A narrative review. *J. Dairy Sci.* 107:3347-3366. <https://doi.org/10.3168/jds.2023-23870>.



HYGIENE

What is the standard?

- ✓ **This standard applies similarly to four age classes of animals:**

Pre-Weaned Calves: 90% or more of pre-weaned calves (>2 days old) observed score 2 or less on the FARM Hygiene Scorecard.

Weaned Heifers: 90% or more of weaned heifers observed score 2 or less on the FARM Hygiene Scorecard.

Dry Cows: 90% or more of dry cows observed score 2 or less on the FARM Hygiene Scorecard.

Lactating Cows: 90% or more of lactating cows observed score 2 or less on the FARM Hygiene Scorecard.

Background on this standard

- **What are the scores in the FARM Hygiene Scorecard?**
 - FARM's Hygiene Scorecard can be accessed here: <https://nationaldairyfarm.com/farm-animal-observations-scoring-guide/> and described on the following page.

What is the rationale for this standard?

Animal hygiene is an indicator of animal health and welfare. Lactating cows with reduced hygiene are at an increased risk of mastitis and reduced udder health. Providing a clean, dry space for cattle to lie down is important for keeping them healthy and comfortable while they rest. Lying down is an important resting behavior for cattle in terms of maximizing health and production and reducing incidence of lameness.

How is this standard evaluated on the farm?

During an on-farm evaluation, evidence will be collected to determine if the farm meets the standard(s) for this topic. One or more of the following approaches will be used to collect this evidence:

- **Observation:** Observe and score animals to determine if the benchmark is met for each age class.

Corrective Action or Continuous Improvement Opportunity:

This standard is not associated with a corrective action.

What can you do to meet the standard or improve in this area?

Hygiene in cows, heifers, and pre-weaned calves can be improved in the following ways:

- Increase bedding depth.
- Consider changing your bedding type to something that better supports hygiene (e.g., sand).
- Change bedding more frequently.
- Observe your facility for clean, dry areas that animals can use to lie down. If there are few available areas, increase bedding management and/or herd management to increase availability.

EVALUATION GUIDANCE: Score both sides of animal and record most severe area.

PRE-WEANED CALVES* AND POST-WEANED SMALL HEIFERS

SCORE 1: CLEAN

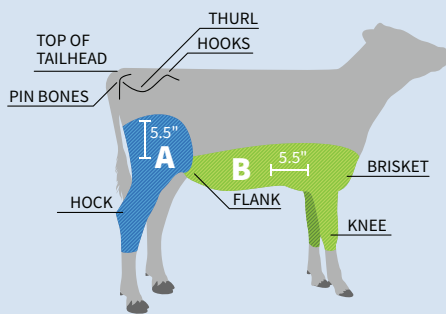
Mud or manure does not exceed 5.5 inches* in length in areas **A or B**

SCORE 2: MODERATE

Mud or manure exceeds 5.5 inches* in length in a **single** area **A or B**

SCORE 3: VERY DIRTY

Mud or manure exceeds 5.5 inches* in length in **both** areas **A and B**



**heifers, bulls, and steers three days of age and older*

POST-WEANED LARGE HEIFERS

SCORE 1: CLEAN

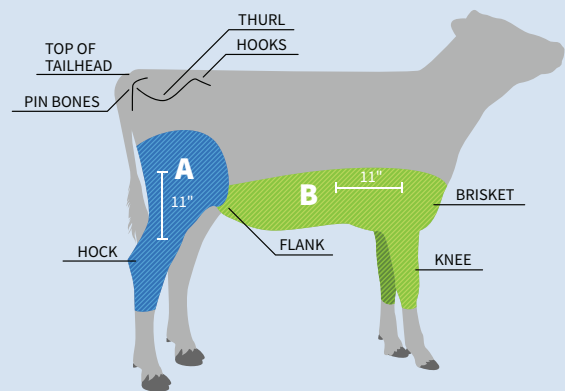
Mud or manure does not exceed 11 inches* in length in areas **A or B**

SCORE 2: MODERATE

Mud or manure exceeds 11 inches* in length in a **single** area **A or B**

SCORE 3: VERY DIRTY

Mud or manure exceeds 11 inches* in length in **both** areas **A and B**



PRE-FRESH, DRY, AND LACTATING COWS

SCORE 1: CLEAN

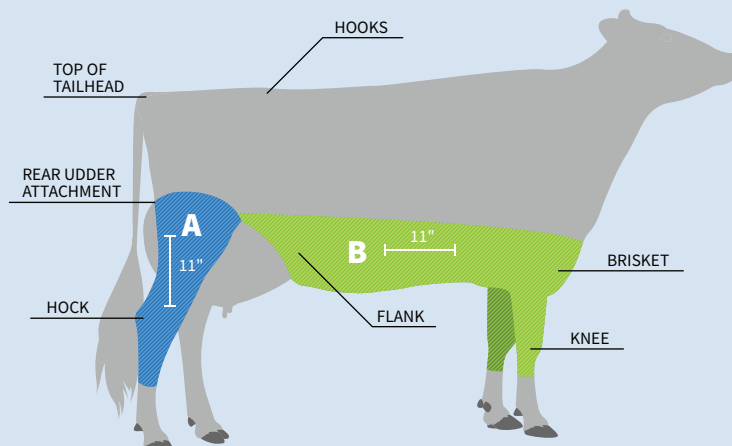
Mud or manure does not exceed 11 inches* in length in areas **A or B**

SCORE 2: MODERATE

Mud or manure exceeds 11 inches* in length in a **single** area **A or B**

SCORE 3: VERY DIRTY

Mud or manure exceeds 11 inches* in length in **both** areas **A and B**



***MEASURING TIP: 5.5 inches is half the height of this 8.5x11-inch paper.**





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