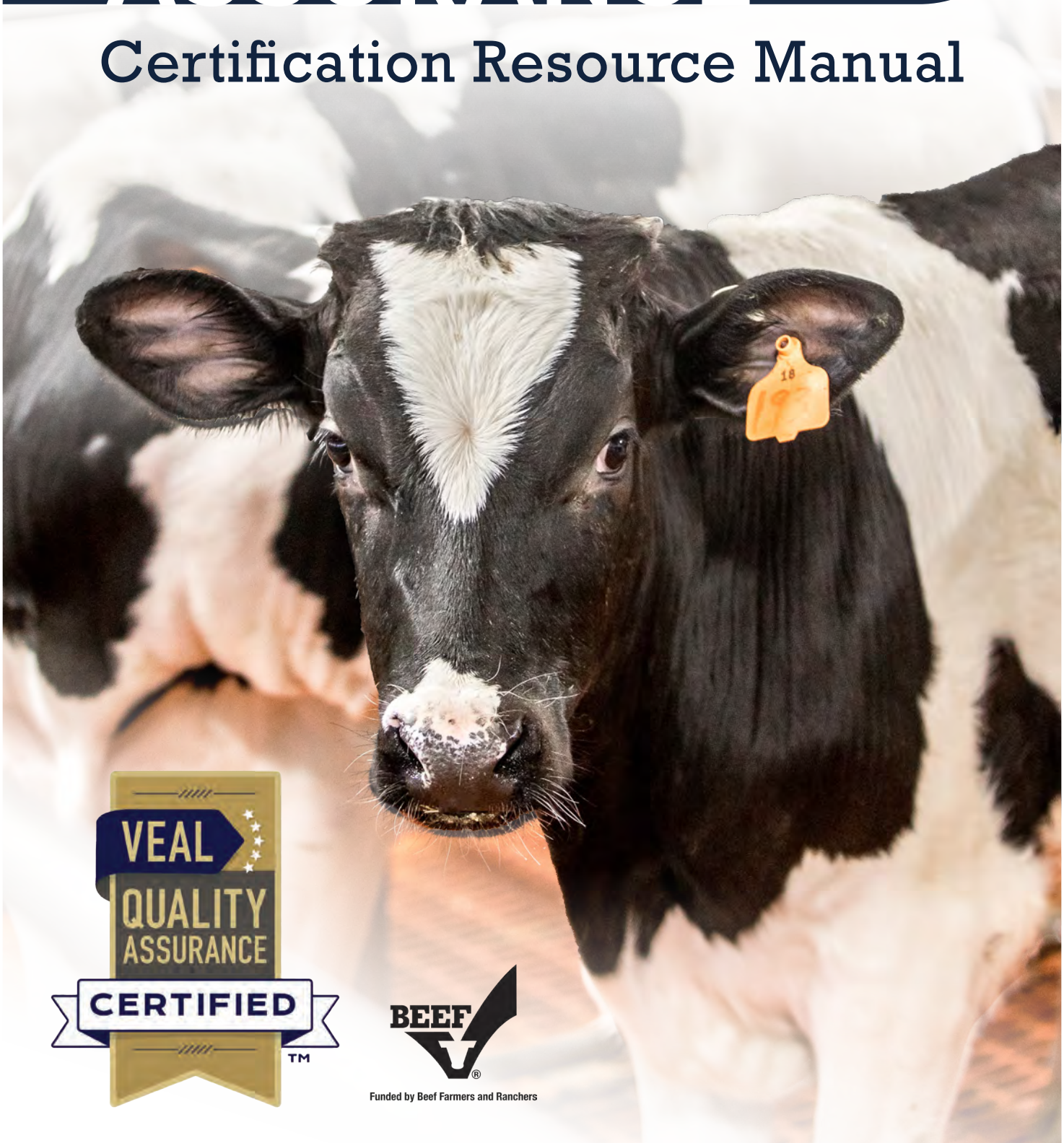
VEAL QUALITY ASSURANCE

JANUARY 2024

Certification Resource Manual



VEAL QUALITY ASSURANCE CERTIFIED™

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ARMS #122123-10 Approved

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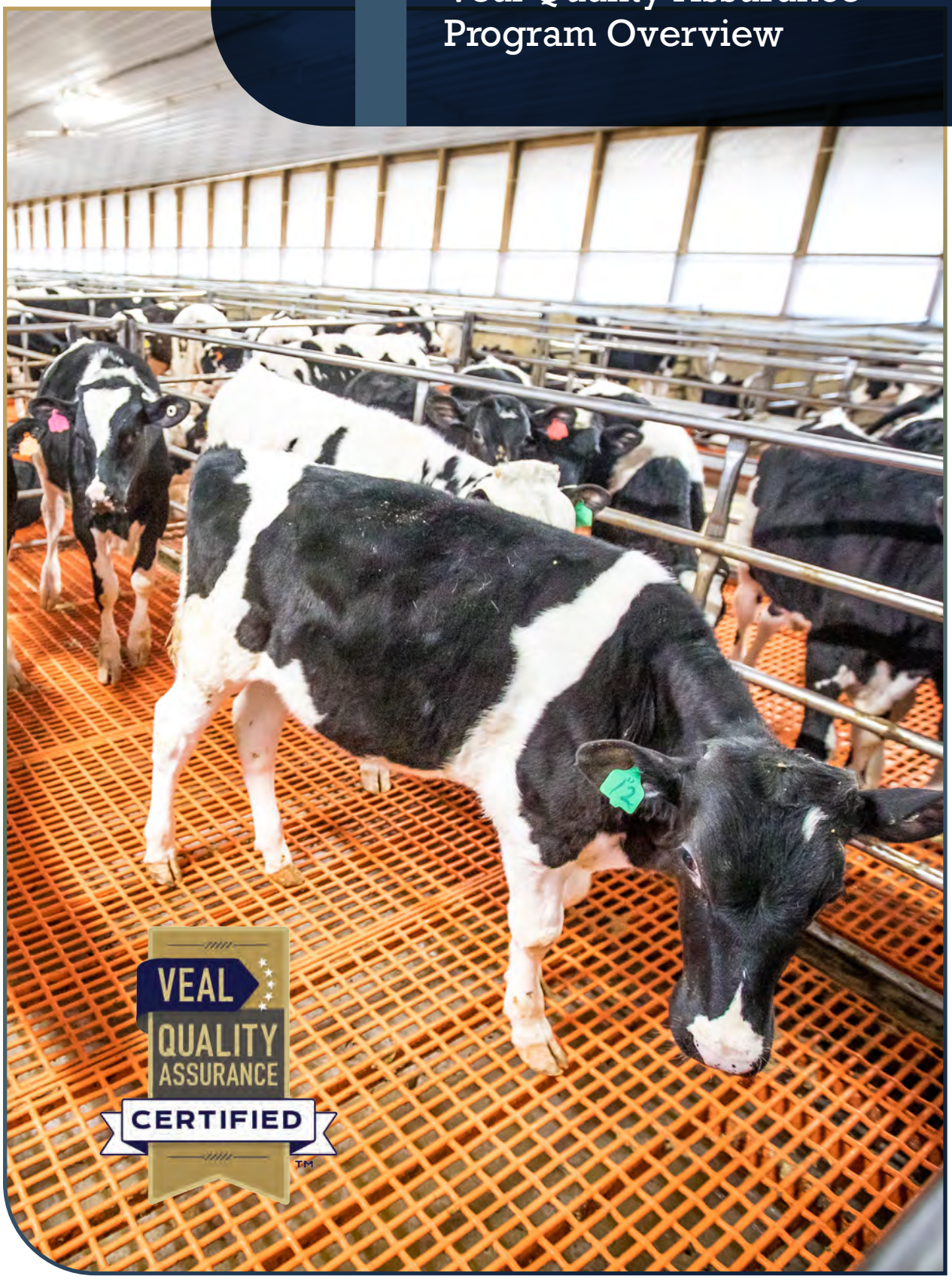


Photo credit: AVA

INTRODUCTION

The science of animal welfare continues to grow, expanding our knowledge and understanding of the physiological and psychological states of animals, especially those raised and cared for by farmers. Farmers have an ethical responsibility to the animals they raise, and they have a responsibility to those who consume the food that is produced.

Today more than ever, interest in food goes beyond taste, nutrition, convenience and price. Today's consumers desire to know how and where their food is produced and who is producing it. The 18th annual Power of Meat report published by the Food Marketing Institute (FMI) and the North American Meat Institute (NAMI) indicates 58% of shoppers think it would be helpful to have some kind of animal welfare ratings or certifications for the meat they buy.

Originating with the American Veal Association, Veal Quality Assurance (VQA) has provided that validation since 1990. VQA like other quality assurance programs such as Beef Quality Assurance (BQA) and National Dairy Farmers Assuring Responsible Management (FARM), helps inspire consumer confidence that veal is ethically and responsibly produced. It also ensures the welfare needs of the animals are met and assessed through a framework and certification process.

The goal of the VQA is to provide a foundation and framework of high standards to ensure formula-fed veal calves raised in the U.S. receive excellent animal care and that those raising calves, in collaboration with licensed veterinarians and animal nutritionists, follow science-based best practices and regulatory requirements to prioritize animal welfare throughout the production system resulting in consistent, safe, quality veal.

The formula-fed veal industry has made extraordinary advancements since the practice of raising formula-fed veal was first introduced by Europe to the U.S. nearly 100 years ago. The most noticeable advancements are the voluntary commitment to shift housing practices to group pens and no tethers, and the dedication to decreasing veterinary drug residues. This commitment to continuous improvement is vital to the long-term success of the U.S. veal industry.

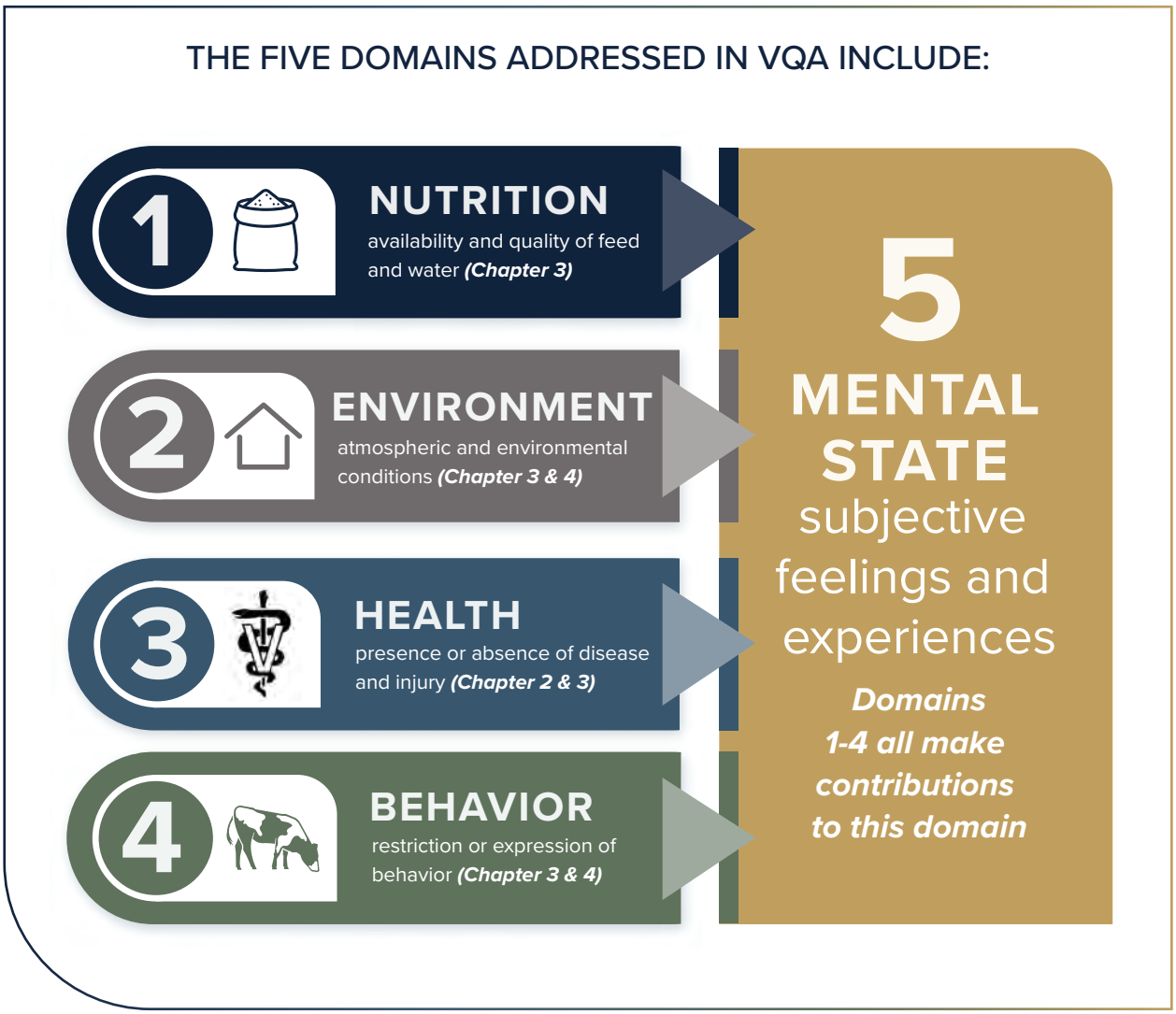
As consumer perceptions and demand for animal-based proteins evolve and new husbandry practices are researched, the formula-fed veal industry must continue to demonstrate they are holding themselves accountable to the highest standards of animal care. The VQA program provides both industry and the consuming public with those standards.

Animal welfare is often defined differently among stakeholders. One prominent definition from the World Organization for Animal Health (WOAH) defines animal welfare as "the physical and mental state of an animal in relation to the conditions in which it lives and dies" (WOAH,2019). In this document, "animal welfare" represents the concepts of animal well-being and quality of life. "Animal care" is used to represent the inputs, protocol and practices influencing animal welfare outcomes.

VQA AND THE "FIVE DOMAINS"

”The “Five Freedoms” have impacted animal welfare internationally for 20 years or more and these standards have been the basis for the VQA program in the past. In recent years, the “Five Domains” have evolved as the new standards for alignment. This shift reflects the advancement of animal welfare science and the significance of promoting positive (physical, behavioral and mental) states of welfare and minimizing negative states.

A noticeable shift in this edition of the VQA manual and certification process is the new focus on “Expected Outcomes” which directly addresses the “Five Domains” and provides defined processes, practices and outcome measurements for achieving welfare goals.



Source: The 2020 Five Domains Model: Including Human-Animal Interactions in Assessments of Animal Welfare. https://pubmed.ncbi.nlm.nih.gov/33066335/

FOOD SAFETY, HACCP AND VQA

The USDA Food Safety and Inspection Service (FSIS) requires meat packing plants to adopt the Hazard Analysis and Critical Control Point (HACCP) food safety system. HACCP is designed to protect public health through food safety by addressing problems proactively to identify and limit potential hazards before they are in danger of reaching the consumer.

Veal farmers are responsible under the packer's HACCP plans to provide animals free from harmful residues of antimicrobials and other known concerns. Farmers should also follow VQA recommended practices to reduce bruises and injection site blemishes as well as follow practices that assist in reducing the burden of food-borne pathogens.

Currently, packers address microbial contamination at the plant, and farmers certainly help with that responsibility by presenting healthy and clean animals free from prohibited products for processing.

THE SEVEN BASIC PRINCIPLES OF THE HACCP SYSTEM INCLUDE:

1. Conduct a Hazard Analysis
2. Determine Critical Control Points
3. Establish Critical Limits
4. Establish Monitoring Procedures
5. Establish Corrective Action
6. Establish Record Keeping and Documentation Procedures
7. Establish Verification Procedures

VQA embraces the principles of HACCP as part of its guidelines and expected outcomes. Proactively recognizing and correcting potential hazards is an achievable best practice. Each farmer, service representative and veterinarian continually complete the "HACCP circle" as they identify, monitor, correct, verify, and record each step in raising VQA-certified veal.

Source: HACCP Seven Principles https://www.fsis.usda.gov/sites/default/files/media_file/2021-02/16_IM_HACCP_Principles.pdf

WHAT IS VEAL?

Veal is meat obtained from calves that typically originate from dairy cows. The U.S. veal industry is comprised of two major markets, formula-fed veal and bob veal.

FORMULA-FED VEAL

(also known as milk-fed or special-fed)

- These calves are raised for about six months and marketed at 500 pounds or more. The calves consume milk, grain and some supplemental fiber throughout the production process.
- The VQA program provides best management practices for producing milk-fed veal.
- Approximately 76% of the veal consumed in the U.S. is derived from milk-fed veal calves.

BOB VEAL

- Bob veal are dairy calves marketed within days of birth and typically sold directly to a meat processing plant or through an auction barn to a meat processing plant for harvesting and fabrication. Calves typically weigh less than 150 pounds.
- Dairy farmers should be very careful not to use medications that can cause residues in these young calves.
- Dairy farmers marketing young calves should refer to and follow the best management practices for newborn calves and dairy beef outlined in the National Dairy FARM program and the Calf Care Quality Assurance (CCQA) program.

SEE IT? STOP IT!
ANIMAL CARE STARTS WITH YOU.

The See it! Stop It! initiative encourages and empowers individuals working with or around animals to immediately report any signs of deliberate animal abuse, neglect, harm or mishandling to a supervisor or any other individual responsible for enforcement of proper animal care at the facility. Individuals can report animal care concerns by calling 833.207.7457 or email: info@seeitstopit.org

A MESSAGE TO DAIRY FARMERS

Milk-fed veal farmers depend on the care and attention dairy farmers provide to newborn calves on the dairy farm.

The success of calves entering beef and veal production systems is highly dependent on early care at the dairy farm. Calves should receive high quality care at birth regardless of their sex or destination.

The Calf Care Quality Assurance (CCQA) program recommends that all calves, heifers and bulls receive high-quality colostrum greater than or equal to 10% of the calf's body weight, ideally within the first two hours of life and no later than six hours after birth

It is recommended to test colostrum using a Brix refractometer or colostrometer to ensure that the colostrum is high quality, as colostrum can be variable.

PASSIVE TRANSFER OF IMMUNITY

The level of passive transfer (an indicator of the volume, quality, and timeliness of colostrum being administered) is a key predictor of future disease. Consider measuring passive transfer on calves between 24 hours to nine days of age. this is done by obtaining a blood sample and measuring the level of protein in the serum which correlates to the level of immunoglobulins that would have been obtained through colostrum. The following benchmarks for calves can be used to guide whether colostrum management at the source facility is creating a challenge for arriving calves.[1]

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

[1]Lombard, J., N. Urie, F. Garry, S. Godden, J. Quigley, T. Earleywine, S. McGuirk, D. Moore, M. Branan, M. Chamorro, G. Smith, C. Shivley, D. Catherman, D. Haines, A.J. Hendrichs, R. James J. Maas, and K. Sterner. 2020. Consensus recommendations on calf-and herd-level passive immunity in dairy calves in the United States. Journal of Dairy Science 103.7611-7624.

If arriving calves are not meeting these targets, work with producers supplying their calves to your facility to aid them in improving their colostrum management.

Dairy farmers should note that when anticipating the sale of calves to a veal farm, through an auction market, or selling calves to be harvested as bob veal, many medications approved for use in dairy calves are prohibited for use in veal calves and will cause violative residues when administered to veal calves. Avoid products with the statement "not for use in calves to be processed for veal."

MANUAL OVERVIEW

This manual for the Veal Quality Assurance (VQA) Program serves as an educational resource outlining the expected outcomes for VQA certification and the best management practices for achieving certification. Some of the recommendations and outcomes contained in this manual refer to specific guidelines set out by the Food and Drug Administration (FDA) and/or United States Department of Agriculture (USDA) and professional veterinary organizations including the American Association of Bovine Practitioners (AABP) and the American Veterinary Medical Association (AVA). Additional content and recommendations were sourced from the National Dairy FARM, Calf Care Quality Assurance and Beef Quality Assurance programs.

The VQA program manual has been compiled to meet the unique needs of the U.S. formula-fed veal industry. The content reflects the best available science and research related to animal welfare as well as the technical input and review from animal scientists, veterinarians and animal nutritionists who have a shared commitment to the welfare of animals.

Farmers should work with their team of advisors, veterinarians, nutritionists and/or other veal company representatives to develop on-farm protocols and training to meet the expected outcomes outlined in this manual to be VQA certified.

2023 VQA TECHNICAL REVIEW PROCESS

A Technical Review Group was formed in 2023 representing veterinarians, feed and nutrition professionals, academia, farmers, and other animal care experts to review and update VQA. This manual represents their recommendations to ensure VQA is science-based and provides educational resources and protocol to help those who raise veal calves meet the ethical obligation to the health and well-being of the animals.

PARTICIPANTS OF THE 2023 TECHNICAL REVIEW GROUP:

- **Greg Habing, DVM, Ph.D.,** College of Veterinary Medicine, The Ohio State University
- **Robert Supancik,** Formula One Feed
- **Miriam Weber Nielsen, Ph.D.** Michigan State University
- **Jennifer Kauf, VMD,** Food Animal Private Practice, Pennsylvania
- **Sonia Arnold, Ph.D.,** Marcho Farms, Inc
- **Annie Dubuc, M.Sc.,** Delimax/Catelli Foods
- **Steve Anderson,** Midwest Livestock, Strauss Dairy Ingredients
- **Margaret Masterson, DVM,** College of Veterinary Medicine, The Ohio State University
- **Jessica Pempek, Ph.D.,** USDA-ARS Livestock Behavior Research Unit, Research Animal Scientist

TECHNICAL REVIEW AND EQUIVALENCY AUDITS PROCESS

- Convene a Technical Review Group every five years to evaluate and update the VQA program standards and certification process.
    - The next technical review should occur in 2028.
- Equivalency audits are to occur every five years to coincide with the updating of the VQA program materials.
    - Equivalency audits are recommended to occur in 2024.

Previous technical reviews of the VQA program occurred in 1995, 2004, 2014 and 2017. This edition was reviewed and updated in 2023 and new resource materials were launched in 2024.

CONTENT ACKNOWLEDGMENTS

As referenced previously, content from the National Dairy FARM, Beef Quality Assurance, and Calf Care Quality Assurance programs were reviewed and included when it applies to veal production practices and overall calf care.

Additional consideration was given to recommendations contained in a March 2020 study, "Comparison of the content and execution of United States programs on calf care and management: BQA, DCHA, FARM, and VQA."

The analysis was conducted by Jennifer Van Os, PhD, Assistant Professor and Extension Specialist in Animal Welfare, University of Wisconsin-Madison, and Theresa Ollivett, DVM, PhD, Assistant Professor, Food Animal Production Medicine Department of Medical Sciences School of Veterinary Medicine, University of Wisconsin-Madison.

Images and graphics presented in this manual are the property of the Beef Checkoff unless other photo credit is referenced.

VQA CERTIFICATION REQUIREMENTS

TO BE VQA CERTIFIED, EACH FARM AND ITS OWNER/FARM MANAGER PRODUCING MILK-FED VEAL IS EXPECTED TO:

A. Maintain a Veterinarian-Client-Patient-Relationship (Appendices Form 1)

B. Meet the Expected Outcomes outlined in each section of the VQA manual and summarized in the Appendices.

C. Have a licensed veterinarian (preferably the one identified in your VCPR) assess and provide documentation every three years confirming that Expected Outcomes are achieved. (Appendices Form 2)

Submit completed VQA Certification documentation *(Form 1 and Form 2)* to:
Veal Quality Assurance Program
2900 NE 60th Street, Suite 200
Gladstone, MO 64119
VQA@LookEast.com

Licensed veterinarians who maintain a Veterinarian-Client-Patient-Relationship serve a critical role in the VQA certification process to assess that best management practices are followed and most importantly, **Expected Outcomes** are achieved on farms raising formula-fed veal.

Additionally, **industry/company representatives** are instrumental in supporting VQA certification by providing program leadership, education and assistance to veal farmers and their employees.

The VQA program and resource materials are intended for educational purposes only. This program manual is not a legal document. Veal farmers are individually responsible for determining and complying with all requirements of local, state and federal laws and regulations regarding all aspects of animal care and production practices.

Look East facilitated the 2023 technical review process updating this document. For additional information or copies, contact: VQA@LookEast.com

EDUCATIONAL RESOURCES AND TRAINING

To encourage continuous improvement in best management practices, please consider self-guided reading of instructional manuals and materials and participation in workshops including, but not limited to:

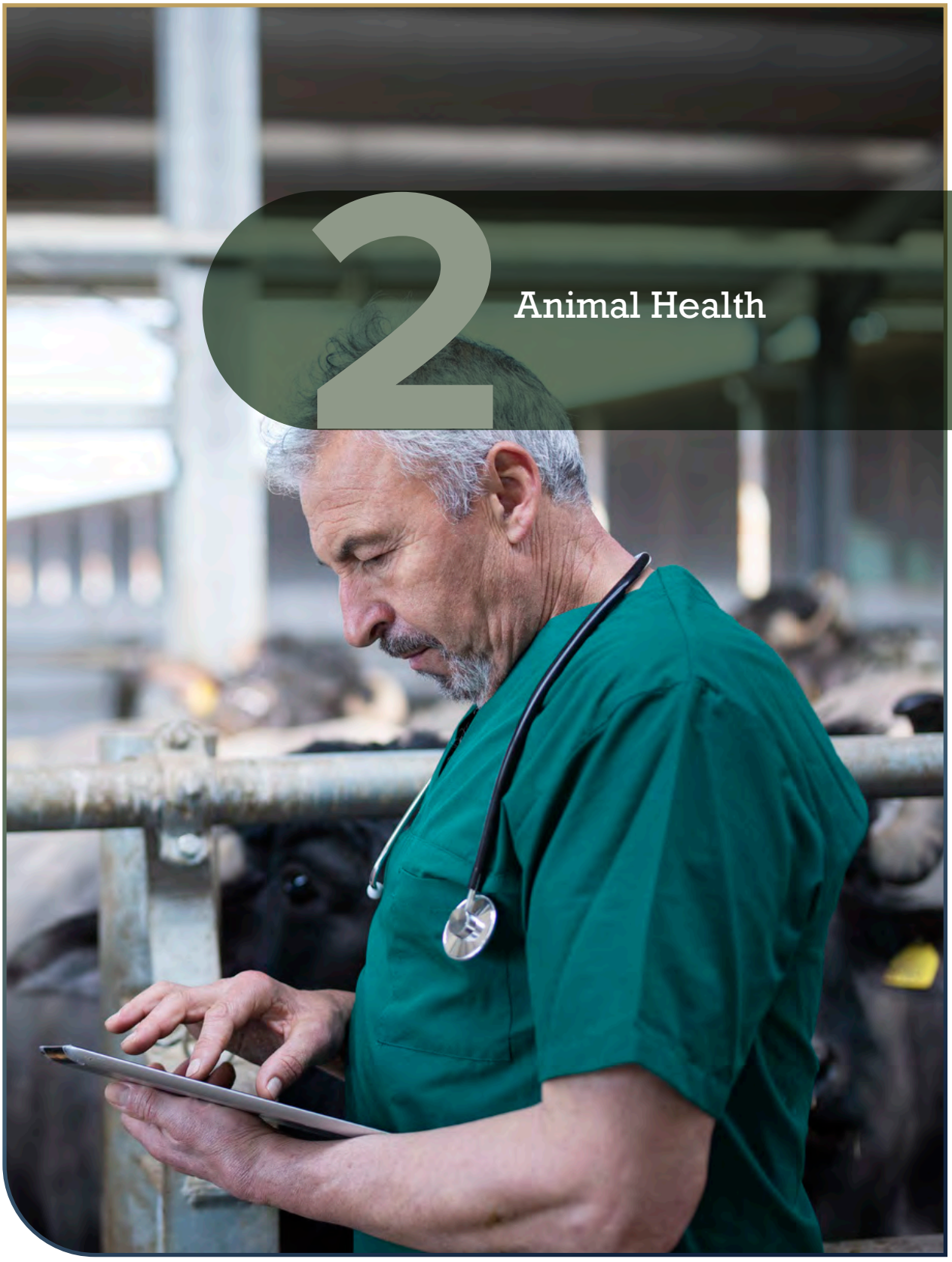
- Calf Care and Quality Assurance Manual and training
- BQA Quality Assurance Certification Resource Manual
- VQA educational presentation by an industry/company representative in a group setting or one-on-one review
- University of Wisconsin Pair or Group Housing of Dairy Calves starter guide
- The Ohio State University Antibiotic Stewardship Educational resources and training
- Dairy Calf and Heifer Association educational webinars and conferences

Ongoing industry meetings and educational opportunities from veterinarian practitioners; industry representatives, university animal care experts, are also excellent resources for ongoing education.

FUNDING AND MANAGEMENT

Every beef and veal farmer, and every beef or veal importer, financially contributes to a national program called the Beef Checkoff. This funding is used to support the Veal Quality Assurance Program. The Beef Checkoff program was established as part of the 1985 Farm Bill. The Checkoff assesses $1 per head on the sale of live domestic and imported cattle, in addition to a comparable assessment on imported beef and beef products. The VQA program is managed by the North American Meat Institute, a contractor to the Beef Board. To learn more about the National Beef Checkoff, visit www.BeefBoard.org

Funded by Beef Farmers and Ranchers



2 Animal Health

ANIMAL HEALTH – A TEAM EFFORT

Raising healthy calves is the priority at the farm and it requires a team approach. This chapter outlines the management practices inherent to achieving optimum animal health and welfare. Veal farmers have an ethical obligation to provide every animal with appropriate quality care through each stage of life. This can best be achieved by establishing on-farm protocols and training to maximize animal health while minimizing stress, disease and pain. In conjunction with providing essential nutrition, access to water, and a clean, comfortable environment, a timely and appropriate response to treating sickness or disease is important. By working directly with a veterinarian to establish a comprehensive herd-health program, veal farmers can provide quality animal care, prevent disease and determine the best option for addressing any animal health concern.

Working with a veterinarian is the first and most important step to healthy calves and VQA certification.

Photo credit: AVA

CHECKLIST:
EXPECTED OUTCOMES FOR VQA CERTIFICATION

ESTABLISH A VETERINARIAN-CLIENT-PATIENT RELATIONSHIP (VCPR)
OUTCOME: Establish a VCPR

HEALTH MANAGEMENT PLAN
OUTCOME: In consultation with your veterinarian, develop and follow a Health Management Plan that includes written protocols and records for the following areas:

1 ANIMAL IDENTIFICATION
OUTCOME: All animals are identified with an easily visible tag, preferably an RFID tag.

2 MEDICATIONS AND IMMUNIZATIONS
a. Stewardship and Residue Prevention
OUTCOME: Facility-specific antibiotic stewardship practices are outlined and implemented to prevent, detect and when needed, treatment of common diseases is managed promptly and properly to optimize health outcomes and prevent residues.

b. Treatment and Health Records
OUTCOME: Permanent drug treatment records are maintained including date of treatment, animal ID, disease or condition, drug, dosage and administration route, person administering the treatment, injection method and site, duration of treatment and specific withdrawal time. FDA regulations require records to be kept for a minimum of two years.

OUTCOME: Health records document type and severity of disease, date of diagnosis, action taken and outcomes including recovery or death.

c. Storage and Disposal
OUTCOME: Medications are properly stored at the correct temperature and discarded based on specific label instructions.

d. Procedures and Administration Methods
OUTCOME: Medications are administered using the approved route, dose, and duration.

e. Immunization
OUTCOME: A vaccination program in consultation with the VOR considers diagnostic laboratory information to tailor the selection and timing of vaccines to prevent diseases.

3 BIOSECURITY AND SANITATION
OUTCOME: Facility-specific biosecurity and sanitation measures are documented and implemented to prevent the spread of disease.

4 MONITORING MORBIDITY AND MORTALITY
OUTCOME: Health records are summarized to describe overall health trends. Veal calves are monitored, assessed and managed to ensure that risk factors are reduced, and mortality and morbidity are prevented.

5 NON-AMBULATORY ANIMALS
OUTCOME: Detection, movement, housing, treatment, care and decision-making details ensure calves are managed in a safe and timely manner.

6 EUTHANASIA
OUTCOME: For animals identified to be euthanized, the euthanasia technique and disposal of euthanized animals reflect guidelines approved by AABP and/or AVMA. Individuals responsible for euthansia should receive adequate training.

7 ASSESSING FITNESS FOR TRANSPORT
OUTCOME: Calves are assessed for fitness before being transported and non-ambulatory animals are never shipped to market.

THE AMERICAN ASSOCIATION OF BOVINE PRACTITIONERS (AABP) OUTLINES THE EXPECTATIONS OF A VCPR AS FOLLOWS:

WRITTEN AGREEMENT

Maintain written agreements for working relationships

A veterinary practice or individual should establish a written agreement with the client that identifies the veterinarian (or veterinary practice if multiple veterinarians from one clinic provide service) who is accountable for drug use and treatments administered to cattle on the operation. If more than one veterinarian or veterinary practice has a working relationship on the operation, then the agreement should establish which one has the overall responsibility for treatment protocols, prescriptions, personnel training, oversight and drug use on the operation. The identified veterinarian is referred to as the Veterinarian of Record (VOR).

VETERINARY OVERSIGHT

Have a Veterinarian of Record (VOR)

The VOR is responsible for making recommendations with respect to animal health at the operation, including appropriate oversight of drug use on the operation. Such oversight is a critical component of establishing 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 usage and assuring appropriate labeling of drugs. Veterinary oversight of drug use should include all drugs used on the operation regardless of the distribution of drugs to the operation. Regular site visits are an essential component to providing such oversight, however this can be supplemented through laboratory data evaluation, records evaluation, telephonic and electronic communication. The timeliness of site visits should be determined by the Veterinarian of Record based on the type and size of the operation.

RELATIONSHIP WITH CONSULTANTS AND OTHER VETERINARIANS

Clarify any and all relationships with consultants and other veterinarians

If a veterinarian who is not the Veterinarian of Record provides professional services in any type of consultative or advisory capacity, then it is incumbent on that veterinarian to ensure that the Veterinarian of Record is contacted and informed of their findings and recommendations. No protocols or procedures that have been established by the Veterinarian of Record should be changed unless or until there is an agreement by all parties about such changes. The agreement between the Veterinarian of Record and the client should establish which management groups of the operation are covered in the agreement.

For VQA, the management group covered by the agreement must include the veal calves at all stages of production.

TREATMENT PROTOCOLS

Provide written protocols

Protocols and treatment guidelines for commonly occurring, easily recognizable conditions should be established in writing and agreed upon by all parties involved, signed and dated. Training of personnel authorized to use drugs on the operation should be undertaken and periodically reviewed. The frequency of such training and review should be determined by the size and type of the operation, the rate of personnel turnover, and the changes in protocols and procedures. The treatment protocols and procedures should include all drugs used on the operation (e.g., over-the-counter, prescription, extra-label, Veterinary Feed Directive, water-soluble). All protocols should clearly define when to quit treating and seek professional help (e.g., poor response, increase in severity of clinical signs).

WRITTEN/ELECTRONIC TREATMENT RECORDS

Ensure written or electronic treatment records are maintained

Written/electronic treatment records of all animals or groups of animals treated are an essential component of maintaining and establishing the VCPR to decrease the risk of violative drug resides. Such records should include, at a minimum, the date, identification of animal(s), drug(s) used, frequency, duration, dose, route, appropriate meat withdrawal intervals and the person administering the treatment. Periodic and timely review of the treatment records and drug usage is an important part of oversight by the Veterinarian of Record.

PRESCRIPTION DRUGS

Provide drugs or prescriptions for specific time frames and for specific protocols

Provision of drugs or drug prescriptions should be for specific time frames and appropriate to the scope and type of operation involved and only for management groups within the operation that the Veterinarian of Record has direct involvement and oversight. Additionally, failure to follow agreed upon protocols and procedures should be grounds for denial of provision of drugs or prescriptions except for an individual patient needing treatment at the time of examination. Routine examination of drug inventories on farm and product purchase records (pricing information is unnecessary) review are recommended. Cooperation with distributors is encouraged. Establishment of a VCPR for the sole purpose of the sale of drugs or increased sales of a particular brand of drug is not a valid or ethical reason for having a VCPR.

Source: AABP VCPR Guideline. https://aabp.org Revised March 2020 VCPRGuidelineRev032020.indd (aabp.org)

Refer to Appendices for Veterinary Client Patient Relationship Validation Form.

HEALTH MANAGEMENT PLAN

The cornerstone of quality assurance is written procedures and protocols that help guide calf care management. This is commonly referred to as a Health Management Plan developed by your veterinarian. A comprehensive Health Management Plan should include written protocols for all primary areas of calf health management and provide enough details to ensure all family and non-family employees with animal care responsibilities can perform those duties accurately and consistently.

A written Health Management Plan with standard operating procedures should include the following:

1. Animal Identification
2. Medications and Immunizations
   a. Stewardship and Residue Prevention
   b. Treatment and Health Records
   c. Storage and Disposal
   d. Procedures and Administration Methods
   e. Immunization
3. Biosecurity and Sanitation
4. Monitoring Morbidity and Mortality
5. Non-Ambulatory Animals
6. Euthanasia
7. Assessing Fitness for Transport

The focus of the Health Management Plan should be prevention, accurate and early diagnosis, and quick decision-making on necessary treatment and care of all sick animals. Your written Health Management Plan should be reviewed by your Veterinarian of Record (VOR) on an annual basis.

Refer to Appendices for Treatment and Health Record Forms.

ANIMAL HEALTH BEST MANAGEMENT PRACTICES

1 ANIMAL IDENTIFICATION

It is imperative that all animals within the facility have highly visible identification affixed to them upon arrival if they did not arrive with identification. Identification is beneficial to ensure proper record-keeping, residue prevention and treatment.

USDA has implemented Animal Disease Traceability (ADT) rules to monitor and regulate movement of animals between states. The guidelines state all animals must be identified using an approved method or device for identification. Some of the approved options include:

- Radio Frequency Identification (RFID) tag
- Brite tag
- Vaccination tag
- Dangle tag
- Button tag

Consider establishing a traceability system for your facility by tagging calves upon arrival with unique identifiers that also indicate the source or supplier. Identification protocols 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.

2 MEDICATIONS AND IMMUNIZATIONS

FDA Definitions and Oversight

FDA defines a drug as any substance (vaccine, antibiotic, analgesic) for use in the diagnosis, cure mitigation, treatment or prevention of disease. These drugs, when used as directed, can be important and effective tools for farmers to improve and sustain the health and welfare of their animals.

All animal medicines are required to meet stringent FDA standards, including significant human and food safety benchmarks, prior to approval. Compared to other livestock species, a limited number of medications are approved for use in veal calves. It is especially important to work with your veterinarian to determine which drugs are allowed for use in veal calves.

FDA Guidance #263

As of June 2023, medically important antibiotics for animals over-the-counter (OTC) require a prescription from your veterinarian.

FDA Guidance #263

The Food and Drug Administration (FDA) Center for Veterinary Medicine Guidance for Industry (GFI) #263 instructs animal drug companies to voluntarily change labels so that medically important antibiotics, which are medically important for human medicine, that are currently available over-the-counter (OTC) for animals transition to prescription only. These medications will require a prescription from a licensed veterinarian for legal use and livestock producers will need an established veterinarian-client-patient relationship (VCPR) before purchasing prescription antibiotics.

Extra-Label Drug Use

Extra-label drug use (ELDU) is more common for veal calves in that there are very few medications created to treat and prevent disease for veal. FDA defines ELDU as actual or intended use of a drug in an animal in a manner that is not in accordance with the approved labeling. This practice is regulated by FDA under the AMDUCA regulations. Using a prescription drug or over-the-counter drug in an extra-label manner is illegal unless it is under the supervision of a veterinarian and it is prescribed with a veterinarian working in the context of a VCPR. Veterinarians who are unsure if a drug can be prescribed in an extra-label drug use manner can consult the AVMA's extra-label drug use algorithm along with the AMDUCA regulations.

Veterinary Feed Directive (VFD) Medications

A VFD drug is intended for use in animal feeds and such use of the VFD drug is permitted only under the professional supervision of a licensed veterinarian. Fluid milk and milk replacer are considered a feed, however, there is no VFD approved for use with veal. A VFD drug cannot be used in an extra-label manner.

Hormone implants are strictly prohibited for use in veal calves.

2a ANTIMICROBIAL STEWARDSHIP AND RESIDUE PREVENTION

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.

Additionally, the presence of drugs in products intended for human consumption can mean serious consequences for the farmer. The marketing of food products with drug residues, even unintentionally, is illegal. It can result in financial and criminal penalties. Residue prevention includes establishing and following good treatment protocols and ensuring accurate records.

Your veterinarian should aid in the development of treatment protocols and have data available to oversee the use at your facility.

Use the following information as a guide to ensure judicious use of antibiotics as outlined in the American Veterinary Medical Association (AVMA), AABP, and Academy of Veterinary Consultants (AVC) Guidance on Appropriate Veterinary Antibiotic Use:

1. **Focus on prevention.** Preventing health challenges will lead to a reduction in the need to use antibiotics. Ensure appropriate husbandry and hygiene, routine health examinations, and vaccinations to impact the health of the animal.
2. **Adhere to FDA guidelines.** Follow label instructions and FDA guidance for the use of all antibiotics. The use of antibiotics that are medically important in human medicine should only be used after careful consideration. If medically important feed-grade antibiotics are used, they must be under the guidance of a Veterinary Feed Directive (VFD).
3. **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. Veterinarians can use laboratory data, including culture and sensitivity testing of bacterial pathogens, to select the antibiotic that will lead to best health outcome.
4. **Don't use multiple antibiotics.** Combination antibiotic therapy is discouraged unless there is clear evidence the specific practice is beneficial. Combination therapy would constitute extra-label drug use and must be directed and supervised by a veterinarian.
5. **Avoid inappropriate antibiotic use.** Avoid using antibiotics when inappropriate, such as for viral infections without bacterial complication. Only use antibiotics to treat diseases they are clinically proven to treat.
6. **Treatment programs should reflect best use principles.** Regimens for therapeutic antibiotic use should be optimized using current pharmacological information and principles.
7. **Treat the fewest number of animals possible.** Limit antibiotic use to sick or at-risk animals.
8. **Treat for the recommended time period.** Minimize the potential for bacteria to become resistant to antimicrobials by following the recommended treatment duration.
9. **Avoid environmental contamination with antibiotics.** Steps should be taken to minimize antimicrobials reaching the environment through spillage, contaminated ground run off, or aerosolization.
10. **Keep records of antibiotic use. Accurate records of treatment and outcome should be used to evaluate therapeutic regimes and always follow proper meat and milk withdrawals.** Keep records for a minimum of two years or longer based on state and local regulations. (This is an FDA requirement).
11. **Follow label instructions and never use antibiotics other than as labeled.** Prescriptions, including extra-label use of medications, must meet the Animal Medicinal Drug Use Clarification Act (AMDUCA). This includes having a valid VCPR.
12. **Medically important antibiotic use should be limited to treat, prevent, or control disease**. Medically important antibiotics should not be used if the principle intent is to improve performance. Antibiotics that are medically important to human medicine, which includes all antibiotics available for use in veal production except ionophores, may not be used to improve performance.

2b TREATMENT AND HEALTH RECORDS

Animal health treatment records are critical to ensure the safety of meat that enters the food supply. Records also help to determine the level of disease within your facility. Maintaining excellent treatment records can:

- Ensure an effective Health Management Plan through periodic and timely review of treatment records with your veterinarian.
- Prevent accidental violative residue.
- Save money.

Records on all animals treated with drugs should be kept for a period of at least two years per the FDA, or in accordance with local laws and regulations.

The treatment records for the facility should be kept in:

- A permanent format (written or electronic) for the treatment of common diseases that occur.
- A format that is easily accessible for those who work with animals.

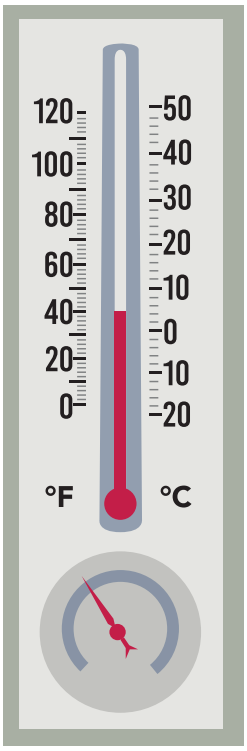
Refer to the Appendices for Treatment and Health Record Forms.

Specific drug record components that should be recorded include:

- Date of treatment
- Person administering the treatment
- Animal ID
- Disease or condition name
- Drug name
- Dosage
- Route of administration *(i.e., intramuscular [in the muscle], subcutaneous [under the skin], oral, intravenous [in the vein])*
- Injection method and site
- Duration of treatment
- Specified withdrawal times for meat to ensure food safety

2c STORAGE AND DISPOSAL

Medications and other animal health care products (AHCPs) should be obtained from a reputable supplier and properly labeled. It is also essential to follow label instructions for storing and administering AHCP. For example, a label may state that the entire bottle should be used within a certain time period and then be discarded. Those instructions are important for maintaining the safety and effectiveness of the product.



- Store AHCPs according to label instructions; most medications from which some product has been used should be stored in a refrigerator at constant temperature of 35-45°F. Coolers are not an appropriate form of permanent storage.
- Antiseptics, wound dressings, vitamin or mineral products, and other products that do not require refrigeration can be stored in cabinets. Store in cool, dry conditions. Re-seal containers as much as possible between uses.
- Keep a thermometer in the refrigerator to determine if the temperature is accurate; discard any vaccines, medications or other AHCPs that become frozen.
- Sanitize the tops of bottles that have been opened, and from which some product has been withdrawn (e.g., with alcohol), before storing and just prior to reuse.
- Store AHCPs in a refrigerator, special cabinet, separate room or other protected area that can be locked.
- Use a new needle for each animal injection to minimize disease transmission and contamination.
- Disposable needles and syringes are recommended and should be properly disposed of after a single use.

- Keep syringes, needles and other administration supplies in their individual wrappers until use.
- When withdrawing AHCPs from bottles, a new, clean needle should be placed in the bottle, thereby reducing the chance of transmitting organisms from calf-to-calf.
- Never leave needles or syringes in the AHCP container between uses.
- Do not mix different AHCP in syringes.

DISPOSAL

DO:

- Return outdated drugs to the supplier. Empty bottles of medicine – biological or pharmaceuticals – must be disposed of in a landfill and cannot be recycled.
- Immediately place used needles and other sharps in a sharps disposal container to reduce the risk of needle sticks, cuts or punctures from loose sharps.
- Use an FDA-cleared sharps disposal container, if possible. If an FDA-cleared container is not available, consult your veterinarian regarding appropriate disposal containers and methods including where and how to get an FDA-cleared sharps disposal container.
- Keep all sharps and sharps disposal containers out of reach of children and pets.
- Ask the manufacturer of your drug products used with a needle or other sharps if they provide a sharps disposal container to customers at no charge.

DO NOT:

- Throw loose needles and other sharps into the trash.
- Flush needles and other sharps down the toilet.
- Put needles and other sharps in your recycling bin -- they are not recyclable.
- Try to remove, bend, break, or recap needles used by another person. This can lead to accidental needle sticks, which may cause serious infections.
- Attempt to remove the needle without a needle clipper because the needle could fall, fly off, or get lost and injure someone.

2d PROCEDURES AND ADMINISTRATION METHODS

PROCEDURES

To ensure calf comfort, use proper care while restricting calf movement when the AHCP is administered. All calf caretakers should be trained in proper animal handling procedures to minimize calf stress and the possibility of personnel or calf injury.

Follow label instructions to determine the optimal method of administration unless a veterinarian prescribes a different use of the medication. All persons helping to care for, feed or treat calves should receive proper training and supervised practice in administering AHCPs prior to administering these products by themselves.

Administer AHCP using the approved route or method of administration as recommended by your veterinarian. A correct delivery route makes the AHCP most effective. In addition, inappropriate delivery methods may cause trauma, prolonged withdrawal times, or inactivity of the AHCP.

ADMINISTRATION METHODS

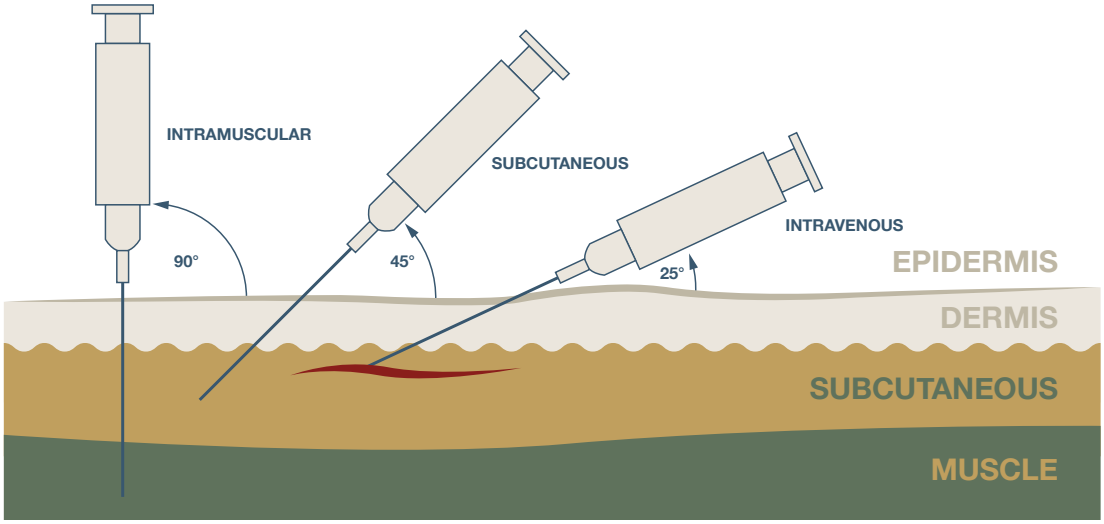
There are several methods by which medications can be administered. Subcutaneous (SQ) administration is the preferred method if the AHCP is labeled for Intramuscular (IM) or SQ administration. Injections should be limited to 5 cc per IM injection site. No more than 10 cc of the AHCP should be deposited in one site if SQ administration is used. The smallest gauge needle appropriate for the substance being injected should be used.

- Subcutaneous (SQ) – beneath the hide on the side of the neck only
- Intramuscular (IM) – neck muscles only
- Intravenous (IV) – in the jugular vein (neck)
- Topical – applied to the outside of the hide (usually along the back)
- Oral – as a drench, bolus or pill

Avoid the NO ZONE. Administer the injection in the approved injection zone.

APPROVED INJECTION ZONE

THE NO ZONE



Additional details on administration methods will be covered on the following pages related to vaccines.

Refer to Appendices for Vaccination and Treatment Record Forms

2e IMMUNIZATION PROCEDURES

One of the best ways to boost the immunity of your calves against specific viruses and bacteria that cause disease is through vaccination. Collaborating with your VOR to create an immunization program plays an important role in keeping calves healthy and mitigating the spread of disease. However, vaccination programs for veal calves have sometimes given unpredictable responses.

There are several reasons for this lack of predictability:
Vaccines are intended to prevent disease and should be administered well before the risk period for the targeted pathogen. Maternally derived antibodies, provided through colostrum, may interfere with the effectiveness of vaccines. In addition, almost any environmental factor or management practice that causes distress to the calf will decrease the ability of the vaccine to "immunize" the calf.

Most pharmaceutical companies are investing in research and development programs to improve the effectiveness of vaccines, and several of these developments have made vaccination programs in veal calves more predictable. Your veterinarian should help plan and coordinate your vaccination plan and ensure the specific approach is based on the disease prevalence where the calves originate and the location/background of the veal barn.

STRATEGIES TO IMPLEMENT INCLUDE:

- Obtain necropsy, blood titer levels, and culture analyses through your veterinarian and/or diagnostic laboratory. This information allows the farm and the veterinarian to have a more accurate knowledge of the diseases that should be addressed in the vaccination program.
- Allow calves a three-or four-day rest period after arrival before vaccinating and provide a follow-up dose between six and 10 weeks of age, or as recommended by your veterinarian. Some veterinarians may recommend that an intranasal vaccine or all vaccines be given at arrival. Always follow your veterinarian's advice. Do not vaccinate sick or stressed calves unless recommended by the veterinarian.
- Purchase current-dated, refrigerated vaccines from a reliable source and keep **vaccines refrigerated until just before use.** Refrigerated vaccines should be stored at temperatures between 36°F and 46°F. The thermostat should be set at a mid-range of 40° F to decrease the likelihood of temperature fluctuations.
- Follow label directions exactly, retain labels from the vaccine containers, and give the recommended dose by a recommended method.
- Use sterile, disposable syringes to administer vaccines. Label syringes for each vaccine used to prevent contamination between products.
- Do not use unnecessary vaccines or mix vaccines unless directed by your veterinarian.

- Know that modified live vaccines (MLV) are susceptible to inactivation with time after mixing the two separate products (powder and liquid or diluent portion) obtained when the vaccine is purchased, and to such sanitizing agents as alcohol. If alcohol is used either on the hide of the animal before injection, on the needle or in the syringe, the needle and syringe must be thoroughly rinsed with either sterile water or saline solution prior to use. It is best to use disposable syringes and needles and not use alcohol when using an MLV product.
- The timing of vaccines is important. In most cases, calves respond best to viral vaccines if given a few days to one week after calves arrive at the farm and then repeated two to three weeks later. Because of stress from transportation, the introduction to a new environment and other factors, animals do not respond as well to vaccines upon arrival at the farm.
- When giving multiple injections (vaccine or drugs) designate a side and location that each injection should always be given. This will help avoid interactions between products. Never give vaccines and antibiotics in the same location. Make sure bacterial and viral vaccines are given in different locations
- Keep careful records as to the types of vaccines used on different groups of calves, the age of the calves when the vaccines are administered, and the source of the products.

The four methods of applying vaccinations are:

1. **Intramuscular (IM) –** Because of the blood supply in muscle tissue, substances injected into the muscle are distributed by the blood to all tissues of the body quite rapidly. IM injections must be placed in the approved triangle region, in front of the shoulder (see image on page 25). A 3/4 or 1-inch long, 18-gauge needle is usually used for IM injections in calves.
2. **Subcutaneous (SQ)** – Practically all types of vaccines can be given SQ. Since the needle does not enter the muscle, there is much less chance of muscle irritation or injection site blemish, and still the product administered is effectively distributed throughout the calf's body. SQ products are usually administered on the side of the neck. The hide is grasped between the thumb and forefinger to create a "tent," with a space beneath the skin into which the vaccine is deposited. The needle should be inserted at about a 30-degree angle to the skin. A needle 1-inch in length and 18-gauge in diameter is recommended.
3. **Intranasal (IN)** – These vaccines are packaged with aerosol applicators that fit on the end of a syringe to distribute the vaccine into the nasal passages. This special applicator is used to squirt aerosol droplets quickly through the nasal passages. Some of the recent developments in vaccines use this method of administration; it appears that some IN vaccines are more effective in young calves than IM or SQ.
4. **Oral** – Only a few orally-active vaccines are available, and most are used in newborn calves. A disposable plastic syringe containing the vaccine is placed at the side of the calf's mouth and the vaccine is slowly discharged into the mouth. Hold the calf until all the vaccine is swallowed, and the calf's head should be slightly elevated while the vaccine is being administered.

The information provided here **does not replace** the advice of a veterinarian and is intended to provide a **better understanding** of the benefits and shortcomings of vaccination programs.

Most veterinarians servicing veal production units communicate with each other to determine the success of different vaccination programs and vaccines. Some of the diseases that are usually considered in a vaccination program for veal calves are:

DISEASE	SIGNS
Infectious Bovine Rhinotracheitis (IBR)	Cough, fever, red nose, pinkeye
Parainfluenza-3 (P13)	Cough, fever, nasal discharge
Bovine Respiratory Syncytial Virus (BRSV)	Fever, cough, fluid accumulation in lungs
Bovine Viral Diarrhea (BVD)	Eye or nasal discharge, mouth sores, diarrhea, incoordination
Haemophilus somnus “Thrombo” TEME	Pneumonia, fever, nervous system signs, “downers,” incoordination, arthritis
Enterotoxemia	Sudden death, diarrhea, weakness
Pasturella-multocida	Pneumonia, swollen joints, dropped ears, fever, depressed immune system
Mannheimia hemolytica (similar to P.Multocida family)	Pneumonia, swollen joints, dropped

3 BIOSECURITY AND SANITATION

USDA National Institute of Food and Agriculture defines biosecurity as the strategies and management practices that lessen biological risk. “According to the USDA, on a farm, attention to biosecurity is the most important measure to reduce and prevent the introduction of diseases or pests of animals and plants. Biosecurity practices also minimize the spread of diseases or pests within a farm system. Many aspects of biosecurity are common sense, but if these strategies and practices are not enforced consistently, there is a greater risk of introducing animal or plant diseases and facing their accompanying economic costs.

Source: Livestock Biosecurity – Beef Cattle https://beef-cattle.extension.org/livestock-biosecurity/

Biosecurity practices on livestock farms include sanitation, animal management, feed management, facility maintenance, manure handling, and disposal of dead animals. Certain principles of biosecurity are critical in disease prevention, specifically with veal calves, including:

- Working from the youngest to oldest calves helps minimize the risk of disease. This practice helps to prevent the spread of pathogens older calves may have and are not affected by, but young calves do not have immunity to yet.
- Wearing clean boots and coveralls, especially for the youngest calves, to prevent the transfer of manure that could cause disease.
- Practicing all-in, all-out management where an entire group of calves arrives and leaves at the same time and are not introduced into pens of other animals, allowing for complete cleaning and disinfection between groups. This practice reduces the stress of establishing a hierarchy when new additions are constantly added. Calves required to adapt to stress put less energy toward growth and immune function, making them susceptible to disease.
- Designating a hospital or "sick" pen to segregate sick, injured or weak calves from healthy calves and thoroughly sanitizing this pen between use.
- Ensuring calves are transported in clean, disinfected trailers, as trailers have been found to have high levels of pathogens.

For additional information regarding Biosecurity & Sanitation see Chapter 4.

4 MONITORING MORBIDITY AND MORTALITY

It is important to understand morbidity and mortality in your herd as these are keys to reducing risk factors contributing to sickness and death. Morbidity relates to sickness and mortality relates death. One cannot improve what you don't measure. Measuring, documenting and tracking morbidity and mortality helps you reflect on the risk factors, mitigate those risks, and improve the overall health and welfare of your calves. This also relates to the bottom line of your farm business.

CALF MORBIDITY

of calves sick X 100 ÷ total # of calves (sick and healthy)

For example, your current barn holds 200 calves, during the first month, 23 calves experience umbilical infections. That represents 11.5 %.

23 ÷ 200 X 100 = 11.5% morbidity for umbilical infections

How is this information helpful? Consider this scenario. Because you have been tracking issues like this, you know this morbidity percentage is higher than in the past. Why? Were these calves purchased from a different source where the care and facilities for newborn calves are different from the previous farmer? Or are there new employees and steps in training that have been missed?

Similar calculations could be done for diarrhea, respiratory disease and any other sickness and disease you want to track and measure. Next, analyze the insight to help mitigate the risk factors of morbidity.

CALF MORTALITY

Mortality is the death rate for each group of calves for a defined period of time. The calculations are done the same as those for morbidity. If your barn holds 200 calves and over the first 30 days, you lose 5 calves, your mortality is 2.5%.

of calves dead ÷ total # of calves (alive and dead) X 100

Measuring, tracking and evaluating your mortality rate consistently over time provides you with valuable insight to reduce risks and further enhance the overall health and well-being of your animals. This approach is an ethical responsibility and also good for business.

Work with your veterinarian to determine the most meaningful process and frequency for tracking morbidity and mortality at your veal facility.

HOW ARE YOU DOING?

While estimates specifically on veal are limited, the National Animal Health Monitoring System (NAHMS) conducted surveys in 2011 and 2014 in the U.S. dairy industry to explore morbidity and mortality. The USDA surveys indicate the levels of disease and mortality have declined over time; however, there still remain areas for improvement.

	U.S. HEIFER RAISERS[1]		U.S DAIRY FARMS[2]	
Type of Facility	Pre-Weaning	Post-Weaning	Pre-Weaning	Post-Weaning
Average % with Diarrhea	25%	21%	21%	1%
Average % Treated for Respiratory Disease	18%	12%	12%	5%
Average % Mortality	6%	6%	6%	2%

[1]USDA. 2011. Dairy Heifer Raiser. An Overview of operations that specialize in raising heifers. Available at: https://www.aphis.usda.gov/animal_health/nahms/dairy/downloads/dairyheifer11/HeiferRaiser_1.pdf

[2]USDA. 2014. Dairy 2014. Health and management practices on U.S. dairy operations. Available at: https://www.aphis.usda.gov/animal_health/nahms/dairy/downloads/dairy14/Dairy14_dr_PartIII.pdf

HOW DOES YOUR FACILITY COMPARE?

The Dairy Calf and Heifer Association has a Gold Standards Program that can be a starting guide for veal farmers. Below are some targets to benchmark mortality and morbidity.

The Gold Standards Suggest Several Key Targets for Survival Rates:

AGE	SURVIVAL RATE
24 hours to 60 days	≥ 97%
61 - 180 days	≥ 98%
6 months to freshening/slaughter	≥ 99%

The Gold Standards also Suggest Targets for Morbidity:

AGE	RESPIRATORY DISEASE	DIARRHEA
Pre-weaning	< 10%	< 15%
Post-weaning to 120 days	< 10%	< 2%
121 - 180 days	< 2%	< 1%

Source: DCHA Gold Standards https://calfandheifer.org/wp-content/uploads/2020/09/DCHA_GoldStandards_2020_En_WEB-final.pdf

5 NON-AMBULATORY ANIMALS

Even with diligent adherence to best management practices for healthy calves, sickness and injuries are a reality of livestock agriculture. It is important farmers first and foremost, work to prevent calves from becoming non-ambulatory as much as possible. When this does occur, farmers should respond quickly and appropriately. This includes making timely decisions to reduce pain and suffering. In caring for a sick or injured animal, it is important to remember that a calf will not stand because it cannot stand -- not because it is stubborn.

Working with your veterinarian, develop a written protocol for caring for non-ambulatory calves. This includes moving animals humanely and efficiently using a cart or sled. Additional protocol may include:

- Move this animal to a separate area where it can be easily assessed, monitored, and treated. Such an area should protect the calf from trampling, weather elements, and predators.
- Non-ambulatory or compromised animals should not be moved by dragging, pushing, pulling or scooting. This is unacceptable behavior.
- There should also be ample amounts of clean, dry bedding, as well as access to water and feed.
- It is then important to conduct a physical examination to determine why the animal is unable to stand.
- If the condition is easily managed or treatable, follow protocols developed with the help of your veterinarian for the treatment of the injury or disease.
- Call your veterinarian for further assistance. They can support you in determining a diagnosis for a non-ambulatory calf if it is not immediately identifiable, as well as recommend or provide treatment.

Refer to the Appendices for Non-Ambulatory Protocol Form

Here are a few health aspects to monitor that may lead to an animal being non-ambulatory and/or compromised:

- Overall body condition and/or signs of physical injury such as broken bones and/or limbs, joint stiffness, swelling or tenderness, lacerations, punctures, bleeding.
- Signs of illness and/or disease such as nasal discharge, coughing, diarrhea, increased respiratory rate (normal is 30 - 60 breaths per minute), swollen navel, tenderness or swelling.
- Rectal temperature higher than normal which is typically 103°F.
- Hydration by considering the placement of the eyeball within the socket. Hydrated animals normally have their eyeballs touching the medial canthus (inside corner of the eye). Dehydrated animals have a gap between the eye and the medial canthus as fluid loss causes the eyeball to sink within the socket. If there is evidence of dehydration, provide fluid immediately. A skin tent test can also be performed by pinching a fold of skin at the nape of the neck, rotating it 90 degrees, and counting the number of seconds it takes to flatten or return to normal (< 2 seconds). If the skin remains tented > 2 seconds, the calf is dehydrated, and oral electrolyte solutions should be provided.

Monitor compromised animals closely for 24 hours following the discovery and administration of treatment. Consider contacting your veterinarian for further direction if the animal has not eaten within 24 hours. Tubing milk to a calf that will not drink is not recommended. Tubed milk is deposited into the rumen which can contribute to the development of rumen acidosis, exacerbating illness. The risk of tubing either milk or electrolyte solutions to non-ambulatory calves also presents a significant risk for aspiration or depositing fluids into the lungs. Discuss this practice with your veterinarian and ensure those administering this practice, if needed, are thoroughly trained.

The key question is — will the animal recover?

Once you have determined why a calf is unable to stand, consider whether this animal has a realistic chance of recovery. If not, then euthanasia is likely the next step to humanely end undue pain and suffering.

As a reminder, non-ambulatory animals cannot be sold for processing. As stated in the North American Meat Institute Animal Handling Guidelines written by Temple Grandin, Ph.D., in the United States, since December 30, 2003, all cattle that arrive at packing plants that are non-ambulatory or that become non-ambulatory at packing plants are to be condemned and must be euthanized. They cannot be used for food.

6 EUTHANASIA

When livestock cannot reasonably recover from an illness or injury, euthanasia is the humane decision. As a veal farmer, you strive for optimal health and welfare. However, when necessary, relieving an animal of their pain, suffering, fear and stress is a demonstration of compassion and can often be the best decision you make on its behalf.

WRITTEN PROTOCOL

Every farm should have a written protocol for euthanizing animals that includes criteria for the identification of animals to be euthanized, and euthanasia techniques approved by the AABP and/or the AVMA. These criteria should also include carcass disposal using an appropriate method. Your veterinarian is an excellent resource for assisting with decision-making and developing a protocol for euthanasia as well as training staff to ensure this procedure is being performed humanely.

CRITERIA FOR TIMELY DECISION-MAKING

Timely decision-making is an important part of the euthanasia process. Euthanasia may be the next step if the animal:

- Has been non-ambulatory for 24 - 48 hours
- Has been deemed unfit for transport
- Is in severe pain
- Has hip and spine injuries preventing them from standing or walking
- Has broken limbs that are too large to use a splint appropriately
- Cannot breathe without difficulty
- Has chronic conditions and/or low body condition score

All staff involved in the care of your calves need to be familiar with the farm's protocols developed for euthanasia. This includes notifying the person responsible and trained for euthanasia if animals are identified in distress.

The AABP and AVMA have developed guidelines for appropriate methods of humane euthanasia. Adherence to these guidelines is imperative.

2023 AABP Acceptable Primary Methods of Euthanasia

Intravenous (IV) adminstration of a lethal dose of a barbiturate or barbituric acid derivative to induce a transition from consciousness to unconsciousness and death.

Gunshot using an appropriate firearm, ammunition and anatomic site to cuase physical disruption of brain activity by direct destruction of brain tissue.

Penetrating Captive Bolt (PCB) to induce unconsciousness in combination with an adjunctive step such as exsanguination, intravenous administration of a solution of either potassium chloride or magnesium sulfate, or pithing (increasingdestruction of brain and spinal cord tissue) to ensure death. Non-penetrating captive bolt can be used for the euthanasia of neonates and calves less than two-three months of age when followed by use of an adjunctive method to assure death. When properly applied, the above euthanasia methods cause the animal's rapid loss of consciousness and death without undue distress to the animal.

Source: AABP Euthanasia Guidelines http://aabp.org/Resources/AABP_Guidelines/EUTHANASIA-2023.pdf

AFTER EUTHANASIA IS ADMINISTERED

Confirmation of death is required to ensure the procedure was effective and the animal experiences a painless, humane death. If the first attempt was not effective, the procedure should be repeated immediately, and death confirmed.

Criteria to confirm death include:

- Lack of pulse or heartbeat if using a stethoscope for more than five minutes.
- Lack of breathing for more than five minutes.
- Lack of corneal reflex: If the animal has passed, there should not be any blinking or movement of the third eyelid if the surface of the eyeball is touched.

Development of rigor mortis is the most effective method for confirmation; however, this takes some time to occur, and the criteria below should be ensured before leaving the animal.

CARCASS DISPOSAL

Following euthanasia, animals should be disposed of according to state laws and guidelines.

Options may include rendering, burial, composting, incinerating, and landfills.

Refer to the Appendices for AABP Euthanasia Decision Protocol

7 ASSESSING FITNESS FOR TRANSPORT

Your daily focus has been on meeting the health and well-being of your calves. Now, it is time to market your animals. Veal farmers in collaboration with your production company representative should assess fitness for transport for each calf.

Do not transport any animal if:

- The calf has been given a drug and it does not meet the withdrawal period for meat.
- The calf has a compromised condition that will reduce the welfare during transport and/or not pass pre-slaughter inspection at the packing or processing plant. Consult the plant for information on these specific conditions.
- The calf is non-ambulatory or is unable to walk unassisted into the trailer for transportation. As stated previously, non-ambulatory animals cannot be sold for processing.

Here are additional factors to consider for the well-being of your calves prior to transport.

The duration of transit: The longer the duration, the risk increases that calves may experience stress, dehydration and losses in body weight.

Trailer sanitation: Transport trailers, unless cleaned and sanitized, contain high levels of disease-causing pathogens. Trailers need to be washed and disinfected between each new group of animals.

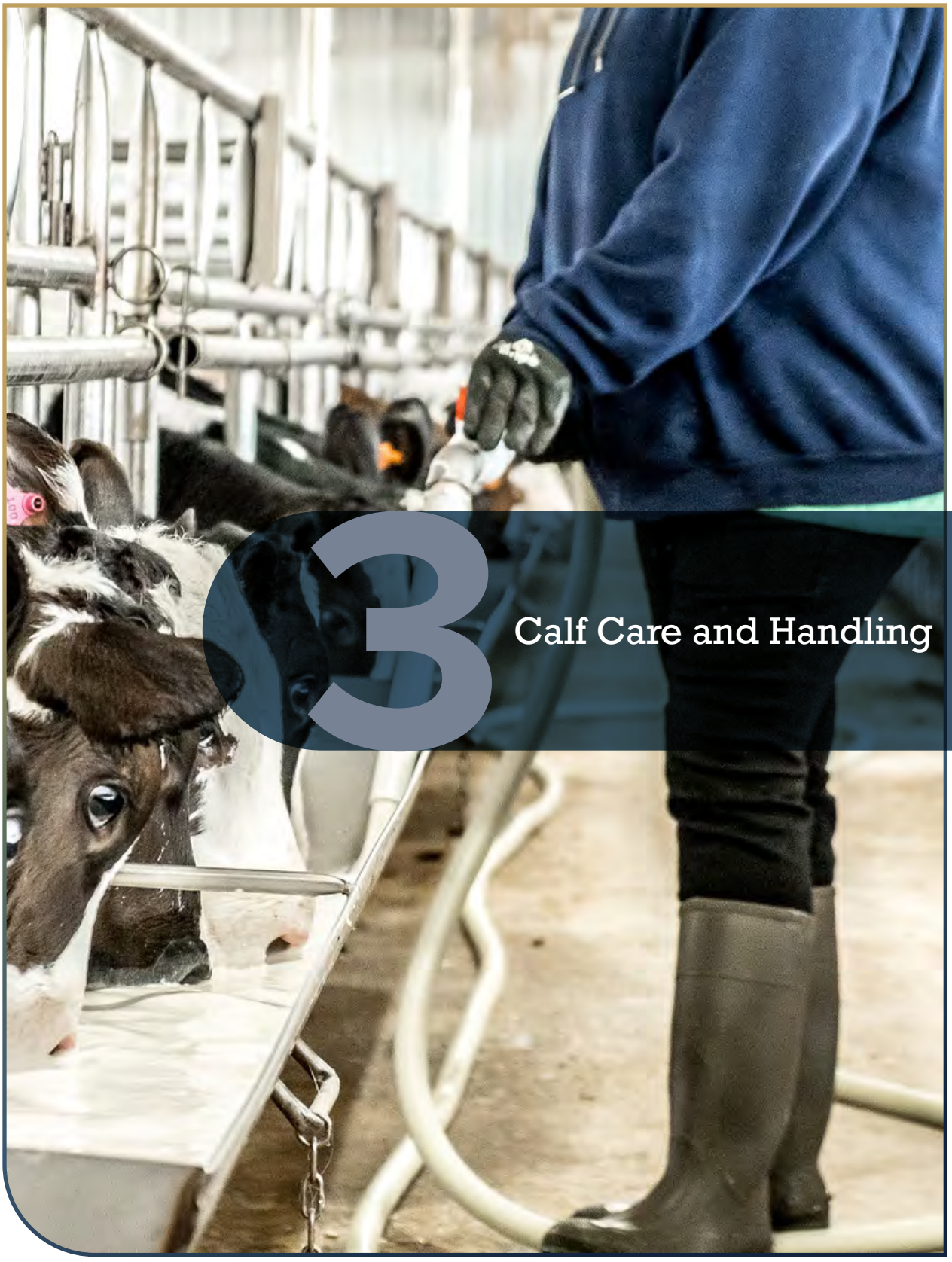
Weather temperatures: If transporting during cold weather (<60° F) calves will have difficulty maintaining their normal body temperature. Be sure to provide clean bedding for calves and consider covering half or more of the open trailer slots to contain more heat in the trailer. When temperatures are over 78° F, consider transporting at night or in the early morning when temperatures are lower to help mitigate the impact of dehydration and heat stress.

A final condition to embrace is to ensure all drivers/animal transporters are trained properly to handle and transport your calves. VQA recommends that a veal company representative ensures that drivers/animal transporters are trained and certified by the Beef Quality Assurance Transportation program.

For more information regarding Calf Care and Handling see Chapter 3

Does VQA provide best management practices for disbudding, dehorning and castration?

These procedures are not practiced in the raising of milk-fed veal calves and therefore protocols are not addressed in the VQA manual. Disbudding, dehorning and castration are procedures that are commonly performed in beef production systems and farmers should follow protocols to minimize pain.



3 Calf Care and Handling

CHAPTER 3

Photo credit: AVA

CHECKLIST:
EXPECTED OUTCOMES FOR VQA CERTIFICATION

1 WATER

OUTCOME: All calves should have continuous access to fresh water to maintain proper hydration. If water is subject to freezing in winter, water needs to be accessible at a minimum of twice a day.

OUTCOME: All devices and equipment used to provide water to the calves are monitored, cleaned and repaired as needed.

OUTCOME: Water quality is tested by a third party (as advised by your nutritionist, veterinarian or feed service representative) at least once each year.

2 FEED AND NUTRITION

OUTCOME: Calves are fed milk formula daily and have access to feed as outlined in written protocols by your feed service representative or nutritionist at levels sufficient to meet requirements for health, growth and vigor.

OUTCOME: All caretakers/employees are trained to follow the written protocol for daily feeding requirements.

OUTCOME: Facilities are designed to provide enough feeding space to mitigate competition.

3 BODY CONDITION, PERFORMANCE AND ANIMAL INJURIES

OUTCOME: Veal calves exhibit growth between arrival at the facility and each week that follows until reaching market weight.

OUTCOME: 95% of calves at the facility have an ideal body score of 3 (on a scale of 1 to 5) or higher during the finishing phase of production.

OUTCOME: 95% of calves at the facility are free from hock, knee, tail and/or other physical injuries.

OUTCOME: Measures are taken to ensure injuries are minimized or eliminated, this can include routine facility maintenance, appropriate handling and training, optimal stocking density, evaluating housing areas to identify areas of potential injury, and providing a clean resting area.

4 HANDLING AND MOVEMENT

OUTCOME: Implement cattle handling protocols which cover all aspects of handling and ensure all caretakers are trained to provide quiet, low-stress handling, and always employ these techniques.

OUTCOME: Caretakers should ensure the least amount of prodding is used to move animals while ensuring the safety of all employees and other calves. All animal caretakers should understand that calves are observant creatures capable of learning from and remembering events in their environment.

OUTCOME: No animals should be processed/treated in an unsecured or uncomfortable position. Animals that are mis-caught should be allowed to readjust their position or released and restrained appropriately for processing/treatment.

OUTCOME: Less than 5% of animals vocalize while being restrained for animal health processing and/or treatments.

5 TRANSPORTATION AND FITNESS FOR TRANSPORT

(Responsibility of this OUTCOME is that of the veal company that purchases the calves and delivers them to the veal farm and then ultimately to the plant for harvest.)

OUTCOME: A transportation plan is developed, documented and followed to help mitigate thermal distress, dehydration, interruptions in routine feeding, physical exertion, exposure to pathogens and stress.

OUTCOME: All animals are assessed for fitness before being transported.

6 ABUSE AND NEGLECT ZERO-TOLERANCE POLICY

OUTCOME: The farm owner/manager has in place a zero-tolerance policy and enforcement plans on animal abuse and neglect for all staff.

OUTCOME: Employees and others who handle and/or observe animals at the farm are aware of how they can confidently report instances of abuse and neglect.

OUTCOME: There are zero instances of animal abuse or neglect on the farm.

CALF CARE AND HANDLING BEST MANAGEMENT PRACTICES

Feed, nutrition, water and animal handling are essential for healthy calves to thrive and grow. This chapter includes management practices to ensure veal calves receive the care needed to provide optimal animal welfare and provide the farmer and caretakers with operational efficiency. Additionally, guidelines for monitoring and assessing body condition, performance and injuries are included in this section.

The Calf Care Quality Assurance (CCQA) reference manual served as a valuable resource for much of the content in Chapter 3. Where appropriate, adjustments were made to meet the unique needs of raising and handling veal calves.

1 WATER

Water is the most essential nutrient and is required for the health and well-being of calves. All calves should have access to clean, fresh water from the first day of life to maintain proper hydration. Continuous access to water is recommended. When that's not possible, animals should be provided opportunities to drink to satiation at least twice a day, according to CCQA, which also recommends that pre-weaned calves be provided fresh water within 20 minutes after feeding milk or milk replacer when continuous access to water is not available.

- Feeding milk or replacer should not be a substitute for water. Water used with milk replacers needs to be fresh, palatable and free of contaminants.
- Monitor and clean all devices and equipment on a regular basis used in providing water to the animals to help eliminate bacteria and pathogens in the water.
- Water quality should be tested and monitored by your nutritionist, veterinarian or feed service representative at least once each year.
- Calves prefer to drink warm water. Ideally, offer water at 100°F or just above. By providing warm water compared to cold water, the amount of energy expended by the calf to warm water up to the calf's body temperature is minimized. Cold water will also reduce the temperature of the rumen. *
- Water is not only the number one requirement for animals; it is crucial for starter intake and rumen development. A good rule of thumb for calf water consumption is the 4:1 rule, as calves will consume four parts water for every 1-part starter they consume. In a 1984 study, weight gain was reduced by 38% and starter intake by 31% for calves deprived of water.*
- In addition, ensure watering equipment is in good repair, functional and free of sharp edges that may injure animals.

*Source: Sarah Morrison, Ph.D. is a Research Scientist at the William H. Miner Agricultural Research, Chazy, NY

Photo credit: AVA

2 FEED AND NUTRITION

In addition to having access to fresh, clean water, veal calves should be provided adequate nutrition through every stage of life for growth and development, disease abatement and thermoregulation.

Veal farmers should work with reputable experts (animal nutritionists, veterinarians, feed company representative, etc.) to design a nutritional program for their veal calves.

Although dairy products and by-products, particularly whey protein concentrate, still form the basis for most veal feeds, there are alternative nutrient sources that give satisfactory results when the ingredients are combined correctly and thoroughly tested through research and development.

As a reminder, higher milk intake will result in looser feces, but this is not always associated with increased diarrhea or other health problems.

- Make sure your feed service representative and your veterinarian are familiar with each other and communicate about the health and nutrition of your calves.
- Follow your advisors' recommendations for using electrolytes. Provide water to the calves between feedings.
- Milk consumption is very important especially in the first four weeks of life when calves' ability to digest solid feed is limited. It is recommended you develop a written protocol for your milk feeding program in consultation with your feed service representative, nutritionist and/or veterinarian to ensure calves receive a volume of milk replacer that maintains health, growth, and vigor through each stage of growth.
- Ensure all animal caretakers are trained to use the appropriate weight of powder, and volume and temperature of water to ensure consistency when mixing milk replacers and to use clean feeders and sanitary practices.
- Carefully follow the feed manufacturer's recommendations on water temperature for mixing the milk replacer. Milk and water consumed by calves can impact the amount of energy needed to maintain normal body temperature (101-102^{0}F). If calves consume milk or water that is below their normal body temperature, they must expend additional energy to warm their drink to normal body temperature, increasing maintenance requirements. Milk replacer tags typically have recommended mixing temperatures. However, it is important to ensure that when that milk replacer reaches the calf, it is not below 105^{0}F.
- During heat stress, milk may also be fed at a cooler temperature (depending on manufacturer's recommendations.)
- When the feed is changed, such as from a starter to a grower or finisher, the blending of the different types of feeds takes place over a 6- to-10-day period.

- Nutritional amendments such as iron, selenium or vitamins are provided, if needed, and are based upon blood analyses and examination/recommendations by your feed service representative in consultation with your veterinarian.
- Facilities should be designed to provide enough feeding space to mitigate competition. Provide sufficient space for group-fed calves to feed at the same time.
- To ensure quality and safety, feed should be stored in appropriately designed areas that prevent the build-up of moisture and contamination.
- Through its Animal Proteins Prohibited from Ruminant Feed regulation, the FDA has prohibited feeding most ruminant-derived protein to cattle or other ruminants due to the risk of transmission of bovine spongiform encephalopathy (BSE). Meat and bone meals are prohibited, whereas milk and blood products can be fed. Check the ingredient list of products and contact the manufacturer if there is a question.
- Feeding equipment must be in good repair and free of sharp edges that may injure animals.

FEEDING PROGRAM FOR MILK-FED VEAL CALVES

The milk feeding programs should provide calves with the nutrients and energy needed for health, growth and vigor. Important factors to ensure proper nutrition include:

- Carefully follow your feed service representative's recommendations for quantity of milk-formula to be fed, water temperature for mixing the milk replacer and when to provide electrolytes.
- When calves are housed in groups, ensure that stocking density enables all calves to have equal access to consume feed at the same time.
- Follow the recommendations of your feed company representative to introduce fresh, palatable starter feed by day three.
- Provide water continuously starting within 24 hours of arrival.
- If needed, nutritional amendments such as iron, selenium or vitamins are provided and are based on recommendations of your feed service representative, nutritionist and/or in consultation with your veterinarian.

MONITORING PRODUCTION AND PERFORMANCE

Growth is the most important measurement for determining production and performance. If a calf is healthy and thriving, it's growing. To determine if your calves are meeting your production and performance goals, measure and assess average daily gain (ADG).

Determine the average daily gain by dividing the weight gained over a defined period of time.

For example, if a calf weighs 90 pounds at birth and 190 pounds at 56 days of age, then the calf is gaining 1.8 pounds per day.

Most important to veal farmers, and an important indicator of animal welfare, is growth very early in life, particularly in the first 7 to 10 days. These calves are required to overcome the challenges faced during transport to the facility, mixing with animals from other facilities, and adjusting to new surroundings. Calves need to manage this stress which requires energy, plus grow, thermoregulate, and develop their immune system. This early period is critical. Young veal calves rely almost entirely on milk formula for all their nutrition. If an ample supply of high-quality, nutritious milk replacer is not provided, their nutritional resources to support body maintenance, growth and immunity will be limited. Calves may use their energy for staying warm or cool, growing or fighting the diseases they are exposed to, and therefore, causing them to be more susceptible to disease.

To measure and evaluate performance, use a digital scale or weigh tape measure calves upon arrival, within a week, at 10 weeks, and 20-24 weeks just prior to harvest. When a group of animals is assessed and a cumulative ADG is determined, this will allow for the determination of specific areas where an opportunity exists to improve growth.

Young calves should demonstrate positive weight gain between arrival at the facility and one week later. If your calves are not meeting the target for growth performance during this time or throughout the growing period, work with your veterinarian, nutritionist, or other company advisors to develop a plan to improve growth.

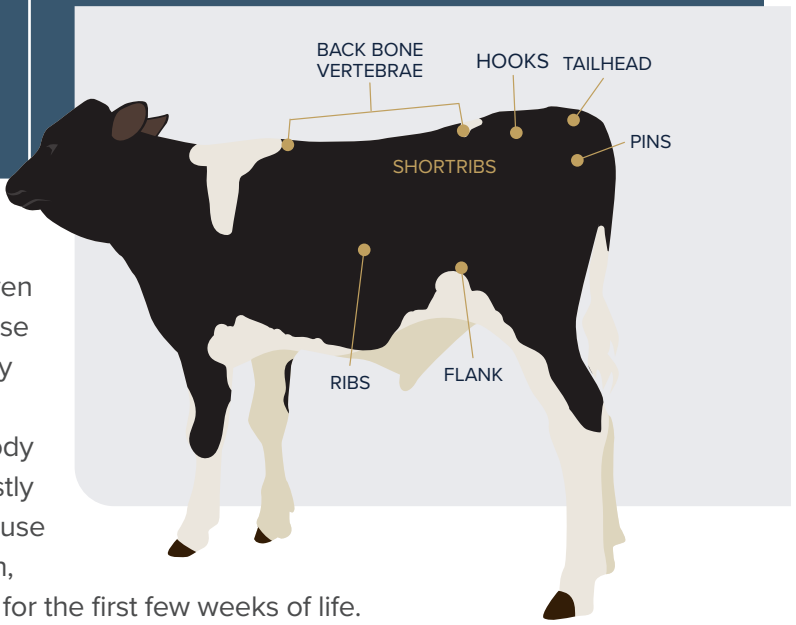
Photo credit: AVA

3 MONITORING BODY CONDITION

How does one assess the health, growth and vigor of a calf? Monitoring body condition and performance assessments show where calves are thriving and growing, and conversely, where there may be health and nutrition challenges.

Body condition score or BCS is one approach to assessing the condition of an animal. Ideally, assessing the BCS should be done using a hands-on approach by feeling along the ribs and spine, as the hair coat can often cover bony projections. Examining each individual calf should take approximately 10 seconds.

A body condition score of 3 or more includes:	Calves with low body condition score (1) may have:
• Calves should not have a hollow looking appearance in the flank area. • Hips (hook and pin bones) are visible and there is fat and muscle cover giving them a rounded appearance. • Backbone may appear as a rounded ridge without individual vertebrae being visible. • Short ribs should not have a shelf-like appearance. • Some ribs may be visible through the hair coat but should not appear prominently.	• A hollow flank. • Prominent, angular hook and pin bones. • Backbone that is apparent with vertebrae feeling sharp. • Visible short ribs. • More than three or four sets of prominent ribs.



Ideal BCS takes time for calves

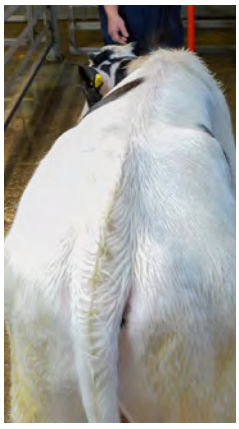
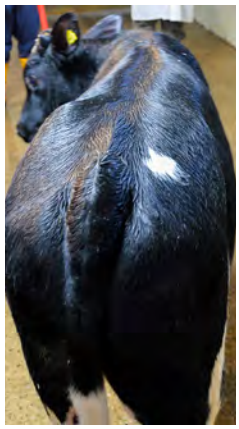
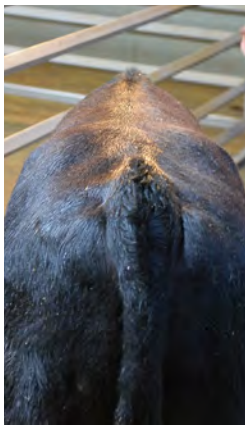
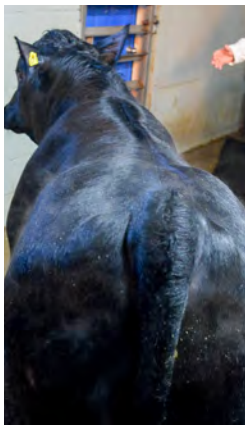
Calves are born with very little body fat and even with excellent nutrition, it takes time to build those energy stores. As nutrients are consumed, they are first applied to the core body functions including thermoregulation (regulating their body temperature,) then to immune function, and lastly to growth and building of energy stores. Because calves are purchased within a few days of birth, they will have a body condition less than ideal for the first few weeks of life.

Veal calves in the finishing phase (18-22 weeks) should have a BCS of three or better. Calves should have muscle development around the tail head, hook and pin bones (hips), and should not have prominent ribs, short ribs or vertebrae.

Work closely with your veal feed company representative to ensure nutritional needs are met to ensure calves are exhibiting a BCS of 3 or greater. Ideal BCS is achieved when water, feeding and nutrition protocols are followed and if rations are increased to accommodate energy expenditure required for thermoregulation during periods or seasons of both hot and cold temperatures.

VEAL BODY CONDITION SCORE ASSESSMENT

While a hands-on approach is recommended to determine BCS, this chart and images provide further context for assessing BCS for veal calves as they begin the finishing phase of production.

BCS 1	BCS 2	BCS 3	BCS 4	BCS 5
The veal animal is gaunt, appears physically weak with all ribs and bone structure easily visible. The backbone, hook and pin bones are extremely pronounced. Animals in this score are rare and usually affected with a disease or parasite outbreak.	The veal animal is considered thin, with prominent backbone, hook and pin bones, and minimal coverage on the ribs and tailhead region. Short ribs are visible and more than three or four sets of prominent ribs are visible.	The veal animal demonstrates a less pronounced backbone, hook and pin bones. Bones remain visible but there is average coverage beginning to develop over the bones, and ribs, giving them a rounded appearance. Backbone may appear as rounded ridge without individual vertebrae being visible.	The veal animal is average to slightly above average condition. Backbone, ribs and tailhead are not visible due to an even layer of fat coverage over the bones. Ribs are not visible and appear to have a layer of fat coverage over them.	The veal animal demonstrates a thick coverage of fat deposits around the tailhead and smooth, flat appearance on the ribs. Backbone, hook and pin bones are not visible and more condition can be seen along and over the bones than a BCS 4.
				
BCS 1	BCS 2	BCS 3	BCS 4	BCS 5

The veal calves shown here represent a range of Body Condition Scores (BCS) from 1 to 5.

ANIMAL INJURIES

HOCK AND KNEE INJURIES

In cases of prolonged exposure to rough or hard surfaces or inadequate or unsuitable bedding, animals can be prone to hock and knee injuries. These injuries can also occur during improper handling which may cause or come as a result of slips and falls. Having visual inspection protocols in place is important to determine the underlying causes and address them.

CCQA guidance on hock and knee inspection:

- While the calf is standing, visually inspect both knees at the same time to compare size.
- Look at hocks from both the side and behind. Side views allow for inspection for hair loss and scabbing.
- When viewing the calf from behind, be sure to compare both hocks together and assess for symmetry. If an animal typically lies on one side more frequently, you may notice more prominent swelling there, and you can use the opposite hock for reference.

KNEE SCORING

No hair loss or swelling is present.

NORMAL

Minor to severe hair loss, swelling, ulceration, or scabbing is present.

ABNORMAL

ABNORMAL

HOCK SCORING

NORMAL

ABNORMAL

ABNORMAL

To help reduce hock and knee injuries:

- Providing all animals access to the lying area at the same time.
- If bedding is used, examine the quality and depth of bedding and the quality and comfort of mats.
- Ensure that bedding conforms to the animals' body, is clean and dry, is sufficiently deep to allow for nesting behavior to provide warmth, and keeps animals clean to prevent ulceration of the skin on contact areas.
- Determine if injuries occur after periods of handling and if quiet.
- Implement management changes if the presence of injuries within your herd exceeds 5%.

BROKEN TAILS

The condition of the tail, can be an indicator of animal care standards on the farm. The tail comprises many small vertebrae and is an extension of the spine. When injured, it can cause extreme pain to the animal and should be avoided at all costs.

If more than 5% of animals at your facility have broken or injured tails, determine the cause and address the issue(s) immediately.

When broken tails are present, especially in high numbers, it indicates concerning issues with animal welfare and handling. In addition, it could mean problems with facilities, including high stocking densities where tails may become injured from being caught in housing features or stepped on.

TAIL ASSESSMENT

Tail does not have any swelling, deviations in vertebrae that can be seen, or any evidence of necrotic tissues in the tail.

NOT BROKEN

Tail has any swelling, deviations in vertebrae that can be seen, or any evidence of necrotic tissues in the tail.

BROKEN

BROKEN

To reduce the incidence of broken tails, ensure that all employees involved in animal handling are properly trained in quiet, low-stress handling techniques.

Tail jacking, a restraint technique to immobilize the rear end of the animal, can be used for older animals for medical exams and other procedures, but should not result in injury. Cattle should never have their tails tied during restraint, and animals should be positioned appropriately when using a chute or performing examinations or medical procedures to ensure they can't back into anti-kick bars and other portions of the chute.

4 HANDLING AND MOVEMENT OF CALVES

Animals deserve to be treated with respect. Safe animal handling and movement on America's veal farms is paramount to animal health and well-being and a reflection of a farm committed to excellence. In addition, it ensures the safety of caretakers, too.

Animal caretakers should be involved in training and continuous education using the recommended guidelines outlined in the VQA program manual and in veterinary-approved animal restraint methods provided by your VCPR. While understanding calf behavior and quiet, low-stress handling methods is important, having a calm demeanor and patience is vital. Choose your calf caretakers/employees carefully.

In addition, farmers should ensure that an adequate number of caretakers is available to safely perform all necessary animal handling tasks. The primary objective of safe and efficient veal calf handling is to eliminate any actual or potential animal distress.

All animal facilities should be designed with age-related, species-typical behaviors in mind. Implement cattle handling protocols that cover all aspects of handling, including handling at the time of receiving the calves, handling during health evaluations, feeding, blood sampling, moving sick or injured animals and at the time of transport.

ANIMAL MOVEMENT CONSIDERATIONS

This diagram illustrates the general flight zone of an animal. The actual flight zone of an animal will vary depending on how calm the animal is. When a handler is on the outer edge of the pressure zone, the animal becomes aware of the handler's presence and turns around and looks. When the outer-most edge of the flight zone is penetrated, the animal moves away.

FLIGHT ZONE

A calf's flight zone is the distance from an animal that a handler must maintain for the animal to feel comfortable. It is similar to one's personal space, and if a handler enters into that space, it can cause a flight response or escape behavior by cattle. The flight zone will often vary depending on how accustomed they are to human interaction. Using the flight zone is an important training and movement principle for handling cattle. To use the flight zone effectively, the handler must be aware of where an animal is able to see you (from the side, and not from directly behind), as well as how closely you can approach to appropriately initiate movement. Because cattle adopt a herd mentality and prefer to stay as a group, they will do so until a perceived threat moves into their flight zone, causing them to bolt or move away from it.

BLIND SPOTS

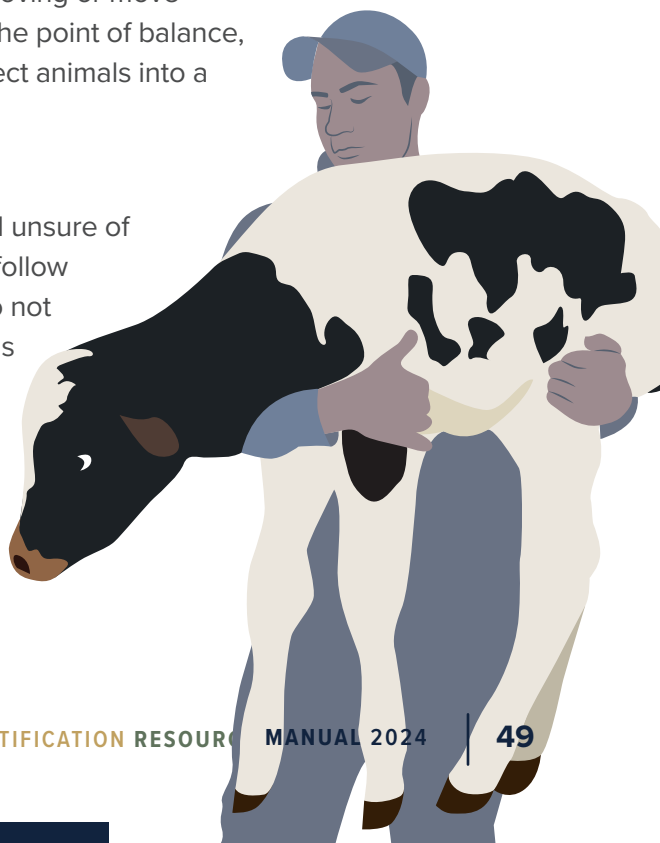
Blind spots are helpful to keep in mind when moving animals. Cattle see approximately 300° around their selves but cannot see directly behind them. When an unfamiliar object or person moves into an animal's blind spot, they will turn to visualize them (disrupting the flow of forward movement). Or, if movement appears suddenly from the blind spot, they can become startled or frightened by the perceived threat (responding dangerously towards handlers or causing injury to themselves).

POINT OF BALANCE

Cattle have an imaginary point of balance at their shoulder, where if you were to move or stand in front of the point of balance, the animal would stop moving or move backward, away from you. If you were to move or stand behind the point of balance, the animal would move forward. This is useful when trying to direct animals into a particular area, such as through a gate.

Extra Considerations for Calves

Calves can be fearful, unsteady on their feet, uncoordinated, and unsure of your expectations of them. They do not move fluidly and do not follow the same patterns of movement as adult cattle do. They often do not have a well-defined point of balance or flight zone. These animals must be handled calmly, gently, and with great patience. When calves are young (less than one month of age) they can easily be lifted (using a hand under the neck and around the rump for support) or gently moved using a safe, clean movement device (such as a wagon, wheelbarrow, rolling gate, halter or other devices).



ANIMAL HANDLING FOR PROCEDURES

Special protocols should be considered when processing and/or securing/loading/unloading animals for examinations or procedures. These procedures can be very stressful for animals, making them uncooperative and handling more challenging. Ensuring that calm, low-stress handling techniques are used is critical to animal well-being and employee safety. Restraining an animal for animal health procedures should be managed and evaluated for indicators of animal stress.

Key areas to consider include:

ELECTRIC PROD USE

Electric prods should not be used on animals that can be lifted or moved manually. The use of prods should be restricted to older animals (more than three months of age; those that cannot be lifted or moved manually) and only used in the event of an emergency, where animal and/or human safety is a concern, and when all other handling techniques have been unsuccessful. This level of use should not exceed 10% of animals handled in a given handling event. Electric prods should not be used on the face, rectum, genitals, or other sensitive areas. Consider providing paddles with beads or flags for use on older animals as persuasion devices to extend the handler's reach into the animals' flight zones. These animal handling aids are not to be used with force or to strike animals.

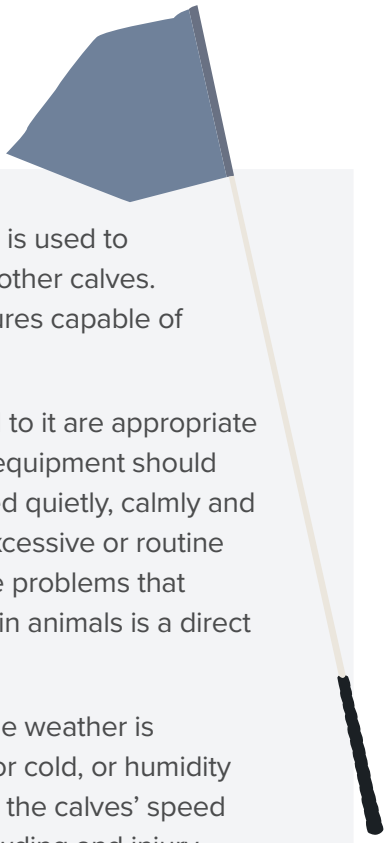
VOCALIZATION

Few animals should vocalize if caught and restrained appropriately. To evaluate if the amount of vocalizing is appropriate relative to the restraint techniques being used, observe the number of cattle that vocalize following restraint, but prior to occurrence of a procedure. If vocalization exceeds 5% of the calves observed, evaluate handling techniques and assess whether restraint devices are being utilized properly (i.e., are halters on appropriately so as not to restrict an animal's ability to breathe, etc.).

ANIMAL BEHAVIOR AFTER PROCESSING

Animals rushing, jumping, slipping, and falling as they are released from processing, are all signs that should be observed to determine how well animals are being handled and the overall facility maintenance and/or design. Animals that rush away from handling are stressed and are also prone to injuries. Animals that stumble or slip (knees hitting the floor) or fall (where their belly hits the floor) are at risk of developing knee injuries and lameness as a result of bruising and soft tissue injury. Evaluate handling techniques and facilities as described above and ensure that methods for restraining an animal are done as safely as possible. Ideally, upon being released, < 25% of animals run or jump, < 10% of animals stumble or slip, and < 2% of animals fall.

ANIMAL HANDLING BEST MANAGEMENT PRACTICES



1. Farmers should always ensure that the least amount of prodding is used to move the animal while ensuring the safety of all employees and other calves. All caretakers should understand that cattle are observant creatures capable of learning from and remembering events in their environment.

2. The use of flags, plastic paddles and a stick with ribbon attached to it are appropriate for stimulating animals to move, slow, stop or turn. However, no equipment should be used as a weapon. Any force used on animals must be applied quietly, calmly and with sound logic that provides for a productive, safe outcome. Excessive or routine prodding can indicate underlying handling and animal avoidance problems that require management attention and correction. Conflict behavior in animals is a direct indication of inefficient handling.

3. Calves should walk and not at excessive speeds, particularly if the weather is extreme. For example, when the temperature is excessively hot or cold, or humidity has caused slippery flooring. It is particularly important to control the calves' speed within lanes, around corners and along alleyways to prevent crowding and injury around handlers, corners, gates and places where passages narrow. Use full-sided panels rather than gates to move calves. Turns at 45˚ angles encourage efficient and safe calf flow; 90˚ turns should be avoided where possible. Teaching calves to walk around corners and pass handlers without an increased rate of movement is an excellent, scientific process for ensuring that animals learn to face and walk toward all destinations.

4. When moving groups ensure there is adequate space ahead for animals to move without crowding and that the calves don't lose their footing.

5. Non-skid flooring and/or sand or other non-slip materials should be used where calves travel. Areas should be well-lit (to avoid shadows as much as possible) and free from sharp or protruding objects, new objects (or noises) that can cause distractions.

6. When you must restrain calves, for example when performing procedures or crowding animals temporarily in pens, restrain them for the least amount of time possible, and have the equipment and personnel on hand to keep the animals calm and safe.

5 TRANSPORTATION

Beef Quality Assurance Transportation demonstrates the foundational BQA principles in cattle care, handling, and welfare to transporters within the beef industry. Using common-sense husbandry and transportation techniques, each stakeholder, from the cattle owner to the transporter, can learn about and enact responsible transport decisions. Learn more at bqa.org.

Veal company representatives who are responsible for the arrangement and management of transportation should require those transporting veal calves to be Beef Quality Assurance (BQA) certified in transportation, which is an additional program specific to best management practices for animal movement and transportation.

Beef Quality Assurance TRANSPORTATION

The following guidelines are intended for the veal company representatives and/or those responsible for arranging and managing the transportation aspects of calves to and from the veal farm.

Transportation is a part of raising livestock, but it can be stressful for the animals. To keep calves healthy, take great care to minimize distress during transport. That includes adequate training for employees and third-party transportation services to properly handle and move cattle onto trailers, distribute the cattle correctly onto the trailer and use hauling techniques that minimize cattle stress.

In addition, develop protocols to eliminate thermal distress, dehydration, interruptions in routine feeding, physical exertion, and exposure to pathogens and weather changes.

Veal calves are temperature sensitive and require special care during transport. Weather forecasts should be monitored to avoid transporting calves during inclement weather. Before loading animals, ensure that a health and behavior assessment has been done on all calves ensuring that ill or otherwise compromised calves are not loaded or transported.

Refer to Appendices for Non-Ambulatory Protocol Form.

MONITORING FITNESS FOR TRANSPORT

Before transporting veal calves, especially young calves coming to the veal farm, it's important to have a written protocol in place to determine if animals are fit for transport to mitigate any risk of illness, injury, or mortality, and to ensure that the staff and/or driver responsible for assessing fitness for transport are adequately trained.

The following questions from the CCQA program can be used to determine fitness. If the answer to any of the questions is "yes" – **the animal is unfit for transport.**

- **Is the Animal Dehydrated?** Calves dehydrated prior to transport are at a greater risk of disease and will not gain as much weight over their growth period. Delay transport for dehydrated calves and provide fluid therapy to resolve dehydration. Young calves that go extended periods without feed and water are at risk of developing dehydration.

- **Is the Animal Non-Ambulatory or is There a Good Chance it May Become Non-Ambulatory During the Transport or Marketing Process?** Non-ambulatory animals cannot be marketed. Dehydrated, sick, or injured animals are at risk of becoming non-ambulatory during transport and should not be shipped.

- **Does the Animal Have a Poor Body Condition Score?** These animals may be weak, injured, or ill. Depending on the duration of transport, animals may go long periods without feed and need to rely on stored energy reserves.

- **Is the Animal Severely Lame?** Consider the amount of weight shifting required for an animal to remain standing during transport. A lame animal will not be able to do this without experiencing pain.

- **Does the Animal Have Bone Fractures of the Limbs, Injuries to the Spine or Open Wounds?** Again, animals will be required to shift weight to remain standing on a trailer and cannot do this with injuries. Open wounds are likely to become infected and may also impair the animal's ability to remain standing.

- **Does the Animal Have an Active Case of Disease?** Many symptoms of disease (such as dehydration) are exacerbated during transport. Stress that occurs during transport can also compromise an animal's ability to fight the disease it is exposed to during and shortly thereafter.

- **(If transporting for harvest) Does the Animal Meet the Withdrawa Period for Meat?** The presence of drugs in meat intended for human consumption can mean serious consequences for the farmer. The marketing of food products with drug residues, even unintentionally, is illegal. Residue prevention includes establishing and following effective treatment protocols and ensuring records are kept. Never market animals that have not met the full withdrawal period for meat.

Transportation Best Management Practices

1. Train caretakers in safe, calm and efficient transport loading and unloading practices to minimize stress and the risk of injury.
2. Feed a combination of electrolytes, dextrose and water for about 6 hours before calf transportation. Avoid feeding milk just prior to moving calves.
3. Properly design and maintain loading facilities.
4. Use proper loading densities. Load and unload animals at a time of day that is best for moving calves.
5. The longer the duration of transport for calves, the greater risk of physical challenges, including dehydration and reduction in body weight. Consider keeping the in-transit time to less than 24 hours. If the trip must be longer, plan a stop to provide feed and electrolytes.
6. During hot weather (> 78°F is outside a calf's thermoneutral zone) calves can become dehydrated. Try to transport calves at night or early morning when temperatures are lower. During extreme cold weather (< 60°F is outside a calf's thermoneutral zone) young calves can have difficulty maintaining body temperature during transit and must expend energy to do so. Try to transport during daylight or early evening when temperatures are higher. Consider providing bedding that calves can nest in and/or provide calf jackets.
7. Ensure that animals grouped together for the first time are not crowded. It is best to try to keep group penned calves together in the truck, where possible.
8. Because some calves prefer to lie down during transport, they should be stocked at a lower density and given enough space that they are not at risk of being stepped on by standing animals.
9. Sufficient handlers and appropriate equipment should be available for loading or unloading animals from transport.
10. Trucks and trailer transport vehicles, even though transportation vehicles are not stationary, should have the same type of safety features as other facilities including:
    - Sides high enough to prevent animals from jumping over them
    - Non-slip flooring that provides secure footing
    - Ventilation adequate for the weather conditions
    - Proper bedding (to protect animals from weather extremes)
    - Adequate vehicle/holding pen covering to protect animals from adverse weather.
    - Exhaust stacks on trucks that prevent the animals from being exposed to fumes.

UNIVERSITY OF WISCONSIN-MADISON Dairy Division of Extension

Are you ready for your calves to go on the long haul?

"Calves should have plenty of space to lie down while being transported. There should also be plenty of space to avoid the risk of being stepped on by other calves that are standing. Calves should not be overcrowded."

LEARN MORE AT: https://dairy.extension.wisc.edu/articles/are-you-ready-for-your-calves-to-go-on-the-long-haul? – Dairy (wisc.edu)

11. Avoid stressful procedures like vaccinations and weaning within one week before or after transport.

12. Wash and disinfect trailers and add new bedding before loading a new group of animals to mitigate the risk of exposing calves to disease-causing pathogens.

13. Loading areas should be accessible in all kinds of weather. Locate holding areas near loading/unloading areas and minimize the number of directional changes an animal must make.

14. Loading ramps should not exceed a 25° angle and should have non-slip flooring ensuring safe footing. Ramps should be equipped with wing gates and a self-aligning bumper to prevent animals from stepping up or down between the ramp and the transport or being stuck between the side of the chute and the transport.

15. Do not use cattle prods unless it is an emergency. Young calves may need to be manually lifted to load and unload.

16. Veal company representatives' should be familiar with the actual transport drivers or have reviewed their references to make sure animals will be cared for properly during transit. Also, managers should check the truck prior to loading to ensure the proper safety of the calves and that provisions have been made for unexpected, inclement weather.

17. Before transported animals enter the farm, veal company representatives' should follow a documented disease prevention protocol for the farm. This includes providing plastic boots and foot baths for visitor biosecurity, spraying and disinfecting vehicles before entering the farm, and working with a veterinarian to develop additional biosecurity protocols.

18. Veal company representatives should specify the documented loading and unloading times with the transport driver and coordinate those times with the processing facilities plant. The driver should know the real-time contact information and GPS directions to/from your farm and to the processing facility, if any problem or delay should occur.

UNACCEPTABLE HANDLING

Ensure your caretakers/employees are fully aware of what is considered unacceptable handling at your facilities.

The following list is a few examples of unacceptable animal handling behavior.

- Kicking, hitting, slapping, punching, dragging or tossing
- Pulling by the ears, tail, hair, neck or a single limb
- Use of items such as needles, screwdrivers or other sharp and potentially painful objects as a means of prodding animal movement.
- Use of any type of an electric prod on sensitive areas (belly, genitals, facial, or anal areas), repeatedly on the same animal, and on calves less than three months of age. (Use of an electric prod should only be used in the event of an emergency, where animal and/or human safety is a concern, and when all other handling techniques have been unsuccessful.)
- Yelling and excessive waving of the arms
- Slamming gates

REPORTING ABUSE AND NEGLECT

ANIMAL ABUSE AND NEGLECT ARE NOT TOLERATED

VQA does not tolerate animal abuse or neglect. Animals in your care deserve to be treated humanely and with respect. As a responsible farmer and to be VQA certified, enforce a zero-tolerance policy for abuse and neglect and provide an outlet for employees to share their concerns comfortably and confidently without fear of retaliation.

All caretakers/employees who work with veal calves should be properly and continuously trained in animal handling and held to the highest standards. Any employee found mistreating an animal should swiftly be held accountable.

In addition, there should be systems in place for employees and others to report animal abuse and neglect without fear of retaliation.

VQA recommends the “See it? Stop it!” Program. Managed by The Center for Food Integrity, “See it? Stop it!” is a national initiative that provides an avenue for swift and confidential reporting.

To confidentially report concerns, call the “See it? Stop it!” hotline at 833-207-7457 or email info@seeitstopit.org.

SEE IT? STOP IT!
ANIMAL CARE STARTS WITH YOU.

4 Facilities

CHAPTER 4

Photo credit: AVA

FACILITIES AND ENVIRONMENTAL CONDITIONS

Facilities and environmental conditions where cattle are raised contribute directly to two of the "Five Domains of Animal Welfare" outlined in Chapter One. The two domains addressed specifically in this chapter include:

- Environment – atmospheric and environmental conditions
- Behavior – restriction or expression of behavior

VQA recognizes that facilities should be designed and maintained to provide veal calves with clean, safe and comfortable environments to help protect them from inclement weather, reduce exposure to pathogens, and enable expression of natural behaviors, including space to turn around freely and socialize with other calves. The expected outcomes for VQA certification are summarized below. Best management practices to help achieve these outcomes complete the content in Chapter 4.

Where applicable, veal farmers should meet state and/or local specific requirements for housing, stocking density and manure management.

Photo credit: AVA

CHECKLIST:
EXPECTED OUTCOMES FOR VQA CERTIFICATION

1 INDIVIDUAL AND GROUP HOUSING CONSIDERATIONS

OUTCOME: State laws outlining space requirements and any other designations for veal calves are met as specified for selling/marketing veal for consumption within the implied state. This OUTCOME supersedes other VQA housing outcomes.

OUTCOME: The space and stocking density where animals are raised should enable each calf to comfortably rest, easily stand, move about freely, turn around fully, and socialize with other animals.

OUTCOME: Calves are in group pens of two or more by 10 weeks of age, unless it is for health purposes, and animals are never tethered at any age.

OUTCOME: Calves have a comfortable, dry and sanitary place to rest. Most desirable is rubber-coated flooring that maintains comfort for the animals, provides a skid-resistant surface and enhances the cleanliness of the animal.

2 BIOSECURITY AND SANITATION

OUTCOME: A hospital pen has been designated to isolate sick or injured animal(s) from others until they have regained their health.

OUTCOME: Pens are routinely cleaned, and all parts of the facility/barn are thoroughly cleaned, sanitized and dried between groups of calves to reduce the possibility of bacterial growth

OUTCOME: A pest control plan is in place to manage and eliminate pests and employees are trained to manage and implement pest control practices.

OUTCOME: Only sufficiently cleaned and disinfected equipment is shared between farms. For example, loaders, carts, buckets, calf feeding tubes.

OUTCOME: The number of people with direct contact with the veal calves is limited to the number of people to efficiently serve the needs of the farm.

OUTCOME: Handwashing is conducted between working with groups of calves and before leaving the barn to minimize the spread of pathogens. Caretakers should have access to water, soap and towels in the barns.

OUTCOME: A visitor policy is in place to ensure visitors do not introduce contamination or disease to the farm or barns and all employees are trained to follow procedures for visitors.

3 FACILITIES AND ENVIRONMENTAL CONDITIONS

OUTCOME: Facilities are properly ventilated, and protocols are in place to minimize airborne particles to reduce odors, dust and/or noxious gases to help maximize animal health and comfort and provide a safer work environment for farmers and employees.

OUTCOME: All classes of calves are provided with protection from predators and extreme weather conditions. Facilities are adequately insulated to keep barns warmer in the winter and cooler in the summer.

OUTCOME: Facilities provide natural and/or overhead lighting during regular daytime hours

OUTCOME: All facility elements such as flooring, fans, waterers, windows, curtains, gates and fences are in good condition, and fixed or replaced as needed.

OUTCOME: A manure management plan is in place outlining measures to contain, control and then remove animal manure from the farm annually following state and local guidelines when applicable.

MANAGEMENT PRACTICES

FACILITIES, SPACE AND HOUSING CONSIDERATIONS

The health and welfare of veal calves are influenced by the space provided, the conditions of their pens and the facilities where they are raised. There has been increasing interest in this topic from the public and some states have regulations outlining specific mandates related to how veal calves and other farm animals are raised including specific space requirements.

As a reminder, veal farmers need to ensure they are meeting state laws for raising and selling veal to the public.

In 2021, a literature review of calf space allowance and the impact it has on animal welfare was conducted by Jessica Pempek, Ph.D., at The Ohio State University, Department of Animal Sciences. Pempek concluded that limited research has been conducted to evaluate the influence of space allowance on aspects of calf welfare in modern veal calf production systems. Pempek reported, *"This review identified a significant gap in the literature and highlights the need for studies focused on varying space allowances and the impact on veal calf health (mental and physical), performance, and behavior in the United States. Further research is necessary to implement evidence-based management practices, such as space allowance, that promote veal calf welfare in current production systems. Therefore, strong inferences on varying space allowances and all aspects of veal calf welfare cannot be made."*

In developing proposed rules to implement California Proposition 12, the California Department of Food & Agriculture (CDFA) said in its initial Statement of Reasons:

"Minimum space requirements for veal calves and breeding sows outlined in Health and Safety Code (HSC) are not drawn from specific industry standards or published scientific research prescribing 43 square feet for veal calves and 24 square feet for breeding pigs." (Source: CDFA Initial Statement of Reasons p. 146-147.)

CDFA also said: *"Animal confinement space allowances prescribed in the Act (cage-free for egg-laying hens, 43 square feet for veal calves and 24 square feet for breeding pigs)* ***are not based in specific peer-reviewed published scientific literature*** *or accepted as standards within the scientific community to reduce human food-borne illness, promote worker safety, the environment, or other human or safety concerns."*

For the purposes of VQA certification, the program will continue to be guided by animal care practices advised by veterinarians and animal scientists and grounded in research and science to ensure the health and welfare of veal calves are achieved.

Refer to Appendices for additional references on veal housing information from the University of Wisconsin-Madison.

INDIVIDUAL AND GROUP HOUSING

Work with your veterinarian and/or trusted advisor such as a veal company representative to develop a protocol for when calves are moved to group pens of two or more. As a best practice, calves are in group pens of two or more by 10 weeks of age, unless it is for health purposes, and animals are never tethered at any age.

As a best practice, VQA continues to embrace that calves through all stages of growth should have a comfortable resting area that allows animals to easily stand, lie down, adopt normal resting and grooming behavior and turn around fully whether in individual or group pens. Visual and/or physical contact with other cattle has also been shown to be beneficial.

It is important to remember that veal farms typically receive newborn calves from multiple farms. This is significant in that newborn calves have limited immunity leaving them very susceptible to disease and respiratory issues. Additionally, because calves are sourced from a variety of farms, they are also bringing pathogens from those farms of other locations such as live auction markets/livestock facilities raising the potential for disease transmission. For these reasons and to ensure the health and welfare of each calf, it is currently a best practice to house calves upon arrival at the veal farm in individual pens for the first few weeks to help minimize the risk of disease, avoid competition for milk and feed, allow feed intake to be individually monitored, and prevent cross-sucking.

When it is time to move calves into pairs or groups, animals must be strategically grouped to ensure they are housed with calves of comparable size, age and drinking habits. Veal farmers should continue to monitor individual calves multiple times per day to ensure maximum health and comfort for each animal. There has also been growing interest and evidence-based research regarding the timing and management of moving calves from individual pens to pens of two or more calves.

Photo credit: AVA

BIOSECURITY AND SANITATION BEST MANAGEMENT PRACTICES

Biosecurity is essential to prevent exposure to diseases that are transferred from other animals, equipment, vehicles or other external sources. Work with your veterinarian as part of your Herd Health Plan or another trusted advisor such as the veal company representative, to develop a biosecurity protocol. Ensure all family members and/or employees are trained and understand the measures to follow and implement to help prevent the spread of disease.

HOSPITAL PEN

Designate a sick/hospital pen that isolates sick and/or injured animal(s) from others until they have regained their health and allows for close observation. Because sick and/or injured animals are more susceptible to discomfort than healthy animals, it is important that the pen be equipped to maximize animal comfort. It should provide adequate bedding, air movement and easy access to food and water.

When doing daily chores in each barn, it is best to work with sick and/or injured animals last to minimize and prevent further spreading of diseases. Similarly, older animals can often harbor disease-causing pathogens which might not affect them but may impact younger calves that have not built their immunity. A daily best practice is to work from the youngest to oldest calves and address the calves in the hospital pen last. If the facility has more than one barn or room with calves of different ages, clean and disinfect boots (or put on a new pair of disposable boot covers) in between barns or rooms to limit the potential spread of disease.

PEST CONTROL

Pest, insect, parasite and fly control are important aspects of biosecurity and disease prevention. Every farm should have a plan for managing and eliminating pests, especially those that carry disease or contamination. Best practices should focus on procedures to control flies, mosquitoes, lice, mites, ticks, grubs, fleas, rodents, skunks and pest birds (e.g., starlings, pigeons and sparrows).

Specifically, exercise caution to avoid contaminating feedstuffs, as contaminants may pass into the human food chain via veal. A certified pesticide applicator or a pesticide service may be used. Read and follow label directions for all pesticide products. Cats and dogs kept at the farm must be vaccinated for rabies and have limited access to the calves and feed supplies.. In some regions, wildlife can also spread rabies, so it is important to know if this is a concern in your region.

CLEANING SOLUTIONS

There are many cleaning solutions and disinfectant products available on the market. Be sure to select products that are safe and effective for their intended use. A chart comparing the characteristics of some of the more commonly used products can be found in the Appendices.

Refer to the Appendices for Biosecuity Protocols and Characteristics of Disinfectants.

BARN/FACILITY SANITATION

Thoroughly cleaning and disinfecting all aspects of a facility between groups of calves is a best practice to prevent the growth of bacteria, which can lead to the possible spread of disease. When all calves have left the building, clean and disinfect the entire facility. All parts of the barn, including the feed storage and mixing areas, feed troughs and buckets, and distribution hoses, if used, should be cleaned, sanitized, and dried.

High pressure or steam cleaning and/or scraping of all surface areas should be thorough and include cleaning the bottoms of the stall floors. The ceilings, side walls, ventilation tubes, loading/unloading docks and chutes, and all other areas in the calf housing area should be thoroughly cleaned and sanitized and allowed time to thoroughly dry. Use the sanitizing solution according to label directions. Additionally, work with the transporters of arriving calves to ensure that they've cleaned and disinfected between loads of transported calves.

These sanitation activities will help reduce disease transmission between groups and has been shown to reduce morbidity and mortality. Employee training is essential to ensure the process outlined for cleaning is understood and implemented by those responsible for the task. The time allotted for cleaning is also an effective time to assess and make repairs to pens and other parts of the facility including unloading docks or gates. These repairs and updates will allow easier, safer and less stressful unloading and penning of calves.

Animal caretakers should have access to soap, water and towels to conduct handwashing between working with groups of calves and before leaving the barn to minimize the spread of pathogens.

Viruses and bacteria that make veal calves sick sometimes spread between farms through vehicles, any shared equipment, or people. Avoid sharing equipment that has contact with the calves between farms, or plan to adequately clean and disinfect any share equipment. Caretakers should have dedicated coveralls and boots that are stored on the farm. This practice is particularly important for workers that care for calves at more than one site to avoid spreading pathogens between sites.

VISITOR POLICY

A visitor policy helps ensure that visitors do not introduce contamination or disease to the farm or barns. A visitor protocol should be established, and employees should be trained to follow all visitor procedures outline. Best practices include limiting the number of visitors at the barn or farm, limiting the areas on the farm where visitors may go, and providing disposable plastic boots (and coveralls) or foot baths to visitors who enter the calf housing areas. Foot baths are also recommended between calf rooms within the same barn, especially when different rooms house calves of different ages, or if there is a disease outbreak in one of the rooms. In addition, ensure that visitors are advised of safety concerns at all areas of barns and farms.

Provide a sign at the entrance with your contact information so visitors do not need to enter the facility to locate you. Ensure all visitors, including suppliers coming to your farm are familiar with your expectations for biosecurity. It may also be prudent for you to keep a record of visitors.

FACILITIES AND ENVIRONMENTAL CONDITIONS BEST MANAGEMENT PRACTICES

The information contained in this section should not be substituted for consultation with a veal/livestock housing expert as well as meeting necessary local building code requirements.

VENTILATION AND HEATING

A healthy environment promotes healthy calves. Veal farmers should ensure that barns are properly ventilated to maximize animal health and comfort. In addition, well-ventilated barns provide a safer work environment for employees and calf caretakers.

Ventilation allows fresh outside air to be brought into a barn (without causing drafts) and potentially contaminated air to be removed from the barn. Air should be moved throughout all parts of the building to supply oxygen, dilute and remove excess moisture, heat, odors, dust particles and other air pollutants.

Air quality should be monitored to control the level of ammonia and other gases with use of ammonia strips or ammonia reader. High quality, clean air should contain:

<10 ppm ammonia <2,500 ppm carbon dioxide <3 ppm hydrogen sulfide <15 ppm carbon monoxide

Other components of a complete environmental control system include a well-insulated, tightly constructed room or building, a control system, and a heater or furnace. Automatic controls will maintain more uniform conditions than manual controls. An environmental control system should maintain the best environment (proper temperature and humidity) for the calves with minimal temperature fluctuations and drafts. Design and operation of the system should consider the heat and moisture produced by the calves as well as the location of the building, expected outside temperatures and wind, number of animals, changes in calf size, and airflow, which will vary with the change in seasons. Any environmental control system must be correctly designed and professionally installed, monitored, and maintained.

Although most of the discussion in this manual discusses powered ventilation/heating systems, natural-ventilation systems can also be effective. Consult with experts to determine the best system for the farm to create the best environment that provides optimum employee comfort and calf health.

Insulation, ventilation, and heating must all work together to achieve an optimum environment. Adjustments can usually be made for individual situations which are best determined by an expert in the field.

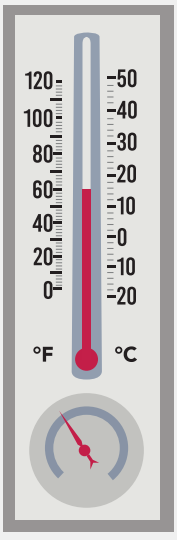
Photo credit: AVA

RECOMMENDED GUIDELINES INCLUDE:

Discuss and plan your ventilation system needs with a veal housing (ventilation and heating) expert and learn how to properly operate, monitor and maintain the system to provide the best environmental conditions for the calves.

- Calf barns and room(s) should be well insulated. Good insulation keeps the barn warmer in winter and cooler in summer and minimizes cold inside wall or ceiling surfaces and condensation. A vapor barrier on the side of the insulation towards the interior of the building is necessary to keep moisture from getting into and damaging insulation and the building structure. Specific recommendations for your area should be discussed with a veal-housing expert and should meet local building codes as necessary. General guidelines for minimum insulation R-values mild climates: 11 walls, 19 ceilings; cold climates: 19 walls, 35 ceilings.
- Exhaust fans should be properly sized and provide several ventilation rates. For adequate ventilation, 10 air changes/hour in winter, 15-45 air changes/hour in spring and fall, and 60 air changes/hour in the summer are needed.
- Install a fresh air inlet system in your calf barn that provides good air distribution and mixing. For fresh air inlets, the incoming air velocity should be 700 -800 ft. per minute for adequate mixing (lower or higher speeds can result in drafts or poor air distribution). Air inlets should be adjustable to allow maximum airflow with all the fans running and allow proper air velocity at lower ventilation rates. Remember—warm air currents passing over calves are not considered detrimental drafts.
- There should be adequate supplemental heat to maintain desired temperatures and allow minimum ventilation rates to remove moisture and gases. The heater should be able to maintain the temperature when the minimum ventilation fan is running, and the building is full of small animals.

  Optimum temperatures are 65-70° F for starting calves and 60° F for market age calves. There should be little temperature fluctuation within the building when the weather is cool (less than 5°F for calves less than 200 lbs. and less than 10°F for larger calves).



- Maintain humidity levels required for healthy calves. The optimum relative humidity for veal calves is 50% to 65%. There is increased condensation and more transport of airborne bacteria at humidity levels higher than 65%. At lower levels, there is increased dustiness and during cold weather, the building will require more heat. Dust levels should not exceed 2.5 milligrams per cubic meter of air. It should be noted that calves are a major source of humidity, releasing approximately 0.22 lbs. of moisture/100 lbs. body weight/hour into the air.

- Monitor temperature and humidity in your calf barn daily. Regularly evaluate conditions within your calf barn by using instruments specifically designed to measure environmental factors. It generally takes a minimum of 24 hours to see changes in air quality after a change in ventilation is made.
- At least once a month, check and clean: fan shrouds, blades and shutters (so that the fans can deliver rated capacity); screens over the air inlets (so they don't become plugged); motors and controls to prevent overheating and allow proper sensing; fan belts for proper tension, excessive wear, and correct alignment, and lubricate any necessary components of the system.
- Have an emergency plan for maintaining adequate ventilation during power outages. An alarm system to notify you of power outage, or automatic cut-in natural ventilation, should be installed in your barn. There should be an auxiliary or back-up electrical source that can power the ventilation equipment if needed. This backup system should be serviced periodically.
- Install thermometers in several places in the calf barn (at least one maximum/minimum thermometer and a portable thermometer) to allow you to track temperature changes and variations throughout the barn.
- Check the calibration of all controls and monitoring instruments.

MANURE MANAGEMENT

Manure management—how manure is captured, stored, managed, and used—has important implications for farm productivity and the environment.
When applied according to the agronomic needs of crops, manure can improve productivity by reducing the need for commercial fertilizer.
Additionally, how you manage, contain and remove animal manure is a contributing factor to overall barn sanitation and air quality for your animals and those who work in the barn. A best practice is to have a manure management plan to address this as well as when, where, and how manure is applied to either your fields or someone else's.

Be sure to follow your state-specific requirements for Nutrient Management Plans based on the number of animals you raise. State agencies and university extension programs have resources available to guide you in developing a manure management plan even where there are no state laws requiring one.

Photo credit: AVA

5 General Management

CHECKLIST:
EXPECTED OUTCOMES FOR TRAINING AND EDUCATION AND EMERGENCY PREPAREDNESS

TRAINING AND EDUCATION

OUTCOME: All individuals (family and hired caretakers) responsible for animal care, feeding and handling at the farm receive training annually related to their specific responsibilities and demonstrate their commitment to VQA principles.

EMERGENCY PREPAREDNESS

OUTCOME: Develop, review, and update annually , a written emergency preparedness plan to effectively manage emergencies or crisis situations that could occur

OUTCOME: Complete the emergency contact form and make it accessible to all animal caretakers and post it in a prominent location in the languages understood by workers to facilitate quick communication in the event of an emergency

TRAINING AND EDUCATION CONSIDERATIONS

Regardless of the size of your farm/facility or if your animal caretakers are hired employees or family members, providing training and continuous education opportunities is time well invested, not only for your caretakers but also your animals.

Training and development – whether done on the farm or by attending an industry workshop – helps individuals expand their knowledge, understanding and skillset. A robust training program helps ensure individuals understand the “how” and “what” they should be doing and most importantly, they also understand the “why.”

As part of your educational efforts, be sure to foster open communication and encourage engagement from those who work in your barns. This helps create a more positive work environment and demonstrates you value their role in raising healthy calves.
On an annual basis with current caretakers and whenever a new employee is onboarded, make sure everyone is informed of low-stress animal handling protocols and your zero-tolerance for abuse is understood. The VQA manual includes additional areas such as biosecurity, handling for non-ambulatory animals, and administering treatments where training is recommended, and protocols should be reviewed and followed.

Sources for education are listed on page 12 of the manual and additional information can also be found in the Appendices.

EMERGENCY PREPAREDNESS CONSIDERATIONS

No one wants to be unprepared when an emergency or disaster hits. Planning and taking steps to be prepared are the best ways to keep you and your animals safe. Whether the threat is a flood, wildfire, hurricane, structural fire, or disease outbreak, protecting your family, your animal caretakers and your livestock will only happen if you have taken the time to develop an emergency preparedness plan. Because emergencies and disasters are difficult to control or prevent, your goal is to minimize their impact by being prepared.

DIAL 911 FOR IMMEDIATE EMERGENCY ASSISTANCE

1 RISKS AND HAZARDS

Understanding what types of emergencies could impact your farm and your team is the first step in the process. Identifying a list of risks that could range from a disease outbreak to a natural disaster and being aware of the different risks that you may need to mitigate. Some disasters are more prevalent in certain parts of the country. Maybe you live in a flood-prone area or have a higher likelihood of wildfires or blizzard conditions preventing deliveries of feed. Be sure to prioritize these situations but do not overlook other possible emergency scenarios.

ReadyAG© workbook created by Penn State University Extension has worksheets with list of questions intended to guide you through the most important functions of your agriculture enterprise. This workbook is a guide to make you aware of potential vulnerabilities and how you might address them, whether these factors are naturally occurring, human error, or intentional acts. Each question asks for your response about the STATUS, and PRIORITY, for each issue and provides space for COMMENTS. The comprehensive workbook can be found online here: https://extension.psu.edu/readyag-workbook

2 MITIGATING POTENTIAL RISKS

Consider the impacts you may experience such as: building damage, limitations to feed or water for the animals, personal injury, and more. Once you have identified the risks you may experience, it is important to develop strategies to mitigate them. These may include how to inform others of the emergency, how to access area emergency alerts, determining a backup plan to access feed and water for the animals, and implementing steps to prevent injury to animals and caretakers.

3 ASSESS AVAILABLE RESOURCES

Be sure all animal caretakers know the emergency resources available in your area and how to contact them, including, your veal company representative, your veterinarian, fire department, and county sheriff and other resources that may have a role or authority over livestock businesses. Additionally, if phone service is not available, how can these individuals be contacted in the most expeditious way?

4 DEVELOP AN EMERGENCY PREPAREDNESS PLAN

Information to help you develop an Emergency Preparedness Plan is outlined below and continues on the following pages.

5 PRACTICE, REVIEW AND UPDATE

The best-case scenario to handle an emergency situation is to practice and review your written protocols. Practice and discuss the strategies you have identified for potential emergency situations with family members, caretakers and additional experts such as your veterinarian and veal feed company representative. Conducting an annual walk through of the emergency preparedness plan with all individuals involved at your farm is a recommended best practice to ensure you are prepared and can be responsive in case of an emergency or crisis.

Photo credit: AVA

Refer to the Appendices for the Emergency Contact Form

DEVELOP AN EMERGENCY PREPAREDNESS PLAN

Having a written emergency preparedness plan will be critical in helping you, your family and caretakers manage the emergency and navigate through the steps to ensure safety for all. Ensure a copy of the emergency plan is available to all individuals who have a responsibility on the farm.

Examples of emergencies to include in an emergency plan:

- Employee injury
- Biosecurity breach
- Natural disaster (fire, flood, tornado, blizzard, drought, lightening, hurricane)
- Temperature extremes (excessive heat or cold)
- Disease or health outbreak (foot and mouth disease, contamination of feed, chemical poisoning)
- Loss of utilities
- Manure or chemical spills

Priorities in time of emergency – Call 911 if people are injured and need medical attention

1. Safety of people
    a. Evacuation of injured
    b. Prevention for any further or additional injury of others
2. Protection of livestock and property
    a. Shut down of systems
    b. Movement of cattle to designated location or alteration of existing location with the ability to address the emergency

    Examples:

    - Heat Stress: Provide additional water, additional cooling methods or mechanisms (shade, fans, cooling systems) and reduce stocking density
    - Cold Stress: Bring cattle into sheltered area, provide additional feed and water
    - Clean up: Remove hazardous materials or debris

Emergency preparedness plan should:

1. Identify potential emergency situations
2. Include the following components for each potential situation
    a. What actions should be taken in an emergency situation
    b. For each action, designate the people in charge or performing those actions.
    c. Individuals who will give authority to perform specific action when emergency occurs
    d. Communication flow for quick and accurate information share
    e. Data and information related to site such as site physical address (911 address), GPS coordinates, utilities, evacuation routes, road conditions, equipment/materials involved, injuries, and location of resources
    f. Emergency supplies and equipment
    g. Training and documentation of training on execution of emergency plan for all involved including employees and first responders
    h. Response scenario options
    i. Sheltering in place
3. All animals and caretakers remain at the farm through disaster event where farm becomes self-contained

FARM EVACUATION PROCEDURES

SCENARIO	PROCEDURE
1. On-site – animals are relocated to safer area on the farm	
2. Off-site – animals are relocated off-site to a safer location that can provide necessary feed, water and shelter	

KEY CONTACTS:

(include mobile phone numbers or information on how to reach people if a phone is not available)

- Farm owner/manager
- Veal company representative
- Veterinarian
    - o To investigate of any cause of death in animals
- Nutritionists/Feed suppliers
- Local agencies *(Fire Department, Police/Sheriff, County Road Department, Farm Services Agency, Poison Control)*
- State agencies *(Department of Agriculture, State Animal Health Official, Department of Natural Resources/Environmental Quality)*
    - o To report catastrophic death loss
    - o To ask permission to bury or compost animals
- Insurance company
- Equipment suppliers
- Utility providers *(electrician, water, propane, natural gas)*

Emergency Preparedness Checklist

- ❒ Training programs for employees
- ❒ Emergency contact list posted throughout the farm and facilities
- ❒ Back-up power and fuel
- ❒ Fire extinguishers accessible
- ❒ Fail-safe alarms that are routinely checked and have sufficient backup alarms
- ❒ Water supply sufficient for 2-3 days minimum
- ❒ Feed supply sufficient for 2-3 days minimum
- ❒ Emergency release on gates, pens and barns for rapid exit, if necessary
- ❒ Euthanasia protocol
- ❒ Animal identification and inventory
- ❒ Necessary equipment for evacuation (trailer, trucks, tractors, fire extinguishers, etc)
- ❒ Insurance on buildings, cattle and other livestock

APPENDICES

TABLE OF CONTENTS

Photo credit: AVA

VQA EXPECTED OUTCOMES FOR CERTIFICATION

The following pages summarize the Expected Outcomes for VQA Certification. The farm's veterinarian should assess if the outcomes are being met -- Yes or No -- or if improvements are needed.

❒ Yes ❒ No ❒ Needs Improvement (NI)

CHAPTER 2 ANIMAL HEALTH

ESTABLISH A VETERINARIAN-CLIENT-PATIENT RELATIONSHIP (VCPR)

Y N NI

OUTCOME: Establish a VCPR

HEALTH MANAGEMENT PLAN

Y N NI

OUTCOME: In consultation with your veterinarian, develop and follow a Health Management Plan that includes written protocols and records for the following areas:

ANIMAL IDENTIFICATION

Y N NI

OUTCOME: All animals are identified with an easily visible tag, preferably an RFID tag.

MEDICATIONS AND IMMUNIZATIONS

a. Stewardship and Residue Prevention

Y N NI

OUTCOME: Facility-specific antibiotic stewardship practices are outlined and implemented to prevent, detect and when needed, treatment of common diseases is managed promptly and properly to optimize health outcomes and prevent residues.

b. Treatment and Health Records

Y N NI

OUTCOME: Permanent drug treatment records are maintained including date of treatment, animal ID, disease or condition, drug, dosage and administration route, person administering the treatment, injection method and site, duration of treatment and specific withdrawal time. FDA regulations require records to be kept for a minimum of two years.

Y N NI

OUTCOME: Health records document type and severity of disease, date of diagnosis, action taken and outcomes including recovery or death.

c. Storage and Disposal

Y N NI

OUTCOME: Medications are properly stored at the correct temperature and discarded based on specific label instructions.

d. Procedures and Administration Methods

Y N NI

OUTCOME: Medications are administered using the approved route, dose, and duration.

e. Immunization

Y N NI

OUTCOME: A vaccination program in consultation with the VOR considers diagnostic laboratory information to tailor the selection and timing of vaccines to prevent diseases.

BIOSECURITY AND SANITATION

OUTCOME: Facility-specific biosecurity and sanitation measures are documented and implemented to prevent the spread of disease.

MONITORING MORBIDITY AND MORTALITY

OUTCOME: Health records are summarized to describe overall health trends. Veal calves are monitored, assessed and managed to ensure that risk factors are reduced, and mortality and morbidity are prevented.

NON-AMBULATORY ANIMALS

OUTCOME: Detection, movement, housing, treatment, care and decision-making details ensure calves are managed in a safe and timely manner.

EUTHANASIA

OUTCOME: For animals identified to be euthanized, the euthanasia technique and disposal of euthanized animals reflect guidelines approved by AABP and/or AVMA.

ASSESSING FITNESS FOR TRANSPORT

OUTCOME: Calves are assessed for fitness before being transported and non-ambulatory animals are never shipped to market.

CHAPTER 3 CALF CARE AND HANDLING

WATER

OUTCOME: All calves should have continuous access to fresh water to maintain proper hydration. If water is subject to freezing in winter, water needs to be accessible at a minimum of twice a day.

OUTCOME: All devices and equipment used to provide water to the calves are monitored, cleaned and repaired as needed.

OUTCOME: Water quality is tested by a third party (as advised by your nutritionist, veterinarian or feed service representative) at least once each year.

FEED AND NUTRITION

OUTCOME: Calves are fed milk formula daily and have access to feed as outlined in written protocols by your feed service representative or nutritionist at levels sufficient to meet requirements for health, growth and vigor.

OUTCOME: All caretakers/employees are trained to follow the written protocol for daily feeding requirements.

OUTCOME: Facilities are designed to provide enough feeding space to mitigate competition.

BODY CONDITION, PERFORMANCE AND ANIMAL INJURIES

OUTCOME: Veal calves exhibit growth between arrival at the facility and each week that follows until reaching market weight.

OUTCOME: 95% of calves at the facility have an ideal body score of 3 (on a scale of 1 to 5) or higher during the finishing phase of production.

OUTCOME: 95% of calves at the facility are free from hock, knee, tail and/or other physical injuries.

OUTCOME: Measures are taken to ensure injuries are minimized or eliminated, this can include routine facility maintenance, appropriate handling and training, optimal stocking density, evaluating housing areas to identify areas of potential injury, and providing a clean resting area.

HANDLING AND MOVEMENT

OUTCOME: Implement cattle handling protocols which cover all aspects of handling and ensure all caretakers are trained to provide quiet, low-stress handling, and always employ these techniques.

OUTCOME: Caretakers should ensure the least amount of prodding is used to move animals while ensuring the safety of all employees and other calves. All animal caretakers should understand that calves are observant creatures capable of learning from and remembering events in their environment.

OUTCOME: No animals should be processed/treated in an unsecured or uncomfortable position. Animals that are mis-caught should be allowed to readjust their position or released and restrained appropriately for processing/treatment.

OUTCOME: Less than 5% of animals vocalize while being restrained for animal health processing and/or treatments.

TRANSPORTATION AND FITNESS FOR TRANSPORT

(Responsibility of this outcome is that of the veal company that purchases the calves and delivers them to the veal farm and then ultimately to the plant for harvest.)

OUTCOME: A transportation plan is developed, documented and followed to help mitigate thermal distress, dehydration, interruptions in routine feeding, physical exertion, exposure to pathogens and stress.

OUTCOME: All animals are assessed for fitness before being transported.

ABUSE AND NEGLECT ZERO-TOLERANCE POLICY

OUTCOME: The farm owner/manager has in place a zero-tolerance policy and enforcement plans on animal abuse and neglect for all staff.

OUTCOME: Employees and others who handle and/or observe animals at the farm are aware of how they can confidently report instances of abuse and neglect.

OUTCOME: There are zero instances of animal abuse or neglect on the farm.

INDIVIDUAL AND GROUP HOUSING CONSIDERATIONS

OUTCOME: State laws outlining space requirements and any other designations for veal calves are met as specified for selling/marketing veal for consumption within the implied state. This OUTCOME supersedes other VQA housing outcomes.

OUTCOME: The space and stocking density where animals are raised should enable each calf to comfortably rest, easily stand, move about freely, turn around fully, and socialize with other animals.

OUTCOME: Calves are in group pens of two or more by 10 weeks of age, unless it is for health purposes, and animals are never tethered at any age.

OUTCOME: Calves have a comfortable, dry and sanitary place to rest. Most desirable is rubber-coated flooring that maintains comfort for the animals, provides a skid-resistant surface and enhances the cleanliness of the animal.

BIOSECURITY AND SANITATION

OUTCOME: A hospital pen has been designated to isolate sick or injured animal(s) from others until they have regained their health.

OUTCOME: Pens are routinely cleaned, and all parts of the facility/barn are thoroughly cleaned, sanitized and dried between groups of calves to reduce the possibility of bacterial growth

OUTCOME: A pest control plan is in place to manage and eliminate pests and employees are trained to manage and implement pest control practices.

OUTCOME: Only sufficiently cleaned and disinfected equipment is shared between farms. For example, loaders, carts, buckets, calf feeding tubes.

OUTCOME: The number of people with direct contact with the veal calves is limited to the number of people to efficiently complete serve the needs of the farm.

OUTCOME: Handwashing is conducted between working with groups of calves and before leaving the barn to minimize the spread of pathogens. Caretakers should have access to water, soap and towels in the barns.

OUTCOME: A visitor policy is in place to ensure visitors do not introduce contamination or disease to the farm or barns and all employees are trained to follow procedures for visitors.

CHAPTER 4 FACILITIES

FACILITIES AND ENVIRONMENTAL CONDITIONS

OUTCOME: Facilities are properly ventilated, and protocols are in place to minimize airborne particles to reduce odors, dust and/or noxious gases to help maximize animal health and comfort and provide a safer work environment for farmers and employees.

OUTCOME: All classes of calves are provided with protection from predators and extreme weather conditions. Facilities are adequately insulated to keep barns warmer in the winter and cooler in the summer.

OUTCOME: Facilities provide natural and/or overhead lighting during regular daytime hours

OUTCOME: All facility elements such as flooring, fans, waterers, windows, curtains, gates and fences are in good condition, and fixed or replaced as needed.

OUTCOME: A manure management plan is in place outlining measures to contain, control and then remove animal manure from the farm annually following state and local guidelines when applicable.

CHAPTER 5 GENERAL MANAGMENT

TRAINING AND EDUCATION

OUTCOME: All individuals (family and hired caretakers) responsible for animal care, feeding and handling at the farm receive training annually related to their specific responsibilities and demonstrate their commitment to VQA principles.

EMERGENCY PREPAREDNESS

OUTCOME: Develop, review, and update annually , a written emergency preparedness plan to effectively manage emergencies or crisis situations that could occur

OUTCOME: Complete the emergency contact form and make it accessible to all animal caretakers and post it in a prominent location in the languages understood by workers to facilitate quick communication in the event of an emergency

FORM 1

To be reviewed, signed and submitted to VQA Program. Please fully complete the form and print clearly.

VETERINARIAN CLIENT PATIENT RELATIONSHIP (VCPR) VALIDATION FORM

FARMER / MANAGER

Name_____

Address_____

City_____ State_____ Zip_____

Farm Name and Location_____

Section_____ Township_____ County _____

Premise ID Number_____ Phone_____

Email_____

Signature _____ **Date** _____

VETERINARIAN

Name_____

Clinic Name_____

License No. or USDA Accreditation No._____

Address_____

City_____ State_____ Zip_____

Phone Number_____ Email_____

Email_____

"I hereby certify that a valid Veterinarian Client Patient Relationship (VCPR) is established for the above listed owner and will remain in force until canceled by either party."

Veterinarian's Signature _____ **Date** _____

Submit completed VQA certification documentation (Form 1 and Form 2) to:
Veal Quality Assurance Program
2900 NE 60th Street, Suite 200
Gladstone, MO 64119
VQA@LookEast.com

FORM 2

To be reviewed, signed and submitted to VQA Program. Please fully complete the form and print clearly.

CONFIRMATION OF VEAL QUALITY ASSURANCE EXPECTED OUTCOMES

FARMER / MANAGER

I hereby confirm that I maintain a Veterinarian Client Patient Relationship agreement with a licensed veterinarian; and I am fully committed to the Outcomes outlined in the Veal Quality Assurance program.

Farmer / Manager Signature _____ **Date** _____

Farmer / Manager Name _____

Farm Name _____

City _____ State _____

Phone _____

Which describes your role? (Check all that apply)

❒ Calf Owner ❒ Labor-lease Contract grower ❒ Independent grower

As a licensed veterinarian, I confirm that this producer is meeting all the Outcomes outlined in the Veal Quality Assurance program.

Veterinarian's Signature _____ Date _____

Veterinarian Name _____

Clinic Name _____

City _____ State _____

Phone _____ Email _____

Submit completed VQA certification documentation (Form 1 and Form 2) to:

Veal Quality Assurance Program
2900 NE 60th Street, Suite 200
Gladstone, MO 64119
VQA@LookEast.com

ADDITIONAL RESOURCES AND TRAINING

THE OHIO STATE UNIVERSITY
VETERINARY MEDICAL CENTER

Antibiotic Stewardship Education

Veterinarian-informed antibiotic stewardship training and decision-making tools can help reduce unnecessary antibiotic use and slow the spread of antibiotic-resistant bacteria in calf production. The Ohio State University College of Veterinary Medicine has Antibiotic Stewardship training and resources available for veal farmers. Work with your veterinarian to access the information or visit their website at: https://u.osu.edu/oneherdlab/teaching/resources-for-calf-producers/

ANIMAL WELFARE SCIENCE @UW-MADISON

The labs of Drs. Jennifer Van Os and Sarah Adcock

Pair and Group Housing

The University of Wisconsin has a comprehensive guide for pairing or group-housing dairy calves created by J. Van Os, PhD, with contributions from others. The series of articles provide helpful information to further enhance your management practices and decisions as it relates to the timing and stocking density of young calves. According to the information compiled, calves in groups have better solid feed intakes, average daily gains in body weight, and cognitive development and learning abilities compared to individually housed calves.

For more details, see the “Why all the fuss about paired housing?” article in the series which can be found online. Pair or group housing of dairy calves – Animal Welfare Science @ UW-Madison (wisc.edu) https://animalwelfare.cals.wisc.edu/calf_pairing/

ANIMAL TREATMENT RECORD

The Veterinarian of Record (VOR) is responsible for making recommendations with respect to animal health at the operation, including appropriate oversight of drug use on the operation.

Funded by Beef Farmers and Ranchers

Veterinarian Name: _____ Phone: _____

Animal ID or Group Name	Diagnosis Signs conditions Treated	Treatment plan						Withdrawal	Calculated Withdrawal Period Expires	Remarks Cautionary Statements *Examples: initials of person treating/testing*
		Date	Product	Dose	Route	Frequency	Length	(days)		

VACCINATION

OBJECTIVE: To prevent incidence of common dairy diseases by raising level of immunity.

Consult your veterinarian on recommendations for vaccines and protocols.

CALVES							
Group Pen	**Date**	**Age**	**Vaccination Type** (eg. Live, Modified Live, Inactive, Recombinant)	**Product Name**	**Dosage**	**Route of Administration** (IM, IV, SQ)	**Withdrawal Times (Days)**
Additional Protocols Specifications:							

CALF RESPIRATORY SCORING CHART

Review the UC Davis chart for guidance to assess your calves and the symptons you are observing to determine if treatment is needed.

Farmer Name: _____ Date: _____

CALF SCORES (Total respiratory score: 4-watch, 5 or more-treat)

Animal ID	Age	Nasal discharge	Eye or ear (highest number)	Cough -spontaneous or induced	Temperature	Total respiratory score

UCDAVIS VETERINARY MEDICINE
Veterinary Medicine Teaching and Research Center

UC CE University of California Agriculture and Natural Resources Cooperative Extension

UCDAVIS ANIMAL SCIENCE

Bovine respiratory disease scoring system for pre-weaned dairy calves[1,2,3]

Clinical sign	Score if normal		Score if abnormal (any severity)[4]	
Eye discharge	**0**		**2**	 Or  Or 
Nasal discharge	**0**		**4**	 Or  Or 
Ear droop or Head tilt	**0**		**5**	 Or  Or 
Cough	**0**	No cough	**2**	Spontaneous cough
Breathing	**0**	Normal	**2**	Rapid or difficult breathing
Temperature	**0**	< 102.5° F	**2**	≥ 102.5° F

Add scores for all clinical signs, if total score is ≥ 5, calf may be positive for bovine respiratory disease[3]

1. Love WJ, Lehenbauer TW, Kass PH, Van Eenennaam AL, Aly SS. (2014) Development of a novel clinical scoring system for on-farm diagnosis of bovine respiratory disease in pre-weaned dairy calves. PeerJ 2:e238 https://peerj.com/articles/238.
2. Aly SS, Love WJ, Williams DR, Lehenbauer TW, Van Eenennaam AL, Drake C, Kass PH, Farver TB. (2014) Agreement between bovine respiratory disease scoring systems for pre-weaned dairy calves. Animal Health Research Reviews 15: 2 Pages 148-150 http://journals.cambridge.org/repo_A94AI150
3. Love WJ, Lehenbauer TW, Van Eenennaam AL, Drake CM, Kass PH, Farver TB, Aly SS. Sensitivity and specificity of on-farm scoring systems and nasal culture to detect bovine respiratory disease complex in preweaned dairy calves. J Vet Diagn Invest. 2016 Mar;28(2):119-28. http://www.ncbi.nlm.nih.gov/pubmed/26796957
4. Any abnormality including, but not limited to, the examples shown in the above pictures.

LAMENESS PREVENTION & TREATMENT

OBJECTIVE: To prevent and treat lame animals to ensure animal comfort and sound mobility.

PROTOCOLS TO REVIEW AND COMPLETE:	
How are family and non-family employees trained to identify lameness?	
How often are animals surveyed for hoof, feet and leg health?	
What other methods of lameness prevention are utilized for the herd?	1. _____ 2. _____ 3. _____ 4. _____ 5. _____
What are the steps to follow if lameness is identified in an animal?	
Who is trained and responsible for treatment of lameness?	
How are treatments for lameness recorded?	
Treatment details:	
Additional Protocols Specifications:	

Source: Adapted from Calf Care Quality Assurance Program

NON-AMBULATORY

OBJECTIVE: To provide comfort and support to animals aiding in their recovery from injury/disease or to humanely euthanize animals that will not recover.

PROTOCOLS TO REVIEW AND COMPLETE:	
How are family and non-family employees trained to manage non-ambulatory animals?	
How and who is responsible for the determination of improvement, additional treatment, re-entry back into the herd or euthanasia made?	
What equipment is used to move the non-ambulatory animal?	
How many employees are to assist with moving non-ambulatory animals?	
Where are non-ambulatory animals moved to?	
How is feed, water, protection from heat and cold for typical climatic conditions, isolationfrom other ambulatory animals, and protection from predators?	
What medical care is provided to non-ambulatory animals and when is care provided?	
Where are treatments recorded?	
What additional methods of rehabilitation are used for non-ambulatory animals?	
Treatment details:	
Additional Protocols Specifications:	

Source: Adapted from Calf Care Quality Assurance Program

EUTHANASIA

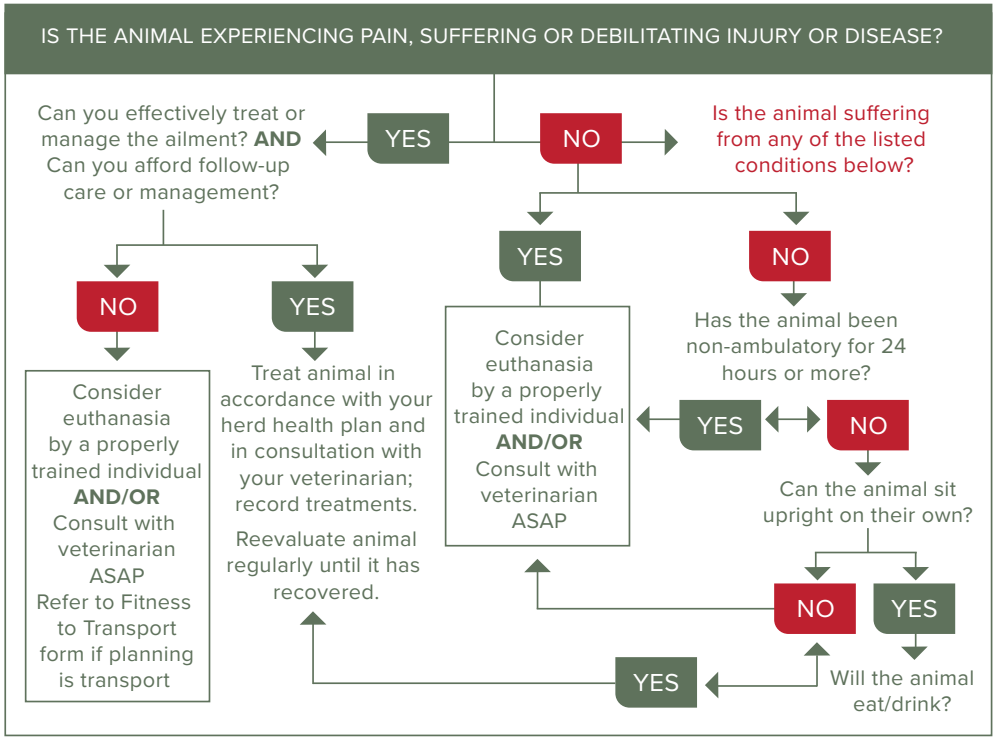
OBJECTIVE: Livestock caretakers have an obligation to ensure the welfare of animals under their care. Euthanasia of an animal that is suffering from irreversible disease or injury is a primary responsibility of caretakers.

PROTOCOLS TO REVIEW AND COMPLETE:	
How are family and non-family employees trained to recognize the criteria necessary for an animal to be euthanized?	
What are the criteria established for animals to be euthanized?	
What method of euthanasia is utilized?	
How is death confirmed after euthanasia has been completed?	
How is the carcass of the euthanized animal handled and disposed?	
What is used to disinfect equipment used for movement of deceased animal?	
Where is the reason for euthanasia recorded?	
Additional Protocols Specifications:	

Source: Adapted from Calf Care Quality Assurance Program

EUTHANASIA DECISION TREE

Use the following decision tree to determine if euthanasia should be performed immediately. Pain is an unpleasant physical sensation occurring in varying degrees of severity because of injury, disease or resulting from a medical or management procedure.

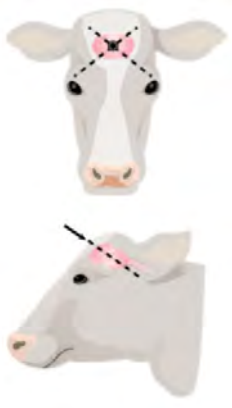


RECOMMENDED PRIMARY EUTHANASIA METHODS

Intravenous (IV) adminstration of a lethal dose of a barbiturate or barbituric acid derivative to induce a transition from consciousness to unconsciousness and death.

Gunshot using an appropriate firearm, ammunition and anatomic site to cuase physical disruption of brain activity by direct destruction of brain tissue.

Penetrating Captive Bolt (PCB) to induce unconsciousness in combination with an adjunctive step such as exsanguination, intravenous administration of a solution of either potassium chloride or magnesium sulfate, or pithing (increasingdestruction of brain and spinal cord tissue) toensure death. Non-penetrating captive bolt canbe used for the euthanasia of neonates and calves less than two-three months of age when followed by use of an adjunctive method to assure death. When properly applied, the above euthanasia methods cause the animal's rapid loss of consciousness and death without undue distress to the animal.



Content adapted from: American Association of Bovine Practitioners. 2023 Guidelines for the humane euthanasia of cattle.

Conditions or situations may lead to an animal being compromised to such an extent that euthanasia should be performed immediately:

1. Extended drug withdrawal time for clearance of tissue residue

2. INABILITY TO:

- Maintain sitting upright position with head held up
- Move and raise front legs once lifted under assistance
- Stand due to catastrophic fracture, trauma or disease of the limbs, hips or spine

3. SUFFERING FROM:

- Injury that results in the animal being too compromised for transport or market
- Chronic pneumonia and difficulty breathing/gasping for air
- Chronic repeated bloating
- Conditions with no effective treatement
- Disease conditoins with cost-prohibitive treatement
- Disease with a significant threat to human health (i.e., rabies)
- Emaciation and/or debilitation from disease
- Pain and distress that cannot be managed
- Poor prognosis or prolonged expected recovery
- Uncontrollable bleeding from a major blood vessel

BIOSECURITY PROTOCOLS - 1

OBJECTIVE: Utilize this form in discussion with your veterinarian to help prevent the spread or addition of pathogens or diseases and control visitor access to the farm.

VISITORS/VENDORS/OTHERS	PROTOCOLS
Where are Biosecurity signs to be posted?	
Where is a visitor log kept?	
Where should visitors park?	
Biosecurity measures for visitors?	
Additional Protocols Specifications:	

SICK/DEAD ANIMALS	PROTOCOLS
How are sick animals quarantined?	
For how long are sick animals quarantined?	
Where are dead animals stored prior to disposal or pickup by a rendering service?	
Additional Protocols Specifications:	

SECURITY	PROTOCOLS
Where are No Trespassing signs to be posted?	
What secure area are hazardous chemicals and drugs stored?	
Other security measures	
Additional Protocols Specifications:	

Source: Adapted from Calf Care Quality Assurance Program

BIOSECURITY PROTOCOLS - 2

SANITATION: CALF PENS	PROTOCOLS
Frequency of Cleaning	
Sanitizing Agent	
Directions	
Additional Protocols Specifications:	

SANITATION: NON-AMBULATORY ANIMAL SLED/BUCKET/ETC.	PROTOCOLS
Frequency of Cleaning	
Sanitizing Agent	
Directions	
Additional Protocols Specifications:	

LOCATION:	PROTOCOLS
Frequency of Cleaning	
Sanitizing Agent	
Directions	
Additional Protocols Specifications:	

Source: Adapted from Calf Care Quality Assurance Program

Characteristics of Selected Disinfectants

This table provides general information for each disinfectant chemical class.

Antimicrobial activity may vary with formulation and concentration.

Always read and follow the product label for proper preparation and application directions.

Disinfectant Category	Alcohols	Alkalis	Aldehydes	Oxidizing Agents			Phenols	Quaternary Ammonium Compounds
				Halogens: Chlorine	Halogens: Iodine	Peroxygen Compounds		
Common Active Ingredients	ethanol, isopropanol	calcium hydroxide, sodium carbonate, calcium oxide	formaldehyde, glutaraldehyde, ortho-phthalaldehyde,	sodium hypochlorite (bleach), calcium hypochlorite, chlorine dioxide	povidone-iodine	hydrogen peroxide/ accelerated HP, peracetic acid, potassium peroxymonosulfate	ortho-phenylphenol, orthobenzylpara-chlorophenol	benzalkonium chloride, alkyldimethyl ammonium chloride
Mechanism of Action	Precipitates proteins; denatures lipids	Alters pH through hydroxyl ions; fat saponification	Denatures proteins; alkylates nucleic acids	Denatures proteins	Denatures proteins	Denature proteins and lipids	Denatures proteins; disrupts cell wall	Denatures proteins; binds phospholipids of cell membrane
Characteristics	• Fast acting • Rapid evaporation • Leaves no residue • Can swell or harden rubber and plastics	• Slow acting • Affected by pH • Best at high temps • Corrosive to metals • Severe skin burns; mucous membrane irritation • Environmental hazard	• Slow acting • Affected by pH and temperature • Irritation of skin/ mucous membrane • Only use in well ventilated areas • Pungent odor • Noncorrosive	• Fast acting • Affected by pH • Frequent application • Inactivated by UV radiation • Corrodes metals, rubber, fabrics, • Mucous membrane irritation	• Stable in storage • Affected by pH • Requires frequent application • Corrosive • Stains clothes and treated surfaces	• Fast acting • May damage some metals (e.g., lead, copper, brass, zinc) • Powdered form may cause mucous membrane irritation • Low toxicity at lower concentrations • Environmentally friendly	• Can leave residual film on surfaces • Can damage rubber, plastic; non-corrosive • Stable in storage • Irritation to skin and eyes	• Stable in storage • Best at neutral or alkaline pH • Effective at high temps • High concentrations corrosive to metals • Irritation to skin, eyes, and respiratory tract
Precautions	Flammable	Very caustic	Formaldehyde has carcinogenic potential	Toxic gas released if mixed with strong acids or ammonia			May be toxic to animals, especially cats and pigs	
Bactericidal	+	+	+	+	+	+	+	+
Virucidal	±[a]	+	±	+	+	+	+	+ Enveloped
Fungicidal	+	+	+	+	+	±	+	+
Tuberculocidal	+	±	+	+	+	±	+	—
Sporicidal	—	+	+	+	±	+	—	+
Factors Affecting Effectiveness	Inactivated by organic matter	Variable	Inactivated by organic matter, hard water, soaps and detergents	Rapidly inactivated by organic matter	Rapidly inactivated by organic matter	Effective in presence of organic matter, hard water, soaps, and detergents	Effective in presence of organic matter, hard water, soaps,and detergents	Inactivated by organic matter, hard water, soaps and anionic detergents

+ = effective; ± = variable or limited activity; — = not effective

a - slow acting against nonenveloped viruses (e.g., norovirus)

References: Fraise AP, Lambert PA et al. (eds). *Russell, Hugo & Ayliffe's Principles and Practice of Disinfection, Preservation and Sterilization*, 5th ed. 2013. Ames, IA: Wiley-Blackwell; McDonnell GE. *Antisepsis, Disinfection, and Sterilization: Types, Action, and Resistance.* 2007. ASM Press, Washington DC. Rutala WA, Weber DJ, Healthcare Infection Control Practices Advisory Committee (HICPAC). 2008. Guideline for disinfection and sterilization in healthcare facilities. Available at: *http://www.cdc.gov/hicpac/Disinfection_Sterilization/toc.html*; Quinn PJ, Markey FC et al. (eds). *Veterinary Microbiology and Microbial Disease*. 2nd ed. 2011. West Sussex, UK: Wiley-Blackwell, pp 851-889.

The Center for Food Security & Public Health

Iowa State University®
College of Veterinary Medicine

EMERGENCY CONTACTS

Posting the names and telephone numbers of emergency contacts in a prominent place in the animal facility in employees' native languages is necessary to speed up communications in an emergency.

Funded by Beef Farmers and Ranchers

FARM NAME	
FARM ADDRESS	
OWNER / MANAGER	
TELEPHONE	

FOR GENERAL EMERGENCY SERVICES, CALL 911 If phone service is unavailable, identify methods for reaching these contacts.		PHONE *How to Contact*
LOCAL VETERINARIAN	NAME	
VEAL COMPANY REPRESENTATIVE	NAME	
FEED DEALER	NAME	
OTHER CONTACTS	NAME	
OTHER CONTACTS	NAME	
OTHER CONTACTS	NAME	

Report Animal Care Concerns Anonymously | 1.833.207.7457 | info@seeitstopit.org

AMERICAN VEAL ASSOCIATION ETHICAL COMMITMENTS

The American veal industry is committed to producing safe, healthy, nutritious protein in a responsible and sustainable manner. The American Veal Association (AVA) represents the vast majority of milk-fed veal raised in the U.S. Members include businesses and individuals, from veal farmers to feed companies and veal processors.

The AVA Ethical CommitmentsEthical Commitments outline our dedication to producing veal in the most sustainable and ethical manner today and in the future. As the American Veal Association, we will create understanding and accountability among our veal farm partners and employees to achieve these commitments, and we will openly share our progress in meeting these standards. Further details of these commitments and indicators to monitor our progress can be found on the association's website, www.AmericanVeal.com.

Animal Welfare

Quality care for our animals at every stage of life AVA members are committed to:

- Follow standards of the Veal Quality Assurance (VQA) program, which is updated at least every five years.
- Establish, train and demonstrate compliance with standard operating procedures that support the Five Domains of Animal Welfare.
  - Nutrition • Environment • Health • Behavioral Interactions • Mental State
- Calves are in housing that meets or exceeds VQA standards.
- Establish and maintain a veterinarian-client-patient-relationship (VCPR) and Veterinarian of Record (VOR) for animal health diagnosis and treatment in accordance with guidelines of the American Association of Bovine Practitioners.
- Follow accepted standards of veterinary care at all stages of life, including euthanasia when necessary, following recommendations of the American Association of Bovine Practitioners and the American Veterinary Medical Association.
- Follow animal welfare standards, including animal handling at transport and slaughter, which are aligned with the Protein PACT.

Environment

Conservation of our precious natural resources AVA members are committed to:

- Continually review and adopt management practices that conserve energy and natural resources, including land, soil, air and water.
- Manage manure, water and food processing residuals to cultivate soil health, enhance plant growth and protect our water supply.
- Assess the environmental impacts of U.S. veal, including Greenhouse Gas emissions, and identify ways to mitigate/reduce our impact.

THESE ETHICAL COMMITMENTS OUTLINE OUR DEDICATION TO PRODUCING VEAL IN THE MOST SUSTAINABLE AND ETHICAL MANNER TODAY AND IN THE FUTURE.

Food Safety

Safe, quality food as our first responsibility AVA members are committed to:

- Continually review and adopt practices that protect food safety
- Use animal health products when medically necessary and under guidance of a licensed veterinarian
- Prevent food safety and security issues through use of proven technologies and biosecurity practices
- Trace U.S.-raised veal from veal farm to product package

Health and Wellness

Veal's role in a healthy diet AVA members are committed to:

- Provide accurate, science-based information on the nutritional value of veal and its role in a healthy diet
- Serve under-nourished people through food donations, in our local communities and across the U.S.

Labor and Human Rights

Enhancing the quality of life for people and our communities AVA members are committed to:

- Treat all people with dignity and respect
- Support diversity in our workforce
- Provide training and professional growth for our workforce and veal farmers
- Promote a safe and healthy work environment
- Strengthen our communities through an engaged workforce and local volunteerism. Engage neighbors and the community with integrity and respect

GLOSSARY OF TERMS

ACRONYMS & ABBREVIATIONS	
AABP	American Association of Bovine Practitioners
ADG	Average Daily Gain
ADT	Animal Disease Traceability
AHCP	Animal Health Care Products
AMDUCA	American Medicinal Drug Use Clarification Act of 1994
AVC	Academy of Veterinary Consultants
AVMA	American Veterinary Medical Association
BCS	Body Condition Score
BSE	Bovine Spongiform Encephalopathy
BQA	Beef Quality Assurance
CCQA	Cubic feet per minute, a measure of ventilation capacity.
DCHA	Dairy Calf and Heifer Association
ELDU	Extra label drug use
FARAD	Food Animal Residue Avoidance Databank
FARM	National Dairy Farmers Assuring Responsible Management Program
FDA	Food and Drug Administration, the government agency charged with approval and use of drugs
FSIS	Food Safety and Inspection Service, the government agency charged with food and animal inspections
HACCP	Hazard Analysis and Critical Control Points, a set of principles to be used to prevent food safety problems
NAHMS	National Animal Health Monitoring System
OTC	Over-the-counter drug
USDA	United States Department of Agriculture
RFID	Radio Frequency Identification
VCPR	Veterinarian-Client-Patient Relationship
VFD	Veterinary Feed Directive
VOR	Veterinarian of Record
VQA	Veal Quality Assurance

GLOSSARY OF TERMS	
Animal Welfare	How an animal copes with the conditions in which it lives. An animal is in a good state of welfare (as indicated by scientific evidence) if it is healthy, comfortable, well nourished, safe, able to express innate behavior, and it is not suffering from unpleasant states such as pain, fear, or distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate protection from heat and cold, management and nutrition, humane handling, and humane slaughter/ euthanasia. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.
Antibiotic	A specialized substance that can inhibit or kill bacteria or other microorganisms.
Antibodies	(Maternally Derived) A specialized substance produced by certain blood cells (lymphocytes), especially in response to the presence of an antigen. These antibodies neutralize, and create immunity to, specific antigens. Maternally derived antibodies (sometimes referred to as immunoglobulin) are those antibodies produced by the cow's body and released into her colostrum. These antibodies can then be passed on to the calf by its consumption of colostrum as soon as possible after being born.
Antigen	A substance, such as a virus, to which the body reacts by producing antibodies.
Antimicrobial Resistance	When bacteria and other organisms evolve to survive in the presence of the medications that were intended to kill them. Occurs through inappropriate use of antimicrobial medications.
Antimicrobial Stewardship	Effort made to reduce the unnecessary and inappropriate use of antibiotics to preserve their effectiveness for both future use and for human medicine.
Average Daily Gain	A method for assessing animal growth, productivity, and feed efficiency. Calculated by measuring calves at predetermined intervals and dividing by the time elapsed in between to determine how much weight is gained per day, on average.
Benchmark	The minimum standard or level which producers should strive for in their own facilities. Often used as a measure of determining if management practices are effective.
Biosecurity	A set of measures aimed at preventing the introduction and/or spread of harmful organisms, to minimize the risk of transmission of infectious diseases to people, animals, and plants caused by viruses, bacteria, or other microorganisms.
Blood Titer Levels	The degree of concentration of substance in blood.
Body Condition Score	A measure to assess the provision of appropriate and sufficient nutrition to growing calves. A score is assigned based on the evaluation of various parts of the animal's body looking for either bony prominence or the presence of fat and muscle cover.
Bovine	All members of the cattle family.
Euthanasia	The intentional ending of an animal's life by an acceptable method to relieve pain and suffering.
Extra-Label Drug Use	Actual or intended use of a drug in an animal in a manner that is not in accordance with the approved labeling. This includes, but is not limited to, use in species not listed in the labeling, use for indications (disease and other conditions) not listed in the labeling, use at dosage levels, frequencies, or routes of administration other than those stated in the labeling, and deviation from labeled withdrawal time based on these different uses.

GLOSSARY OF TERMS	
Health Management Plan	An animal health management system developed with a veterinarian to prevent, diagnose, control, and treat disease or injury of all cattle at a facility.
Hemoglobin	A protein contained within the red blood cells, which carries oxygen from the lungs to the body tissues, and carbon dioxide from the tissues to the lungs. Hemoglobin is also responsible for the red coloring of the blood.
Humane	Having or showing compassion.
Immunity	Resistance to or protection against a specified disease; power to resist infection, especially because of antibody formation.
Lesions (Injection Site)	An injury or other change (damage to the calf's body tissue usually muscle) where the calf has received an injection.
Local Anesthesia	Provision of a 'freezing' medication, typically lidocaine, to prevent sensation or feeling to a particular area of tissue.
Low-stress Handling	A method of animal handling where herds people are trained to effectively and efficiently move animals based on cattle's natural and innate tendencies. Low-stress handling does not utilize excessive arm waving, yelling, or use of implements that may cause pain, stress, or fear to encourage animal movement.
Morbidity	Having a disease; calculated by assessing the number of calves that were treated for a given disease divided by the population that is at risk of being infected.
Mortality	Dying of a disease; calculated by the number of calves that die over a certain period of time divided by the population that is at risk of dying (which is the entire population or group of calves).
Necropsy	An examination of the calf's body after death; post-mortem.
Non-Ambulatory Animal	An animal that is not able to stand due to injury, illness, weakness, and/or pain.
Noxious Gases	Harmful gases (such as ammonia, carbon dioxide, carbon monoxide, hydrogen sulfide, methane) that can enter or build up within a veal facility and cause health problems, low growth performance, or death, depending upon concentration levels.
Pain Mitigation	Relieving pain through changing housing or management, or through the administration of medication, such as a nonsteroidal anti-inflammatory drug.
Passive Transfer of Immunity	The process in which antibodies from a cow are deposited in colostrum to be ingested by the calf. The calf then relies on these antibodies to protect itself against various pathogens until its own immune system begins to develop. Passive transfer of immunity is ensured when calves receive a sufficient volume of high-quality colostrum very soon after birth. It is measured by using a refractometer to evaluate a blood sample taken from calves at 24 hours of age up until nine days of age.

GLOSSARY OF TERMS	
Post-mortem	An examination of the calf's body after death; necropsy.
Protocol	The decided-upon system of rules or procedures for completing a specific task. This is established to ensure consistency and continuity of care.
Residue Avoidance	Ensuring that animals treated with any medications observe the appropriate withdrawal time to prevent drug residues from entering milk or meat at the time of processing.
Restraint	Holding, tying, or catching an animal for a period of time to perform a procedure.
Routes of Administration	How AHCP's delivered to animal – subcutaneously, intramuscularly, orally, etc.
Rumen	The largest of the four stomach compartments in the adult bovine. The site of active bacterial digestion allows the breakdown of hay, grass and other feedstuffs.
Sanitary	Absence of dirt and other causes of infection or diseases.
Sharps	A medical term for devices with sharp points or edges that can puncture or cut skin.
Standardized	To compare with a predetermined standard or goal. A means of ensuring that certain procedures are being performed in a similar, consistent manner.
Stocking Density	The number of animals in each housing area.
Thermoneutral Zone	The ambient temperature at which a calf is not required to expend energy to keep itself warm or cool. For calves, this zone is approximately 50 - 78°F (10-25°C). A calf experiencing temperatures outside of this zone is prone to heat or cold stress.
Treatment	Providing an animal with a substance (such as an antimicrobial medication or electrolytes) to relieve the symptoms of an illness.
Vaccine	Any preparation of killed microorganisms, living weakened organisms, etc. introduced into the body to produce immunity to a specific disease by causing the formation of antibodies.
Veterinarian-Client-Patient Relationship	An established partnership with a trusted veterinarian that is in the best interest of your herd and business. 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.
Veterinarian of Record	The responsible party for providing appropriate oversight of drug use at the facility operation. Such oversight is a critical component of establishing, maintaining, and validating a VCPR.
Withdrawal time	Amount of time that must be between administration of an AHCP slaughter of the animal for meat production (usually should be longer in special-fed veal than in other animal types).

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