MODULE 22: ANIMAL WELFARE: AN INTRODUCTION

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Approved as one unit of supplemental training for participants in USDA’s National Veterinary Accreditation Program

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This informational module has been approved expressly to serve as one unit of supplemental training for participants in USDA’s National Veterinary Accreditation Program. The content for this module was developed by the American Veterinary Medical Association Animal Welfare Division and the Animal Behavior and Welfare Group in the Department of Animal Science at Michigan State University. The module is intended to familiarize accredited veterinarians with animal health regulatory concepts and activities. Information in the module does not supersede the regulations. For the most up-to-date regulations and standards, please refer to the Code of Federal Regulations or contact your local District Office.

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Introduction
Welcome to the Animal Welfare: An Introduction module.

Upon completion of this module, you will be able to
• explain why animal welfare is an important part of an accredited veterinarian’s regulatory activities;
• define animal welfare in a comprehensive way;
• explain how to assess and evaluate an animal’s welfare; and
• identify the opportunities and challenges that exist in protecting an animal’s welfare.

Completion of this module is estimated to take 50 minutes, but will vary depending on your familiarity with the information presented.

Animal Welfare: Accredited Veterinarians’ Roles
Accredited veterinarians are required to consider the well-being and humane treatment of animals in the course of their regulatory work. The regulatory activities guiding the work of APHIS Veterinary Services and accredited veterinarians are found in the Code of Federal Regulations (CFR), Title 9, Animals and Animal Products Chapter I—Animal and Plant Health Inspection Service, Department of Agriculture Subchapters B, C, D, and J available at: http://www.ecfr.gov. [Select Title 9—Animals and Animal Products; then Parts 1–199—Animal and Plant Health Inspection Service, Department of Agriculture; then find the various Subchapters].

Regulations
The authority supporting humane handling provisions required of accredited veterinarians is provided by the Animal Health Protection Act (AHPA), under the Commercial Transport of Equines to Slaughter Act (9 CFR Part 88), and the Statement of Policy under the Twenty-Eight Hour Law (9 CFR Part 89). The AHPA specifically permits the Secretary of Agriculture to prohibit or restrict
• the exportation of any livestock “unfit” to be moved; and
• the use of any means of conveyance in connection with an importation of livestock because the means of conveyance does not have accommodations for the safe and proper movement and humane treatment of livestock.

To learn more about transportation of equines to slaughter, please see NVAP Module 20: Slaughter Horse Transport.

The Statement of Policy under the Twenty-Eight Hour Law (9 CFR Part 89) may be accessed at: http://www.ecfr.gov. [Select Title 9—Animals and Animal Products; then Parts 1–199—Animal and Plant Health Inspection Service, Department of Agriculture; then find Part 89].

In addition, thousands of accredited veterinarians are involved with the enforcement of humane animal care within the regulatory provisions of 9 CFR Subchapter A, granted by the Animal Welfare Act.

Finally, APHIS relies on the professional reputation of accredited veterinarians to appropriately and effectively perform their duties and to uphold the integrity of the National Veterinary Accreditation Program (NVAP). The actions of accredited veterinarians, including the handling and management of animals during the course of regulatory duties, are directly reflective of APHIS’ mission to protect and promote U.S. agricultural health, regulate genetically engineered organisms, administer the Animal Welfare Act, and carry out wildlife damage management activities.
A Changing Landscape
In the animal welfare arena, practical and ethical decisions about animal use and care involve multiple stakeholders. Communication is important, even among divergent perspectives.

Animal welfare has attracted increasing attention in recent years. Practices for the acquisition, production, and care of animals used in agriculture, biomedical research, teaching, exhibition, entertainment, and companionship have changed.

The animals that the majority of people in the United States are most familiar with today are those kept for companionship. As such, the public has different expectations for how animals should be kept and cared for compared with previous generations’ expectations, whose experience with animals was largely as sources of food, fiber, and work.

The public expects a veterinarian to understand and to be able to explain what is necessary for the well-being of all animals. Similarly, the veterinary profession has also changed as evidenced by modifications made to the Veterinarian’s Oath in 2010.

The Veterinarian’s Oath
The Veterinarian’s Oath affirms the roles and responsibilities of the veterinarian in protecting and enhancing the welfare of animals through the inclusion of key phrases:

“Being admitted to the profession of veterinary medicine, I solemnly swear to use my scientific knowledge and skills for the benefit of society through the protection of animal health and welfare, the prevention and relief of animal suffering, the conservation of animal resources, the promotion of public health, and the advancement of medical knowledge.

I will practice my profession conscientiously, with dignity, and in keeping with the principles of veterinary medical ethics.

I accept as a lifelong obligation the continual improvement of my professional knowledge and competence.”

Source:
American Veterinary Medical Association, 1954; revised 1969, 1999, and 2010

As the oath suggests, veterinarians’ primary responsibility is to their patients. However, veterinarians must also consider the needs of their human clients, and how members of the public perceive that animals are used and maintained.

Animal Welfare Activities
Veterinarians may engage in many animal welfare-related activities, including the following:

- Evaluating the welfare of animals and carrying out actions or providing advice to improve welfare;
- Informing clients about the welfare of animals and their responsibilities as owners;
- Informing other stakeholders (including the public) about animal welfare;
- Developing standards for animal care or assisting in drafting laws to protect the welfare of animals; and
- Evaluating compliance with welfare standards within voluntary or regulatory frameworks.

Animal Welfare Audiences
Veterinarians interact with and impact various audiences and need to be aware of the background and perspectives of those audiences when discussing animal welfare. The following are major groups veterinarians may be in contact with:

- Clients;
- Other veterinarians;
• Veterinary, undergraduate, and other students;
• Members of the public;
• Special interest groups (e.g., businesses/industry, animal protection organizations);
• Officials and regulatory agencies; and
• Members of the media.

Animal Welfare Decisions
Clients often need guidance in making decisions that affect the welfare of their animals. For companion animals, these include, but are not limited to, pet selection, spaying and neutering, breeding, preventive care, housing, nutrition, transportation, socialization and training, medical and surgical treatments (including antimicrobial use), cosmetic surgeries, and euthanasia.

For livestock and working or show animals, these decisions include those listed for companion animals but may also include management procedures such as dehorning, castrating, branding, and tail alterations.

Various Animal Purposes
One factor that influences the priorities of a client is the purpose for which the animal is being kept. There are four general categories that will be addressed next: companion animals, farm animals, research animals, and horses. Keep in mind that any particular animal species can move between the various categories depending on its use.

• The care of companion animals may be influenced by the owner’s resources and level of attachment, and their primary concern is often how their pet feels. Medical and surgical care provided for companion animals can be as sophisticated as that provided for human beings. The primary focus is on the individual animal.

• The care of farm animals (e.g., vaccinations, castration, docking) is often performed by farm or facility staff who may be under the supervision of a veterinarian. The primary focus is on the health and productivity of the herd or flock.

• The care of animals for research is managed by the veterinarian. While mindful of research goals, they often have the task of ensuring animal welfare is properly considered and that the many applicable institutional policies and State and Federal regulations are followed.

• The care of horses is often determined by the horse’s primary purpose, as well as the owner’s level of attachment and his or her financial situation. Because horses are used in many ways, approaches to care and management also vary.

Public Perception
The public looks at animal welfare as an ethical and social issue, and it can be a factor in consumer choices. Over the years, a smaller percentage of the population has become directly involved with animal-based industries, such as animal breeding and the use of animals in agriculture, research, education, and entertainment. The public values the opinions of veterinarians due to their training, expertise, roles in their community, and the ethical standing of the profession.

Special interest groups represent a spectrum of animal-based industries, companies and professions, groups promoting animal use, groups advancing animal welfare, and groups pursuing the abolition of animal use.

Public discussions play out in arenas such as policy-making bodies (e.g., legislatures, public agencies), the courts, and the media. As such, people with diverse interests are involved in debating, shaping, and implementing decisions.
on animal use and care. Since animal welfare may be a very small part of the duties of each person involved in these decisions, the onus often falls on veterinarians and other specialists with training and education in animal welfare to ensure they are consulted.

Although their education and training brings consistency to the technical application of skills, veterinarians’ opinions may differ on what is necessary for an animal’s appropriate use and care. However, veterinarians’ responsibility to act in the protection of an animal’s welfare and to make decisions based on science makes them a valuable consultant in all discussions regarding animal welfare.

Knowledge Review #1

Animal welfare is an important topic for veterinarians because:

A. Veterinarians are seen as animal experts.
B. Veterinarians’ opinions are respected and trusted when it comes to animals.
C. Veterinarians influence the development and implementation of animal welfare policies and standards.
D. Veterinarians have the opportunity to interact with many stakeholder groups influencing animal welfare decisions.
E. All of the above.

Answers are found in the appendix.

Defining Animal Welfare

A Global Definition

It is difficult to identify a single, universally agreed-upon definition of animal welfare; however, many individuals and organizations have crafted definitions that share certain commonalities including the following:

• Welfare is the state of the animal and how it is coping with the conditions in which it lives.
• An animal’s welfare can range from negative to positive.
• A complete assessment of welfare requires consideration of multiple facets of the animal’s state.

An unbiased and thorough assessment of an animal’s state should be encouraged regardless of its species, role, or utility. While the goal may be to classify welfare as good/bad or acceptable/unacceptable, it will always involve considering different information often with ethical components.

The American Veterinary Medical Association defines animal welfare as how an animal is coping with the conditions in which it lives. While practical considerations may sometimes limit steps that can be taken to improve an animal’s welfare, these considerations should not impact the assessment of the animal’s welfare state.

Consider the following examples of dogs living in three different situations:

• Situation 1: This dog is a pet that has free access to the owner’s home and is taken for walks outside. The dog is fed whatever brand of dog food is on sale and is frequently given table scraps. Veterinary examinations are done annually. The dog has accessible toys and plays fetch occasionally with its owner, but it is the only dog in the household and does not have social contact with other dogs. The dog’s owner works long hours so the dog often spends much of its time alone.

• Situation 2: This dog resides in a laboratory, is housed in a kennel, and is taken outside for daily walks. The dog’s diet is strictly controlled and nutritionally complete. Every day a caretaker evaluates the dog and it is examined monthly by a veterinarian. The dog has accessible toys, and daily training exercises take place with familiar caretakers. This dog is able to hear and see other dogs but is not allowed direct contact with them.
- Situation 3: This dog lives in a shelter. The dog’s diet varies greatly and is based on donations. The dog received an initial veterinary examination, but additional examinations are not performed unless a problem is noted. Daily observations of how the dog is doing are conducted by shelter volunteers who also play regularly with the dogs. There is frequent contact with other dogs via a play yard.

Consider which of the above situations would provide the best welfare for the dog.

Varying Definitions
People’s opinions of what constitutes good welfare are shaped by their beliefs, values, and experiences with animals.

In the situations described above, a comprehensive assessment of animal welfare considers multiple aspects of each dog’s physical and psychological condition and encourages people to recognize that the welfare of the dog is affected differently in each situation. This may make it possible to identify attributes that are essential for ensuring a dog’s good welfare. On this basis, commonalities that are unquestionably acceptable and unacceptable can be agreed upon and positions on other, less defined practices can be clarified.

In a diverse society, an absolute consensus on what constitutes “good” (or even “acceptable”) animal welfare is difficult to achieve. However, by making a good faith effort to do what is best for the animal and making decisions that are informed by sound scientific information, some level of agreement is generally attainable.

What Animal Welfare Is Not
The scientific study of animal welfare is fraught with efforts to reduce its scope. Some believe welfare is only impaired if the animal has lost physical fitness, experiences physiological stress, or becomes less productive. Others believe that only what the animal feels ultimately matters, and that so long as the animal experiences positive feelings, its welfare is good.

Source:

Animal welfare generally cannot be reduced to a single parameter or domain. Optimizing any one parameter will not address all aspects of welfare and may even negatively affect other aspects of welfare. Animal welfare decisions require a careful balancing of sometimes competing needs. For example, keeping laying hens safe from predators, disease vectors, and climatic extremes can lead to improved welfare. However, the optimization of freedom from disease, predation, and climatic-related discomfort bears the cost of restricting movement and prevents hens from performing many natural behaviors (such as nesting, perching, and dust bathing). Being able to perform these behaviors is also important for the well-being of hens.

Animal Welfare vs. Animal Rights
Animal welfare is distinct from animal rights. Animal rights addresses the legal and moral standing of animals in society and, in its most extreme form, seeks to end the use of animals by humans. While a person with an animal
rights orientation may seek welfare improvements as an intermediate step, it does not follow that those seeking welfare improvements have animal rights as their final goal.

**Examples of Specific Approaches to Animal Welfare**

Dr. Donald Broom* of the University of Cambridge wrote that: “The welfare of an individual is its state as regards its attempts to cope with its environment.” By this definition, an animal with good welfare would be one that is successfully coping with the demands of its environment.


*Dr. Donald Broom is an emeritus professor of animal welfare at the University of Cambridge. He was the first officially appointed professor in animal welfare in the world and is widely regarded as one of the field’s most influential researchers. His early work helped to establish the credibility of the field as a scientific discipline. Throughout his career, he has engaged in critical work to define and rigorously examine measures useful for assessing animal welfare and to ensure the appropriate use of animal welfare information in the formation of laws and regulations.*

Dr. Stanley Curtis** stated that animals have needs in three main domains: physical needs, safety needs, and psychological needs. By this definition, an animal has good welfare when these needs are met.

**Source: Curtis SE. Animal well being and animal care. Veterinary Clinics of North America 3 (Farm Animal Behavior) 1987;369–382.**

**Dr. Stanley Curtis (1942–2010) was one of the most prominent early researchers in animal welfare in the United States. His work on pigs' preferences, ability to control their environment, communication, and the impacts of stress on their welfare garnered him a great deal of respect.*

Toward the end of his career, Dr. Curtis was best known for his promotion of the performance axiom (i.e., that an animal’s performance closely correlates with its state of well-being and can be objectively measured via production data). As animals have been bred for greater production and some production attributes have created additional challenges for welfare (e.g., the impact of heavy body weight on the musculoskeletal system and locomotion), the performance axiom has engendered considerable debate.

A popular approach to animal welfare based on three overlapping groups of needs was developed by Drs. David Fraser, Dan Weary, Ed Pajor, and Barry Milligan. They suggested that full consideration of welfare must include an assessment of the following:

1. **Functioning:** The physical fitness of the animal. Animals should have good health, normal bodily functions, and normal growth and development.
2. **Natural living:** The ability of animals to lead reasonably natural lives. They should be able to perform important types of normal behavior. Animals should also have some natural elements in their environment, such as fresh air or the ability to socialize with other animals in normal ways.
3. **Affective states:** The emotional state of the animal. Animals should feel well mentally and should not be subjected to excessive amounts of negative emotion and unpleasant affective states (e.g., pain, hunger, distress). Animals should also experience some positive emotions in the form of pleasure or contentment.

Ideally, the three areas of need should fully overlap, indicating that an improvement in one need would concurrently improve the other needs. In reality, this is often not the case and an improvement of one need may be accompanied by no change or a negative change in one or more other needs. Conflict may arise when deciding what trade-offs must be made between competing areas of need.
Next are examples to illustrate how functioning, natural living, and affective states interrelate.


**Wallowing Pigs**

In modern commercial swine productions, pigs live in climate-controlled environments that make wallowing unnecessary to control body temperature; however, an overheated pig in an outside environment will normally wallow in mud to cool off if a wallow is available. In an environment where it cannot wallow on a hot day, welfare is reduced in all three need areas.

1. **Functioning:** If no other cooling options were available, the pig might undergo heat stress, disturbing the normal function of the body.
2. **Natural living:** The natural behavior of wallowing is prevented.
3. **Affective states:** The pig will show behavioral indicators of distress (i.e., discomfort due to heat).

**Chimpanzee Tool Use**

Wild chimpanzees can use complex behaviors to find food, which may include the use of tools. Some chimpanzees will spend hours fishing for termites by inserting a long stick into a mound, removing the stick, and eating the insects that are attached to it. If the chimpanzee is in a captive environment, where this behavior cannot be performed, welfare may be reduced in two of the three need areas.

1. **Functioning:** This area is not affected by whether or not the chimpanzee is allowed to perform the behavior. As long as the facility’s diet adequately meets the chimp’s needs, the chimp’s body will maintain its normal function.
2. **Natural living:** Tool use in foraging is a natural behavior; thus, preventing tool use could reduce welfare in this area.
3. **Affective states:** The chimpanzee should be given an opportunity to engage in this behavior to avoid stress.

**Litter in Broiler Houses**

Broilers are often housed on the floor in large finishing units, and a litter substrate is provided to soak up moisture. Ventilation is managed to ensure optimal humidity levels and prevent moisture retention in litter. High moisture levels in litter can cause birds to develop foot pad dermatitis and hock burn leading to lameness. Lameness can, in turn, precipitate other health problems if birds spend more time lying in the wet litter. Thus, if moisture in the facility is not managed to keep the litter dry, welfare could be directly reduced in two of the three need groups.

1. **Functioning:** High moisture levels in litter may lead to a decrease in function because physical harm is caused to the birds’ feet.
2. **Natural living:** The litter substrate may or may not be typical of what the birds naturally live on. This need is not greatly affected.
3. **Affective states:** The birds may experience pain from wounds on their feet and discomfort due to exposure to litter with high moisture levels.

As the examples demonstrate, not all welfare domains will be affected at the same time, in the same direction, or to the same degree in any given situation. These examples also show the importance of considering all the needs of the animal and how we might better adapt environments to meet the animal’s needs.
Knowledge Review #2

Animal welfare is best described as:
A. The desire to abolish all human use of animals.
B. Assured when the animal is physically healthy and productive.
C. The overall positive or negative state of an animal.
D. Whether an animal is happy or unhappy.
E. Assured when an animal can perform natural behaviors.

Answers are found in the appendix.

Measuring and Assessing Animal Welfare

The Role of Research
It was only as recently as the 1940s that animal welfare began to be seen as a subject for scientific research.

Animal welfare scientists collect information necessary to make informed animal welfare decisions, including how animals may be affected by genetics, nutrition, environment, transportation, handling, restraint, and surgery.

The parameters measured may include body condition or composition, states of disease or injury, behaviors, preferences, indicators of physiological stress, or human judgments of the animal’s state.

Research in the field of animal welfare expanded rapidly in the 1950s and 1960s in response to a series of events focused on animals in the laboratory and in agriculture that brought animal welfare into prominence as a social issue.

The Three Rs
In 1954, the Universities Federation for Animal Welfare (UFAW) commissioned a systematic study of laboratory techniques as they related to ethical concerns for using animals in research. In 1959, William Russell and Rex Burch produced a report resulting from that study, The Principles of Humane Experimental Technique, which contained ethical goals for animal research that remain important to this day. These ethical goals are referred to as the Three Rs.

- **Replacement**: This “R” encourages a search for alternatives to using animals in research to achieve the same outcomes. Although this is not always possible, if there are suitable alternatives to animals, they should be considered first before turning to animal models.

- **Refinement**: This “R” involves improving techniques used in research to minimize animals’ pain and distress. Sometimes pain and distress may be the very things that are being evaluated, but efforts should be made to minimize them as much as possible.

- **Reduction**: This “R” seeks to reduce the number of animals used while maximizing the data collected from each subject. This means careful design of experiments, experimental procedures, and statistical models so that the data collected can be used to its fullest potential.

Assessing Animal Welfare

Societal concerns about changing farming methods came to the attention of the public after the publication of Ruth Harrison’s book Animal Machines in 1964 (see appendix: Growing Societal Concern). This led to a series of events
that resulted in scientific evaluation by the British government of conditions of farm animals and the development of the Brambell Report, which included a set of guidelines for assessing animal welfare known as the Five Freedoms.

The Five Freedoms are a list of elements deemed essential for welfare and address both the physical and mental states of the animal. The Five Freedoms are considered by the World Organisation for Animal Health (formally known as the Office International des Epizooties or OIE) when developing international standards on animal welfare. For more information on the Five Freedoms, please visit: http://web.oie.int/eng/normes/mcode/en_chapitre_1.7.1.htm.

The Five Freedoms

The Five Freedoms form a framework for examining welfare in any system for any animal and describe the ideal to be sought rather than the establishment of standards for acceptable welfare. The goal of the Five Freedoms is to safeguard and improve animal welfare within a philosophical framework that assumes the use of animals for human purposes is acceptable.

The Five Freedoms include the following:
1. Freedom from hunger and thirst;
2. Freedom from thermal and physical discomfort;
3. Freedom from pain, injury, and disease;
4. Freedom to express normal behavior; and
5. Freedom from fear and distress.

While Freedom 3 may initially appear to have the most direct relationship to veterinary medicine, in practice, veterinarians address all of these freedoms because all five elements contribute to a healthy animal. These freedoms are a useful reference when assessing the welfare of animals.

Measuring and Evaluating Animal Welfare

Scientific advances have given us a range of direct and indirect animal-based welfare parameters that can be measured and then evaluated as part of a welfare assessment.

Measuring and evaluating are different but closely related aspects of welfare assessment.

- Measuring aspects of welfare that relate to both the physical and psychological states of animals provides data that can be processed and analyzed. Examples include the concentration of chemicals and cells in the blood of an animal (e.g., cortisol, white and red blood cells), heart rate, and changes in body weight and behavior.
- Evaluating data to make an overall welfare assessment is a subjective process that often involves ethical judgments and personal beliefs. Individuals may therefore draw different conclusions from the same data.

Measures of Welfare

Commonly, measures of poor welfare receive the most attention. Welfare deficits are often easier to objectively and discretely measure. Disease states and injuries, reduced immune function, reduced growth or reproduction, reduced productivity, prevention of other normal physiological processes, reduced life expectancy, and depressed appetite are examples of welfare deficits.

Positive indicators of welfare, such as play, contentment, positive social interactions, and the exhibition of natural behaviors, are also important to consider. Play and natural behaviors may be indicative of a pleasurable experience for an animal or group of animals. These are somewhat more difficult to assess objectively, but they are still valuable measures that should not be ignored.

Other measures that should also be considered include attempts by the animal to cope with stress, such as expression and frequency of abnormal behaviors (e.g., self-mutilation) or the absence or reduction of normal behaviors. These may be difficult to assess because different observers may interpret the coping and behavioral mechanisms of animals differently.
Abnormal Behaviors
Mice normally groom themselves and each other. Barbering is an abnormal behavior shown by some strains of mice in group caging. It is characterized by discrete patterns of oral manipulation and removal of the fur and/or whiskers of cage mates. As with any aspect of veterinary medicine, one must be able to identify what is in the realm of normal behaviors and then identify abnormal behavior from there.

Sources:

Measures of Affective States
Measures of affective states concentrate on gaining insight into the subjective experiences of the animal. Such measures include performing fear tests, qualitative behavioral assessments, or assessing animals' responses to novelty or stimuli that are normally neutral. These measures can be especially difficult to carry out and are always indirect, as affective states are not directly observable. The aim is to reduce negative experiences, such as pain and fear, and work to increase positive experiences, such as pleasure and comfort. This approach is used by humane advocates, cognitive scientists, psychologists, and behaviorists.

Resource Preferences
Animal preference tests may be used to assess what resources are valued by animals and to help caretakers make choices to improve welfare. There has been a great deal of research examining preference and motivation for access to different resources such as space, flooring, and nest sites across a range of species.

One example is the effort a hen is willing to expend to gain access to a substrate for dust bathing. If deprived of the opportunity to dust bathe, hens will perform the behavior longer and have a short latency to begin bathing once a suitable substrate is provided.

Source:

Another example is the sow to the right, which has been trained to press an operant panel with her snout to gain access to a group pen with various enrichment items, such as compost for rooting, straw, a cotton rope, or flooring covered with rubber matting. Her motivation can be assessed by measuring how hard she will work (i.e., how many times she is willing to press the panel) to gain access to the resources.

The resource preferences of animals and the effort they will expend to gain such resources are a reflection of their underlying needs and wants. Results of experiments examining motivational strength need to be evaluated with the knowledge that the animal is only responding to those...
immediate conditions and situations. Short-term decisions may satisfy the need or want immediately at hand but have the potential to disadvantage the animal over the long-term. For example, animals such as pigs, dogs, and cats will often overeat if provided with a constant supply of food. As a result, these animals will become obese. The animals are acting correctly in the short-term as they have not evolved to cope with ad libitum food that provides concentrated energy, does not require substantial work to obtain, and can be consumed in a matter of minutes rather than hours. However, this behavior is not beneficial to them in the long-term in their current situation and therefore their human caretakers need to regulate the amount of food offered.

Long-term decisions made by people should take into account the short-term decisions made by animals because they reflect something that is of value to the animal. Many animal welfare scientists and behaviorists incorporate tests of preference and motivation into their research and work, and this approach reduces the likelihood of misguided anthropomorphic interpretations of what animals want and need.

Natural and Evolutionary Development
The importance of looking to the natural and evolutionary development of the species has been mentioned several times throughout this module. Such a perspective provides humans with information on how and where the animal evolved and can help provide benchmarks for identifying abnormalities. One of the challenges of using this approach is that it can be difficult to define what is ‘natural’ for many domesticated and highly genetically selected species, some of whom may no longer have any closely related species in the wild. As a result, what was natural or normal for their wild ancestors might be dangerous or harmful for the domesticated members of that species today.

Comparing the behavior of dogs with wolves is a useful example. The hunting patterns of wolves have been well established as a seven-step process. The hunt begins with orienting toward the prey, followed by the wolf following the prey with its eyes. Next, the wolf will physically stalk and follow the prey animal and then transition to a faster chase. The wolf then performs a grab-bite to capture the prey, followed by a kill-bite and the interaction ends with dissection and consumption of the prey.

This behavioral sequence has been modified in many domesticated dog breeds. Herding dogs, such as Border Collies, will go through the sequence from orientation to chasing, but stop there. Terriers and other breeds selected for rodent removal may go as far as the kill bite, but not actually dissect and ingest the rodents. Other breeds, such as pointers, terminate the sequence even sooner by only going so far as to stalk the animal of choice. Regardless of breed, the shared instinct to gorge on a meal in anticipation of not eating again for a few days, as wolves do, may lead to obesity in domestic dogs that are fed ad libitum, which illustrates the complexity of basing welfare decisions solely on natural behaviors. Selective breeding has vastly changed the physical appearance and abilities of domestic animals as well, further complicating the question of what is ‘natural’. Therefore, natural species-specific instincts must be considered alongside environmental and husbandry practices. However, despite its challenges, the natural history of a species is still an important consideration in evaluating welfare.

Group and Individual Welfare
Understanding differences between welfare at the group and the individual animal level is also important and corresponds to the notion of treating an individual as opposed to maintaining herd health. If the population is small (e.g., exotic species in a zoo), a veterinarian can monitor and evaluate individuals and work on finding ways to make improvements for all animals in the population. In production settings where one is contending with large populations (in the thousands or even millions), evaluation of individuals is less practical and potentially not feasible.
In large-scale settings, if the welfare of the group as a whole is found to be good, then the majority of animals are assumed to have sufficient welfare. However, in any large population, there will be individuals with impaired welfare and others with superior welfare. This presents management challenges where one should seek to identify and improve the welfare of those that could be suffering while not doing anything to lessen the welfare of the overall population.

**Welfare Technologies**

Technologies are being developed to assist the monitoring of welfare (e.g., remote monitoring systems for individual animals as pictured right), but should never replace careful observation and physical examination of the animals when necessary. Body-mounted sensors, such as the one worn by this laying hen, have been developed to provide information on the activity levels, specific behaviors, location, and social preferences of individual animals. This information can provide insight into an animal’s behavior and health, and thus, overall welfare. Strategies are already in use to monitor or prevent poor welfare such as monitoring hock burn in broiler chickens or monitoring of stunning voltages and currents in abattoirs. In other systems, housing areas should be walked daily following predetermined observation protocols to adequately and appropriately evaluate the welfare of animals in a given space.

**Evaluating Welfare**

When measuring and evaluating animal welfare, it is best to consider animal welfare on a continuum that can range from good to poor. This continuum takes into account both the physical and psychological needs of the animal.

In addition to examining the animals themselves, the assessment of welfare should also be guided by 1) what resources are provided for the animals, and 2) how this affects the animal and its performance in its role (e.g., as a research model, a companion animal, or a production animal).

Assessments should always consider the following:

- The intensity of the welfare concern (e.g., intensity of pain or distress), as well as its duration. The product of intensity and duration is termed severity.
- The number of animals affected.

This approach can also be used to assess the potential benefits of changes for the animals.

Any assessment should create a complete picture of the animal, its environment, and the practices used to manage the animal in that environment. In addition to looking at what contributes successfully to the animal’s ability to function well in a particular environment, consideration must be given to what matters to the animal (i.e., what it needs, wants, and the strength of its preferences).
Knowledge Review #3

Which of the following is NOT one of the Five Freedoms?

A. Freedom from hunger and thirst
B. Freedom from discomfort
C. Freedom from pain, injury, and disease
D. Freedom from abuse and harassment
E. Freedom from fear and distress

Answers are found in the appendix.

Animal Welfare: Contemporary Topics

Now that an understanding of what welfare is and is not has been established and a review of what tools are available to measure and evaluate the well-being of animals has been provided, some specific issues of concern relating to animals will be addressed. These issues are among those most often discussed and debated in the United States. The topics presented in this module are not an exhaustive list nor are these issues limited to the United States. Similar concerns and questions have been raised in various places around the world, but different regions will also have other issues that are specific to the environment, animals, and people of that location.

There are considerable and unique challenges and opportunities as we strive for good animal welfare. Recent years have also seen a shift in what are issues of concern. In the past, the goal for ensuring good welfare was meeting the animal’s physical needs. Today, modern science and veterinary medicine are able to do this and attention has shifted to also satisfying the psychological needs of animals. Due to the high species-specificity of determining psychological needs (e.g., sociability, substrates, enrichment needs), this aspect of welfare is often more subjective than that of meeting physical needs such as adequate food and water. While some information on psychological needs is available, much work remains to be done to fully understand this aspect of an animal’s welfare.

Housing Systems

There is heated debate on housing systems. Animals may be raised intensively or extensively, as well as indoors or outdoors. There are advantages and disadvantages to each approach to housing, affecting both animals and people. In intensive systems,* animals will usually have contact with conspecifics** in some fashion, be that tactile, auditory, visual, olfactory, or a combination thereof.

*Intensive refers to a system of raising crops and animals, usually on small parcels of land, where a comparatively large amount of production inputs or labor are used per acre.

**Conspecific refers to individuals or populations of organisms that belong to the same species.

Contact with conspecifics may benefit animals’ welfare if the species is found in social groups in nature and if those groups can reasonably be managed in the population. However, providing for such contact presents several challenges. For example, the potential for disease transmission increases when animals live in close quarters, individual animals may find it difficult to escape aggressive interactions in the group, and, for veterinarians, observations of individual animals can be difficult. Additionally, a species that is social in nature may also have a specific group composition, especially in regard to sex and age, which may not be feasible to reproduce, especially in agricultural, exhibition, and research settings.

Extensive operations*** present different challenges as it might be difficult to check on the animals daily depending how far away they are located and the social benefits of close conspecific contact can be lost. Indoor housing greatly limits the natural components of the environment for animals, whereas outdoor housing presents added risks of predation, concerns over food and water delivery, and climatic variability.
**Public Demand for Change**

A related challenge is public demand for changes in single components of housing systems. Examples include legislative proposals and citizen-led initiatives that have focused on gestation stalls for sows, conventional cages for laying hens, and space allocations and floor types for dogs in breeding facilities. Some recommended changes may reflect an increased understanding of the animals’ physical and behavioral needs while others have negative repercussions for the population’s welfare, due to the complex relationship between various physical and psychological needs.

Recommendations for change need to be evaluated in conjunction with their effect on animal care and overall welfare, with consideration for human welfare, working conditions, and ergonomics.

Lambs in many parts of the world are routinely tail docked, which has been documented to be a painful and stressful procedure regardless of the method used. However, if the practice of tail docking sheep is prevented, the presence of long tails could lead to an increase in dirty wool and infestation by blowfly larvae, which burrow into the skin. Ultimately these infestations can lead to infection and in the most severe cases, death. However, alternative management practices (such as clipping wool in the tail and breech area or breeding for sheep that grow shorter or less wool in that area) should continue to be explored as alternatives that reduce problems associated with long tails while avoiding the pain of tail removal.

**Transportation**

Transportation raises welfare concerns that include which animals may be safely transported, how long and how far animals should travel, what environmental controls are in place in transport vehicles, whether animals should be kept in individual compartments or transported in groups, what stocking density is appropriate, and whether food and water are available. There are also human and mechanical considerations such as: how many hours a day a driver can travel, how much training and knowledge a driver should have about the animals being transported (including tests of competence and monitoring), and the operational condition of the vehicle (i.e., is it appropriately constructed and well maintained). For more information on preparing animals for transport, please see NVAP Module 21: Animals’ Fitness to Travel.

**Surgical Alterations**

Surgical alterations and other practices, including elective ‘cosmetic’ surgeries carried out as part of animal care, also raise concerns for the welfare of animals. In livestock, tail docking, castration, beak or bill trimming, horn removal or tipping, and toe or spur trimming or removal are practices that have caused concern. In companion animals and exhibition animals, procedures such as canine-tooth removal, debarking, declawing, ear cropping, and tail docking have also elicited concern and comment. Concerns are particularly common when there may be incomplete understanding of a procedure’s purpose. A veterinarian needs to assess how the surgical procedure may affect the animal’s welfare, human safety, product quality, and whether there may be a feasible alternative for the animal.

Some of these procedures have value in helping to protect animals from injuring themselves, a conspecific, or the humans working with them (e.g., dehorning, beak trimming). Others may affect attributes of the products derived from the animal (e.g., castration). Sometimes there are alternatives...
that can replace some of the procedures (e.g., genetic selection for polled cattle as a replacement for dehorning) or there may be approaches to the procedures that make them less painful for the animal (e.g., appropriate age, improved technique, use of analgesics). Surgical and genetic alterations should be evaluated in the context of an individual animal or population, as applicable, to weigh the benefits to all relevant parties against the costs.

Lastly, questions arise as to who should perform these procedures to best ensure the welfare of the animal while allowing for practical concerns related to availability of services and cost.

**Euthanasia and Depopulation Methods**

Euthanasia and depopulation also raise important animal welfare concerns. Euthanasia translates from the original Greek as “good death” which is understood to be “the act of inducing humane death in an animal” according to the 2013 AVMA Guidelines on Euthanasia. The Guidelines specify that euthanasia techniques should minimize distress and anxiety and involve a rapid loss of consciousness followed by cardiac or respiratory arrest and death.

Depopulation is the killing of animals in large numbers, such as in the face of disease outbreaks, bioterrorism, and natural disasters. As much consideration is given to the welfare of the animals as practicable, but the circumstances and tasks facing those performing depopulation are understood to be extenuating. One substantial challenge facing those working to protect animal welfare is a catastrophic disease outbreak in large populations of animals. Infectious diseases can cause major problems at facilities that have been exposed to these pathogens. On a poultry farm exposed to Newcastle disease virus, for example, hundreds of thousands of birds might be depopulated to prevent further spread of the disease. Veterinarians are key to implementing a method to effectively depopulate the birds in a manner that is practical and humane. The problem becomes even more complex when the disease may be highly infectious for both animals and people, such as some forms of avian influenza. Similar challenges, although often on a smaller scale, can be encountered in laboratory animal facilities or animal shelters.

To address public concerns about euthanasia and depopulation, veterinarians must communicate science-based decisions about the methods chosen and why they are suitable, just as they might communicate why an individual animal must be euthanized. The public should have confidence that the issue of concern (e.g., disease, disaster) is being controlled while ensuring the best possible outcomes for the animals and people that are directly affected.

**A History of Progress**

While challenges will continue to exist, successful improvements in animal welfare should also be mentioned. For agricultural animals, consideration of the natural biology of the animal has helped improve their welfare and, in turn, has helped to increase production. For example, in laying hens, an increase in cage space yielded improved production and reduced mortality. In addition, the replacement of vertical bars with horizontal bars in the front of layer cages has allowed for better feed access and greater flexibility of movement.


Manure belts in layer houses have reduced fecal matter drop through to birds in lower cages, keeping the animals cleaner and reducing the amount of ammonia and dust in the air, benefiting both hens and workers. Slatted floors in swine production facilities allow for manure to be more easily removed, leaving a more sanitary environment for the animals to live in and an area that is easier for workers to clean. Better ventilation systems for all production settings have led to reductions in noxious gases and improved temperature and humidity control. Curved raceways and chutes use the natural movement and behavior of cattle to guide them through cattle yards in abattoirs with less stress for the animals and less risk to the humans.
Facilities for laboratory animals have similarly evolved. Nonhuman primate housing now requires pair or group housing of these highly social animals. Open grids, rather than solid surfaces, are used for sides and fronts where an animal lives in isolation so that they can still see, smell, and hear conspecifics. Enrichments in cages, such as perches, food puzzles, and/or hide boxes provide something for the animal to manipulate and allow it to interact with its environment. Similar types of housing changes have been made for rabbits and rodents in laboratory environments that have improved animal welfare.

Companion animal species in shelters and research settings are also benefiting from the increased focus on welfare. Group housing and communal play areas are becoming more common. Air handling advancements and improved housing materials—including floors with antimicrobial and bacteriostatic additives and non-slip areas for play and training—enhance the cleanliness and safety of housing for animals in shelters and research facilities.

### Knowledge Review #4

What is the main reason for carrying out procedures on farm animals such as piglet tail docking and tooth trimming and poultry beak or spur trimming?

A. To improve the animal’s appearance.
B. To increase the animal’s weight gain.
C. To prevent animals from injuring each other.
D. To conform to breed standards.

Answers are found in the appendix.

### Animal Welfare Assurance

Animal welfare assurance in the United States is accomplished via the following two main routes:

1. Market-driven programs (i.e., voluntary); and
2. Regulatory efforts at the Federal, State, and local levels.

At the international level, the World Organisation for Animal Health (OIE) has developed various recommendations and guidelines on animal welfare for a variety of animal species that are intended to facilitate international trade. Since May 2005, the OIE has adopted animal welfare guidelines that include the production and transportation of animals, the killing of animals for disease control purposes and human consumption, and several pertaining to the welfare of fish.

### Conclusion

Animal welfare is a complex and multidimensional subject. It is context-specific for the group of animals that is being evaluated. Although two farms or laboratories may have similar animal care standards and protocols, the welfare of the animals in those environments may not necessarily be the same. Each situation needs to be considered individually and those conducting the assessment must understand that the assessment is only a single snapshot in time. The picture of welfare is forever changing for animals due to changes in the environment and in the animals themselves.

Protecting animal welfare means doing what one can to meet the animal’s needs, whether physical or psychological, within the context and constraints of the system in which the animal is living and the animal’s use or purpose. Understanding the complex relationships between scientific knowledge, social acceptability, economic feasibility, and sustainability will also help identify practical applications and assist with having informed conversations with...
diverse audiences. While scientific information can be used to foster welfare improvements, interpreting such information is not value-free. It is therefore imperative to be cognizant of potential biases and influences on judgment, including one’s own.

Currently available animal care systems involve trade-offs. Each system will offer unique advantages and disadvantages that must be considered when determining the best option for that situation. Increased behavioral freedom may mean there is a greater risk of disease and injury. Conversely, protecting animals from disease and injury may mean that their behavioral freedom is curtailed. Quick fixes are rarely what they seem to be, so if an isolated change is recommended, it is important to take the time to evaluate all the possible consequences of that change to ensure the desired results are obtained without unanticipated negative consequences. The most successful systems are the ones that continuously evaluate their procedures and make changes accordingly.

Science informs many decisions, but it does not make them, and science can be misconstrued or misused to support a specific belief. Veterinarians should make it their business to engage with all stakeholders and use those opportunities to both learn and convey information related to the science, values, and perspectives involved in discussions of animal welfare. Most importantly, animal welfare questions, issues, and challenges should be viewed as opportunities for productive exploration and positive change, rather than as liabilities to be avoided. Veterinarians are uniquely positioned to foster dialogue between the multiple stakeholders involved with animal welfare, thus facilitating the resolution of important issues.

**Resources/Web Links**

Throughout this module, you were provided with additional resources and links for more information. That information is repeated here for your convenience.

American Veterinary Medical Association (AVMA)
A Comparison of Cage and Non-Cage Systems for Housing Laying Hens

AVMA Animal Welfare Policy Statements

AVMA Guidelines on Euthanasia

Code of Federal Regulations, Title 9
- The Twenty-Eight Hour Law (9 CFR Part 89) [Select Title 9—Animals and Animal Products; then Parts 1–199—Animal and Plant Health Inspection Service, Department of Agriculture; then find Part 89].

USDA Animal Welfare Information Center

[http://web.oie.int/eng/normes/mcode/en_chapitre_1.7.1.htm](http://web.oie.int/eng/normes/mcode/en_chapitre_1.7.1.htm)
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A commercial double-deck trailer, which is prohibited by USDA to use for horse transport as it does not allow enough headroom for horses to ride comfortably. *Photo source: Joey Astling, USDA-APHIS*

A veterinarian examines a piglet for an umbilical hernia and records his findings as part of a health assessment. *Photo source: American Veterinary Medical Association (AVMA)*

Veterinarians interact with many different audiences. A veterinarian performs a procedure on a sheep with assistance from a group of students. *Photo source: Stephen Ausmus, USDA-ARS*

A veterinarian talks with two clients about the care of their goat. *Photo source: Scott Bauer, USDA-ARS*

A veterinarian prepares to inject a beef cow with a vaccine. *Photo source: Keith Weller, USDA-ARS*

Some horses are used to help humans accomplish certain tasks, such as gathering cattle. *Photo source: Alan Bishop, Hermosa, South Dakota*

The pet dog in the photo is playing with a toy in the backyard of the owner’s home (top). A laboratory dog being used in a research project to examine olfactory perception (bottom). *Photo sources: Janice Siegford, Michigan State University (top); Stephen Ausmus, USDA-ARS (bottom)*

A dog is in its run at the animal shelter. *Photo source: Animal Behavior and Welfare Group, Michigan State University*

Laying hens housed in a conventional cage at a commercial facility. When hens are housed this way, it is easy to individually feed and monitor birds. Such systems keep hens safe from predation, reduce disease transmission, protect birds from inclement weather, and promote production of clean eggs (left); Laying hens perching in an aviary system. Hens prefer to roost on perches at night to rest. Perching also improves bone strength in the legs, reducing the possibility of fracture (second from left); A hen sitting in a nest box. Hens are as strongly motivated to access nests as they are to access food. When a nest is not available, hens make gakel calls and pace, both of which indicate frustration (third from left); A hen dust bathing in dirt. Hens will dust bathe every other day, working dirt into their feathers to remove excess oil and ectoparasites. In the absence of a dust bathing substrate, hens often show ‘sham dust bathing,’ indicating that they are strongly internally motivated to perform the behavior (right). *Photo sources: United Egg Producers (left, second from left); Janice Siegford, Michigan State University (third from left); www.morguefile.com (right)*

The three concepts of animal welfare: functioning, natural living, and affective states. Note that the overlap between the concepts is incomplete. This indicates that factors may not affect all areas of animal welfare directly or to an equal degree. *Graphic illustration by: Bridget Herrick, Iowa State University*

A pig resting in a muddy wallow. *Photo source: www.morguefile.com*

A chimpanzee using a stick to reach into an orange container. Not all groups of chimpanzees show this behavior, and tool use can vary from group to group. The behavior is learned by young animals observing other chimpanzees using tools. *Photo source: LOU, ZooChat user*

Broiler birds in a floor system resting on litter. *Photo source: USDA-ARS*

These photos illustrate the differences in body condition score, one of the parameters that may be measured in animal welfare research, with an emaciated horse (top) and an overweight horse (bottom). *Photo sources: Center for Equine Health, School of Veterinary Medicine, University of California, Davis (top); Patricia Futoma, Iowa State University (bottom)*

This graphic illustrates the Three Rs, or ethical goals, of animal research. *Graphic illustration by: Bridget Herrick, Iowa State University*

Cooperative grooming (e.g., allogrooming), as seen in these horses, is a positive indicator of animal welfare (top). Normal behaviors that species are motivated to perform, such as grazing by these cattle, are positive indicators of animal welfare (bottom). *Photo sources: www.morguefile.com (top); Stephen Ausmus, USDA-ARS (bottom)*
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*(Top)* This laboratory mouse has a barbered hair coat. Barbering is a malfunctional compulsive disorder of hair and/or whisker plucking observed in some mouse strains that appears to be homologous to compulsive hair pulling in humans (Trichotillomania). *Photo source: Giovana Vieria, Purdue University*

*(Bottom)* This sow has been trained to press an operant panel with her snout to gain access to a group pen with various enrichment items such as compost for rooting, straw, a cotton rope, or flooring covered with rubber matting. Her motivation can be assessed by measuring how hard she will work (i.e., how many times she is willing to press the panel) to gain access to the resources. *Photo source: Monica R. P. Elmore et al., Purdue University*

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*(Top)* This Border Collie is staring at the sheep in a particular way, often called ‘showing eye’. This is one of the steps of wolf predatory behavior that domesticated dogs commonly show. However, Border Collies do not display the entire ancestral predatory sequence, typically stopping their performance of the sequence before the bite step. *Photo source: www.morguefile.com*

*(Bottom)* In many production systems, animals may be placed together in large groups. This is not inherently bad for animal welfare, but it does make keeping track of individual animals within the group difficult. Sheep can be managed in flocks or herds of hundreds or thousands of animals. *Photo source: Commonwealth Scientific and Industrial Research Organization*

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*(Top)* A brown laying hen wearing a wireless sensor on her back (indicated by the circle). The sensor has been colored to blend in with the hen’s feathers to avoid attracting the attention of other hens. *Photo source: Courtney Daigle, Michigan State University*

*(Bottom)* Animal welfare is best thought of as a continuum that ranges from good to poor, taking into account both physical and psychological needs of the animal. *Graphic illustration by: Bridget Herrick, Iowa State University (both)*

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Animals can be housed in a variety of different ways. With each type of system come different challenges and benefits. This dairy cow is housed indoors in a free stall barn. She is protected from the elements but may have to stand on hard surfaces, such as concrete, that can cause hoof and leg problems (top); This dairy cow is housed outdoors on pasture where she is able to graze but will have to contend with inclement weather (bottom). *Photo source: Melissa Elischer, Michigan State University*

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*(Top)* Sows housed in gestation stalls during pregnancy. Several States have passed legislation that restricts or prohibits housing sows in this way (top); Flooring for dogs being bred for research that reduces slipping and disease transmission (bottom). *Photo sources: Janice Siegfurd, Michigan State University (top); P&G Pet Care (bottom)*

*(Center)* This type of commercial double-deck livestock transport trailer can be used to transport larger animals such as pigs or cattle. *Photo source: Joe Snyder, Portland, Oregon*

*(Bottom)* This dairy cow has a docked tail, a surgical alteration that has raised concerns about animal welfare. *Photo source: Veterinary Diagnostic and Production Animal Medicine, Iowa State University*

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*(Top)* This photo shows a veterinarian in personal protective equipment (PPE) drawing up chemical euthanasia agent in a single-use syringe. *Photo source: Andrew Kingsbury, Iowa State University*

*(Bottom)* This photo depicts solid concrete (for laying) and slatted concrete (to enhance cleanliness) floors in a few empty pens that will house grower pigs in a confinement building. *Photo source: Alex Ramirez, Veterinary Diagnostic and Production Animal Medicine, Iowa State University*

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*(Top)* These rats are housed in cages with solid floors and have been provided with bedding and enrichment. *Photo source: Carissa Wickens, Michigan State University*

*(Bottom)* Many animal shelters have begun housing social cats in communal living areas that allow for contact with other cats and typically provide more space per cat and more complex environments. *Photo source: Sheilah Robertson, University of Florida*

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This photo depicts an outdoor exercise area for goats, which has both advantages and disadvantages for their welfare. *Photo source: Danelle Bickett-Weddle, Iowa State University*
Knowledge Review Answers

Knowledge Review #1

Animal welfare is an important topic for veterinarians because:
A. Veterinarians are seen as animal experts.
B. Veterinarians’ opinions are respected and trusted when it comes to animals.
C. Veterinarians influence the development and implementation of animal welfare policies and standards.
D. Veterinarians have the opportunity to interact with many stakeholder groups influencing animal welfare decisions.
E. All of the above.

The correct answer is E, all of the above. Answers A, B, C, and D only capture some of the reasons that veterinarians must be knowledgeable about animal welfare. Veterinarians are the experts that the general public respects and trusts most and they interact with many stakeholder groups, giving them multiple opportunities to influence animal welfare decisions.

Knowledge Review #2

Animal welfare is best described as:
A. The desire to abolish all human use of animals.
B. Assured when the animal is physically healthy and productive.
C. The overall positive or negative state of an animal.
D. Whether an animal is happy or unhappy.
E. Assured when an animal can perform natural behaviors.

The correct answer is C, the overall positive or negative state of an animal. Answer A would more correctly describe animal rights. Answers B, D, and E only cover one aspect of animal welfare (i.e., basic health and biological functioning, affective states, and natural living, respectively). All three should be included in a comprehensive definition or assessment of animal welfare.

Knowledge Review #3

Which of the following is NOT one of the Five Freedoms?
A. Freedom from hunger and thirst
B. Freedom from discomfort
C. Freedom from pain, injury, and disease
D. Freedom from abuse and harassment
E. Freedom from fear and distress

The correct answer is D, freedom from abuse and harassment. Answers A, B, C, and E are all included in the Five Freedoms. Missing from the list is the freedom to express normal behavior.
Knowledge Review #4

What is the main reason for carrying out procedures on farm animals such as piglet tail docking and tooth trimming and poultry beak or spur trimming?

A. To improve the animal’s appearance.
B. To increase the animal’s weight gain.
C. To prevent animals from injuring each other.
D. To conform to breed standards.

The correct answer is C, to prevent animals from injuring each other. While tail docking might in some cases be used to improve the appearance of an animal or to conform to a breed standard, that is not the primary reason. Pigs have a tendency to bite each other’s tails, and when tails are docked this problem may be reduced. Tooth trimming in piglets prevents injury to the sow and to other piglets in the litter when piglets fight during the first few days of life to establish teat order. Poultry beak trimming is done to reduce the severity of feather pecking or cannibalism. Spur trimming in breeding roosters helps prevent injury to other roosters during aggressive interactions and to hens during mating.
Animal Machines, by Ruth Harrison, examined farming practices and expressed concern that intensive methods were ‘unnatural’ and could potentially cause ill-health and suffering in animals and compromise food safety.

In her book, Harrison stated, “Life in the factory farm revolves entirely around profits, and animals are assessed purely for their ability to convert food into flesh for ‘saleable products’.” The publication of Animal Machines stirred sufficient uproar that British citizens protested in the streets of London.

In 1965, the British government created the Brambell Commission to address the concerns raised by Harrison’s book. The Commission included farmers, animal behaviorists, veterinarians, animal protectionists, and regulatory officials. Scientific research was identified as an important part of the process to help decide whether specific conditions were safe and humane for animals. The Commission issued a technical report that presented the conceptual framework of the Five Freedoms. After further refinement by the Farm Animal Welfare Council, the Five Freedoms continue to exist as an assessment paradigm for animal welfare to this day (Freedom from Hunger and Thirst; Freedom from Thermal and Physical Discomfort; Freedom from Pain, Injury, and Disease; Freedom to Express Normal Behavior; and Freedom from Fear and Distress).

Source:

Following the Commission’s publication, research was done to look at how animals in the wild behaved, the effect of farming systems on health and growth, the effect of cage designs on the brain and behavior of rodents, and the effect of noxious stimuli on physiological stress responses. There followed a period of reanalysis and integration such that multiple measures of the animals’ overall states would be used to determine the overall effects of common housing and husbandry methods.

During the 1980s, it became acceptable within the mainstream of the scientific community to consider the internal subjective state of the animal. There was interest in not only how the animal perceived pain, but also in exploring more subtle emotions and cognitions such as discomfort, boredom, optimism, and self-awareness.

Since these initial scientific breakthroughs in animal welfare, the field has continued to expand as a multi-disciplinary endeavor, including into the associated ethical and philosophical frameworks and into regulatory and decision-making models. Discoveries relating to practices such as analgesia, determining humane endpoints, and environmental enrichment that were at first tentative have been replicated, leading to suggested best practices that are increasingly mandated as part of good animal care.