Coping with Lab Animal Morbidity and Mortality: A Trainer’s Role

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The author discusses the role of an animal research facility trainer in helping to teach laboratory animal facility staff how to recognize negative behavior patterns, manage grief, and help to prevent feelings of guilt.

One of the most significant stressors in the animal research profession is grief, which is usually expressed as guilt. Such emotions are due to the seemingly opposing duties of providing health care and environmental enrichment to research animals on the one hand, and inducing disease or carrying out euthanasia on the other. Grief has an effect on the workplace, and may result in high staff turnover, loss of workdays, and decreased morale. These circumstances lead to diminished productivity and, in the worst cases, a callous attitude toward the animals. Some of the psychosomatic symptoms of grief can include headaches, stomachaches, inability to sleep, poor appetite, impatience, difficulty concentrating or staying on task, severe mood swings, irritability, and impaired social relationships resulting from the person’s difficulty with self-expression or with effective communication of needs.

Human-Animal Bond

Only since the 1990s has there been recognition in the literature of this bonding with research animals and the grief associated with it. The fundamental tendency of people to become attached to animals (i.e., the human-animal bond) crosses a variety of cultures and economic systems and has possibly existed for 4,000 years. Walshaw describes many of the ways that research workers can become bonded with the animal research subjects. The basic premise is that, “research workers must ensure that the animals live in conditions that provide for their health and comfort. A worker would have difficulty fulfilling these responsibilities without liking or having an interest in the animals.” In research, the bond to an animal usually occurs with animals housed long-term, but there are always exceptions.

The fondness that many people in our field feel for animals is a favorable attribute. People with this disposition tend to be more skilled at applying restraint and other procedures with animals, as well as in recognizing signs of disease and distress earlier than other workers. This same sensitivity can lead to more negative feelings associated with treatments that cause morbidity to animals or with euthanasia. Attachment can occur on many different levels; while some people are more inclined than others, attachment can and will happen to all those who work with laboratory animals.

The Science Behind the Behavior

Known for her research with human subjects and with strategies related to care for the dying, Elizabeth Kübler-Ross determined that terminally ill patients and family members, who are losing or have lost a loved one, go through several stages of grief. Grief reactions occur not only in those who are experiencing death but also in anyone going through a traumatic event. These stages include denial, anger, bargaining, depression, and acceptance.

- Denial and isolation are usually the first reactions in the grief process.
- Anger typically follows denial, with the realization that death is probable. It is a difficult stage, because dealing with an individual going through this phase can generate feelings of anger.
- The bargaining phase is an attempt to enter into some agreement (or to finish an important task) to prolong life. Such promises can be associated
Therese A. Rando explains that anticipatory grief occurs when there is additional loss directly related to the person dying (e.g., loss of income). Preparatory depression relates to the impending loss. Depression results not only because of the impending death, but also often from a questioning of one's own significance in life.

- Depression can be reactionary or preparatory. Reactionary depression occurs when the individual is not directly related to the person dying. Preparatory depression relates to the impending loss. Depression results not only because of the impending death, but also often from a questioning of one's own significance in life.

- Acceptance, considered the final stage of the grief process, usually only occurs when individuals have had sufficient time to work through the other stages of grief.

A clinical psychologist who specializes in the study of loss and anticipatory grief (also called anticipatory mourning), Theres A. Rando explains that anticipatory mourning may be viewed, experienced, and understood from four distinct perspectives. Each viewpoint belongs to one of the main parties in the anticipatory mourning experience.

- The “concerned other” is someone who has some interest in the individual's death. The mourner knows the individual only from a distance or through the media, yet sustains feelings and concerns about the well-being of the dying person. Because there is no direct relationship with the individual, concerned others are particularly susceptible to being disenfranchised in mourning and may require intervention to address this problem and other problems that develop from it.

- The “caregiver” may be involved in anticipatory mourning. The depth of mourning can vary greatly depending on the issues involved, particularly the nature of the relationship of the caregiver to the patient, the circumstances of the illness, and the current psychology of the mourning caregiver.

- Although the “patient” in our scenarios does not experience anticipatory mourning, this is another perspective mentioned by Rando.

- The “intimates” are those with a relatively close association, contact, familiarity, and interaction with the ill or dying patient, and to whom the patient feels strongly and reciprocally connected. Biological or kin ties are not necessary to be an intimate.

The term “anticipatory mourning” suggests that it is a future loss that is being mourned, but the experience of mourning is affected by losses that have occurred in the past. As those to come. All mourning, whether anticipatory or after death, can be understood and evaluated by influencing variables. The influencing variables fall into three categories: psychological, social, and physiological. The psychological issues encompass the nature and the meaning of the patient's relationship to the mourner, the impact of the loss of this relationship, and the characteristics of the mourner. The social influences also fall into many categories: the degree of acceptance, support, security, and assistance among the members of the social group, as well as the quality of the communication among the members. The physiological conditions of an individual's anticipatory mourning include the mourner's physical health, the extent of the mourner's energy depletion, and the amount of rest, sleep, and exercise available to and engaged in by the mourner. The mourner's use of drugs, food, and caffeine can have an effect, as well.

It is this experience of loss from death that brings trauma to the anticipatory mourner; death and the loss associated with it potentiate each other. Through grief, a mourner experiences the psychological, behavioral, social, and physical reactions to the perception of loss. While coping requires the individual's active encounter with a stressor in a dynamic attempt to contend with it, the mourner's planning can focus either on negative or expected crisis events (e.g., more animal deaths) or positive expected developmental events (e.g., good data results). During the process of becoming aware of and gradually accommodating to the mourning process, several areas of a mourner's life undergo often tumultuous change. The effects can extend to the individual's personal or internal world; to interpersonal relationships between two or more of the parties involved with the subject; and finally to family, social group, or working relationships. A social change involves establishing new roles and responsibilities in response to the death; such innovations may include establishing new social affiliations to deal with the grief, such as participating in after-death rituals.

Rando describes the “six R process of mourning” to help people to adapt to their feelings:

- Recognize the loss that has occurred;
- React to the separation caused by the loss;
- Recollect and re-experience the deceased and the relationship;
- Relinquish the old attachments and the way things were, and readjust and move into the new day with the way things are;
- Reinvent yourself.

Training to Enhance Coping Skills

Trainers need to understand the psychological processes related to death and mourning if they are to help trainees comprehend and deal with their own feelings about laboratory animal morbidity and mortality. Nevertheless, it is not the responsibility of the trainer to provide grief counseling, which should be left to professionals.

Not unlike our evaluation of an animal's appropriateness as a research subject, it is our need to assess a person's potential behavior when faced with the death and/or suffering of research animals. Therefore, a comprehensive review of the person's background should be the first step. Cultural, religious, and physiological (e.g., age) information all contribute to our assessment of the perspective this person...
Brings to the relationship with an animal and to the depth of the bond that may develop. It is important that everyone recognizes the feelings that arise as a result of attachment, or of stress due to the intensity of a project.

Being able to express one’s emotions with the knowledge that such feelings are acceptable constitutes a first step toward healing. Without this acknowledgment of higher feelings, a person may become dissociated from the animal. Dissociation is a phenomenon that occurs in many people who are trying to avoid the feelings of guilt or sadness that occur when dealing with an animal that is expected to become moribund or die. It is a method of avoiding the attachment or bonding. This can be detrimental in that it may result in the unconscious choice not to recognize the animal’s behavioral changes due to morbidity and thus cause more pain to the animal than is necessary. But, in turn, could jeopardize the research.

The personnel in a research facility have different levels of education. A principal investigator (PI) will have a high level of understanding regarding the science of the protocol but may have little knowledge of the behavior of the animal required for the experimental design. A research associate (RA) possibly comprehends the basic science but may not understand the animal’s behavior, and is likely to question the absence of alternatives. Both the PI and the RA will see the data that result from the experiment. Alternatively, a technician may not understand the research theory; is likely to be more sensitive to the animal’s behavior, is probably going to question the absence of alternatives, and rarely sees the outcome of the data.

By reading the protocol and discussing the review process with the IACUC chair or veterinarian, the trainer can get a sound understanding of the trainee’s perspective on the use of the animals. Training methods should be adapted on the basis of this information.

Comprehensive training includes accepting the consequences of personal as well as technical actions, and also the response of the animal to these actions. The trainer should address the consequences of the protocol with regard to human and animal behavior. Does the protocol involve a high level of morbidity? Are multiple injections or procedures involved? Will the trainee be required to spend long hours with the animals? Is there a demanding observation schedule?

To provide some coping mechanisms, the trainer should give animal caretakers some justification for the protocol of a procedure. The trainer should explain the reductions or the refinements of the procedure being discussed. It will be helpful to talk about the behavioral characteristics of the animal when teaching procedures, for example, the best way to approach the cage, and the animal’s normal postural behavior. Is it clear to the trainee that a guinea pig will run to the back of the cage whether or not there is a needle in your hand? Or that vocalizations may not indicate pain or fear? It is obviously necessary that the trainee learn to recognize the signs of pain and aggression to prevent injury to both animal and human. However, in planning how to teach the trainee to do a procedure with an animal, it is wise to consider what the person may feel (e.g., does he/she think that the animal will be more traumatized than it actually is)? When it is first experienced, a cat may find a collar is just as unacceptable as a catheter. In reviewing normal versus abnormal health signs for the species, one can also add pain score levels to this procedure. Trainers should reemphasize the importance of an alternative endpoint and its reduction of pain to the animal. They should provide the trainee with information on recognizing the signs of grief and bonding behavior. In addition, trainers can make sure that trainees know whom to contact if they feel they need assistance with depression or grief.

Finally, the trainer should consider what his/her intuition suggests about the trainee. Has he/she been attentive to the lesson? Has he/she adapted well to the animal? Has the trainee said anything about how he/she feels about working with the animal or doing procedures? Do these circumstances seem satisfactory to the trainee? If yes, then it is time to move on; if no, it is best to try another approach with the trainee.

**Approach to Training**

Any current training format can incorporate teaching coping skills. If training a group, the trainer may be less likely to sense an individual’s specific problems with regard to the procedural activity. Everyone who comes into contact with the research animal facility must acquire coping skills and the ability to recognize the signs of grief. The breadth and diversity of the program will depend on the characteristics and needs of each individual institution.

**Guidance in the Literature**

An excellent resource as an introductory handout to trainees is a brochure recently completed by the American Association for Laboratory Animal Science (AALAS). The brochure addresses the topic of the human–animal bond, understanding the emotional experiences of animal research personnel, and the expression and the consequences of grief; it also includes a list of coping strategies for both managers and individuals. The "2000 Report of the AVMA Panel on Euthanasia" contains a very brief statement for laboratory animal users: "The same considerations afforded pet owners or shelter employees [who must euthanize animals] should be provided to those working in laboratories." While the AVMA Panel recognizes stress and grief of animal euthanasia, it does not provide much assistance with regard to coping skills.

**Additional Options**

How are other professions dealing with coping issues? A hospice’s close relationship with the human medical field offers a much more extensive system for dealing with the subject of grief and mourning. Most facilities employ psychologists who assist the family members as well as the patient. Support groups formed for patients and family members encourage
the feeling that one is not alone in this predicament. There are hundreds of websites devoted to the topics of grief, bereavement, and recovery. There are also informational sites, chat rooms, poetry sites, etc. Rainbow Bridge is an organization devoted to the reverent remembrance of pets that have died. This group has set aside an evening once a week when participants light a candle in memory of their pet. This organization also has a website for sharing stories, poems, etc. about peoples’ pets. Many veterinary schools and the AVMA have established websites where people can search for information on dealing with the loss of a pet and also for help with the decision to euthanize a pet.

These types of resources can be used as models to develop programs oriented toward research animal caretakers. Institutional Officials (IOs) should be made aware of the need for such programs. Often, institutions have the resources for a support system, but the IO is not aware of the need. For example, many universities have counseling centers on campus that could be made available to animal care personnel.

Conclusions

That most humans become emotionally invested with the animals with which they come into contact is well known. Trainers can help personnel to understand this phenomenon. Through a comprehensive overview of the science and procedures, trainers can reduce the stress on personnel and improve the overall care for the animals.

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References

7. American Association for Laboratory Animal Science. Cost of Caring: Recognizing Human Emotions in the Care of Laboratory Animals (AALAS, Memphis, 2000).

Specific Scenarios to Consider

It may be helpful to work through the following scenarios, discuss them with colleagues, and determine what insights are available by getting a different view of the project.

Scenario One: Training a Principal Investigator

A female PI has been doing research at your institution for several years using chick embryos for microbiological studies. She has written a new protocol that uses rats. The new study will require surgical implantation of jugular catheters and both i.p. and i.v. injections that will infect the rats with a class II level of pathogen. You will need to provide basic handling training as well as the procedural training mentioned earlier. As you read the protocol, you notice that the PI wants to find homes for the rats at the end of the study, but the IACUC has required her to amend the protocol for 100% euthanasia, a procedure in which you will also need to train her. What information would you want to give to the PI during the training session?

In this case, the trainee is clearly not comfortable with the idea of euthanasia. She may have had little exposure to the use of live animals in research and is likely to dissociate from the process. Discuss the potential for morbidity of the animal during this project, and stress the need to be aware of any potential for reduction of stress and pain. Discuss the justifications for the IACUC requiring euthanasia (i.e., class II pathogen exposure and the potential for public risk). You will also want to ensure that the PI understands the methodology of euthanasia. Moreover, this PI is a definite candidate for information on anticipatory mourning.

Scenario Two: Training a Research Associate

A newly hired summer graduate student from a neurosciences department will be working with cats from a research study that has been ongoing for two years and is reaching its conclusion for this grant cycle. He will need to be trained in handling and restraining the cats, as well as euthanasia and necropsy procedures. Your discussion with the PI reveals that the research associate was hired at this time because of the increase in benchwork that will occur as a result of the need to euthanize and examine the brains of 50% of the cats over the next three months. What information will you need to provide this RA?

This is a typical scenario in which the trainee has little knowledge of earlier events, and is essentially cleaning up after someone else’s work. You will need to provide this trainee with a complete understanding of the methodology of euthanasia, and information on anticipatory mourning. A comprehensive view of the project would be helpful so that the trainee understands the justification for the euthanasia of these animals.

Scenario Three: Training an Animal Care Technician

You will be training an animal care technician (LAT certified) who is being transferred from a conventional mouse-breeding colony that was depopulated because of the PI’s retirement. The technician will now be working with a colony of spontaneously diabetic, insulin-dependent rats. Your task is to train the technician in basic handling, urine collection, and insulin administration procedures, as well as in health assessment for diabetics. What information would you want to provide the technician during this training session?

In this case there is a trainee who is in transition and dealing with the loss of an entire colony. This person not only is going to be preoccupied with the changes to which she will have to accommodate, but he probably also still in the grieving process. This trainee may have adapted to the concept of a small number of deaths within a breeding colony, but she will need to learn about the potential increase in the average number of deaths occurring in a diabetic animal colony, as well as the increased morbidity of animals associated with the disease.