

# Owner response to companion animal death: development of a theory and practical implications

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**Abstract** — This study used an inductive research method known as grounded theory to develop a theory to describe owner response to the death of a pet. Participants were identified from 8 veterinary clinics in Wellington County, Ontario. Eighty percent (8 of 10) of the practices approached agreed to participate and there was a 77% (44 of 57) participation rate by clients. Nondirective interviews were conducted with participants approximately 10 days following the death of their pet, and at 3, 6, and 12 mo thereafter. The theory developed suggests that people's reactions are best described as a social and psychological search for meaning. Factors that contributed to the search for meaning included societal values and norms, the cultural milieu of pet death, and the cultural milieu of veterinary medicine. Other factors, such as the participant's personal beliefs, life stage, critical life events, and animal attributes, either alleviated or aggravated the experience. The outcome for participants grieving the death of a pet was a self-governing approach to coping with the death. Practical implications and suggestions for veterinarians are presented.

**Résumé** — Réaction du maître à la mort d'un animal de compagnie: Développement d'une théorie et implications pratiques. Cette étude a utilisé une méthode de recherche inductive reconnue comme étant une théorie éprouvée pour développer une hypothèse décrivant la réaction du maître à la mort de son animal. Les participants ont été sélectionnés à partir de 8 cliniques vétérinaires du comté Wellington en Ontario. Quarante-vingt pourcent (8 sur 10) des établissements contactés ont accepté de participer et le taux de participation des clients a été de 77 % (44 sur 57). Des entrevues non-directives ont été menées avec les participants approximativement 10 jours après la mort de son animal et par la suite après 3, 6, et 12 mois. La théorie développée suggère que c'est une recherche d'un sens social et psychologique qui décrit le mieux la réaction des gens. Les facteurs qui contribuent à la recherche d'une signification comprennent les valeurs et les standards sociaux, le milieu culturel de l'animal défunt et le milieu culturel vétérinaire. D'autres facteurs, tels les croyances personnelles du participant, la période de la vie, les événements critiques de la vie et les qualités de l'animal apaisaient ou exacerbaient l'épreuve. Le résultat pour les participants affligés par la mort d'un animal cher consistait à développer une approche personnelle afin d'apprivoiser la mort. Des implications pratiques et des suggestions sont présentés aux vétérinaires.

(Traduit par docteur André Blouin)

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## Introduction

Increasing awareness of the significant role that animals play in people's lives has led researchers to look at people's reactions to the death of a pet (1,2). Researchers have found that the death of a companion animal can cause severe psychological, emotional, or physiological stress (3). In extreme cases, the mourning has resulted in psychiatric treatment in hospital (4).

In order to understand the grief that some people experience after their pet dies, researchers began to compare the consequences associated with pet death with responses to human death. In an attempt to classify and describe owner reactions to pet death, researchers (5,6) have relied mainly on the stage-theory of the grief associated with the death of a person developed by Kubler-Ross (7). However, Kubler-Ross' (7) work was intended to explain human reactions to death and dying

rather than to be used as a broad application to other losses, such as pet death.

In 1987, Kidd and Kidd (8) recognized that while the field of human animal interactions had generated a large body of literature, most of it was based on human to human rather than human to animal interactions. They concluded that grief for a pet should be explored within the context of pet culture and not simply compared with grief for a human life or other experiences of loss that people encounter. In most cases, research into grief that occurs following pet death has been based on deductive research methodologies. For example, hypotheses have been formulated based on preexisting knowledge or theories about the subject matter and then tested (9,10). This has limited our understanding. Therefore, there is little material available for veterinarians to guide them in predicting or detecting clients who are at risk following the death of their pet, or to determine the services needed to address the range of reactions that people have to pet death.

Certain qualitative research methodologies provide a means of conducting inductive research, whereby the phenomenon of interest is approached without previously formulated hypotheses. Given the lack of relevant

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information about grief associated with pet death, this study was undertaken to develop a theory to describe owner response to companion animal death and to identify some practical implications for veterinarians dealing with death and human emotion in their practices.

One strategy for developing a theory is to use a research methodology called grounded theory (11). The result is a set of interrelated concepts and a description of the plausible relationship among them. The development of a theory is particularly useful if no adequate explanation or understanding of the phenomenon of interest is available (12). Theories are central to understanding complex phenomena, as they provide a broad view of the factors that are related to the phenomena. Theories may continually be modified and updated as they provide the impetus for the asking of pertinent questions, so that the topic of investigation can continue to be more fully understood.

Interviewing and the use of questionnaires are the primary techniques of data collection when using grounded theory methods (13). Grounded theory requires the researcher to use a set of systematic and integrative procedures such that data collection, analysis, and interpretation occur simultaneously. The initial interviews are then analyzed and the findings used to add structure to the remaining interviews to facilitate the development of the theory.

## Materials and methods

### Sampling

#### *Veterinary practices*

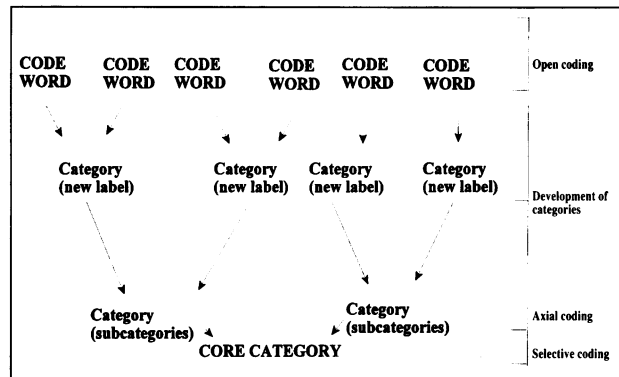
From a list of all veterinary clinics in Wellington County, Ontario, that had 50% or greater small animal practice, 10 of 21 clinics were selected by simple random sampling and approached regarding their amenability to participate in the study. Participation involved agreeing to forward the names of pet owners whose cat or dog accidentally or naturally died or was euthanized during the data collection period. Participating veterinary clinics were contacted by the researcher on a weekly basis. At this time the names of all the clients whose cat or dog died over the course of the week were collected.

#### *Participants*

Contact was made with clients within one to 14 d following the death of their pet. Participants were enrolled until the desired sample size had been achieved. By using grounded theory methods, the sample size was determined based on the findings of ongoing analysis. The emerging results indicated the events, subgroups, or incidents that needed to be sampled in order to enhance the description of the phenomenon of interest. For example, participant enrolment was directed to ensure that there was appropriate representation of people who were extremely upset and were not upset, owners of pets that died of various causes, and so on. Sampling ceased once the theory was developed and the addition of participants did not change the findings (11).

#### *Interviewing*

The first face-to-face interview ranged in length from 2½ to 5 h. A nondirective interviewing style was used (14).



**Figure 1.** The process of data analysis of material from interviews using grounded theory methods.

Subjects were asked to discuss their life with their pet and the impact of the pet's death on their social, emotional, and psychological well-being. At the end of the interview, subjects were also asked to complete an information sheet to provide basic demographic information. The researcher contacted participants 3, 6, and 12 mo following the first contact. The second interview (3 mo) was also face-to-face; the remaining 2 contacts were by telephone. Interviews were tape-recorded and professionally transcribed.

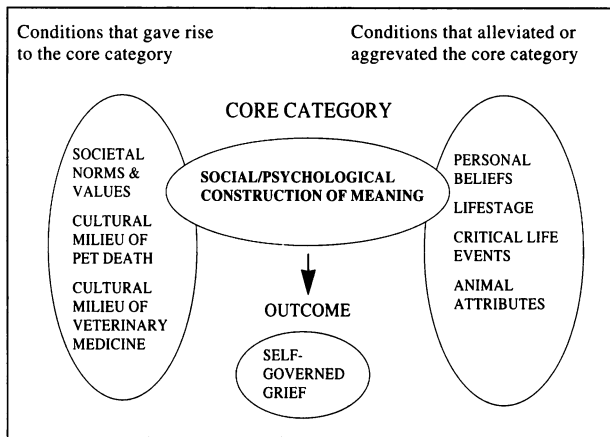
### Analysis

Descriptive statistics were calculated for demographic variables. Data from the interviews were analyzed by using grounded theory techniques known as open, axial, and selective coding. Coding and further analysis commenced following the first interview. The method was iterative, whereby details from the analysis informed further directions for sampling and discussion during subsequent interviews with different participants. A full description of the grounded theory method is beyond the scope of this paper. Details of methods used in this study have been presented briefly (13,15). Figure 1 provides a simplified overview of the phases of data analysis, including open coding, the development of categories, axial coding, and selective coding.

In open coding, the data were broken down by scrutinizing each sentence, thought, or paragraph and giving it a code that represented what was being described by the owner; for example, show no emotion, rationalize death, and guilt. Once all of the transcripts were coded, the code words were compared across all participants to look for similarities and differences.

The next phase involved the development of categories by comparing and finding code words that appeared to pertain to a similar phenomenon. Similar codes were then subsumed into a larger conceptual category and each category was labelled. For example, a category entitled controlled coping was developed to describe participants' desire to remain in control of their feelings and behavior after their pet had died. The code words that were included in this category were self-talk, rationalize death, and forced coping.

Axial coding involved forming an overall theoretical understanding of the phenomenon that was being investigated by finding relationships among categories. A conceptual category was developed and it represented an



**Figure 2.** A theory of owner response to companion animal death.

array of categories. The categories that belonged to that conceptual category were referred to thereafter as subcategories. For example, self-governed grief was identified as being a conceptual category and the subcategories that belonged to it were rationalization, comparative grief, compartmentalized grief, and the participant's previous death experience.

The next step, selective coding, involved the selection of a core category and then relating it to other categories. The core category is the central phenomenon around which all the other categories are related. A category is eligible to become a core category if it occurs frequently in the data, relates the data, and highlights the variation in the data.

The computer program called "The Ethnograph" was used to assist the researcher with the mechanical aspects of data analysis (16). Through these procedures theoretical coverage of grief associated with pet death was achieved with emphasis on the variability of grief across subjects.

## Results

### Demographics

Eighty-percent (8 of 10) of the veterinary practices and 77.2% (44 of 57) of clients agreed to participate. The mean number of days to first contact was 10.7, standard deviation 2.3.

The mean age of the participants was 48 y (range 21 to 75 y). There were 30 women (68%) and 14 men (32%). There were 25 (57%) dog owners and 19 (43%) cat owners. The median length of time people had owned their pet was 10 y (range 1 mo to 26 y). The median age of the pet at time of death was 11 y (range of 2 mo to 26 y). Of the 44 animals, 28 (64%) were euthanized and 16 (36%) died of other causes. See Table 1 for additional descriptive statistics.

### Theory of owner response to companion animal death and related factors

Throughout the analysis of the data, it became apparent that there was a main theme or overriding story line. Participants were trying to understand their feelings and reactions to the death of their pet, within the context of messages they perceived from their social support net-

**Table 1. Participant related descriptive statistics**

Variable	Frequency (%) n = 44
<b>Marital status</b>	
married/living with partner	33 (75%)
divorced	3 (7%)
single	2 (5%)
widowed	6 (13%)
<b>Children at home</b>	
yes	16 (36%)
no	28 (64%)
<b>Education</b>	
university	9 (21%)
college	7 (16%)
high school	12 (27%)
did not complete high school	12 (27%)
other	4 (9%)
<b>Employment</b>	
unemployed	2 (5%)
retired	11 (26%)
self-employed	5 (11%)
homemaker	6 (14%)
professional	6 (14%)
student	3 (7%)
missing value	10 (23%)
<b>Income</b>	
< 20k	8 (18%)
21-30k	6 (14%)
31-40k	6 (14%)
41-50k	4 (9%)
51-60k	8 (18%)
61-70k	7 (16%)
> 71k	5 (11%)

work and the broader social structure, including the veterinarian. Although actual feelings and reactions were quite variable across participants, the search for understanding was consistent, and this theme connected the various categories and subcategories developed from their responses. This was termed "the social and psychological construction of meaning" and was designated the core category. The outcome for the participants was "self-governed grief." The theory that describes this complex phenomenon is represented in Figure 2.

In general, data indicated that subjects felt that the conditions on the left side of Figure 2 were precursors or factors that gave rise to their feelings after their pet had died. The factors on the right side of the figure influenced or modified the intensity and duration of reactions to pet death for individuals and contributed to differences among participants. This might be viewed as a causal association, with factors such as societal norms and aspects of the veterinary milieu being predictors, and personal beliefs and experiences being covariates that together resulted in an outcome of self-governed grief. The core category and its properties summarize the variability in the grieving process that was observed across participants. The factors and conditions that gave rise to, alleviated, or aggravated the grieving process, as well as the outcome, will be discussed in detail using actual quotes taken from interviews with pet owners.

### **Societal norms and values**

The grief that is associated with the death of a beloved pet was characterized by participants trying to determine how to feel and what to feel (guilt, sadness, relief, no feeling), within a broad context of societal beliefs that define the role of animals in society, the value that is placed on them, and behavior that is acceptable following the death of a pet. Participants struggled with the contradiction between how they felt after their pet had died and the perceived absence of support for their feelings from others, or society in general. A relative lack of and the restrictive nature of norms and values that pertain to human-pet grief required people to grapple with the contradictions that existed between their feelings for their animal and the absence of protocol for grieving a deceased pet, as indicated in comments from subjects such as, *"It's silly really (referring to grieving over a pet). No it isn't, I can't help the way I feel..."*

Participants dealt with a lack of support either by succumbing to external pressure to get on with life without letting their pet's death disrupt their life or by trying to minimize this external pressure by discussing their feelings with supportive people, such as a family member, friend, or veterinarian. The veterinarian and the participant's support network served to alleviate or aggravate efforts to place pet death and grief in context. When participants were alleviated from some of their confusion and turmoil by a supportive veterinarian, they felt justified in feeling badly that their pet had died and then permitted themselves to grieve. Aggravators of grief, such as nonsupportive people, made participants question their mental stability.

Overall, participants' perceptions of the standards for dealing with pet death were indicated by comments such as, *"But I think unfortunately with animals, you have to adopt the attitude, you've got to get on with it, you don't want to take the time to, uh, go through it and everything, and there are so many animals out there that are just crying for a good home, type of thing,"* and *"...you go through periods of ok-ness as I call it, you put on a front, as long as you can, because society doesn't want to see you crying..."*

### **Cultural milieu of pet death**

The death of a pet does not require owners to make funeral arrangements, invite relatives, or carry out any of the usual rituals that occur when a human dies. Unlike the symbolic milieu for human death (black hearses), the specific locations associated with death (cemetery), and role proliferation (doctors, undertakers, morticians, funeral directors), pet death does not have a system of rituals and protocols. Yet the death of a pet does involve routine (inviting the client to stay during euthanasia, sedating the animal or not) and simple rituals (returning the animal in a green bag or a towel, returning the ashes in a bag or a ceramic urn, sending a sympathy card), but there is no standardization across veterinary practices. For example, 23 (52%) of participants were not informed about burial and cremation options for their pet. Inadequate information about various pet death rituals, such as cremation, resulted in subjects feeling angry, suspicious, and uninformed. Unlike the protocols that surround human death, pet death does not

demand a set of standard procedures by the veterinarian. As described by many of these participants, the present milieu of pet death in our society suggests that the death of a pet is insignificant, which, in turn, influences the grieving process.

### **Cultural milieu of veterinary medicine**

Societal and cultural attitudes toward animals are insidious and they influence the way that veterinarians deal with pet death. The results suggest that there were factors related to the veterinarian's approach in dealing with their client that caused confusion, feelings of inadequacy, and frustration on behalf of some clients. These factors were the contradiction in the roles that the veterinarian assumes (promote health, terminate life), the issue of euthanasia, and the limited nature of verbal support to clients around the time of death. The largest hurdle that participants had to deal with was related to the juxtaposition between their heartfelt feelings toward their pets and the cultural milieu of pet death within the veterinary clinic. On the one hand, participants felt sad when their pet died, yet the message was conveyed that they should be able to cope.

### **Personal beliefs, life stage, critical life events, animal attributes**

There were personal factors that contributed to the variability in the grieving experience for participants. Personal beliefs about how to behave in relation to a pet dying dictated, for some people, the intensity and duration of their grieving. Heartfelt reactions to pet death were modified by previously defined expectations for dealing with emotions, as indicated in the following comment: *"...of course, when I left the exam room, I had him in my arms and I was crying, but you know, I didn't want to show other adults that I couldn't handle myself."* Participants had expectations of themselves in terms of how they should behave that had been developed over their lifetime.

Participants said that their life stage affected how they felt and reacted after their pet had died. Various reasons were cited as being responsible for the range of feelings people had, such as children at home, demanding job, empty nest syndrome, financial and physical mobility, and previous exposure to death of a pet or human. It was found that pet death can affect people differently at different times in their life, as indicated in the following comment: *"No, I would say they're not the same (referring to death experiences across all companion animals over a lifetime). I loved them, but I think the stage of my life had something to do with it. I had other issues at hand. I had the children, they were growing up. I think that deferred some of the closeness that I had with the pets then, compared to my last dog."*

Related to participants' life stage was their exposure to major life events, such as the death of a spouse or child, divorce, miscarriage, and so on. In many cases, pets played a critical role in participants' lives during these events. One person said that his dog served as a buffer from personal troubles or compensated for a life full of disappointment. Critical life experience was a factor that influenced the intensity and duration of grief.

Characteristics of the pet, including the species, were identified by participants as influential in their grieving experience. Although there was no particular attribute or species that stood out as evoking the most traumatic grief response, participants retraced their history with pets and identified the most special animals that evoked the greatest degree of grief.

## Outcome

### *Self-governed grief*

As a result of the factors mentioned above, grieving following pet death was characterized as a search to determine how to feel and behave within a society that does not recognize the nature of the human-animal relationship or sanction the emotions that may result from a pet dying. Participants attempted to control their emotions or conceal their distress (by wearing dark glasses into the veterinary office before their pet was to be euthanized, for example). Participants revealed that they tried to minimize emotional and behavioral alterations as a result of the death of their pet by using coping techniques or survival tactics that permitted them to maintain control. They also tried to regain homeostasis as soon as possible, so that their normality would not be questioned and they could resume regular activities (return to work after animal was dead) as soon as possible. Fourteen (32%) of the participants said that they obtained another pet within 3 wk after their pet had died in order to help with the healing process. Participants made comments, such as, "...and when I was feeling bad after she died, I put myself into the mind set of thinking about getting another dog. This took my mind off things and had a salutary effect." Others relieved some of their tension or sadness by comparing their situation of a pet dying with other situations that they perceived as worse. Through this exercise they reminded themselves that things could be worse and, therefore, it was time to feel good and not dwell on the deceased pet. Participants tried to put pet death in perspective with rationalizations, such as, "Intellectually, I kept telling myself how this was the best thing for me and the animal, and how I'm doing the right thing. This sort of relieved the tension," and "yeah, I think you kind of fight it, I think you try not to think about them (referring to dog), but you do. You never forget, but you just convince yourself you did the right thing, so you don't feel so much guilt."

## Discussion

The theory that was developed to investigate owners' reactions has highlighted some of the unique features of people's responses to pet death and the differences between grief for a human companion versus a companion animal. This theory will be of use in ongoing research in the area of human-animal relationships.

The response rate of veterinarians and their clients was very high, given the nature of the study. Participating veterinarians perceived their involvement in this study as a benefit to their practice, in that clients had the opportunity to talk about their feelings in relation to their pet dying. The nonparticipating veterinarians were concerned that their clients would perceive this type of study to be too intrusive, which, in turn, might upset the

veterinarian-client relationship. They also felt their clients would not benefit from this study, because they were adequately addressing their needs and concerns in relation to pet death.

By using grounded theory methodology, we were able to sample subjects to reflect the breadth and depth of experiences and undertake rigorous analysis of complex textual material. Initially, all owners who had had a pet die were included, not simply those who were perceived to be experiencing grief. The sample was augmented with specific subgroups to ensure a broad representation of situations and experiences, according to grounded theory protocols (11,13). Interviews were long and intensive. However, the nondirective style allowed subjects to describe and emphasize their experiences and feelings in their own way, with minimal prompting from the interviewer. Participants perceived the study to be extremely valuable, because this approach to data collection was more personalized than are typical questionnaires.

The findings from the present study reveal that reactions following pet death are variable, highly complex, and heavily influenced by the cultural milieu of pet death. The latter includes the way that pet death is handled in the veterinary practice, as well as overall societal attitudes and beliefs about animals and how to behave when they die. This finding supports other work that suggests that societal norms define what people can grieve for, the duration of the grieving experience, and the contexts within which people are permitted to grieve (17). Even though sensitivity toward people grieving the death of a pet has increased, there are still factors that impinge on owner's response to pet death.

The theory developed in this study supports the suggestion that there are marked differences in response to human death versus pet death. For example, the grieving experience for most owners was short and practical, as daily demands took over. Participants said they felt extremely sad, but their experience was not marked by the depth of depression that is often experienced when a human companion dies. This finding supports a study by Rajaram et al (2) that compared people's reaction to human death versus pet death. It is unclear whether the grief experience in relation to pet death is truncated due to the perception that it is not permissible to grieve, or if grief associated with pet death is simply more brief. Archer and Winchester (18) found that grief in relation to the death of a pet resulted in a lower frequency of distress compared with grief in relation to the death of a beloved human companion. Other researchers have suggested that grief associated with pet death is not different from grief in relation to human death (10). Overall, the results of studies done on grief for a pet are contradictory, due in part to sampling strategies, study design (inductive versus deductive), and methods of data collection (questionnaires intended to measure grief associated with human death versus questionnaires more specific to pet death).

With regard to the practical implications, factors such as what takes place at the veterinary practice before, during, and after the pet's death, how the veterinarian talks to the client, and methods of returning the

pet's body or ashes indicate the veterinarian's perception of the significance of the situation.

However, the veterinarian who attempts to save the animal when it is ill is often required to end the animal's life. Thereafter, the same veterinarian may be called upon to provide support to the client. This lack of role differentiation was commented on by some participants in this study as confusing or contradictory. Despite the fact that the majority of participants in this study were upset and grieved when their pet died, they did not expect the veterinary practice to be set up like a funeral home or the veterinary team to be divided into different roles (Dr. Wellness and Dr. Death). In general, subjects did not express a desire for post death rituals and support that resembled human death rituals, although some participants said they might have chosen more formal aftercare options, such as a pet cemetery, if the information had been provided.

Participants in this study appreciated their veterinarian recognizing the significance of the death and validating feelings, concerns, and questions. Veterinarians were identified as being the best people to provide support to clients grieving the death of their pet, although they did not expect their veterinarians to have superb counselling skills. At a minimum, participants said they would have liked an opportunity to spend time with their veterinarian, discussing issues related to the death of their pet. In the case of a planned euthanasia, participants appreciated the opportunity to review with their veterinarian whether or not they were making the right decision. They also appreciated the opportunity to discuss whether or not they wanted to stay during the euthanasia and after the animal had died. Participants were appreciative of the opportunity to discuss aftercare options, such as cremation, home burial, or group burial. Discussion prior to the pet's death helped participants to make informed decisions and feel that they were part of the treatment decision to end their pet's life. Lack of attention to the details of pet death by the veterinarian and staff had a negative impact on the client.

During euthanasia or at the time the animal was pronounced dead, participants felt that the veterinarian was sensitive if he or she said some kind words, and shared some knowledge of grieving for pets, such as, "*This is a very difficult time and it will take some time to recover from the loss of Lady.*" Most importantly, participants appreciated a veterinarian who did not make them feel embarrassed for crying and who reminded them that it was normal to feel bad. Participants were also grateful if they were not rushed away from the practice, particularly if they wanted to stay with their pet for a while or just collect themselves before leaving. The majority of participants were extremely grateful for a sympathy card or telephone call, although a few were offended.

The variability across participants in terms of their grief and their needs at the time of their pet's death was remarkable. Several factors contributed to this variation, including the participant's personal beliefs, life stage, critical life events, and the animal's attributes. This finding supports work by Gosse and Barnes (19), whereby they identified attachment to the pet, lack of social support, and stressful life events as correlates of

grief following companion animal death. Participants also varied in terms of how they reacted in the veterinary practice. Some participants were seen by members of the veterinary team as abrupt and uncaring, at the time of pet death. This was simply a strategy used by participants to retain control of their emotions in front of the veterinarian.

Although flexibility in approach must be maintained to address the variation across clients, some procedures can be standardized. Examples include conducting euthanasia during quieter periods in the day; returning ashes to the client in a private area rather than across the reception desk, when the waiting room is full of clients; explaining the euthanasia procedure and options for dealing with the body, including giving the client the option to stay or leave; and making resources, such as books and video tapes related to pet death, available to clients. However, veterinarians must use their interpersonal skills to address each individual client and uncover their specific needs and concerns. The way that the veterinary practice deals with animal death can have a profound impact (positive or negative) on the client. The veterinary practices that participated in this study were fairly sophisticated in their approach to dealing with clients, yet results suggested that there was still room for improvement in their approach to dealing with various aspects of pet death. The results from this study stress the importance of veterinary practices offering a comprehensive package of services in order to establish a client-sensitive practice, particularly around the time of pet death.

This paper has described a theory of owner response to companion animal death and highlighted important factors that may contribute to people's grief. This paper also identified particular strategies that should be considered by veterinarians in dealing with clients around the time of pet death. The findings are based on non-directive interviews that allowed a selected group of owners to describe their experiences following pet death. Information from this qualitative research was used to develop a questionnaire to measure owner response to pet death that could be used in a quantitative survey of a larger and a more representative sample to provide a more detailed description of the range of reactions to pet death and the predictors and correlates of grief. cvj

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## Answers to Quiz Corner/Les Réponses du Test éclair

1. a — The signs described are classic for hematoma resulting from a breeding accident, causing rupture of the tunica albuginea.  
a — *Les signes décrits sont classiques d'un hématome résultant d'un accident de monte, causant la rupture de la tunique albuginée.*
2. d — The head and forelimbs are normal; therefore, the lesion is caudal to T2. Increased myotactic reflexes and a crossed extensor reflex in the hind limbs when the animal is recumbent indicate an upper motor neuron lesion, cranial to L4. Thus the lesion is located at T3-L3.  
d — *La tête et les membres antérieurs sont normaux; ainsi la lésion est située caudalement à T<sub>2</sub>. L'augmentation des réflexes myotactiques et un réflexe d'extension croisée dans les membres postérieurs lorsque l'animal est en décubitus indiquent une lésion du neurone moteur supérieur située crânialement à L<sub>4</sub>. Ainsi la lésion est située dans les segments T<sub>3</sub>-L<sub>3</sub>.*
3. c — One cannot determine the time of infection from a single IgG antibody titer.  
c — *On ne peut pas déterminer le moment de l'infection à partir d'un titre d'anticorps unique d'IgG.*
4. a — Bone thickening has not been reported, but bone development can be affected with any interference with digestion and absorption of nutrients.  
a — *L'épaississement des os n'a pas été rapporté, mais le développement osseux peut être affecté par n'importe quelle interférence avec la digestion et l'absorption des nutriments.*
5. a
6. b
7. b — Olecranon osteotomy provides excellent visualization of the distal articular surface of the humerus and allows for more secure fixation in a mature dog than does triceps tenotomy.  
b — *L'ostéotomie de l'olécrâne procure une excellente visualisation de la surface articulaire distale de l'humérus et permet une fixation plus sécuritaire chez un chien adulte que la ténotomie du triceps brachial.*
8. a — Amyloidosis is a common cause of death in aged hamsters. Ascites can be quite pronounced.  
a — *L'amyloïdose est une cause fréquente de mortalité chez les vieux hamsters. L'ascite peut être très prononcée.*
9. e — Prevalence = incidence × duration. Any condition that causes incident cases to become chronic causes prevalence to increase. Over time, incident cases become prevalent cases.  
e — *Prévalence = incidence × durée. Toute condition qui amène des cas incidents à devenir chroniques conduit à l'augmentation de la prévalence. Dans le temps, les cas incidents deviennent des cas prévalents.*
10. c — Metronidazole, amoxicillin, and clindamycin are the only drugs listed with good anaerobic efficacy. Metronidazole only kills anaerobic bacteria. Clindamycin is not very effective against gram-negative bacteria, which would be expected in peritonitis caused by intestinal leakage. Ampicillin plus amikacin has excellent aerobic efficacy. Combinations of β-lactam antibiotics (eg cephalothin with amoxicillin) are rarely useful.  
c — *Le métronidazole, l'amoxicilline et la clindamycine sont les seuls médicaments énumérés ayant une bonne efficacité anaérobie. Le métronidazole détruit seulement les bactéries anaérobies. La clindamycine n'est pas très efficace contre les bactéries gram-négatif qui devraient être soupçonnées dans les cas de péritonite causés par une fuite intestinale. La combinaison d'ampicilline et d'amikacine a une excellente efficacité aérobie. Les combinaisons de bêtalactémines (ex. céphalotine avec amoxicilline) sont rarement utiles.*