At its simplest, anxiety is the anticipation of danger or threat. However, in many cases the source of anxiety is not easy to identify. Anxiety can cause stress, which can be a functional response; when organisms perceive something that threatens them, they respond physiologically, allowing appropriate responses that are adaptive and aid in survival. Depending on the severity of the stimulus, stress will activate the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system, engaging the body’s “fight-or-flight” response. When utilized appropriately, this response system allows the animal to perceive, evaluate, and choose the correct response both physiologically and behaviorally. On its own, anxiety and the accompanying physiological changes are probably not pathological when short lived, but chronic anxiety can lead to chronic stress. When stress and anxiety become a chronic state, the health, welfare, and life span of the individual may become compromised (Dreschel 2010). Responses to anxiety-provoking stimuli are likely influenced by early learning, negative experiences during development, and the individual’s genetics (Mertens and Dodman 1998). If the same experience is repeatedly encountered, anxiety and apprehension may occur through sensitization, perhaps resulting in enhanced responses. Stimulus intensity and frequency of encounters may compound the response, and various associative processes may accelerate acquisition of responses (Levine 2009). Therefore, to provide optimum health and welfare for all pets, veterinary care practitioners should consider anxiety as another disease state in companion animals.

**Causes of Anxiety in Companion Animals**

While our companion canines are usually well provided for nutritionally and medically, there are other needs that are often unmet. Dogs are very social creatures and seem to be uniquely bonded to humans. Dogs have a well-established method of communication that allows them to communicate with other dogs. Central to all that dogs do is their basic ethologic behavioral patterns, which render them capable of responding to all things simply as dogs. In actuality it is the conflict created by these three things—lack of social contacts, misunderstood communication, and inability to perform normal behaviors—that can cause dogs to become anxious.

**Canine and Human Bonding**

Although the actual date of domestication and the location are still debated by scientists, it suffices to say that dogs have lived with people for over 10,000 years. While initial interactions were perhaps tentative and purely utilitarian, burial remains show that dogs quickly became cherished companions. This bonding goes beyond our ability to provide food and shelter and the ability of dogs to hunt or herd livestock. The lifestyle lived, however, was one that was more active and interactive, with many dogs working side by side with their people. But times have changed. Although we still live with our dogs, many of them spend long hours alone without people and often without other dogs or animals. This lack of social interaction can cause anxiety and stress.

**Canine and Human Communication**

Dogs have a fairly well-established and complex form of communication that utilizes body postures, facial expressions, vocalizations, and sensory information, since they have well-developed hearing, vision, and olfaction. Dogs will generally communicate with humans using all those modalities, some of which we are not skilled in, appreciate, or understand.

However, recent research has also shown that dogs can understand many human gestures. Although they are descended from wolves, they can do this much better than a hand-raised wolf. Puppies as young as four months of age can locate hidden food based on seeing a person pointing to the hidden location, but wolves cannot do so without extensive training (Viranyi et al. 2008). Dogs appear to be ready to accept human intervention and can even be taught to “do as I do” and repeat certain actions (although this takes extensive training too) (Topal et al. 2006).

Unfortunately, the ability of many humans to understand dog communication is poor. One study showed that dogs respond differently to petting on the same body regions, depending on their familiarity with the human in the interaction (Kuhne et al. 2012), by showing stress signals, and this could have profound implications when it comes to canine aggression. The inability to effectively control physical and other interactions through the usual canine communication modalities can cause anxiety.

**Canine Normal Behaviors**

Finally, not only do dogs look at the world differently than humans, but what they find entertaining and fun may be at odds with the environment in which they live. Most dogs like to sniff, chew, dig, and otherwise interact with their
environment in a very physical way. Young puppies and adolescent dogs have a high need for both physical and mental stimulation and often live in situations where these needs are not met. The inability to express most normal dog behaviors and have their mental and physical needs met can cause anxiety in our companion dogs.

Changes in Routine and Interactions
Like people, animals find predictable interactions and consequences important and calming. When schedules or lifestyle changes happen, animals may show signs of stress and anxiety. An interesting study in cats found that “sickness behaviors” referable to the gastrointestinal and urinary tract, the skin, and behavior problems were noted in cats when they were exposed to unusual external events (changes in caretakers, changes in routine, and lack of interaction with the usual investigator) (Stella et al. 2011). Often, animals are presented to the veterinarian for such complaints without clear manifestations of disease. When this occurs, veterinarians should closely question owners about changes in environment, schedules, or interactions with their pets.

What Are the Common Manifestations of Anxiety in Dogs?
In some situations, anxiety signs can be clearly noted, and some owners are good at seeing them (Dreschel 2010). Anxious dogs will often pant, pace, tremble, shake, whine, hide, and vocalize. These signs may occur in response to numerous events or stimuli, such as noises, owner departure, unfamiliar people, punishment, and outside stimuli. But other manifestations are possible. Anxious dogs may exhibit excessive attention-seeking behavior, some obvious, some not. Attention seeking can include constantly following the people in the home, pressing against them, making requests for petting (or what appear to be requests for petting), barking, or even engaging in what appears to be vigilant behavior. Destructive behaviors, both indoors and outside, can be outlets for anxiety. Conversely, anxiety can be displayed by profound inactivity—the dog refuses to interact, hides, and won’t seek play or physical attention. Finally, subtle signs of stress and anxiety are often missed, such as head turning, yawning, looking elsewhere, and nose licking (Mariti et al. 2012). Medical problems can also occur due to stress or anxiety and may be subtle and include diarrhea, house soiling or over—grooming, and licking, poor appetite, and insomnia.

Common Anxiety Disorders
Although anxiety can occur from many things, there are some common anxiety disorders in dogs that are well documented and seem to be relatively common within the canine companion-animal population. A retrospective study by Bamberger and Houpt (2006) examined 1,644 canine case files from 1991 to 2001 and reported that 14.4% of the dogs had a diagnosis of separation anxiety and 5.7% had a diagnosis of generalized anxiety. There were significant associations between diagnoses, with dogs that showed various types of aggression also showing signs of anxiety. Additionally the diagnoses of noise phobia and separation anxiety occurred together more often than chance would predict.

Separation Anxiety in Dogs
Separation anxiety is one of the most common types of anxiety and perhaps the easiest syndrome to recognize in dogs. While often discussed as a unitary phenomenon, it is likely that separation anxiety has different forms of expression. Some dogs are distressed whenever they are alone regardless of how long they are alone or who is gone, but are fine if they are with any people. Other dogs are distressed if only a certain person leaves the house. There are also dogs that are afraid to be home alone because a scary or fear-inducing event has occurred when they were home alone previously; these dogs may have noise or storm phobias or some other fear. There are dogs who are only distressed when they are confined, or dogs that are only distressed when the owner “re-leaves” after having returned from work. Some dogs will be fine for years and then will be quite distressed when home alone if the household schedule or family composition changes. Finally, there are some senior dogs who seem to develop separation anxiety as part of cognitive changes.

Diagnosis is based on various signs that occur in the absence of the owner; house soiling, destruction, and vocalization are the most common. However, in some cases the owner may come in with the complaint of unwanted behaviors in the dog when the owner is at home, including the dog whining, pacing, being vigilant, following them, and engaging in persistent, incessant, and objectionable attention-seeking behaviors. If the dog is not destructive or does not house-soil when the owner is gone, the owner may be unaware that separation anxiety is the culprit for the anxious behaviors in the dog while the owner is at home. The best way to verify separation anxiety is with a video of the dog when the owner is gone from the house. Multiple methods are now available to owners to take these recordings, including smartphones, computers, and tablets. Once separation anxiety is verified, treatment (discussed below) can be implemented.
Inherent in helping anxious dogs is creating a predictable, calm environment and teaching new, calmer behaviors. Principles for treatment programs include the following:

- Avoid the trigger stimuli whenever possible.
- Punishment must never be used, since it will only increase rather than decrease a pet’s distress.
- Create predictable interactions with people through a command-response relationship or “doggy please” to help dogs learn how to access the things they need.
- Create a safe haven for the dog and train the dog to go there when the stimulus is not present. This can be a dog bed in a quiet space, a crate, or a closet anywhere that is secure and quiet and where the dog is assured that it will be left alone. Then, when the anxiety-provoking stimuli is present or will be presented, the dog is placed in this safe haven. Only use this technique if a dog can be comfortably confined.
- For separation anxiety, it will also be important to habituate dogs to departure cues, create independence in the dog, and keep departure and return calm and low key.
  - Leaving food or a stuffed toy on departure may help decrease anxiety for some pets.
- Playing music that is loud or has a strong beat or some type of white noise (exhaust fan) may aid in muffling the outside noises that can cause distress.
- Playing with familiar toys, engaging in games, or practicing obedience may help calm the dog and provide appropriate mental and physical stimulation.
- Use of a head collar and leash may offer additional control and can be calming for some dogs.
- For use of pheromones, either collars, diffusers, or both, and nutraceuticals, see Sheppard and Mills 2003; Levine et al. 2007.
- On body wraps, see Cottam and Dodman 2009.
- Medication: Reconcile with behavior modification (Elanco), Clomicalm with behavior modification (Novartis).
## Drugs, Dosages, and Indications for Anxieties in Dogs

<table>
<thead>
<tr>
<th>Key Drug</th>
<th>Drug Class</th>
<th>Dose Range</th>
<th>Frequency</th>
<th>Route</th>
<th>Indications</th>
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</thead>
<tbody>
<tr>
<td>Clomipramine*</td>
<td>Tricyclic antidepressant</td>
<td>1.0–2.0 mg/kg</td>
<td>q 12 hrs</td>
<td>Oral</td>
<td>Separation anxiety, noise and storm phobias, other anxieties</td>
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<tr>
<td>Clomicalm®</td>
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<tr>
<td>Fluoxetine*</td>
<td>Selective serotonin reuptake inhibitor</td>
<td>0.5–2.0 mg/kg</td>
<td>q 24 hrs</td>
<td>Oral</td>
<td>Separation anxiety, noise and storm phobias, other anxieties</td>
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<tr>
<td>Reconcile®</td>
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<tr>
<td>Diazepam**</td>
<td>Benzodiazepine</td>
<td>0.55–2.2 mg/kg</td>
<td>q 6–24 hrs</td>
<td>Oral</td>
<td>Separation anxiety, departure panic, storm phobias, situational anxieties</td>
</tr>
<tr>
<td>Alprazolam**</td>
<td>Benzodiazepine</td>
<td>0.01–0.1 mg/kg</td>
<td>q 8–12 hrs</td>
<td>Oral</td>
<td>Storm and noise phobias, situational anxieties such as owner departure, separation anxiety</td>
</tr>
<tr>
<td>Buspirone***</td>
<td>Azapirones</td>
<td>0.5–2.0 mg/kg</td>
<td>q 8–12 hrs</td>
<td>Oral</td>
<td>Global anxiety</td>
</tr>
</tbody>
</table>

* May take 2 to 4 weeks until effect. Ideally should be started one month prior to storm season. Not effective on an “as needed” basis. Must be given daily throughout storm season for separation anxiety.
** Can be used on an “as needed” basis. May be used in conjunction with Clomipramine for storm phobias.
*** Can be effective in dogs with global anxiety. Need to be administered 2 to 3 times daily; this may limit usefulness. May take 2 to 4 weeks until effect.

**Conclusion**

Anxiety can be pervasive in companion animals. Early recognition of anxiety in dogs and appropriate interventions can greatly improve the quality of life for companion dogs.

**References**


Cottam N, Dodman NH. Comparison of the effectiveness of a purported anti-static cape (the Storm Defender®) vs. placebo cape in the treatment of canine thunderstorm phobia as assessed by owners’ reports. *Appl Anim Behav Sci* 2009;119:78–84.


