

## HUMAN-DIRECTED CANINE AGGRESSION: WHY DOGS BITE

Terry Marie Curtis DVM, MS, DACVB  
[curtist@ufl.edu](mailto:curtist@ufl.edu)

### DIAGNOSIS AND TREATMENT OF AGGRESSIVE BEHAVIOR IN DOGS

Numerous considerations are involved, such as the human-animal bond, public safety, and euthanasia. When treating aggression in dogs, all of the following should be taken into account: the attitude of the owner, the presence of vulnerable individuals in the household, the size of the dog, the type of aggression, the intensity of the aggression, and special logistical issues for preventing bites (such as doors, fences, gates, collars, muzzles). With the treatment of any aggression, it is important to caution owners of the unpredictability of any attempt to treat. **NO TREATMENT IS 100% EFFECTIVE.** Any dog may bite, whether they have done so previously or not. It is important to obtain "Permission to Treat" from the owner, in writing.

### AGGRESSION DIRECTED AT HUMANS

Categories include fear, possessive, territorial/protective, maternal, predatory, and pain. "Dominance" is NOT a cause for human-directed aggression in dogs. Remember the "ritual signals"... If the dog signals with its eyes, ears, head, body, tail and the threatening person doesn't go away, what's left? With some dogs: growling, snapping, and biting. If, at that point the person retreats, the behavior has been negatively reinforced and the dog is more likely to perform that behavior in the future.

**FEAR AGGRESSION is the most common motivation for aggression directed at people** and it is characterized by aggression coupled with signals of fear and submission: avoidance, ears back/down, tail down, retraction of commissure of lip – "grin", looking away, turning away, and licking lips, yawning. One of the most important components of treatment involves the owner learning to recognize the ritual signals that dogs give PRIOR to growling, snapping, and/or biting. If these signals (the "soft conversation") aren't seen or recognized by us humans, dogs can learn that they need to growl, snarl, snap, or bite ("yelling") in order to make the scary person go away. While there are no medications that are FDA-approved for use in dogs for aggression, anxiolytics can be useful to decrease the dog's level of anxiety and reactivity. Any medication used would be recommended only in conjunction with a behavior modification plan tailored to the specific patient.

### POSSESSIVE AGGRESSION

The dog defends specific items (food, bones, chewies, toys, etc.), but otherwise does not exhibit aggression or ritual dominance signals. The behavior is often fear-based. Treatment can be as simple as denying the dog access to certain desirable items. Every dog should be taught a "drop" or "leave it" command! In the meantime, offering a more desirable item for the item the dog has tends to work very well. A yummy treat is better than a paper napkin.... Often there is a play/attention-seeking component to the behavior so walking away from the dog usually results in the dog dropping the illicit item and following the owner. It's important to realize that the owner isn't "giving in" and the dog isn't "winning". What's happening is that every one wins and no one gets hurt – which should be the #1 goal.

### TERRITORIAL AGGRESSION

The aggression can be directed at humans, other dogs, other animals, or a combination of targets. The dog can be territorial of the house, the yard, its crate, its sleeping place, a confined place, the car. It may also protect an individual approach distance – a "mobile territory". The #1 rule with a territorial dog is to not give it a territory to defend. A dog that runs the fence should not be let out in the yard alone. Otherwise, the dog learns that this is the behavior that works for him! Every time he barks and runs the fence, the "intruder" goes away. This is very powerful learning. Treatment involves denying the dog the opportunity to practice this type of behavior. We all get good at things we do day after day after day... The dog can be desensitized and counter-conditioned to people, etc. on the other side of the fence so that the dog responds in a different manner.

## PROTECTIVE AGGRESSION

An extension of territorial aggression where the **dog perceives that the owner is threatened** when there is no *real* threat – such as with a stranger at door, when the dog is approached when in a car with the owner, when another dog approaches owner, when a person raises its voice to owner, or when a person hugs the owner. The treatment plan is very similar to that for territorial aggression. In many cases, however – if not all – the dog is actually protecting itself, not the human...

## MATERNAL AGGRESSION

This is normal behavior that typically wanes as the puppies mature. Make sure prepartum bitch is familiar with whoever will be caring for her and the puppies postpartum to minimize the likelihood of aggression.

## PREDATORY AGGRESSION

*Canis familiaris* is a predator. This type of aggression results in a number of fatalities each year, in addition to many injuries. Common targets include: joggers, bicyclers, and running children. Risk factors include: a loose dog and any history of predatory behavior. Any dog with a history of predatory behavior needs to be under owner control at all times. Medications that increase serotonin may help in these cases – but need to be part of a comprehensive treatment plan that includes behavioral and environmental modifications.

## PAIN AGGRESSION

This is something that we are all likely to see commonly in practice. A dog in pain is likely afraid, so that adds to the possibility for aggression. Try to see things from the dog's perspective... If the dog is acutely painful, implement analgesia therapy as quickly as possible. For chronic conditions [ear infections, eye diseases, skin allergies] that require long-term and/daily administration of medications it is important that the owner try to make the medicating as "good" a thing as possible. For ear medications, have the owner use the "baby bottle" method to warm the medication and perhaps apply it to a cotton ball first – instead of just pouring the cold liquid into the ear. Pair the medicating with a special treat so that the dog doesn't run and hide every time it sees the "bad bottle". Have the owner engage with the dog at other times – so that the human/animal bond stays strong. The bottom line is to address and treat the underlying disease so that it isn't a lingering issue.

**DOMINANCE AGGRESSION** is a current issue and ***over diagnosed***. In many cases it is presumed to be the cause of aggression when no diagnostic process has been conducted. Dominance motivated aggression is a **problem of relationships between 2 members of the same species**. Therefore, *it is not possible for it to be the cause of aggression to you during an exam in your clinic*". Treating a fear-motivated aggressive dog with dominance-based techniques could have devastating consequences, so a diagnosis is imperative! This article discusses the topic of "dominance" in dogs: Dominance in domestic dogs – useful construct or bad habit? John W. S. Bradshaw, Emily J. Blackwell, Rachel A. Casey; *Journal of Veterinary Behavior* (2009) 4, 135-144.

## GENERAL TREATMENT FOR CANINE AGGRESSION

### Environmental Modification

**Avoidance of triggers** known to cause the aggression is of paramount importance. Simple examples include:

- Not reaching out/over the dog.
- Interacting with the dog only when it's up on all 4 feet – so it can easily move away.
- Looking at the dog's body language and respecting what the dog is saying.
- Not cornering the dog – up on furniture, under furniture, in its bed, etc.
- Avoiding all physical and loud verbal punishment.

**Using muzzles** can be the closest thing to a guarantee that a dog won't bite that an owner can have. The light-weight, good-fitting basket muzzles are best. The dog can still drink and take treats, it just can't bite. It is very important to make the muzzle a positive thing as soon as you introduce it to the dog – make it a "food cone"! Go slowly and continue to associate good things with every use.

**Head collars and harnesses** can help in the general GENTLE control of any dog. It is especially important to not use choke, prong or shock collars in aggressive dogs [but again, in ANY dog]. Their use can associate discomfort and pain with the very trigger we're trying to make positive.

### Behavior Modification

**Desensitization and counter-conditioning (DS&CC)** can be done to pertinent stimuli – people that the dog is afraid of and aggressive towards. This is a process that's done slowly – often after weeks or months into treatment.

**Classical conditioning** can be done early on to teach the dog that previous scary person is predictive of something great: treats! It is very important that you/clients don't feel that the dog is being "rewarded" for its aggressive behavior – he/she is not. What is happening is that the dog is learning new associations. Instead of "see person, feel threatened and react", the dog will start to learn that "see person and look for a yummy treat". Remember: learning through classical conditioning has already happened. Our goal is to use this learning technique to teach the dog something new.

### Pharmacological Treatment

Remember that in the overwhelming majority of aggressive dogs, the cause for their behavior is anxiety/fear. Therefore, the goal of any medical therapy is to decrease the dog's overall level of anxiety & reactivity – so that it can learn the new things we're teaching. The **selective serotonin reuptake inhibitors (SSRIs)** and **tri-cyclic antidepressants (TCAs)** help to do this by increasing serotonin. They can take 4-8 weeks to reach peak effects and ideally, the dog should be weaned off of these medications over several weeks/months when the time comes to do so. **Buspirone** (an Azapirone) is a good option – especially for dogs that are more fearful than reactive. If the medication is effective, it is generally used for 3-6 months. That said, some dogs need life-long treatment.

#### **Selective Serotonin Reuptake Inhibitors - SSRIs**

Inhibition of serotonin reuptake resulting in increased serotonergic neurotransmission by allowing serotonin molecules to act for extended periods of time. In dogs common uses include anxiety and fear issues. Serotonin is involved in modulation of aggression, therefore, medications which increase central serotonergic activity should produce a decrease in affective aggression and decrease the tendency to engage in sudden outbursts. Side-effects of SSRIs include GI signs – decreased appetite, vomiting, diarrhea/constipation, anxiety, irritability, insomnia, anorexia, and aggression. Contraindications include diabetes mellitus and hepatic disease. *Do NOT use with an MAOI or TCA* as it may result in serotonin syndrome. SSRIs have a slow onset of action and result in neurotransmitter/receptor changes. They are metabolized in liver and excreted through kidneys. They have 1-4 week latency to effect and a long  $t_{1/2}$ . Start at the lower dose and work up to avoid side-effects.

#### **Fluoxetine dose:**

Dogs 1.0-2 mg/kg PO q24h

#### **Paroxetine dose:**

Dogs 1.0 – 1.5 mg/kg PO q24h

#### **Sertraline dose:**

Dogs 0.5 – 4.0 mg/kg PO q24h

#### **Tri-Cyclic Antidepressants (TCAs)**

Uses in Dogs: anxiolytic effect, fears, phobias, aggression secondary to anxiety/fear, lick granuloma, compulsive disorder, urine marking.

TCAs are well absorbed from the GI tract, metabolized in the liver, and eliminated through urine & feces. They are highly lipophilic and can cross the placenta and into maternal milk – therefore, do not give to pregnant animals. They have a very bitter taste.

Common TCAs used: Amitriptyline (Elavil®), Clomipramine (Clomicalm™, Anafranil®), Doxepin (Sinequan®), and Imipramine (Tofranil®).

The therapeutic effects involve increasing norepinephrine levels which affect general arousal, attention, mood reactivity, and stress response modulation. Increasing serotonin regulates mood states, decreases fear & stress responses, affects feeding behavior, and decreases impulsive behavior. The side-effects include  $\alpha$ -adrenergic orthostatic hypotension, dizziness, syncope, sedation, vasoconstriction, smooth muscle contraction. The cholinergic side-effects include dry mouth, dental pathology, stomatitis, mydriasis, decreased tear production, impaired visual accommodation - blurred vision, urinary retention, bronchodilation. The histaminic side-effects include anti-pruritis, sedation, anti-ulcer activity, weight gain. The cardiovascular effects include arrhythmias, sinus tachycardia (NE),  $\downarrow$  conduction time, heart block, myocardial infarction, stroke. GI effects include nausea, vomiting, constipation, paralytic ileus, anorexia, abdominal cramping, diarrhea. Behavioral side effects include anxiety, restlessness, agitation, sleep disorders, sedation, fatigue, headache, ataxia. Other effects include lowered seizure threshold, altered blood glucose levels, and bone marrow suppression. The TCAs have 2 – 4 week latency. Stabilize for 1 – 2 months to see true effect. When ready to stop, gradual withdrawal is recommended. Certain conditions require long-term treatment. When withdrawing a TCA, decrease the original dose by  $\frac{1}{2}$  for 2-4 weeks. If all is okay, decrease dose by  $\frac{1}{2}$  for another 2-4 weeks. If all is okay, decrease dose again either by  $\frac{1}{2}$  daily or give every other day. If at any time “undesirable” behavior resumes, go back to last controllable dose. The process should take several months.

The goal is to have the pet off the medication or to be on the lowest possible dose that controls the behavior.

Drug Interactions include anticholinergics, sympathomimetics, cardiac toxicity, MAOIs & SSRIs, thyroid supplements, anti-thyroid agents, agranulocytosis, cytochrome P450 competition, antidepressants, antipsychotics, psychostimulants. See <http://medicine.iupui.edu/flockhart/table.htm> for more information.

Drug Precautions include glaucoma, urinary retention, cardiac disease, thyroid disease, seizure disorder, adrenal tumors, liver disease, and kidney disease.

### TCA Toxicity

The TCAs have a narrow therapeutic index. A 10-day supply for pet could be fatal to adult human!! There is **NO ANDIDOTE** so make sure that drug is kept safely away from pet in child-proof cap.

#### Clomipramine dose:

Dogs 1-3 mg/kg PO q12h

#### Amitriptyline dose:

Dogs 1-6 mg/kg q12h

Start low and work up to avoid side-effects

**Azapirones – Buspirone** – a 5-HT<sub>1</sub> partial agonist – can be used alone or as an “augmenting” agent for SSRIs/TCAs. It is not dependent on serotonin levels. It has direct actions on the receptors so it may be able to “kick start” process. Initially, buspirone slows neuronal impulses which may help the neuron to replace its serotonin. Side-effects are uncommon: agitation and GI effects. It is not sedating and there is no potential for human abuse. It has a relatively fast onset (1-3 weeks). There is no need to ramp up the dose or wean off, and there is no physical dependence. It does not lower the seizure threshold. It can be used in combination with SSRIs and TCAs – if so, decrease the dose of the other drugs accordingly. **Buspirone should NOT be given with any of the MAOIs.**

#### Buspirone dose:

Dogs 0.5 – 2.0mg/kg PO q 8-24h