Eliminating Inappropriate Feline Elimination

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Tragically, in North America, tens of thousands of cats are euthanized or surrendered to shelters each year for behavior problems. Of these cats, between 40% and 75% have an elimination disorder involving urination or defecation. In addition, many cats are presented with the clinical signs of lower urinary tract disease (LUTD) (pollakiuria, stranguria, and hematuria). Thus, there are three populations of cats who may urinate/defecate inappropriately: those with behavior-based problems, those with medical problems and a small group of cats experiencing both problems, concurrently.

Asking about behavior concerns is part of every veterinary visit just as reviewing diet and vaccination risk assessment are. Clients should be counselled to watch their kitten in the litter box so that they know what constitutes normal behavior for that cat. With any behavior disorder, the earlier the problem is presented, the greater the likelihood that the problem will be treatable. A valuable resource is Overall's book: Clinical Behavioral Medicine for Small Animals, Mosby, 1997. This text has chapters covering behavior problems in depth, as well as important basic chapters: Taking the Behavioral History and Behavioral Pharmacology. Additionally, appendices include client handouts with easy-to-follow protocols for each category of behavior disorder and informed consent forms providing drug information.

Because cats may urinate in unacceptable locations due to discomfort or to "announce" LUTD, before starting in-depth behavior consultation, it is prudent to rule out a physical component for the behavior by performing a thorough physical examination and a complete urinalysis. If the problem is defecation, rectal examination, anal sac assessment, vaginal examination, fecal ova and parasite may be required. Baseline blood work is advisable in any patient with a behavior problem whose therapeutic plan may include the use of pharmacological agents especially when they will be needed for a prolonged period of time. Some adverse reactions, such as hepatotoxicity, may be prevented by screening for pre-existing disease. Nevertheless, there is always the possibility of idiosyncratic drug reaction with any drug in any patient. This risk should be disclosed to clients while discussing options.

Determining whose urine is misplaced can be confusing in a multi-cat household. Fluoroscein (0.3 ml at 100 mg fluoroscein/ml) may be given subcutaneously or six large (9 mg fluoroscein/strip) strips in a gelatine capsule given orally to cat will result in bright yellow-green fluorescent urine for 24 hours after administration when viewed with a fluorescent black light. Because the urine of untreated cats will also fluoresce mildly, clients must become familiar with normal fluorescence to appreciate the difference. Often more than one cat may be participating.

Having ascertained that the problem is behavioral, a thorough, detailed behavior history is taken. This includes information about the source and age of the cat at adoption, age at surgical altering, prior behavioral problems, daily routine, indoor/outdoor status, feeding patterns, other family pet illnesses, family and household structure. Ask about the most recent incident, the second and the third most recent incidents. Determine the number, location, sizes, depths, types and age of litter boxes, litter, history of use of litter types, frequency of changing litter and scooping the litter and number of cats sharing the boxes. Find out as much as you can about how the cat uses the box. What has the client observed? Does the cat get fully inside the box or not when using it? Where are the accidents occurring? Much of this can be gleaned by having the client fill in/check off history forms and by sketching a floor plan of the home marking the location of the litter boxes, the doors and windows and where the cat is eliminating. Ask the client to do this is while you are observing the cat interact with the environment and while you are reviewing the history questionnaire. Remember to observe how the cat and client interact. Because it will take about 20-30 minutes to collect the history, plan on at least an hour-long consultation. When done, ask the client if there is anything else that they can think of that hasn't been covered by the questions. By this time, you will be noticing some relationship between the cat's behaviors and the home environment (social, physical). These correlations will allow you and the client to test some theories in order to determine causality.

Elimination disorders can be categorized as being aversions (substrate or location), preferences (substrate or location), or marking (non-spraying or spraying). With the exception of the last, all of these categories can apply to urine or feces.

Aversions

Substrate aversions

Cats may associate their litter with pain or fear from cystitis, colitis, or after declawing. They may dislike the smell of the litter or the state of the box, clean or soiled. Deodorized litters are unpleasant to many cats, as are strong smells of used litter, cedar wood chips, or the smells of an ill cat sharing the box. Noises or sensations of fizzing baking soda, sticky litter, litter box liners, hard gravel, and extraneous noises and smells act as deterrents for some cats. Before developing a new preference, a cat may balance on the rim of the box and scratch outside of the box, rather than touch the litter so that urine and feces are in the box or beside it. Even once they have chosen a preferred substrate, they may occasionally use the box or the location; this is a very treatable problem.

Location aversions

Occur when a cat feels threatened by someone or something when using the litter box (the scent of other cats, physical exclusion or victimization by other cats, people, other animals) or previous negative experience associated with a startling noise (washing machine

or other equipment noise). This often leads to choosing a preferred location away from other cats, noise or activity. Aversion to a hooded box is especially likely when the cat is being or feeling terrorized by another individual (human or animal) or if the smell becomes unpleasant. If the cat's aversion is purely to the location and not to the substrate, simply by moving the box to an area without those factors will solve the problem.

Preferences

Substrate preferences

Substrate preferences are very common. Generally the cat has a clear preference for an alternative substance such as fabrics, bedding, towels, bath mats, plastic bags, bathtubs, wood floors, linoleum, etc. Some cats prefer smooth open surfaces, such as bathtubs and uncarpeted floors. Illness may also be implicated in preference development: urge incontinence of colitis or cystitis may force the cat to choose a closer, more available substrate if the box is too far away; arthritic pain may make it difficult for a cat to get to or get into a box.

Location preferences

As the description implies, cats may develop a preference for an alternative location over that of the litter box; this occurs most often if social conflict exists and/or if the perpetrator has a shy, anxious personality. This cat may prefer a covered box or a box in a less busy area. By placing an additional box in the preferred location one soon sees if the problem is solely one of location preference as the problem should resolve. Should the cat use several spots to eliminate in, rather than one, it is helpful to use counter conditioning (discussed below) to reshape the cat's behavior.

Marking

Non-spraying marking

This form of marking may be with urine or feces and does not include spraying. The purpose of this behavior appears to be territorial marking in one or more locations. A pool of urine or feces is found. This may be difficult to differentiate from substrate or location preference. The perpetrator may be dominant or an anxious cat wanting to claim territory without fighting for it.

Spraying marking

The more commonly recognized form of urine marking is a normal behavior for cats. Finding spraying in a household situation is evidence of territorial marking, by either bold cats announcing their presence and right to domain) or by timid cats trying to claim a niche (they may spray, squat or deposit feces). Commonly cats spray near windows and doors to the outside if the perceived threat is outside (i.e., another cat). Social relationships between cats within the household must be carefully observed and addressed to determine where the stress is occurring. Females, as well as males may spray. Typically, spraying is on vertical surfaces (walls, furniture) and the urine drips down; urine in the middle of a room may, however, be sprayed and takes the form of a long thin soiled area.

Aggression and elimination disorders

Because cats have a superb sense of smell and because it is a normal for cats to mark territory, urine or feces are the perfect calling cards. Consider that in a cat's brain, the olfactory epithelium is up to 20 cm, while in humans, the area allocated to smell is a mere 2-4 cm. Thus, smell and odour marking play a great role in the development and maintenance of social systems for cats. Cats may be displaying active aggression (confident cat), passive aggression (anxious or fearful cat avoiding overt aggression), or status-related spraying (stereotypic posturing for the benefit of a real or imaginary cat as it serves to assert social status). Contests for position and status occur. Status, deference and adequate space are methods for avoiding conflict and maintaining stability within households; pee-mail helps to keep distance and share time. . It is essential to get an understanding of the complex social interactions between cats in a multi-cat household in order to untangle elimination disorders in these homes.

Treatment of elimination disorders

In order to be optimally successful in treating feline elimination disorders a combination of environmental and behavioral modifications and pharmacological intervention must be introduced. It is, as stated earlier, imperative to rule out any underlying or concurrent medical conditions that may be implicated, even if the problem isn't one of the urinary or gastrointestinal tracts.

The olfactory component must be dealt with aggressively. All layers of the affected area need to be cleaned or replaced; concrete should be sealed once thoroughly cleaned with an enzymatic odour eliminator; tiles and floorboard need to be replaced. It is critical that clients do not use vinegar or ammonia for cleaning up the soiled locations. Also, some odour eliminators become ineffective at degrading the urine when cats are on certain antibiotics. Urine-Off (www.urine-off.com) seems to be the most effective; a black light helps to identify all of the locations. After removing materials, cleaning with the odour eliminator, heavy gauge insulating plastic should be taped down securely to avoid further penetration of urine/feces, as well as to change the tactile sensation making it less pleasant for the cat.

Provide the cat with a variety of substrates. There should be enough litter boxes in different locations to decrease the stress of sharing: at least one more than the number of cats. There should be at least one on each floor in a multi-level home. A variety of box styles may also be desirable.

Toileting

The natural latrine for cats is sand or soil. Most cats prefer fine-grained, silica, disposable, clumping cat litters. To determine what kind of litter the cat will use if a cat has started to use an undesirable material, a selection of litter boxes with different types and depths of litter may be offered. A cat may prefer one type to defecate in and another to urinate in. A variety of types of boxes may also be offered, esp. for those individuals who like to spray or urinate without squatting completely. Leaning one box against a wall on its end and placing the second box inside of it on the floor may help in this situation if the cat dislikes a hooded box.

Litter box cleanliness

Is crucial to successful treatment. Boxes should be scooped at least once a day (like using an unflushed toilet) and ideally emptied and washed out once a week. Rinse out all residues of disinfectants or deodorizers. Old boxes should be discarded as they are permeated with smell. Size is important. Boxes need to be large enough, in other words at least twice the length of the cat!

If the cat has shown a clear preference for a new location, then the box filled with a preferred litter-type, can be placed in that spot. Counter-conditioning starts with covering the soiled (now clean and odour-free) spot with food bowls, a large plant, or solid piece of furniture. For this to be successful it is imperative to leave the new box in its new location for 2 consecutive, incident-free weeks before starting to relocate the box. Then it can be moved no more than 1-2 inches (2.5-5 cm) per day towards a more convenient/appropriate location. The safety of the new location needs to be protected: a cat should not be terrorized or startled while using the box. It may be helpful to bell the cat so that the client knows when the cat is near the undesirable location and can distract the cat while taking them to the desired box. Clients need to be reminded that physical punishment and rubbing the cat's nose in the urine of feces will not work and should not be done.

Pheromone use

Feliway^{TM} is a synthetic analog of a feline facial pheromone that is thought to increase emotional stability. Its use in the reduction of inappropriate urination needs to be studied further. Studies done to date have shown a reduction in urine marking of less than 3 months duration of over 96%. In cats who had been marking for 4 months or longer, there was a reduction of marking in 91% of cats after 35 days of environmental treatment. A third study showed that while there was a significant reduction in all households in which Feliway^{TM} was applied, 2/3 of the households still experienced some marking.

The product is sprayed directly on places soiled by the cat and also any prominent vertical locations in the environment. A daily application is necessary until the cat is noted to exhibit facial rubbing on the site. If the cat does not exhibit facial rubbing, then daily application to the environment should be continued for one month. Plug-in diffusers provides a constant slow release of pheromone covering an area of 500 to 700 square feet, but must not be covered, placed behind a door or under furniture.

Pharmacological intervention

Must be viewed as adjunctive therapy. Used alone, without behavioral and environmental modification, it is bound to fail. Drugs that are appropriate for certain situations and personality types (social structure) are the benzodiazepines (diazepam, clorazepate), tricyclic antidepressants (TCAs, such as amitriptylline, nortriptylline, clomipramine), non-specific anxiolytics (buspirone HCl and selective serotonin re-uptake inhibitors (SSRIs)) and progestins (as a last resort). It is prudent to spend some time reading about the mechanisms of action of all behavior pharmacological agents. This topic is beyond the scope of these notes.

Because cats are deficient in glucuronyl transferase, they are less effective than other species in metabolizing drugs of many kinds. The report of acute hepatotoxicity associated with diazepam/ValiumTM use has underscored the importance of pre medication blood screening (CBC, differential, serum chemistries) and urinalysis. Risks should be discussed with clients, so that they are both informed, as well as observant and are able to respond rapidly should side effects be noted. This drug metabolic bottleneck in cats, also explains why they are more prone to side effects (e.g. drowsiness with TCAs) than some other species. It may take nothing more than decreasing the frequency of the drug or changing to a different form of it (e.g. nortriptylline rather than amitriptylline) to alleviate the side effects, whilst maintaining the benefits.

In elimination problems involving a substrate or location preference or aversion, either a TCA or a non-specific anti-anxiety drug will be most effective. Diazepam may make the behavior worsen, because any learned inhibition (such as still using the box but not standing in the disliked litter) may be removed. This could result in the cat no longer attempting to maintain appropriate behavior (near the box) and staring to eliminate elsewhere as well. Similarly, an unwelcome side effect of buspirone may be an increase in inter-cat aggression as learned inhibition may be reduced. Clomipramine and fluoxetine are equally effective in the short term (8 weeks) but over a 16-week period, fluoxetine was significantly more effective. Table 1 shows medications, which may be considered as part of a treatment plan for inappropriate elimination. Without concurrent attention to making the toilet a pleasant place and without addressing social issues within the home, treatment will be minimally successful.

For most cats, drugs will be needed life long, however, after a minimum of 2-4 months have passed without incident, gradual weaning to the lowest effective controlling dose is advisable. Decrease the drug dosing frequency by half for one week, then again by half for another week, etc., until the dose is found that the cat needs to be maintained on. Some cats do not relapse.

Therapy for spraying necessitates analysis of the social demographics in the home. Occasionally, only physical and behavioral modifications need be made if the problem is of recent onset. However, if the problem has been occurring for more than a week, more work will be required because the olfactory input is being reinforced providing an opportunity for the cat to learn a new range of behavior. Because this could make the problem irreversible or extremely difficult to treat, it is advisable to utilize pharmacological aids promptly. TCAs, SSRIs, diazepam and buspirone are all used in the treatment of inappropriate elimination. Recently, a milk origin peptide, tryptic bovine s1-casein hydrolysate (Zylkene) has been evaluated for the treatment of anxiety in cats. When hydrolyzed, this molecule has been shown to fit into a segment of the GABA-B receptor thought to be responsible for anxiolytic activity. It may be considered for urine spraying, compulsive licking, and fear-related aggressive behaviors when these are believed to be associated with stress or anxiety. It is lactose free. A new diet (Royal Canin Calm) contains alpha-casozepine, tryptophan and nicotinamide. Up to the time of writing, the author has not seen any research (independent, peer-reviewed or otherwise) evaluating this product.

The recommended route of administration for the medications discussed above is oral. Although transdermal gels are gaining popularity for ease of administration, studies have shown that the systemic absorption of amitriptyline, buspirone and fluoxetine administered transdermally is poor (~ 10%) compared with the oral route of administration. Until supporting pharmacokinetic data are available, veterinarians and cat clients should not rely on the transdermal route of administration for treating cats with these drugs.

Table 1

Drug	Drug class	Feline dose	Side effects (partial list)
Buspirone Buspar	Azapirone	0.5-1.0 mg / kg po q12-24h	increased intercat interactions with some propensity for agonistic outcomes (10%)
Amitriptyline Elavil	Tricyclic antidepressant	0.5-1.0 mg / kg po q12-24h	sedation, anticholenergic effects
Clomipramine Anafranil	Tricyclic antidepressant	0.5 mg/kg po q24h x 8 weeks	sedation, anticholenergic effects
Fluoxetine Prozac	SSRI	0.5-1 mg/kg po q24h x 8 weeks	Inappetence, mild lethargy
Paroxetine Paxil	SSRI	0.5-10.0 mg / kg po q24-48h	urinary and fecal retention, mild lethargy
Cyproheptadine Periactin	antihistamine	0.25-5 mg/ kg po q12h	sedation, increase in appetite, dry mouth
Diazepam Valium	benzodiazepine	0.2-0.4 mg/kg po q12-24h	acute hepatic failure (extremely rare, and possibly 2^{o} to another pathology); sedation
Alpha-casozepine Zylkene	benzodiazepine-like	15 mg/kg po q24h	none reported to date