

The Ins and Outs of Feline Elimination Problems

M. Leanne Lilly DVM DACVB

Low Stress Silver, Cat Friendly Veterinarian, Fear Free Elite & Shelter

Linkedin: mleannelilly

Feline undesirable elimination is the most common causes for feline relinquishment to shelters(Salman et al., 2000) or return post-adoption (Casey et al., 2009) Elimination is always 'appropriate' from the perspective of the cat.

Taking a careful history is critical to arriving at a diagnosis, so that you can apply appropriate treatment. Typically speaking, we need to differentiate between toileting (voiding the bladder or bowels) and marking (which includes urine marking/spraying and maddening, marking with fecal material. Some unlucky cats/clients will be subject to both aspects, but knowing this will be important as well.

Toileting

Toileting should be large volumes when urine, (stool otherwise) on horizontal surfaces, with squatting posture, digging or scratching beforehand, often followed by attempts to cover or scratch around it. Toileting outside the box may be associated with a wide array of box, location, cat, or learned factors. (Herron, 2010; Sung and Crowell-Davis, 2006) Medical issues resulting in polyuria, pollakiuria, (diarrhea with extra box defecation) or box-access problems (osteoarthritis) must be ruled out first. A complete blood cell count, chemistry panel, thyroid, urinalysis and fecal are warranted. Cats without overt bacteriuria, concentration 1.035 particularly under 10 years of age, should **not** be given anti-biotics without sterile culture even in the face of hematuria: less than 2% of cats in this category will have an actual infection. (Lekcharoensuk et al., 2001; Tynes et al., 2003) Rule out or treat for pain. Toileting problems can be broken down in to 3 categories, and it is not uncommon for multiple components.

Aversions

The location the box is in, the box itself, or the substrate/litter. The location of the elimination can guide you to the appropriate aversion. Consider sights, sounds, scents, or previous scary incidents (spooked by dog or other cat), or in the case of older cats, discomfort in accessing the box such as stairs. Box cleanliness may also result in aversions to the box or litter, due to scent and texture. A single painful experience in the box may result in a box or substate aversion and even if the painful condition (diarrhea, bladder stones or infection, leg, back, foot injury) is resolved, may still avoid the box or substrate in question long term.

Preferences

Cats prefer sand-like surfaces, so unscented clay litter may be the most 'standard' preference among cats.(Herron, 2010) More recently, finer-ground sand like clay litter (Slide™) may be an appealing option to both the client due to it' low dust, strong clumps, and its softer texture. Individual preferences vary greatly through learning.

Treatment requires altering the litter situation to make the cat and client happy at the same time, and positive reinforcement (treats) for using the correct locations. Soiled areas need to be treated either with enzymatic or thorough cleaners.

Anxiety/Stress & FIC

Stressors of any kind especially in anxious kitties can result in derailed toileting habits (or sometimes marking). Feline Idiopathic cystitis is an inflammation of the bladder without a definitive cause, causing stranguria, hematuria and recognized as secondary to stress. (Buffington, 2011; Westropp and Buffington, 2004)

Marking

Urine marking is often, though not always, on vertical surfaces, with a wider range of urine deposition, tail flagging and high posture, rarely squatting, and no scratching or pawing afterward- the intent is to leave a social signals and the locations often hint to this- windows, doorways, items containing scent of particular people or animals. Middening has no scratching afterward and is in socially relevant locations (Herron, 2010; Neilson, 2009; Sung and Crowell-Davis, 2006) Marking is typically due to anxiety or stressors, and sometimes hormonally regulated in intact cats. Rule out internal stressors with a thorough physical exam, complete blood cell count, chemistry panel, thyroid, and urinalysis. Placement of plastic or potty-pads can improve cleanup during management phase and prevent urine soiling into the underlying surfaces. Confinement may be necessary to appropriately prevent access to both stressors and marked surfaces.

Medical Management

Fluoxetine (Prozac/Reconcile) 0.5-1.5mg/kg Q24(Ogata et al., 2019)

The most commonly prescribed SSRI in pets, this is your go to for either anxiety/stress related toileting or marking. Demonstrating 90% reduction in spraying in 100% of cats tested within 8 weeks. (Pryor et al., 2001) Compliance may be best with Reconcile flavored chews or compounded liquid. Transdermal is ~10% bioavailable and concentrations that lead to similar blood levels as oral dosing cause dermal irritation (Ciribassi et al., 2003)

Buspirone (Buspar™) 0.5-1mg/kg Q12

An azapirone serotonin agonist, non-sedating. Colloquially termed the “bravery drug,” Though very rare, side effects include mild sedation, agitation, gastrointestinal upset, and increased aggression. Increased friendliness toward humans has been reported. (Dantas and Crowell-Davis, Sharron L, 2019) Most useful for cats who are profoundly fearful. For marking, 55% of cats showed 75% or more reduction in marking, 56% returning to normal litter box usage. (Hart et al., 1993) Sadly, buspirone is not detected when given transdermally. (Mealey et al., 2004)

Clomicalm™ (Caniquel™ clomipramine) 0.25-2 mg/kg Q24 (Crowell-Davis, 2019; Denenberg, 2020)

The veterinary formulations are flavored, making them easier to give to cats. Though only 80% of cats improved on clomipramine for spraying/markings in a study that included multi-cat households, and cats who had previous medication experience (Landsberg and Wilson, 2005) The anti-cholinergic side effects of clomipramine need to be weighed in case selection especially male cats, and cost may be prohibitive.

Amitriptyline (Evlavil) 0.5-1mg/kg Q24

While appealing because of its low cost, amitriptyline’s anti-cholinergic side effects are a considerable risk for male cats with anxiety and any lower urinary signs from any cause. Only 60% of cats improved in FIC or urine spraying signs with amitriptyline.(Kruger et al., 2003) Interestingly it did not improve cytoscopic signs even if behavior was improved and posed an increased the risk of calculi (Chew et al., 1998; Kruger et al., 2003)

Hills c/d Multicare Stress (variety of flavors and co-morbidity addressing optoins)

Formulated with glycosaminoglycans, Mg²⁺, Ca²⁺ and P salt balance, antioxidants and omega-3 fatty acids to decrease bladder inflammation, decrease risk of struvite and oxylate crystals, and increase water intake, cats fed this diet vs control diet have shorter FIC episodes, and lower incidents of hematuria, dysuria and stranguria (Gunn-Moore, 2008; Kruger et al., 2015; Naarden and Corbee, 2020) Ideally, use of the wet food will increase water turn over in the bladder, but not all cats are amenable to texture changes.

Royal Canin Calm

Shown to reduce feline fear to unfamiliar environment, but not people(Landsberg et al., 2017) the main active ingredient, alpha-casozepine, has been shown to decrease fear at the vet, fears, phobias and fear-related aggression(Beata et al., 2007) but whether urinary signs were specifically included is not clear. Theoretically alpha-casozepine is a GABA_B agonist (Lecouvey et al., 1997) and has a GRAS (generally recognized as safe) status in the US and is not considered a drug in Europe.

Pheromones

Feliway Classic (Gunn-Moore and Cameron, 2004) Feliway Optimum (De Jaeger et al., 2021) have both decreased periuria in open label trials with efficacy ranging from 64-77% of cats improving. However, in masked placebo cross over trials, 44% of clients noticed no difference between placebo and Feliway Classic using a spray.(De Jaeger et al., 2021) There are also other pheromone products on the market: Secure Cat™ and FeliZen™ though they have not been studied in peer reviewed papers for periuria.

References

- Beata, C., Beaumont-Graff, E., Coll, V., Cordel, J., Marion, M., Massal, N., Marlois, N., Tauzin, J., 2007. Effect of alpha-casozepine (Zylkene) on anxiety in cats. *Journal of Veterinary Behavior* 2, 40–46. <https://doi.org/10.1016/j.jveb.2007.02.002>
- Buffington, C.A.T., 2011. Idiopathic Cystitis in Domestic Cats—Beyond the Lower Urinary Tract. *J Vet Intern Med* 25, 784–796. <https://doi.org/10.1111/j.1939-1676.2011.0732.x>
- Casey, R.A., Vandenbussche, S., Bradshaw, J.W.S., Roberts, M.A., 2009. Reasons for Relinquishment and Return of Domestic Cats (*Felis Silvestris Catus*) to Rescue Shelters in the UK. *Anthrozoös* 22, 347–358. <https://doi.org/10.2752/089279309X12538695316185>
- Chew, D.J., Buffington, C.A., Kendall, M.S., DiBartola, S.P., Woodworth, B.E., 1998. Amitriptyline treatment for severe recurrent idiopathic cystitis in cats. *J. Am. Vet. Med. Assoc.* 213, 1282–1286.
- Ciribassi, J., Luescher, A., Pasloske, K.S., Robertson-Plouch, C., Zimmerman, A., Kaloostian-Whittymore, L., 2003. Comparative bioavailability of fluoxetine after transdermal and oral administration to healthy cats. *American Journal of Veterinary Research* 64, 994–998. <https://doi.org/10.2460/ajvr.2003.64.994>
- Crowell-Davis, S.L., 2019. Tricyclic Antidepressants, in: *Veterinary Psychopharmacology*. Wiley-Blackwell, Hoboken, NJ, pp. 231–256.
- Dantas, L.M. de S., Crowell-Davis, Sharron L, 2019. Miscellaneous Serotonergic Agents, in: *Veterinary Psychopharmacology*. Wiley-Blackwell, Hoboken, NJ, pp. 129–146.
- De Jaeger, X., Meppiel, L., Endersby, S., Sparkes, A.H., 2021. An Initial Open-Label Study of a Novel Pheromone Complex for Use in Cats. *OJVM* 11, 105–116. <https://doi.org/10.4236/ojvm.2020.113006>
- Denenberg, S. (Ed.), 2020. *Small animal veterinary psychiatry*, 1st ed. CAB International, Boston.

- Gunn-Moore, D.A., Cameron, M.E., 2004. A pilot study using synthetic feline facial pheromone for the management of feline idiopathic cystitis. *Journal of Feline Medicine and Surgery* 6, 133–138.
<https://doi.org/10.1016/j.jfms.2004.01.006>
- Gunn-Moore, P.D.A., 2008. FIC (Feline Idiopathic Cystitis) “Leave behind Flier.”
- Hart, B.L., Cliff, K.D., Tynes, V.V., Bergman, L., 2005. Control of urine marking by use of long-term treatment with fluoxetine or clomipramine in cats. *Journal of the American Veterinary Medical Association* 226, 378–382.
<https://doi.org/10.2460/javma.2005.226.378>
- Hart, B.L., Eckstein, R.A., Powell, K.L., Dodman, N.H., 1993. Effectiveness of buspirone on urine spraying and inappropriate urination in cats. *J. Am. Vet. Med. Assoc.* 203, 254–258.
- Herron, M.E., 2010. Advances in Understanding and Treatment of Feline Inappropriate Elimination. *Topics in Companion Animal Medicine, Emerging Issues in Feline Medicine* 25, 195–202.
<https://doi.org/10.1053/j.tcam.2010.09.005>
- Kruger, J.M., Conway, T.S., Kaneene, J.B., Perry, R.L., Hagenlocker, E., Golombek, A., Stuhler, J., 2003. Randomized controlled trial of the efficacy of short-term amitriptyline administration for treatment of acute, nonobstructive, idiopathic lower urinary tract disease in cats. *Journal of the American Veterinary Medical Association* 222, 749–758. <https://doi.org/10.2460/javma.2003.222.749>
- Kruger, J.M., Lulich, J.P., MacLeay, J., Merrills, J., Paetau-Robinson, I., Brejda, J., Osborne, C.A., 2015. Comparison of foods with differing nutritional profiles for long-term management of acute nonobstructive idiopathic cystitis in cats. *Journal of the American Veterinary Medical Association* 247, 508–517.
<https://doi.org/10.2460/javma.247.5.508>
- Landsberg, G., Milgram, B., Mougeot, I., Kelly, S., de Rivera, C., 2017. Therapeutic effects of an alpha-casozepine and L-tryptophan supplemented diet on fear and anxiety in the cat. *J Feline Med Surg* 19, 594–602.
<https://doi.org/10.1177/1098612X16669399>
- Landsberg, G.M., Wilson, A.L., 2005. Effects of clomipramine on cats presented for urine marking. *J Am Anim Hosp Assoc* 41, 3–11. <https://doi.org/10.5326/0410003>
- Lecouvey, M., Frochot, C., Miclo, L., Orlewski, P., Driou, A., Linden, G., Gaillard, J.-L., Marraud, M., Cung, M.T., Vanderesse, R., 1997. Two-Dimensional 1H-NMR and CD Structural Analysis in a Micellar Medium of a Bovine α s1-Casein Fragment having Benzodiazepine-Like Properties. *European Journal of Biochemistry* 248, 872–878.
<https://doi.org/10.1111/j.1432-1033.1997.00872.x>
- Lekcharoensuk, C., Osborne, C.A., Lulich, J.P., 2001. Epidemiologic study of risk factors for lower urinary tract diseases in cats. *Journal of the American Veterinary Medical Association* 218, 1429–1435.
<https://doi.org/10.2460/javma.2001.218.1429>
- Mealey, K.L., Peck, K.E., Bennett, B.S., Sellon, R.K., Swinney, G.R., Melzer, K., Gokhale, S.A., Krone, T.M., 2004. Systemic Absorption of Amitriptyline and Buspirone after Oral and Transdermal Administration to Healthy Cats. *Journal of Veterinary Internal Medicine* 18, 43–46. <https://doi.org/10.1111/j.1939-1676.2004.tb00133.x>
- Naarden, B., Corbee, R.J., 2020. The effect of a therapeutic urinary stress diet on the short-term recurrence of feline idiopathic cystitis. *Veterinary Medicine and Science* 6. <https://doi.org/10.1002/vms3.197>
- Neilson, J.C., 2009. Housesoiling by cats, in: *BSAVA Manual of Canine and Feline Behavioural Medicine*. British Small Animal Veterinary Association, Gloucester, England, pp. 117–126.
- Ogata, N., Dantas, L.M. de S., Crowell-Davis, S.L., 2019. Selective Serotonin Reuptake Inhibitors, in: *Veterinary Psychopharmacology*. Wiley-Blackwell, Hoboken, NJ, pp. 103–128.
- Pryor, P.A., Hart, B.L., Cliff, K.D., Bain, M.J., 2001. Effects of a selective serotonin reuptake inhibitor on urine spraying behavior in cats. *Journal of the American Veterinary Medical Association* 219, 1557–1561.
<https://doi.org/10.2460/javma.2001.219.1557>

- Salman, M.D., Hutchison, J., Ruch-Gallie, R., Kogan, L., New, J.C.Jr., Kass, P.H., Scarlett, J.M., 2000. Behavioral Reasons for Relinquishment of Dogs and Cats to 12 Shelters. *Journal of Applied Animal Welfare Science* 3, 93–106. https://doi.org/10.1207/S15327604JAWS0302_2
- Sung, W., Crowell-Davis, S.L., 2006. Elimination behavior patterns of domestic cats (*Felis catus*) with and without elimination behavior problems. *American Journal of Veterinary Research* 67, 1500–1504. <https://doi.org/10.2460/ajvr.67.9.1500>
- Tynes, V.V., Hart, B.L., Pryor, P.A., Bain, M.J., Messam, L.L.M., 2003. Evaluation of the role of lower urinary tract disease in cats with urine-marking behavior. *J. Am. Vet. Med. Assoc.* 223, 457–461.
- Westropp, J.L., Buffington, C.A.T., 2004. Feline idiopathic cystitis: current understanding of pathophysiology and management. *Vet. Clin. North Am. Small Anim. Pract.* 34, 1043–1055. <https://doi.org/10.1016/j.cvsm.2004.03.002>