Feline Inappropriate Elimination

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Would you use a toilet that had not been flushed in days? I didn’t think so – let’s not expect our cats to use one, either!

The basics of the litter box: What do cats like?
• Clean
• Uncovered
• Clumping / sandy texture litter
• Large box:cat ratio
  o Enter, turn around, dig, turn around, eliminate, turn around, cover
• Core area
• Easily accessible
• 1 litter box per cat +1
• Multiple locations
• No liners
• Deep litter

Other considerations
• Multiple litter box options in one location
• Location free from obstructions or agonistic encounters
• Adequate distance from food and water bowls

What is feline inappropriate elimination (FIE)?
• Elimination outside of a designated area
• Is this truly inappropriate, or just undesirable?

Most common cat behavior problem reported to veterinarians
• Leads to cat relinquishment to shelters
• Common cause for euthanasia
• Frequently can be resolved with appropriate treatment

• Consider the owner’s vs. the cat’s perspective
  What’s a litter box?
  • Laundry basket full of clean clothes bares a close resemblance….

Working it up…
• Behavior history
• Medical workup
• Behavior problem list
• List stressors and the inadequacies of the current environmental management

…and making a treatment plan
• Medical rule-outs
• Treat all medical conditions
• Behavior differential diagnoses list
• Remedy environmental mismanagement
• Behavior modification
• Reduce anxiety as needed

Behavioral history
• Be objective and ask open-ended questions about the environment and other household pets
  o Signalment?
  o Where?
  o What?
  o When?
  o How?
  o Who?
    ▪ Consider every cat in the household a suspect!

• Progression and duration
• Acute onset?
• Household changes?
• New pets
• Addition or departure of family member
• Renovations
• Previous treatment and response?
• Litter box changes, medications, pheromones, punishment, clean up

Behavioral history
• Beware of owner interpretations of their cat’s behavior
  o “jealous”
  o “mad at me”
  o “spiteful”
• When in doubt, consider normal cat behavior
  o 10% neutered males spray
  o 5% spayed females spray
  o Is this abnormal?
• Remember – it’s an animal, not an adversary

Medical Workup
• Medical history
  • Change in weight, appetite, thirst, grooming
  • History of lameness, abnormal stools, urinary disease
  • Complete PE, CBC, chemistry, total T4, and U/A, fecal

• Other useful tests:
  • Urine culture and sensitivity
  • Abdominal radiographs
  • Abdominal ultrasound

Treat all medical conditions, including those not affecting GI or GU systems
Differential diagnoses - medical
- Bacterial cystitis
- Interstitial cystitis
- Cystic calculi
- Bladder neoplasia
- Renal neoplasia
- Diabetes mellitus
- Renal failure
- Pyelonephritis
- Hyperthyroidism
- Gastrointestinal disease
- Constipation
- Dietary etiology
- Liver insufficiency
- Neurologic disease
- Osteoarthritis
- Any causes of polyuria, polydypsia, pain and / or lethargy

Differential diagnoses - behavioral
- Urine marking/middening
- Inappropriate toileting
- Substrate preference
- Substrate aversion
- Location preference
- Location aversion
- Litter box aversion
- Anxiety-related elimination
- Contributing behavioral diagnoses
- Separation anxiety, territorial aggression

Differential diagnoses
- Remember that medical and behavior diagnoses are not mutually exclusive
- Often medical disease exacerbates behavioral pathology and visa versa

Urine Marking - Characteristics
- Standing posture, tail up, tail shake
- Vertical surfaces
  - Baseboards, furniture, doors
- Small amounts of urine
- Absence of digging/covering before and after urination
- Socially relevant locations
- Items of certain household members
- Favored place of other pets
- Window/door frames
- New household items

Urine Marking - Diagnoses
• Anxiety related
  • Generalized anxiety disorder
  • Underlying stressors – changes in household, schedule, addition of new animals, agonistic interactions
  • Poor litter box management can be anxiety-provoking
• Territorial
  • Directed towards unfamiliar cats
  • Outdoor cats (windows)
• Sexual
  • Estrus females – up to 1x/hour
  • Intact males – up to 12x/hour
• Medical

Inappropriate Toileting
  • Squatting posture
  • Horizontal surfaces
  • Large amount
  • Likely show digging before and covering behaviors after elimination

Causes of inappropriate toileting
• Anxiety/social stressors
  • Social group changes (animal, human)
  • Environmental changes
  • Schedule changes
  • Cats outside the home
  • Agonistic interactions
  • Stress lowers threshold for tolerance of litter box management

• Location
• Size of the box
• Substrate (type, amount, liners)
• Type of box
• Cat:box size ratio
• Cleanliness
• Number of boxes and cats
• Miscellaneous stimuli near box location

Litter box aversion
  • Something is wrong with the box
    • Previous painful experience?
    • Not cleaned/scooped properly
    • Covers
    • Plastic liners
    • Motorized self-cleaning
    • May eliminate right next to box
    • Variable substrates and locations

Substrate aversion
• Don’t like what’s in the box!
  • Large, hard particles
  • Strongly scented litter
  • Perch on the edge of the litter box
  • Dig/cover outside of box rather than manipulate the litter

Substrate preference
• Typically soft, clean substrates – carpet, bedding, laundry
• May develop as a result of substrate aversion

Location aversion
• Agonistic interactions – ambush!
• Aversive stimuli in environment
  o Washer/dryer, furnace, dogs
  o Not easily accessible

Location preference
• Preference for one or several locations in the house
• Variable substrates

Anxiety-related elimination
• Urination or defection, or both
• Social and environmental factors
• Separation anxiety

Treatment
• Similar principles for marking and toileting
  • Improve litter box and social environment
  • Behavior modification
  • Medication when environment cannot meet cat's needs

Litter box environment
• Make the litter box more attractive
• BIGGER – Large box:cat ratio
• CLEANER – scoop 1-2 times DAILY
• Change the box type entirely if needed
• More, more, more (n + 1)
• Location – 1 on every floor
• Litter box cafeteria
• Make the soiled areas less attractive
• Cleaners: enzymatic, fully soak
• Aversive stimuli
• Foil, upside-down carpet runner
• Decrease access
• Confinement to core area unless supervised may be indicated

Improving litter box hygiene can decrease marking up to 50%
• Provide the desired environment for elimination
• Make the litter box the safest, most comfortable place to eliminate
• Acceptable area to mark?

Improving the social environment
• Environment of plenty
  • Interactive toys, work for portion of food, “hunting” opportunities, scratching substrates, vertical resting options, hiding places
• Separate core areas for each cat
  • Feeding and water stations, litter boxes, resting places
• Reduce agonistic interactions, such as punishment
• Decrease access to outside cats
  • Keep indoors only
  • “frosty glass” window film
  • ScareCrow® motion sensor sprinkler

Behavior modification
• Avoid positive punishment
• Interruptor sound
• Positive reinforcement of appropriate elimination
• Teach new skills to improve confidence and safety in presence of owner
  • “touch”
  • “high five”
  • “sit”

Medication
Selective serotonin reuptake Inhibitors (SSRIs)
• Fluoxetine (Reconcile®, Prozac®)
  • 0.25-1.0mg/kg SID
  • 90% success rate for urine marking
  • Decreased appetite and mild sedation most common side effects
• Paroxetine (Paxil®)
  • 0.25-1.0mg/kg SID
  • Better choice for finicky eaters
  • Anticholinergic side effects possible – constipation, urine retention, dry mouth, arrhythmias
• Sertraline (Zoloft®)
  • 0.25-0.5mg/kg SID
  • No published reports in cats
  • Fecal excretion
• Contraindications:
  o Seizures, cardiovascular disease, hepatic dysfunction, renal disease (FLU, PAR), constipation (PAR), obesity (FLU)

Tricyclic antidepressants (TCAs)
• Clomipramine (Clomicalm®)
  • 0.25-1.0mg/kg SID
  • Approved for treatment of urine spraying in Canada
  • Anticholinergic effects possible; sedating
• Amitriptyline (Elavil®)
  • 0.5-1.0mg/kg SID
  • Higher side effect profile – anticholinergic; most sedating
  • Extremely bitter
• Contraindications:
  o Seizures, cardiovascular disease, hepatic dysfunction, renal disease, constipation, owners opposed to sedative effects on their cat

Buspirone (Buspar®)
• 2.5-7.5mg per cat BID
• 55% success rate in urine marking
• Minimal side effects
• Contraindicated in aggression

Benzodiazepines
• Diazepam (Valium®)
  • Up to 75% improvement
  • Hepatotoxicity reported for PO administration in cats
• Oxazepam (Serax®)
  • 0.2-1.0mg/kg SID-BID
  • Less potential for hepatotoxicity
  • No active metabolites

Progestins
• Megestrol acetate (Ovaban) and Medroxyprogesterone (DepoProvera)
  o Some efficacy in MC (50%), little in FS (10%)
  o Dangerous side effect profile

Pheromones
• Several studies showing efficacy
• To be used in combination with environmental changes
• Feliway® (Comfort Zone ®)
  • Synthetic F3 fraction of facial pheromone
  • Available in diffuser and spray
  • Signal of contentment (false signaling?)
  • Antagonist of urine marking
• Felifriend ®
  • Synthetic F4 fraction of facial pheromone
  • Allorubbing
  • Antagonist of aggression or territorial activity
  • Not available in the US