

Digest

**VOLUME 1:
DEALING WITH
FRUSTRATING FELINE
ELIMINATION DISORDERS**

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Myriam Hesta
DVM, PhD, Diplomate ECVCN

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Andrew Sparkes
BVetMed, PhD, Diplomate ECVIM,
MANZCVS, MRCVS

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Andrew Sparkes
BVetMed, PhD, Diplomate ECVIM,
MANZCVS, MRCVS



Strategies for Enhancing Feline Hydration

Myriam Hesta, DVM, PhD, Diplomate ECVCN
Ghent University, Merelbeke, Belgium

Increasing water intake can be useful for feline lower urinary tract conditions such as urolithiasis, as well as for other conditions in cats, such as constipation or chronic kidney disease. There are several different techniques that can be used to increase water intake in a cat with lower urinary tract disease (**Box 1**). Strategies may differ depending on the primary condition.

For some cats, it may be beneficial to switch to a wet diet or add water to a dry diet.¹ Switching to wet food may be a valuable and simple approach. In one study, the total volume of water ingested (from drinking water and food) was significantly higher in cats fed wet diets.² When adding water to dry food, the amount of water consumed by an individual cat will vary. Some cats may not find wet diets or dry diets with added water palatable. Moderately increasing dietary sodium can also be considered to help increase water intake in cats eating dry food.³

Preference for a particular water source and/or adding flavors to the drinking water can also be investigated by owners. Zanghi et al. showed an increased preference and an increased drinking water intake by a nutrient-enriched water supplement compared to tap water. The addition of a poultry flavor to the nutrient-enriched water supplement significantly increased total daily water intake compared to the nutrient-enriched water supplement without flavoring.^{4,5} In another study, the unique tongue anatomy of cats allowed them to lift more water per lap when the viscosity of the water was increased.⁶ And although providing running water by using fountains or special water bowls may not be as successful for improving hydration as originally thought,^{7,8} they may be useful for some cats that have clear preferences.⁸

Of Note

- Commonly used tactics to enhance feline hydration for lower urinary tract patients include feeding wet food, using veterinary diets with moderately increased sodium, providing fresh, clean water, and hydration supplements.
- Individual strategies to increase water intake will depend on the owner, as well as the cat and their preferences.
- Success of these strategies can be assessed by measuring urine specific gravity and by owner observation for signs of lower urinary tract disease.

It is essential that drinking water is fresh and water bowls are cleaned regularly. Cat owners can trial different types of bowls to ensure their cat's preferences are met. Individual cats may prefer specific materials or sizes of water bowls and meeting these may help increase water intake. Having access to multiple water bowls in the household may also be beneficial.

Individual tactics will depend on the owner, as well as the cat and their preferences. Success of these strategies can be assessed by measuring urine specific gravity and by owner observation as well as monitoring for signs of lower urinary tract disease such as stranguria or inappropriate urination.

Box 1. Strategies to increase water intake in cats with lower urinary tract disease

- Provide fresh, clean water at all times
- Clean water bowls daily
- Offer and test a variety of water bowls and water sources
- Have water bowls available in different locations throughout the house
- Feed canned food or make dry food wet by adding water
- Provide a diet with a moderately increased sodium concentration
- Use water fountains or address other individual preferences for drinking
- Add flavoring to water
- Use hydration supplements (e.g., nutrient-enhanced water supplements) to increase water intake

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A Multimodal Approach to Feline Idiopathic Cystitis

Andy Sparkes, BVetMed, PhD, Diplomate ECVIM, MANZCVS, MRCVS
Simply Feline Veterinary Consultancy, Shaftesbury, Dorset, United Kingdom

Clinical signs of feline lower urinary tract disease (FLUTD) include pollakiuria, periuria, dysuria, hematuria, and stranguria. When investigations such as urinalysis, urine culture, and diagnostic imaging fail to identify a specific underlying cause, feline idiopathic cystitis (FIC) is a disease diagnosed by exclusion. In most studies, FIC is the single most common diagnosis made in cats presenting with signs of FLUTD.¹⁻⁴

Because the etiopathogenesis of FIC remains poorly understood, management of the disease is challenging, and few interventions have strong proven efficacy. Clinical signs in FIC often recur (with variable frequency), but signs tend to spontaneously resolve within a few (typically 2–7) days.^{1,5} FIC is a challenging condition to diagnose and manage. Utilizing a multimodal approach may help increase success. Medications, environmental management, dietary modification, and increasing water intake are strategies that have been used to manage cats with FIC.

Medications: To date, no drugs have been demonstrated to be effective in controlled clinical trials of the management of FIC.^{2,6} The condition is painful, and thus short-term analgesic therapy is an important welfare consideration.⁶

Environmental management: Reducing stressors is widely recommended for cats with FIC,^{1,4,6} based on evidence that stress may play a role in the pathogenesis of the disease. Clinical observations and the results of an uncontrolled trial of cats with severe recurrent FIC⁷ suggest that multimodal environmental modification (MEMO) can be beneficial. The aim of MEMO is to create an enriched, reassuring, and safe environment for the cat, to reduce sources of stress, and through this to hopefully reduce the frequency of recurrent episodes and improve the cat's welfare (Box 1).

Dietary modification: Dietary studies suggest

Of Note

- While FIC is the single most common diagnosis in cats with FLUTD, management can be challenging.
- Important aspects of management of FIC include pain control, environmental modification, and increasing water intake.
- Dietary strategies include feeding a veterinary diet formulated for management of FLUTD and using hydration supplements.

an increased water intake and a reduced urine specific gravity are beneficial in cats with FIC, and along with MEMO this has become a standard recommendation.^{1,2,7} At least one paper has recommended aiming for a urine specific gravity of <1.040 in affected cats.⁸ The studies performed to date have not determined what aspects of diet may have contributed to the improvements seen. It would seem prudent to recommend the feeding of a high quality complete and balanced diet to cats with FIC where possible, and a veterinary diet for lower urinary tract disease can have additional benefits. If the cat is overweight, appropriate measures should be taken to reduce and normalize bodyweight. Nutritional strategies to help reduce signs of stress such as calming probiotics or supplements may also be beneficial; however, to date, there are no published data on using these strategies to manage cats with FIC.

Increasing water intake: While feeding wet rather than dry food helps increase water intake, increase the volume and frequency of urination, and reduce urine concentration, not all cats adapt to a wet

Box 1. Overview of commonly recommended MEMO interventions^{6,7}

- Provide safe and appropriate places for all cats to hide and rest (including provision of vantage points)
- Provide opportunities to play (with toys and with people) and to engage in predatory behavior (e.g., toys, hiding food etc.)
- Make sure each cat in a multi-cat household can separate themselves (have multiple, separate resting and hiding places)
- Make sure each cat in a multi-cat household has separate access to key resources (food and water bowls, litter trays, scratching posts, toys, etc.)
- Ensure frequent and positive owner-cat social and play interactions
- Offer cats choices to express their preferences over resources, interaction, and play
- Avoid situations and circumstances that cause fear or anxiety for the cat
- Use appropriate synthetic environmental pheromone products

diet. Dry urinary veterinary diets with a moderately increased salt content may successfully increase water intake and urine output. Other strategies to increase water intake may be found elsewhere in this issue.

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Managing Feline Struvite and Calcium Oxalate Urolithiasis

Andy Sparkes, BVetMed, PhD, Diplomate ECVIM, MANZCVS, MRCVS
Simply Feline Veterinary Consultancy, Shaftesbury, Dorset, United Kingdom

Urolithiasis is the macroscopic accumulation of crystalloid material (uroliths or “stones”) in the urinary tract. This is distinct from crystalluria, which is a normal finding in many cats. A variety of urolith types occur in cats, but the most common are ‘struvite’ (composed primarily of magnesium, ammonium, and phosphate) and calcium oxalate (CaOx). Although crystalluria can be common, crystalluria without evidence of urolithiasis, urethral obstruction, or lower urinary tract signs is not likely to require intervention.

Struvite uroliths can be dissolved medically, whereas CaOx cannot and require removal for resolution.¹ There is a high risk of recurrence of uroliths, so long-term medical management to reduce risks is needed. Consensus guidelines on managing uroliths have been published and highlights are shown in **Box 1**.

Several commercially available veterinary urinary diets are designed to dissolve struvite uroliths and to help prevent recurrence of both struvite and CaOx. A number of these diets have proven

Of Note

- A variety of urolith types occur in cats, but the most common are struvite and calcium oxalate (CaOx).
- Several commercially available veterinary urinary diets are designed to dissolve struvite uroliths and to help prevent recurrence of both struvite and CaOx.
- The presence of struvite and CaOx crystals without evidence of urolithiasis, urethral obstruction, or lower urinary tract signs is not likely to require intervention.

Box 1. ACVIM consensus guidelines for managing uroliths in cats²

- For suspected struvite uroliths, medical dissolution is highly effective and should be attempted unless contraindicated (e.g., urethral obstruction).
- Infected struvite uroliths are rare but require antimicrobial therapy to eliminate the infection.^{1,2}
- Urocytoliths that cannot be dissolved and are not associated with clinical signs can be monitored. They should be removed if they are likely to obstruct the urethra.²
- Urethral stones should be managed by minimally invasive removal or retrograde hydropulsion followed by cystotomy. Urethral surgery is discouraged, and urethrostomy should be avoided wherever possible.²
- For ureteroliths, partial or complete ureteral obstruction should be treated as an emergency with appropriate intervention.
- With CaOx uroliths, hypercalcemia should be investigated and treated appropriately when present.

efficacy in dissolving naturally occurring struvite uroliths.³⁻⁶

As previously noted, dietary dissolution is achievable for struvite. This is usually achieved through:

- Avoiding excessive magnesium and phosphate in the diet.
- Producing a moderately acidic urine.
- Encouraging water intake, such as feeding a high moisture diet (>70–80%) to increase urine volume and reduce concentration – cats on dry food may benefit from a gradual transition to a wet diet.
- A dry diet with moderately increased sodium (e.g., 300–350 mg/100 kcal) may also be used to help increase water intake and reduce struvite concentration.
- Other strategies to increase water intake may also help to reduce urine concentration.
- Where uroliths are present, clinical and radiographic re-evaluation every 2–4 weeks is recommended, and most dissolve within 30 days. A lack of reduction in urolith size within 2–4 weeks may suggest they are non-struvite uroliths or are mixed/compound uroliths with other stone types present and that they likely will not dissolve.

Dietary dissolution is not achievable for CaOx, so the aim is to help prevent recurrence after removal. This may be best achieved by:

- Increasing water intake and the production of dilute urine (USG <1.025–1.030) – this is considered the most beneficial intervention and may be achieved by feeding a high moisture (>70–80%) diet.
- Dry diets with moderately increased sodium may increase urine volume and lower CaOx relative supersaturation (RSS).
- Encouraging additional water consumption or using nutrient-enhanced water supplements.
- Avoiding high levels of dietary calcium may help reduce calciuria.

- Where CaOx uroliths are still recurrent, additional urine dilution is indicated, if possible, along with potentially the use of potassium citrate as it may help inhibit CaOx formation.

Diets used for management of feline urolithiasis should be complete and balanced, meet AAFCO or FEDIAF minimums for adult maintenance, and be designed to dissolve and help prevent struvite stones and to help prevent calcium oxalate.

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