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## Approach to urethral obstruction in the cat: Part 3

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## Approach to urethral obstruction in the cat: Part 3:

### Home management to prevent recurrent obstruction, and address underlying Feline Idiopathic Cystitis (aka Feline Stress Cystitis)

#### Introduction

Our two previous articles discussed the in-clinic management of the ‘the blocked cat’. Whilst this is usually successful in managing the life-threatening emergency presentation, it is not where the care of these cases ends. This is because they usually result from underlying Feline Idiopathic Cystitis (FIC aka Feline Stress Cystitis), so they frequently re-present with house-soiling, dysuria, or repeat urinary obstruction. Sadly, previous studies have shown that up to 60% will develop recurrent cystitis and repeat obstruction; because of which over 35% will be euthanased (Gerber *et al.* 2008). ***Achieving long-term control of the underlying cystitis and preventing its recurrence is as critical to these cats as the initial unblocking.***

FIC occurs when a susceptible cat is exposed to a provocative (i.e., stressful) environment. Susceptible cats are sensitised to stress, meaning that they have a lower tolerance for social and environmental stressors. ***This altered response to stress results in an ‘anxiopathy’ caused by chronic activation of the central threat response system (CTRS).*** This involves activation of the sympathetic nervous system and uncoupling of the hypothalamic-pituitary-adrenal axis. The main feature of clinical relevance is altered bladder innervation, which transitions from predominantly afferent to efferent, and direct neurogenic inflammation gives rise to cystitis triggered directly by stress. Vasodilation within the bladder wall, mucosal oedema, and upregulation of pain fibres and their receptors may be accompanied by muscular spasm of the bladder and or urethra. An excellent more detailed summary is recommended (Westropp *et al.* 2019).

#### Investigations

While FIC is a diagnosis of exclusion, it is by far the most common cause of cystitis and or urethral obstruction in the cat. Any cat of any age or breed can develop FIC, however, certain factors from the history and clinical examination can help to increase the index of suspicion. Young to middle aged, over-weight, black-and-white cats are more likely to

present with FIC, with neutered males most likely to present with urethral obstruction. A sedentary indoor lifestyle with a predominantly dry food diet are also common historical features.

Physical examination is often unremarkable, but it is important to rule out comorbidities that may be associated with chronic activation of the CTRS. A full environmental and behavioural history should be taken to enable a stress audit (see later).

Investigation should include a full urine analysis (e.g., dipstick evaluation, specific gravity, sediment assessment and urine culture). While a cystocentesis sample is ideal, this may be counterproductive in a stressed cat. Culture samples can be taken from a disinfected then rinsed litterbox and new non-absorbent litter, but results need to be interpreted with the collection method in mind. For example, a heavy pure growth with an active sediment is reliable evidence of infection, while a light mixed growth with an inactive sediment is not.

Bloodwork in recurring cases of cystitis, haematuria or urethral obstruction can be useful, including platelet counts, renal parameters, and where stones are found, ionised calcium concentration.

Imaging usually involves abdominal ultrasound examination. However, ***a rectal examination or contrast urethrogram is essential to assess the distal two-thirds of the urethra.*** Once other major causes of feline lower urinary tract disease (FLUTD) have been excluded, such as urolithiasis, neoplasia and infections, a diagnosis of FIC can be made.

### **Management of FIC**

Unfortunately, few treatments for FIC have been investigated by well-controlled double-blinded experimental studies. Most recommendations are based on uncontrolled clinical observations and personal opinion. Also, since FIC is usually self-limiting, many treatments may *appear* to be effective, when they actually have no positive effect. All treatments should therefore be considered with appropriate caution.

Corticosteroids and antimicrobial therapy have been investigated to a greater degree, and were not shown to be beneficial.

### **Analgesia**

Pain associated with FIC can impair welfare. It can result in hyporexia/anorexia, and because FIC typically occurs in obese cats, hepatic lipidosis is a secondary risk. Additionally, perineal self-trauma may risk secondary infections or chronic inflammation. Please see Table 1 for a summary of analgesic options.

### **Reduce urine specific gravity (USG)**

Two studies have shown that reducing urine concentration to  $\sim 1.035$  can significantly reduce the signs of FIC ( Markwell *et al.* 1999, Gunn-Moore *et al.* 2004). This acts to reduce the pain of concentrated urine in contact with the urothelium. ***Active measures should be taken to reduce urine specific gravity (USG) to 1.035 or less.***

One method to achieve this is by transitioning to a wet diet, ideally one that has been formulated to reduce the USG more than might be expected, while also reducing oxalate and struvite crystalluria. There are a number of these diets available, often with L-tryptophan, milk protein hydrolysate and or glycosaminoglycan (GAG) added, which attempt to reduce the USG, reduce stress and increase urinary GAGs, e.g. Hills c/d Multicare/Urinary Stress, Purina UR ST/Ox, and Royal Canin Urinary SO (Naarden and Corbee 2020). While the wet versions of these diets are always preferred, for cats that will only eat dry foods these are the ideal choices. The diet should not be introduced whilst the patient is unwell and hospitalised, as nausea associated with bladder inflammation can result in food aversion to the new diet. A slow transition is usually best, gradually introducing the new diet over 10-14 days to allow adjustment. Specific cat soups can be offered, as can products like Purina Hydra Care which can also increase the cats' water intake, or water added to a wet diet to give the same consistency. Rechecking the urine SG after 14 days on the diet will allow additional measures to be incorporated if necessary.

Cats should also be encouraged to drink more water. They usually prefer their water bowl to be offered away from their food. However, identifying how each cat prefers to drink is a skill in itself. Some prefer flowing water from a tap or fountain, whilst others choose to drink from ceramic, metal or glass bowls. Typically, they prefer a diameter of <15cm across (Handl & Fritz 2018). Raising water bowls can encourage cats with forelimb arthritis to drink. Filling the bowls to the brim is often preferred, so the cats do not need to put their faces deep into the bowl. Most cats prefer regular clean water; however, some prefer bottled water, or even rainwater. Drops of tuna brine or a 'tuna ice cube' can also be added to the water to give it some flavour. In multi-cat households it is important that there are enough water bowls available, so sharing is not needed.

### **GAG supplements**

The GAG layer overlies the urothelial mucosa, forming an essential part of bladder defence, acting as a physical barrier, preventing bacterial adherence and protecting the deeper layers. One paper showed a slight reduction in haematuria and discomfort in a month-long study (Panchaphanpong *et al* 2011), and a small pilot study where GAGs (i.e. hyaluronic acid, chondroitin sulphates and N-Acetyl glucosamine) were instilled into the bladder on three occasions within 24 hours of de-obstruction appeared to reduce the one-week re-obstruction rate (Bradley & Lappin 2013). However, three much larger studies, found no positive effect when GAGs are given orally as N-Acetyl glucosamine (Gunn-Moore *et al.* 2004) or pentosane polysulphate (PSS; Chew *et al* 2009) and given for 6 months, or when PSS was given by subcutaneous injection and followed for a year (Walliace *et al.* 2009).

While anecdotally, individual cats may benefit, there is no way to tell which GAGs might help in each cat; it is trial and error. Many GAG products now have added ingredients, e.g., Cystease™, which contains N-Acetyl glucosamine and hyaluronic acid as GAGs, plus L-tryptophan to reduce stress. While these products may help in some circumstances, it is essential to address the cat's stress and reduce their USG.

**FIC and stress: 'Assess the stress, address the stress'**

A study explored the effects of reducing stress in the management of cats with FIC (Buffington et al. 2006). They used a detailed questionnaire to identify and evaluate a range of potential social and environmental stressors, before developing a treatment plan, termed Multimodal Environmental Modification (MEMO). MEMO aims to reduce stress through client education to implement environmental and behavioural measures within the home. Treatment resulted in a significant reduction in cystitis signs as well as several positive behavioural changes.

***Given the important role of stress in FIC, behavioural evaluation to identify actual and potential stressors, and a behaviour modification programme to remove or minimise the impact of these stressors is needed in every case.***

The gold standard approach is referral to a feline-focused clinical animal behaviourist, or veterinary behaviourist, for a behaviour consultation, where an in-depth assessment can be made, leading to individualised advice through a ***behaviour modification programme***. The Animal Behaviour and Training Council hold a practitioner directory where you can search for a clinical animal behaviourist or veterinary behaviourist in your area (<https://abtc.org.uk/>). Alternatively, a behaviour service may be offered in house by veterinary staff with interest and expertise in clinical animal behaviour.

A behaviour consultation can take several hours, with additional time needed to provide a written report for the client on specific treatment recommendations; follow-up appointments may be needed to assess progress with the implementation and outcome of interventions. Whether a case is referred on, or conducted in house, there will be costs incurred to the client. Many insurance companies will cover the costs of a behaviour consultation, but it is best to check first, before proceeding. However, the cost of a behaviour consultation may be prohibitive for some clients: the remainder of this article therefore aims to provide an overview of some of the most important points to consider when assessing and addressing stress in cats with FIC which could be offered as an affordable service within general practice.

***'Assess the stress, address the stress'***

An excellent website provides a range of outstanding free resources designed to help veterinarians and owners improve the health and wellbeing of cats under their care through environmental enrichment (<https://indoorpet.osu.edu/home>). Their 'Indoor Cat Home Checklist', a 44-point questionnaire (Buffington *et al.* 2006), is recommended as the best way to quickly and concisely assess key environmental stressors for cats with FIC; this can be readily conducted in general practice. Completing the questionnaire with an owner identifies specific areas of concern leading to direct recommendations on how to improve them. Additionally, the accompanying document 'Environmental Enrichment for Confined Cats' on the same website provides general recommendations on stress reduction, including providing an optimal environment (considering all senses) and a consistent and predictable daily routine. Table 2 summarises the key stressors assessed by the questionnaire and resulting treatment recommendations to address them.

A useful additional resource is the 'Five pillars of feline environmental needs' (<https://journals.sagepub.com/doi/pdf/10.1177/1098612X13477537>). These guidelines were compiled by internationally recognised feline experts through the International Society of Feline Medicine (ISFM) and the American Association of Feline Practitioners (AAFP). They provide a framework for meeting the environmental needs of cats, which can be used by veterinarians, owners and others working with cats.

The ICatCare website has an excellent set of owner-focussed resources on introducing new pets and minimising anxiety associated with vet visits, amongst others (<https://icatcare.org/advice/introducing-an-adult-cat-to-your-cat/>)

### **Beyond the questionnaire – insights from a full behaviour consultation**

Whilst the questionnaire above is an excellent tool, it should be remembered that it is based on owner report. This may be adequate for assessing items relating to features of the environment, resource number, frequency and duration of interactions etc., but it is more challenging to assess the actual behaviour and body language of cats during e.g., social interactions with people, and other cats and animals in the house which may be pivotal in the identification of stressors. These points can be explored with more time within a full behaviour consultation, which permits more detailed assessment, and the

creation of an individualised behaviour modification programme. A house visit, or video consult, allows a clinician to directly observe social interactions between the cat and other animals and humans. A video consult or video footage is least intrusive, as the presence of a clinician may alter the social interactions the cat displays. Another useful tool is documentation of the cat's resources on an illustrated house plan – this can help identify potential problems with resource provision or distribution, and aid the process of environmental optimisation (Figure 1).

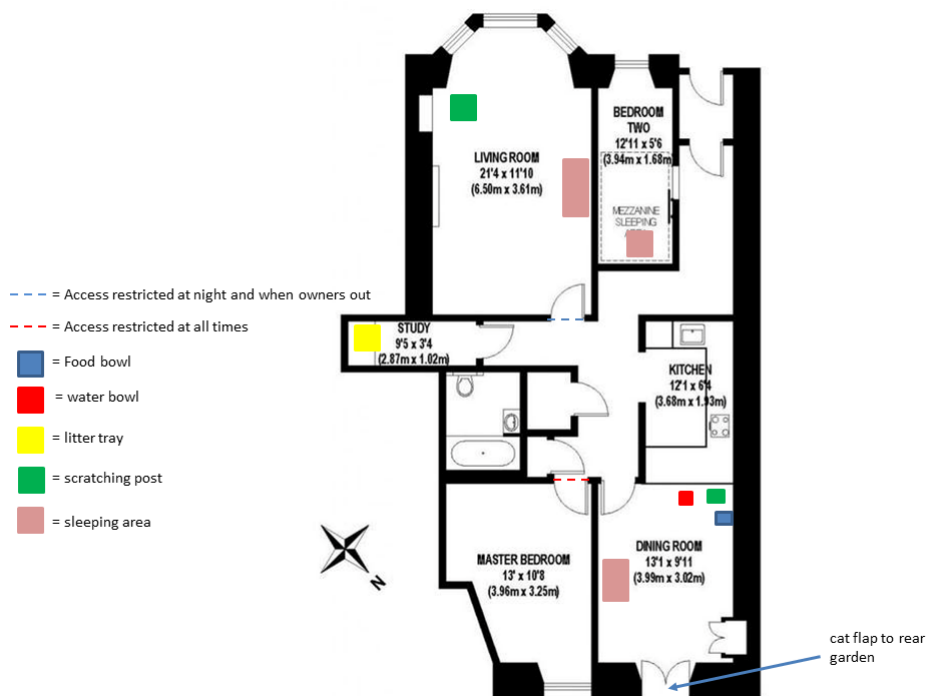


Figure 1:

### Additional tools - 'Assess the stress'

Performing a **stress audit** is a way of taking a comprehensive behavioural history, accounting for a range of potential stressors for domestic cats (Karagiannis 2015). Stress auditing focusses on the degree of controllability and predictability the cat has over its environment. **Controllability** refers to the options available to the cat to deal with potential stressors in the environment e.g., the ability to avoid or escape from those stressors. Take the cat who is permitted outdoor access by the owner opening the back door – one day this cat has an altercation with a neighbouring cat who has entered the garden, the options to escape/return indoors are removed as the door is shut. There is a



loss of ability to control the situation which may lead to stress. **Predictability** refers to the ability to predict a stressor; unpredictable stressors may be more challenging to cope with and lead to generalised anxiety.

**Establish a time-line** – this can be a useful way of bringing together different aspects of a cat’s history (Figure 2). This is a diagram charting the known sections of a cat’s life to document potentially relevant behavioural history (including predisposing, initiating and maintenance factors for the problem) and medical history (including episodes of cystitis +/- obstruction, plus evidence of other medical problems which may contribute to overall stress [e.g., painful osteoarthritis], or may be the consequence of stress [e.g., over-grooming]).

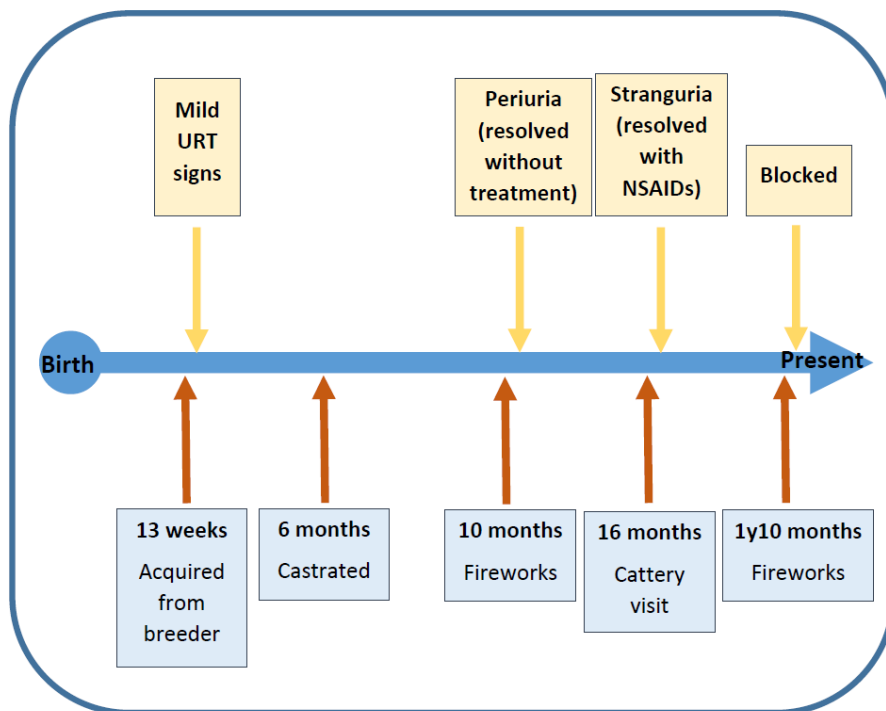
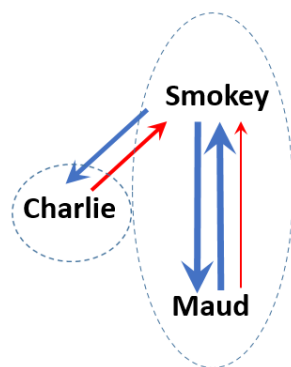


Figure 2:

Within a behavioural history, the common stressors featured in Table 2 should all be accounted for. When plotting a time-line, for some cats it may be possible to identify an acute stressor which precipitated an episode of FIC/obstruction. Potential acute stressors include change in the physical or social environment (house move, redecoration or building works, cattery visit, change in the social dynamics of the household whether the human

family (arrival of a new person [e.g., a new baby], or departure of a person [e.g., someone leaves to college/university]) or non-human family [addition of another cat, dog, or loss of a companion], abrupt change in diet etc.). However, there is often a lack of an identifiable acute stressor, instead there are a range of chronic stressors, acting cumulatively, and contributing to the development of FIC. Chronic stress can alter how a cat may react to any additional acute stressor, even if that stressor is deemed mild by an owner, or often goes unnoticed. It can sometimes be difficult for clients to accept the possibility that their cat may be suffering from chronic and or acute stress. It should be noted that cats respond to stress in a range of different ways and that the more passive responses (such as increased hiding, grooming and sleeping) are easily missed.

Within multi-cat households, a diagram can be composed documenting owner reported interactions between their cats to establish social groupings (Figure 3). Cats within a social group typically display behaviours such as allogrooming (licking/grooming each other), allorubbing (rubbing against each other), sleeping together/resting in close contact (usually curled up or intertwined), and generally spending time together (Rodan and Heath, 2015). ***Identifying social groupings is vital as it directly informs the provision and distribution of a set of resources for each social group.*** In some multi-catsome households there may be no social groups *per se*, with single cats living within solitary groups. This can be a sensitive discussion to broach with owners who do not see the relationship between their cats as a source of stress, and may feel guilty about their current management of their cats (and other animals) when environmental changes are suggested. However, it is vital to explore and address these points, as stress arising from social conflict within a multi-cat household is a common contributing factor for FIC. It is also important to note that not all stressed cats will develop FIC, so where social conflict is identified, measures taken to relieve it should be deemed a priority for all cats, not just those presenting with obvious urinary signs.



|         | Grooms        | Sleeps with | Avoids | Hisses at | Stares at |
|---------|---------------|-------------|--------|-----------|-----------|
| Smokey  | Maud, Charlie | Maud        | /      | /         | /         |
| Maud    | Smokey        | Smokey      | /      | /         | Smokey    |
| Charlie | /             | /           | Maud   | Smokey    | /         |

Figure 3: An example of a feline sociogram with dotted circles indicating social groups. Blue arrows show the direction of affiliative behaviour(s), while red arrows show the direction of agonistic behaviour(s). The thickness of the arrow represents the range and frequency of behaviour(s) seen.

In this household, Maud and Smokey often sleep curled up together and will allogroom. Occasionally Maud will stare at Smokey if he tries to approach while she is eating. Smokey will groom the other cats, but this behaviour is only reciprocated by Maud. Charlie occasionally hisses at Smokey when he has had enough of the grooming and prefers to spend time on his own. Therefore, there are two social groups in the house: Maud and Smokey are in one group and Charlie is in 'group' of his own.

#### **Additional considerations - 'Address the stress'**

The general guidelines on MEMO (Table 2) provide a solid foundation for reducing general stress levels in cats. They can successfully reduce urinary signs and improve a range of behaviours (Buffington *et al.*, 2006). However, other treatment options can be considered within a behaviour modification programme, and may be necessary in some cases. These should be considered on an individualised basis following thorough assessment during a behaviour consultation.

All cats are unique, and for many there may be acute stressors which need to be managed for that individual. Within multi-cat households, consideration may need to be given to

whether there is appropriate space, and resources distributed within that space, to successfully provide for the number of cats and social groupings. In cases where the needs of the cats cannot be provided for, reducing group size may need to be considered e.g., rehoming one or more cats, or one or more social groups. It is usually hard to convince an owner that this is needed; but when it is needed, it is essential for that cat/those cats.

Reducing stress can extend beyond avoiding/minimising stressors and providing better means of coping with stressors within a household. For example, a cat is fearful and anxious of loud noises, especially fireworks (Figure 2). The time-line suggests that for the past two years she has shown signs of cystitis around bonfire night. However, she is also stressed when housed in a cattery. So removing her from the stress of bonfire night by putting her in a cattery is not an option. In this case, consideration can be given to psychopharmacological support using anxiolytic drugs to help her cope in the short term. In the longer term, and once the stress associated with the most recent fireworks has passed, sound recordings of fireworks can be used in a process of desensitisation and counterconditioning to change her reaction to this noise trigger, reducing its importance in the future.

In cats with FIC, it is vital to take a proactive approach to their long-term management by minimising potential stressors. Difficult decisions may need to be made by owners to preserve the welfare of their current cat irrespective of other aspirations – e.g., where an owner wants to acquire a puppy or a new cat and this would probably act as a social stressor that may precipitate a relapse, the current cat's welfare should take priority. Similarly, changes to the cat's environment and management should be made gradually to minimise the disruption to the cat's routine. E.g., changing foods gradually, making any changes to the layout of the home gradually etc.

### **Adjunctive Treatments**

The use of adjunctive treatments such as pheromones, nutraceuticals and psychotropic medication are covered in Table 3. These interventions can be considered where there is a poor response to the implementation of MEMO, where the environment provided is

already optimal but signs of FIC persist, where stressors cannot be adequately avoided or minimised, or the response to them changed using behaviour modification.

Whilst there are no specific medications with strong evidence for reducing signs of FIC, there are a range of unlicensed medications which could be considered to modify behaviour, such as the Selective Serotonin Reuptake Inhibitors (SSRIs) and Tricyclic Antidepressants (TCAs), as well as short acting medications such as gabapentinoids, trazodone and benzodiazepines.

Synthetic pheromone products are a popular choice in the management of FIC as they do not require individual dosing (which can be a stressor in itself) and in multi-cat households the benefits are not restricted to any one cat. However, as with any adjunctive treatment, care should be taken to ensure that the social and physical environment is optimised as much as possible prior to their use, otherwise efficacy is likely to be compromised.

### **Monitoring**

Clients should be made aware that FIC will often need to be managed throughout the cats' life and that long term optimisation of the physical and social environment is essential. Education on feline body language can be particularly helpful, and clients should be encouraged to keep a diary of the occurrence of key behaviours that have been identified as indicators of stress for their cat(s), alongside potential triggers. Monitoring enables clients to take a proactive approach to their cats' physical and psychological wellbeing, preempt when flare-ups may occur and work with the veterinary team to help to prevent future episodes of cystitis. From a medical point of view, urine analysis should be checked periodically to ensure that the specific gravity remains within the target range, allowing interventions to be instituted at an early stage.

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