



# WINN FELINE FOUNDATION

For the Health and Well-being of All Cats

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## **Non-Obstructive Feline Lower Urinary Tract Disease**

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Lower urinary tract disease refers to any syndrome affecting the bladder and urethra. It has been estimated that up to 1.5% of all cats in the United States suffer from a lower urinary tract disorder, with close to 10% of veterinary visits having a lower urinary component. Cats can develop a number of independent issues related to the bladder and urethra. Commonly used acronyms for these conditions include FUS (Feline Urologic Syndrome) and FLUTD (Feline Lower Urinary Tract Disease). As long as 70 years ago, signs of lower urinary tract disease in cats were commonly seen by veterinarians. Today, these remain some of the most challenging and frustrating problems in feline medicine.

Lower urinary disease in cats usually consists of a combination of cystitis (inflammation of the bladder wall) and urethritis (inflammation of the tube leading from the bladder out of the body). There are several sub-types of FLUTD.

- **Bladder stones, silt and crystals:** These are all various forms of minerals that may coalesce within a cat's bladder. These calculi may cause irritation and inflammation to the bladder wall, bleeding of the bladder wall, and are associated with pain and difficulty urinating. Large stones or aggregates of smaller stones may sometimes form. While genetic factors are definitely at play in the formation of stones and crystals, diet is also a major factor. Cats who eat primarily dry/kibbled diets, diets with a high mineral content, and diets that predispose to very high or low urinary acidity are much more likely to form urinary stones.
- **Feline Idiopathic Cystitis (FIC):** This is the most common cause of feline lower urinary tract disease. This disease is defined by inflammation, pain, and damage to the bladder wall without an obvious external cause. While the disease process is not fully understood, stress is known to play a major part in the development of FIC. Diet, obesity, and genetic factors also likely play a role.
- **Infection:** Bladder infections are uncommon in healthy, adult male cats, but may occur more commonly in older, especially female cats. Usually a cat with a bladder infection has an underlying cause that has predisposed to this infection. These may include kidney disease, diabetes, or even severe obesity. Bladder stones in cats, unlike dogs, are not commonly associated with infection.
- **Other:** Other, less common causes of lower urinary tract disease include birth defects causing malformed urethras, cancers of the bladder and urethra, or prostate disease

Regardless of the cause, there are common symptoms that may be seen in cats with any lower urinary tract disease. They include: hematuria (blood in the urine), dysuria (difficulty passing urine), pollakiuria (increased frequency of urination), and urinating outside of the litter box. The end-stage of lower urinary

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disease is urethral obstruction, or complete inability to urinate. This is discussed separately. When a cat is presented to the veterinarian for possible lower urinary tract disease, the veterinarian will first determine if a urinary obstruction exists by palpating the bladder. This article deals with non-obstructive cases, which are the most common type.

Evaluation of a cat with signs of lower urinary tract disease starts with taking the patient's history and a good physical examination. The bladder is felt through the abdomen for thickness, fullness, pain, and possible bladder stones. Since many cats urinate in inappropriate places in response to behavioral problems, one of the first tasks is to determine if a medical or behavioral problem exists. Urine testing (including chemistry, microscopic analysis, and culture) at a minimum is required to work up urinary disease. Further testing usually entails x-rays to evaluate for bladder or kidney stones, and potentially blood testing to evaluate for systemic diseases. Ultrasound examination is commonly used to evaluate the bladder for inflammation, masses, stones or silt, blood clots, and other causes of disease.

Analysis of urine may indicate systemic diseases such as kidney failure, liver disease, or diabetes. It may also reveal urine-specific issues such as crystals, changes in acidity, or bacterial infection. Your veterinarian may collect urine in several different ways: either at home with a special litter; by “free-flow” in the clinic; or by cystocentesis (using a long needle to draw urine directly from the bladder). Each of these options has pros and cons, and the ideal method of collection will be determined by your veterinarian.

Crystals are microscopic mineral fragments that form in cat urine. Determining the significance of crystals can be problematic. While crystals may be associated with disease, and with the formation of larger, visible stones, many normal cats have small numbers of crystals in their urine. On the other hand, up to 50% of cats that have bladder stones may have no evidence of crystals at all. Generally, only moderate to severe cases of crystalluria should be considered significant and treated. Such cases are often of dietary origin, and may be treated with specific foods.

Common types of crystals in feline urine are struvite (magnesium ammonium phosphate; triple phosphate) and calcium oxalate. While most “urinary” diets on the market today are designed to treat both kinds of stone, it is important to remember that only struvite may be dissolved with diet; calcium oxalate can be prevented, but not dissolved. Other types of stones, such as urates, cysteine, or calcium phosphate are less common in cats. Feeding only canned diets to cats diagnosed with urinary crystals may help to reduce the risk of recurrence and speed dissolution.

Therapy of lower urinary tract disease is directed against the underlying factors discovered during testing. Significant crystalluria is treated by prescribing the appropriate therapeutic canned diet. If a urine sample cultured for bacteria is positive, antibiotics are prescribed on the basis of sensitivity test results. Anatomical defects may require surgical repair. Bladder tumors are uncommon in cats, and may require specific treatment such as surgery, radiation, or chemotherapy. Bladder stones may be dissolved with diet, or removed surgically, depending on the type. Some success has been had using a technique called “voiding retrohydropulsion” to remove small stones without surgery.

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Various medications may also be used to decrease pain, to help the bladder contract effectively, or to decrease any irritation or spasms in the urethra. Corticosteroids were once frequently used to eliminate inflammation, but have not been shown to be very effective. Non-steroidal anti-inflammatory drugs are sometimes used, but only in cats with normal kidney function. “Prazosin”, a urethral relaxant, is often used to dilate the urethra and decrease the risk of obstruction. Pain medications are often used to make cats more comfortable and prevent inappropriate urination.

Poly-unsaturated fatty acids, glycosaminoglycans, and pentosan polysulfonate are all medications used to reduce bladder inflammation and restore the normal mucous lining to the bladder. While evidence of the efficacy of these drugs is unclear, they have very few side effects.

The majority of cats with lower urinary tract disease are found to have moderate to severe signs without a readily identifiable cause. They typically have blood in their urine, but no stones or bacterial infection are present. Also, they do not have tumors, anatomical defects, or external causes of urinary disease. The term interstitial cystitis, borrowed from human medicine, has been used to describe these cats. An alternate term is idiopathic cystitis, both are abbreviated FIC. The only way to definitively diagnose FIC is by cystoscopic examination (inserting a narrow camera into the bladder) or biopsy, so many cases are tentatively diagnosed after all other conditions have been ruled out.

Therapy of interstitial cystitis is currently evolving. Significant data suggests that the bladder of cats is a “stress organ” that becomes inflamed due to chronic anxiety, stress or boredom. Reduction of stress in the cat's environment is very important to controlling or eliminating FIC. Even cats that do not appear anxious or stressed may experience boredom if not properly stimulated.

Environmental needs of cats must be met to help reduce the reoccurrence of FLUTD. Food, water bowls, and litterboxes need to be located in quiet areas and kept clean. Separate water and food bowls, litter boxes and sleeping perches placed in different locations and at different heights should be provided. Large water bowls should be located far away from food and litter. Readily available scratching posts of different materials and heights in different locations are essential for the cat to mark the home as their territory. Cats think in both vertical and horizontal planes, making it important to locate resources at different heights. Cats love to perch and watch their world from a safe location. Mental stimulation with regularly changing toys, food puzzles, visible outdoor bird feeders, or electronic games are all ways to keep pets cats engaged. Playtime for a cat is not an added “enrichment” but an environmental need.

A synthetic cat pheromone called Feliway® has been produced and is available commercially through veterinarians and pet stores. This product is able to exert a calming effect on some cats that may help reduce inappropriate elimination behaviors.

Several modern diets have been formulated with stress-reducing agents to help minimize the occurrence of FIC. Many dietary supplements also exist to help reduce stress. In severe, recurrent cases, drugs such as amitriptyline (Elavil®), or fluoxetine (Prozac®) may be prescribed by the veterinarian. These drugs are

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used to manage anxiety, decrease the pain associated with episodes of cystitis and to decrease inflammation in the bladder lining.

## For more information

American Association of Feline Practitioners

<http://www.catvets.com/cat-owners/disease-and-conditions/flutd>

Cornell Feline Health Center

[http://www.vet.cornell.edu/fhc/Health\\_Information/brochure\\_urinary.cfm](http://www.vet.cornell.edu/fhc/Health_Information/brochure_urinary.cfm)

The Indoor Cat Initiative: Idiopathic/Interstitial Cystitis in Cats

<http://vet.osu.edu/indoorcat>

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