



## What is Lower Urinary Tract Disease (LUTD)?

LUTD is a classification of urinary conditions involving the bladder and urethra (lower urinary tract). LUTD is commonly characterized by inflammation of the bladder (cystitis) and urethra (urethritis). In many cases in cats the cause of this inflammation is unknown (idiopathic). Some cats with LUTD develop microscopic crystals and larger sand-like particles in their urine. In male cats crystals may form plugs that lodge in the narrow urethra of the penis and cause life-threatening urethral obstruction. Larger crystalline stones, called uroliths can form in the bladder and the kidneys as well. Rarely, cancer can develop in the bladder and urethra of cats.

## Incidence of Feline LUTD:

Roughly 4.6% of cats contract LUTD over the course of one year. Male and female cats are equally affected by LUTD, although male cats gain more notoriety because they are predisposed to urethral obstruction. Approximately 63% of feline LUTD cases are idiopathic.

## Causes of Feline LUTD:

LUTD is the subject of ongoing research and the cause is not clearly understood. There are probably a number of disease-causing factors.

Diet appears to be a major factor in many cats with LUTD. Most experts agree that feeding non-acidifying diets high in magnesium, especially dry foods, predispose to struvite crystal and stone formation. Treatment of struvite crystals and stones involves feeding specially formulated acidifying, low-magnesium diets.

Calcium oxalate is a variant of the urinary crystal/stone story in cats. Prescription diets have been formulated to treat cats that develop calcium oxalate crystals and stones.

Unfortunately, many cases of feline LUTD are idiopathic, where the cause is unknown. Potential contributing factors include viruses, **reduced water intake**, dehydration, obesity, and **stress**. Stress plays an important role in many cases. Veterinarians recognize similarities between some cases of idiopathic LUTD in cats and a bladder disorder affecting people called interstitial cystitis. In humans, psychologically stressful events often precede the pain and discomfort of interstitial cystitis. In cats, stresses associated with changes in weather, moves, new or revisiting pets, visiting relatives or friends, a new baby in the home and separation from owners may precede the onset of LUTD. Cats

with idiopathic LUTD sometimes respond medications such as Lorazepam (an anti-anxiety med) or antidepressants such as Fluoxetine or amitriptyline.

Bacterial infections are the most common cause of LUTD in older cats or in diabetic cats. Bacterial urinary tract infections in older cats often affect the kidneys as well, and can lead to kidney disease and kidney failure. Unfortunately, many cats with bacterial urinary tract infections do not act ill until considerable damage to the kidneys has occurred.

### **Signs of Feline LUTD:**

Onset of LUTD is signaled by a change in urination patterns including:

- Urinating outside of the litter box and/or spraying behavior
- Increased frequency of urinations
- Straining while producing small amounts of urine
- Bloody and/or strong smelling urine
- Licking the penis or vulva areas

If you see these signs, have your cat examined immediately.

### **Danger Signs of Feline LUTD:**

In male cats, life-threatening urethral obstruction occurs when crystals lodge in the urethra. Danger signs of urethral obstruction are:

- Straining without production of urine
- Depression
- Loss of appetite
- Vomiting
- Bow-legged walk
- Mournful crying
- Pain when being picked up

*Cats exhibiting danger signs can die within 48 hours of onset of signs. Immediate veterinary care can be life saving!*

### **Treatment:**

At the end of this handout you will find a checklist and discussion of Home Treatments. Your doctor will individualize treatments based on your cat's condition.

Cats with uncomplicated LUTD (without urethral obstruction) are often treated as outpatients. The Cat Doctor may need to hospitalize your cat to obtain a urine sample to confirm the diagnosis and select appropriate treatments.

Obstructed males are hospitalized and the obstruction is relieved by catheterization of the urethra under general anesthesia. In more difficult cases, the urinary catheter stays in the urethra several days while fluids and medications are administered. Once the patient is urinating without assistance, generally after 3 to 6 days in the hospital, he is sent home on medications. Some cats require longer hospitalization due to complicating factors such as ongoing crystal formation, recurring obstruction, and temporary loss of bladder function.

### **Follow-up:**

Good follow-up is essential. Signs of LUTD may take 5 to 7 days to improve. Please call if problems persist. Some male cats that were obstructed continue to have signs for a week or more after they are home. Male cats can obstruct or re-obstruct at home after treatment has begun. Watch your male cat for danger signs!

We will recheck your cat and obtain a urinalysis 2-3 weeks after home treatment was started, sometimes earlier. The recheck examination is important even if your cat is improved and appears normal. It is best that you drop your cat off at The Cat Doctor for the day so that we can collect the urine sample.

In some cases you may collect the urine at home. The following method of home urine collections works for some cats. Wash and dry the litter box thoroughly so that there is no debris in the box. Shred wax paper or place a small amount of Norsorb™ crystals (purchased from The Cat Doctor) in the box as a substitute for litter. After your cat has urinated, transfer the urine to a clean container, refrigerate, and deliver to The Cat Doctor as soon as possible.

If LUTD persists or recurs, we may recommend additional diagnostic tests, including abdominal radiographs and ultrasound of the abdomen.

### **Prevention:**

Cats with LUTD have a high rate of recurrence especially if preventative measures are ignored. For cats with struvite crystals, returning to old diets is asking for trouble. Continue feeding acidifying low magnesium diets. Good alternatives to the veterinary prescription diets are Science Diet and Purina Pro Plan, which can be purchased through veterinarians or at pet stores. Male cats that have been obstructed or experienced stone formation must be maintained on prescription diets indefinitely. Caution: we have seen failures when owners try non-prescription diets that claim to prevent LUTD or claim low magnesium levels. Talk to us before you make such a change.

Cats with calcium oxalate crystals and stones are maintained on prescription diets indefinitely.

Recurrence in cats with idiopathic LUTD is as high as 30-50%. This may happen weeks, months, or years later. Idiopathic LUTD is difficult to prevent since we can't direct a

treatment or prevention at a specific cause. Reducing stress, weight reduction in obese cats, a good litter box environment, and encouraging good hydration probably help. Maintaining good hydration seems particularly important. Canned food is preferred over dry. Add water to dry and canned foods, make plenty of fresh water available in inviting ways, and consider a circulating water fountain.

The *Home Treatment Checklist* is included on the next page. Make sure to note the treatments suggested by our doctor.

## Home Treatment Checklist

[ ] Prazosin: reduces painful urethral spasm and promotes ease of urination. Prazosin is given twice daily during the early phases of LUTD.

[ ] Cats with struvite crystals and stones are treated with low magnesium diets formulated to keep the urine acid, at a pH near 6.0. Hills C/D Multicare, Purina UR, Royal Canin Urinary SO are maintenance diets available in canned and dry rations. Prescription diets are invaluable in treating and preventing struvite crystal formation.

[ ] Cats with calcium oxalate crystals and stones can be prevented with special prescription diets. When you are purchasing prescription diets it is very important to identify the exact diet your cat is fed. As a rule, canned foods with increased water content are favored over dry foods. Moistening dry formulations and adding water to canned food is helpful.

[ ] Urinary acidifiers: are used in some struvite cases to keep the urine near 6.0, especially when cats will not eat prescription diets adequately or when prescription diets are less effective at lowering the urine pH. DL-methionine or ammonium chloride are our choices.

[ ] Oral antibiotics: for 14 days or longer. Please use the entire course of antibiotics even if your cat appears fine.

[ ] Promote increased water intake: to keep your cat better hydrated, encourage larger volumes of dilute urine and flush out the urinary tract. **Canned foods are preferred over dry foods** due to increased water content. Adding water to dry food and even wet food is helpful. Make plenty of fresh water available in inviting ways. Avoid plastic bowls that impart a disagreeable taste to the water. A wonderful tool for encouraging water drinking is a small circulating water fountain that can be purchased in pet stores. Moving water, which mimics natural sources of fresh water, fascinates cats. Please remember to clean and maintain circulating water fountains regularly.

[ ] Litter box etiquette: An unpleasant bathroom experience may cause your cat to hold his or her urine. Cats need a clean and pleasant toilet. Scoop the waste from the litter box once a day, twice daily in multiple cat households. At least once a week, wash litter boxes and replace old litter with two inches or more fresh litter. Provide one litter box per cat. Large cats should have the largest litter box. Place litter boxes in quiet and accessible locations. In multiple cat households, two or more litter box locations are recommended. Other considerations: Most cats prefer uncovered litter boxes to covered boxes. Scoopable clumping litters and old-fashioned clay litters are preferred by cats over litter pearls, paper, cedar, and other types of litter products. Cats like unscented litters more than scented litters. Avoid baking soda or other cat litter additives and lightweight cat litters.

[ ] Other treatments:

- Lorazepam: \_\_\_\_\_
- Buprenorphine: \_\_\_\_\_
- Other: \_\_\_\_\_