



## FLUTD – Feline Lower Urinary Tract Disease

Feline Lower Urinary Tract Disease, or FLUTD, is a general term for disorders of the lower urinary tract in cats. The lower urinary tract refers specifically to the urinary *bladder*, the organ that stores urine, and the *urethra*, the tube that carries urine from the bladder to the outside world. Cats with FLUTD may have any of the following signs:

- Blood in the urine
- Difficult or painful urination
- Frequent urination
- Urinating outside of the litter tray or in unusual places
- Licking the urinary opening (a pain response)
- Urinary blockage and complete inability to urinate

The urinary tract tends to respond to disease in a similar manner, regardless of the cause, such that any cause of FLUTD may be associated with varying combinations of the above signs.

### Causes of FLUTD

FLUTD can be described as *non-obstructive* (no blockage to the passage of urine) or *obstructive* (urine passage is obstructed).

The most common causes of FLUTD are listed below:

#### **NON-OBSTRUCTIVE FLUTD**

- Feline idiopathic cystitis
- Bladder stones
- Bacterial infection
- Behavioural
- Structural defects
- Cancer

#### **OBSTRUCTIVE FLUTD**

- Feline idiopathic cystitis
- Urethral plug
- Bladder stone

- Bacterial infection
- Urethral spasm

The above causes of FLUTD may occur individually, or in varying combinations. For example, urethral plugs may occur with concurrent feline idiopathic cystitis and stones.

**Feline Idiopathic Cystitis (FIC)** – *cystitis* means “inflammation of the bladder” and *idiopathic* means “no identified cause”. Idiopathic cystitis is actually a very common cause of FLUTD. Recent research suggests that FIC may be caused by a complex interaction between the bladder nerves, the bladder lining and urine. When certain nerves in the bladder are stimulated either by the brain (i.e. from stress) or by stimuli in the bladder itself (such as urine, infection, stones etc), they are able to induce inflammation in the bladder, which leads to pain.

**Urethral plugs** – these develop from protein, cells and mucus from the bladder, and also crystals that are found in urine. Urethral plugs may develop during or after feline idiopathic cystitis. Urethral plugs are particularly important, as they may lead to partial or complete blockage of the urethra.

**Urethral spasm** – this is where the muscles of the urethra become very tense and tight, so much so, that they can cause the urethra to block. This most commonly occurs as a sequelae to other inflammatory disorders, such as FIC , urethral plugs or stones.

**Bladder stones** – otherwise known as uroliths, are named according to the minerals they are composed of. Common uroliths in cats include *struvite* and *calcium oxalate* uroliths. As well as causing inflammation and pain, stones may lead to partial or complete blockage of the urethra.

**Urinary tract infection (UTI)** – this is actually a fairly uncommon cause of FLUTD. It involves bacterial infection of the lower urinary tract. Sometimes infection may be *secondary*; that is, it occurs as a result of another, primary disease, such as stones, or cancer.

## Risk factors for FLUTD

Risk factors for the development of FLUTD include:

- **Diet** – high levels of certain types of minerals in food can increase the chance of crystals forming in the urine. Struvite crystals are one of the most common types of crystals found in urine and are chiefly composed of magnesium and phosphate. Therefore, it can be helpful to reduce the amount of these minerals in the diet. Crystal formation in urine also depends on the *pH* (how acidic or alkaline) of the urine, which in turn is influenced by diet – thus foods that promote a healthy urine pH are important to help prevent urine crystal formation. In addition, if the pH of the urine is too acidic or too alkaline, it can cause inflammation of the lining of the bladder.
- **Behaviour** – behaviours that may cause cats to urinate less frequently can increase the risk of FLUTD. For example, an indoor, sedentary lifestyle, reduced water intake or dirty litter trays may lead to less frequent urination and this may in turn increase the risk of FLUTD
- **Weight/body condition** – being overweight may increase the risk of FLUTD in cats.

- **Gender** – although both male and female cats can develop FLUTD, urinary obstruction is much more likely to occur in male cats. This is because of the smaller diameter of the urethra in male cats.
- **Age** – the average age for the development of FLUTD is 4 years. It may occur in any cat, at any age, but is most commonly recognized in middle aged cats. Cats younger than one and older than ten are less likely to develop FLUTD.
- **Stress** – stress has been linked to the development of FLUTD signs.

### How is FLUTD diagnosed?

In cats showing signs of FLUTD, as listed earlier, it is important to take a urine sample. Analysis of this sample can help to differentiate between the different underlying causes of FLUTD. The presence of inflammation, crystals, blood and infection can be detected by analyzing a urine sample. In some cases, blood tests may be required, or occasionally, x-rays or ultrasound.

### Managing FLUTD

FLUTD does require treatment, as it is a painful and distressing condition, with the propensity to become life threatening if it progresses to the obstructive form of the disease. Treatment involves both treating the current episode and also preventing recurrence in the future.

Treatment of the current episode will depend on the underlying cause:

- **Medications** may be required, including anti-inflammatory drugs to reduce pain and inflammation and antibiotics if infection is present. Sometimes, when urethral spasm is occurring, we need to use anti-spasmodic drugs, such as diazepam, which helps the muscles of the urethra relax, which in turns helps make it wider such that urine can pass through more easily.
- **Diet** plays an important role in urine pH and also in crystal formation. Feeding a diet specifically formulated for urinary health controls the level of magnesium and phosphorus in urine and also helps to maintain optimum urine pH.
- **Water intake.** Ensuring your cat drinks enough water is also important as crystals are much less likely to form in dilute urine. Supply free access to water and encourage your cat to drink – many cats will prefer to drink running water. This may include water sources such as a running tap, the shower or even purchasing a water fountain. Wet/ tinned foods tend to have a much higher content of water, so including specially formulated urinary diets that are tinned can help increase water intake.
- **MEMO:** Multimodal Environmental Modification. Please read the “keeping your cat busy & happy” handout

- Another critical component of managing cats with FLUTD, especially FIC, involves appropriate use and maintenance of litter boxes in the home. The majority of cats prefer clumping, unscented litter; however, it may be necessary to give cats several choices and let them select their preference. It may be possible to have cats within the home that prefer different types of litter or litter boxes. In general, uncovered litter boxes are recommended because they are less likely to trap odours inside. For older cats with mobility issues, the owner should select a litter box with low sides to facilitate the cat getting in and out of the box. Litter boxes should be scooped daily and washed every few weeks with warm, soapy water. Because plastic can absorb odours over time (months to years), owners should consider replacing litter boxes with new ones periodically. Finally, there should be an adequate number of litter boxes (the 1 + 1 rule = 1 more than the number of cats) in the home and they should be located on multiple floors where cats can enter and exit readily.