

## SECTION 2 | explaining the science of lower urinary tract disease

### What is feline lower urinary tract disease (FLUTD)?

Feline lower urinary tract disease (FLUTD) is a term used to encompass a number of conditions which affect the bladder and urethra. Your vet may also refer to this condition as cystitis. The definition of cystitis is inflammation of the urinary bladder. The symptoms of FLUTD are very similar regardless of the cause. This is a condition which is most common in young and middle aged cats.

FLUTD is sub-divided into obstructive and non-obstructive. Obstructive is the term used to describe cats with urethral obstruction. Obstructed cats are unable to pass urine and are often presented to their vets because they have been repeatedly straining to urinate without success. A lay term for this is a 'blocked' cat.

Patients with non-obstructive disease remain able to pass urine. Typically, these cats will be straining to pass small quantities of urine on a frequent basis.

### What is the urinary tract?

The urinary tract includes the organs involved in production of urine (the kidneys) and all of the structures involved in the transit of urine out of the body. This includes:

- The **ureters**: there are two of these – one for each of the kidneys. These tubes take urine from the kidneys to the bladder
- The **bladder**: this is where urine is stored prior to urination (micturition is the scientific name for urinating)
- The **urethra**: this is the tube which takes urine from the bladder to the outside

The term 'lower urinary tract' generally refers to the bladder and urethra. Thus lower urinary tract disease is illness affecting the bladder and urethra. Some other organs are closely involved with the lower urinary tract – in male cats this includes the prostate. In female cats, the urethra empties into the vagina.

### What causes FLUTD?

There are several important causes of lower urinary tract disease in cats. The frequency of the different causes does vary according to the age group of the cats as will be discussed in each section below. The different causes of FLUTD can occur separately or in interacting combinations. For example, bacterial infections can occur in association with bladder stones.

#### 1. Feline idiopathic cystitis (FIC) or idiopathic FLUTD (iFLUTD)

This is the most common cause of FLUTD in cats and is especially common in young and middle aged cats where it accounts for more than 50% of cases of FLUTD. In cats over 10 years of age, iFLUTD only accounts for 5% of cases with FLUTD. Idiopathic means 'cause unknown' so this category is one where all of the known causes of FLUTD have been ruled out. Affected cats often have several of the following factors in common:

- Overweight
- Lead a sedentary or very inactive lifestyle
- Indoor-only cats or have restricted access outdoors or dislike going outdoors



Cats that are overweight are more vulnerable to developing FLUTD.

- Use an indoor litter box
- Live in a multi-animal household. There is often tension between the FLUTD cat and other members of the household
- Neutered cats are more vulnerable than entire males (Toms) or entire females (Queens)
- Single cats living in indoor-only situations with little environmental enrichment are more vulnerable
- Cats that are very dependent on their owners and that suffer from separation anxiety are especially at risk of developing FLUTD

Persian and black and white domestic short haired cats may be over-represented with this condition and in the UK at least, **clinical signs** are often seasonal being worse from Autumn to early Spring.

FIC can be **obstructive** or **non-obstructive**. Male cats are most vulnerable to **obstructive** disease and this needs emergency treatment.

**Clinical signs** with **non-obstructive FIC** are usually self-limiting – in other words, the cats get better on their own, usually within five to ten days. However, most affected cats suffer from repeated episodes of **clinical signs** which can be very distressing to both cat and owner. In general the frequency and severity of these episodes gradually decreases with time.

Unfortunately, in spite of more than 30 years of research, no one knows the precise cause of FIC. It has been suggested that this condition is similar to an illness called interstitial **cystitis** – an idiopathic **bladder** disease affecting people. A recent **hypothesis** suggested that FIC is a condition seen when ‘a susceptible cat is placed in a provocative environment’ and that disease results from changes in the cat’s nervous and hormonal systems leading to an inability to cope with environmental stress. Affected cats are believed to suffer from defective information processing by their brain meaning that they are vulnerable to developing FIC when stressed. Genetic and/or developmental factors are thought to be very important in causing this problem. Genetic factors could account for the increased incidence of FIC in some families of cats. Stress in the peri-natal period (when the kitten is developing in the womb and during its first few weeks of life) is thought to cause abnormal development of the cats stress



Cats living in multicat households are more likely to suffer from FLUTD – especially if there is tension between the cats.

management system. The end result is altered processing within the brain and nerve supply between this and the bladder. It is not clear whether these cats have an abnormal stress response system which predisposes them to negative effects of chronic stress (such as FIC) or whether being in a state of chronic stress leads to malfunctioning of the stress response system. This situation may be further worsened by changes to the protective glycosaminoglycan layer which lines the bladder. This lining protects the bladder cells from coming into contact with

irritating substances which are normally present in the urine such as a salt called potassium.

Stress is believed to play a very important role in triggering and/or exacerbating FIC. Stress is defined as being 'acute' or 'chronic'. In medical terminology, acute means sudden (occurring over a period of up to a few days) whereas chronic conditions have been present for at least a couple of weeks. Causes of chronic stress and especially those which the cat has little or no control

over, are suggested to be the most damaging. Acute stress can also trigger **FIC** and this can include causes of stress which the cat is able to manage or evade through using normal coping strategies such as hiding.

Suggested **stressors** (causes of stress) include:

- Living in a multiple animal household, especially when there is conflict or tension between cats
- Moving house
- New additions to the house e.g. new cats, new babies
- Stress associated with urination – for example:
  - Competition for using a litter box affecting a cat’s ability to access the litter box.
  - Using a cat litter which the cat doesn’t like. For example changing the cat litter from something which the cat has used for years.
  - Placing the litter box in an unsuitable location. For example a litter box overlooked by cats outside the house or in a very busy part of the home.
  - Providing a dirty litter box
  - Providing a litter box which is difficult for the cat to access. For example an arthritic cat may have difficulty getting into a high-sided box.
- Sudden changes to the cat’s diet
- Bad weather deterring a cat from going outside when it normally uses the outdoors to urinate.

**Owner stress can be transmitted to the cat and if the owner/cat bond is very close this can be very stressful for the cat.**

- Other cats in the neighbourhood preventing a cat from going outdoors (or making life outdoors very stressful and unappealing)
- Building work in the house – especially if this affects core areas of the house such as the kitchen and areas where the cat spends a lot of its time.
- Changes to the owner’s schedule – for example working away from the home for longer periods, shift-working etc. Cats that are very ‘needy’ and dependent on their owners are especially vulnerable to stress associated with these changes.
- Owner stress can also be transmitted to the cat and if the owner/cat bond is very close this can be very stressful for the cat. Often the combination of cat and owner stress exacerbates each other and worsens the situation.

Reducing stress – especially causes of chronic stress – is therefore likely to be of great benefit to a cat suffering from **FIC**. Reducing stress should help to reduce the frequency and severity of bouts of **FIC**. Strategies for reducing stress in the home are discussed on pages 39-44.

Stress is thought to affect **FIC** cats in a different way to normal cats. Because of the changes in their nervous system and processing of information, they respond to stress by showing