



Feline Lower Urinary Tract Disease/Inflammation (FLUTI)

Also Known as Feline Cystitis or Pandora Syndrome

What is FLUTI?

FLUTI is an inflammatory condition in cats that results in irritation and inflammation of the bladder and urethral lining. This often leads to thickening of the bladder wall. Both female and male cats can be affected. Male cats with FLUTI are at risk of urinary obstruction which is an emergency situation.



What are the clinical signs of FLUTI?

The most common clinical signs of FLUTI are:

- Blood in urine
- Pain when urinating (vocalizing)
- Inappropriate urination (urinating outside the litter box)
- Frequent attempts to urinate small amounts or straining
- Increased licking or grooming of the prepuce or vulva area

How is FLUTI diagnosed?

A full physical exam will be performed to check for pain or any other abnormalities. Special attention will be paid to the bladder to ensure that it is not too large or obstructed. A sample of urine will be collected and examined under the microscope or sent to the laboratory for a culture. The urine sample will be examined for signs of inflammation, infection, crystals and blood. Blood work may be recommended to verify the proper functioning of the internal organs, including the kidneys. An x-ray can be used to look for urinary stones in the bladder as these can serve as a source of inflammation or infection. Finally, ultrasound is highly sensitive for looking for bladder stones and can also be used to assess bladder wall thickness and aid in urine collection.

Common physical exam and laboratory findings include:

- Crystals in the urine
- Red blood cells in the urine
- White blood cells in the urine
- Bacteria in the urine (occasionally)
- Thickened bladder wall
- Mucous plug at tip of the urethra in males
- A large, painful bladder that is obstructed (males)
- Overweight or obese patient

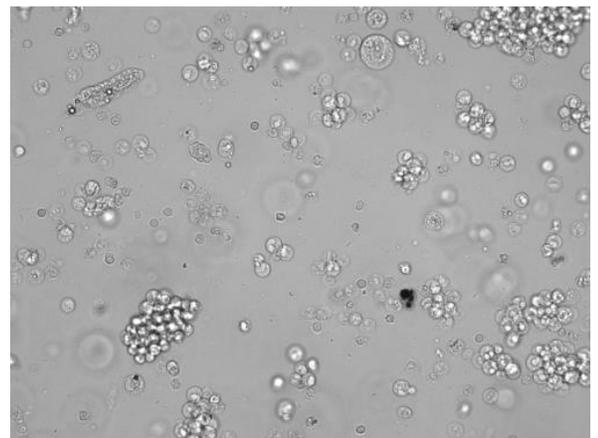


Figure: Many white blood cells, red blood cells and bacteria in a urinalysis seen through the microscope under high power.



What causes FLUTI?

The current accepted theory is that stress plays a significant role in causing FLUTI. Just as people may get headaches when they are stressed in life, cats can get FLUTI when they are stressed. Sometimes it is clear what may be causing stress for the cat, for example moving houses, having construction done at the house or even anxiety due to other cats in the house. Other times it is not as obvious why they may be stressed. Additional signs of stress other than FLUTI may be subtle or not apparent.

How is FLUTI treated?

1. **Stress:** As stress is a contributing factor, stress management is recommended in the treatment plan. Removing the stressor, if known, increasing play time/interaction with your cat, providing toys, providing multi-level cat trees etc. can all be done to decrease stress. Pheromones like, Feliway, can be used to decrease stress in cats.
2. **Litter Boxes:** Ensure your cat has easy access to at least one regularly cleaned litter box. The litter substrate should be one that is preferred by your cat and it should be placed in an area that is free from loud noises or obstructions. If you have more than one cat you should have more than one litter box.
3. **Water:** Increasing water intake will help dilute the urine and any irritants in the urine. This can help flush out any crystals from the bladder and prevent their build up.
4. **Diet:** Dietary management is also important. Urinary specific diet such as Royal Canin's Urinary S/O, Hill's c/d, Hill's c/d stress or Purina's UR can help prevent crystal formation and dissolve certain crystals that have already formed. These diets will also help regulate the urine pH and encourage more water intake to further flush crystals.



5. **Antibiotics:** If a bacterial infection is noted, then antibiotics will be prescribed.
6. **Blockage:** As inflammation causes swelling, this can have a dramatic effect on the urethra, which can then become obstructed. If an obstruction has occurred (blocked, not able to pass urine), this is a life-threatening condition and needs to be addressed immediately. A urinary catheter is usually placed to remove any blockage and to aid in draining and flushing the bladder. Once the urinary catheter is removed, your cat will likely stay in the hospital a little longer to ensure they are urinating normally before going home.
7. **Anti-spasmodic and muscle relaxants:** Medications to help relax smooth muscle and the urethral sphincter are often used. These can be helpful in trying to prevent urinary blockage.
8. **Pain control:** Controlling your cat's pain associated with FLUTI is important to allow healing to occur, therefore medications for pain control are often prescribed.
9. **Cartrophen:** A nutraceutical injection of Cartrophen (pentosan polysulfate) can help keep the bladder lining healthy with good integrity. Use of these medications has been extrapolated from studies performed in women with cystitis. These injections are typically given once weekly for the first 4 weeks, then monthly for 4-6 months.
10. **Weight loss:** Weight loss in overweight or obese cats will be important for prevention of future events.
11. **Behaviour modification medications:** Some cats will benefit from behaviour modification medications to help decrease stress and anxiety.





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What is the prognosis of cats with FLUTI?

Prognosis can vary depending on the severity of the condition at the time of presentation. FLUTI is a condition that will require management, very often for life, in order to help prevent future recurrences. With proper management, your cat can lead a normal life.

Related Readings

The indoor cat initiative

<https://indoorpet.osu.edu/cats>

Feline Idiopathic Cystitis (FIC)

<http://www.pethealthnetwork.com/cat-health/cat-diseases-conditions-a-z/feline-idiopathic-cystitis-fic>

Idiopathic Cystitis in Cats

<http://www.pethealthnetwork.com/cat-health/cat-diseases-conditions-a-z/feline-idiopathic-cystitis-fic>