

# Feline Lower Urinary Tract Disease (FLUTD)

## What Is FLUTD?

FLUTD is a term that veterinarians use to describe a set of problems affecting the lower urinary tract in cats. It was formerly known as FUS (Feline Urologic Syndrome).

FLUTD is well-known to veterinarians, with approximately 10% of the cats seen by them having signs of urinary problems. However, FLUTD is not a common disorder in cats in general; it is estimated that FLUTD affects less than 1% of the overall cat population.

## Causes and Associated Factors

In many cases of FLUTD, the cause is idiopathic or unknown. In those cases where there is a known reason, the most common cause is urolithiasis, or the formation of stones from accumulations of crystals in the urinary tract. This may be so severe that it completely obstructs the urinary tract and prevents urination.

Many other factors have been associated with this condition, such as gender, age, body weight, environmental conditions, and stress. Simply changing a cat's routine or environment may trigger the onset of FLUTD. Owners may minimize their cat's risk of developing FLUTD by

- Providing routine veterinary care
- Providing fresh, clean water at all times
- Minimizing stress and providing a comfortable living environment

## Signs of FLUTD

Clinical signs vary with this condition. They may be a result of inflammation or irritation of the urinary tract or due to its complete blockage. Signs of FLUTD include, but are not limited to, the following:

- Frequent urination
- Difficult or painful urination (i.e., cat may try to urinate but cannot or cries when straining to urinate)
- Inappropriate urination (i.e., cat may urinate outside of the litterbox)
- Blood-tinged urine
- Excessive licking of genital area

A cat owner who notices any of these signs should contact their veterinarian, as FLUTD may be a life-threatening situation.

## Diet Effects on FLUTD

Diet can affect the development of FLUTD because dietary factors have been associated with the formation of some types of urinary stones, or uroliths. This is particularly true for one of the most common types of stones seen in FLUTD, called struvite. Struvite stones are made up of minerals (magnesium-ammonium-phosphate) that form crystals in the urine.

The most important diet-related factor in the formation of struvite stones is urine pH (amount of acidity or alkalinity).

- More alkaline urine (pH higher than 6.8) increases the likelihood of struvite crystal and stone formation

- Urine pH is naturally influenced by the protein source in the diet
  - Cat foods that contain large amounts of animal- and fish-based protein produce a more acidic urine
  - Cat foods that contain large amounts of plant protein, such as soybean meal, may promote a more alkaline urine
- Urine pH is also influenced by how often the cat is fed
  - Urine pH becomes alkaline after a meal
  - When food is always available and a cat nibbles throughout the day, urine pH does not become as alkaline

Another factor that affects the formation of struvite stones is the amount of magnesium consumed through the diet.

- When the cat's diet contains more magnesium than needed for the body's functions, the extra magnesium is excreted into the urine. That extra magnesium could contribute to the development of a struvite stone if other conditions are met.
  - If the urine pH is less alkaline (more acid, 6.8 or lower), large amounts of magnesium are required for the formation of struvite crystals.
  - If the urine pH is more alkaline (higher than 6.8), it takes lower amounts of magnesium to promote the formation of struvite crystals.

To minimize the likelihood of struvite stones and signs of FLUTD, a cat food should produce an acidic urine (pH less than 6.8) and contain low dietary levels of magnesium (less than 0.12% on a dry-matter basis). Increasing water intake by feeding wet food, dry food mixed with water, using a pet drinking fountain, or using flavored water may help to reduce the recurrence of idiopathic FLUTD.

### *Nutritional Application*

- Eukanuba® and Iams® adult feline formulas provide low dietary magnesium and are formulated to produce an acidic urine pH.
- Feeding the cat at regular time intervals in the same comfortable location may help minimize the risk of developing FLUTD.
  - Diets that are low in magnesium content, like Eukanuba® and Iams® adult cat formulas, can be fed as several daily meals or made available for nibbling throughout the day
- Diets that are high in moisture content, such as Iams® and Eukanuba® wet feline formulas, may help to minimize the recurrence of idiopathic FLUTD.