

# Feline Lower Urinary Tract Disease

## SIGNS:

- Excessive straining when urinating
- Blood in the urine
- Frequent trips to the litter tray
- Urinating indoors or in inappropriate places
- Restlessness, hiding away, refusal to eat
- Signs of pain and discomfort
- Not urinating regularly

### Feline interstitial Cystitis (FIC)

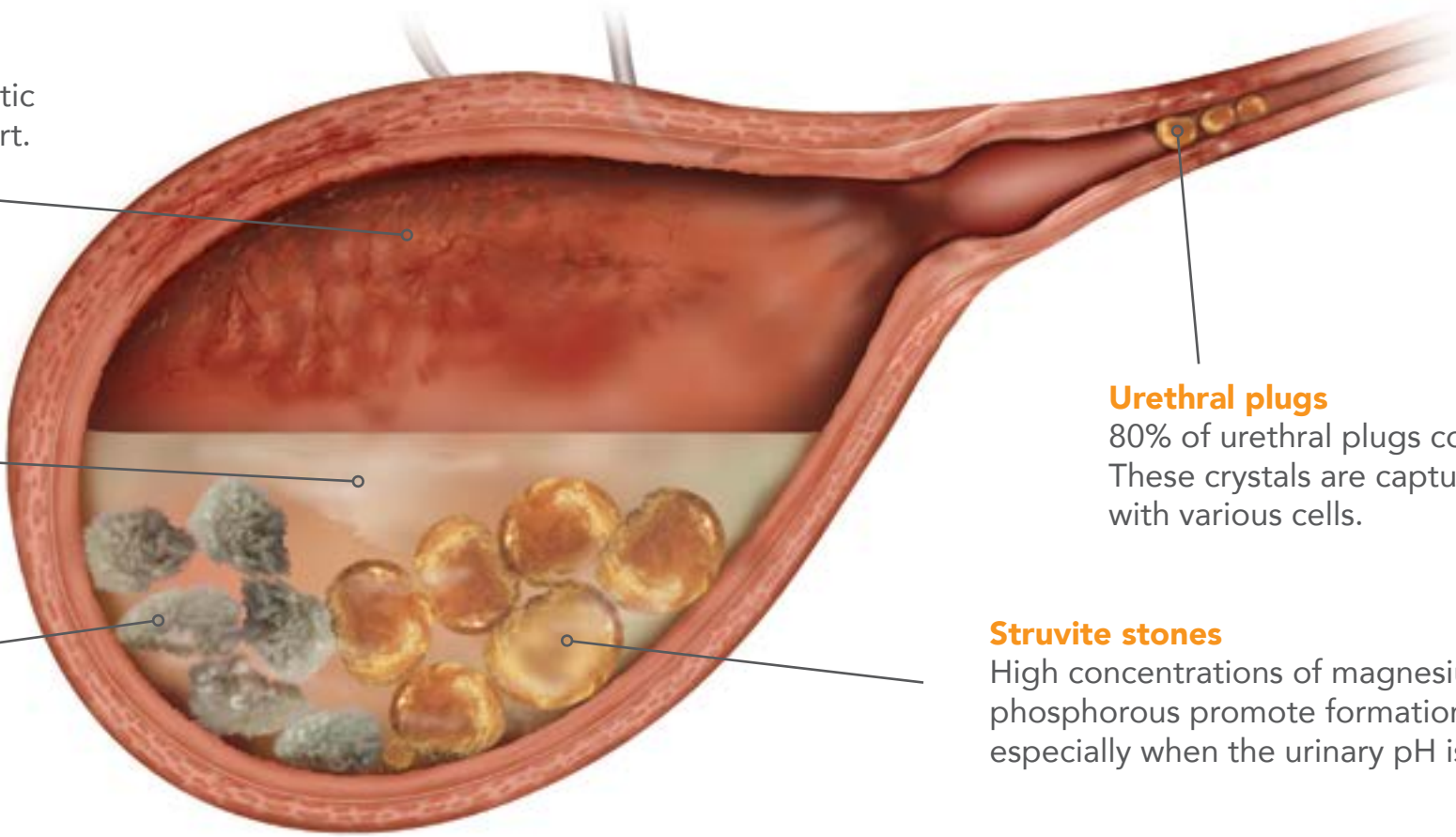
In cases of FIC an over stimulated sympathetic nervous system results in pain and discomfort. The cause of FIC is unknown but stress is a major risk factor.

### Struvite + Calcium oxalate crystals

Urinary pH above 6.5 is a risk factor for the development of struvite crystals. A pH between 6.2 and 6.4 does not stimulate the formation of calcium oxalate, but a more acid pH ( $\leq 6.0$ ) increases the risk significantly.

### Calcium oxalate stones

High concentration of calcium and oxalate + a low concentration of citrate promote the formation of calcium oxalate stones.


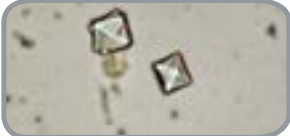


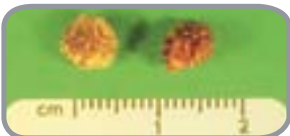



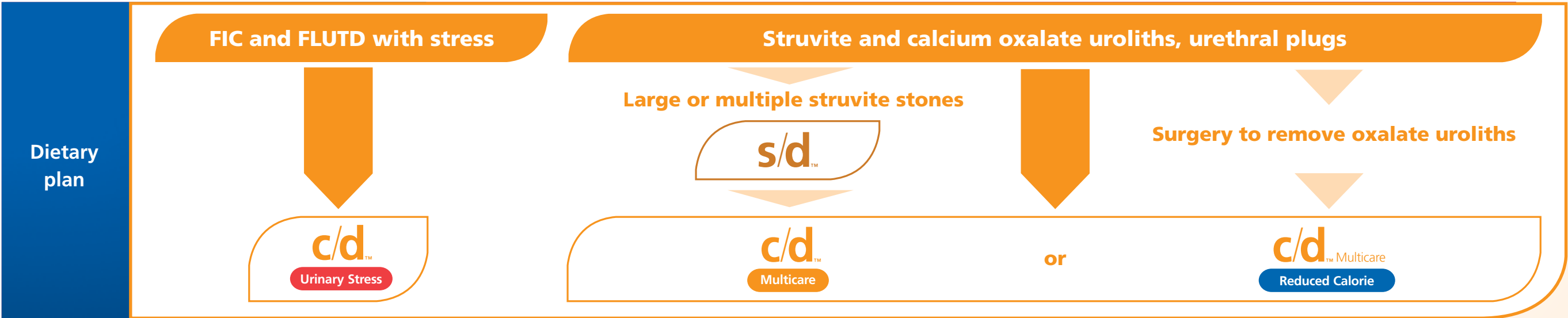
### Urethral plugs

80% of urethral plugs contain struvite crystals. These crystals are captured in a protein matrix with various cells.

### Struvite stones

High concentrations of magnesium, ammonium and phosphorous promote formation of struvite stones; especially when the urinary pH is above 6.5.

Cause	FIC	Uroliths / crystals		Plugs
				
	Inflamed bladder	Calcium oxalate crystal	Struvite crystal	Macro view of plug
				
		Calcium oxalate stone	Struvite stone	
Common risk factors				
Age	Any	4 – 15	2 – 10	2 – 10
Weight	Overweight	Overweight	Overweight	Overweight
Urine pH	Any	pH $\leq 6.0$	pH $> 6.5$	Alkaline
Lifestyle	Indoor / sedentary	Indoor / sedentary	Indoor / sedentary	Indoor / sedentary
Breed	Domestic Shorthair, Persian, Himalayan	Persian, Himalayan	Domestic Shorthair, Persian, Himalayan	Not specified
Other	Stress, low water intake	Low water intake, steroids, etc.	Excessive magnesium intake in the presence of alkaline urine, alkalinising foods	Excessive magnesium intake, alkalinising foods
Gender	Not specified	Males	Females	Males
Non-dietary management	Behavioural enrichment, increase water intake, anti-inflammatory agents and analgesics, anticholinergics	Non surgical methods for stone removal Surgical removal	Non surgical methods for stone removal Surgical removal	Non surgical methods for plug removal Surgical removal



### Prescription Diet™ c/d™ Urinary Stress

Nutrition clinically proven to reduce the recurrence of FIC signs by 89% and contains ingredients to control stress.



### Prescription Diet™ c/d™ Multicare

Clinically proven to dissolve sterile struvite stones in as little as 7 days (Average 27) and helps prevent recurrence.



### Prescription Diet™ c/d™ Multicare

Available in Reduced Calorie for overweight cats.



### Prescription Diet™ s/d™

Dissolution of larger or multiple struvite uroliths in cats.



Clinical nutrition to improve quality of life™