



### ABOUT THE DISEASE

**Urinary crystals** are microscopic crystals, that in the right conditions, can combine together to form bladder or kidney stones. Please see the documents on these diseases for additional information.

Several different types of **urinary crystals** can form, but the two main types are composed of:

- Struvite – combination of ammonium, phosphate, and magnesium
  - In some circumstances, these crystals may also form when a patient has a urinary tract infection
- Calcium Oxalate – as the name suggests, a combination of calcium and certain oxalates

Generally, there are very few clinical symptoms of **urinary crystals**, until patients develop secondary urinary tract infections. Please see the [Urinary Tract Infection](#) for additional information.

Some symptoms may include:

- Straining to urinate (stranguria)
- Increased frequency of urination, while urinating small amounts at one time (pollakiuria)
  - This is not to be confused with an increased frequency of urination, with large amounts of urine (polyuria)
- Blood in the urine (hematuria)
- Painful urination (dysuria)
- Urethral Obstruction
  - More prevalent in male feline patients, typically caused by both inflammatory debris, infectious debris, and crystalline debris that plugs the urethra.
  - Please see the [Feline Urethral Obstruction](#) document for additional information.

### OBTAINING A DIAGNOSIS

Performing a urinalysis will detect the presence of **urinary crystals** and a secondary urinary tract infection.

Ultrasound can often find large amounts of sediment in the urinary bladder, but will not be able to differentiate between type of crystal present. X-rays (radiographs) are not an effective diagnostic tool for diagnosing **urinary crystals**.

A urine culture and sensitivity may be utilized in cases that are poorly responding to antibiotic therapy. With this test, the bacteria are grown at a reference laboratory which helps guide antibiotic therapy. However, even with bacteria found in-clinic, there is a 25% chance of bacterial growth at the reference laboratory. While a culture and sensitivity can help guide therapy, it should not be the sole criteria to stop treating a patient with distinctive symptoms.

### TREATMENT

Most immediately, patients often require treatment of underlying urinary tract infection.

Once a patient has been diagnosed with **urinary crystals** there are no store-bought foods or treats that can be fed without increasing the risk of reformation of **crystals**. These prescription diets are formulated by nutritionists and veterinarians to specifically support urinary tract and bladder health.

Once such company, Royal Canin Veterinary Diet ® has created a food called Urinary S/O ®, which has several different mechanisms to dissolve and prevent **urinary crystals**. Some of these benefits include:

- Struvite dissolution – proven to effectively dissolve pure struvite uroliths
- Low Relative Super Saturation (RSS) – decreased risk of struvite and oxalate crystalline formation utilizing technology that predicts the crystallization potential of urine
- Urine dilution – entice thirst to increase urine volume and reduce the saturation of the urine with precursors to struvite and oxalate crystals

### TIPS FOR SUCCESS

- Maintain dietary restrictions to prescription food, without exception.
  - Do not mix other store-bought foods, do not add treats, and do not add people foods
  - There are no store-bought or home-made diets that can replace the prescription foods