Protocol for Management of Struvite Urolithiasis in Cats

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This protocol is intended only as a guideline. For specific questions, please do not hesitate to contact the laboratory.

After the stone(s) is (are) removed or dissolved (see “dissolution” protocol for further information), perform two view abdominal radiographs to ensure no small cystic or urethral calculi remain.

1. Submit the stones to the G. V. Ling Urinary Stone Analysis Laboratory for quantitative crystallographic analysis.
2. Submit a urine culture and sensitivity, and initiate appropriate antibiotic therapy if indicated.
   a. Unlike dogs, most struvite stones in cats occur in sterile urine. If urease-producing bacteria are present, please feel free to call the laboratory for further management advice.
3. Dilute urine and frequent urination is critical for managing patients with any type of urolithiasis. Reevaluate the cat in three to four weeks (or after the owner feels they have increased the moisture content appropriately) followed by regular monitoring of specific gravity, pH, and presence of crystals.
   a. Specific gravity and pH may be more reliably assessed from a urine sample collected in the animal’s natural environment.
   b. The use of a pH meter is more accurate than urine dip strips
      - Urinary acidifiers (such as methionine and ammonium chloride) should only be used for cats with a consistent average urine pH > 6.5 measured under ad libitum feeding conditions on a struvite preventative therapeutic diet.*
      - Acidifying agents are contraindicated in cats with calcium oxalate urolithiasis, and have no known value in the treatment of other lower urinary tract disorders. They are rarely needed in cats with struvite uroliths because the therapeutic diets available for this condition are formulated to achieve the recommended degree of urinary acidification without additional supplementation.
   c. Urine should be very fresh (evaluated within 30 minutes) for sediment examination.
      For cats with a history of struvite stones, the sediment should not contain a large concentration of struvite crystals.
   d. If urine specific gravity is not ideal (<1.025 for cats), add more water to the diet. Alternatively, low salt tuna, clam or beef broth can be added. Encourage water intake via additional water bowls, water fountains, faucets, and flavored water.
      - Schedule periodic reevaluations until the desired urine pH, specific gravity, and urine sediment is acceptable. Owners can collect urine samples at home.
4. Radiograph the cat periodically (2-3 times per year) to be certain no stones are visible.
Client information sheets regarding urolithiasis are available here: http://www.vetmed.ucdavis.edu/vmth/small_animal/nutrition/client_info_sheets/uroliths.cfm

If you are a veterinarian and wish to discuss specific dietary recommendations for your case, please contact the G. V. Ling Urinary Stone Analysis Laboratory (530-752-3228 or stonelab@ucdavis.edu), OR the UC Davis Nutrition Support Service (530-752-7892 or nssvetmed@ucdavis.edu) http://www.vetmed.ucdavis.edu/vmth/small_animal/nutrition/index.cfm.

* As a public institution, UC Davis does not endorse any particular brand or type of pet food. The higher moisture content of canned formulations is helpful in stone prevention. Any dietary management plan should take into consideration concurrent diseases and other individual client and patient factors. **Dietary management plans for any patient that is overweight, or that has a low energy requirement, or that has any other concurrent disease should be individualized to optimize efficacy and avoid problems.** The reader is encouraged to discuss dietary strategy with a veterinary nutritionist; **a customized approach is often indicated.** There are large variations in the nutritional profiles of various diets marketed for urolithiasis management (see list below), while other diets can be effectively used 'off-label' for this purpose.

**Commercially Available Diets Marketed for Management of Feline Struvite Urolithiasis:**

1. Iams Veterinary Formula Urinary S-Low pH/S Feline canned and dry
2. Purina Veterinary Diet UR Urinary St/Ox Feline Formula canned and dry
3. Hill’s Prescription Diet r/d Feline canned and dry
4. Hill’s Prescription Diet w/d Feline canned and dry
5. Hill’s Prescription Diet c/d Multicare Feline canned and dry
6. Royal Canin Veterinary Diet Feline Urinary SO canned and dry