



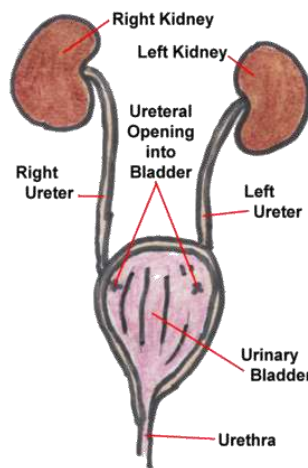
## Bladder Stones

Bladder stones can form in the bladder for a variety of reasons. They irritate the bladder and can cause increased drinking, increased urination, bloody urine, pain, decreased appetite, and weight loss.

Stones can also lodge in the urethra and cause an obstruction. This will prevent your pet from being able to urinate and is a medical emergency that needs immediate attention.

### Understanding the Urinary Tract

The urinary tract's job is to get rid of waste material from the body and to reabsorb needed water and nutrients. The kidneys (one on each side) filter the blood. The waste they remove (urine) goes to the bladder via small tubes called ureters.



The bladder collects and stores the urine until it is expressed from the body. The tube that leads from the bladder to the outside of the body is the urethra. Male pets have a long, thin urethra while females have a shorter, slightly wider urethra. This difference causes males and females to be prone to different urinary problems.

### Stone formation



A urinary stone is simply a buildup of minerals that resembles a stone. They can be large like river pebbles or small like grains of sand (and anywhere in between).

The surface may be smooth or it may be pointy. The type of minerals in the stone determines what shape it takes, when and how it forms, if it shows up on x-ray, and how it's treated.

A stone can form in the bladder when the environment is correct for stone formation. This is usually due to an abnormal pH of the urine or the result of a urinary tract infection. What your pet eats helps determine the pH of urine.

Urinary tract infections usually occur when bacteria have entered the urethra and traveled up to the bladder. This is much more common in females since they have short urethras. It is also more common in dogs than cats. A urinary tract infection can also occur in pets that are immune compromised (such as old age, medicine that decreases the body's infection fighting ability, or other ongoing diseases).

### Signs

A pet that has urinary stones (without a blockage) will have increased drinking and urination. You may notice your pet urinating small amounts often. Bloody urine is common but can be easy to miss. Since bladder stones are painful, you may notice changes in your pet's behavior (irritation, decreased appetite, pain when touching the abdomen). Your pet may lick its genital area more often. Weight loss can also occur.

A pet with stones and a urinary blockage is not able to pass any urine. ***This is a life-threatening situation and your pet needs to see a veterinarian immediately.*** Your pet will strain to urinate without producing any actual urine. He may also cry out. If you think your cat is having this problem, check the litter box after they leave to see if any urine is present. If you do not see more than a few drops or if you aren't sure, go to the vet immediately.



### **Diagnosis**

These signs can mimic other diseases. Therefore, your pet needs several tests for proper identification of urinary stones. Your pet will have a urinalysis, a urine culture, and x-rays or ultrasound. Some pets will also need a complete blood count and a chemistry panel

A urinalysis lets us know important qualities of the urine such as pH, bacteria, or blood. A urine culture tells us if your pet has an infection and the best antibiotic to use. Most stones are visible with x-rays. However, sometimes they are too small or made of a non-radiographic material. In these cases, we need to do ultrasound.



A complete blood count lets us know if there is an infection going on, a bleeding disorder, or if too much blood is lost. A chemistry panel allows us to see how well the kidneys are working and helps rule out other diseases such as diabetes.

### **Treatment**

We need to remove most bladder stones with surgery. If the stones are composed of struvite, a special food may help to dissolve the stone. Unfortunately, we don't know what the exact composition of the stone is without removing it. In addition, this can take many months and leaves the risk of urinary blockage.

Antibiotics will treat any infections present as well as help prevent any from occurring. Your pet will also need pain medicine before and after surgery. When there is kidney damage or other problems, these are treated with additional medications.

For pets that have blocked, they need hospitalization with a urinary catheter to remove the blockage, intravenous (IV) fluids, antibiotics, and pain medicines.

### **Long Term Management**

After surgically removing the stones, we send them to a lab for analysis. This tells us what the stone is composed of and how to prevent stones in the future.

Special prescription foods will prevent most recurrences. Other supplements to support bladder (and kidney) health include fish oil, probiotics, and glucosamine/chondroitin.

Making sure your pet has plenty to drink is also important for bladder health. Feed canned food or add water to the food. Have several water bowls available. Some pets prefer running water. Leave a faucet on or buy a fountain to encourage drinking.



For stones caused by an infection, test a urinalysis and urine culture every 6 months to avoid recurrence.

For male pets with repeated blockages, a surgery can shorten the urethra. A shorter urethra means that stones are more likely to pass through rather than obstructing.