

# Whole Dog Journal™



## Canine Kidney Stone and Bladder Stone Prevention

### How to prevent and treat your dog's struvite crystals and stones.

By CJ Puotinen, Mary Straus

*[Updated August 6, 2018]*

#### URINARY STONES IN DOGS: OVERVIEW

1. Become familiar with the symptoms of urinary stones and respond quickly if you see them.
2. Request a urine culture and sensitivity test to check for infection even if your veterinarian doesn't think it's necessary.
3. Encourage your dog to drink extra water and give her frequent opportunities to urinate.
4. Don't expect a low-protein diet to cure or prevent struvite stones.
5. Learn how to test your dog's pH to check for recurring urinary tract infections.

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Humans aren't the only ones who get kidney and bladder stones. Our dogs develop these painful and dangerous conditions, too. But much of what is said and done about canine urinary tract stone disease (also known as bladder stones, urolithiasis, urinary stones, ureteral stones, urinary calculi, ureteral calculi, or urinary calculus disease), including its causes and treatment, is either incorrect, ineffective, or potentially harmful. Here's the information you need in order to make informed decisions on behalf of your best friend.

Most canine uroliths, or bladder stones, fall into six categories, depending on their mineral composition:

- **Magnesium ammonium phosphate (also called struvites)**
- **Calcium oxalate**
- **Ammonium urate or uric acid**
- **Cystine**
- **Calcium phosphate**
- **Silica**



There are also compound or mixed stones consisting of a core mineral surrounded by smaller amounts of another mineral, most commonly a struvite core surrounded by calcium phosphate. In veterinary reports, the terms stone, urolith, and calculus (its plural is calculi) are used synonymously.

Monitoring the pH of your dog's urine can alert you to a recurrence of a urinary tract infection. Collecting a sample to test is not difficult; use a clean paper cup and a pair of tongs or a "pick up" tool. Or, just slide a clean dish under your dog as she urinates! You need to catch only a few drops to test.

Because different stones require entirely different treatment –and often completely opposite treatment –it's critical to identify the type of stone accurately. Without removing a stone there is no way to know for sure, but a good guess can be made based on urinary pH; the dog's age, breed, and sex; type of crystals, if present; radiographic density (how well the stones can be seen on x-ray); whether infection is present; and certain blood test abnormalities.

Between 1981 and 2007, the Minnesota Urolith Center at the University of Minnesota's College of Veterinary Medicine analyzed 350,803 canine uroliths. The highest percentage came from mixed breeds (25 percent), Miniature Schnauzers (12 percent), Shih Tzus (9 percent), Bichons Frises (7 percent), Cocker Spaniels (5 percent), and Lhasa Apsos (4 percent). The remaining 38 percent were collected from 154 different breeds.

Veterinary studies conducted around the world on millions of urinary stones show similar demographics. Although kidney and bladder stones can afflict dogs of both sexes, all breeds, and all ages, those at greatest risk are small, female, between the ages of 4 and 8, and prone to bladder infections. Although male dogs develop fewer stones, the condition is more dangerous to them because of their anatomy. Stones are more likely to cause blockages in the male's longer, narrower urethra.

In 1981, 78 percent of all uroliths tested at the Minnesota Urolith Center were struvites and only 5 percent were calcium oxalate stones, but by 2006 the struvite occurrence had fallen to 39 percent while the incidence of calcium oxalate stones rose to 41 percent. Researchers investigating the trend have not discovered a reason for the change but are exploring demographic risk factors such as breed, age, gender anatomy, and genetic predisposition along with environmental risk factors such as sources of food, water, exposure to certain drugs, and living conditions.

## Bladder Stones in Dogs

When bladder stones form, their minerals precipitate out in the urine as microscopic crystals. If the crystals unite, they form small grains of sand-like material. Once grains develop, additional precipitation can lead the crystals to adhere together, creating stones. Some stones measure up to 3 or 4 inches in diameter. Problems develop when stones interfere with urination.

Some dogs with stones never develop symptoms and their stones are never diagnosed or are discovered during routine physical exams when the abdomen is palpated. X-rays, which can be used to confirm the diagnosis, reveal stones as obvious white circles unless they are radiolucent (invisible to X-rays), in which case a dye injected into the bladder makes them visible.

Symptoms of stones can include blood in the urine (hematuria), the frequent passing of small amounts of urine, straining to produce urine while holding the position much longer than usual, licking the genital area more than usual, painful urination (the dog yelps from discomfort), cloudy and foul-smelling urine that may contain blood or pus, tenderness in the bladder area, pain in the lower back, fever, and lethargy. If a stone blocks the flow of urine, its complications can be fatal.

When surgery is necessary, uroliths are removed by a cystotomy, a procedure that opens the bladder. Stones lodged in the urethra can be flushed into the bladder and removed. Stones that are small enough to pass in the urine can be removed in a nonsurgical procedure called urohydropropulsion. A catheter is used to fill the sedated dog's bladder with a saline solution and the bladder is squeezed to expel the stones through the urethra. Other procedures are used for more complicated cases.

All dogs who have formed a urolith are considered at increased risk for a recurrence. According to Dennis J. Chew, in a paper delivered at the 2004 Small Animal Proceedings Symposium of the American College of Veterinary Surgeons, "Water may be the most important nutrient to prevent recurrence of uroliths. Increased water intake is the cornerstone of therapy for urolithiasis in both human and veterinary medicine. Increasing water intake to dilute urine and increase frequency of urination is an important part of treatment. Decreasing the concentration of potential

stone-forming minerals in urine and increasing the frequency of voiding are the key elements of therapy to reduce the risk of formation of a new urolith.”

It’s easy to interest most dogs in drinking more fluids by making sure that plain water is available at all times, adding broth and other flavor enhancers to water in an additional bowl, and adding water or broth to food. Just as important is the opportunity to urinate several times a day. Stones and crystals form in supersaturated urine, which can occur when dogs have to hold their urine for long periods.

This month, we’ll discuss struvite uroliths. Calcium oxalate uroliths will be discussed in the next issue.

## Struvite Stones in Dogs

Struvite uroliths belong to the magnesium ammonium phosphate (MAP) category. Struvites are also known as triple phosphate uroliths, a term dating from an old, incorrect assumption that the struvite crystal’s phosphate ion was bound to three positive ions instead of just magnesium and ammonium. Although struvites can develop in the kidneys, where they are called nephroliths, the vast majority are bladder stones. About 85 percent of all struvite stones are found in female dogs and only 15 percent are found in males.

Struvite stones usually form when large amounts of crystals are present in combination with a urinary tract infection from urease-producing bacteria such as *Staphylococcus* or *Proteus*. Urease is an enzyme that catalyzes the hydrolysis of urea, forming ammonia and carbon dioxide. It contributes to struvite stone formation as well as alkaline (high-pH) urine.

Caregivers and veterinarians obviously want to prevent and treat struvites as effectively as possible. But what works and what doesn’t is a topic of confusion.

## Struvite Stone Facts or Fiction?

All of the following statements are believed by many veterinarians and their clients. Yet none of them are true. Which have you heard before?

1. Urinary struvite crystals represent disease and require treatment.
2. Struvite crystals require a change in diet, usually to a prescription diet like c/d, u/d, or s/d.
3. Dogs prone to forming struvite stones should be kept on a special diet for life.
4. The most important treatment for dogs with a history of struvite stones is a low-protein diet.

Here’s why these common beliefs are misconceptions:

1. The presence of urinary struvite crystals alone does not represent disease and does not require treatment. These crystals can be found in the urine of an estimated 40 to 44 percent of all healthy dogs and are not a cause for concern unless accompanied by signs of a urinary tract infection. According to the Merck Veterinary Manual (2005), “Struvite crystals are commonly observed in canine and feline urine. Struvite crystalluria in dogs is not a problem unless there is a concurrent bacterial urinary tract infection with a urease-producing microbe. Without an infection, struvite crystals in dogs will not be associated with struvite urolith formation.”(Our emphasis.)

Whether your struvite-crystal dog has a urinary tract infection is the key question. Researchers estimate that more than 98 percent of all struvite stones are associated with infection. Failing to eradicate the original infection and prevent new bacterial infections is the main reason struvite uroliths recur. A recurrence rate of 21 percent was



Urinary tract infections that cause struvite crystals to become uroliths can raise urinary pH to 8.0 or 8.5. Contact your vet if your dog’s urinary pH jumps from acid to alkaline.

recorded in one study, but the risk can be significantly reduced through increased surveillance and appropriate antimicrobial treatment. In one study, dogs were infected with an experimental Staphylococcal urinary tract infection, and their infection-induced struvites grew large enough to be seen on X-rays within two to eight weeks.

2. Struvite crystals do not require a change in diet. Because struvite crystals do not pose a problem unless the dog has a urinary tract infection, there is no required treatment for crystals, including dietary changes. If the dog does have a urinary tract infection, a prescription dog food will not cure it.

If your veterinarian finds struvite crystals in the urine and suggests a diet change, you'd be well advised to find a new vet. You have to wonder how many other things he or she is misinformed about. It isn't just a case of not keeping up with newer research; this recommendation is just plain wrong.

3. Dogs prone to forming struvite stones should not be kept on a special diet for life. Struvites almost always form because of infections, for which dogs with a history of stones should be closely monitored and properly treated. No long-term dietary change is required, nor will a special diet prevent the formation of infection-induced struvites. However, short-term changes may help speed the dissolution of stones.

4. Low-protein diets do not prevent stone formation. A low-protein diet can speed the dissolution of struvite stones –when accompanied by appropriate antibiotic treatment –but it is not necessary for the prevention of struvite formation in dogs who are prone to this problem. For almost all dogs, controlling infections will prevent more stones from forming.

## "Sterile Struvites"

Not all struvite stones are caused by *Staphylococcus*, *Proteus*, or other bacteria. Between 1 and 2 percent of struvites are called sterile because they do not involve an infection. They are also known as metabolic struvites.

These stones are treated in much the same way as infection-induced struvites, and they tend to dissolve more quickly. Urinary acidifiers can be used to help dissolve sterile struvites, and feeding a low-protein diet may help speed their dissolution.

Several reports in the veterinary literature describe the spontaneous dissolution of sterile struvite uroliths within two to five months in dogs fed a maintenance diet, demonstrating that these stones can disappear within a short time without the use of a calculolytic diet.

To prevent the formation of future sterile struvites, the most effective methods appear to be urinary acidification and increased fluid intake. The amino acid dl-methionine, which is available in tablet form, is commonly used when needed to keep the urine acidic. It will not help and should not be given to dogs who form infection-induced struvites.

The conventional recommendation for treatment and prevention of sterile struvites is to feed a diet with reduced phosphorus and magnesium content, but it's questionable whether that's needed as long as the urine is kept slightly acidic (at a pH below 7.0) and the dog is encouraged to drink more and has ample opportunity to eliminate in order to avoid supersaturated urine.

Even though a meat-based diet is high in phosphorus, meat has an acidifying effect on the urine and may therefore be beneficial for the prevention of sterile struvites as well as providing more complete nutrition in a form that the dog most enjoys.

Dietary starch and fiber potentially stimulate the formation of struvite crystals, so reducing dietary carbohydrates helps prevent struvite urolith formation.

## The Low-Down on Low-Protein Diets for Dogs

Several prescription dog foods are marketed as a treatment for struvite crystals and struvite stones. These are called calculolytic foods or diets, and nearly all of them are severely protein-restricted, phosphate-restricted, magnesium-restricted, highly acidifying, and supplemented with salt to increase the patient's thirst and fluid consumption.

While a low-protein diet is not required to dissolve struvite stones, it can speed their dissolution (when accompanied by appropriate antibiotic treatment). Protein provides urea, which bacteria convert or “hydrolyze” into ammonia, one of the struvite building blocks. However, this approach is not a long-term solution and will not prevent the formation of infection-induced stones. Feeding a low-protein diet to an adult dog to help dissolve stones is acceptable for short periods. Because they are not nutritionally complete, however, low-protein foods are harmful to adult dogs if used for more than a few months, and they should never be fed to puppies.

If stones are not present, there is no reason to feed a low-protein diet. According to Dr. Chew, “No studies exist to show that a specific diet is helpful for the prevention of infection-related stone development.”

In general, the benefits of a meat-based diet far outweigh the risks posed by protein’s ammonia generation. Plus, by feeding your dog a home-prepared diet of fresh ingredients, you can provide food that is higher in quality and much more to your dog’s liking than diets that come out of cans or packages.

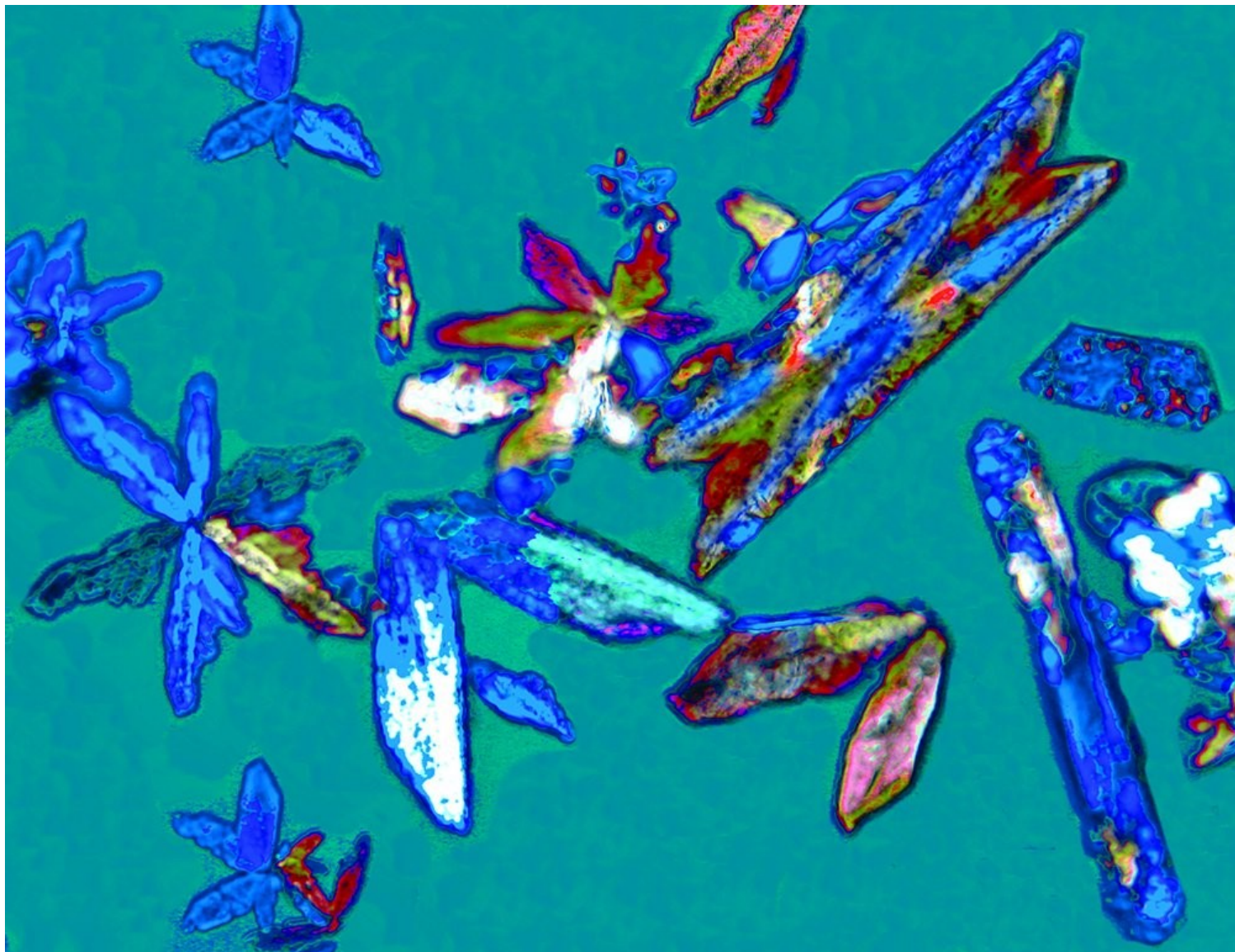
Other prescription pet food strategies –such as keeping the diet low in fiber so that fluids are not lost through the intestines, using highly digestible ingredients for the same reason, and increasing the dog’s fluid intake by adding salt to the diet –can be better accomplished with a home-prepared diet and management techniques that encourage the dog to drink more water. The more concentrated the urine, the more saturated it becomes with minerals that can precipitate out, so extra fluids, which dilute the urine, reduce the risk.

Urinary acidifiers are not used to dissolve or prevent stones caused by urinary tract infections, since acidification does not help while an infection is present.

## **The Importance of Urinary Culture and Sensitivity Tests**

It’s important to know that urinalysis can’t always detect a bladder infection; urinalysis may appear normal as frequently as 20 percent of the time when a urinary tract infection is present.

For this reason, if your dog shows possible signs of infection, you need to request a “urinary culture and sensitivity test.” This will verify the diagnosis (in some cases the problem is something other than an infection) and, if it is an infection, it will reveal which antibiotic will be most effective for treatment. Using an ineffective antibiotic not only harms the patient by delaying proper treatment, but also contributes to the spread of drug-resistant bacteria. Antibiotic therapy must be continued as long as struvite stones are present, since the stones harbor bacteria that are released as the stones dissolve.



Struvite (magnesium ammonium phosphate or “triple phosphate”) crystals in polarized light (total magnification 112x). Struvite crystals are common in dogs and don’t cause problems until they unite to form stones that interfere with urination; generally, this happens only when the dog has a urinary tract infection.

Dogs who are prone to frequent infections may need longer antibiotic therapy –of at least four to six weeks –to completely eradicate the infection. Some dogs need continuous or “pulsed” antibiotic therapy to prevent recurring infections. A few may need surgery to correct structural defects that make them prone to infection, such as a recessed vulva. This condition usually corrects itself following first heat but may continue to cause problems for females who are spayed prior to their first heat.

Ureaplasma bacteria, which can cause struvite stones, will not show up on a regular urine culture, but you can request a special culture to look for this type of bacteria. This should be done before one assumes that the patient’s struvites are sterile (see “Sterile Struvites,” page 13) rather than infection-induced.

Follow-up tests will show whether the therapy your dog received, such as antibiotics from a conventional veterinarian or an alternative infection-fighting treatment from a holistic vet, was effective. You want to be sure that the treatment worked and that the infection isn’t coming back. For dogs with a history of forming struvite stones, or who suffer from multiple urinary tract infections, cultures should be repeated a few days after treatment ends and then periodically, such as monthly for a while and then at longer intervals, to be sure the infection is completely cleared.

## At-Home Urinary Tract Infection Prevention

To keep your dog healthy, it’s important to prevent the conditions –especially, urinary tract infections –that can lead to stone formation.

Monitoring your dog’s urinary pH at home will alert you to any recurring bladder infection. The numbers refer to

acidity and alkalinity, with 7 considered neutral (neither acid nor alkaline). Numbers less than 7 indicate acidity, and the lower the number, the more acid the substance. Numbers greater than 7 indicate alkalinity, and the higher the number, the more alkaline the substance. Most healthy dogs have a neutral to slightly acid urinary pH between 5.5 and 7.0.

Because urinary pH varies throughout the day, test your dog's urine at the same time each day to determine her "normal" pH. The best time to do this is first thing in the morning, before she eats. Urine should be tested before it hits the ground. You can collect some in a paper cup or simply hold a pH test strip in the stream. An advantage to paper cup collection is that you can also check the urine for blood, cloudiness, and other indications of infection.

The urinary tract infections that cause struvite crystals to become uroliths have an alkalizing effect, raising urinary pH to as much as 8.0 or 8.5. If your dog's urinary pH jumps from acid to alkaline, contact your veterinarian.

Other preventive measures include giving your dog cranberry capsules, [apple cider vinegar \(/issues/20\\_3/features/Apple-Cider-Vinegar\\_21614-1.html\)](/issues/20_3/features/Apple-Cider-Vinegar_21614-1.html), [probiotics \(/issues/15\\_3/features/Probiotics-For-Dogs\\_20473-1.html\)](/issues/15_3/features/Probiotics-For-Dogs_20473-1.html), and [vitamin C \(/issues/1\\_7/features/Vitamin-C-for-Dogs\\_5309-1.html\)](/issues/1_7/features/Vitamin-C-for-Dogs_5309-1.html).

[Cranberry \(https://universityhealthnews.com/daily/heart-health/top-cranberry-health-benefits-lower-triglycerides-and-boost-antioxidant-intake/\)](https://universityhealthnews.com/daily/heart-health/top-cranberry-health-benefits-lower-triglycerides-and-boost-antioxidant-intake/) doesn't cure existing infections, but it mechanically prevents bacteria from adhering to the tissue that lines the bladder and urinary tract. Because they are continuously washed out of the system, bacteria don't have an opportunity to create new infections. Cranberry capsules are easier to use and more effective than juice, since they are far more concentrated. On product labels, the terms cranberry, cranberry juice, cranberry extract, and cranberry concentrate tend to be used interchangeably.

If your cranberry capsules are a veterinary product, follow label directions. If they're designed for humans, adjust the dosage for your dog's weight by assuming that the label dose applies to a human weighing 100–120 pounds. Giving cranberry in divided doses, such as twice or three times during the day, will make this preventive treatment more effective.

Probiotics are the body's first line of defense against infection, and the more beneficial bacteria in your dog's digestive tract, the better. Probiotics are routinely used by a growing number of medical doctors and veterinarians to treat urinary tract and vaginal infections in women and pets.

Several brands of probiotics are made especially for dogs. Because antibiotics destroy beneficial as well as harmful bacteria, the use of probiotic supplements after treatment with antibiotics helps restore the body's population of beneficial bacteria. (See "[Probing Probiotics \(/issues/9\\_8/features/Dog-Probiotics\\_15827-1.html\)](/issues/9_8/features/Dog-Probiotics_15827-1.html)," WDJ, August 2006 for more information.) Many veterinarians recommend vitamin C for dogs who are prone to bladder infections and struvite stones because of its anti-inflammatory effects. Dogs (unlike humans) manufacture their own vitamin C, but the amount they produce may not meet their needs if they are under stress or fighting infection.

The ascorbate form of vitamin C is most often recommended for dogs, as it may be better absorbed and is less prone to causing gastrointestinal upset. Calcium ascorbate and sodium ascorbate are available in generic forms as a powder, but the most popular form is a product called Ester-C, which contains calcium ascorbate and vitamin C metabolites.

Veterinary recommendations range from 250 mg twice per day for every 15 to 30 pounds of body weight up to a maximum of 1,000 mg twice a day for large dogs. Because vitamin C can cause diarrhea, start with small doses and increase gradually. The maximum amount your dog can tolerate without the diarrhea side effect is called her "bowel tolerance" dose.

The herb *uva ursi* (*Arctostaphylos uva-ursi*) is used in many herbal blends for bladder infections because of its antibacterial properties. *Uva ursi* is best used for short periods rather than for months at a time as it can irritate the kidneys. The dosage for this herb depends on the individual blend and how it was prepared. Follow label directions for products formulated for dogs; adjust the dosage of products meant for humans by weight, assuming the human's weight at 100 to 120 pounds.

While adding salt to your dog's food is an effective way to encourage drinking more fluids for dogs who don't tend to drink enough, consider switching from refined table salt to unrefined sea salt, which is sold in natural food markets and contains dozens of minerals and trace elements that are not present in refined salt.

Since most homemade diets are low in salt compared to commercial foods, the amount of salt to add will depend on the diet you feed. Start by adding a pinch of salt (small for a small dog, larger for a large dog) to your dog's food and watch to see if it makes her more thirsty. Increase the amount by a pinch at a time until she is drinking more than usual.

Traditional broth or stock is easy to make at home by simmering chicken, beef, or other bones in water overnight or for 24 to 36 hours. If desired, add carrots and other vegetables. Replace evaporating water as needed. The longer the simmer, the more nutritionally dense the broth and the more interesting it is likely to be to your dog. Broth can be used as a flavor enhancer when strained and added to food or given in addition to water. Be sure to provide plain drinking water at all times.

Struvite stones can make any dog miserable, but by understanding how and why they occur and by taking the preventive measures described here, you can be sure that your dog lives a happy, stone-free life.

## Resources

Minnesota Urolith Center (<https://www.vetmed.umn.edu/centers-programs/minnesota-urolith-center>) at the University of Minnesota College of Veterinary Medicine

pH test strips from [Solid Gold Natural Health for Pets](https://www.solidgoldpet.com/) (<https://www.solidgoldpet.com/>)

pH test strips from [Micro Essential Laboratory](http://www.microessentiallab.com/) (<http://www.microessentiallab.com/>)

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## Comments (35)

Very interesting article. I'm reading this after having picked up my Yorkie from bladder stone surgery less than an hour ago. I'm conflicted because as predicted my vet is telling me he has to be on a special prescription diet for the remainder of his life. With all that I have learned in the last couple years about dog food I prefer we put him on a 100% human grade food diet. Is there anyone that can help me make the right choice?

Posted by: Cmullen | August 21, 2017 3:53 PM

My rescue dog developed urine crystals and was put on Hill Science C/D. My vet told me that she would have to remain on this food for the rest of her life. Guilty I have been trying to find a little cheaper way of feeding her, for the dog food is quit out of my income range. I don't want to lose my dog. Is there a better alternative since Hill Science is being sued for fillers and other bad ingredients?

Posted by: Your Best Friend | August 10, 2017 11:56 AM

Hey JoeB, are you talking about the answers to the four "Fact or Fiction" statements in bold? The answers to those are numbered right below them.

Posted by: TAC357 | July 31, 2017 2:56 AM

I love all the questions. How about the answers to the questions? Thank you.



Posted by: JoeB | July 12, 2017 9:37 AM

Really I'm interested on your post!  
Please post more article about Kidney stone.  
Thanks a lot,  
Hamid

sangekolye.com

Posted by: sangekolye.com | June 11, 2017 2:27 PM

I have a two year old Basset Hound and on tuesday I took him to his routine appointment. They gave me his urine test and it shows that he has crystals in his urine. They advised me to change his food to a prescription food, which costs a LOT. He's been eating Blue Buffalo Life Protection Dry Adult Dog Food Fish & Brown Rice since he was 7 months old. Should I keep giving him that food or should I change it?

Posted by: Jessica ` | March 16, 2017 4:42 PM

Cayenne pepper expands the blood vessels and helps them to pee !!

Posted by: JLies | March 11, 2017 3:04 PM

I have a small dor and she has kidney stones. She is not in pain but is constantly trying to urinate to push them out. We have been doing the vitamin c and cidar vinager. Does anyone know something I can give her to help her pass them or devolve them

Posted by: Kerri | January 11, 2017 10:24 AM

Hello, can any one advise me on the best source of salt to add to my dogs raw food diet? Sea salt, Himalayan salt, etc. Also, someone mentioned vitamin C 500mg twice a day. Do you use human grade vitamin C or something especially for dogs? As of yet, we do not have stones or urinary infections. We have a 6yr old male Bichon Frise and a 2 year old Australian labradoodle and would like to begin preventive measures as stones and infections sound awful and very expensive to manage. This article is very helpful. It also mentions something that I have been concerned about.....my dogs don't drink enough water, supposedly because there is much more moisture in a raw food diet. Even though I do add a bit of water to there food, it makes sense that by adding the salt into their meals they will drink more frequently. The other thing that I appreciated in these comments was the tip to use distilled water!! I hope someone will respond to my questions!

Posted by: opalandollie | December 14, 2016 12:57 PM

I have a 10 year old Bichon who has had significant issues with bladder infections and stones. This was one of the best articles I have read. There is a lot of misinformation out there driven by the dog food industry. Because of that misinformation and my own ignorance, she had to undergo two surgeries to remove stones. I vowed to never put her through that again and determined to learn as much as possible about bladder infections and stone formation. I would just like to add that Ultrasound is a good way to diagnosed stones that are radiolucent. This has become my preferred method of check-up every 6 months. If caught early (My Bichon was already forming new stones 3 weeks after her second surgery) it is possible to dissolve struvite stones with the right antibiotic therapy. I use regent strips that test for blood as well as test PH. You can buy regent strips and sterile urine cups on Amazon very cheaply.

Posted by: Christy | November 7, 2016 12:08 PM

We have a Maltese that has stones and we were told she may need surgery. Are there any alternative methods that can be used to dissolve the stones? We cannot afford the surgery.

Posted by: monttina | November 7, 2016 10:54 AM

I have a Bullmastiff about a year and a half. He has had numerous issues and crystals are one. His urine was very basic with a PH of 8.

This high of PH makes urination painful. My vet told me bleach was 9. He also continued to have partial blockages from crystals. These combined led to untimely, uncontrollable bladder emptying. He is currently on vet prescribed cranberry concentrate pills. These have helped but he continues to have short lived partial blockages. I'm going to try canine probiotics as well as Pedialite in his water. If anyone has any other ideas I would be willing to try them. The increase in water has helped but the problems increased with the untimely bladder emptying. His kennel is 5X6 Ft. he fills it up and ends up standing in an inch of urine. Now I know he doesn't want to do this as he can lift his leg a pee outside his kennel.

Posted by: Tia0220 | November 6, 2016 10:58 AM

I have found cranberry capsules (dried whole fruit in capsule form) to be of help in calming canine bladder infections--especially low grade ones. I've started routinely using this on all new foster dogs that I have as they often come into the rescue with multiple health problems especially from poor nutrition and hygiene.

I'm not sure how the cranberry would interact with any stones already present so please check with your vet first before using.

Posted by: PJKutscher | November 6, 2016 9:17 AM

My 2 year old boerbull [South African mastiff] is prone to bladder stones. According to the vet his body is making the stones and is not food related. The vet has recommended the Hills UD / Royal Cannin equivalent. Unfortunately I cannot afford \$150 per month for the next 8 years on dog food. My question is this, is there anything natural that I can give my dog ie What food can I cook for him that will do the same job as the UD food? I cannot bear to think that if I can't find an alternative I will have to put my baby down. Please help me help my Max. He is the most precious boy in my world

Posted by: Michelle Wood | October 5, 2016 1:44 AM

My dog who has been on a prescription diet for bladder stones for more than three years was given a medication for her allergies which caused her to throw up. My vet told me to continue the medication but in the meantime give her boiled chicken and rice. I made this for her today and she loved it. I will call the vet tomorrow to see if I can discontinue her prescription canned food and substitute the rice and chicken and give her the prescription dry food as a treat. The prescription food is very expensive and if I can eliminate the canned food and keep the prescription dry food to give to her as treats that would be wonderful. Incidentally she never had surgery for her bladder stones. I gave her Pedialyte and she immediately passed a lot of stones so the surgery was cancelled. I understand that dogs who undergo surgery for bladder stones require repeated surgeries so I just give her Pedialyte. She has passed no further stones but I saved a lot of money by cancelling her surgery by using the Pedialyte. Incidentally her pH is completely normal.

Posted by: armecia | September 8, 2016 8:42 PM

for 14 years i have had great luck with d-mannose along with adding water to every pet's meal. it does what cranberry does and also removes the slime that builds up in bladder where the bacteria like to stay. my cat was on many courses of antibiotics to no avail. added d-mannose to wet cat food and when she urinated the sandy grit and slime came out. i had never seen anything like it. no one in my house has bladder issues now . it has a sweet taste so pets accept it readily. like NOW Brand.

Posted by: petscleanbladder | August 10, 2016 9:34 AM

Unless I have missed it - there seems to be no mention of Canine Hyperuricosuria in this article. While my breed (Weimaraner) generally is not on the affected list, several breeders (myself included) are now DNA testing our breeding stock through a test developed by Univ. of California Davis...I can't post a link here but if anyone is interested, google UC Davis Veterinary Genetics Laboratory

Inexpensive simple cheek swab....this is a big problem with Dalmations....we are finding some carriers and affected dogs within our breed, but have not really heard of many UTI problems that were a result of this condition. I'm thankful to have this valuable tool (and many others developed by UC Davis) as a resource.

Posted by: dcurler | August 8, 2016 7:34 AM

Wow. Really good article. Your article made me realize that I really need to take my 3 year old Chihuahua to the vet. A week ago, I brought my doggie to the clinic after watching him having difficulty pooping and urinating. They had his bloodwork done. Turns out he

had high WBC, BUN, creatinine. Doc told me he had Chronic Kidney disease and probably had to be hospitalized to monitor his condition because he is borderline to renal failure as she said. I took him home and gave the prescribed antibiotics + supplements. Edward lost a lot of weight 2 days after taking him to the vet. He is also not eating at that moment. But I gave him coconut water and force fed a K/D canned food. Gave him also cranberry juice. After 3 days, he seems improving. His poop is getting back to normal. As I observe him in the past days, I realize that he might have bladder stones as he is still having difficulty to urinate. Doc also suggested to have his abdomen x-ray for bladder stones and put it out there the need for surgery if it comes to that. I'm still hesitant but thanks I am convinced now.

Posted by: EdwardtheChi | February 17, 2016 7:36 AM

My Shih Tzu had bladder stones a couple of years ago. She was scheduled for surgery on Monday but the preceding Sunday she became very ill and would not eat or walk and I noticed blood in her urine. My vet was not open so I went on the Internet and typed in "My dog has not urinated in 24 hours and when she urinated there was blood in her urine." Most of the replies to my question recommended that I give her Pedialyte. She had not eaten but when I gave her the Pedialyte she immediately drank it and within an hour or so passed a lot of urine along with 28 stones and following that she was much improved. The following morning I cancelled her surgery and took her to another vet along with the stones (Sturvite) who has treated her ever since much to my satisfaction. She put her on Royal Canin Urinary SO and she has been on this food ever since. This food is extremely expensive and my question is, does she have to be on this food for the rest of her life? She has checkups every six months with her new vet who gave her an abdominal x-ray at her last visit along with a urinalysis and reported that she had no more bladder stones. I give her distilled water and no treats other than the Royal Canin dry dog food which she "thinks" are treats, and I give her the canned Royal Canin SO in the morning.

Posted by: armecia | April 27, 2015 9:02 AM

My dog Daisy has a bladder infection with the Struvite stones right now. Our vet in St. Paul, MN gave her antibiotics and special dog food. Daisy has always eaten raw dog food with guts, bones, meat ground up, and also eggs, vegetables and cottage cheese mixed in. When my parents don't give me dog food (BARF), I get raw dog food from Woody's Pet Food Deli. I wonder why Daisy would get the stones in the first place if she is eating such good food :( I hope that once the infection is gone, the stones will break up and pass. Any comments you have on BARF diets would be appreciated.

Posted by: daisyandpiglet | November 12, 2014 2:41 PM

How do I find a good vet that is well informed and worth the cost. We just rescued a blue tick coonhound with a bunch of health issues. One is we can't get rid of crystals and a concentrated urine.

Posted by: hypomone | November 11, 2014 8:32 AM

My now eleven year old Husky/Shepherd mix had a bladder stone surgically removed when she was about 4 years old. The prescription dog food the vet recommended was very, very expensive, more than I could afford. So, I looked in Dr. Pitcairn's book on natural health care for dogs and cats and bingo! I found the quick fix! Give 500 mg Vit C twice daily. That's been seven years ago and there's not been another problem at all – no bladder stones, no infections, and no dietary changes were needed for this to work. The stone that was removed seven years ago was the one and only stone she's ever had. However, the stone was not tested to determine type and I don't know if that could be a factor.

Posted by: VeggieNut | October 13, 2014 12:41 PM

I just put in my name to receive your updates and I do hope you can get me on the list before your next article as my dog just had surgery and the vet said they were calcium oxalate stones. Would like to hear your take on that subject.

Posted by: Daisy-do | September 12, 2014 3:39 PM

Our corgi had a terrible infection, blood in her urine, and crystals. The initial radiograph and sonogram showed a huge stone (which turned out to be, most likely, a huge inflammation in the bladder wall due to infection). We had hopes we weren't dealing with cancer. After putting our corgi on s/d, using cranberry from our vet, and three weeks of antibiotics, she was much better. She became her old self again, bossing every other corgi in the house. Our vet has recommended continuing on s/d as prevention. We have been adding veggies, rice to her food because she lost 1/4 of her weight on the s/d!! After reading your article, we are going to wean her off the s/d

completely and begin cooking for her. We picked up some canned chicken (chicken, chicken broth and salt) and veggies this week. Will be glad to get her off that nasty SD s/d. The food is crap. Hopefully, changing her food and adding cranberry and ester-c will carry her along well. She's 13 now and we want to keep her as healthy as possible. Thanks for your article. I learned quite a bit.

Posted by: Cindi | August 3, 2014 12:40 PM

About 10 yrs ago when our Bichon, Maggie, developed struvite bladder stones for the second time (requiring a second surgery), I researched the topic on the internet. A couple of sites recommended giving your dog only distilled water, which makes sense because the minerals have been removed from the water. We immediately changed Maggie's water source and she never had another problem. Since then we've only given our other Bichons distilled water too. So far, so good. Hope this helps.

Posted by: Lily's Mom | July 17, 2014 2:38 PM

My 9 year old (eta) pom/fox cross has just had surgery for bladder stones. We pick her up tomorrow from the vet. They told us yesterday that her diet was fine, but now they she will need a "prescribed" diet (and her teeth cleaned, which we can't afford). I am so confused. After reading this article, I seem to be feeding her the right things but now????? We very rarely give our dogs canned food, and then only if they seem to want a change from real beef, chicken, chicken necks or kangaroo. They also get rice and they get things like boneo biscuits, liver treats. Any suggestions anyone?

Posted by: karen g | May 28, 2014 5:23 AM

I'm thoroughly confused. About 3 years ago my 6 year old male pug started having frequent urinary tract infections which meant frequent trips to the er to get cathed and a lot of pain for him and worry for me. I went to 3 of the best doctors in Ohio only for them to tell me they couldn't figure it out. They didn't see stones on the x-rays so they each wanted to open him up. But I honestly felt that wasn't the issue because every-time we went to the Er he would be given anti inflammations and antibiotics we would get better for long periods of time. I did some more looking and found some great reviews on a local vet who's office wasn't fancy but he was very inexpensive and apparently great. I decided to give it a try. In the first visit he found out Leo had struvite Crystals. That his bladder was too alkaline and I needed to add vitamin c to his food to help prevent them from forming into a stone. This worked for about a year. When it stopped he recommended Prescription diet k/d. Since then Leo has never had an issue again. Except when a child fed him some of their snacks, but a trip to my vet and a shot, he was good as new! So my confusion is this: you said diet does not help, and if your vet says that, to seek a new vet. But it worked for me... like really worked. So whats happening here?

Posted by: PugLove30 | May 23, 2014 11:44 AM

I have a 14 yr old Bichon. He's had 2 bladder stone removal surgeries and just recently had his gall bladder out. I make him homemade food also. I boil 8 lbs chicken breast, 4 cups cooked white rice, 4 cups peas. After it's all cooked - cut up the chicken in chunks and mix it all together and let sit overnight to get cold. I chop it up in the ninja blender. I make 3/4 cup servings. My guy eats 3 times a day. For the morning serving, he gets a tablespoon of pumpkin with his chicken.

Posted by: Bichon Kyle | May 19, 2014 2:45 PM

#### Bladder stones and diet change

We had a lot of trouble with bladder stones with our Hannah (a Cairn terrier) including an instances of acute retention which could have killed her, but a change of diet to a bland and natural one seem to solve the problem on a life long basis. Most vets seem to favour a change of diet.

For a suitable bladder stone diet and description of Hannah's problems and details of her case history please see -

[sites.google.com/site/caninebladderstones/](https://sites.google.com/site/caninebladderstones/)

If the link does not work then just copy and search for it in the address bar.

Posted by: Dave24066 | May 3, 2014 11:30 AM

## Bladder stones and diet change

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Posted by: Dave24066 | May 3, 2014 11:26 AM

Roger, if you refer to the box near the top of the article named "Also with this article," we provide the resources mentioned in this article.

Posted by: WDJ Admin | March 19, 2014 2:16 PM

Please, when you use such phrases as: "Researchers estimate," "in one study," etc., could you provide citations if not links to the referenced studies? Yes, I realize that your editorials are not meant to be taken as academic articles, but the online pet-health literature is awash with these sorts of unsubstantiated claims. Without clear reference to the studies mentioned, the claims have no validity whatsoever and only contribute to the current oversaturation of unsupported online pet-health literature.

Thank you

Posted by: RogerB | March 19, 2014 12:53 PM

for good advice on food for your pets check out [www.petnutritionsystems.com](http://www.petnutritionsystems.com)

you can also find them on facebook. They have formulated a diet for my aging shitzu. Her coat skin and energy has seen a marked improvement. If you don't want to make their food you can also buy it from them. They recommend a raw food diet. I wouldn't go back to 'dog' food again. My girl is so much healthier than she has ever been.

Posted by: Sandyk1750 | March 17, 2013 8:35 PM

This is so confusing. My vet wants my dog on u/d or s/o diet for struvite issue but i hate giving him that junk food. No one seems to mention possible infections, just diet change to canned wet food forever! He refuses to eat any science diet product and i cant say i blame him. He has had 3 rounds of surgeries in 8 years and I would rather cook his food fresh and know what he is eating. Can someone forward a link for real help in Boston area? Thank you!

Posted by: Unknown | January 27, 2013 6:17 AM

my 12.5 pound miniature 8 year old poodle has been tested by his vet. He does not have any stones or infections. However, he has struvite crystals in his urine and his Ph is 8.5. My vet recommends a hill's prescription diet that I won't feed him since it contains chicken by-products, corn and fillers. I am looking for an alternative food. Any specific recommendations would be appreciated. I found a holistic vet book that recommended a natural food diet but some of the ingredients were unfamiliar to me and not specific enough

Posted by: SirPoochala | August 4, 2010 4:11 PM