How Can This Vital Test Extend Your Pet's Life?

Uncover how a simple health check can reveal hidden health issues, contributing to your pet's extended lifespan and well-being.

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STORY AT-A-GLANCE

- Your pet's urine, which is the end product of a filtering process that removes waste from the body, is a measure of his or her health
- In addition to routine blood tests, a urinalysis should be performed by your veterinarian at least yearly for healthy pets, and more often for older animals and those with existing or chronic health issues
- Three conditions that are picked up by urinalysis (but not by routine blood tests) are proteinuria, Fanconi syndrome, and bacteriuria
- Important elements of a urinalysis include a visual inspection of the urine sample, a dipstick test, and microscopic evaluation of urine sediment

A complete urinalysis is considered a baseline diagnostic test in dogs and cats, but for a number of reasons, it isn't always done along with the CBC (complete blood count). I always recommend this test during biannual **wellness checkups**, because there are conditions that may not cause signs or symptoms, or show up on routine bloodwork, that are found through urinalysis.

3 Conditions Only a Urinalysis Can Detect

1. **Proteinuria —** Proteinuria is the presence of protein in urine, which us a sign the kidneys aren't working properly. In some situations, it may even be a sign of kidney failure. However, the condition can occur for a variety of reasons other than serious kidney disease, and in fact, bleeding or inflammation in the urinary tract is a far more common cause of proteinuria. In these cases, the bladder and urethra are usually involved, but the prostate gland or vagina may also contribute.

Proteinuria caused by bleeding or inflammation usually disappears once the underlying disorder is treated. But unfortunately, if proteinuria is not due to inflammation or bleeding in the urinary system, it is more likely to be a sign of kidney disease. This is concerning because the underlying disease can be complex, difficult to diagnose, and hard to treat.

If your pet's urinalysis reveals inflammation or bleeding, your veterinarian may recommend further testing to look for underlying causes such as bacterial infection, bladder stones, prostatic disease or vaginitis, and cancer, etc. Once the culprit is found and treatment is given, a repeat urinalysis should be done to determine if the proteinuria has resolved.

If proteinuria is present and there is no sign of inflammation or bleeding, the best test to determine the severity of the problem is the urine protein:creatinine ratio. A protein:creatinine ratio that remains persistently high is a reliable indicator of serious kidney disease and possibly kidney failure. Further investigation is recommended and could include doing blood tests to assess kidney function, testing for bacterial infection or infectious disease, performing an ultrasound of the kidneys and possibly doing a kidney biopsy. Once a diagnosis has been made, effective management of the problem may be possible.

2. **Fanconi syndrome —** In Fanconi syndrome, the tubules of the kidneys don't function properly. In healthy kidneys, the tubules reabsorb vitamins, minerals and sugars back into the body to be reused. These tubules in a dog with Fanconi syndrome aren't able to perform their reabsorption function.

   Solutes including amino acids, glucose, phosphorus, sodium, potassium and bicarbonate are dumped into the urine and passed from the body. The loss of these solutes leads to dehydration, electrolyte imbalance and other problems. Typical symptoms are vomiting, lethargy and anorexia.

   Inherited Fanconi syndrome is most often seen in Basenjis. The acquired form of the disease is commonly seen in pets with ethylene glycol toxicosis, drug reactions, metabolic and infectious diseases, or a history of **chicken jerky treat** ingestion.

3. **Bacteriuria, subclinical bacteriuria —** Bacteriuria is a urinary tract infection (UTI); subclinical bacteriuria describes a positive urine culture result for a pet without symptoms of a UTI, or less often, in pets whose urine sediment shows signs of inflammation in the absence of symptoms.

   Subclinical bacteriuria can occur in healthy dogs and cats. Antimicrobial treatment is unnecessary, as there is no association with development of cystitis or other infectious complications.

More Measures of Health Your Pet's Urine Sample Reveals

The first test of a urine sample is a visual examination. Your veterinarian will note the color of the urine and whether or not it is cloudy, which may suggest an infection or the presence of protein. The color and clarity of the urine is important because in some cases it can adversely affect the next phase of testing, the dipstick test. For example, if the sample is bright red in color, it can falsely elevate the dipstick readings for protein, acidity, and specific gravity.

The **dipstick test** uses a thin piece of plastic with small strips of chemically treated pads that change color when they encounter certain substances in the urine. The test can check the following measures:

- **Acidity (pH) —** The pH level indicates the acidity of the urine. In healthy pets, urine pH should be in the 6.0 to 6.5 range.
- **Specific gravity —** This is a measure of urine concentration, which is a measure of kidney function. Urine can be very dilute or very concentrated. Dilute urine (low specific gravity) is the color of water, whereas concentrated urine (high specific gravity) is bright or dark yellow. It's important to know that a healthy urine specific gravity will vary throughout the day depending on your pet's activity level and the amount of water she's drinking.
- **Protein —** Protein isn't a normal component of urine, so a positive dipstick test for protein may indicate a bacterial infection, a problem with the kidneys, or blood in the urine. If your pet is passing protein, ask your vet to complete a urine protein to creatinine ratio (UPC) or microalbuminuria (MA) level to quantitatively determine how much protein is being passed.

- **Sugar —** Sugar is also not normally found in urine. Its presence signals the possibility of diabetes mellitus.
- **Ketones —** Ketones are byproducts produced by the cells of the body when they aren't receiving adequate energy in the form of nutrients. Ketones in the urine are another red flag for diabetes.
- **Bilirubin —** Bilirubinuria (bilirubin in urine) is a sign that red blood cells are being destroyed at a higher-than-normal rate. The condition exists in animals with liver disorders and autoimmune disease. It's important to note that blood in the urine from a bladder infection can stain the bilirubin pad on the dipstick, causing a false reading for potential liver disease.
- **Blood —** The dipstick test will pick up the presence of red blood cells or other components of blood in urine. This finding should always lead to a microscopic evaluation of the urine to check for infection, inflammation, or bladder or kidney stones.

Microscopic Evaluation of Urine Sediment

Another test that should be performed on your pet's urine sample is a microscopic evaluation of urine sediment. This is accomplished by putting the urine in a centrifuge, which ultimately deposits any cells or other abnormalities (the urine sediment) in the bottom of the test tube where they can be collected and evaluated under a microscope. Urine sediment findings requiring further investigation include:

- **White blood cells —** The presence of white blood cells can be a sign of an infection or inflammation in the bladder or kidneys.
- **Red blood cells —** Red blood cells in urine sediment may indicate trauma or irritation to the bladder wall or kidneys and are commonly found in pets with bladder or kidney infections or stones, interstitial cystitis (inflammation of the bladder lining), and cancer in the urinary tract.
- **Bacteria —** Bacteria in urine sediment can be a sign of infection, however, if no bacteria are seen in the sediment, it doesn't rule out an infection in the bladder or kidney if bacteria was found in the urine sample itself. You should always request a urine culture for clarification if the sediment does not support a diagnosis of a urinary tract infection and your pet is showing classic symptoms, such as urinating more frequently or pain on urination.

  Likewise, if the sample was not collected in a sterile specimen cup provided by the veterinary clinic, there could be bacterial contaminants that may prompt your vet to prescribe unnecessary antibiotics. If your vet thinks there may be a bladder infection present, always insist on a culture as proof of infection, and to ensure the appropriate treatment is given.
- **Casts —** Casts are the interior lining of cells found in the tubes of the kidneys, and when they show up in urine sediment, they are a sign of a problem with the kidneys such as infection, inflammation or an ingested toxin.
- **Crystals —** Crystals in urine generally occur when the urine pH is out of range, or when bacteria is present.
- **Atypical cells —** Pets with bladder tumors occasionally shed atypical cells into their urine, as well as animals with irritated bladder walls.

Hopefully I've given you some valuable information today about why your furry family member's urine is an important measure of his health. There are some additional tests that can also be performed on a urine sample that aren't routinely a part of a basic urinalysis, including the **Bladder Tumor Antigen test**.

Urinalysis is an inexpensive, easy-to-perform, and highly useful diagnostic tool that can reveal abnormalities undetected on routine CBC and serum chemistry profile and can be performed in-house without delays due to shipping. A routine urinalysis in healthy animals, and certainly in pets showing signs of a urinary tract issue or other illness, is an essential part of providing proactive health care for four-legged family members.

Sources and References

Clinician's Brief, April 2021

VCA Animals Hospitals