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Testing for Patients Who Are Urinating Inappropriately



My pet is urinating on the floor! What might be causing my pet to lose his house-training?

The causes of inappropriate urination include diseases (infections, tumors) affecting the kidneys, bladder and genital tract, endocrine diseases such as diabetes mellitus, diabetes insipidus, Cushing's disease and estrogen responsive urinary incontinence, as well as neurological disease and behavioral problems. Some drugs such as prednisone may cause your pet to drink more, causing increased urine production, which may result in 'accidents' in the house.

How do we determine the cause of inappropriate urination in my pet?

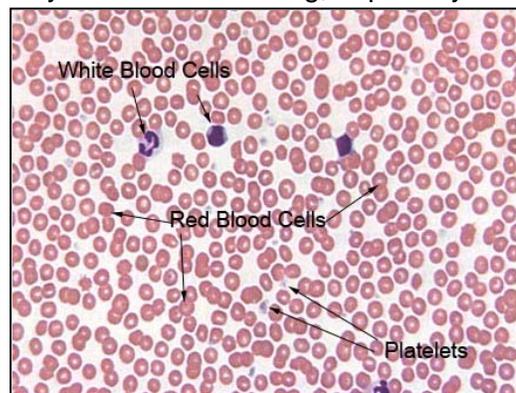
A thorough history and physical examination may reveal clues to the underlying cause of this behavior in your pet.

An evaluation of any recent changes in your household (addition of new family members or pets) will help us to determine whether such changes may have instigated this inappropriate behavior.

The pattern and nature of inappropriate urination provides us with important information. For example, if your pet is straining to urinate or is passing small quantities of urine frequently, this suggests underlying inflammation or blockage of the urinary tract. A female dog, especially one that is older, that is passing 'puddles' of urine while she is sleeping may have an estrogen responsive urinary tract condition.

The physical examination will help to uncover conditions such as neurological deficits, and some physical abnormalities of organs including the kidneys and urogenital tract.

A series of screening tests will help us to confirm any tentative diagnoses made during the physical examination and may rule out other underlying diseases that may be contributing to your pet's clinical signs. *These screening tests include a complete blood count (CBC), a serum biochemistry profile, and a urinalysis.*

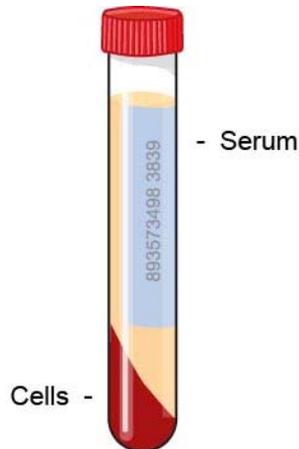


*From: Laboratory Urinalysis and Hematology
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What might these screening tests indicate?

A **complete blood count (CBC)** provides a complete evaluation of the red blood cells, the white blood cells and the platelet components of a blood sample. In some instances of kidney disease or other chronic systemic diseases, the CBC may indicate the presence of concurrent anemia. Underlying infections of the urogenital tract and kidneys may be indicated by increases in the white blood cell numbers.

A **serum biochemistry profile** provides an evaluation of many organ systems including the kidneys, liver and pancreas. Kidney disease may result in the production of large volumes of dilute urine. The sheer volume of urine produced may be so large that some pets may lose their ability to hold their urine for long periods of time. Cats may make more frequent visits to the litter box so that it becomes wetter than usual and less pleasant to use. The cat may urinate on the floor beside the litter box instead. The biochemistry profile allows us to evaluate kidney function by assessing two kidney related metabolites, urea and creatinine. Increases in these parameters, in association with dilute urine, is supportive of underlying kidney disease.



Diabetes mellitus is another common disease that results in the production of large volumes of dilute urine. The biochemistry profile allows us to assess your pet's blood glucose (sugar) concentration. Diabetes is supported by the presence of an increased blood glucose concentration and the presence of

glucose in the urine.

A **urinalysis** provides us with an assessment of both the physical and chemical characteristics of a urine sample. A urinalysis is essential for the accurate interpretation of changes noted on the serum biochemistry profile, as noted above.

A urinalysis will allow us to look for the presence of red blood cells, white blood cells, bacteria, yeasts and fungi, crystals, abnormal urinary tract lining cells, and cellular elements called casts. These abnormal components of urine may help pinpoint the underlying cause of inappropriate urination in your pet. For example, inflammation in the urinary tract may be due to the presence of bladder stones or a bacterial infection (or sometimes a combination of both).



Will any additional testing be required?

That depends entirely on the combined results of the history, physical examination, and screening tests. If these screening tests do not reveal any abnormalities, and the cause of the inappropriate urination is suspected to be behavioral in origin, then further 'treatment' would be aimed at modifying this inappropriate behavior.

If the screening test results suggest the possibility of underlying bladder stones or masses, then x-rays or ultrasound evaluation of the urinary tract is indicated. If the presence of a mass is

confirmed, then further diagnostic tests might include a fine needle aspiration biopsy or a tissue biopsy of the mass in order to identify its nature.

The presence of bladder stones might necessitate either a change in diet or surgery to remove them.

A laboratory analysis of the mineral content of any bladder stones that have either been naturally passed or surgically removed is strongly recommended so that appropriate dietary changes can be made to help prevent their recurrence.

If increased numbers of white blood cells and/or bacteria are identified in the urine sample, culture and sensitivity testing of the urine is recommended to identify the type of bacteria and determine the most appropriate antibiotic treatment.

Should the initial screening tests indicate that the likely cause of inappropriate urination is a systemic disease such as Cushing's disease, then further confirmatory testing is required before treatment is started. On occasion, a serum fructosamine test will be required to confirm the diagnosis of diabetes mellitus.

This client information sheet is based on material written by Kristiina Ruotsalo, DVM, DVSc, Dip ACVP & Margo S. Tant BSc, DVM, DVSc.

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