

# HORMONE-RESPONSIVE URINARY INCONTINENCE

## About the Diagnosis

In dogs and cats, as in humans, the flow of urine from the bladder through the urethra is controlled by a complex arrangement of nerves and muscles. Some of these muscles and nerves form the urethral sphincter, a "valve" that holds back the urine. Coordination must exist between the nervous system, bladder, and sphincter to allow a dog or cat to urinate at an appropriate time and in an appropriate location. Urinary incontinence occurs when an animal is not able to control the flow of urine properly.

There are many causes of urinary incontinence. Among them are neurogenic problems (such as spinal cord trauma) and birth defects/congenital abnormalities such as ectopic ureters (misplacement of the tubes that leave the kidneys, such that they bypass the bladder) or other defects of the urinary system or spinal cord. If an animal has a urinary tract infection or urinary stones (calculi), irritation of the urinary tract will cause a frequent urge to urinate, often in unsuitable places. This gives the appearance of incontinence.

One of the most common causes of incontinence arises from a problem with the urinary sphincter. It is called hormone-responsive incontinence or urethral sphincter incompetence. With this disorder, a weakness of the muscles that control urine outflow from the bladder allows urine to pass inappropriately. Middle-aged or older, female, spayed dogs are most often affected. The condition is commonly hormone responsive, meaning that treatment with reproductive hormones is effective in solving the problem. Young females and older neutered males can also be affected. Medium and large-sized dogs are affected more often than small breeds.

In this type of incontinence, urine will dribble freely, whenever the bladder is partially full. This happens most often when the dog is relaxed and when pressure is placed on the bladder (e.g., lying down or sleeping). Often, the most obvious first symptom is a wet spot on the dog's bed or floor after the dog has rested there. Urine may be observed dribbling from the back end. Sometimes, prolonged contact with the urine irritates the skin around the vulva, causing redness and a rash (urine scald). The dog will lick at the area, which can make the rash even worse.

Confirming the nature, cause, and best treatment for an animal's urinary incontinence is based on a number of factors. These include the history (features of the problem that you have observed), the veterinarian's physical exam findings, and sometimes response to therapy. It is important to rule out other causes of incontinence. Your veterinarian will ask questions such as:

- Is she urinating more frequently than normal, and does it seem uncomfortable?
- Is there blood or a foul odor present?
- Does she urinate greater volumes than normal or strain to produce only a few drops?
- Is she drinking more or less water than normal?
- When does the incontinence occur (i.e., when sleeping versus all the time)?

These questions are important in order to rule out other causes of inappropriate elimination, such as some of those mentioned in the second paragraph above. For example, urinary tract infections and bladder stones can result in frequent, painful urination with or without straining. Kidney disease and diabetes mellitus produce greater volumes of less concentrated urine.

Blood tests, a urinalysis (analysis of a urine sample), and radiographs (x-rays) are usually recommended to evaluate whether these other diseases are present. It is especially wise to have these tests performed on senior animals, since they may have preexisting, age-related disorders as well.

## Living with the Diagnosis

If no other causes of incontinence are found, your veterinarian may arrive at a presumptive diagnosis of urethral sphincter incompetence, especially if your pet is middle-aged and spayed. Fortunately, this is a "hormone responsive" disorder in many female dogs. When we spay young dogs, we remove the uterus and ovaries. These organs are responsible for the production of many reproductive hormones. In some individuals, the lack of hormones eventually results in weakness of the urethral sphincter. It is very important to note that the risks of developing a hormone-related problem do not outweigh the benefits of spaying your female dog. **It is recommended that you spay and neuter your pets.**

With replacement hormones and other medications, the incontinence can often be controlled. Usually, treatment is required for life. It may take some time before the problem is solved, and it can be frustrating during this stabilization period. Additional visits may be necessary to monitor the effect of the medication on your pet and to make adjustments to therapy. **The medication and management is often very effective in improving your dog's quality of life and making your life with her more enjoyable for years to come.** Persistence pays off with successful results in the majority of cases.

## TREATMENT

One of two different types of medication is often prescribed:

- Replacement hormones (estrogen-based) are used for female dogs. In the rare case of an affected male dog, testosterone can be given as injections for effective control of the problem. For females, the most common hormonal replacement medication is called diethylstilbestrol (DES). Recently, there has been much media attention given to side effects of hormone replacement therapy (HRT) in humans. Although this treatment is similar to HRT, much smaller doses are used in dogs and for a shorter period of time. Even though your dog may be on this medication for life, which translates to years versus decades, the side effects of HRT for humans do not apply to dogs.
- $\alpha$ -Adrenergic agonists (phenylpropanolamine [PPA], phenylephrine and pseudoephedrine) are also prescribed. Some of these drugs may not be available because of side effects in human medicine.

Both of these types of drugs tighten the smooth muscles of the urethral sphincter, which reduces the spillage of urine from the bladder outward. Treatment is generally affordable but usually must be continued for life.

Often, a medication is given every day for a short period of time. Then the drug is decreased to the lowest possible level that is still effective. In the case of DES, this often means treating only twice per week with a small amount of the drug. If a single medication is not completely effective, a combination of drugs may offer relief.

Both types of drugs have side effects. High doses of diethylstilbestrol can depress the bone marrow. The marrow is responsible for manufacturing different types of blood cells. Low levels of white blood cells lead to reduced protection from infection. Low levels of platelets will affect clotting ability. Low levels of red blood cells result in anemia, the most commonly seen side effect, and in very rare cases this has been fatal. Treatment with DES at high doses will also bring on signs of heat in female dogs (vaginal swelling and blood tinged discharge). Therefore, monitoring, including blood tests, is important to detect any of these signs early, since early detection allows reversal of the side effect.

The side effects of  $\alpha$  agonists include flushing (red skin, like blushing), panting, elevated heart rate, restlessness, tremors, and vomiting. These side effects mentioned for both groups of drugs are potentially serious, but not common, and your veterinarian can give you his/her opinion on the relative risk in a given instance for your individual dog. It is very rare for the risk to outweigh the benefit of treatment.

Another management issue is keeping your dog's hind end clean and dry. The hair may be shaved from the groin area under the tail (perineum) to make this easier. Your veterinarian will instruct you on how to clean the area, and an antibiotic ointment or cream may be recommended if a skin infection is present.

## DOs

- Realize that hormone-responsive incontinence is an involuntary disorder. The dog has no sensation of the urination occurring, and the urine leakage does **NOT** indicate a desire on the dog's part to annoy, take revenge, or otherwise deliberately urinate.
- Follow your veterinarian's instructions regarding medication and recheck appointments.
- Keep your dog clean, dry, and comfortable. She may need to go outside to urinate more frequently. Provide clean dry bedding and access to fresh water at all times.
- Monitor urination. Make sure your dog **is** passing urine. Watch for signs of concurrent urinary tract infection (blood in urine, foul odor, straining to urinate).

## DON'Ts

- Don't ignore the side effects listed below. Although medication can control this condition, there are consequences that are uncommon but, when they occur, can be serious.

- Don't assume that an incontinence problem means that your dog's quality of life is reduced. Older dogs have many good years left with the help of simple treatment.

## When to Call Your Veterinarian

- If your dog is placed on hormonal medication and you notice lethargy, depression, vomiting (with blood), or pale gums, she could be suffering from a blood cell abnormality due to reduced bone marrow function. This can be an emergency and warrants an immediate visit to the veterinarian.

## Signs to Watch For

- Dribbling urine.
- Wet spot where dog has been lying down.
- Red, irritated skin around hind end.
- If giving hormonal medication watch for:
  - Vaginal discharge.
  - Depression, pale gums, loss of appetite, nausea, vomiting, or abnormal bleeding (blood in stool or vomit).
- If giving an  $\alpha$ -agonist medication watch for:
  - Restlessness, panting, vomiting, or loss of appetite.

## Routine Follow-Up

- Dogs receiving hormonal therapy (diethylstilbestrol) will need to have repeated blood tests (as frequently as once per month) to monitor the health of the bone marrow.
- It may take several appointments and adjusting doses of medication before the condition is stabilized.

## Additional Information

- Because hormonal responsive incontinence often affects older dogs, it is important to remember that other illnesses of the senior canine can also cause urination problems. Depending on the particulars of your dog's case, your veterinarian will generally need to run blood and urine tests to evaluate this possibility.
  - Diabetes mellitus, kidney disease, and hyperadrenocorticism (Cushing's disease) can all cause accidents in the house because of increased volume of urine.
  - Urinary tract infections or stones will cause increased frequency and possible straining to pass small amounts of urine.