

# WOODVALE PARK

## VETERINARY HOSPITAL



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## Increased Urination (Polyuria) and Increased Thirst (Polydipsia)

### Basics

#### OVERVIEW

- Polyuria—increased urination; greater than normal urine production (dogs, more than 45 ml of urine per kilogram body weight per day; cats, more than 40 ml of urine per kilogram body weight per day)
- Polydipsia—increased thirst; greater than normal water consumption (dogs, more than 90 ml of water ingested per kilogram body weight per day; cats, more than 45 ml of water ingested per kilogram body weight per day)

#### SIGNALMENT/DESCRIPTION OF PET

##### Species

- Dogs
- Cats

##### Mean Age and Range

- Congenital (present at birth) diseases that cause increased urination (polyuria) and increased thirst (polydipsia), such as diabetes insipidus (“water diabetes”); portosystemic shunt (condition in which blood vessels allow blood to flow abnormally between the portal vein [vein that normally carries blood from the digestive organs to the liver] and the body circulation without first going through the liver); and certain kidney diseases; as well as decreased levels of steroids produced by the adrenal glands (known as “hypoadrenocorticism” or “Addison's disease”); and some causes in which the dog appears to have a “psychological” drive to drink excessive amounts of water (known as “primary polydipsia”)—predominantly affect young dogs
- Kidney failure; increased levels of steroids produced by the adrenal glands (known as “hyperadrenocorticism” or “Cushing's syndrome”); increased levels of thyroid hormone (known as “hyperthyroidism”); and tumor disorders affecting the pituitary gland and hypothalamus—predominantly affect middle-aged and older dogs and cats

#### SIGNS/OBSERVED CHANGES IN THE PET

- Increased urination (polyuria)
- Increased thirst (polydipsia)
- Other signs determined by underlying disease

#### CAUSES

- Primary increased urination (polyuria) due to impaired response of the kidneys to antidiuretic hormone (ADH), the hormone that decreases the amount of water in the urine and thus, maintains hydration of the body—kidney failure; increased levels of steroids produced by the adrenal glands (hyperadrenocorticism or Cushing's

syndrome) in dogs; increased levels of thyroid hormone (hyperthyroidism) in cats; bacterial infection/inflammation of the kidney (known as “pyelonephritis”); leptospirosis; decreased levels of steroids produced by the adrenal glands (hypoadrenocorticism or Addison's disease); inflammation with accumulation of pus in the uterus (known as “pyometra”); liver failure; increased levels of calcium in the blood (known as “hypercalcemia”); decreased levels of potassium in the blood (known as “hypokalemia”); abnormalities in the kidney's ability to concentrate urine; dietary protein restriction; drugs; congenital (present at birth) diabetes insipidus (“water diabetes”)

- Primary increased urination (polyuria) caused by increased production of urine due to the presence of certain substances in the kidney tubules, such as the presence of glucose (sugar; condition known as “osmotic diuresis”)—diabetes mellitus (“sugar diabetes”); kidney problem that allows glucose or sugar to enter the urine, without increased blood glucose levels (known as “primary renal glucosuria”); increased production of urine as the body's response following relief of blockage or obstruction of urination (known as “postobstructive diuresis”); some medications that remove excess fluids from the body (known as “diuretics”), such as mannitol and furosemide; ingestion or administration of large quantities of dissolve substances (known as “solutes,” such as salt [sodium chloride] or glucose); and condition caused by excessive levels of growth hormone, leading to enlargement of bone and soft-tissues in the body (known as “acromegaly” or “hypersomatotropism”)
- Primary increased urination (polyuria) due to deficiency of antidiuretic hormone (ADH), the hormone that decreases the amount of water in the urine and thus, maintains hydration of the body—unknown cause (so-called “idiopathic disease”); trauma; cancer; or congenital (present at birth) diabetes insipidus (“water diabetes”); some drugs (such as alcohol and phenytoin)
- Primary increased thirst (polydipsia)—behavioral problem; fever; pain; or disease of the anterior hypothalamic thirst center of cancerous, traumatic, or inflammatory origin

## RISK FACTORS

- Kidney disease or liver disease
- Administration of medications to remove excess fluids from the body (diuretics), steroids, and medications to control seizures (known as “anticonvulsants”)
- Low-protein diets designed for dissolving of struvite urinary tract stones (known as “uroliths”) in dogs
- Young, hyperactive, large-breed dogs appear to be at higher than normal risk for “psychological” drive to drink excessive amounts of water (primary polydipsia)

## Treatment

### HEALTH CARE

- Serious medical consequences are rare, if the pet has free access to water and is willing and able to drink; until the mechanism of increased urination (polyuria) is understood, access to water should not be limited to avoid possible dehydration (any limitation of access to water should be considered *only* under the direction of your pet's veterinarian)
- Direct treatment at the underlying cause
- Provide free access to water, unless the pet is vomiting
- If vomiting, give replacement maintenance fluids via injection (fluids administered intravenously [IV] or under the skin [subcutaneously or SC])
- Provide fluids via injection (fluids administered IV or SC) when other conditions limit intake of fluids by mouth (oral route) or dehydration persists, despite increased thirst (polydipsia)
- “Psychological” drive to drink excessive amounts of water (primary polydipsia)—treat by gradually limiting water intake to a normal daily volume, as directed by your pet's veterinarian—it may be necessary to reduce water intake over days to weeks to avoid undesirable behaviors (such as increased barking); monitor closely to avoid dehydration

### DIET

- Depends on underlying cause of increased urination (polyuria) and increased thirst (polydipsia)

## Medications

- Vary with underlying cause

# Follow-Up Care

## PATIENT MONITORING

- Hydration status—by clinical assessment of hydration and serial evaluation of body weight
- Fluid intake and urine output—provide a useful baseline for assessing adequacy of hydration therapy

## POSSIBLE COMPLICATIONS

- Dehydration
- Hypovolemic shock (where the blood volume has decreased to the point that circulation or flow of blood is unable to sustain the body)
- Increased levels of sodium in the blood (known as “hypernatremia”)

## EXPECTED COURSE AND PROGNOSIS

- Vary with underlying cause

## Key Points

- Polyuria—increased urination; greater than normal urine production
- Polydipsia—increased thirst; greater than normal water consumption
- Serious medical consequences are rare, if the pet has free access to water and is willing and able to drink
- *Do not withhold water* from the pet with increased urination (polyuria) and increased thirst (polydipsia) because potentially dangerous dehydration may result

# Notes

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*Blackwell's Five-Minute Veterinary Consult: Canine and Feline, Fifth Edition*, Larry P. Tilley and Francis W.K. Smith, Jr. © 2011 John Wiley & Sons, Inc.