

# Addison's Disease

- Addison's disease occurs when the body cannot produce adequate amounts of certain hormones, including a hormone called *cortisol*.
- Addison's disease tends to affect young to middle-aged dogs, and females are more commonly affected than males. It is rare in cats.
- Diagnosis can be complicated, but most dogs respond well to appropriate treatment and can live normal lifespans.

### What Is Addison's Disease?

Glucocorticoids (primarily cortisol) and mineralocorticoids are two important types of hormones produced by the body's adrenal glands. Under normal conditions, the brain releases a hormone called *adrenocorticotropic hormone* (ACTH) that stimulates the adrenal glands to release their hormones. Addison's disease occurs when the brain doesn't release adequate amounts of ACTH, or the adrenal glands fail to release their hormones in response to ACTH. The medical term for Addison's disease is *hypoadrenocorticism*.

Glucocorticoids and mineralocorticoids help regulate numerous complex processes in the body and participate in critical functions such as the following:

- Maintaining the body's fluid balance
- Maintaining the body's balance of sodium and potassium
- Maintaining the integrity and functioning of blood vessels
- Regulating blood pressure and blood flow to vital organs, like the kidneys
- Supporting cardiac function
- Controlling blood sugar levels and carbohydrate metabolism
- Helping to counteract the effects of stress
- Helping to maintain immune system function

The body has highly developed systems called *feedback mechanisms* that control how much of these hormones the adrenal glands produce and release,

based on the body's needs. During times of physical or emotional stress, the body tends to increase the production and release of glucocorticoids (cortisol) to help it deal with the stressful episode. In contrast, when the body is receiving cortisol from an outside source (like a cortisone pill or injection), it reduces the amount of cortisol that the adrenal glands produce.

In most cases, the cause of Addison's disease is not determined. Sometimes, the body's immune system can damage the adrenal glands' cells so extensively that they can't release hormones when they need to. In other cases, such as a brain tumor, the part of the brain that should release ACTH is unable to. However, Addison's disease can also occur if a pet that is receiving cortisol medication suddenly stops getting it. In this case, the body has reduced its own cortisol production and can't increase it quickly enough to compensate when the medication is discontinued. This is why steroid medications (such as prednisone) should not be discontinued suddenly, but must instead be gradually reduced and then discontinued.

Addison's disease is most commonly diagnosed in dogs, although it does occur rarely in cats. Young to middle-aged dogs are generally affected, and females are more commonly affected than males.

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### What Are the Clinical Signs of Addison's Disease?

The clinical signs associated with Addison's disease can vary greatly and can resemble those of other diseases. They include the following:

- Vomiting and diarrhea
- Decreased appetite

## Common Conditions

- Increased drinking and urination
- Dehydration
- Weakness and collapsing episodes
- Abdominal pain
- Weight loss
- Weak pulse and slow heart rate

These clinical signs can vary in severity, and many owners report that the problems seem to “wax and wane”—sometimes seeming to resolve on their own and sometimes responding temporarily to very nonspecific treatment. Because dogs with Addison’s disease have a reduced ability to handle stress, the emotional stress of visiting a boarding kennel or the excitement of a family gathering can cause clinical signs to resurface.

### How Is Addison’s Disease Diagnosed?

Diagnosis of Addison’s disease may require several steps. Your veterinarian will likely begin by reviewing your pet’s medical history. A complete physical examination may be followed by recommendations to perform diagnostic tests. Results of these tests can support a diagnosis of Addison’s disease:

- Blood tests, including a chemistry panel and complete blood cell count (CBC)
- Urinalysis
- Abdominal radiographs (x-rays)
- Abdominal ultrasonography

If your veterinarian suspects Addison’s disease, an additional test called an *ACTH stimulation test* may be recommended. As described above, ACTH is the hormone the brain produces that stimulates the adrenal glands to release glucocorticoids and mineralocorticoids. In a dog with Addison’s disease, ACTH may be absent or the adrenal glands may be unable to respond adequately to it. The ACTH stimulation test involves administering a small amount of ACTH by injection and then measuring the levels of cortisol produced over a period of a few hours. In dogs with Addison’s disease, the injection

of ACTH does not result in a significant increase in cortisol levels. This response can be used to confirm a diagnosis.

The ACTH stimulation test requires a few hours of hospitalization so that blood can be drawn to check the body’s response to the injection.

### What Are the Treatment and Outcome for Addison’s Disease?

Some dogs with Addison’s disease arrive at the veterinary office in a state of life-threatening crisis. Low blood pressure, shock, dehydration, impaired heart function, and other complications of the disease can be fatal if not treated immediately and aggressively. In such a case, hospitalization for emergency intravenous fluid therapy and other stabilization is necessary.

In other cases, the clinical signs of Addison’s disease are more subtle. As long as the dog is stable, treatment can begin on an outpatient basis.

The primary treatment for Addison’s disease consists of giving the body the adrenal gland hormones it is unable to produce on its own. Glucocorticoid supplementation commonly involves administering prednisone or hydrocortisone pills. Most dogs also need mineralocorticoid supplementation; these are available in pill and injectable formulations. A popular mineralocorticoid formulation is injectable deoxycorticosterone pivalate (DOCP); this medication can be given as an injection every 21 to 30 days.

Medications for Addison’s disease only replace missing hormones; they don’t cure the disease. Therefore, dogs with Addison’s disease need to receive medications for the rest of their lives. Periodic veterinary examinations and repeat blood testing are required for the life of the pet, and sometimes medication dosages need to be adjusted. Your veterinarian may also want to discuss modifying your pet’s medication during times of stress, when the body’s need for these hormones may increase. Fortunately, dogs that receive proper treatment for Addison’s disease can have a normal lifespan and enjoy a good quality of life.