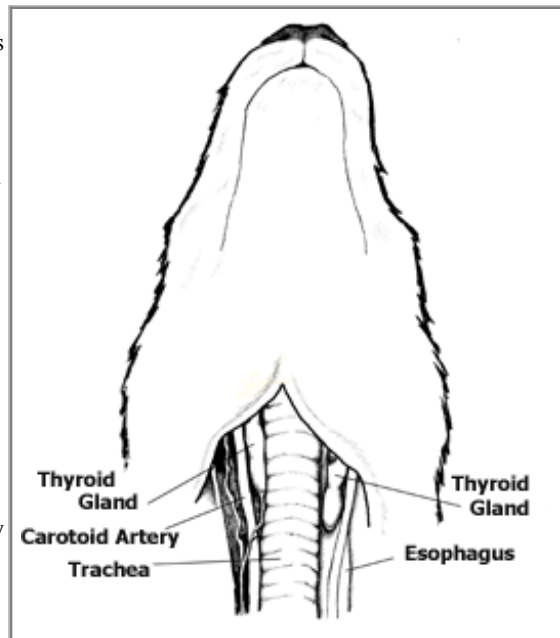


# Hypothyroidism in Dogs

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Hypothyroidism is a common disease in dogs, but rarely occurs in cats. The thyroid gland has a number of different functions, but it is most well known for its role in regulating metabolism by producing thyroid hormones. Hypothyroidism is the condition that occurs when not enough thyroid hormones are produced. Hypothyroidism causes a wide variety of symptoms, but is often suspected in dogs that have trouble with weight gain or obesity and suffer from hair loss and skin problems. Hypothyroidism is easy to diagnose with a blood test that checks the level of various thyroid hormones including T4. Most hypothyroid dogs respond readily to treatment with synthetic thyroid medication such as Soloxine. Many dogs suffer from a low thyroid hormone level for years without treatment. If your dog has chronic recurrent skin problems, or unexplained weight gain, she may be suffering from hypothyroidism.



What causes hypothyroidism?

The thyroid gland is a small gland that is situated close to the larynx (voice box) in the neck. It is regulated by the small pituitary gland that is located at the base of the brain. Normally, the pituitary gland produces a hormone called TSH (thyroid stimulating hormone). This hormone tells the thyroid gland to produce thyroid hormone. The amount of TSH produced is dependent on the amount of thyroid hormone in the blood. The pituitary gland responds to the blood level of thyroid hormone by producing more TSH if the thyroid hormone level is low, and less TSH if the thyroid hormone level is high.

Hypothyroidism results from the impaired production and secretion of thyroid hormones. More than 95% of all cases occur as a result of destruction of the thyroid gland. Most hypothyroidism is due to thyroid gland destruction that is suspected to be caused by the dog's own immune system killing the cells of the thyroid gland. Hypothyroidism may also be a result of atrophy of the thyroid tissue and resultant infiltration of the tissue by fat, or by a cancer. Hypothyroidism can also be associated with the presence of other diseases and the use of certain medications. Rare cases of congenital hypothyroidism have been diagnosed, as well.

Who gets hypothyroidism?

Although the onset of clinical signs is variable, hypothyroidism most commonly develops in middle-aged dogs between the ages of 4 to 10 years. The disorder usually affects mid to large size breeds of dogs, and is rare in toy and miniature breeds of dogs. Breeds that appear to be predisposed to developing the condition include the Golden Retriever, Doberman Pinscher, Irish Setter, Miniature Schnauzer, Dachshund, Cocker Spaniel, and Airedale Terrier. German Shepherds and mixed breeds appear to be at a reduced risk of contracting the disease. There does not appear to be a sex predilection but spayed females appear to develop it more often than intact females.



What are the symptoms?

Thyroid hormones are needed for normal cellular metabolic function. A deficiency of thyroid hormones affects the metabolic function of all organ systems. As a result, the symptoms are usually variable and non-specific. There is not a specific symptom that is diagnostic for hypothyroidism. There are, however, several symptoms that when combined together make the veterinarian more suspicious of the likelihood of the animal having the disease. A study on hypothyroid dogs revealed the following information on the variety and frequency of symptoms seen with the disease:

Clinical Symptoms	Percentage of Dogs Showing Symptoms
Lethargy/mental dullness	70

Hair loss	65
Weight gain/obesity	60
Dry hair coat/excessive shedding	60
Hyperpigmentation of the skin	25
Cold intolerance	15
Slow heart rate	10
High blood cholesterol	80
Anemia	50

How is hypothyroidism diagnosed?

There are several different tests used to diagnose hypothyroidism in the dog. The test chosen will depend on the symptoms and the availability of different tests to your veterinarian.

**Baseline T4 Test:** The most common test run is the baseline T4 test. A blood sample is drawn and tested by radioimmunoassay to determine the level of T4 thyroid hormone in the bloodstream. The T4 hormone is produced only in the thyroid gland and dogs with a failure of the thyroid gland will have a lowered level of this hormone. However, there are other conditions that can cause a lowering of T4 so if this screening test is positive for hypothyroidism another more specific test is often done to confirm the diagnosis.

**Free T4 by Equilibrium Dialysis:** T4 is present in two forms in the body. The "bound" form is attached to proteins in the blood and is unable to enter the cells. The "free" T4 is not attached to proteins, and can readily enter the cells and perform its function. The free T4 is normally present in very small amounts. A special laboratory test - equilibrium dialysis - has been designed that can quite precisely measure free T4.

**TSH Level:** This blood test measures the amount of TSH in the bloodstream. In a hypothyroid dog, the level will be elevated because the body is trying to stimulate the thyroid gland to produce more thyroid hormone. If the Baseline T4 and Free T4 by Equilibrium Dialysis are low and the TSH is elevated, a diagnosis of hypothyroidism can be made.

**TSH Response Test:** If a dog has a low T4 level, this test may be performed to confirm a diagnosis of hypothyroidism. A small amount of Thyroid Stimulating Hormone (TSH) is injected into the vein. After 6 hours, a blood sample is drawn and the T4 level is checked. A dog without thyroid disease that may have other conditions causing a low T4 will have a high T4 level after the TSH injection. A dog with true hypothyroidism will not have an increase in T4 after the injection.

How is hypothyroidism treated?

Hypothyroidism in dogs is easily treated. Treatment consists of placing the dog on a daily dose of a synthetic thyroid hormone called thyroxine (levothyroxine). There are numerous brand names of this drug. The dose and frequency of administration of this drug varies depending on the severity of the disease and the individual response of the animal to the drug. A dog is usually placed on a standard dose for his weight and then blood samples are drawn periodically to check his response and then the dose is adjusted accordingly. Once therapy is started, the dog will need to be on treatment for the rest of his life. Usually after the treatment is started, the majority of the symptoms resolve.

A hypothyroid dog will need to be on thyroxine for the rest of his life.