Hypothyroidism can be a slow but progressive endocrine disorder.

Primary hypothyroidism is the most common type of hypothyroidism in the dog, and is the result of either lymphocytic thyroiditis and idiopathic atrophy of the thyroid gland. Lymphocytic thyroiditis is known to be a progressive disorder, with 80% of thyroid tissue destroyed before clinical signs are seen. The condition may progress over 1-3 years-time and the end results may be the cause of some cases of idiopathic atrophy of the thyroid gland.

Having baseline thyroid levels may allow the clinician to spot a downward trend, and enable the practitioner to institute replacement therapy before serious dermatological or metabolic abnormalities develop.

Extra consideration for annual monitoring of thyroid levels should be given in middle age and older dogs of breeds known to be at risk for the development of hypothyroidism. These breeds include (but are not limited to) Golden and Labrador Retrievers and Doberman Pinchers.

Although measurement of T4 is a good screening test for euthyroidism or hypothyroidism, measurement of combined thyroid function tests including FT4 and TSH is preferred when confirming the diagnosis. The diagnosis can be challenging due to the progressive nature of the disease, conflicting or discordant test results, overlap of T4 levels between euthyroid and hypothyroid patients and variation of normal thyroid levels between different breeds. Further it should be noted that different analyzers and labs have different testing modalities and that each thyroid evaluation has different reference ranges for normal thyroid levels. The patient’s thyroid level should always be evaluated from where the value falls within the reference interval.

An index of suspicion of hypothyroidism should be based on appropriate clinical signs and clinical pathology. It is also important to remember certain drugs that will interfere with thyroid testing. For example, glucocorticoids, sulfonamides, NSAIDs, phenobarbital and clomipramine.

Additional clinical pathology changes that should be monitored which provides the clinician a higher degree of suspicion regarding hypothyroidism. These diagnostics include a CBC which may reveal a normocytic, normochromic, nonregenerative anemia and serum chemistries where hypercholesterolemia and hypertriglyceridemia may be seen. Myopathy caused by hypothyroidism may show increases in LDH, ALT, AST and Alkaline Phosphatase.

Some of the early clinical changes of hypothyroidism include lethargy and weight gain, facial myxedema, “cool” skin which may appear to have “bleached out” hairs due to slower turnover. Bilateral alopecia, including sites of wear is also a feature.

Diagnosing a patient with hypothyroidism early when only dermatologic abnormalities have been manifest is clearly preferable to delaying the diagnosis (and treatment) until more serious cardiac, metabolic or neurological abnormalities have developed. Regular physical examinations, CBC and Serum Chemistry and baseline thyroid level testing is essential for early detection of this disorder.
Hyperthyroidism is the only significant thyroid disease of the cat.

It results from a thyroxine producing tumor that affects one or both thyroid lobes and even ectopic thyroid tissue in the neck or the mediastinum. These tumors begin as adenomas; over time some will progress to adenocarcinomas even if the disease is controlled with methimazole.

The most consistent clinical sign is weight loss due to the accelerated metabolic rate resulting from excessive thyroxine. Weight loss is followed by polyphagia as the cat attempts to compensate; however, the cat cannot eat enough to prevent further weight loss. Weight loss will become severe if the disease is not addressed. Many cats lose well over 50% of their body weight before they are treated or die. Ironically, weight loss is not reported in all hyperthyroid cats. However, this is likely a function of observational failure on the part of the owner. Cats living in households with five or more cats may not be observed carefully. Cats with antisocial personalities are also hard to assess. Cats with long hair coats add further to the difficulty some owners have in detecting early weight loss.

Clinical signs include tachycardia leading to systemic hypertension. This results in increased blood flow through the kidneys increasing glomerular filtration rate (GFR) and decreasing creatinine and blood urea nitrogen (BUN) values. Cats with pre-existing renal disease may be difficult to diagnose due to the artificially lowered creatinine and BUN values.

Hyperthyroidism-induced hypertension may also have adverse, systemic effects. Some of these cats have hypertensive encephalopathy manifested as strokes or seizures. Retinopathy may also occur resulting in retinal hemorrhage, hyphema, and retinal detachment.

The typical age for the onset of hyperthyroidism is about 10 years. However, cats several years younger than this have been well documented.

Treatment options include control measures (diet [Hill’s y/d] and methimazole) and cures (thyroidectomy and radioiodine therapy). Cure is the most desirable; however, there are many patient and owner factors that are involved in making that choice.

Early detection of hyperthyroidism is highly desirable. Doing so when the total T4 is less than 8 mg/dL usually means that the cat’s weight loss has been mild and that tachycardia and hypertension have not yet developed. The total T4 is our best screening tool. It is elevated in over 95% of hyperthyroid cats. The total T3 is less sensitive, and the free T4 can be too sensitive, being elevated due to some non-thyroid disease in euthyroid cats. Thyroid stimulating hormone levels have not been shown to be of significant value. If the diagnosis is in question, a T3 suppression test is recommended.

Total T4 screening is highly recommended for all cats over eight years of age and for any cat with unexplained weight loss.

Our goal should be to find hyperthyroid cats in the early stages of disease or even before the onset of clinical signs. Remember that weight loss can elude detection in many cats. Cats diagnosed early suffer no or minimal ill effects from the disease and are very successfully treated. If these patients are successfully treated, there is very little chance that their adenoma has progressed to an adenocarcinoma. Early diagnosis greatly increases the chances of returning these cats to a euthyroid, healthy state, giving them many extra years of quality life.