

Canine

Diagnostic Testing

Canine Basic Thyroid Panel (T4, TSH, Free T4)

The two most frequent thyroid disorders in dogs are primary hypothyroidism and euthyroid sick syndrome (repressed pituitary-thyroid axis due to non-thyroid illness). Additionally, some medications can induce hypothyroxinemia in dogs (i.e. phenobarbital, sulfa drugs, glucocorticoids). Other variables that may affect T4 and TSH include diestrus, testicular neoplasia, thyroid tumors, chronic protein loss, certain breeds (i.e. sighthounds), etc. This panel can differentiate primary hypothyroidism and euthyroid sick syndrome in most dogs, especially when interpreted in conjunction with clinical history.

Canine Comprehensive Thyroid Panel (T3, T4, TSH, Free T4-ED, TgAA)

This comprehensive panel can aid in classification of thyroid disease in dogs with vague clinical signs or ambiguous Canine Basic Thyroid Panel results. Free T4 by Equilibrium Dialysis (Free T4-ED) is useful in cases where total T4 and Free T4 are discrepant. When detected, TgAA is specific for (immune mediated) primary hypothyroidism. However, a negative TgAA does not rule out primary hypothyroidism as the test can be poorly sensitive.

Additional tests of interest: Cholesterol

Treatment Monitoring

Thyroid values should be monitored approximately 6 weeks after beginning medication, six weeks after any medication change, and every six months (depending on clinical status) in treated animals. Blood should be collected three to six hours post pill. T4 should be measured, as well as any other analyte that was abnormal at the time of diagnosis (i.e. Free T4, TSH). When TSH is increased in the original diagnostic bloodwork for primary hypothyroidism, treatment monitoring needs to include TSH until TSH reach low normal values.

Feline

Diagnostic Testing

Feline Thyroid Panel (T3, T4, FT4-ED)

The two most frequent thyroid disorders in cats are hyperthyroidism and euthyroid sick syndrome (repressed pituitary-thyroid axis due to non-thyroid illness). Hyperthyroidism is often due to a thyroid adenoma; thyroid adenocarcinoma rarely occurs. This panel can help differentiate hyperthyroidism and euthyroid sick syndrome in most cases. When thyroxine is borderline, it is recommended to repeat the panel one month later. If the diagnosis is clinically urgent, it may be helpful to retest quickly by submitting two T4 samples collected four hours apart.

Additional tests of interest: BUN, Creatinine, ALT

Hyperthyroxinemia (increased T4) increases glomerular filtration rate (GFR), which can mask azotemia. It is highly recommended to assess BUN and creatinine before treating a hyperthyroid cat (to anticipate a worsening of the azotemia by the treatment), as well as two weeks post beginning of treatment (to identify a

potentially unmasked azotemia). Additionally, hyperthyroxinemia could induce ALT activity and monitoring is recommended with hyperthyroidism.

Treatment Monitoring

Treatment should be monitored approximately 6 weeks post beginning of medication, six weeks post any medication change, and every 6 months (depending on clinical status) in treated animals. Blood should be collected three to six hours post pill. T4, BUN, and Creatinine should be ordered, as well as any other analyte that was abnormal at the time of diagnosis (i.e. Free T4, ALT).

Equine

Diagnostic Testing

Equine Thyroid Panel (T3, T4)

Primary hypothyroidism is considered rare in horses. Normal T3 and T4 essentially rules out thyroid disease in horses. Equine metabolic syndrome (EMS), pituitary pars intermedia dysfunction (PPID), medication induced hypothyroxinemia (e.g. phenylbutazone, corticosteroids, possibly sulfa drugs), and euthyroid sick syndrome should be considered in many cases. Euthyroid sick syndrome occurs when repressed pituitary-thyroid axis result from non-thyroid illness (e.g. severe inflammatory diseases, neoplasia). If a patient is currently on drugs known to depress thyroid hormones, repeat testing two to four weeks after discontinuation of these drugs may be warranted.

General Sample Requirements for Thyroid Tests

- **Specimen:** 1 mL of serum in an additive-free tube
- **Sampling:** Avoid hemolysis and marked lipemia. Collect blood, allow blood to clot, centrifuge sample, transfer serum into a second additive-free tube, labeled with the patient's name, store in the refrigerator.
- **Submission Form:** Include full signalment, specific test requests, specify diagnostic vs. monitoring, brief clinical history, current pertinent medication and dosing, time between treatment and blood collection (i.e. for therapeutic monitoring).
- **Shipping:** Ship overnight with cold pack, ship same day as collection (when possible).

