

FAQs: THYROID DIAGNOSTICS & TREATMENT

W. Jean Dodds, DVM

Hemopet/Hemolife

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Q. When do classical clinical signs of canine hypothyroidism appear?

A. The classical clinical signs with low thyroid values occur only after 70% or more of thyroid tissue has been destroyed or damaged. Other clinical and behavioral changes can present during the early phase.

Q. Are basal thyroid levels the same for animals over the age and breed spectrum?

A. No. All animals are not the same.

- Puppies have higher basal thyroid levels than adults
- Geriatrics have lower basal thyroid levels than adults
- Large / giant breeds have lower basal thyroid levels
- Sighthounds as a group have much lower basal thyroid levels

Q. How does one screen effectively for canine thyroid dysfunction?

A. Accurate assessment requires:

- Complete thyroid antibody profile preferred

Q. What tests should be included in the complete thyroid profile?

A. At least the majority of the following:

- T4, freeT4, T3, freeT3
- TgAA (important if breeding or for breeds at risk for thyroiditis)
- T3 Autoantibody (T3AA) and T4 Autoantibody (T4AA)
- cTSH poorly predictive (~ 70%) compared to humans

Q. What are some things that can affect basal thyroid activity?

A. Results may be affected by the following:

- Basal levels affected by certain drugs
- Basal levels lowered by estrogen; raised by progesterone [sex hormonal cycle effects]. Test during anestrus
- Thyroid levels are suppressed slightly (up to 25%) by corticosteroids, sulfonamides, overdosing iodine (kelp), and phenobarbital
- Rabies vaccination within previous 45 days can elevate TgAA by ~ 25%

Q. Is T4 alone a sufficient screening test for canine hypothyroidism?

A. No, T4 alone can give misleading results. It can overdiagnose hypothyroidism in the presence of non-thyroidal illness or use of certain drugs; underdiagnose hyperthyroidism in cats or from thyroxine overdosage; inaccurately assess adequacy of thyroxine therapy; and fail to detect autoimmune thyroiditis.

Q. How is freeT4 measured accurately?

A. While endocrinologists may favor the equilibrium dialysis (ED) method for measuring free T4, because earlier analog methods were less accurate, newer technology offers other accurate methodology. These new assays are also faster and less costly.

Q. What is the diagnostic importance of measuring canine endogenous TSH ?

A. The cTSH test gives relatively poor predictability for primary hypothyroidism in dogs [~ 70%] vs people [95%], because the dog has another pathway to regulate the pituitary-thyroid-hypothalamic axis via growth hormone. False negatives and false positives (i.e. discordant results) occur in ~ 30% of cases. New research just published has shown that unlike humans where growth hormone has minimal influence on thyroid regulatory control, the dog uses this additional important regulatory pathway along with endogenous TSH.

Q. When are blood samples drawn for testing dogs on thyroxine therapy?

A. Blood samples should be drawn 4-6 hrs post-pill for BID Rx.

- Blood samples drawn 8-10 hrs post-pill for SID Rx (horses)
- Minimum testing needed is T4 and freeT4
- Thyroid antibody profile preferred; a must for thyroiditis cases

Q. Should thyroxine be given twice daily or will once daily suffice?

A. Dividing the daily dose q 12 hrs avoids “peak and valley” effect

- Achieves better steady state over 24 hrs; half life 12-16 hrs
- Dosing once daily results in undesirable cardiovascular stress
- Dosing should be given directly by mouth rather than in food bowl

Q. Should thyroxine be given with or away from food?

A. Because thyroxine binds to calcium and soy, it should be given at least an hour before or three hours after each meal, to ensure proper absorption.

Q. After discontinuing thyroxine therapy, how long a wait is needed to accurately assess thyroid function?

A. A minimum of 6 weeks is needed off thyroxine before an accurate assessment of basal thyroid capacity can be made.

Q. Why do some dogs over-supplemented with thyroxine still test hypothyroid?

A. Because the body can increase thyroxine turnover rate and excrete it faster to avoid thyrotoxicosis.

Q. Screening for canine autoimmune thyroiditis

A. Dogs taking thyroxine must be off this drug for at least 90 days to get accurate TgAA results for thyroiditis. Testing requires:

- Complete thyroid antibody profile
- Test intact females during anestrus
- Need T3AA, T4AA, TgAA; not just freeT4, TSH, TgAA
- OFA Thyroid Registry is only a limited panel
- About 8% of TgAA negative cases are T3AA and/or T4AA positive

Q. How is canine autoimmune thyroiditis treated?

A. Thyroxine therapy will inhibit TSH output from the pituitary gland by negative feedback, which reduces further destruction of thyroid tissue by self-directed targeted lymphocytic attack.

- Treat all cases positive for T3AA and/or T4AA, or TgAA
- Don't wait until dog gets ill or has aberrant behavior
- If *only* low-grade TgAA positive, retest profile in 2-4 mos
- Treat with thyroxine BID; retest profile in 4-6 mos
- Always monitor with the full thyroid antibody profile

Q. Should dogs with autoimmune thyroiditis be used for breeding?

A. No, regardless of the presence or absence of clinical or behavioral issues.

- Heritable trait, regardless of clinical status
- Screen relatives annually from puberty; females during anestrus
- Consider for breeding, if negative, after age three

Q. What about testing older cats ?

A. Testing older cats is similar to older dogs.

- Basal thyroid levels in older cats should be lower than adults
- Other illnesses often lower T4, masking hyperthyroidism
- Minimum testing needed is T4 and freeT4
- FT4 by ED method can be high in cases of GI, renal, and liver disease