Canine Hypothyroidism

Canine Screening
- Dogs with low total T4 (T4) and evidence of nonthyroidal illness (NTI) should have NTI addressed.
- Dogs with T4 results in the low normal range may be hypothyroid.
- In dogs with low or low normal T4 results and with consistent clinical signs, consider free T4 (fT4) and endogenous thyroid-stimulating hormone (TSH) and possibly thyroglobulin autoantibodies (TgAA) to aid in confirming hypothyroidism.

Hypothyroidism Therapeutic Monitoring
For dogs on thyroid supplement, acceptable 4–6-hour post-pill T4 values will generally fall in the upper end of the reference range or slightly above.

**SNAP® Total T4 Results**
- Low: <1.0 µg/dL (<13 nmol/L)
- Low Normal: 1.0–2.0 µg/dL (13–26 nmol/L)
- Normal: 1.0–4.0 µg/dL (13–51 nmol/L)
- High: >4.0 µg/dL (>51 nmol/L)
- Therapeutic: 2.1–5.4 µg/dL (27–69 nmol/L)

**Dynamic Range**
- 0.5–7.0 µg/dL (6.4–90.0 nmol/L)

**Algorithm**

**Canine Hypothyroidism Suspected**

**Common Clinical Signs in Dogs**
- Obesity
- Skin Disease
- Lethargy
- Mental dullness
- Exercise/cold intolerance

**Initial Database**
- Total T4
- CBC
- Biochemical profile
- Electrolytes
- Urinalysis

**Low T4 with NTI**
- <1.0 µg/dL
  - Address NTI

**Low T4**
- <1.0 µg/dL
  - fT4 + TSH ± TgAA
    - Low fT4 ± high TSH ± positive TgAA
      - Hypothyroidism likely
        - Clinical trial
    - Normal fT4 and TSH negative TgAA
      - Hypothyroidism unlikely
      - Repeat testing in 4–6 weeks if hypothyroidism still suspected

**Low Normal T4**
- 1.0–2.0 µg/dL

**Normal T4**
- 2.0–4.0 µg/dL
  - Hypothyroidism unlikely
Feline Hyperthyroidism

Dynamic Range
0.5–7.0 µg/dL
(6.4–90.0 nmol/L)

SNAP® Total T4 Results
- Subnormal: <0.8 µg/dL (<10 nmol/L)
- Normal: 0.8–4.7 µg/dL (10–60 nmol/L)
- Gray zone in old or symptomatic cats: 2.3–4.7 µg/dL (30–60 nmol/L)
- Consistent with hyperthyroidism: >4.7 µg/dL (>60 nmol/L)

Feline Screening
Cats with consistent clinical signs and total T4 (T4) values in the borderline high range (gray zone) may have early hyperthyroidism or a concurrent nonthyroidal illness (NTI). In these cases, consider a free T4 (fT4), a T3 suppression test or radionuclide thyroid imaging to aid in confirming the diagnosis.

Hypothyroidism Therapeutic Monitoring
Following treatment with methimazole, T4 values will generally fall within the lower to midportion of the reference range.

Algorithm

Feline Hyperthyroidism Suspected

Common Clinical Signs in Cats
- Weight loss
- Hyperactivity
- Polyphagia
- Palpable goiter
- Unkempt coat

Initial Database
- Total T4
- CBC
- Biochemical profile
- Electrolytes
- Urinalysis

Low T4
- <0.8 µg/dL
- Euthyroid sick or iatrogenic

Normal T4
- 0.8–2.3 µg/dL

Gray Zone
- 2.4–4.7 µg/dL

High T4
- >4.7 µg/dL
- Low or normal fT4
- Hyperthyroidism unlikely*
- High fT4
- Hyperthyroidism likely

*If strong suspicion of hyperthyroidism still exists, consider retesting in 4–6 weeks or a technetium scan.

CBC = Complete blood count
Note: 1 µg/dL is equal to 12.87 nmol/L. A result that falls within the gray zone of the assay should be considered ambiguous.
SNAP® Total T₄ Testing Guide

Equine Hypothyroidism

**Dynamic Range**
0.5–7.0 µg/dL
(6.4–90.0 nmol/L)

**SNAP® Total T₄ Results**
- **Low**  
  < 1.0 µg/dL  
  (< 13 nmol/L)
- **Normal**  
  1.0–3.8 µg/dL  
  (13–49 nmol/L)
- **High**  
  > 3.8 µg/dL  
  (> 49 nmol/L)

**Note:** 1 µg/dL is equal to 12.87 nmol/L.