

USC THYROGLOBULIN TESTING STRATEGY

The USC Endocrine Laboratories use a dual strategy to provide highly reliable serum Thyroglobulin (Tg) testing for both TgAb-negative and TgAb-positive patients with Differentiated Thyroid Carcinomas (DTC).

Background

Serum Tg measurement is the cornerstone of management for patients with DTC. Current Tg assays are based on either radioimmunoassay (RIA) or immunometric assay (IMA) methods. Unfortunately, serum Tg measurement is compromised by a number of technical challenges:

1. Thyroglobulin autoantibodies (TgAb) are present in ~20% of DTC patient sera and can cause falsely low values using IMA methods.
2. Large between-method biases preclude changing methods when serial monitoring patients.
4. Poor between-run precision, across the long follow-up intervals (~1 year) typical for DTC patients can mask the early detection of recurrence.

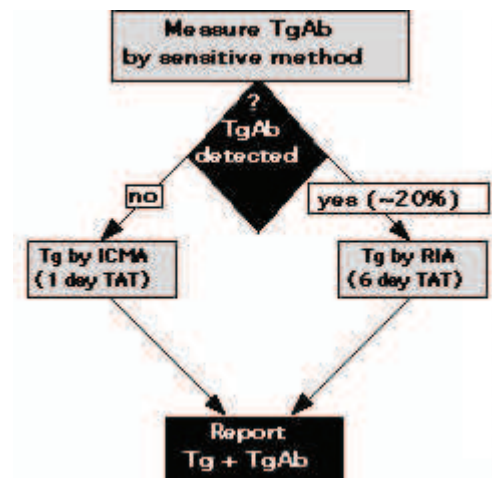
USC Tg Testing Strategy

The USC Endocrine Laboratories use a dual assay Tg testing strategy that minimizes TgAb interference and routinely archives (at -20°C) specimen remaining after Tg analysis to allow the physician to order concurrent re-measurement of the past alongside the patient's current specimen to eliminate between-run variability.

Specimens are triaged to either a Tg ICMA or Tg RIA method on the basis of their TgAb status, measured by a sensitive immunoassay.

When TgAb is Negative: Serum Tg is measured by a sensitive ICMA with a 1-day turn-around time (TAT).

When TgAb is Positive: Serum Tg is measured by an RIA method that has been used by our laboratory for 20 years (1). This RIA is resistant to interference by TgAb but has the disadvantage of requiring a longer TAT (6 days).



References

1. *Spencer et al.* Serum Tg Autoantibodies: prevalence, influence on serum Tg measurement and prognostic significance in patients with differentiated thyroid carcinoma. *JCEM* 83:1121-7, 1998.
2. *Spencer C.* Challenges of Serum Thyroglobulin (Tg) Measurement in the Presence of Tg Autoantibodies (TgAb). *JCEM* 89:3702,2004.
3. *Laboratory Medicine Practice Guidelines: Laboratory Support for the Diagnosis and Monitoring of Thyroid Disease.* *Thyroid*, 2003. 13: 57-67. Also available on www.nacb.org.