Clinical Use
• Screen patients with thyroid carcinoma for metastases after thyroid gland ablation
• Indicate presence of thyroid gland tissue in infants with congenital hypothyroidism
• Indicate deficient thyroglobulin synthesis in infants with goitrous hypothyroidism

Reference Range

<table>
<thead>
<tr>
<th>Thyroglobulin</th>
<th>ng/mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults</td>
<td>2.0-35.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thyroglobulin Antibody</th>
<th>IU/mL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults and children</td>
<td>&lt;20*</td>
</tr>
</tbody>
</table>

*Higher levels can interfere with thyroglobulin quantification.

Interpretive Information

- Graves disease
- Multinodular goiter
- Papillary and follicular thyroid carcinomas
- Thyroiditis
- TSH-dependent hyperthyroidism

- Thyroidectomy
- Thyroid aplasia
- Thyroglobulin synthetic defect
- Exogenous thyroid hormone use

Clinical Background

Thyroglobulin (Tg) is a 660-kd protein synthesized exclusively in the thyroid gland. It serves as the precursor molecule for thyroid hormones, since it contains tyrosine moieties that are iodinated to form iodotyrosines and coupled to form the thyroid hormones T4 and T3. Most synthesized Tg is stored as colloid for later pinocytosis and hydrolysis within thyroid follicular cells. Small amounts are secreted directly from the endoplasmic reticulum during synthesis. Tg release is increased in a variety of thyroid disease states.

Tg measurements are most useful in the postoperative monitoring of patients with papillary, follicular, and Hürthle cell carcinomas. Tg measurement also is helpful in the differential diagnosis of congenital hypothyroidism and in detecting thyrotoxicosis caused by exogenous medication (iatrogenic or factitious), in which case the serum Tg concentration should be low. Measurements are always preceded by assessment of Tg antibodies that interfere in the assay. In the presence of endogenous antibody, the Tg measurement is not reliable.

Method

**Thyroglobulin**
- Immunochemiluminometric assay (ICMA)
- Analytical sensitivity: 0.2 ng/mL
- Analytical specificity: underestimation caused by thyroglobulin autoantibodies

**Thyroglobulin Antibody**
- Immunochemiluminometric assay (ICMA)
- Analytical sensitivity: 20 IU/mL

Specimen Requirements

2 mL room temperature serum
0.8 mL minimum
No additive red top preferred
SST red top acceptable