Clinical Use
• Differentiate quantitative TBG derangements from thyroid dysfunction

Reference Range

μg/mL
Men 12.7-25.1
Women 13.5-30.9
Children
3-8 y 16.1-24.2
9-13 y 12.5-25.8
14-17 y 9.8-23.7

Interpretive Information
• Pregnancy
• Infancy
• Familial excess
• Hepatitis
• Estrogen treatment
• Tamoxifen treatment
• Androgenic steroid treatment
• Glucocorticoids (large dose)
• Nephrotic syndrome
• Acromegaly
• Familial deficiency

Clinical Background
Thyroxine-binding globulin (TBG) is a glycoprotein produced in the liver. TBG binds both thyroxine (T4) and triiodothyronine (T3) with high affinity and accounts for 75% of plasma protein thyroxine-binding activity. Thus, an increase or decrease in its circulating level alters total concentrations of T4 and T3 in blood, leading to potential confusion with true thyroid gland function. A number of diseases and medications, as well as inherited alterations in TBG gene expression, can change the serum TBG concentration (see Test Application and Interpretation section). Common causes of increased serum TBG include estrogen therapy (especially oral contraceptive agents), pregnancy, and hepatitis. Conversely, serum TBG may be decreased in cirrhosis, in the nephrotic syndrome, and by androgens.

The measurement of TBG can be used to establish the presence of TBG deficiency or excess suggested by abnormal total serum T4 and T3 concentrations in the presence of normal free levels of these hormones. Definitive documentation of a TBG derangement may avoid unnecessary diagnostic procedures and therapy in individuals with harmless congenital TBG anomalies, and in their relatives.

Method
• Immunochemiluminometric assay (ICMA)
• Analytical sensitivity: 3.5 μg/mL

Specimen Requirements
1 mL refrigerated serum (no additive red top tube); 0.5 mL minimum
SST red top unacceptable