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**Lab Dept:** Chemistry

**Test Name:** FREE THYROXINE (T4) LOW, WITH REFLEX TO FT4 BY DIALYSIS (MML)

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***General Information***

**Lab Order Codes:** LFT4

**Synonyms:** Free T4 by Immunoassay, Free T4 by Dialysis; FT4

**CPT Codes:** 84439 – Thyroxine; free by immunoassay (Children's)  
84439 – Thyroxine, free by dialysis (MML) (if appropriate)

**Test Includes:** Free thyroxine concentration reported in ng/dL. If the base free T4 level is low, testing will be automatically reflexed to FT4 by dialysis performed at Mayo Medical Laboratories and reported in ng/dL at an additional charge.

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***Logistics***

**Test Indications:** Free Thyroxine (T4) is the portion of T4 that is not bound to transport proteins. It is metabolically active and is a precursor to triiodothyronine (T3). Free T4 levels correlate with T4 secretion and metabolism.

If the FT4 is low, abnormal types or quantities of binding proteins found in some patients and most often related to other illnesses or drug treatments may interfere with accurate measurement of FT4 by analog immunoassays. These problems can be overcome by measuring FT4 by equilibrium dialysis, free from interfering proteins.

**Lab Testing Sections:** Chemistry (base FT4 test by immunoassay performed at Children's)

**Referred to:** Mayo Medical Laboratories (MML test: FRT4D), if FT4 by immunoassay is <0.8 ng/mL, FT4 by dialysis will automatically be ordered at an additional charge.

**Phone Numbers:** MIN Lab: 612-813-6280

STP Lab: 651-220-6550

**Test Availability:** Daily, 24 hours

**Turnaround Time:** FT4 by immunoassay: 1 day  
FT4 by dialysis at MML (if appropriate): 3-8 days

**Special Instructions:** N/A

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## ***Specimen***

<b>Specimen Type:</b>	Blood
<b>Container:</b>	SST (Gold, marble or red) top tube
<b>Draw Volume:</b>	7 mL (Minimum: 3.6 mL) blood
<b>Processed Volume:</b>	3.1 (0.5 Children's + 2.6 MML) mL (Minimum: 1.7 (0.5 Children's + 1.2 MML) mL serum)
<b>Collection:</b>	Routine venipuncture
<b>Special Processing:</b>	Lab Staff: Centrifuge specimen, remove serum aliquot into a plastic sample cup. Specimen must be separated within 6 hours of collection. If specimen reflexes to FT4 by dialysis to MML, remainder of specimen should be shipped and stored at refrigerated temperatures for reflex testing.  FT4 by immunoassay (Children's): Stable refrigerated for 7 days FT4 by dialysis (MML): Stable refrigerated for 28 days.
<b>Patient Preparation:</b>	None
<b>Sample Rejection:</b>	Mislabeled or unlabeled specimen; gross hemolysis; gross lipemia

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## ***Interpretive***

<b>Reference Range:</b>	Ranges apply to all ages:  FT4 by immunoassay (Children's): 0.8 - 1.8 ng/dL FT4 by dialysis (MML): 0.8 – 2.0 ng/dL
<b>Critical Values:</b>	N/A
<b>Limitations:</b>	Elevated values may be seen in patients on thyroxine therapy. Heterophile antibodies may interfere with immunoassay tests. A number of drugs including phenytoin, carbamazepine, ibuprofen, and salicylate, may interfere with Free T4 results due to competition for TBG sites. Thyroid autoantibodies when present may cause elevated results.
<b>Methodology:</b>	FT4 Immunoassay test (Children's): Homogeneous Sequential Chemiluminescent Immunassay  FT4 Dialysis test (MML): Equilibrium Dialysis/Tandem Mass Spectrometry (MS/MS)
<b>References:</b>	Siemens Dimension Vista Directions For Use (8/21/2013) Siemens Healthcare Diagnostics

National Committee for Clinical Laboratory Standards (NCCLS) (2002)  
Clinical Laboratory Technical Procedure Manuals; Approved Guideline-  
Fourth Edition GP2-A4

Biorad Immunoassay Plus Control Product Insert

Burtis, CA, Ashwood, ER, Bruns, DE, ed (2006) Tietz Textbook of  
Clinical Chemistry and Molecular Diagnostics. 4th Edition, Philadelphia:  
W.B. Saunders

Jacobs and DeMott Laboratory Test handbook (2001) 5th Edition, Lexi-  
comp Inc

Mayo Medical Laboratories (February 2018)

**Updates:**

4/3/18: Draw volume update.