
Lab Dept: Chemistry

Test Name: TESTOSTERONE, TOTAL AND FREE

General Information

Lab Order Codes: TGRP

Synonyms: N/A

CPT Codes: 84402 – Testosterone, free
84403 – Testosterone, total

Test Includes: Total testosterone (ng/dL), Free Testosterone (ng/dL)

Logistics

Test Indications: Alternative, second-level test for suspected increases or decreases in physiologically active testosterone:

- Assessment of androgen status in cases with suspected or known sex hormone-binding globulin globulin-binding abnormalities
- Assessment of functional circulating testosterone in early pubertal boys or older men
- Assessment of functional circulating testosterone in women with symptoms or signs of hyperandrogenism, but normal total testosterone levels
- Monitoring of testosterone therapy or antiandrogen therapy in older men and in females

Lab Testing Sections: Chemistry - Sendouts

Referred to: Mayo Clinic Laboratories (Mayo test: TGRP)

Phone Numbers: MIN Lab: 612-813-6280

STP Lab: 651-220-6550

Test Availability: Daily, 24 hours

Turnaround Time: 3 – 5 days, test set up Monday – Saturday

Special Instructions: N/A

Specimen

Specimen Type: Blood

Container:	Red NO GEL (SST tubes will not be accepted)
Draw Volume:	7.5 mL (Minimum: 3 mL) blood
Processed Volume:	2.5 mL (Minimum: 1 mL) serum Note: Submission of the minimum volume does not permit repeat analysis.
Collection:	Routine blood collection
Special Processing:	Lab Staff: Centrifuge specimen within 1 hour of collection. Remove serum aliquot into a screw-capped round bottom plastic vial. Store and ship refrigerated in a plastic vial. Forward promptly. Specimens stable refrigerated (preferred) for 14 days or frozen for 60 days.
Patient Preparation:	None
Sample Rejection:	Mislabeled or unlabeled specimens; specimens collected in gel separator tubes.

Interpretive

Reference Range:

See the reference lab's [catalog](#) for the comprehensive list of age- and sex-based reference ranges. Reference ranges are also included on the result report.

Critical Values:

N/A

Limitations:

Early morning testosterone levels in young male individuals are on average 50% higher than pm levels, reference values were established using specimens collected in the morning.

Testosterone levels can fluctuate substantially between different days, and sometimes more rapidly. Assessment of androgen status should be based on more than a single measurement.

The low end of the normal reference range for total testosterone in prepubertal subjects is not yet established.

While free testosterone can be used for the same indications as bioavailable testosterone, determination of bioavailable testosterone levels may be superior to free testosterone measurement in most situations.

Methodology:

Free Testosterone: Equilibrium Dialysis
Total Testosterone: Liquid Chromatography-Tandem Mass Spectrometry (LC-MS/MS)

References:

[Mayo Clinic Laboratories](#) September 2024

Updates:

4/17/12: Reference range updates.

8/2/2017: Ref range update (Males >18)

1/18/2018: Update Sex Binding Hormone reference ranges

11/20/2021: Moved from Esoterix to Mayo

9/4/2024: Reviewed. Added a temporary note that expected turnaround times are extended to 2-3 weeks, added specimen stability. Omitted extensive reference range list and instead referred to the linked reference lab catalog. Omitted outdated rejection of hemolyzed, icteric or lipemic samples.

12/13/2024: Delays resolved; resumed normal TAT.