



Patient: **SAMPLE**
PATIENT

DOB:

Sex:

MRN:

4001 Male Hormonal Health - Serum

Methodologies: Chemiluminescent method, ECLIA, EIA, ICMA, HPLC

Blood Tests

Reference Range



Age	Reference Range
18 to 20 yrs	24-537 mcg/dL
21 to 30 yrs	85-690 mcg/dL
31 to 40 yrs	106-464 mcg/dL
41 to 50 yrs	70-495 mcg/dL
51 to 60 yrs	38-313 mcg/dL
61 to 70 yrs	24-244 mcg/dL
Over 70 yrs	5-253 mcg/dL



Age	Reference Range
>= 18 yrs	13.3-89.5 nmol/L



Age	Reference Range
>=18 yrs	<15-32 pg/mL



Age	Reference Range
Less than 20 yrs	Not Established
20 to 29 yrs	9.3-26.5 pg/mL
30 to 39 yrs	8.7-25.1 pg/mL
40 to 49 yrs	6.8-21.5 pg/mL
50 to 59 yrs	7.2-24.0 pg/mL
Over 59 yrs	6.6-18.1 pg/mL



Lab Results Continued

Reference Range

Dihydrotestosterone, DHT (serum) ♦	42	30-85 ng/dL
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Age	Reference Range
>= 18 yrs	30-85 ng/dL

Insulin-like Growth Factor 1, IGF-1 (serum)	145	109-353 ng/mL
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Age	Reference Range
18 yrs	145-506 ng/mL
19 yrs	122-435 ng/mL
20 yrs	116-410 ng/mL
21 to 25 yrs	109-353 ng/mL
26 to 30 yrs	101-307 ng/mL
31 to 35 yrs	95-290 ng/mL
36 to 40 yrs	90-278 ng/mL
41 to 45 yrs	84-270 ng/mL
46 to 50 yrs	81-263 ng/mL
51 to 55 yrs	74-255 ng/mL
56 to 60 yrs	68-247 ng/mL
61 to 65 yrs	64-240 ng/mL
66 to 70 yrs	59-230 ng/mL
71 to 75 yrs	53-222 ng/mL
76 to 80 yrs	45-207 ng/mL
81 to 85 yrs	40-194 ng/mL
86 to 90 yrs	33-176 ng/mL
Over 90 yrs	Not Established

Prostate Specific Antigen, PSA (serum)	2.0	<= 4.0 ng/mL
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Age	Reference Range
>= 18 yrs	<= 4.0 ng/mL



Additional Tests

Reference Range

Prolactin (serum)	<div style="display: flex; justify-content: center; align-items: center;"> <div style="width: 100px; height: 20px; background: repeating-linear-gradient(45deg, transparent, transparent 2px, red 2px, red 4px, yellow 4px, yellow 6px, green 6px, green 8px, red 8px, red 100%); border: 1px solid black; border-radius: 10px; margin: 0 auto;"></div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px; margin: 0 5px;">9.00</div> </div>	2.64-13.13 ng/mL
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Age	Reference Range
>= 18 yrs	2.64-13.13 ng/mL

Luteinizing Hormone (serum)	<div style="border: 2px solid black; border-radius: 10px; padding: 2px 10px; display: inline-block;">4.0</div>
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Age	Reference Range
>= 18 yrs	1.7-8.6 mIU/mL

Follicular Stimulating Hormone, FSH (serum)	<div style="border: 2px solid black; border-radius: 10px; padding: 2px 10px; display: inline-block;">6.0</div>
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Age	Reference Range
>= 18 yrs	1.5-12.4 mIU/mL

Androstenedione (serum) ♦	<div style="border: 2px solid black; border-radius: 10px; padding: 2px 10px; display: inline-block;">88</div>
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Age	Reference Range
15 to 60 yrs	27-152 ng/dL
61 to 80 yrs	22-96 ng/dL
Over 80 yrs	Not Established



Commentary

Reference ranges are for patients ≥ 18 years of age.

Please note that the reference ranges for Free Testosterone, Dihydrotestosterone, Insulin-like Growth Factor 1, and Prostate Specific Antigen have been updated.

Please note that the reference ranges for Androstenedione have been updated.

Reference ranges for the following analytes provided by LabCorp:

- Free Testosterone
- Dihydrotestosterone
- Insulin-like Growth Factor 1
- Prostate Specific Antigen
- Androstenedione
- Follicle Stimulating Hormone
- Luteinizing Hormone

Testing for the following analytes was performed by LabCorp - Regional Lab and Center for Esoteric Testing (CET), 1447 York Court, Burlington, NC 27215

- Free Testosterone
- Insulin-like Growth Factor 1
- Prostate Specific Antigen
- Androstenedione
- Follicle Stimulating Hormone
- Luteinizing Hormone

Testing for the following analytes was performed by LabCorp – Esoterix Inc, 4301 Lost Hills Road, Calabasas Hills, CA 91301-5358

- Dihydrotestosterone

Prolactin Testing Methodology: Chemiluminescent

Follicle Stimulating Hormone Testing Methodology: Electrochemiluminescence immunoassay (ECLIA)

Luteinizing Hormone Testing Methodology: Electrochemiluminescence immunoassay (ECLIA)

Androstenedione Testing Methodology: Liquid chromatography/tandem mass spectrometry (LC/MS/MS)

The performance characteristics of all assays have been verified by Genova Diagnostics, Inc. Unless otherwise noted with ♦, the assays are cleared by the U.S. Food and Drug Administration.

Commentary is provided to the practitioner for educational purposes, and should not be interpreted as diagnostic or as treatment recommendations. Diagnosis and treatment decisions are the practitioner's responsibility.

Estradiol Interference

Recently, one of our manufacturers provided documentation that patients receiving treatment with fulvestrant result in false positive increases in the serum estradiol levels. The level of false positive increase is dependent on the dosage of fulvestrant prescribed. The range of % cross reactivity is 0.31 to 0.35 relative to the concentration of fulvestrant. The

Commentary

laboratory can be contacted for further details.

PSA Interpretative Information

According to the American Urological Association, Serum PSA should decrease and remain at undetectable levels after radical prostatectomy. The AUA defines biochemical recurrence as an initial PSA value 0.2 ng/mL or greater followed by a subsequent confirmatory PSA value 0.2 ng/mL or greater. Values obtained with different assay methods or kits cannot be used interchangeably. Results cannot be interpreted as absolute evidence of the presence or absence of malignant disease.

Sex hormone-binding globulin (SHBG) is synthesized primarily in the liver and serves as a protein carrier for Estradiol (E2), testosterone, and dihydrotestosterone (DHT). The biologic effects of these steroid hormones (especially testosterone) are largely determined by the unbound portion. Thus, SHBG exerts a major regulatory effect on bioactivity of these steroids. Since SHBG concentrations determine bioavailability of E2, testosterone, and DHT, normal levels of SHBG are considered protective against conditions associated with excessive androgenic and estrogenic activity such as breast cancer, as well as conditions associated with deficient activity such as osteoporosis. Check individual levels of these hormones for a more thorough evaluation.

Estradiol (E2) is the most potent estrogen. E2 may arise from E1 (reversible reaction) or from testosterone in peripheral tissues such as adipose. Estrogens promote vasodilatation and vascular smooth muscle tone, collagen production, brain activity, and also inhibit bone resorption.

Free testosterone represents the fraction of testosterone that is not bound to sex hormone binding globulin (SHBG), therefore bioavailable. High levels of Free Testosterone are commonly due to supplementation with testosterone, androstenedione, or DHEA, especially in women. A lower concentration of SHBG (such as occurs with hyperinsulinemia or hypothyroidism) will lead to higher levels of Free Testosterone. Other possible causes of elevated Free Testosterone include polycystic ovarian syndrome (PCOS), adrenal tumors, testicular tumors, Cushing's disease and/or congenital adrenal hyperplasia (CAH). Low Free Testosterone is usually due to age-related decline or hypogonadal function. A higher concentration of SHBG (such as occurs with hyperthyroidism or oral estrogen replacement) can also lead to lower levels of Free Testosterone. Men may benefit from testosterone replacement, whereas women may do well with DHEA or androstenedione.

Human growth hormone (hGH) from the pituitary promotes healthy aging via its growth-stimulating and healing effects on a variety of systems, including musculoskeletal, neurological, immune, and endocrine. Because of the pulsatile secretion of hGH, indirect serologic assessment of hGH is best accomplished by measuring insulin like growth factor-1 (IGF-1, or somatomedin C), which is released from the liver and other tissues in response to growth hormone and which mediates many of hGH's actions. Greater than 95% of total IGF-1 is bound to IGF binding proteins that limit its bioavailability. Normal levels of IGF-1 suggest sufficient hGH production. This is a positive finding, as lower levels of IGF-1 have been associated with symptoms such as fatigue, decreased psychological well-being and diminished ability for growth and repair. Levels are generally increased with measures like exercise (especially anaerobic), sleep, reduced-carbohydrate diets, 'secretagogues' (e.g., L-arginine), and/or recombinant hGH administration.