



Endocrinology Metabolism Panel

MDL Test Number: 651, Tests Included: 21

Specimen Requirements

Specimen	Collection Platform	Stability	Turnaround Time
Serum	2 Serum Separator Tube (SST)	Room Temperature	24 – 72 hrs.

Special handling and timing

This panel is drawn into serum separator tubes, but several of its tests place requirements on how and when they are collected.

- **Fasting is required:** This panel includes both vitamin B12 and folate, and the manufacturer requires a fasting sample when the two are measured together. Patients should take nothing but water for the period the ordering provider specifies.
- **A morning draw is preferred.** Cortisol is highest in the early morning and falls throughout the day, testosterone follows the same pattern, and prolactin rises with sleep, stress, and the draw itself. The time of collection should be recorded on the request.

What is the Endocrinology Metabolism Panel?

Unexplained weight change, persistent tiredness, and low energy are among the commonest reasons for a hormone test, and among the hardest to work through, because several unrelated systems produce the same picture. This panel measures those systems together rather than one at a time.

It covers thyroid function fully, since an underactive thyroid is the commonest hormonal cause of weight gain and tiredness. It covers the adrenal axis with cortisol, whose excess causes weight gain with a characteristic pattern and whose deficiency causes profound fatigue. It covers the growth hormone markers, the sex hormones, and the carrier protein that reflects insulin resistance, and prolactin.

It then covers the nutritional and inflammatory explanations that account for a large share of these symptoms when the hormones prove normal — iron, vitamin B12, folate, and vitamin D, together with the inflammatory marker and homocysteine.

Why order the Endocrinology Metabolism Panel?

It is commonly used to:

- Investigate unexplained weight gain or weight loss, persistent tiredness, or low energy, where the cause is not apparent.
- Exclude an underactive thyroid, the commonest hormonal explanation, using a full assessment rather than a single screening test.

- Assess the adrenal axis where the pattern of weight gain, skin changes, or fatigue raises the question of cortisol excess or deficiency.
- Assess insulin resistance indirectly through the carrier protein for sex hormones, which falls as insulin resistance rises.
- Identify the nutritional deficiencies that account for much unexplained fatigue and are readily corrected.
- Describe the inflammatory and cardiovascular risk markers that accompany metabolic disease.

Special Instructions

- **Protection from light:** Vitamin B12 and folate break down on exposure to light, so the sample is protected from the moment it is drawn. This is handled by the laboratory and the draw site and needs nothing from the patient.
- **Hormonal contraception and hormone treatment:** Combined pills, patches, rings, hormonal intrauterine devices, and menopausal hormone therapy change several of these results. Current or recently stopped treatment, and what form it takes, should be listed on the request.
- **Biotin supplements:** Biotin is sold on its own and is present in many hair, skin, and nail products, often at high doses. Several tests in this panel can be affected. One of them, folate, has a measured interference that pushes the result falsely high, and the most sensitive of the others was tested by its manufacturer only up to a level that a high-dose supplement can exceed. Patients should tell the ordering provider what they take and at what dose.
- **Recent supplements and infusions:** Iron tablets, iron infusions, vitamin B12 injections, and high-dose vitamin D taken shortly before the draw can all overstate the corresponding result. When these were last taken should be on the request.
- **Medicines and recent illness:** Steroids, some psychiatric medicines, iron and vitamin supplements, and any recent significant illness can affect these results. A current medication list should accompany the request. The manufacturer of the folate test directs that it not be used for patients currently receiving methotrexate.



Which tests are included in this panel?

Each test below is also available individually, and a separate fact sheet for each one gives its reference ranges, limitations, and the conditions it is used to assess.

Free testosterone and the free androgen index, where included, are calculated from the total testosterone and SHBG results already in this panel. They are not separately charged.

Test No.	Analyte	CPT Code	Method
611	Estradiol (E2)	82670	Immunoassay
612	Thyroid-Stimulating Hormone (TSH)	84443	Immunoassay
613	Thyroxine, Total (Total T4)	84436	Immunoassay
615	Triiodothyronine, Total (Total T3)	84480	Immunoassay
616	Triiodothyronine, Free (Free T3)	84481	Immunoassay
617	Thyroxine, Free (Free T4)	84439	Immunoassay
620	IGFBP-3	83520, 82397	Immunoassay
622	Testosterone, Total	84403	Immunoassay
631	DHEA-Sulfate (DHEA-S)	82627	Immunoassay
639	Sex Hormone-Binding Globulin (SHBG)	84270	Immunoassay
641	Cortisol	82533	Immunoassay
654	Prolactin	84146	Immunoassay
655	Vitamin B12	82607	Immunoassay
656	Folate	82746	Immunoassay
657	Ferritin	82728	Immunoassay
659	Vitamin D, 25-OH	82306	Immunoassay
660	Insulin-like Growth Factor 1 (IGF-1)	84305	Immunoassay
662	Homocysteine	83090	Immunoassay
663	C-Reactive Protein, High Sensitivity (hsCRP)	86141	Immunoassay
685	Free Testosterone	—	Calculated
696	Free Androgen Index (FAI)	—	Calculated

Limitations:

Every laboratory panel has limits. For this one, the main ones are:

- A broad panel describes several systems at once; it does not decide which of them is responsible. The pattern across the results, read against the symptoms, is what carries the meaning.
- Cortisol measured on a single morning sample cannot by itself establish or exclude cortisol excess or deficiency. An abnormal result leads to a specific follow-up test rather than to a diagnosis.
- Some results are expected to fall outside the printed range in a healthy person, particularly where the range assumes a cycle day or a time of day that does not apply. A flagged result is a prompt to look, not a finding on its own.
- Results are interpreted against the reference range printed on the report for each individual test. Those ranges differ by age and, for several of these tests, by where the patient is in her cycle.
- These results are one piece of a larger picture. They are meant to be read together with the patient's symptoms, medical history, and examination — never on their own.

What are some references that discuss the medical necessity of this panel?

1. Jonklaas, J. et al. Guidelines for the treatment of hypothyroidism. *Thyroid* **24**, 1670–1751 (2014).
2. Devalia, V. et al. Guidelines for the diagnosis and treatment of cobalamin and folate disorders. *Br. J. Haematol.* **166**, 496–513 (2014).
3. Demay, M. B. et al. Vitamin D for the prevention of disease: an Endocrine Society clinical practice guideline. *J. Clin. Endocrinol. Metab.* **109**, 1907–1947 (2024).
4. Ridker, P. M. A test in context: high-sensitivity C-reactive protein. *J. Am. Coll. Cardiol.* **67**, 712–723 (2016).
5. Camaschella, C. Iron deficiency. *Blood* **133**, 30–39 (2019).
6. Krassas, G. E. et al. Thyroid function and human reproductive health. *Endocr. Rev.* **31**, 702–755 (2010).

