



Comprehensive PMOS/PCOS Panel

MDL Test Number: 649, Tests Included: 25

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 that tube is taken.

- **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.
- **The day of the cycle must be recorded.** Follicle-stimulating hormone, luteinizing hormone, estradiol, and progesterone are all interpreted against where the patient is in her cycle, and the first three are best drawn in the first few days of her cycle, counting the first day of bleeding as day 1. Progesterone says something about ovulation only when it is drawn about a week before the next period is due.
- **If the cycle day is not known, say so.** Irregular or absent periods are among the reasons this panel is ordered, so many patients will not be able to give a cycle day. That is expected, and it is not a reason to delay the draw. What matters is that the request records what is known, the date of the last period or that periods are irregular or absent, so the provider interprets the results accurately.
- **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 Comprehensive PMOS/PCOS Panel?

Polycystic ovary syndrome, now called polyendocrine metabolic ovarian syndrome (PMOS/PCOS), is the commonest hormonal disorder in women of reproductive age. It is not diagnosed by any single test. The international criteria require two of three findings — irregular or absent ovulation, excess male-type hormones shown either by examination or by laboratory testing, and the characteristic appearance of the ovaries — together with the exclusion of the other conditions that produce the same picture.

This panel is built around those requirements. It measures the male-type hormones and the protein that carries them, so that biochemical androgen excess can be assessed properly rather than inferred from a total testosterone alone. It measures the pituitary hormones and progesterone that describe whether ovulation is occurring. It carries anti-Müllerian hormone, which the 2023 international guideline accepts in adults in place of counting follicles on an ultrasound scan. And it carries the tests needed to exclude the conditions that imitate PMOS/PCOS — thyroid disease, a raised prolactin, and adrenal causes of androgen excess.

Because PMOS/PCOS is a metabolic condition as well as a reproductive one, the panel also includes the markers that describe its longer-term consequences: inflammation, homocysteine, and the nutritional measures that are commonly low in this population and in the treatments used for it.

Why order the Comprehensive PMOS/PCOS Panel?

This panel is ordered when the question is whether a patient has PMOS/PCOS, and what kind. It is commonly used to:

- Work through the diagnostic criteria in a single draw, rather than across several visits.
- Establish biochemical androgen excess using a calculated free testosterone or free androgen index, as the 2023 international guideline directs, because the carrier protein is often low in this condition, and a total testosterone can look reassuring while the available hormone is not.
- Assess whether ovulation is occurring, and describe the pituitary pattern behind irregular or absent periods.
- Assess the ovarian reserve, which the same guideline accepts in adults as an alternative to an ultrasound follicle count.
- Exclude the conditions that produce the same picture and are treated quite differently — an underactive or overactive thyroid, a raised prolactin, and adrenal causes of androgen excess.
- Describe the metabolic and nutritional picture that accompanies the condition, which informs what is treated alongside the hormonal findings.
- Establish a baseline before treatment, so that later results have something to be compared against. MDL's Core PMOS/PCOS Panel (690) is the shorter panel intended for that follow-up.

Special Instructions

- **Protection from light:** Vitamin B12 and folate both 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, and hormonal intrauterine devices change several of these results, and a panel drawn during use can be difficult to interpret for ovulation, ovarian reserve, or androgen excess. Current or recently stopped treatment 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 are calculated from the total testosterone and SHBG results already in this panel. They are not separately charged.

Test No.	Analyte	CPT Code	Method
610	Follicle-Stimulating Hormone (FSH)	83001	Immunoassay
611	Estradiol (E2)	82670	Immunoassay
612	Thyroid-Stimulating Hormone (TSH)	84443	Immunoassay
614	Luteinizing Hormone (LH)	83002	Immunoassay
616	Triiodothyronine, Free (Free T3)	84481	Immunoassay
617	Thyroxine, Free (Free T4)	84439	Immunoassay
620	IGFBP-3	83520, 82397	Immunoassay
621	Androstenedione	82157	Immunoassay
622	Testosterone, Total	84403	Immunoassay
630	Progesterone	84144	Immunoassay
631	DHEA-Sulfate (DHEA-S)	82627	Immunoassay
638	Anti-Thyroid Peroxidase Antibody (Anti-TPO)	86376	Immunoassay
639	Sex Hormone-Binding Globulin (SHBG)	84270	Immunoassay
641	Cortisol	82533	Immunoassay
653	Anti-Müllerian Hormone (AMH)	82166	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:

- PMOS/PCOS is not diagnosed by blood tests alone. The international criteria combine laboratory results with the menstrual history, the clinical examination, and, in some cases, an ultrasound scan, and the diagnosis is made only after other causes have been excluded.
- Each result is a snapshot of one moment. Several of these hormones change substantially across the menstrual cycle and through the day, so a single set of results should be interpreted against when the sample was taken.
- A normal panel does not exclude the condition, and an abnormal single result does not establish it. The pattern across the panel is what carries the meaning.
- 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. Teede, H. J. et al. Recommendations from the 2023 International Evidence-based Guideline for the Assessment and Management of Polycystic Ovary Syndrome. *J. Clin. Endocrinol. Metab.* **108**, 2447–2469 (2023).
2. Martin, K. A. et al. Evaluation and treatment of hirsutism in premenopausal women: an Endocrine Society clinical practice guideline. *J. Clin. Endocrinol. Metab.* **103**, 1233–1257 (2018).
3. Speiser, P. W. et al. Congenital adrenal hyperplasia due to steroid 21-hydroxylase deficiency: an Endocrine Society clinical practice guideline. *J. Clin. Endocrinol. Metab.* **103**, 4043–4088 (2018).
4. Practice Committee of the American Society for Reproductive Medicine. Current evaluation of amenorrhea: a committee opinion. *Fertil. Steril.* **122**, 52–61 (2024).
5. Melmed, S. et al. Diagnosis and treatment of hyperprolactinemia: an Endocrine Society clinical practice guideline. *J. Clin. Endocrinol. Metab.* **96**, 273–288 (2011).
6. Practice Committee of the American Society for Reproductive Medicine. Testing and interpreting measures of ovarian reserve: a committee opinion. *Fertil. Steril.* **114**, 1151–1157 (2020).

