

Luteinizing Hormone (LH)

MDL Test Number: 614

Methodology: Immunoassay

CPT Codes: 83002 x 1



Specimen Collection Platform:

Serum in Serum Separator Tube (SST)

Turnaround Time:

24 - 72 hours

Stability:

Room temperature

Test Additions*:

30 days to add tests

Specimen Collection:



1. Immediately after blood collection, invert the tube(s) gently 5 times to ensure mixing of clot activator.



2. Allow the tube to rest upright for at least 30 minutes after collection to ensure proper clotting.



3. Centrifuge for at least 15 minutes at 2200-2500 RPM within one hour of collection.



4. Do not remove the stopper or pour off serum.



What is Luteinizing Hormone (LH)?

Luteinizing hormone, or LH, is a messenger hormone made by the pituitary gland, a small gland at the base of the brain that directs much of the body's hormone activity. LH travels through the blood to the ovaries, carrying instructions from the brain.

LH rises sharply in the middle of the menstrual cycle. This spike, often called the LH surge, is the signal that releases an egg from the ovary about a day later. LH then helps the ovary produce estrogen and progesterone. Men make LH as well, which tells the testes to make testosterone. LH is almost always measured alongside a second pituitary hormone called FSH, because the two work as a pair and are far more informative together than either is alone.

Two features of LH explain most of the instructions on this sheet. The body releases LH in bursts rather than a steady stream, so two samples drawn hours apart can look quite different. And one part of the LH molecule is nearly identical to part of the pregnancy hormone hCG, which can occasionally confuse the test.

Why test for Luteinizing Hormone (LH)?

LH is measured to check how well the pituitary gland and the ovaries are working together. Because LH is the instruction and the ovarian hormones are the response, comparing the two tells a provider where a problem is coming from:

- **High LH with low estrogen** usually points to the ovaries themselves. The pituitary keeps signaling harder and harder, but the ovaries cannot respond.
- **Low or normal LH with low estrogen** usually points to the pituitary gland or the brain region above it. The signal itself is not being sent.

Common reasons a provider orders this test include:

- **Periods that are irregular, infrequent, or have stopped, and difficulty getting pregnant**
- **Evaluating polyendocrine metabolic ovarian syndrome (PMOS/PCOS)**, where LH is often high compared with FSH
- **Pinpointing ovulation during fertility evaluation and treatment**
- **Confirming the transition to menopause**, when LH rises as the ovaries slow down
- **In men, evaluating low testosterone** and whether the testes are responding normally
- **Checking overall pituitary function**, since LH is often one of the first hormones to fall when the pituitary is not working properly, and monitoring fertility medications that act on this system



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Special Instructions:

- **Record the collection time and cycle day:** LH is released in bursts and drifts a little over the course of the day, so a single random sample may not represent a patient's average level. When LH is being used to pinpoint ovulation, the mid-cycle surge comes roughly 24 hours before an egg is released. Both the collection time and the day of the menstrual cycle should be recorded, or the result cannot be interpreted properly.
- **Hormonal contraceptives:** Combined birth control pills, patches, and rings quiet the pituitary signal and block the mid-cycle surge, so LH stays low and flat while a patient is using one. A result drawn during hormonal contraception cannot be used to detect ovulation or to confirm the menopausal transition.
- **Pregnancy and hCG:** Because part of the LH molecule closely resembles part of the pregnancy hormone hCG, samples with very high hCG — in pregnancy, in certain placental conditions, or with some testicular tumors — can make LH read falsely high. Results should be interpreted with care in these situations.
- **Biotin supplements:** Biotin (vitamin B7) is found in many over-the-counter hair, skin, and nail supplements, and it can interfere with this test and give an incorrect result. Patients should stop taking biotin at least 72 hours (3 days) before the blood draw. It is worth asking every patient about it, since many people do not think of supplements as medication.
- **Comparing results over time:** Different laboratories and different instruments can produce somewhat different LH numbers from the same sample. When results are being tracked over time, use the same test at the same laboratory each time so the comparison is meaningful.

Limitations:

Every laboratory test has limits. For LH, the main ones are:

- Two samples taken from the same patient on the same day can differ noticeably and still both be normal. This is the natural burst pattern of LH release, not a mistake by the laboratory. It does mean a single result can be hard to interpret on its own.
- Very high levels of the pregnancy hormone hCG can push LH results falsely high. This is uncommon in routine testing but matters in pregnancy, in certain placental conditions, and with some testicular tumors.
- A high LH compared with FSH is common in PCOS / PMOS, but current international guidance does not use that comparison to make the diagnosis. LH supports the clinical picture; it does not settle it.
- A small number of patients carry natural antibodies in their blood — often people who work closely with animals or who have received certain antibody-based treatments — that can interfere with the test and produce an unexpected result.
- An LH result is one piece of a larger picture. It is meant to be read together with FSH, the patient's symptoms and medical history, and other test results — never on its own.

Reference Range(s):

LH is measured in milli-international units per milliliter (mIU/mL). Expected levels depend on where a patient is in her menstrual cycle:

Adult female, by menstrual-cycle phase:

- **Follicular phase** (first half of the cycle, before an egg is released): **1.1 – 11.6 mIU/mL**
- **Mid-cycle** (the surge, around the time an egg is released): **17 – 77 mIU/mL**
- **Luteal phase** (second half of the cycle, after an egg is released): **not detectable – 14.7 mIU/mL**
- **Postmenopausal:** **11.3 – 39.8 mIU/mL**

Adult male: 0.8 – 7.6 mIU/mL

"Not detectable" means the level is below what the test is able to measure, which is a normal finding in that phase. The mid-cycle surge is much higher than the rest of the cycle, and levels rise after menopause — a high LH is expected at that stage, not a cause for concern on its own. A result outside these ranges is not automatically a problem, and a result inside them does not rule one out. Only the ordering provider can interpret what a given number means for a given patient. Patients should always go by the reference range printed on their own laboratory report.

Analyte	Disorder	Expected Value*
LH	PCOS / PMOS	↑
LH	Functional hypothalamic amenorrhea	↓
LH	Perimenopause	V
LH	Postmenopause (natural)	↑↑
LH	Primary ovarian insufficiency (POI)	↑↑

*V – Variable, ↑ – Increased, ↑↑ – Markedly Increased, ↓ – Decreased.

What are some references that discuss the medical necessity of testing Luteinizing Hormone (LH)?

1. Teede HJ, 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. Bulun SE, Babayev E. Physiology and pathology of the female reproductive axis. In *Williams Textbook of Endocrinology* 15th edn (eds Melmed, S. et al.) Ch. 15 (Elsevier, Philadelphia, 2025).
3. Practice Committee of the American Society for Reproductive Medicine. Current evaluation of amenorrhea: a committee opinion. *Fertil Steril*, **122**, 52–61 (2024).
4. Harlow SD, et al. Executive summary of the Stages of Reproductive Aging Workshop +10: addressing the unfinished agenda of staging reproductive aging. *J Clin Endocrinol Metab*, **97**, 1159–1168 (2012).
5. Nelson LM. Clinical practice. Primary ovarian insufficiency. *N Engl J Med*, **360**, 606–614 (2009).



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