TEST

Luteinizing hormone (LH) blood test

A blood test that measures luteinizing hormone to assess ovulation, reproductive function, or puberty

WHAT IT MEASURES
Luteinizing hormone, which helps control ovulation and sex hormone production

SAMPLE
Blood

FASTING NEEDED?
No, unless fasting for other tests

HOW LONG IT TAKES
Usually less than 10 minutes

RESULTS IN
Usually one to three days, depending on the laboratory

USED FOR
Diagnosing and assessing reproductive, menstrual, or puberty concerns

MAIN LIMITATION
LH changes with cycle timing and is released in pulses

Overview

A luteinizing hormone, or LH, blood test measures the amount of LH in your blood. LH is made by the pituitary gland, a small gland at the base of the brain.

LH helps control the reproductive system. In people with ovaries, a rapid rise in LH helps trigger ovulation, when an egg is released. LH also supports production of hormones such as progesterone and estrogen.

In people with testes, LH signals the testes to make testosterone. During childhood and puberty, changing LH levels help show whether the brain and reproductive organs are developing and communicating as expected.

An LH result is rarely interpreted by itself. It is often considered with follicle-stimulating hormone, or FSH, and hormones such as estradiol, progesterone, or testosterone.

Why the test is ordered

An LH test can help investigate menstrual, fertility, hormone, or puberty concerns. It may be ordered to:

LH testing is not usually needed to diagnose menopause in someone over 45 who has typical symptoms and menstrual changes. Hormone levels can fluctuate during the transition to menopause, so one result may be misleading.

An LH test also does not diagnose polycystic ovary syndrome, or PCOS. Some people with PCOS have higher LH levels, but LH or the LH-to-FSH ratio cannot confirm or exclude the condition.

- Assess irregular or absent menstrual periods
- Help identify whether ovulation may be occurring
- Investigate difficulty becoming pregnant
- Assess low testosterone, reduced sexual interest, or low sperm production
- Investigate puberty that appears unusually early or delayed
- Help distinguish an ovarian or testicular problem from a pituitary or brain-signalling problem
- Support assessment of menopause in selected situations
- Monitor some fertility or hormone treatments

Who should have the test

You may be offered this test if your symptoms, menstrual history, fertility assessment, physical development, or other hormone results suggest that more information is needed.

In adults, this may include absent or irregular periods, possible problems with ovulation, low testosterone, or concerns about ovarian or testicular function. LH may also be measured during fertility treatment to help time care or assess the response to medicines.

In children and teenagers, testing may be appropriate when signs of puberty begin much earlier or later than expected. Results in this age group require careful interpretation because normal values change substantially with age and stage of puberty.

LH is not generally used as a routine screening test when there are no related symptoms or clinical concerns.

How to prepare

Fasting is usually not required. You can normally eat and drink as usual unless other blood tests being taken at the same appointment require fasting.

Tell the healthcare professional ordering the test about prescription medicines, non-prescription medicines, hormone treatments, fertility medicines, and supplements. Do not stop any medicine unless you have been specifically advised to do so.

If you have menstrual cycles, you may be asked to have the test on a particular cycle day. The first day of bleeding is usually counted as day one. Follow the timing instructions you were given, because LH changes greatly across the cycle.

High-dose biotin supplements can interfere with some laboratory testing methods. Biotin is often sold for hair, skin, or nail health and may also be present in multivitamins. Ask whether you need to pause it before testing; do not stop prescribed biotin without medical advice.

What happens during the test

A healthcare professional places a small needle into a vein, usually in your arm. Blood is collected into a tube and sent to a laboratory.

You may feel a brief scratch or sting. The blood draw itself usually takes only a few minutes, although the full appointment may take longer.

Sometimes more than one sample is needed. This may be done when checking for an LH surge, investigating puberty, or assessing how the pituitary gland responds to a stimulating medicine.

Understanding your results

Your report should show the laboratory's own reference range. There is no single LH range suitable for everyone. Ranges and interpretation vary by laboratory, age, sex, pregnancy status, menstrual-cycle stage, medicines, and clinical context.

A rise in LH around the middle of a menstrual cycle may represent the surge that happens before ovulation. Because this rise can be brief, one blood sample may miss it. An LH surge suggests that ovulation may be approaching, but it does not prove that an egg was released.

After menopause, LH is commonly higher because the ovaries produce less estrogen and progesterone. During the years leading to menopause, levels can move up and down, so one measurement may not reflect the overall pattern.

A high LH level alongside low ovarian or testicular hormone levels may suggest that the

pituitary gland is signalling strongly but the ovaries or testes are not responding normally.

A low, or unexpectedly normal, LH result alongside low sex hormone levels may suggest reduced signalling from the pituitary gland or hypothalamus. The hypothalamus is the part of the brain that controls pituitary hormone release.

These patterns are not diagnoses. Your symptoms, menstrual history, age, examination findings, and other test results are needed to understand what an LH result means.

What affects the results

LH is released in pulses rather than at a steady rate. A sample taken between pulses can be lower than one taken shortly afterward, even when nothing has changed medically.

Other factors include:

A recent ordinary workout is unlikely to make an LH result meaningless, but sustained intensive training combined with low energy intake can change reproductive hormones.

Unlike some blood tests, a recent blood transfusion does not usually have a meaningful direct effect on LH. Tell the person interpreting the result about major recent illness or treatment so the full context is considered.

- Menstrual-cycle timing: LH can change sharply around ovulation
- Age and puberty: Levels change as the reproductive system matures
- Pregnancy: Normal hormone feedback changes LH production and interpretation
- Hormonal medicines: Contraception, estrogen, progesterone, testosterone, anabolic steroids, and fertility medicines can alter LH
- Pituitary treatments: Medicines that act on gonadotropin-releasing hormone can raise or suppress LH
- Biotin and test interference: High-dose biotin or uncommon blood antibodies can distort some laboratory methods
- Energy balance and illness: Significant undernutrition, major illness, or prolonged intense exercise can suppress reproductive hormone signalling
- Kidney or liver disease: Changes in hormone handling may complicate interpretation

Accuracy and limitations

Laboratory LH measurements are generally reliable for measuring the hormone present in that

sample. The larger limitation is that one sample may not represent your usual level because LH is released in pulses and changes across the menstrual cycle.

There is no single rate for how often LH testing misses a condition or incorrectly suggests one. This changes with the reason for testing, the timing of the sample, the laboratory method, and the threshold used.

A single LH result may miss a short ovulation surge. It may also appear raised without proving ovulation, especially when hormone patterns are irregular. A progesterone test taken at an appropriate time is often more useful for showing whether ovulation has recently occurred.

Basal LH testing can be inconclusive in children being assessed for early or delayed puberty. Repeat testing or a stimulation test may provide clearer information.

LH cannot by itself diagnose infertility, PCOS, menopause, pituitary disease, or ovarian or testicular failure. Other hormone tests, pregnancy testing, semen analysis, ultrasound, genetic testing, or pituitary imaging may be more appropriate, depending on the question.

Risks and complications

The main risks are minor bruising, soreness, or bleeding where the needle entered. Some people feel light-headed or faint during a blood draw.

What happens next

Results are usually reviewed with your symptoms and other hormone tests. A clearly timed result may be enough to answer a specific question, but an unexpected or borderline result may need repeating.

Routine next steps can include testing FSH, estradiol, progesterone, testosterone, prolactin, thyroid hormones, or pregnancy hormone. Fertility assessment may also involve ultrasound or semen analysis. If pituitary signalling is a concern, further hormone testing or imaging may be considered.

An isolated high or low result is usually suitable for routine follow-up rather than emergency care.

Do not wait for an LH result if you develop severe sudden pelvic or testicular pain, very heavy bleeding with weakness or fainting, or a sudden severe headache with new vision loss. These symptoms need urgent medical assessment for reasons that an LH test cannot evaluate.

Common questions

Can I drink coffee before an LH blood test?

Usually, yes. LH testing does not normally require fasting, so plain coffee is generally allowed. If other tests are being taken at the same time, follow the preparation instructions for those tests.

Does the time of day matter?

Cycle day is often more important than clock time. However, LH is released in pulses, and levels can change during the day. If repeat tests are planned, having them at a similar time can make comparison easier.

Can I exercise beforehand?

Normal daily activity is unlikely to cause a major problem. Avoiding an unusually intense workout immediately beforehand may help keep testing conditions consistent. Long-term intensive exercise with insufficient food intake can lower reproductive hormone signalling.

What cycle day should I have the test?

It depends on the reason for testing and the usual length of your cycle. Early-cycle testing and testing for an ovulation surge are done at different times. Use the specific cycle-day instructions provided with your request.

Will contraception affect the result?

It can. Combined hormonal contraception and some other hormonal methods suppress the normal LH cycle. Tell the healthcare professional and laboratory what contraception you use, but do not stop it solely for the test unless advised.

Is a blood LH test the same as a home ovulation test?

No. Home tests usually measure LH in urine and are designed to detect a rise before ovulation. A blood test measures LH at one specific moment and may be used for a wider range of reproductive, pituitary, or puberty assessments.

Sources

- MedlinePlus: Luteinizing Hormone (LH) Levels Test , US National Library of Medicine
- Mayo Clinic Laboratories: Luteinizing Hormone, Serum , test interpretation and analytical cautions

- American Society for Reproductive Medicine: Fertility evaluation of infertile women , committee guidance on fertility assessment
- NICE Guideline NG23: Menopause-identification and management , National Institute for Health and Care Excellence
- US Food and Drug Administration: Biotin interference with certain laboratory tests , laboratory safety communication
- Endotext: Laboratory Assessment of Testicular Function , National Center for Biotechnology Information Bookshelf