

Human Chorionic Gonadotropin (hCG)

MDL Test Number: 640

Methodology: Immunoassay

CPT Codes: 84702 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



What is Human Chorionic Gonadotropin (hCG)?

Human chorionic gonadotropin (hCG) is a hormone made by the placenta. Production begins almost as soon as a fertilized egg implants in the wall of the uterus. Its first job is to keep the ovary producing the hormones that hold a

pregnancy together through its earliest weeks. Outside of pregnancy, hCG is present in blood and urine only in trace amounts, which is what makes it such a clear signal that a pregnancy has begun.

hCG levels change faster than those of almost any other hormone measured in the laboratory. In the first weeks after implantation, they roughly double every two days, reach about 2,000 mIU/mL a month after conception, and peak near 100,000 mIU/mL around the third month. Levels then fall and settle at a lower plateau for the rest of the pregnancy. After delivery, they drop quickly, returning to nonpregnant amounts in about two weeks. Because the curve is so steep, the expected range depends heavily on how many weeks have passed since the last menstrual period.

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.

Why test for Human Chorionic Gonadotropin (hCG)?

A healthcare provider may order an hCG test to measure how much of the hormone is present in the blood. Common reasons include:

- **Confirming a pregnancy and estimating how far along it is**
- **Following a series of results in early pregnancy**, where the rate of rise separates a pregnancy that is progressing normally from one that is not
- **Evaluating pain or bleeding in early pregnancy**, alongside ultrasound, when a pregnancy outside the uterus is a concern
- **Confirming that levels have returned to nonpregnant amounts after a miscarriage**, a termination, or treatment of a pregnancy outside the uterus
- **Following disease of placental tissue**, where hCG is tracked until it is no longer detectable, and then for a period afterward
- **Checking for pregnancy before a procedure**, an imaging study, or a medication that could affect a pregnancy



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Special Instructions:

- **Timing of the draw:** Very early in pregnancy, hCG may not yet have risen far enough to be measured. Levels roughly double about every two days at that stage. When a first result is low or unclear, a second sample drawn two or more days later tells the provider far more than one measurement.
- **Fertility medications that contain hCG:** Some fertility treatments use an injection of hCG to trigger the release of an egg. This test cannot tell that medication apart from hCG made by a pregnancy. A sample drawn too soon after the injection can read positive when no pregnancy has started, so patients should give the ordering provider the date of any trigger injection.
- **Biotin supplements:** Biotin (vitamin B7) is found in many over-the-counter hair, skin, and nail supplements, and at high enough levels it can change this result. Patients should tell the ordering provider that they take biotin so the provider can advise on timing before the blood draw.
- **Recent pregnancy:** hCG does not disappear the moment a pregnancy ends. After a delivery, a miscarriage, or a termination, it takes about two weeks to fall back to nonpregnant amounts, and longer when levels were high to begin with. A patient tested inside that window can have a detectable result that reflects the pregnancy that ended rather than a new one, so the date it ended should go on the requisition.
- **Comparing results over time:** Different laboratories and different instruments can produce somewhat different hCG 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 hCG, the main ones are:

- This test measures hCG directly up to 5,000 mIU/mL. Normal pregnancy levels climb far above that point, so higher samples are diluted and measured again, and the reported number is calculated from that dilution. Concentrations this high do not cause a falsely low reading; the method is unaffected up to 600,000 mIU/mL.
- A single hCG value cannot show where a pregnancy is developing or whether it will continue. Expected values at any point in early pregnancy are wide, and the ranges seen in a normal pregnancy, a pregnancy outside the uterus, and an early loss overlap. Current obstetric guidance uses a series of results together with ultrasound, not one number.
- hCG is built from two joined parts. The free form of one of them, the beta subunit, is measured by this test as though it were whole hCG, which matters when a tumor releases that part on its own rather than the complete hormone. Closely related hormones that act on the ovaries and the thyroid are not detected and do not interfere.
- 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. In hCG testing, this can show up as a low positive result when no pregnancy is present.
- hCG is not made only in pregnancy. Diseases of placental tissue and, less often, some other tumors can raise it, so a positive result in a patient who is not pregnant calls for further evaluation rather than being read as proof of pregnancy.
- An hCG result is one piece of a larger picture. It is meant to be read together with the patient's symptoms, medical history, and other test results — never on its own.

Reference Range(s):

hCG is measured in milli-international units per milliliter (mIU/mL). Levels rise steeply through the first months of pregnancy, so a result is compared against the expected range for the number of weeks since the last menstrual period. Representative windows are shown below:

- **Weeks 3 to 4** (median 71 mIU/mL): **16–156 mIU/mL**
- **Weeks 5 to 6** (median 5,243 mIU/mL): **1,110–31,500 mIU/mL**
- **Weeks 9 to 13, the usual peak** (median 117,678 mIU/mL): **20,900–291,000 mIU/mL**
- **Weeks 23 to 41** (median 15,352 mIU/mL): **2,700–78,100 mIU/mL**
- **Nonpregnant adult women:** **below 5.3 mIU/mL**
- **Adult men:** **below 2.5 mIU/mL**

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*
hCG	Normal early pregnancy	↑↑
hCG	Multiple pregnancy	↑
hCG	Ectopic pregnancy	V
hCG	Early pregnancy loss	↓
hCG	Gestational trophoblastic disease	↑↑

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

What are some references that discuss the medical necessity of testing Human Chorionic Gonadotropin (hCG)?

1. 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).
2. American College of Obstetricians and Gynecologists. Tubal ectopic pregnancy: ACOG practice bulletin, number 193. *Obstet Gynecol*, **131**, e91–e103 (2018).
3. Schreiber CA, Sonalkar S. Tubal ectopic pregnancy. *N Engl J Med*, **392**, 798–805 (2025).
4. American College of Obstetricians and Gynecologists. Early pregnancy loss: ACOG practice bulletin, number 200. *Obstet Gynecol*, **132**, e197–e207 (2018).
5. Ngan HYS, et al. Diagnosis and management of gestational trophoblastic disease: 2025 update. *Int J Gynaecol Obstet*, **171**, 78–86 (2025).



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