Test Definition: THCG
HCG, Quantitative, Pregnancy, S

Overview

Useful For
- Early detection of pregnancy
- Investigation of suspected ectopic pregnancy or other pregnancy-related complications
- Monitoring in vitro fertilization patients

Method Name
Electrochemiluminescent Immunoassay

NY State Available
Yes

Specimen

Specimen Type
Serum

Advisory Information
For use as a tumor marker (eg, testicular cancer patients), see BHCG / Beta-Human Chorionic Gonadotropin, Quantitative, Serum.

Specimen Required

Patient Preparation: For 12 hours before this test do not take multivitamins or dietary supplements containing biotin (vitamin B7), which is commonly found in hair, skin, and nail supplements and multivitamins.

Container/Tube:
- Preferred: Serum gel
- Acceptable: Red top

Specimen Volume: 0.5 mL

Collection Instructions:
1. Serum gel tubes should be centrifuged within 2 hours of collection.
2. Red-top tubes should be centrifuged and aliquoted within 2 hours of collection.

Specimen Minimum Volume
0.4 mL

Reject Due To

<table>
<thead>
<tr>
<th>Gross hemolysis</th>
<th>Reject</th>
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</thead>
<tbody>
<tr>
<td>Gross lipemia</td>
<td>OK</td>
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</table>
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Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
<td>72 hours</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>365 days</td>
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Clinical and Interpretive

Clinical Information

Human chorionic gonadotropin (hCG) is a glycoprotein hormone that consists of 2 subunits (alpha and beta chains), which are associated to comprise the intact hormone. The alpha subunit is similar to those of luteinizing hormone, follicle-stimulating hormone, and thyroid-stimulating hormone. The beta subunit of hCG differs from other pituitary glycoprotein hormones, which results in its unique biochemical and immunological properties. This method quantitates the sum of intact hCG plus the beta subunit.

hCG is produced in the placenta during pregnancy. In nonpregnant individuals, it can also be produced by tumors of the trophoblast, germ cell tumors with trophoblastic components, and some nontrophoblastic tumors. The biological action of hCG serves to maintain the corpus luteum during pregnancy. It also influences steroid production. The serum in pregnant individuals contains mainly intact hCG. Measurement of the hCG concentration permits the diagnosis of pregnancy as early as 1 week after conception.

Reference Values

Negative: <5 IU/L

Interpretation

Values in pregnancy should double every 2 to 3 days for the first 6 weeks.

Elevated concentrations of human chorionic gonadotropin (hCG) measured in the first trimester of pregnancy are observed in normal pregnancy, but may serve as an indication of chorionic carcinoma, hydatiform mole, or multiple pregnancy.

Decreasing hCG concentrations indicate threatened or missed abortion, recent termination of pregnancy, ectopic pregnancy, gestosis or intrauterine death.

Both normal and ectopic pregnancies generally yield positive results of pregnancy tests. The comparison of quantitative hCG measurements with the results of transvaginal ultrasonography (TVUS) may aid in the diagnosis of ectopic pregnancy. When an embryo is first large enough for the gestation sac to be visible on TVUS, the patient generally will have hCG concentrations between 1,000 and 2,000 IU/L. (These are literature values. Definitive values for this method have not been established at this time.) If the hCG value is this high and no sac is visible in the uterus, ectopic pregnancy is suggested. Elevated values will also be seen with choriocarcinoma and hydatiform mole.

Peri- and postmenopausal females may have detectable hCG concentrations (< or = to 14 IU/L) due to pituitary production of hCG. Serum follicle-stimulating hormone measurement may aid in ruling-out pregnancy in this population. Cutoffs of greater than 20 to 45 IU/L have been suggested and are method dependent.
**Cautions**
False-elevations (called phantom human chorionic gonadotropin: hCG) may occur with patients who have human antianimal or heterophilic antibodies.

Some specimens may not dilute linearly due to abnormal forms of hCG.

Elevated hCG concentrations not associated with pregnancy are found in patients with other diseases such as tumors of the germ cells, ovaries, bladder, pancreas, stomach, lungs, and liver. This test is not intended to detect or monitor tumors or gestational trophoblastic disease.

**Clinical Reference**

**Performance**

**Method Description**
The Roche HCG+B method employs 2 monoclonal antibodies specifically directed against human chorionic gonadotropin (hCG). A biotinylated monoclonal antibody and a second monoclonal antibody labeled with a ruthenium complex react with hCG to form a sandwich complex. After the addition of streptavidin-coated microparticles, the complex becomes bound to the solid phase via interaction of biotin and streptavidin. The reaction mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Application of a voltage to the electrode then induces chemiluminescent emission, which is measured by a photo multiplier.(Package insert: HCG+B, Roche Diagnostics Corporation, Indianapolis IN)

**PDF Report**
No

**Day(s) and Time(s) Test Performed**
Monday through Sunday; Continuously

**Analytic Time**
Same day/1 day

**Maximum Laboratory Time**
1 day

**Specimen Retention Time**
7 days

**Performing Laboratory Location**
Rochester

**Fees and Codes**

**Fees**
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.
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Test Classification
This test has been cleared or approved by the U.S. Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

CPT Code Information
84702

LOINC® Information

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<th>Order LOINC Value</th>
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