Test Definition: HE4
HE4, S

Overview

Useful For
An aid in monitoring patients with treated epithelial ovarian cancer for recurrence or progression

Method Name
Electrochemiluminescence Immunoassay

NY State Available
Yes

Specimen

Specimen Type
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.

Collection Container/Tube:

Preferred: Serum gel

Acceptable: Red top

Submission Container: Plastic vial

Specimen Volume: 1 mL

Forms

If not ordering electronically, complete, print, and send an Oncology Test Request (T729) with the specimen.

Specimen Minimum Volume
0.50 mL

Reject Due To

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Hemolysis</td>
<td>Mild OK; Gross reject</td>
</tr>
<tr>
<td>Lipemia</td>
<td>Mild OK; Gross OK</td>
</tr>
<tr>
<td>Icterus</td>
<td>NA</td>
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<td>Other</td>
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Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
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<tbody>
<tr>
<td>Serum</td>
<td>Frozen (preferred)</td>
<td>84 days</td>
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**Clinical and Interpretive**

**Clinical Information**

Human epididymis protein 4 (HE4) belongs to the family of whey acidic four-disulfide core proteins. Currently, the biologic function of HE4 is unknown.

HE4 has been shown to be overexpressed in 93% of serous, 100% of endometrioid, and 50% of clear cell ovarian carcinomas. In a study of 233 patients with a pelvic mass, including 67 with epithelial ovarian cancer, HE4 had a higher sensitivity for ovarian cancer detection than cancer antigen 125 (CA 125), 72.9% versus 43.3%, respectively, at a specificity of 95%. Researchers also found HE4 to be elevated in more than half of the ovarian cancer patients who did not have elevated CA 125 levels; therefore, the combination of markers provided slightly improved cancer diagnostic sensitivity for the detection of ovarian cancer.

The main established application of HE4 is in post-therapy monitoring of ovarian cancer patients, who had elevated pretreatment levels. In this setting, it complements CA 125 measurement and facilitates follow-up of patients with little or no CA 125 pretreatment elevations.

Certain histological types of ovarian cancer (mucinous or germ cell tumors) rarely express HE4, therefore the use of HE4 is not recommended for monitoring of patients with these types of ovarian cancer.

**Reference Values**

Females: \(< \text{ or } = 140 \text{ pmol/L}

Males: Not applicable

**Interpretation**

Increase in human epididymis protein 4 (HE4) suggests recurrence or disease progression, while a decrease suggests therapeutic response. A change in serum HE4 concentration of greater than or equal to 20% is considered significant.

**Cautions**

*Twelve hours before this blood test, do not* take multivitamins or dietary supplements containing biotin (vitamin B7) that are commonly found in hair, skin and nail supplements and multivitamins.

Results cannot be interpreted as absolute evidence of the presence or absence of malignant ovarian disease, because mild elevations of human epididymis protein 4 (HE4) might also be present in individuals with benign gynecologic conditions (ovarian cysts, cystadenomas, leiomyomas, myomas, fibromas, and endometriosis), hypertension, congestive heart failure, renal and liver disease.

Serial testing for patient HE4 results should be used in conjunction with other clinical methods for monitoring ovarian cancer.

HE4 should not be used as a screening test for ovarian cancer.

The use of this test in disease states other than ovarian cancer has not been clinically validated.
Serum markers are not specific for malignancy and values may vary by method. Values obtained with different assay methods cannot be used interchangeably. Correlation studies between this method and the previous ELISA method (Test ID FHE4) show good correlation (correlation coefficient =0.92). However the new method will, on average, give 28% higher HE4 concentrations and individual patient results may vary more than would be calculated from the correlation equation.

Ideally, when changing methods, parallel testing using the old and new method will allow establishing the patient's HE4 baseline levels with the new method (rebaseline).

In rare cases, interference due to extremely high titers of antibodies to analyte-specific reagents (human anti-mouse or heterophile antibodies, streptavidin, or ruthenium) can occur. The laboratory should be alerted if the result does not correlate with the clinical presentation.

Clinical Reference

Performance

Method Description
The instrument used is the Roche Cobas 6000 e601. The Roche Elecsys HE4 (human epididymal protein 4) method is a sandwich electrochemiluminescence immunoassay that employs a biotinylated monoclonal HE4-specific antibody and a monoclonal HE4-specific antibody labeled with ruthenium complex. HE4 in the specimen reacts with both the biotinylated monoclonal HE4-specific antibody (mouse) and the monoclonal HE4-specific antibody (mouse) labeled with ruthenium, forming a sandwich complex. Streptavidin-coated microparticles are added and the mixture is aspirated into the measuring cell where the microparticles are magnetically captured onto the surface of the electrode. Unbound substances are then removed. Application of voltage to the electrode induces the chemiluminescent emission, which is then measured against a calibration curve to determine the amount of HE4 in the patient specimen. This method has been standardized against the HE4 EIA method from Fujirebio Diagnostics, Inc.(Package insert: Roche HE4 reagent, V1. Roche Diagnostic Corp., Indianapolis, IN 2012-10)

PDF Report
No

Day(s) and Time(s) Test Performed
Monday through Friday; 5 a.m.-12 a.m.
Saturday; 6 a.m.-6 p.m.

Analytic Time
1 day

Maximum Laboratory Time
3 days

Specimen Retention Time
3 Months
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.

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
86305

LOINC® Information

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<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
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<td>HE4</td>
<td>HE4, S</td>
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