Overview

Useful For
Aiding in the diagnosis of infection

Method Name
Photometric, Hexokinase

NY State Available
Yes

Specimen

Specimen Type
Body Fluid

Advisory Information
For spinal fluid glucose, order GLSF / Glucose, Spinal Fluid.

Necessary Information
1. Date and time of collection. 2. Specimen source. -Preferred sources: Identify source name from the following list with location (if appropriate): -Peritoneal fluid (peritoneal, abdominal, ascites, paracentesis) -Pleural fluid (pleural, chest, thoracentesis) -Drain fluid (drainage, JP drain) -Peritoneal dialysate (dialysis fluid)

- Amniotic Fluid
- Pericardial Fluid
- Synovial Fluid

Acceptable sources: Write in source name with source location (if appropriate).

Specimen Required
Collection Container/Tube: Sterile container

Submission Container/Tube: Plastic vial

Specimen Volume: 1 mL

Collection Instructions: Centrifuge to remove any cellular material.

Specimen Minimum Volume
0.25 mL

Reject Due To

<table>
<thead>
<tr>
<th>Gross hemolysis</th>
<th>Reject</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other</td>
<td>Breast milk, nasal secretions, gastric secretions, bronchoalveolar lavage (BAL or bronchial washings), colostomy/ostomy, or vitreous fluid</td>
</tr>
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</table>
Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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</thead>
<tbody>
<tr>
<td>Body Fluid</td>
<td>Refrigerated (preferred)</td>
<td>7 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>30 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient</td>
<td>24 hours</td>
<td></td>
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</tbody>
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Clinical and Interpretive

Clinical Information

Blood glucose is measured to assess the glycemic state of a patient. Body fluid glucose concentrations that are lower than expected indicate increased cellularity and, therefore, glycolysis within the body fluid space and serves as an indicator of infection or possibly malignancy. Body fluid glucose concentrations are expected to be lower than that found in serum or plasma. Ideally, they are measured in the fasting state, whereby glucose is able to equilibrate into the space the body fluid is contained within.

Pleural Fluid:

Low pleural fluid glucose concentrations (<40-60 mg/dL) indicate a complicated parapneumonic or malignant effusion.(1) However, low glucose is not specific for infection or malignancy and may be attributed to hemothorax, tuberculosis, or rheumatoid or lupus pleuritis, among other diseases. pH is the preferred test for making this determination when available.

Pericardial Fluid:

Pericardial fluid glucose has been investigated on a limited basis. In presumed normal specimens collected during surgery, pericardial fluid-to-serum ratio for glucose was 1.0 (95% CI, 0.8-1.2).(2)

Peritoneal Fluid:

Ascitic fluid glucose should be interpreted in conjunction with serum glucose measurement. In a cohort of noninfected patients with alcohol-related cirrhosis, the mean (SD) ascitic fluid-to-serum glucose ratio was 1.04 (0.25).(3) Ascitic fluid glucose may be helpful in differentiating spontaneous bacterial peritonitis from secondary peritonitis caused by bowel perforation.(4) Secondary peritonitis is likely if 2 of the 3 following criteria are met: 1) total protein is greater than 1 g/dL; 2) LDH is greater than 225 IU/L (or greater than the upper limit of normal for serum); and 3) glucose is less than 50 mg/dL.(4)

Amniotic Fluid:

Amniotic fluid is produced by the amnion and placenta, representing a plasma ultrafiltrate. Amniocentesis may be performed to assess fetal distress. Intraamniotic infection or chorioamnionitis is an acute inflammation of the fetal membranes commonly caused by bacterial infection prompting an inflammatory response leading to labor and term or preterm birth.(5) Chorioamnionitis may be symptomatic (clinical) or asymptomatic (histological), occurring most often during prolonged labor or as a consequence of membrane rupture as bacteria have greater opportunity to ascend the lower genital tract to colonize the uterus. Prompt diagnosis and treatment for clinical chorioamnionitis is critical to avoid maternal and fetal morbidity and mortality. Culture and gram stain are often used in the assessment
of infection, however, gram stain lacks sensitivity and culture results are not returned in a timely enough manner to make clinical decisions. Low glucose concentrations have been associated with positive culture results and consequently poor outcomes.(6)

Synovial Fluid:

Synovial fluid is present in joint cavities and serves a number of important roles in maintaining joint health and mobility. Symptoms of joint problems include pain, swelling, stiffness, or decreased range of motion.

Routine analysis of synovial fluid includes Gram stain, culture, crystal analysis, and cell count with WBC differential. In normal synovial fluid, glucose concentrations are similar to those observed in fasting serum. Low synovial fluid glucose has been associated with septic arthritis or inflammation.(7)

Reference Values

See Comment

Interpretation

Body fluid glucose concentrations may be decreased due to increased cellular metabolism and should be interpreted in the context of blood glucose concentrations and in conjunction with other laboratory and clinical findings.(8, 9)

Pleural, peritoneal, and pericardial fluid and serum glucose concentrations are similar in the absence of infection.(3)

Transudative pleural fluid glucose concentrations are similar to serum glucose concentrations, while exudates have glucose concentrations less than serum glucose. Glucose levels below 60 mg/dL are typically associated with low fluid pH.(1, 10)

Amniotic fluid glucose levels below 16 mg/dL is suggestive of infection.(6)

Synovial fluid glucose concentrations are similar to fasting blood glucose concentrations or approximately 50% of the nonfasting serum glucose concentration under normal conditions. Values below this can be seen with infection.(7)

Cautions

Body fluid glucose results are not diagnostic and should be interpreted in conjunction with other laboratory and clinical findings.

Specimens that have cells present, either due to trauma during collection (blood present) or due to infection (bacteria) that are not centrifuged and separated from cells as soon after collection as possible may have falsely decreased glucose owing to the continued metabolic action of cells in vitro.

Clinical Reference


Performance

Method Description
Glucose, in the presence of hexokinase, is converted to glucose-6-phosphate (G-6-P). Glucose-6-phosphate dehydrogenase (G-6-PDH), in the presence of NADP, oxides G-6-P to gluconate-6-phosphate and NADPH. The rate of NADPH formation is directly proportional to glucose concentration and is measured photometrically. (Package insert: Roche glucose reagent. Roche Diagnostic Corp, Indianapolis, IN, January 2018)

PDF Report
No

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

Analytic Time
Same day/1 day

Maximum Laboratory Time
2 days

Specimen Retention Time
1 week

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 Definition: GLBF
Glucose, BF

Test Classification
This test has been modified from the manufacturer's instructions. Its performance characteristics were determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the U.S. Food and Drug Administration.

CPT Code Information
82945

LOINC® Information

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<th>Order LOINC Value</th>
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<td>Glucose, BF</td>
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<table>
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<th>Result LOINC Value</th>
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<td>Glucose, BF</td>
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<td>Fluid Type, Glucose</td>
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