**Overview**

**Useful For**
Diagnosing and monitoring hepatobiliary disease, it is currently the most sensitive enzymatic indicator of liver disease

Ascertaining whether observed elevations of alkaline phosphatase are due to skeletal disease (normal gamma-glutamyltransferase: GGT) or reflect the presence of hepatobiliary disease (elevated GGT)

A screening test for occult alcoholism

**Method Name**
PhotometricRate

**NY State Available**
Yes

**Specimen**

**Specimen Type**
Serum

**Necessary Information**
Patient's age and sex are required.

**Specimen Required**

**Collection Container/Tube:**

Preferred: Serum gel

Acceptable: Red top

**Submission Container/Tube:** Aliquot tube

**Specimen Volume:** 0.5 mL

**Collection Instructions:** Centrifuge and aliquot within 2 hours of collection.

**Specimen Minimum Volume**
0.25 mL

**Reject Due To**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross hemolysis</td>
<td>Reject</td>
</tr>
<tr>
<td>Gross lipemia</td>
<td>OK</td>
</tr>
<tr>
<td>Gross icterus</td>
<td>Reject</td>
</tr>
</tbody>
</table>

**Specimen Stability Information**
Test Definition: GGT
Gamma Glutamyltransferase (GGT), S

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serum</td>
<td>Refrigerated (preferred)</td>
<td>7 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>365 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ambient</td>
<td>7 days</td>
<td></td>
</tr>
</tbody>
</table>

Clinical and Interpretive

Clinical Information

Gamma-glutamyltransferase (GGT) is primarily present in kidney, liver, and pancreatic cells. Small amounts are present in other tissues. Even though renal tissue has the highest level of GGT, the enzyme present in the serum appears to originate primarily from the hepatobiliary system, and GGT activity is elevated in any and all forms of liver disease. It is highest in cases of intra- or posthepatic biliary obstruction, reaching levels some 5 to 30 times normal. GGT is more sensitive than alkaline phosphatase (ALP), leucine aminopeptidase, aspartate transaminase, and alanineaminotransferase in detecting obstructive jaundice, cholangitis, and cholecystitis; its rise occurs earlier than with these other enzymes and persists longer. Only modest elevations (2-5 times normal) occur in infectious hepatitis, and in this condition, GGT determinations are less useful diagnostically than are measurements of the transaminases. High elevations of GGT are also observed in patients with either primary or secondary (metastatic) neoplasms. Elevated levels of GGT are noted not only in the sera of patients with alcoholic cirrhosis but also in the majority of sera from persons who are heavy drinkers. Studies have emphasized the value of serum GGT levels in detecting alcohol-induced liver disease. Elevated serum values are also seen in patients receiving drugs such as phenytoin and phenobarbital, and this is thought to reflect induction of new enzyme activity.

Normal values are observed in various muscle diseases and in renal failure. Normal values are also seen in cases of skeletal disease, children older than 1 year, and in healthy pregnant women-conditions in which ALP is elevated.

Reference Values

Males

0-11 months: <178 U/L
12 months-6 years: <21 U/L
7-12 years: <24 U/L
13-17 years: <43 U/L
> or =18 years: 8-61 U/L

Females

0-11 months: <178 U/L
12 months-6 years: <21 U/L
7-12 years: <24 U/L
13-17 years: <26 U/L

Document generated June 18, 2020 at 4:35pm CDT
Test Definition: GGT
Gamma Glutamyltransferase (GGT), S

> or =18 years: 5-36 U/L

Interpretation
An elevation of gamma-glutamyltransferase (GGT) activity is seen in any and all forms of liver disease, although the highest elevations are seen in intra- or posthepatic biliary obstruction. Elevated values can also indicate alcoholic cirrhosis or individuals who are heavy drinkers.

The finding of increased GGT and alkaline phosphatase (ALP) activity is consistent with hepatobiliary disease.

The finding of normal GGT activity and increased ALP activity is consistent with skeletal disease.

Cautions
Gamma-glutamyltransferase activity is inducible by drugs such as phenytoin and phenobarbital and, therefore, elevations should not be considered indicative of liver disease until drug use is ruled out. Elevations are also seen after ingestion of alcoholic beverages.

In very rare cases, gammopathy, in particular, type IgM (Waldenstrom macroglobulinemia) may cause unreliable results.

Clinical Reference

Performance
Method Description
This is an enzyme colorimetric method (rate method) where gamma-glutamyltransferase (GGT) transfers the gamma-glutamyl group of the substrate (L-gamma-glutamyl-3-carboxy-4-nitroanilide) to glycylglycine. The amount of 5-amino-2-nitrobenzoate liberated is proportional to the GGT activity and can be determined photometrically. (Package insert: Roche Diagnostics Cobas 6000 GGT-2 reagent, Indianapolis, IN, 46256; 2017-01, V 10.0)

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
Test Definition: GGT
Gamma Glutamyltransferase (GGT), S

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
82977

LOINC® Information

<table>
<thead>
<tr>
<th>Test ID</th>
<th>Test Order Name</th>
<th>Order LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GGT</td>
<td>Gamma Glutamyltransferase (GGT), S</td>
<td>2324-2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Result ID</th>
<th>Test Result Name</th>
<th>Result LOINC Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>GGT</td>
<td>Gamma Glutamyltransferase (GGT), S</td>
<td>2324-2</td>
</tr>
</tbody>
</table>