Overview

Useful For
Verifying carbon monoxide toxicity in cases of suspected exposure

Method Name
Carboxyhemoglobin Co-oximetry

NY State Available
Yes

Specimen

Specimen Type
Whole Blood EDTA

Advisory Information
This test is not available for autopsy or cadaver specimens.

Specimen Required
Container/Tube: Lavender top (EDTA)

Specimen Volume: 1 mL

Collection Instructions: Avoid exposure of specimen to atmosphere.

Forms
If not ordering electronically, complete, print, and send a Therapeutics Test Request (T831) with the specimen.

Specimen Minimum Volume
0.1 mL

Reject Due To

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

Specimen Stability Information

<table>
<thead>
<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole Blood EDTA</td>
<td>Ambient (preferred)</td>
<td>14 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frozen</td>
<td>14 days</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refrigerated</td>
<td>14 days</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Information
Carbon monoxide (CO) is a colorless, odorless, tasteless gas that is a product of incomplete combustion of carbonaceous material. CO poisoning causes hypoxia because CO binds to hemoglobin with an affinity 250 times greater than that of oxygen, thus preventing delivery of oxygen to the tissues, but concentrations greater than 20% are associated with symptoms of toxicity (eg, headache, fatigue, dizziness, confusion, nausea, vomiting, increased pulse and respiratory rate). CO levels greater than 50% are potentially fatal. Common exogenous sources of carbon monoxide include cigarette smoke, gasoline engines, and improperly ventilated home heating units. Small amounts of carbon monoxide are produced endogenously in the metabolic conversion of heme to biliverdin. This endogenous production of carbon monoxide is accelerated in hemolytic anemias.

Reference Values
Normal Concentration
Non-Smokers: 0-2%
Smokers: < or =9%
Toxic concentration: > or =20%

Interpretation
The toxic effects of carbon monoxide can be seen in levels above 20% carboxyhemoglobin. It must be emphasized that the carboxyhemoglobin concentration, although helpful in diagnosis, does not always correlate with the clinical findings or prognosis. Factors other than carboxyhemoglobin concentration that contribute to toxicity include length of exposure, metabolic activity, and underlying disease, especially cardiac or cerebrovascular disease. Moreover, low carboxyhemoglobin concentrations relative to the severity of poisoning may be observed if the patient was removed from the carbon monoxide-contaminated environment a significant amount of time before blood sampling.

An insidious effect of carbon monoxide poisoning is the delayed development of neuropsychiatric sequelae, which may include personality changes, motor disturbances, and memory impairment. These manifestations do not correlate with the length of exposure or with the maximum blood carboxyhemoglobin concentration.

Cautions
No significant cautionary statements

Clinical Reference

Performance
Method Description
The ABL80 OSM CO-OX analyzer is a portable, automated analyzer that measures oximetry in whole blood. Total
hemoglobin (tHb), oxygen saturation (sO2), carboxyhemoglobin (COHb), and methemoglobin (MetHb) are measured by spectrophotometry. Light passes through a cuvette containing hemolyzed blood sample. The specific wavelengths absorbed and their intensity generates an absorption spectrum used to calculate oximetry parameters. (Instruction manual: ABL80 FLEX CO-OX analyzer-OSM version, Radiometer Medical ApS, 2016)

**PDF Report**

No

**Day(s) and Time(s) Test Performed**

Monday through Saturday; 12 a.m.

**Analytic Time**

Same day/1 day

**Maximum Laboratory Time**

2 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](#).

**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**

82375

**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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<tbody>
<tr>
<td>COHBB</td>
<td>Carbon Monoxide, B</td>
<td>20563-3</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Result ID</th>
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<td>8649</td>
<td>Carbon Monoxide, B</td>
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