

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

Ordering Guidance
This test is not available for autopsy or cadaver specimens.

Specimen Required
Container/Tube: Lavender top (EDTA)
Specimen Volume: 1 mL
Collection Instructions:
1. Avoid exposure of specimen to atmosphere.
2. Send specimen in original collection tube. **Do not aliquot.**

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

Gross hemolysis	OK
Gross lipemia	OK
Gross icterus	OK

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Whole Blood EDTA	Ambient (preferred)	14 days	
	Frozen	14 days	
	Refrigerated	14 days	

Clinical & Interpretive

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. 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

1. Langman LJ, Bechtel LK, Holstege CP. Clinical toxicology. In: Rifai N, Chiu RWK, Young I, Burnham C-AD, Wittwer CT, eds. Tietz Textbook of Laboratory Medicine. 7th ed. Elsevier; 2023;454-484

2. Baselt RC. Disposition of Toxic Drugs and Chemical in Man. 12th ed. Biomedical Publications; 2020

Performance

Method Description

The ABL80 OSM CO-OX analyzer is a portable, automated analyzer that measures oximetry in whole blood. Total hemoglobin oxygen saturation, carboxyhemoglobin, and methemoglobin are measured by multiwavelength 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, 01/2016)

PDF Report

No

Day(s) Performed

Monday through Friday

Report Available

Same day/1 to 3 days

Performing Laboratory Location

Rochester

Fees & 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 account representative. For assistance, contact [Customer Service](#).

Test Classification

This test has been cleared, approved, or is exempt by the US 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

Test ID	Test Order Name	Order LOINC® Value
COHBB	Carbon Monoxide, B	20563-3

Result ID	Test Result Name	Result LOINC® Value
8649	Carbon Monoxide, B	20563-3