
Lab Dept: Chemistry

Test Name: ARTERIAL BLOOD GAS

General Information

Lab Order Codes: ABG

Synonyms: Arterial blood gas

CPT Codes: 82803 – Gases, blood, any combination of pH, pCO₂, pO₂, CO₂, HCO₃ (including calculated O₂ saturation)

Test Includes: pH (no units), pCO₂ and pO₂ measured in mmHg, sO₂ and O₂AD measured in %, HCO₃ and BE measured in mmol/L, Temperature (degrees C) and ST (specimen type)

Logistics

Test Indications: Useful for evaluating oxygen and carbon dioxide gas exchange; respiratory function, including hypoxia; and acid/base balance. It is also useful in assessment of asthma; chronic obstructive pulmonary disease and other types of lung disease; embolism, including fat embolism; and coronary artery disease.

Lab Testing Sections: Chemistry

Phone Numbers: MIN Lab: 612-813-6280

STP Lab: 651-220-6550

Test Availability: Daily, 24 hours

Turnaround Time: 30 minutes

Special Instructions: Arterial punctures, arterial line and indwelling arterial catheter samples must be obtained by physicians or qualified staff from radial, brachial, femoral arteries or catheter sites.

Specimen

Specimen Type: Whole blood

Container: **Preferred:** Sims Portex® syringe (PB151) or Smooth-E syringe (956-463)

Draw Volume: 0.4 mL (Minimum: 0.2 mL) blood

Processed Volume: 0.2 mL blood

Collection: Arterial punctures must be performed by qualified personnel. Prior to radial artery sampling, a test for collateral circulation should be performed and documented. Once the puncture has been performed or the arterial line specimen drawn, immediately remove all air from the syringe. Remove the needle, cap tightly and gently mix. Forward the specimen promptly at ambient temperature.

Note on arterial line draws: The IV solution must be removed from the system prior to collection to prevent contamination.

Special Processing: Lab Staff: Deliver the specimen to the blood gas testing station. Testing must be completed within 30 minutes of collection.

Patient Preparation: The patient should have been stabilized on ventilator settings.

Sample Rejection: Mislabeled or unlabeled specimens; samples containing air; non-heparinized samples; collection times exceeding 30 minutes and clotted samples

Interpretive

Reference Range:

O2 Saturation:	95 – 98%
pO2:	80 – 105 mm Hg
pCO2:	
Males:	35 – 48 mm Hg
Females:	32 – 45 mm Hg
pH:	7.35 – 7.45
HCO3:	22 – 27 mmol/L
Base Excess (BE):	
Newborn (0-7 days):	-10 to -2 mmol/L
Infant (1 week-1 year):	-7 to -1 mmol/L

Child (1-16 years):	-4 to +2 mmol/L
Adult (>16 years):	-3 to +3 mmol/L

Critical Values:

pCO₂: <15 or >70 mm Hg

pH: <7.2 or >7.6

pO₂: <40 mm Hg

Limitations:

N/A

Methodology:

Ion-Selective Electrode, HCO₃ and BE by calculation

References:

ABL800 FLEX Operator's Manual from software version 6.00,
Publication: 200802, Edition: H, Code number: 990-315,
www.radiometer.com

Jacobs & DeMott Laboratory Test Handbook (2001) Lexi-Comp, Inc,
Hudson, OH, 5th Edition

Tietz Textbook of Clinical Chemistry (1999) 3rd Edition, W.B. Saunders
Company