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**Lab Dept:** Chemistry

**Test Name:** CAPILLARY BLOOD GAS (CBG)

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***General Information***

**Lab Order Codes:** CBG

**Synonyms:** CBG

**CPT Codes:** 82803 – Gases, blood, any combination of pH, pCO<sub>2</sub>, pO<sub>2</sub>, CO<sub>2</sub>, HCO<sub>3</sub> (including calculated O<sub>2</sub> saturation)

**Test Includes:** pH (no units), pCO<sub>2</sub> measured in mmHg, HCO<sub>3</sub> and BE measured in mmol/L, Temperature (°C) and ST (specimen type)

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***Logistics***

**Test Indications:** Capillary blood gas determinations are useful in monitoring neonates or other patients when arterial collection is not practical. Arteriolization of the capillary bed yields pH and pCO<sub>2</sub> comparable to arterial blood. 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.

**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:** See [Collection](#) and [Patient Preparation](#)

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***Specimen***

**Specimen Type:** Whole blood

**Container:** Lithium Heparinized Capillary blood gas tube tightly capped with internal mixing flea.

**Draw Volume:** MIN campus: 0.14 mL (Minimum: 0.07 mL) blood  
STP campus: 0.2 mL (Minimum: 0.1 mL) blood

Note: Submission of 0.1 mL of blood in one capillary tube does not allow for repeat analysis.

**Processed Volume:** 0.1 mL blood per analysis

**Collection:** Perform a capillary puncture from an arteriolized site. Fill 2 capillary tubes completely without introducing air bubbles. Cap both ends and mix 20 times by gentle inversion. Forward immediately at ambient temperature only. **Do not** expose the specimen to air.

Do not mix capillary samples from neonates with a magnet. Use gentle and thorough inversion only.

**Special Processing:** Lab Staff: Deliver the specimen to the blood gas testing station. Testing should be completed within 15 minutes of collection.

**Patient Preparation:** The skin area to be punctured should be warmed to no more than 42°C for 3-10 minutes by applying an infant heel warmer. The patient should be in a relaxed and steady state

**Sample Rejection:** Clotted specimen; unlabeled specimen or mislabeled specimens; specimens >30 minutes old; specimen contaminated with large air bubbles

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### ***Interpretive***

**Reference Range:**

pH:	7.35 – 7.45
PCO <sub>2</sub> :	
Males:	35 – 48 mm Hg
Females:	32 – 45 mm Hg
HCO <sub>3</sub> :	22 – 27 mEq/L
Base Excess:	
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

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**Critical Values:**

pCO<sub>2</sub>: <15 or >70 mm Hg

pH: <7.2 or >7.6

**Limitations:**

N/A

**Methodology:**

Ion-Selective Electrode, HCO<sub>3</sub> and BE by calculation

**References:**

Tietz, Norbert (1995) Clinical Guide to Laboratory Tests, 3rd edition, WB Saunders Co, pp 1081-1084

ABL 800 FLEX Operator's Manual, Publication 201410, Edition E, Code Number 994-909, 2008 Radiometer Medical ApS

Jacobs and DeMott (2001) Laboratory Test Handbook, 5<sup>th</sup> edition, Lexi-Comp, Inc., Hudson, Ohio, p 21

ABL90 FLEX Operator's Manual, Publication 201403, Edition H, Code 996-656

**Update:**

7/14/2005: Added clarification on draw volume for repeat analysis.

4/22/2010: TAT update, previously listed as 1 hour, updated references