

University of California, San Francisco Clinical Laboratory  
 At Zuckerberg San Francisco General Hospital  
 1001 Potrero Ave, SF, CA 94110  
 Clinical Laboratory – Barbara Haller, MD, PhD, Laboratory Director

**Point of Care Testing:** Blood Gas, Electrolyte, Glucose, Hematocrit, Lactate, Carboxyhemoglobin, and Methemoglobin by the GEM4000 Premier

**UNIT:** Emergency Department

**Date:** 2-5-20

Chris. Colwell

Christopher B. Colwell, MD  
 Chief of Emergency Services

Barbara Haller

Barbara Haller, MD, PhD  
 Director, Clinical Laboratory

**Clinical Indication**

Test(s)	Utility in Assessing Emergency Patients and Monitoring Therapy
pH, pO <sub>2</sub> , pCO <sub>2</sub> ,	Expected compromised respiratory and/or Acid/Base status
K <sup>+</sup>	Expected Hypo or Hyperkalemia
Na <sup>+</sup> , Ca <sup>++</sup> (ionized)	
Hct	Expected Abnormal Oxygen-carrying capacity or RBC concentration
Glucose	
Lactate	
tHb, O <sub>2</sub> Hb, CoHb, MetHb	

**Documentation**

The results will be electronically transferred to the Electronic Medical Record.

**Clinical Action**

Test(s)	Results relative to Reference Ranges ("Normal Values")*		
	Within Range	Below	Above
pH, pCO <sub>2</sub> , pO <sub>2</sub>	none	Treatment per MD orders based on test results, ventilator settings (if applicable) and patient condition. *pO <sub>2</sub> from venous sample is not used for evaluation.	Treatment per MD orders based on test results, ventilator settings (if applicable) and patient condition. *pO <sub>2</sub> from venous sample is not used for evaluation.
K <sup>+</sup>	none	Management of fluids and electrolytes per MD orders based on test results.	Management of fluids and electrolytes per MD orders based on test results.
Na <sup>+</sup> , Ca <sup>++</sup> (ionized)			

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Hct, tHb	none	Transfusion of red blood cells per MD/CRNA order depending on patient's diagnosis and condition.	N/A	
Glucose				
Lactate				
O2Hb, CoHb, MetHb				

\* For Reference Ranges (arterial versus venous blood sample) please see GEM4000 Point of Care Test Results and Reference Range Sheet.

**Critical Results:**

pH	< 7.20 or > 7.55	Glucose	< 50 or >500 mg/dL Neonates: < 30 or > 170 mg/dL
pCO2	< 25 or > 65 mmHg	Lactate	> 3.9 mmol/L
pO2	< 40 mmHg; Neonates: < 40 or > 100 mmHg	Total Hgb	<7 or >20 g/dL
Ca++ (ionized)	<0.8 or > 1.55 mmol/L	CoHb	>14.9 %
Na+	< 125 or > 155 mmol/L	MetHb	>14.9 %
K+	< 3.0 or > 6.0 mmol/L		

\*If a patient's test result is in the critical value range it must be relayed to the attending staff IMMEDIATELY with the emphasis that the result is in the critical range. If appropriate, repeat the test, or take action and check the effect of the treatment.