



## Laboratory Technical Bulletin

**Date:** 12/22/2015

**Effective Date:** 1/18/2016

**Title:** SPECIMEN CONTAINER CHANGE

**Test:** VENOUS BLOOD GAS

Old Container	New Container
	
Green Top Whole Blood Lithium Heparin Vacutainer Tube	Heparinized Blood Gas Syringe (Anaerobic Pulsator® Arterial Blood Sampling Kit with Liquid Sodium Heparin for Gases and Electrolytes)

**EXPLANATION OF CHANGE:**

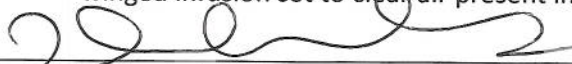
Per testing instrument manufacturer guidelines, venous blood collected in heparinized vacuum tubes is not suitable to measure  $pO_2$ , oxygen Saturation ( $sO_2$ ), oxyhemoglobin or oxygen content. Venous blood collected for blood gas testing must be drawn in a heparinized blood gas syringe.

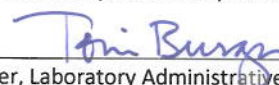
**COLLECTION METHOD:**

Collect sample using venipuncture technique. Do not allow air bubbles to contaminate the sample.  
Mark on patient identification label the patient full name, date of birth, collector mnemonic, date and time of collection and "venous" for sample type.  
Ensure thorough anticoagulation immediately after collection by rolling syringe in palms for 10 seconds.

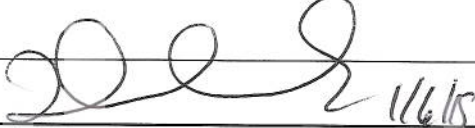
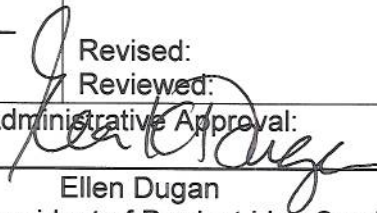
**PRE-ANALYTICAL CONSIDERATIONS AND SPECIMEN REJECTION CRITERIA:**

- Hand delivery to the Laboratory is the preferred method of transport.
- For pneumatic tube transport, cushion the syringe to prevent specimen agitation during rapid acceleration and deceleration at launch and delivery of the pneumatic tube carrier.
- Ensure air bubbles are removed from the specimen prior to transport to prevent air bubble equilibration into the specimen.
- Transport syringe at room temperature.
- Venous blood gas specimens must be tested within 30 minutes of collection.
- Specimens for venous blood gas testing will be rejected if received in the Laboratory after 30 minutes from collection, if received on ice, if air bubbles are present in the sample, or if clots are detected in the sample.
- In the specimen tube order of draw, venous blood gas samples are the last to be collected from a "butterfly" winged infusion set or from an IV cannula.
- If a venous blood gas sample is the only sample to be collected, a waste tube must be used with a "butterfly" winged infusion set to clear air present in the cannula or use the straight needle included in sampling kit.

 Date 12/23/15  
Dr. Daniel Sudilovsky, Laboratory Medical Director

 Date 12-22-15  
Toni Burger, Laboratory Administrative Director

CAYUGA MEDICAL CENTER AT ITHACA  
LABORATORY POLICY AND PROCEDURE MANUAL

 Daniel Sudilovsky, MD      Date: 1/16/15 Medical Director Laboratory		Effective:            March 2015  Revised: Reviewed:
Administrative Approval:  Ellen Dugan Vice President of Product Line Services		
Department:    Laboratory/Nursing Categories:      Specimen Collection  Subject:            Venous Blood Gas Collection Policy and Procedure	Prepared By            Karen Stalker, MLS (ASCP) <sup>cm</sup> Date Adopted            March 2015	

**STANDARD:**

Policies and procedures for venous blood gas collection are established, current, approved and readily available.

**PURPOSE:**

To ensure quality venous blood collection practices for accurate patient test results used in clinical decision-making for effective patient care.

**SUPPORTING DATA:**

Procedures Collection of Diagnostic Blood Specimens by Venipuncture; Approved Standard-Sixth Edition. H3-A6 Vol. 27 No. 26 Clinical and Laboratory Standards Institute®

Specimen Collection – Blood Collection/Venipuncture Mayo Medical Laboratories

NYSDOH Clinical Laboratory Standards of Practice

GEM Premier 4000 Operator's Guide-Patient Sampling Instrumentation Laboratory March 2011

**RELATED POLICIES/PROCEDURES/FORMS**

Order Of Draw Chart – 2/2015 K. Stalker, MLS (ASCP)

Venous Blood Collection Policy and Procedure

**VENOUS BLOOD GAS COLLECTION PRINCIPLE**

To establish general procedures for collecting diagnostic venous blood gas specimens.

Venous blood is suitable for analyzing pH, pCO<sub>2</sub>, electrolytes, glucose, lactate, total bilirubin, total hemoglobin, hematocrit, carboxyhemoglobin and methemoglobin. Venous blood is not a suitable substitute for arterial blood gas analysis.


Venous blood collected in heparinized vacuum tubes is not suitable to measure pO<sub>2</sub>, oxygen saturation, oxyhemoglobin or oxygen content. Venous blood collected for blood gas measurement must be collected in a heparinized syringe using venipuncture collection technique.

The procedures listed below are designed to provide basic instruction on obtaining a quality blood sample for venous blood gas testing. Consideration will be placed on comfort to the patient, safety to patient and collector, and the integrity of the sample.

## **VENOUS BLOOD GAS COLLECTION POLICY AND PROCEDURE**

- A. Venous blood gas collection preparation
  - 1. Perform patient identification with the Iatrics Mobilab system
  - 2. Select and prepare the venipuncture site following the Venous Blood Collection Policy and Procedure.
  
- B. Technique for drawing venous blood gas only:
  - 1. Butterfly needle with blood gas syringe technique:
    - a. Assemble the butterfly needle and blood gas syringe for collection.
    - b. Move the syringe plunger back and forth to lubricate the inside of the syringe with heparin and then expel the excess heparin solution (it states to expel excess heparin on the syringe).
    - c. Remove transfer needle from butterfly cannula.
    - d. Secure butterfly needle to heparinized blood gas syringe.
    - e. Remove the butterfly needle safety cover.
    - f. Using the syringe holding hand, anchor the vein below the venipuncture site by lightly pulling down the skin surface with the thumb of this hand.
    - g. With the drawing hand, pinch the "wings" of the needle between thumb and index finger and insert the butterfly needle bevel up into the vein at a 15° angle to the skin.
    - h. Successful venipuncture is signaled by a "flash" of blood at the beginning of the butterfly needle cannula.
    - i. Release tourniquet.
    - j. With the thumb and forefinger of the syringe drawing hand, draw back blood gas syringe plunger gently and slowly.
    - k. One (1) mL of blood is the minimum specimen volume required for venous blood gas testing. Excessive drawing pressure will cause hemolysis and result in an unacceptable specimen.
    - l. Place clean gauze or lint-free tissue gently over puncture site with syringe hand and activate the push button safety device with the thumb of the drawing hand to retract the needle from arm.

- m. Remove butterfly needle from syringe and secure the blue filter cap on the syringe. Gently remove air bubbles from blood gas syringe if present by expelling a small amount of sample into the filter cap.
  - n. Label blood gas syringe with the verified patient's full name and date of birth AND write "venous" on the label to indicate specimen type. The Mobilab System includes the collector mnemonic and time of collection on the label.
  - o. Transport specimen to the Clinical Laboratory immediately for testing.  
**Venous blood gas samples must be tested in 30 minutes of collection.** Hand transport is preferred, pneumatic tube transport is approved.
  - p. Do not transport specimens for blood gas testing on ice.
  - q. Check the venipuncture site for cessation of active bleeding.
  - r. Apply bandage.
  - s. Discard butterfly needle in sharps container and other waste in appropriate receptacles.
2. Technique for drawing venous blood gas with other tests:
- a. Assess need for assistance in collection to transfer specimen tubes and blood gas syringe.
  - b. Assemble butterfly needle with a blood collection transfer device (hub).
  - c. Move the syringe plunger back and forth to lubricate the inside of the syringe with heparin and then expel the excess heparin solution.
  - d. Perform venipuncture according to the venous blood collection policy and procedure.
  - e. Collect blood specimen tubes in the order of draw.
  - f. Venous blood gas is drawn last in the order of draw.
  - g. Fold the butterfly needle cannula to pinch the butterfly cannula shut. This step can be performed by assistant.
  - h. Remove the blood collection transfer device (hub) and the butterfly transfer needle.
  - i. Attach the white connector on the butterfly needle cannula to the syringe, release the pinched cannula, gently draw back the syringe plunger using the thumb and fingers of the collecting hand, and collect a venous blood gas specimen.
  - j. Remove butterfly needle from syringe and secure the blue filter cap on the syringe. Gently remove air bubbles from blood gas syringe if present by expelling a small amount of sample into the filter cap.
  - k. Label blood gas syringe with the verified patient's full name and date of birth AND write "venous" on the label to indicate specimen type. The Mobilab System includes the collector mnemonic and time of collection on the label.
  - l. Transport specimen to the Clinical Laboratory immediately for testing.
  - m. **Venous blood gas samples must be tested in 30 minutes of collection.** Hand transport is preferred, pneumatic tube transport is approved.
  - n. Do not transport specimens for blood gas testing on ice.
  - o. Check the venipuncture site for cessation of active bleeding.
  - p. Apply bandage.
  - q. Discard butterfly needle in sharps container and other waste in appropriate receptacles.

Reviewed and Approved by:  Date: 1/6/15

Reviewed and Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed and Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed and Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

## Direct Observation Checklist for Venous Blood Gas Collection

<b>Employee Name</b>	<b>Date Competency Performed</b>
<b>Department</b>	<b>Initial    Annual    (Circle competency period)</b>
<b>Overall Competence Result</b> (Place and X in the appropriate box to the right)	<input type="checkbox"/> <b>Satisfactory</b> <input type="checkbox"/> <b>Unsatisfactory</b>

**Competency Type:**    Initial                       Annual

Venous Blood Gas Collection	Y (yes)	N (no)
Selects and prepares venipuncture site correctly		
Prepares blood gas syringe correctly		
Assembles butterfly needle and blood gas syringe for collection		
Performs venipuncture with the butterfly needle		
Draws blood sample into venous blood gas syringe correctly.		
<b>What is the minimum amount of blood sample for venous collection?</b>		
Completes venipuncture correctly		
Removes air bubbles from blood gas syringe and caps specimen for transport		
Labels specimen correctly		
<b>Venous blood gas samples must be tested within how many minutes of collection?</b>		
<b>Where in the order of draw are venous blood gas samples drawn?</b>		
Demonstrates technique for drawing venous blood gas with other tests		
<b>Comments/Corrective Action Follow-up:</b>		
<b>Competence Assessment observed by/Date:</b>		
<b>Reviewed by Specimen Management Supervisor:</b>	<b>Date:</b>	
<b>Reviewed by Support Services Manager:</b>	<b>Date:</b>	