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|  | **Blood Collection Procedures****IPP#9** | **Dept:**  | **Inpatient Phlebotomy 324305** |
| **Effective Date:** | **2/17/2011** |
| **Revised Date:** | **March 2019** |
| **Contact:** | **Laurie Watson** |
| **Name & Title: Greg Pomper, MD Medical Director** | **Date:** |  |
| **Signature:** |

1. **General Procedure Statement:** To give guidelines to staff concerning the proper Process for Blood Collection.
	1. **Purpose:** This procedure is to serve as a guide for trained personnel in the Inpatient Phlebotomy Department to perform the services described herein. These guidelines should be used in conjunction with proper training and only by qualified Phlebotomists.
	2. **Responsible Department/Party/Parties:**
		1. Procedure owner/ Implementer: Inpatient Phlebotomy
		2. Procedure prepared by: Laurie Watson MT(ASCP)
		3. Who Performs procedure: Inpatient Phlebotomy

**Procedure: Blood collection Procedure**

**Venipuncture Procedure**

The collection of a properly identified and skillfully collected blood sample is an essential step for quality lab results.

The proper use of personal protective clothing /equipment should be used for all patients as indicated. Standard Universal Precautions are followed for all patients, including glove usage and proper hand hygiene.

**PROCEDURE OVERVIEW:**

* 1. Phlebotomists, Medical Technologists, Medical Lab technicians or nursing staff can obtain blood samples by peripheral venipuncture or skin puncture. Arterial punctures and other methods of collections are not performed by these staff members.
	2. Any difficulties encountered obtaining blood specimens should be directed to the provider.
	3. Hand hygiene shall be performed and examination gloves worn for collection of body fluid and blood. Identification of the patient shall be per the Patient Identification policy. Hand hygiene shall also be performed following the collection.
	4. Blood samples will be labeled immediately following collection, at the patient’s bedside, with two approved patient identifiers (Patient name and DOB, or MRN).
		1. NOTE: Room number is not an approved patient identifier and can lead to a BAD ID and rejection of the sample. The person collecting the specimen should be the one to ID the patient and label the specimens.
	5. The laboratory will use clinically effective needle devices that incorporate engineering controls to prevent needle stick injuries. Needles may not be manipulated by bending or recapping.
1. Procedure
	1. **Wash hands before placing gloves on hands.**
	2. Prepare requisitions when appropriate, and specimen labels**.**
		1. Each request for a blood specimen must be verified to identify all supplies associated with the patient.
		2. Identify the patient by scanning the armband and confirming the name and date of birth visually and verbally.
		3. In the absence of the scanner, a three-way match should be made using the test requisition and the specimen labels by comparison of what the patient verbally states.
	3. Assemble Supplies**.**
		1. Only latex free supplies are used.
		2. Collection tubes
		3. Latex free Tourniquet
		4. 70% alcohol gauze
		5. Dry gauze pads
		6. Latex Free Exam gloves
		7. Adhesive bandage or medical tape
	4. Select the system for venipuncture:
		1. Evacuated System
		2. The single use tube holder
		3. Evacuated tubes
		4. Single use syringes
		5. Single use needles
	5. Reassure the patient**.**
		1. The phlebotomist gains the patient’s confidence and assures the patient that although the venipuncture will be slightly uncomfortable, it will be short in duration.
		2. Never tell a patient that the venipuncture will not hurt.
	6. Prepare the patient**.**
		1. The arm should be straight, firmly supported and rotated to expose the antecubital area.
	7. Apply new tourniquet**.**
		1. Apply tourniquet 2-6 inches above the desired insertion site to impede venous, but not arterial, blood flow.
		2. The tourniquet should be tight enough to restrict blood flow but not make the patient unnecessarily uncomfortable.
		3. Ask the patient to close their hand but not to pump their fist**.**
	8. Select a site**.**
		1. If a peripheral IV is in the same arm, turn IV fluids off for at least 2 minutes prior to venipuncture.
		2. Whenever possible, **avoid** venipuncture above an IV site.
		3. The larger and fuller medial cubital and cephalic veins are used most frequently used.
		4. Veins in the hand or back of the wrist may also be used.
		5. The use of the basilic vein should be the last option.
		6. Veins on the palm side of the wrist should not be used.
	9. Clean the venipuncture site**.**
		1. Clean with 70% alcohol in a circular motion from center to periphery.
		2. Allow to air dry for 30 seconds. Failure to allow alcohol to dry properly could lead to hemolyzed specimens and increased discomfort for the patient during the collection.
	10. Perform venipuncture.
		1. Evacuated tube method
			1. Thread the needle into the tube holder and remove cap
			2. Grasp patient’s arm and position thumb 2 inches below insertion site. Apply traction on skin in direction of hand.
			3. Insert needle with bevel up through skin at a 15 – 30˚ degree angle. Use a continuous smooth motion.
			4. Ask patient to open their hand.
			5. Continue to hold the tube holder with one hand while inserting and changing the evacuated tubes according to the correct order of draw.
			6. Allow tube to fill until the vacuum no longer draws blood from the vein.
			7. Remove tourniquet following blood fill of the first tube. To avoid hemoconcentration, the maximum time the tourniquet should be tied around the patient’s arm is @ 1 minute.
			8. Mix additive tube by gently inverting them 5 to 10 times.
			9. When final tube is collected, place a piece of gauze over collection site and withdraw needle. Lock the safety shield over the needle and discard into biohazard sharps container.
			10. Hold gauze over the wound site for 2-4 minutes. Check to ensure bleeding has stopped and apply clean gauze and apply dressing.
				1. NOTE: BANDAIDS are not an approved dressing for children under 2 years of age.
			11. Label all tubes immediately in the presence of the patient.
			12. Place specimens in biohazard bag.
		2. Syringe Method
			1. Attach the needle to the syringe and exercise the plunger.
			2. Grasp patient’s arm and position thumb 2 inches below insertion site. Apply traction on skin in direction of hand.
			3. Insert needle with bevel up through skin at a 15 – 30˚ degree angle. Use a continuous smooth motion.
			4. Gently pull the plunger back to fill the syringe. Do not force plunger back. When properly performed, the plunger should be easy to pull back.
			5. Ask the patient to open hand
			6. Release the tourniquet.
			7. Place gauze on the venipuncture site**.**
			8. Remove the needle.
			9. Apply gentle pressure to the gauze as the needle exits the point of entry.
			10. Activate the protective sheath on the needle
			11. Discard the needle and holder in an appropriate sharps container**.**
			12. Maintain pressure on the puncture site until bleeding stops (2-4 minutes)
			13. Bandage the site.
				1. NOTE: BANDAIDS are not an approved dressing for children under 2 years of age.
			14. Transfer blood from syringe to appropriate colored evacuation tubes using a vacutainer blood transfer device only. Place evacuated tubes into vacutainer blood transfer device holder according to the recommended order of draw for syringe collections.
			15. Label the tubes in the presence of the patient.
			16. Deliver samples to the lab in a biohazard bag.
		3. Vacutainer Safety Push Button Blood Collection Set (Butterfly Blood Collection Set)
			1. Peel apart the package and remove set.
			2. Screw the luer adapter into the holder.
			3. Grasp patient’s arm and position thumb 2 inches below insertion site. Apply traction on skin in direction of hand.
			4. Grasp butterfly wings with thumb and fingers. Insert needle with bevel up through skin at a 15 – 30˚ degree angle. Use a continuous smooth motion.
			5. Ask patient to open their hand.
			6. Continue to hold the tube holder with one hand while inserting and changing the evacuated tubes according to the correct order of draw.
				1. NOTE: When using a winged blood collection set for venipuncture and a coagulation (citrate) tube is the first specimen tube to be drawn, a discard tube should be drawn first. The discard tube must be used to fill the blood collection set tubing’s “dead space” with blood but the

discard tube does not need to be completely filled. This important step will ensure proper blood-to-additive ratio. The discard tube should be a non-additive or coagulation tube.

* + - 1. Allow tube to fill until the vacuum no longer draws blood from the vein.
			2. Remove tourniquet following blood fill of the first tube. To avoid hemoconcentration, the maximum time the tourniquet should be tied around the patient’s arm is @ 1 minute.
			3. Mix additive tubes by gently inverting them 5 to 10 times.
			4. When final tube is collected, place a piece of gauze over collection site. Activate the safety shield button. The needle will automatically retract inside the holder.
			5. Discard needle in biohazard sharps container.
			6. Hold gauze over the wound site for 2-4 minutes. Check to ensure bleeding has stopped and apply clean gauze and apply dressing.
				1. NOTE: BANDAIDS are not an approved dressing for children under 2 years of age.
			7. Label all tubes immediately in the presence of the patient.
			8. Place specimens in biohazard bag.
		1. Safety Push Button Blood Collection Set (Butterfly Blood Collection Set) with syringe
			1. Remove the clear luer adapter tip from the blood collection set and attach a syringe.
			2. Follow all steps above for Vacutainer Safety-Lok Blood Collection Set (Butterfly Blood Collection Set) above.
			3. Transfer blood from syringe to appropriate colored evacuation tubes using a vacutainer blood transfer device only. Place evacuated tubes into vacutainer blood transfer device holder according to the recommended order of draw.
			4. Label all tubes immediately in the presence of the patient.
1. Skin Puncture Collection Methods
	1. Fingerstick
		1. Fingerstick is an acceptable method for children over 6 months of age.
		2. A venipuncture is the method of choice for collections.
		3. If a fingerstick is being substituted in lieu of a venipuncture, documentation of physician notification should occur. Due to the nature of the puncture, some tests may be affected by a fingerstick method; therefore, physicians should be notified.
		4. Choose a finger that is not cold, cyanotic, or swollen.
			1. If possible, the puncture should be at the tip of the fourth finger of the nondominant hand.
		5. Gently massage the finger five or six times from base to tip to aid blood flow.
		6. With an alcohol swab, cleanse the ball of the finger. Allow to air dry.
		7. Remove the protective covering from the top of the lancet.
		8. Hold the patient's finger firmly with one hand and activate the puncture button on the lancet. Choose a puncture site halfway between the center of the ball of the finger and its side.
		9. The cut should be made in a vertical line with the finger to produce a large, round drop of blood.
		10. Wipe the first drop of blood away with clean gauze (not for PT tests).
		11. Gently squeeze the finger from base to tip to obtain the proper amount of blood for the tests requested.
		12. At completion of specimen collection, apply pressure to the puncture site using dry gauze.
			1. NOTE: BANDAIDS are not an approved dressing for children under 2 years of age.
		13. Place cap on microtainer and mix each additive tube by inversion 8-10 times immediately after collection.
		14. Place the beaker label around the top of the tube, being careful not to obscure the name and MR#
	2. HEEL PUNCTURE**:**
		1. Heel puncture should only be performed on infants less than 6 months of age.
		2. Heel puncture should be reserved for only infants requiring a bilirubin test or at the direction of the physician. If venipuncture is not an option, documentation should be made the physician was notified a heel puncture is being performed. Due to the nature of the puncture, some tests may be affected by a heel stick method, therefore, physicians should be notified.
		3. Assemble necessary equipment (see above for finger puncture) and have within easy reach.
		4. Identify the patient by comparing the requisition, labels and the stated name and date of birth.
		5. Firmly grasp the foot, exposing the heel with one hand, use the lancet to make a puncture with the other hand.
		6. Wipe away the first drop of blood with dry gauze.
		7. Gently massage the heel to obtain the desired blood flow and fill the containers to the proper levels.
			1. Use only gentle massage when obtaining blood.
			2. Excessive massaging dilutes the blood with tissue fluids and may also cause hemolysis.
			3. It is sufficient to massage with your thumb and forefinger.
		8. At completion of specimen collection, apply pressure to the puncture site using dry gauze. A Band-Aid is not to be used on infants.
		9. Place cap on microtainer and mix each additive tube by gentle inversion 8- 10 times immediately after collection.
		10. Label tubes as with finger sticks.
		11. **Do not use a heel that is excessively bruised**. Have a doctor make the judgment when you are unsure about the condition of a foot.
	3. RECOMMENDATIONS FOR HEEL PUNCTURES
		1. Perform punctures on the most medial or most lateral portion of the plantar surface.
		2. Puncture no deeper than 2.4 mm.
		3. Do not perform punctures on the posterior curvature of the heel.
		4. Do not puncture through previous sites which may be infected.
		5. Do not use a heel that is receiving IV fluids or is excessively bruised. Have a doctor make the judgment when you are unsure about the condition of a foot.



1. Processing of tubes
	1. Most tubes contain an additive or clot activator that needs to be mixed with the blood sample.
	2. Tubes with anticoagulants such as EDTA need to be mixed to ensure the specimen does not clot
	3. Immediately after drawing, hold the tube upright and gently invert 180˚ and back.
	4. Repeat movement as prescribed for each tube.
	5. Failure to mix tubes properly could lead to clotting of the tube, failure of SST tubes to clot completely and repeat of the specimen collection.
	6. Once tubes have been collected, labeled, and appropriately mixed, place in biohazard bag and deliver to the laboratory.
2. Procedure Notes
	1. All needles are disposed in biohazard sharps containers.
	2. The safety devices on these needles are designed to reduce the likelihood of needle injury but accidents may still happen. Report all needle injuries to the supervisor immediately, as well as overfilled sharps containers.
	3. Phlebotomists should be aware of any discomfort of the patient. If a patient faints, seizes or is otherwise injured call 6-9111 and report the Code 44. Remain with the patient until assistance arrives
	4. Patient nourishment is provided in cases where the patient feels ill or nourishment is needed.
3. The order of draw is the same for syringe or vacutainer.
	1. If only a blue top tube is required, then it may be the only tube obtained, unless using a butterfly. In the event a tubed butterfly unit is used to collect a sample, a discard tube must be used to capture the air in the tubing.
	2. The SST Gel tube is an additive tube and should be drawn after the blue.
	3. Specimen requirements are specific for the tube type as required by the testing department.
	4. See Order of Draw Procedure
	5. Placement of bar-coded Labels on the Tubes
		1. The bar-coded labels that are generated from the LIS must be placed on the tubes with a specific orientation.
		2. The first letter of the last name is oriented toward the top of the tube.
		3. Note the placement of the label. The barcode is positioned next to the cap and is in line with the tube. This alignment is critical for instruments to read the bar code in the laboratory.
	6. Hand-written label placement: Place the label on the specimen in a way such that the written information is not obscured.
4. Transporting Specimens back to the Laboratory
	* 1. Samples should be delivered to the laboratory ASAP.
		2. All samples being delivered to the laboratory should be in a biohazard bag.
		3. Multiple patient samples may be placed in the same biohazard bag if:
			1. All tubes have a barcoded, Beaker generated label on it
			2. There are no requisitions to go with the specimens
		4. Specimens that are hand-labeled or have a requisition require their own biohazard bag and may not be mixed with other patient specimens.
		5. Samples may be delivered by courier, walking the sample to the lab, or by tube system.
		6. Blood collection tubes are maintained at room temperature unless otherwise instructed.
	1. Receiving the Specimen in the Laboratory
		1. Specimens are received into the laboratory using the “receive” function in the Mobile Electronic collection device or the LIS system.
		2. In the event of duplicate requests, the phlebotomists/ lab tech may credit the duplicate only if ordered for the same patient on identical dates and times.
		3. Acceptable credit /cancellation codes are pre-defined in the beaker/ Wake One LIS.
5. Pediatric Blood Collection Considerations
	1. The collection of blood specimens from children poses special challenges related to both size and specimen requirements.
	2. Venipuncture is the method of choice for all ages. It should be the first attempt at blood collection.
	3. Heel sticks and finger sticks are performed at the physician's request for any test with a suitable micro methodology. To verify micro volume requirements and availability the phlebotomist can confirm methods with the testing lab:
		1. Hematology 716-2610
		2. Chemistry 716-2610
		3. Microbiology 716-2658
		4. Referral Testing 716-2610
		5. Blood Bank 716-2618
	4. Heel sticks may be attempted up to but not beyond age 6 months. After 6 months an infant's heel becomes too thick for adequate blood collection.
	5. Fingerstick may be performed on any patient older than 6 months of age, if appropriate.

**Order of Draw and Tube Types**

The proper order of draw is followed when drawing all patient samples

The order of draw is as follows:

1. Tubes for sterile samples (i.e. Blood Cultures)
2. Tubes for coagulation studies
3. Tubes without additives
4. Tubes with additives
	1. SST Gel
	2. Heparin
	3. EDTA/Pink and Purple
	4. Oxalate/Fluoride
	5. Others as needed

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| **Tube Top Color** | **Size** | **Additive** |
| BD Bactec Aerobic and Anaerobic | 10 ml | Blood Culture Media |
| Blue | 2.7 ml, 1.8ml | Sodium Citrate (anticoagulant) 0.3ml-0.109M |
| Red | 10 ml | None |
| Gold | 3.5 ml | Inert gel barrier and clot activator |
| Green | 5 ml | Li Heparin (anticoagulant) 75 USP Units |
| Lavender | 3 ml500ul | K2EDTA (anticoagulant) 5.4 mg K2EDTA (anticoagulant) 1.0 mg |
| Pink | 6 ml | K2EDTA (anticoagulant) 10.8 mg |
| Yellow | 10 ml, 1.5 ml | ACD (anticoagulant) |
| Royal Blue | 6 ml | K2EDTA (anticoagulant) 10.8 mg, lavender stripeSerum red stripe |
| Gray | 4 ml | Sodium Fluoride 10mg, Potassium Oxalate 8 mg (anticoagulant)  |

Ref: NCCLS Document H3-A4 Vol.18 No. 7

* 1. **Special Collection and Tube Considerations**
		+ 1. Some specimens require special handling once collected.
			2. Follow guidelines according to the specific test you are collecting.
			3. Call main campus customer service center (716-2610) for additional information if not found in the online test catalog or Beaker.
		1. **Light Sensitive Specimens**
			1. Specimens that are light sensitive require special handling.
			2. Transport these specimens in a foil or other light protecting wrapping.
			3. Examples of light sensitive specimens
				1. Bilirubin
				2. Erythrocyte protoporphyrin
				3. Carotene
				4. Some Vitamin Tests
		2. **Blood Alcohol Specimens**
			+ 1. Use an alternate cleansing solution such as betadine or soap and water.
				2. Do not use alcohol or Chlorhexidine Preps.
		3. **Chilled Specimens**
			1. Certain analytes must be preserved prior to analysis by keeping the specimen chilled.
			2. To ensure accurate results of such specimens, fill a biohazard bag with an ice slurry.
			3. Do not put specimen directly into the ice slurry.
			4. Place specimen in the outer pouch of the biohazard bag.
			5. Examples of analytes requiring chilled specimen transport:
				1. ACTH
				2. Acetone
				3. Ammonia
				4. Ionized Calcium
		4. **Keep warm**
			1. Cryoglobulins require a red top tube and send immediately to the lab. It is best to transport them in a warm hand or a heal warming device if possible.
1. **Review/Revision/Implementation:**

All procedures must be reviewed at least every 2 years.

* All new procedures and procedures that have major revisions must be signed by the CLIA Laboratory Medical Director.

* All reviewed procedures and procedures with minor revisions can be signed by the designated section manager.
1. **Related Procedures: IPP#4, IPP#1, IPP#9**
2. **References: GEN.74250**
3. **Attachments:** **Minimum Pediatric Blood volumes**
4. **Revised/Reviewed Dates and Signatures:**

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| --- | --- | --- | --- |
| Review Date: | Revision Date: | Reason: | Signature: |
|  | 3/6/2017 | Reformatted to Medical Center standard template | Laurie Watson, MT, ASCP |
| Review Date: | Revision Date: | Reason: | Signature: |
|  | 3/5/2019 | Revised signature page | Laurie Watson, MT, ASCP |
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