 <p>Covenant Health Laboratory Policy</p>	FACILITY: Covenant Medical Center/Covenant Children's Hospital/ CMC AED Laboratory
	DEPARTMENT: Laboratory
	SECTION: General Laboratory
	AUTHOR: Steve Madrid
TITLE: Venipuncture Collection of Whole Blood, Serum, and or Plasma	

TITLE: *Venipuncture Collection of Whole Blood, Serum, and/or Plasma*

PRINCIPLE/PURPOSE: *This procedure will explain the steps necessary for laboratory and/or nursing personnel to obtain a venipuncture specimen from an inpatient or outpatient.*


TEXT:

1. Specimen Requirement (Collection & preparation where needed):

Whole Blood, Serum, Plasma. Universal Considerations apply to all specimens of blood, serum, plasma, blood products, vaginal secretions, semen, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid, and concentrated HIV or HBV viruses. Any specimen of any type, which contains visible traces of blood, should be handled using Universal Precautions.

2. Materials Needed (Reagents, standards, controls, supplies):

- a. *Blood drawing site: The blood drawing site should provide privacy to the patient. A chair with a wide, flat, clean surface on the arms will suffice. The chair should be wide enough for the patient's arm to rest comfortably. The patient's arm should be supported so that it remains straight. Some patient's may prefer to lie down, in which case an examination table may be used.*
- b. *Blood Collection Needles: Sterile needles in sizes from 21 gauge to 23 gauge, 1 inch to 1.5 inches are available. Multi-sample needles with the rubber shut-off valve are available for multiple tube draws. Butterfly collection devices are available for patients who are difficult to collect blood specimens from.*
- c. *Vacutainer Holders: The plastic holders are used to hold the needle on one end and the vacuum tube for collection on the other. Regular and pediatric sizes are available. This device also provides safety to collecting personnel.*
- d. *Syringes: These vary in size and are often used for difficult to draw patients.*
- e. *Blood collection /Vacuum Tubes: The vacuum tubes are designed to draw a predetermined volume of blood. Regular and pediatric tubes are available in a variety of sizes. Tubes with different additives are used for collecting blood specimens for specific types of tests. The color of the rubber stopper capping the tube is used to*


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identify these additives, which, in turn, dictate the function of the tube. The following tube types are available in order of draw:

- 1) Plain Red Top (black ring) (Non additive) 5 ml. Solid red top. Used primarily for mail-out tests.
- 2) Blue Top (Sodium Citrate) 3.5 ml. Draw. (2 ml. And 1.8 ml. Tubes for difficult adult and pediatric sticks). Blue tops used primarily for coagulation testing—PT, PTT, ACT. Blue tops also used for some chemistry and mail-out testing. Blue tops must be allowed to vacuum until full, but not overfilled.
- 3) Red Top (yellow ring) SST (serum separation tube), 5 ml. Draw. Chemistry/Immunology. Primary tube used for chemistry at Lakeside and Medical Center.
- 4) Green Top (yellow ring) 5 ml. PST (plasma separation tube, lithium heparin). 8 ml. Draw. For chemistry at Medical Center and Women's and Children's. CMP, (comprehensive metabolic panel), BMP, (basic metabolic panel), potassium, cardiac panels.
- 5) Pink Top – Blood Bank. (EDTA) 6 ml. Pink top used to collect blood bank specimens. Blood Bank tests include HOLDC (hold clot), ABR (blood type), TSCRN (type and screen), XM (Crossmatch), RGHW (rhogram workup).
- 6) Gray Top (Sodium Fluoride) 6 ml. Tube used primarily for glucose tolerance levels and lactic acid.

*****NOTE:** *General Consideration: Try to always follow proper order of draw in order to minimize cross-contamination of chemicals, which can skew results.*

- f. *Tourniquets: Tourniquets are used to distend the veins for ease in the venipuncture. Easy-to-use latex tourniquets are available in adult and pediatric sizes. Latex-free tourniquets are available when necessary.*
- g. *Antiseptics: Individually packaged 70% isopropyl alcohol wipes must be used to clean the venipuncture site for most specimens. ChlorPrep kits will be used when collecting specimens for blood cultures. Betadine wipes will be used when collecting blood alcohols.*
- h. *Gauze: 4x4 inch gauze squares or cotton balls can be folded and taped to the puncture site to control bleeding after the blood specimen is collected.*

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- i. *Sharps Disposal Container: An OSHA acceptable puncture-proof red container marked "biohazardous" with a top for unscrewing needles must be used for needle disposal, or for partially filled capillary tubes.*
- j. *Contaminated /Softs Disposal Container: An OSHA acceptable red container marked "biohazardous" will be used for disposal of gauze pads, gloves, and other contaminated non-sharps.*
- k. *Ammonia Inhalants: Do not use unless a pathologist or staff expressly directs. Patients can have adverse reactions to the ammonia inhalants, exacerbating the problem.*
- l. *Cold Compress: cold compresses may be used to revive patients who faint or become dizzy.*
- m. *Disinfectant: A plastic bottle with DISPATCH should be available for cleaning up small blood spills.*
- n. *Adhesive Labels: Pre-printed labels from the LIS when available.*

3. Instrumentation (Including calibration protocols and schedules): N/A

4. Procedures (Directions, including result reporting, troubleshooting & corrective action):

- a. *Assemble necessary equipment described in the Materials Section of this procedure.*
- b. *Wash hands and put on gloves. The waterless hand cleaner that is provided in patient rooms and at draw stations may be used when necessary.*
- c. *The personnel collecting the specimen must confirm the patients identification per the Identification of the Patient and Patient Specimen Policy.*
- d. *Two unique identifiers must be used before collecting a specimen from a patient.*
- e. *Phlebotomy/hospital personnel should review the orders and review patient preparation. Certain specimens may require fasting or other patient preparation. If special preparations were necessary, verify and note that the patient followed the instructions.*
- f. *Select the appropriate tubes and needles for the specimens to be collected. The laboratory's policy regarding "order of draw" must be strictly adhered to. Any*



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deviance will produce erroneous results. Any tubes containing additives should be tapped to dislodge additives from the walls of the tube and the stopper. The top of the blood culture should be disinfected with an alcohol prep prior to beginning the collection process.

g. Establish specimen collection order. The following order should be used:

- 1) Sterile, clean or blood culture tubes first.*
- 2) Non-additive tubes (red or red/gray)*
- 3) Citrate tubes (light blue)*
- 4) SST tubes*
- 5) Heparin tubes (green)*
- 6) EDTA tubes (lavender)*
- 7) Oxalate/fluoride tubes (gray)*

h. General considerations

- 1) In coagulation studies, it is necessary to prevent tissue fluid contamination, which occurs at the beginning of a sample draw. To prevent this, the specimen for coagulation analysis should always be drawn after a plain red top tube is collected. There are circumstances when this specimen may be discarded because it is not needed.*
- 2) Specimen collecting personnel should position the patient. The patient's comfort with the phlebotomy procedure must always be taken into consideration. Personnel must also consider any physical barriers which may affect the collection process. Some things to take into consideration are surgical procedures, shunts, and fistulas.*
- 3) Ask the patient which arm is best for drawing blood.*
- 4) Make adjustments to any barriers that may hinder the collection process. These barriers include but are not limited to clothing and bed rails. The patient's privacy must be taken into consideration at all times.*
- 5) Apply the tourniquet 2 to 4 inches above the puncture site. It should be restrictive enough to be slightly uncomfortable for the patient.*
- 6) Ask the patient to make a loose fist. Any vigorous hand exercise like "pumping" must be avoided because it can affect test results.*



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- 7) *Select a good venipuncture site. Avoid scarred or bruised areas. Recent IV sites must be avoided. The median cephalic vein should be used if possible. If a good vein cannot be located, the following may help:*
 - *Sharply tapping the inner elbow skin with the index and second finger may cause the vein to dilate.*
 - *Massaging the arm from the wrist to elbow to force blood into the vein and cause it to distend.*
 - *Applying a warm wet towel to the arm for 5 minutes may cause the vein to dilate.*
 - *Have the patient dangle the arm for 5 minutes to distend the veins.*

NOTE: In any of these suggestions, it is important that the tourniquet not be left on for more than one minute as some test results may be affected.
- 8) *Clean the puncture site. Use the alcohol or ChloroPrep and make a smooth circular pass of the puncture site moving in an outward spiral from the zone of penetration. Allow the skin to dry before proceeding. Do not touch the puncture site after cleaning.*
- 9) *Break the seal surrounding the needle device. Discard the empty cap and screw reminder of the device into the vacutainer holder. Do not expose the needle at this time. Insert the first tube to be filled stopping before it's pierced. Piercing the tube will result in a loss of vacuum and could produce erroneous results. When using a syringe and needle, the needle device must be removed from the package and carefully screwed on the end of the syringe.*
- 10) *Holding the needle/tube assembly in your dominant hand, remove the needle cap. Position the needle with the bevel up. (Your right hand is "dominant" if you are right-handed)*
- 11) *Grasp the patient's arm just below the puncture site with your non-dominant finger arm and pull the skin tight with your thumb.*
- 12) *Align the needle/tube assembly with a 15-degree angle to the skin. Use a quick, but small, thrust to penetrate the skin and enter the vein in one motion, if possible.*
- 13) *Holding the plastic-tube holder's flange with the tube below the puncture site, push the tube onto the needle and puncture the stopper. Keep the tube at an upright angle to prevent tube additives from entering the patient. Blood should flow when*



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the needle punctures the stopper. If it does not, then the needle is either not in the vein or too far into the vein. Backing the needle up a bit will work if the needle is too far into the vein. If it is not in the vein, shifting it should work. If you feel that the needle is in the vein and the blood still does not flow, use another tube.

- 14)** *After blood begins to flow, release the tourniquet and ask the patient to open his or her hand.*
- 15)** *Constant forward pressure in the tube is necessary to keep the shut off valve from closing.*
- 16)** *Remove the tube when blood flow stops. The shut-off valve will close to prevent leakage. If multiple tubes are needed, they should be inserted in the order determined in step 7.*
- 17)** *Each tube containing an additive should be gently inverted 8-10 times immediately after being removed from the patient to mix the solution.*
- 18)** *Repeat step d, f, g, and h for each tube to be collected.*
- 19)** *If a syringe is used for specimen collection, the tubes will be filled with strict adherence to the laboratory's Order of Draw policy.*
- 20)** *Remove the needle. A 4x4-inch gauze should be held just above the puncture site. Remove the needle quickly to minimize pain and immediately apply the gauze. Ask the patient to apply pressure to the gauze for at least 2 minutes.*
- 21)** *Using the sleeve attached to the vacutainer holder, cover the needle and promptly dispose of it in a sharps container. If a syringe is being used, the entire device is disposed of in a sharps container.*
- 22)** *When the bleeding stops, apply a fresh bandage, or gauze and tape. The patient should be instructed not to remove it for at least 15 minutes.*
- 23)** *Label the specimens with two unique identifiers that have been verified by the patient. When LIS labels are being used, strict adherence to tube type and labeling must be followed.*
- 24)** *Make sure the patient is all right. Confirm bleeding has stopped and the patient feels normal.*
- 25)** *Specimen collection personnel must dispose of all supplies and wash their hands at this time.*

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5. PROBLEM PATIENT REACTIONS

a. FAINTING

- 1) *If the patient is sitting, lower head and arms. If the patient is lying down, elevate feet.*
- 2) *Loosen any tight clothing.*
- 3) *Record blood pressure, pulse, and respiration rate.*
- 4) *Apply cold compress to the patient's forehead and back of neck.*
- 5) *Call the physician if there is no response.*

b. NAUSEA

- 1) *Situate the patient comfortably with his or her head lowered.*
- 2) *Instruct the patient to breathe deeply and slowly.*

c. VOMITING

- 1) *Roll prone patient onto side.*
- 2) *Give patient a basin.*
- 3) *When vomiting ceases, assist the patient with water and towels.*
- 4) *Inform the physician.*


d. EXCESSIVE BLEEDING

- 1) *Apply direct pressure to the venipuncture site while bleeding continues. Note this on the requisition slip.*
- 2) *Record the time.*
- 3) *If the bleeding persists more than 5 minutes, call the physician.*

e. CONVULSIONS

- 1) *Place a piece of soft, non-swallowable material in the patient's mouth.*
- 2) *Guard the patient from self-injury without completely restraining.*
- 3) *Call the physician or nurse.*

6. Calculations: N/A

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7. Controls (Frequency and corrective action): *N/A*

8. Expected Values (Also alert values): *NA/*

9. Procedure Notes (Linearity or detection limits): *N/A*

10. Limitations (Interfering Substances and/or precautions): *N/A*

11. References: *Compliance Primer
Hematronix, Inc.

1505 Capital Avenue

Plano, Tx. 75074*