

Venous Puncture

I. BLOOD COLLECTION TECHNIQUE BY VENPUNCTURE

Whole Blood
Vacutainer and Syringe

II. PRINCIPLE

Blood collection technique used in the collection of a blood specimen is critical in order to maintain the specimen's integrity and insure quality patient results. In keeping with excellent patient care, it is also a high priority that the patient be reassured and relieved of apprehension to the best of our ability.

III. SPECIMEN REQUIREMENTS

A. Conditions for patient preparation.

The patient should be in the supine or sitting position. The patient should be reassured of the necessity and the ease of the procedure to relieve as much apprehension as possible. All patient questions outside the procedure being performed should be referred to the nurse or physician in charge of the patient.

B. Type of specimen

Whole blood is collected into or transferred to appropriate specimen tubes as required by the test requested.

C. Handling Conditions

All specimens collected must be immediately labeled before leaving the patient. Appropriate handling conditions for each test requested should be adhered to with the specimen being sent to the laboratory for processing as soon as possible, i.e. < 30 minutes.

D. Volume

Minimum blood draws as defined in the Lab Testing Policy and Information Manual (Floor Manual) should be adhered to. Review/revision is at least every three years and/or as needed (Hospital Policy 2.1).

IV. REAGENTS

1. Specimen collection tubes - these will vary depending on the individual requirements of the tests requested.
2. Tourniquet
3. 70% alcohol preps for cleansing the area
4. Sterile gauze squares
5. Syringes, if necessary

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6. Sterile blood collection needle - a 21gauge needle is used for the forearm. The choice of syringe size is determined by the amount of blood required.
7. Approved needle safety device.
8. Band-Aid
9. Protective gloves – Non Latex

V. CALIBRATION

No calibration is required for this procedure.

VI. QUALITY CONTROL

Identification of the patient must be performed by checking identification band against labels or manual request form. Two patient identifiers are required. Ask conscious patient his or her full name and birth date or check wristband /outpatients. Inpatient identifiers are name and medical record number. Verify identity of an unconscious patient from a nurse. DO NOT draw any specimen without properly identifying the patient. Performance Improvement indicators are monitored as well as Patient Satisfaction Surveys.

VII. PROCEDURE

Wash hands following infection control guidelines upon entering the room and between patients

1. Identification of the patient must be performed by checking identification band against computer-printed labels, manual request, or Typenex armband number (crossmatches). A minimum of two patient identifiers are required. Verify identity of an unconscious patient from a nurse. DO NOT draw any specimen without properly identifying the patient.
2. If a fasting specimen is required, confirm that the fasting order has been followed.
3. Address the patient by name and inform the patient what is to be done. Reassure the patient to avoid as much tension as possible.
4. Position the patient properly, depending on whether the patient is sitting or supine, for easy, comfortable access to the antecubital fossa.
5. Assemble equipment necessary for procedure. Always don gloves (must be clean and changed between patients before proceeding to next step).
6. Apply a tourniquet several inches above the puncture site. Never leave the tourniquet in place for longer than one minute.
7. Ask the patient to make a fist to make the veins more palpable. It may be necessary for the patient to pump their hand or to gently slap or massage the arm to increase the prominence of the veins.

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8. Select a suitable vein for puncture. The median cubital and cephalic veins are preferred. Wrist and hand veins may also be used. If one arm has an intravenous line, use the other arm to draw a blood specimen. If both arms have an intravenous line, ask nurse for IV to be turned off at least 2 minutes before venipuncture. Apply tourniquet below IV site, selecting a vein other than the one with the IV. Perform venipuncture. Draw 5 ml of blood and discard before drawing the specimen. *Indicate on requisition, "Sample drawn from an arm with IV running."
9. Cleanse the venipuncture site with 70% isopropanol alcohol solution. Begin at the puncture site and cleanse outward in a outward motion. Allow area to dry completely to prevent hemolysis of specimen. Do not touch the swabbed area with any unsterile object.
10. Grasp the patient's arm firmly. The phlebotomist's thumb should be used to draw the skin taut. This anchors the vein. The thumb should be one or two inches below the venipuncture site.
11. Perform the venipuncture as follows:
 - a. Enter the skin with the needle at approximately a 15 degree angle to the arm, with the bevel of the needle up. Follow the geography of the vein with the needle.
 - b. Insert the needle smoothly and fairly fast to minimize patient discomfort. Do not "bury" the needle.
 - c. If using a syringe, pull back on the barrel with a slow, even tension as blood flows into the syringe. Do not pull back too quickly to avoid hemolyzing the blood and collapsing the vein.
 - d. If using the Vacutainer, as soon as the needle is in the vein, ease the tube forward in the holder as far as it will go. At the same time, hold the needle firmly in place. Once the blood begins flowing freely into the tube, ask the patient to relax their hand. When the tube has filled, remove it by grasping the end of the tube and pulling gently. Remove tourniquet as soon as blood appears in tube. Do not allow contents of tube to contact the stopper or the end of the needle during the procedure. Continue exchanging tubes until all tubes requested are filled. Tubes containing anticoagulant must be mixed by gentle inversion at least 10 times immediately after collection.
 - e. If using a "butterfly", refer to the appropriate technique (c or d) dependent upon method of draw.
 - f. When all tubes needed have been collected, place a sterile gauze square over the site and gently, but fairly fast, remove the needle from the patient's arm. Immediately hold pressure to the site and ask the patient to continue holding pressure for at least 3-5 minutes.
 - g. If it is necessary to use a syringe, the following procedure is recommended to transfer the blood. Rubber stoppers should not be removed from evacuated tubes. To transfer blood from the syringe to an evacuated tube, using a blood transfer device. The tube is allowed to fill (without applying any pressure to the plunger) until flow ceases. This technique helps to maintain the correct ratio of blood to anticoagulant.

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12. Recapping needles is not allowed. Disposable syringes and butterflies are disposed of in sharps container. If using a vacutainer, follow the needle safety device instructions.
13. Label each tube with computer-printed label, addressograph label, or typenex label as appropriate. LIS labels are used by phlebotomists and must include the workload/tech code on the lower left hand corner as well as the collect time. Addressograph labels used routinely by Nursing Services and during computer down-time must be initialed with collect time by Nursing Services and include workload/tech code when drawn by phlebotomist. Typenex labels used for crossmatches by both Clinical Lab Phlebotomy and Nursing Services must be handwritten and include the collector's first initial and last name. All specimens must include the specimen control number.
14. Patients who do not have a historical blood type in the computer must have a confirmatory ABO/Rh performed on a separate sample. The sample may be obtained from another laboratory department if available. Otherwise, the floor must be contacted and a request made for an additional specimen. Patients from the ER are excluded if the need for blood is emergent. If the specimen is from a clinic and is drawn by a laboratory phlebotomist, the sample can be verified by a second phlebotomist as certifying that the patient name matches the sample.
15. Check the condition of the patient, e.g., whether patient is faint and that bleeding is under control.
16. Bandage the patient's arm. Usually a bandaid or rolled-up gauze square is adequate. Patients on coagulation therapy are bandaged with a pressure bandage and instructed to leave on at least 15 minutes.
17. Remove all equipment used and thank patient for their cooperation.
18. Dispose of contaminated materials such as needles, syringes, gauze, etc., placing sharps in appropriate sharps containers.
19. Remove gloves and wash hands following infection control guidelines.
20. Transport of specimens
 - a. Specimens collected by nursing personnel on the floors must be placed in ziplock bags and transported to the Clinical Laboratory Office either via the pneumatic tube system or by courier within 30 minutes of collection (some specimens may need to be transported to the lab immediately; consult the specific test for handling instructions).
 - b. Specimens collected by the phlebotomists are transported to the Clinical Laboratory Office within 30 minutes of collection (some specimens may need to be transported to the lab immediately; consult the specific test for handling instructions) in a leak-proof rack or container marked "Biohazard" using the "clean hand, dirty hand" technique.

VIII. CALCULATIONS

Not applicable.

IX. REPORTING RESULTS

Not applicable.

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X. PROCEDURE NOTES

Use "Standard Precautions" at all times.

Order of Draw: *Vacutainer*

No Discard Tube Required

1. Tubes for Sterile Samples
2. Tubes for coagulation studies (e.g. citrate)
3. BD SST and Serum Tubes.
4. Tubes with other additives (e.g, heparin, EDTA, fluoride)

Order of Draw: *Butterfly Device*

1. Tubes for Sterile Samples
2. Discard Tube/Citrate *
3. Tubes for coagulation studies (e.g. citrate)
4. BD SST and Serum Tubes.
5. Tubes with other additives (e.g, heparin, EDTA, fluoride)

* Draw 1 Discard Tube (blue citrate) immediately before drawing coagulation studies. Only when using a Butterfly device is it necessary to draw a discard tube. .

Note that there are two types of closures. (1) rubber stopper and (2) a device which is a rubber stopper enclosed in a plastic shield and is required by some manufactures. Specific additives are printed on each tube.

All additive-containing tubes must undergo immediate inversion at least 10 times to insure proper mixing. Never shake the tubes violently. This may result in inaccurate results due to hemolysis.

To avoid possible contamination when collecting an alcohol blood specimen, DO NOT use alcohol preps to cleanse the collection site.

Betadine providone iodine should not be used as disinfectant for routine blood draws. It causes falsely elevated levels in potassium, phosphorus, and uric acid.

PREVENTION OF BACKFLOW

Since some evacuated blood collection tubes are not sterile and some contain chemical additives, it is important to prevent possible backflow from the tube to prevent the possibility of adverse

reactions to the patient. To guard against backflow, the following precautions should be taken when drawing blood with evacuated tubes:

- a. Place patient's arm in a downward position.
- b. Hold tube with the stopper uppermost.
- c. Release tourniquet as soon as blood starts to flow into tube.
- d. Make sure tube contents do not touch stoppers or the end of the needles during procedure.

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XI. LIMITATIONS OF PROCEDURE

1. Additive - anticoagulant tubes containing clots must be discarded and recollected.
2. Tubes improperly labeled must be discarded and recollected.
3. Tubes not adhering to special handling procedures must be discarded and recollected.
Examples: Lactic acid and ammonia levels.
4. Hemolyzed specimens obtained for test procedures requiring non-hemolyzed specimens must be discarded and recollected.
5. Specimens exceeding time requirements for test procedure must be discarded and recollected.

XII. REFERENCES

1. CLSI/NCCLS Publication H3-A5 Procedure for the Collection of Diagnostic Blood Specimens by Venipuncture. Publication Date: 12/20/2003. Edition: Fifth Edition
2. Henry, M.D., John Bernard Clinical Diagnosis and Management by Laboratory Methods, 20th edition.
3. Safety Devices To Prevent Needlestick Injuries, LSUHSC-S Nursing Services Policy # S1, pp S1-1 to S1-5 (10/04).
4. Vacutainer Evacuated Blood Collection Tube. Becton Dickinson, 01/02.
5. Hospital Policy Implementation and Revision, Hospital Policy 2.1.0 (10/06)

XIII. PATIENT SAFETY/EMERGENCY

Phlebotomy/Lab Follows Hospital Policies:

In-Patient: Hospital Policy 5.45 START (Shock Treatment and Resuscitation Team) Phlebotomist alerts RN who initiates alert. Posted in Phlebotomy Areas

Out Patient Clinics: ACD: Policy S-30-DIV Divisional Policy Manual Ambulatory Care Division Lab initiates alert. Posted in Phlebotomy Areas

XIV. EFFECTIVE DATE/REVIEW

Effective date June 1992.

Revised by Sue Martin, July 1992.

Revised by Vicki Martin, March 1996. July 1999, September 2000, March 2003, 06/06

Reviewed 06/04, 06/05, 02/06, 05/07,08/08, 08/09

XV. DISTRIBUTION

This procedure is available to laboratory sections/personnel through the Department of Pathology Policy and Information manual. with availability to facility personnel via the hospital web site, www.sh.lsuhs.edu