	<b>Venipuncture Blood Collection LABORATORY</b>	
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**PURPOSE:**

The level of technology and monitored quality control programs for the laboratory are ineffective if the specimens collected for analysis are compromised in their integrity as a result of poor collection techniques or faulty identification. Proper specimen collections and specimen handling are critical since most errors occur in the preanalytical phases of testing. Pediatric specimen collection requires special training and skill. It is important to draw enough blood, but not too much.

**SCOPE:**

This document applies to the collection of specimens for testing performed at AnMed Health Laboratories or its reference laboratories.

**RESPONSIBILITY:**

Any individual collecting specimens to be processed by AnMed Health Laboratory Services.

**REFERENCES:**

1. College of American pathologists, "So You're Going to Collect a Blood Specimen", 2013
2. Kathleen Becan-McBride, et al., Phlebotomy Handbook, 2010
3. The National Committee for Clinical Laboratory Standards. Document H3-A5, Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture, Fifth Edition, Volume 23, Number 32, 2003.
4. Faber, Virginia, "Phlebotomy and the Aging Patient", Advance for Medical Laboratory Professionals, December 21, 1998, pp.12-14.
5. Clinical Laboratory Standards Institute CLSI document H3-A6 Vol 27 #26 Procedures for the Collection of Diagnostic Blood Specimens by Venipuncture, Sixth Edition, Volume 27, Number 26, October 2007.
6. Clinical Laboratory Standards Institute, 5.3.1, GP41, 7<sup>th</sup> edition.

**RELATED DOCUMENTS:**

[Laboratory Patient Identification LABORATORY](#)  
[Therapeutic Drug Monitoring LABORATORY](#)


**POLICY/PROCEDURE:**

**SPECIMEN:**

Not applicable

**EQUIPMENT / MATERIALS / REAGENTS:**

1. **Blood Collection Trays (and/or Carts)**
  - Packaged alcohol wipes
  - Clean cotton (rayon) balls
  - Safety needles for syringes 21 and 23 gauge
  - Transpore tape or micropore paper tape
  - Pens and markers
  - Non-latex tourniquets
  - Vacutainer with safety needle 21 gauge
  - Red top tubes
  - Lavender top tubes
  - Gray top tubes

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- Blue top tubes
- Green top tube-plasma separator
- Microtainers (gold, green and purple top)
- Lancet finger stick (adult and pediatric)
- Heel stick devices
- Infant heel warmer
- Serum Separator tubes
- Syringes (3 cc, 5 cc, and 10 cc sizes)
- Blood bank bracelets
- Disposal containers
- Non-latex gloves
- Butterfly collection sets
- Transfer devices
- Impervious gowns
- Blood Culture preps and bottles
- Adaptors for use with butterfly when collecting Blood Cultures
- Luer adaptors for Nursing

## 2. Outpatient room

- All items listed above
- Stop watch
- Access to Stethoscope and blood pressure cuff
- Ammonia inhalants
- Cold Packs

### **CALIBRATION:**

Not applicable

### **QUALITY CONTROL:**

Not applicable

### **PROCEDURAL STEPS:**

#### **Obtain the order**


Each request for a specimen must be reviewed to determine all paperwork and supplies needed prior to collection.

#### **-Inpatients**

Orders for lab tests on inpatients are obtained by retrieving the collection lists from the LIS. Orders are interfaced from the HIS order entry system except during computer down time.

#### **-Outpatients**

Patients may present to an outpatient area with written orders, printed requisitions, and/or orders available in the HIS from their provider. Orders not in the HIS will be transcribed by Laboratory personnel into the HIS. Some clinic patients will have ancillary forms.

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### Identify the patient.

**Identification of the patient is crucial. The phlebotomist must ensure that the blood specimen is being drawn from the individual designated on the order. Refer to Laboratory Patient Identification work instruction for more details on the process.**

#### **-Inpatient (Non Positive Patient Identification used)**

1. If the patient is alert, ask the patient to state his/her name and date of birth.
2. Compare this information and the same information on the patient identification bracelet against the LIS generated labels.
3. The patient must have an ID bracelet on their arm or leg, before a Type Screen or crossmatch can be collected.
4. Refer to Laboratory Patient Identification for additional details.

#### **-Inpatient (Positive Patient Identification used)**

1. Use the PPID system to print the labels after the armband has been scanned in order to positively identify the patient.
2. If the patient is alert, ask the patient to state his/her name and date of birth.
3. Compare the name and date of birth on the lab generated barcode labels to the name and date of birth on the patient identification bracelet.
4. The patient must have an ID bracelet on their arm or leg, before a Type Screen or crossmatch can be collected.
5. Refer to Laboratory Patient Identification for additional details.

#### **-Outpatient**


1. Greet the patient by calling them by their first and last name.
2. Before ordering or releasing tests, verify that the name and date of birth on the requisition matches the registration label.
3. Ask the patient to state his/her name and date of birth. Use this information and compare it against the Patient Identification Bracelet and the LIS labels.
4. Managed Care, Atlas, and other client billed requisitions will not have a Patient Identification Bracelet. Use the name and date of birth given by the patient and compare it to the requisition before beginning the procedure.
5. Refer to Laboratory Patient Identification for additional details.

#### **Determine and verify diet restrictions and medications**

Some tests require the patient to fast and/or eliminate certain foods prior to specimen collection. If an order states fasting, always ask the outpatient to be sure that nothing has been eaten prior to the draw. This is also critical for tests such as glucose tolerances, lipid profiles, and triglycerides. Nursing determines and orders tests as "TS" that have diet restrictions for inpatients. When collecting therapeutic drug levels and coagulation testing for outpatients, document date and time of the patient's last dose. Collect therapeutic drug specimens according to Therapeutic Drug Monitoring.

#### **Outpatient Order Entry**

After identifying the patient, release orders from Epic. If orders are not in Epic, transcribe the orders. Exceptions to performing order entry include referred tests that are not orderable. Managed Care patient requests are ordered in the LIS as a draw fee only with the test(s) name footnoted. After LIS labels are printed, assemble necessary collection supplies and perform specimen collection according to procedural steps listed below. Apply LIS labels to appropriate samples and **compare labeled samples to armband**

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**before patient leaves the phlebotomy area. For client billed specimens, ask the patient to verify name and date of birth is correct on the LIS label.**

**Assemble all necessary supplies prior to beginning collection.**

**Reassure the Patient**

It is important the phlebotomist gain the patient's confidence. Approach the patient in a pleasant manner and explain to the patient that you are collecting a blood specimen for tests ordered by his/her doctor. This emphasizes the procedure's importance and its necessity to the patient's care.

Never tell a patient that the venipuncture won't hurt. Instead say to the patient that the venipuncture will be slightly painful but will only last a short time. Tell the patient when the needle enters the skin so the patient will not be startled.

**Pediatric Considerations:**

*It is important to remember that infants and children are not small adults. Their reactions to collection procedures vary among age groups and are often dependent on past experiences. Parents should be involved as much as possible. They need to understand why the procedure is needed. The parent should be told what is expected from them in order to be a partner in obtaining the specimen. The presence of the parent(s) will help minimize fears and separation anxiety the child may have. A child's reaction to a painful procedure will vary according to many different variables, most importantly that of trust. Infants are very trusting, and will tolerate procedures if they are done in a kind and gentle way. Between 18 and 36 months of age, they develop separation anxiety that may interfere with this trust. At this age, parental anxiety is also recognized by the child and this compounds his/her ability to trust the phlebotomist. When a child (outpatient) is having trouble undergoing a difficult procedure, the parent should be asked if they would prefer to leave the room or delay the procedure. Pediatric nursing staff can be consulted when a child (inpatient) is involved.*

*Do not tell a child the needle will not hurt. He knows better and will lose all trust in the phlebotomist. The child should be assured that the procedure will only hurt for a few seconds. Engage the child in conversation relevant to his/her age range. Tell the child when the arm is to be pricked.*


*Even though laboratory procedures may be the same for a child or an adult, children deserve special sensitivity because of their developmental needs. Following the above suggestions will help to ensure success in obtaining a specimen.*

**Position the patient**

**The patient is positioned for two reasons: (1) so the vein to be used is readily accessible, and (2) so the phlebotomist is able to work in a comfortable position. A phlebotomist working in a cramped or awkward position has a decreased chance of performing a successful venipuncture.**

**Pediatric Considerations:**

*The age and disposition of the child should be considered when deciding where the procedure should be performed. A heel stick on an infant is best performed with an infant lying in a cradle or on a bed. Toddlers should be restrained by having the parent, or another phlebotomist, hold the child in their lap, immobilizing the child's legs and other arm. Older children may prefer to sit in the collection chair or may feel more comfortable lying down.*

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### **Bed Patients**

Have the patient move to the edge of the bed, if possible. Place equipment where it is readily available but not in danger of being upset by the patient. Equipment should not be placed on the bed unless lack of room around the patient requires so. Never place supplies on the bed that may harm the patient.

### **Ambulatory Patients**

Have the patient sit in a collection chair or at a table in a position where the patient's arm can be extended horizontally.

Never attempt a venipuncture on a standing patient. Patients sometimes faint after venipuncture and a standing patient might suddenly collapse.

### **Select the vein site**


**An appropriate venipuncture site must be selected to ensure specimen integrity.**

- First inspect the area you plan to use. A vein may be visible but always follow procedure when selecting a vein for venipuncture.
- Apply the tourniquet about midway between the elbow and shoulder.
- The patient may form a fist but pumping or tightly clenching the fist is not recommended. The tourniquet must be applied with enough tension to compress the vein but not the artery. (An artery carries blood into the area, and if the tourniquet is too tight, blood flow will slow or stop)
- Always palpate or feel for the vein, even when the vein is seen, this gives you practice in finding deeper, unseen veins. The vein will feel like an elastic tube that "gives" under the pressure of your finger. Arteries pulsate so make certain the structure you feel is not pulsating. If the vein has been used repeatedly for fluid injections and punctures, it may feel cord-like. Such a vein should not be used because it is difficult to obtain blood from it.
- If you are not certain that you have found a vein, examine the other arm. Sometimes veins in one arm are smaller than those in the other arm. The tourniquet should be applied for not more than one minute. Prolonged obstruction of blood flow may change some of the test results. Pay particular attention to this time when performing prolonged collections such as for blood cultures.

If the patient has had prior venipunctures, they (*or parent*) may tell you where a vein can be found. Some of the factors that make a venipuncture extremely difficult are:

1. The patient may have been damaged by many previous punctures or by the repeated introduction of IV fluids.
2. The patient may be obese.
3. The veins may be small and delicate.
4. Intravenous fluids may be flowing into all accessible veins in severely ill patients and there may be no veins available to puncture.
5. The patients may have casts covering the arms and hands or have burns that cover a great amount of the prime venipuncture site.

### **Pediatric Considerations:**

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*Whenever possible, microtainers samples should be collected on children under two years of age. The concern for excessive amounts of blood drawn on children is very real and should not be of secondary importance to the difficulty of collection or the desired minimum volumes of the testing department.*  
 In general, the descending order of preference in selecting a site for venipuncture is as following:

1. **Median vein** – This vein in the “crook” of the arm is almost always the vein of choice for venipuncture. This vein is usually large, closer to the surface and seems to cause the patient less discomfort when it is stuck than do veins in other areas. Blood sampling is also facilitated because larger gauge needles can be used and a great volume can be drawn quickly.
2. **Hand veins** – In many people these veins are fairly small and may rupture when punctured, especially if the tourniquet is left on the arm during blood collection. These veins are also more difficult to stick because of their proximity to bones and tendons in the hand. The hand is still an excellent area for blood procurement, however, especially when IV fluids or other circumstances prevent you from drawing blood elsewhere.
3. **Lower arm veins** – These veins are usually smaller and harder to find than those in the “crook” of the arm or in the hand. Although they are commonly used for IV fluids because of their stability, they are not often used for blood collection.
4. **Finger** – Capillary blood can be obtained from a finger, great toe or heel stick. Although we normally depend on a finger stick as a last resort, circumstances may arise when we cannot use veins as a source of blood and when a small sample can be used. A maximum of 1-2 mL of blood can normally be obtained in this manner although more can be obtained if the capillary beds provide an ample supply of blood. Care must be taken to prevent hemolysis of the sample and trauma to the tissue which may allow tissue fluids to dilute the sample.
5. **IV needle site** – The nurse or doctor may stop the IV flow for at least 2 minutes and then disconnect the tube so that blood can be drawn through the needle already in place or the puncture can be made above the needle already in place. The first few mL of such a sample should be discarded as it is invariably contaminated by the fluids.
6. **Foot or leg veins** – On rare occasions we may be forced to draw blood from veins in the leg or foot. In general a person with naturally small or fragile veins in the hand or arm will have similar veins in the legs, therefore, depending on this as an alternative site for venipuncture is useless. Furthermore, venipuncture of the feet or leg veins in bedridden or elderly patients may lead to thrombophlebitis. Permission to perform a venipuncture on the foot or leg may be obtained in the rare instance when a patient has casts, burns, or some other circumstance that would prevent blood collection from the arms, hands, or fingers. An experienced phlebotomist with the physician’s permission would be allowed to perform the venipuncture. This requires a written order from the physician.

### **Cleanse Venipuncture site**

#### **Bacteria are everywhere; the skin is covered with them.**

1. Alcohol preps are used to disinfect the site of puncture. Alcohol, itself, may destroy some of the bacteria present, but it is the rubbing that is important. Rubbing with the pad removes many skin organisms. When cleansing the venipuncture site with alcohol, it may be necessary to use multiple preps. If the alcohol pad is excessively soiled after use, swab the arm a second or third time. If necessary, cleanse

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the area with soap and water and then wipe with alcohol. Clean the site with a circular motion from the center to the periphery.

2. All new needles are sterile. When the protective cover is removed from a new needle, the needle must not touch anything until it punctures the skin.
3. If the needle should touch anything, discard it and use a new needle. Likewise, if the area that has been cleaned is touched, reclean the area with alcohol.
4. If a 2<sup>nd</sup> venipuncture is necessary, use a new needle.

### **Apply the tourniquet**

Apply the tourniquet around the arm three to four inches above the expected venipuncture site. The tourniquet must be released after no more than one minute. If a tourniquet must be applied for the preliminary vein selection, it should be released and reapplied after 1 minute.

### **Perform the Venipuncture**


#### **Venipuncture with a vacutainer system**

The vacutainer system is designed to be simple to operate, especially in the collection of multiple samples. If the patient has good prominent veins, it is almost always the preferred method of collecting blood specimens. Some of the advantages of the vacutainer system are:

1. It is easier to collect multiple samples with one venipuncture.
2. It is generally less expensive.
3. It saves time.
4. Since blood is drawn directly from the vein into the tube, no transfer of blood is necessary.
5. It provides the greatest protection from needlesticks for the phlebotomist.

The Eclipse system utilizes a one piece system with the needle attached to the vacutainer adapter.

1. Before using, tap all tubes that contain additives to ensure that the entire additive is dislodged from the stopper and the wall of the tube. Use a sterile blood collection tube. When drawing blood for cultures, wipe the stopper with a suitable antiseptic solution. Check the stopper to make certain it is dry before performing the venipuncture.
2. Insert the blood collection tube into the holder and onto the needle up to the recessed guideline on the needle holder. Avoid pushing the tube beyond the guideline, because a premature loss of vacuum may result. The tube will retract slightly. Leave it in this position.
3. Make sure the patient's arm or other venipuncture site is in a downward position to prevent reflux.
4. 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 (2.5 cm or 5.0 cm) below the venipuncture site.
5. With the bevel up, line up needle with the vein and puncture the vein at a 15 degree angle to the skin. Grasp the flange of the needle holder and push the tube forward until the butt end of the needle punctures the stopper. Maintain the tube below the site when needle is in the vein.
6. When collecting 1-2 vacutainer tubes, remove the tourniquet as soon as blood flow is established. When collecting more than 2 tubes, remove tourniquet within one minute after tourniquet has been applied to patient's arm. Leaving the tourniquet on more than one minute can produce significant error from hemoconcentration. Once the draw has started, do not change the position of the tube until it is withdrawn from the needle. During the procedure, do not allow the contents of the tube to contact the stopper. Movement of the fluid back and forth in the tube can cause backflow of blood into the venous system and possible adverse patient reaction.

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7. Keep constant, slight forward pressure (in the direction of the needle) on the end of the tube. This prevents release of the shut-off valve and stopping of blood flow. Do not vary pressure or reintroduce pressure after completing the draw.
8. Fill the tube until the vacuum is exhausted and blood flow ceases. This will ensure that there is a correct ratio of anticoagulant to blood. It is normal for the tube not to be completely filled.
9. When the blood flow ceases, remove the tube from the holder. The shutoff valve re-covers the point, stopping blood flow until the next tube is inserted.
10. Mix immediately after drawing each tube that contains an additive by gently inverting the tube 5 to 10 times (per manufacturer guidelines). To avoid hemolysis, do not mix vigorously.
11. To obtain additional specimens, insert next tube into holder and repeat procedure from step 6.
12. After all tubes have been collected, engage safety device on Eclipse Safety needle.
13. Remove the needle and immediately hold a clean cotton ball against the puncture site. Apply pressure until the bleeding stops. Re-check the venipuncture site prior to applying a bandage, if appropriate. Do not allow the patient to bend his/her elbow.
14. Dispose of sharps/ biohazard waste in patient room. If sharps container is full, notify nursing staff and discard sharps in container located on phlebotomy basket.

### **Venipuncture using a needle and a syringe**

Although the vacutainer system is used most of the time for blood collection, there are times when the syringe is more effective. Some cases when it may be best to use a syringe are:


1. When the veins are very fragile.
2. When hand, forearm, foot or leg veins must be used.
3. When small veins must be punctured.
4. When collecting blood for certain special tests (platelet aggregation, blood culture, etc.)
5. Anytime it is known that blood collected from the patient was hemolyzed in collection.
6. When you wish to use a needle of different diameter.

The main reason for using a syringe is that the phlebotomist has better control over blood flow. One can pull back on the plunger just enough to allow blood to flow into the syringe. With a Vacutainer this control is prevented as blood flows as long as there is a vacuum in the tube. The increased suction inherent with the Vacutainer system also leads to the vein being pulled against the bevel of the needle, causing the blood flow to cease or else by causing hemolysis when the blood comes into the tube rapidly through a reduced opening.

We commonly use 3cc, 5cc, and 10cc syringes. Either 21 or 23 gauge butterfly or syringe injection needles are used with these syringes. These gauge needles are used because needles larger than 21 gauge are so large that a high percentage of the veins to be punctured would be as large as the needle. In addition, needles smaller than 23 gauge would restrict blood flow so that cells would likely hemolyze. A 21 gauge is recommended when using a 10 mL syringe to prevent hemolysis.

1. Insert the appropriate needle onto the syringe.
2. Place the patient's arm in a downward position if possible.
3. Grasp the patient's arm firmly, using your thumb to draw the skin taut. This anchors the vein. The phlebotomist's thumb should be one or two inches (2.5 cm or 5.0 cm) below the venipuncture site.
4. Line up the needle and syringe with the vein from which the blood will be drawn.
5. Turn the needle so the bevel side is in an upward position.
6. Push the needle into the vein. A sensation of resistance will be followed by easy penetration as the vein is entered. Remove the tourniquet within one minute after tourniquet has been applied to patient's arm. Do not exceed one minute.
7. Withdraw the desired amount of blood.



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8. Replace the first syringe with another if additional blood is needed. The needle should remain in the vein during the syringe exchange. Slip clean dry gauze under the needle to catch the blood while making the change. If a butterfly is used press the butterfly line together to halt the flow of blood momentarily.
9. Remove the syringe and needle (activating safety device appropriately per manufacturer guidelines), immediately press a clean cotton ball against the puncture site. Have the patient hold this for 2 – 3 minutes or until the bleeding stops. Do not allow the patient to bend his/her elbow. Apply a bandage to the site.
10. Discard the needle and attach a blood transfer device. The blunted needle is inserted directly through the stopper of the vacuum tube. Blood will fill the tube to the proper volume. Do not push the plunger of the syringe when filling tubes, as this could cause hemolysis. The vacuum will pull the blood into the tube.
11. Discard sharps/biohazard waste in same manner as collection with vacutainer system.

### **Venipuncture with a butterfly blood collection set**

Although the vacutainer system is used most often, there are times when a syringe or butterfly can be more effective. A butterfly can be used in some of the same cases as a syringe. Some of the cases are:

1. When the veins are very fragile.
2. When hand and forearm veins must be used.
3. When small veins must be punctured.

The main reason for using a butterfly is to obtain blood from the very difficult to stick patients. Using the butterfly with the luer adapter enable the phlebotomist to collect not only blood tubes but a set of blood cultures all from one site. Butterflies are available with 21 and 23 gauge needles attached.

### **Steps in the use of a butterfly**


1. Remove set from package.
2. Remove vacutainer adaptor to allow insertion of syringe onto the tubing set.)
3. Follow routine venipuncture site preparation and perform venipuncture holding set by the center spine, not by holding the wings.
4. Place tube into holder and remove when full, replacing with additional tubes as appropriate. Do not leave tourniquet in place for more than 1 minute. The tourniquet should be removed when blood appears in the first tube. If collecting with a syringe, use a transfer device to transfer blood to tubes.
5. Activate safety device and withdraw the needle by grasping the wings and gently pulling. Cover the puncture site per procedure.
6. Remove the needle and immediately press a clean cotton ball against the puncture site. This should be held for 2 – 3 minutes or until the bleeding stops. Do not allow the patient to bend his/her elbow. Apply a bandage to the site.

### **Collection of Microsamples**

1. Wipe the finger well with an alcohol pad. Wipe off any excess alcohol with clean gauze.
2. Stick the finger quickly and deeply with a sterile lancet designed for capillary puncture site.
3. Wipe off the first drop of blood.
4. Squeeze the finger, but not excessively, until another drop appears. This drop and drops that follow may be collected in microtainers depending upon the test for which you are collecting the sample.

### **Infant Heel Puncture**

1. An infant heel warmer should be used to warm the heel for a few minutes prior to puncture.

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Perform punctures on the medial or most lateral portion of the plantar surface. Puncture should be no deeper than 2.0 mm when using the Tender Foot device. Do not perform puncture on the posterior curvature of the heel. Do not puncture through previous sites, which may be infected.

2. Scraping of the heel with the microtainers and excessive squeezing are limitations of the procedure.
3. After collecting blood from a baby's heel, the foot should be raised above its body. A cotton ball should be pressed against the puncture site until the bleeding stops. Do not apply bandages. When collecting a specimen from a newborn infant for screening tests, the directions of the agency that supplies the filter paper for the specimen should be followed.
4. The plantar surface of the big toe may be used by experienced phlebotomists as an alternative site.

### **Multiple Specimen Collection**

Blood collection tubes must be drawn in a specific order to avoid cross- contamination of additives between tubes.

### **Vacutainer Order of Draw**

1. Blood Cultures
2. Coagulation tube (light blue stopper)
3. Non-additive tube ( Red)
4. Plastic clot activator (Red)
5. Serum Separator (SST or Gel)
6. Heparin containing tube (green stopper)
7. EDTA-K<sub>2</sub> – containing tube (lavender stopper)
8. Oxalate fluoride containing tube (gray stopper)

### **Syringe Order of Draw**

1. Citrate containing tube (blue stopper)
2. Serum Separator (SST)
3. Non-Additive Red Tops
4. Plastic clot activator (Red)
5. Heparin containing tube (green stopper)
6. EDTA-K<sub>3</sub> – containing tube (lavender stopper)
7. Oxalate fluoride containing tube (gray stopper)

**Note:** Blood cultures should be collected first also when using syringes.

### **Coagulation Testing collected with Butterfly**

If a coagulation assay is the only test ordered, draw a non-additive red stopper tube or a discard tube first as a discard tube, and then draw the blue stopper tube when collecting with a vacutainer/ butterfly. Coagulation tests other than INR PT/PTT require a non-additive red top or a discard tube to be drawn prior to coagulation tube.

### **CALCULATIONS:**


Not applicable

### **INTERPRETATION OF RESULTS:**

Not applicable

### **RESULTS REPORTING:**

Not applicable

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## **PROCEDURE NOTES:**

### **Patient Inquiry –**

The phlebotomist should avoid discussing with a patient what a test is for or what will be learned from it. The physician can explain better to the patient when he/she is ordering the tests

**Difficult Outpatient** – It is the policy of AnMed Health Laboratory Services that adults who are lucid and obviously in control can refuse any procedure/venipuncture. However, if the patient is a minor, obviously mentally retarded, or confused, he/she may be restrained for collection.

Children less than 6 years old or obviously mentally retarded or confused patients may be restrained for phlebotomy procedures. The protection and safety of the phlebotomist must be considered as well as the rights and safety of the patient. If holding a patient for venipuncture is obviously dangerous due to the patient's size and strength, notify the supervisor. Episodes have occurred where minors (greater than 6 but less than 16 years) have refused to allow a venipuncture but their legal guardian has insisted the procedure be performed. Obviously, the physical restriction of a teenager or school age child presents a major problem. Notify the supervisor. If she or other administrative personnel is unable to convince the patient to submit, then the patient's physician should be notified and the patient sent to his/her physician's office for collection. If a lucid, obviously in control adult (greater than 16 years old) refuses collection, notify the ordering physician's office. Sometimes the patient walks out before the physician can be contacted, but if possible, allow the patient to talk to his physician before he leaves the lab.

**Difficult Inpatient-** Lucid adults and obviously in control patients can refuse any procedure/venipuncture. The patient's nurse should be notified of the patient's refusal and her name written on the barcode. Minors greater than 6 but less than 16 years old, mentally retarded or confused patients may be restrained if at all possible for specimen collection. The phlebotomist should enlist the help of the nursing staff to help restrain an uncooperative patient. When nursing is unable to properly restrain the uncooperative patient the phlebotomist should notify the patient's nurse. The nurse will talk with the patient and then contact the patient's Dr. if necessary for further instruction.

**Hemolysis** – To prevent hemolysis when performing a venipuncture the phlebotomist should:

1. Mix anticoagulated specimens thoroughly by inverting tube gently at least 8 times.
2. Avoid drawing blood from a hematoma.
3. Avoid drawing the plunger back too forcibly when using a needle and syringe.
4. Avoid using a needle that is too small.
5. Make sure the needle is fitted securely on the syringe.
6. Without touching, make sure the venipuncture site is dry.


### **The “Missing” Patient**

There may be occasions whereby a phlebotomist finds that a patient is not in his/her room or is unavailable for specimen collection. For routine testing, the phlebotomist should try back later and make a note on the order form. For timed or STAT work, the phlebotomist needs to attempt to locate the patient. If the delay is excessive, log the time the specimen was drawn along with a note that the patient was not available when the test was requested.

### **Expired Patients**

Specimen collection requests on expired patients are allowed only with proper consent. Proper consent is obtained with one of the following conditions:

- Pathologist

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- Coroner (or his designee) has issued a verbal or written order for specimen collection.
- Note: Coroner may also issue order for specimen collection on living person involved in a death investigation.

**Difficult Sticks** – When a blood sample cannot be obtained, it may be necessary to:

1. Change the position of the needle. If the needle has penetrated too far into the vein, pull it back a bit. If it has not penetrated far enough, advance it further into the vein. Rotate the needle half a turn.
2. Try another tube. The tube being used may not have had sufficient vacuum.
3. Loosen the tourniquet and reapply.
4. Probing is not recommended as it is painful to the patient. A second site below the first site should be selected.
5. **Do not attempt a venipuncture more than twice.** Notify the supervisor or another experienced phlebotomist for help.

**Adverse reactions in patients:**

**Excess bleeding**

The phlebotomist should be alert to excess bleeding. If bleeding persists longer than 5 minutes the appropriate clinician should be alerted. (Nurse or attending physician for inpatients; pathologist for outpatients). Pressure must be continued on the site as long as necessary to stop the bleeding.

**Hematomas**


If a hematoma occurs during or after a puncture procedure, discontinue the procedure and apply pressure to the puncture site.

- Inpatients – Ask for assistance from the patient’s nurse or charge nurse. Report the incident to the Specimen Procurement Supervisor.
- Outpatients – Report incident to the Supervisor. The supervisor or Senior phlebotomist will evaluate the patient and determine if the pathologist needs to be consulted.

**Syncope (Fainting)**

Most people revive quickly after fainting and little needs to be done. Outpatients:

1. If he/she is in a chair with a protective arm, lower his head on the arm and make certain he will not slip from the chair.
2. If in a chair without a protective arm, lower his head to his knees, making certain that you hold him in the chair.
3. Crush the ammonia capsule and, starting 12 – 18 inches from the patient’s nose, mix the ammonia fumes with the surrounding air by waving gently. Slowly move the capsule toward the face, continuing the side to side motion. Stop when the patient shows signs of responding; or, when your reaction to the smell is strong enough to indicate the patient is being exposed to the ammonia fumes. Exercise care when using ammonia not to cause unnecessary pain by holding the capsule too close to the patient’s nose.
4. As he revives, a wet cloth or towel applied to the face may help.
5. Also, a glass of water or juice may be given.
6. If it happens to be an outpatient or one who is to walk to his hospital room, make certain he has recovered completely before you release him. It is also advisable to recommend that he should not drive a car until he feels fully recovered. Reactions in ambulatory patients require judgment on your part.
7. It may be necessary to lay the patient down and pump the legs back and forth to revive them. If the patient fails to revive within 2-3 minutes, contact a pathologist or the physician.
8. In any event, keep the patient in the area for at least 15 minutes before you release him.

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9. Inpatients:

Bed patients rarely have a reaction. If they do, stay with them until the nurse in charge can respond. Call for help using the intercom. Do not leave the patient unattended.

**Nausea and Vomiting**

Of the two emotional reactions to venipuncture, vomiting, while less dramatic than fainting, is more serious. The possibility of a patient aspirating vomit into his lungs is real and dangerous.

1. At some time during your life, you have probably reacted to an illness by vomiting. Therefore, you should understand that the first and most important psychological need for a patient is a convenient location; a wastepaper basket, a bedpan, a bathroom, an emesis basin or even reassurance.
2. A wet cloth or towel applied to the face or throat may help.
3. Small sips of water or chips of ice may be given.
4. If the reaction is severe, have the patient lie down for at least 15-20 minutes. Notify the pathologist or physician.

**Convulsions**

1. It is important to remember to take actions that will prevent a patient from injuring himself/herself if convulsions begin. Do not restrain the movements of the patient's extremities completely.
2. Call for assistance and then notify the physician or nurse or pathologist (for outpatients only).


**The Aging Patient**

The geriatric patient challenges the blood drawing skills of even the best phlebotomist. The provider of care needs to make the elderly patient comfortable in whatever procedure is being performed. They need to feel that someone cares about what is happening to them. The following issues need to be considered when working with an elderly patient:

1. Elderly patients are more prone to infection; therefore, the phlebotomist should be especially conscientious in hand washing.
2. Arteries and veins change with age. They become less stable as well as lacking in muscle and collagen. Blood flow may also be poor. For these reasons, the vein should be well anchored before the venipuncture attempt is made.
3. Never probe for a vein. If the phlebotomist has trouble locating a suitable draw site, help should be sought.
4. Aging skin is fragile and bruises easily. The arm should never be forcefully palpitated to dilate the veins. This could cause bruising.
5. A smaller gauge needle may be required, especially in very fragile veins.
6. When the venipuncture is complete, the site should be held until the bleeding has stopped. Use caution when using bandages on an elderly patient. The skin could tear when the bandage is removed.
7. Be aware of excessive amounts of blood being drawn. The elderly are prone to anemia.
8. The aged are sometimes hearing impaired. It is important to speak clearly and slowly so the patient can hear and understand what is being said.
9. Working with the aged may require the phlebotomist to spend extra time with the patient.
10. Often they just need someone to listen and for them to feel that someone cares for them. This compassion goes a long way.

**LIMITATIONS OF PROCEDURE:**

**Timed Intervals –**

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Some specimens must be drawn at timed intervals because of medications and/or biological variations. It is important that collection of specimens for timed tests be performed at the correct intervals.

### **Pink Bracelets**

**Do NOT stick arms that are banded with pink bracelets.**

Many patients have medical restrictions on possible collection sites. This may be due to the presence of a shunt, PIC line, or fistula. It may be the result of a recent surgery such as radical mastectomy. It may be medical problems such as blood clots, or it may be a result of plans for surgery such as the installation of a shunt. The Nursing Service has agreed that when orders are written for the protection of a particular arm from venipuncture, they will mark that site as restricted by banding that limb with a pink arm bracelet.

### **Pressure Bandages**

Do not remove or adjust pressure bandages.

### **Heparin Locks**

Nursing service often installs heparin locks on patients that are scheduled for frequent intravenous injections or fluids. This saves the patient pain and provides quick emergency access for critical patients. These locks should be protected for that reason.

1. Do not use the same arm for your venipuncture; use the other arm if at all possible.
2. If there is not a vein accessible in the other arm, check with nursing service to see if the patient has received medication through the lock in the last 2 minutes. You may collect blood from the arm if no medication has been received. Do not stick adjacent to the lock. Any hematoma that forms could restrict blood flow and cause the lock to clot.
3. If the patient has received medication wait at least 2 minutes before collecting.

### **Intravenous Fluids**

Laboratory tests will not be drawn from a patient's arm that is receiving intravenous fluids, if at all possible.

### **Procedure:**

1. When laboratory procedures are ordered on a patient who is receiving IV fluids, the phlebotomy procedure will be performed in the opposite arm if at all possible.
2. If this is not possible, the procedure should be performed in the arm receiving fluids, but below the fluids.
3. Any tube of blood collected from a patient's arm that is receiving IV fluids should be labeled with a pre-printed sticker indicating the patient is receiving fluids. It may be necessary to tape the sticker to the tube.
4. Another alternative would be to ask the nurse if the IV could be disconnected and the blood work collected after waiting at least 2 minutes. Phlebotomists may not disconnect a patient's IV.

### **Patients receiving blood transfusions**

- All STAT and ASAP specimens should be collected as ordered, unless otherwise indicated. When nursing insist the specimen not be collected until after the transfusion is complete, document the time and nurse's name on the barcode label.
- Routine laboratory procedures ordered during a blood transfusion, should not be collected until after the transfusion is completed, unless it is otherwise indicated.
- The phlebotomist will report to the nurse's station and ask that they call the lab when the blood has infused. Document on the label/ancillary form the name of the person you spoke to.
- The phlebotomist will bring the label/ancillary back to the lab labeled "Receiving Blood".
- The lab work will be drawn 1 hour after the transfusion is complete.

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- If the physician/nurse insists that you draw the blood anyway, a pre-printed sticker indicating the patient is receiving blood should be applied to each tube of blood.
- The technologist resulting the test must footnote with the following comment: "Blood transfusion in progress when blood was drawn."
- If panels, i.e. Electrolytes, are ordered, the first test in each panel should be footnoted.

### Maximum amounts of blood to be drawn on patients by weight.

The following chart should be used to determine the maximum amount of blood to be drawn on patients:

Pounds	Kg (Approx.)	Amount	Maximum amount of blood (cumulative mL to be drawn during a hospital stay. (1 Month or less)
6-8	2.7-3.6	2.5 mL	23
8-10	3.6-4.5	3.5 mL	30
10-15	4.5-6.8	5 mL	40
16-20	6.8-7.3	10 mL	60
21-25	9.5-11.4	10 mL	70
26-30	11.8-13.6	10 mL	80
31-35	14.1-15.9	10 mL	100
36-40	16.4-18.2	10 mL	130
41-45	18.6-20.5	20 mL	140
46-50	20.9-22.7	20 mL	160
51-55	23.2-25.0	20 mL	180
56-60	25.5-27.3	20 mL	200
61-65	27.7-29.5	25 mL	220
66-70	30.0-31.8	30 mL	240
71-75	32.3-34.1	30 mL	250
76-80	34.5-36.4	30 mL	270
81-85	36.8-38.6	30 mL	290
86-90	39.1-40.9	30 mL	310
91-95	41.4-43.2	30 mL	330
96-100	43.6-45.5	30 mL	350

Note: To convert lbs. to kg. --- multiply lbs. x .45

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