

Phlebotomy Procedure

SCOPE: This procedure is distributed to Central DuPage Hospital (CDH) and all off-site laboratories.

PRINCIPLE:

Laboratory test results are only as good as the specimen, and the specimen is only as good as the method by which it is collected, handled and processed.

The procedures listed below are designed to provide minimum instruction on obtaining a quality blood sample. Consideration is placed on comfort to the patient, safety to patient and phlebotomist, and the integrity of the sample.

Phlebotomy should be performed only by CDH staff who have received phlebotomy instruction by competent CDH laboratory staff and have demonstrated competency to perform the procedure.

Collection procedures are listed for both venous and capillary blood specimens, syringe and vacutainer methods, adult, pediatric and neonatal patient populations and special specimen testing considerations.

MATERIALS:

Venipuncture collection only:

- Tourniquet – latex free, discard if visibly soiled
Do not clean tourniquets
- Vacutainer safety needles
- Winged collection (butterfly) safety needles
- Syringe
- Needle holder – single-patient use; discard adaptor after use
- Safety blood transfer device
- Vacutainer collection tube(s)
- Blood bank ID bracelet (pre-transfusion testing only)
- Blood culture bottles – silver aerobic and red anaerobic

Capillary collection only:

- Safety lancets (should be < 2.0 mm for newborns)
- Microtainer tube and extender
- Microhematocrit tubes and sealant
- Heel warmer (or moist compress) – used for heel sticks

General collection supplies:

- 70 percent isopropyl alcohol wipes
- Chlorhexidine gluconate swab stick – Not for use on infant < 2 months old
- Betadine or iodine wipes – for infant blood cultures or blood alcohol collections
- Sterile water (for infant collections)
- 2 x 2 Gauze squares
- Adhesive bandages – gauze or paper tape preferred
Should never be applied to patients younger than 2 years unless the patient is under close observation until the bandage is removed. Small children may choke on bandages.
- Disposable gloves – proper fit is important for safety
If too small, the gloves may tear. If too large, items may be more easily dropped. Replace gloves immediately when ripped, torn or contaminated (soiled or wet). Do not wash or disinfect gloves for reuse.
- Sharps container
Note that at CDH lab facilities all needles are kept in a locked cabinet or drawer during hours when the lab is closed.

PATIENT IDENTIFICATION:

Before performing any component of the phlebotomy procedure, the phlebotomist must properly verify the identity of the patient with the collection request using two distinct identifiers as follows:

Outpatient:

- 1 Ask the patient to verbally state or spell their complete name. **Do not** ask the patient to confirm their identity by requesting a yes/no response. Compare this information with the name on the paperwork.
- 2 A second identifier such as date of birth must also be verbally stated by the patient. **Do not** ask the patient to confirm this information by requesting a yes/no response.
- 3 Patients who are not capable of giving their name may be identified through verbal verification by another adult who can personally identify the patient.

Inpatient:

- 1 Ask the patient to verbally state or spell their complete name. **Do not** ask the patient to confirm their identity by requesting a yes/no response. Compare this information with the name on the label(s) of the attached wrist band.
- 2 The second identifier must be a visual verification of the account number and must be compared to the account number on the label(s) of the attached wrist band.
- 3 Patients who are not capable of giving their name may be identified through verbal verification by another adult who can personally identify the patient.

Patient Preparation:

Hands must be washed prior to and after all phlebotomy procedures. Using soap and warm water, work up a generous lather, scrub vigorously for 10 to 15 seconds, rinse well and repeat. Use a clean paper towel to turn off the faucet. A hand sanitizer product can be used in place of soap and water.

Examine the patient's arms and obtain information from the patient as to phlebotomy restrictions (i.e., patient's choice of arms, limitations due to surgeries, nerve damage, mastectomies, etc.).

A physician order is required to draw from the same side as a mastectomy or from a foot vein on patients older than 2.

Inform the patient of the procedure(s) that you are about to perform and obtain their permission and cooperation. Situations/conditions where the patient is uncooperative should be referred to the healthcare professional or guardian who is in charge of their care (an ordering physician, or in the case of children, a parent or guardian).

Perform phlebotomy only if approved by appropriate healthcare professional and approved by the patient or patient's guardian.

Phlebotomy Safety:

Gloves are to be worn when performing all phlebotomy procedures. Gloves are not to be altered.

Training is required prior to performing a blood collection. Training is available through HealthLab.

Only phlebotomy supplies that are approved by CDH and for which training/instruction is documented should be used. Supplies shall not be altered in any way to affect their integrity.

All sharps used in phlebotomy must meet Occupational Safety and Health Administration (OSHA) safety standards. The use of straight, non-safety needles is prohibited.

Dispose of all sharps immediately after use into a CDH approved sharps container. Needles are to be used only once and never recapped. Do not bend or break needles or remove them from disposable syringes or holders.

Procedures

Venipuncture Specimens

- 1 Prepare patient as defined under "Patient Identification" and "Patient Preparation" sections.
- 2 Position or instruct the patient so that the patient's arm is comfortably extended. Phlebotomy should **never** be performed while the patient is standing.
- 3 Wash hands. Put on properly fitting gloves.
- 4 Apply the tourniquet 3 to 4 inches above the venipuncture site with enough tension to compress the vein, but not the artery. A blood pressure cuff maintained below diastolic pressure (<40) may be used.
- 5 Palpate or feel for the vein even when it can be seen.
- 6 If a vein is difficult to find, it may become easier to see after massaging the arm from the wrist to elbow, which forces blood into the vein. A warm moist towel (warm to the touch, but not hot) can also be used. You may need to examine the patient's other arm if you are having difficulty finding a vein. You may select a dorsal hand or wrist vein and collect with a smaller gauge needle (22g or 23g).
- 7 **Release the tourniquet. Hemoconcentration will occur after one minute.**
NOTE: If a tourniquet has been applied for longer than one minute while you searched for a vein, release it for at least two minutes, reapply the tourniquet and relocate the vein.
- 8 Cleanse the area for venipuncture in a circular motion from the center outward with a 70 percent isopropyl alcohol pad. Use betadine or soap and water for ETOH (alcohol) draws. Do not use 70 percent alcohol or chlorhexidine. Allow to air dry.
- 9 Reapply tourniquet.
- 10 Anchor the vein by placing your free thumb below the venipuncture site where the needle is to enter and pull skin taut.

Method: Vacutainer

- 1 Introduce the vacutainer needle apparatus with the bevel up at a 15- to 30-degree angle to the skin and parallel to the vein.
- 2 Once the needle is properly positioned in the vein, anchor the needle by grasping the holder with thumb on top and other fingers under the holder, resting securely on the patient's arm. Push the appropriate vacutainer tube into the holder with gentle pressure in order to puncture the cap. The tube will automatically fill with blood.
- 3 Watch the blood as it flows into the vacutainer tube until collection is complete.

4 For draws requiring multiple tubes, the tubes must be drawn in the following order:

- Blood culture vials (sterile)
- Light blue top sodium citrate coagulation tube – tube must be full
- Serum tube with or without clot activator or gel (red, gold, speckled top)
- Green top Heparin
- Lavender top EDTA
- Royal blue top EDTA
- Tan top EDTA
- White/Ivory top K2EDTA (for HIV)
- Gray top Oxalate/fluoride
- Other tubes with additives

If only a coagulation tube is to be drawn for routine coagulation testing (e.g., PT, PTT, fibrinogen, D-dimer), the first tube drawn may be used for testing.

5 Gently invert all tubes five-10 times after filling.

6 Release tourniquet within **one minute**.

7 When all tubes are filled, withdraw the last tube, place gauze square over the site and withdraw the needle. Activate the safety device.

8 Apply pressure to the site until bleeding has stopped.

9 Discard the activated needle and holder into the sharps container. **Never re-cap the needle.**

10 Inspect the puncture wound. When bleeding has stopped, apply a bandage. If bleeding continues, apply pressure for an additional three-five minutes. Prolonged bleeding may be related to the patient's disease or medication.

Exception: A bandage should never be applied to patients younger than 2 years unless the patient is under close observation by an adult until the bandage is removed. Small children may choke on bandages. If a bandage is applied, instruct the adult to remove it within two hours.

11 Label specimen tubes before leaving the patient as defined in the labeling section of this procedure.

12 **Compare the labeled specimen(s) to the patient's identification bracelet, requisition or ask the patient to confirm the tube is properly labeled with the correct spelling of first and last name and date of birth.**

13 Wash hands thoroughly after removing gloves.

Method: Winged Collection (Butterfly) with Evacuated Tubes or Syringe

NOTE: *This method is used primarily for difficult draws, hand draws, infant draws and blood culture collections.*

1 Prepare patient as defined under "Patient Identification" and "Patient Preparation" sections.

Perform phlebotomy with winged butterfly set using a vacutainer holder or remove the luer lock at the end of the butterfly tubing and attach a syringe.

2 Wash hands. Put on properly fitting gloves.

3 Holding the wings of the butterfly with your dominant hand, smoothly insert the needle with the bevel up, parallel to the vein, at approximately a 10- to 15-degree angle.

4 Once the needle is properly positioned in the vein, hold one wing of the winged collection set and insert evacuated tubes using the vacutainer holder according to the order of draw. For syringe draws, gently pull on the plunger to allow blood to flow into syringe. Pulling on the plunger too fast may cause possible collapse of the vein and restrict blood flow into the syringe and/or hemolyze the sample.

5 Off-site Client Accounts: When sufficient blood has been collected, release tourniquet within **one minute**. Place gauze over the site, and remove the needle from the patient's arm. Activate the safety feature of the device.

6 Apply pressure to the site until bleeding has stopped.

7 Discard the holder and butterfly device into a sharps container. In-house Phlebotomy: Use BD push-button winged collection set.

8 If a syringe was used with the butterfly, properly discard butterfly device into a sharps container, and attach a transfer device to the syringe. Fill the appropriate tubes without applying force on the plunger. The order in which vacutainer tubes are filled from the syringe is the same as for the vacutainer system.

9 Inspect the puncture wound. When the bleeding has stopped completely, apply a bandage. If bleeding continues, apply pressure for an additional three-five minutes. Prolonged bleeding may be related to the patient's disease or medication.

Exception: A bandage should never be applied to patients younger than 2 years unless the patient is under close observation by an adult until the bandage is removed. Small children may choke on bandages. If a bandage is applied, instruct the adult to remove it within two hours.

10 Label specimen tubes before leaving the patient as defined in the labeling section of this procedure.

11 **Compare the labeled specimen(s) to the patient's identification bracelet, requisition or ask the patient to confirm the tube is properly labeled with the correct spelling of first and last name and date of birth.**

12 Wash hands thoroughly after removing gloves.

Skin Puncture for Collection of Capillary Blood Specimens

Method: Finger Puncture

NOTE: This method is appropriate for pediatric patients and for adults. This method is not used on the fingers of infants who are small for their age, premature or < 3 months of age.

- 1 Prepare patient as defined under “Patient Identification” and “Patient Preparation” sections.
- 2 Position or instruct the patient so that the patient’s hand is comfortably extended. Blood collection should never be performed while the patient is standing.
- 3 Wash hands. Put on properly fitting gloves.
- 4 Choose a finger that is not cold or swollen. The ring or middle finger is required. Cover the site with a warm, moist towel at a temperature no higher than 42° C (warm, but not hot to the touch) for three-five minutes. Never use a microwave to heat warming device.
- 5 With non-dominant hand, apply a light massaging motion to the fleshy portion of the finger.
- 6 Cleanse the ball or pad of the finger with an alcohol wipe and allow to air dry.
- 7 With your non-dominant hand, firmly grasp the patient’s finger and firmly place the safety lancet against the site. Activate safety lancet to make a cut on the ball of the finger angled toward the outer edge of the nail base. The cut should be across the fingerprint. Cutting along the lines of the fingerprint will cause the blood to stream down the finger.
- 8 Discard the safety lancet into sharps container.
- 9 Wipe away the first drop of blood with gauze. If blood does not flow freely, hold the puncture site downward and gently apply continuous pressure to the surrounding tissue to enhance blood flow. Strong, repetitive pressure (milking) should not be applied as it may cause contamination with tissue fluid or hemolysis.
- 10 Bring the tip of the capillary specimen collection tube into contact with the drop. Blood will flow by capillary action into the tube. Do not scrape the skin tissue with the tip of the capillary collection tube as specimen hemolysis may occur.
Collect specimens in the following order:
EDTA microtainer, heparin, red, SST, PKUs and then all others.
- 11 Inspect the puncture wound. When the bleeding has stopped completely, apply a bandage. If bleeding continues, apply pressure for an additional three-five minutes. Prolonged bleeding may be related to the patient’s disease or medication.

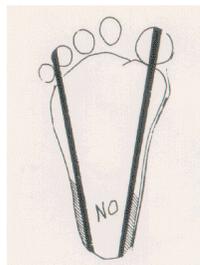
Exception: A bandage should never be applied to patients younger than 2 years unless the patient is under close observation by an adult until the bandage is removed. Small children may choke on bandages. If a bandage is applied, instruct the adult to remove it within two hours.

- 12 Apply tube extender. Label specimen tubes before leaving the patient as defined in the labeling section of this procedure.
- 13 **Compare the labeled specimen(s) to the patient’s identification bracelet, requisition or ask the patient to confirm the tube is properly labeled with the correct spelling of first and last name and date of birth.**
- 14 Wash hands thoroughly after removing gloves.

Method: Heel Stick

NOTE: This method is used for infants less than 1 year old who are not weight bearing (not walking yet).

- 1 Prepare patient as defined under “Patient Identification” and “Patient Preparation” sections.
- 2 Warm the heel with warm, moist heat no greater than 42° C (not hot to the touch), for three - five minutes.
- 3 Wash hands. Put on properly fitting gloves.
- 4 Cleanse the heel with an alcohol wipe and allow to air dry.
- 5 Grasp the infant’s heel with a moderately firm grip, with your forefinger at the arch of the foot and your thumb placed at the ankle.
- 6 Open a safety lancet without touching the tip.
- 7 Make a puncture in one continuous motion in a direction following instructions for the device used. The puncture should be less than 2.0 mm deep on top of heel (meaty area only). See the illustration for proper location of puncture.



Puncture in grayed outside heel areas only.

- 8 Discard the safety lancet into sharps container.
- 9 Wipe away the first drop of blood with gauze. Blood flow is enhanced if the puncture site is held downward and continuous pressure is applied to the surrounding tissue.

10 Bring the tip of the capillary specimen collection tube into contact with the drop. Blood will flow by capillary action into the tube. Do not scrape the skin tissue with the tip of the capillary collection tube as specimen hemolysis may occur.

Collect specimens in the following order:

EDTA microtainer, heparin, red, SST, PKUs and then all others.

11 Inspect the puncture wound. When the bleeding has stopped completely, apply a bandage. If bleeding continues, apply pressure for an additional three - five minutes. Prolonged bleeding may be related to the patient's disease or medication.

Exception: A bandage should never be applied to patients younger than 2 years unless the patient is under close observation by an adult until the bandage is removed. Small children may choke on bandages. If a bandage is applied, instruct the adult to remove it within two hours.

12 Apply tube extender. Label specimen tubes before leaving the patient as defined in the labeling section of this procedure.

13 Compare the labeled specimen(s) to the patient's identification bracelet, requisition or ask the patient to confirm the tube is properly labeled with the correct spelling of first and last name and date of birth.

14 Wash hands thoroughly after removing gloves.

Labeling the Specimen (Non-Blood Bank)

The specimen label must have the following patient information (either on the label or printed legibly in block letters if hand written):

- Name
- Date of birth (outpatient)
- Account number (inpatient)
- Date
- Time
- Location
- Initials of person drawing blood

Microtainer tubes must have the extender attached and properly labeled as above.

Hematocrit tubes need not be labeled, but placed in an appropriately labeled larger tube.

All blood specimens should be immediately labeled by the person who drew the specimen.

Request that the patient confirm the tube is properly labeled by visual examination or compare the labeled specimen to the patient's identification bracelet or requisition.

Collection of Blood Bank Specimens

NOTE: Patients must be registered in order to be drawn for blood bank. If the phlebotomist is presented with a HealthLab requisition, the patient must be registered as an outpatient. The patient should not be drawn more than three days prior to the intended date of transfusion if the patient has been pregnant or transfused within the preceding three months. Other patients can be drawn up to 21 days before a transfusion.

For patients outside of the hospital, a pre-transfusion form is to be filled out completely (including date of surgery) and forwarded to blood bank for their records along with the specimen. Do not band the patient. Instruct the patient to bring the blood bank band with them on admission. **Inform them that if they forget the band, the testing must be repeated.** Place the blood bank band and a patient instruction sheet in an envelope and give it to the patient.

All blood bank specimens must be labeled, banded and identified (as described above) at the time the specimen is drawn, before leaving the patient. If this procedure is not followed, the blood bank will require that the specimen be redrawn. A 6 ml. lavender top EDTA tube is collected for all adult and pediatric patients. EDTA microtainers are for infants.

Remember: A blood bank wristband is needed for all type and screen and type and crossmatch orders. The following six items must be written neatly on a blood bank wristband:

- Name
- Medical record number (inpatient) or date of birth (outpatient)
- Date
- Time
- Location
- Initials of person drawing blood

Use a ball point pen and press down firmly since you are making a carbon copy on the blood bank bracelet.

A blood bank bracelet is not required for the following tests, but the information listed above must be written on the tube:

- Rh immune globulin
- Direct Coombs
- Type and Rh

Any blood bank labeling information that is misspelled, illegible or incomplete must be redrawn.

Labeling Blood Bank Specimens

For patients requiring a type and crossmatch and type and screen, use the YELLOW blood bank bracelet. The blood bank bracelet is secured around the right wrist. The following patient information must be included on the bracelet and specimen:

- Name
- Medical record or date of birth
- Date
- Time
- Location
- Initials of person drawing blood

The specimen should be labeled with the correctly completed blood bank wristband label only. **Compare the labeled specimen(s) to the patient's identification bracelet, requisition or ask the patient to confirm the tube is properly labeled with the correct spelling of first and last name and date of birth.** The specimen label with the medical record number and blood bank ID number (three letters, four numbers) written on the label, should be put in the outside pocket of the biohazard bag when transporting the specimen.

If a patient already has been banded with a yellow blood bank bracelet, do not reband the patient. Label the tube with all the information above, PLUS the blood bank bracelet number (three letters, four numbers).

NOTE: Orders for a prenatal type and screen, type and Rh, RhoGAM or direct Coombs test do NOT require that the patient be banded; however, the tube must be labeled as described above with date of birth on the specimen label.

Neonatal/Pediatric Transfusion Specimen Requirements

For Infants Younger than 4 Months Old

When transfusing an infant who is younger than 4 months old, the blood must be compatible with the mother as well as the infant. Ideally, a specimen from the mother as well as from the infant should be drawn. If the mother is unavailable, the infant's specimen may be used for testing. If an antibody is detected, the mother's specimen must be used.

Mother's specimen

Obtain a purple top (6 ml EDTA) tube from the mother. Label it with her name, her date of birth, date drawn, time drawn, phlebotomist's initials and the name of her infant and infant's five digit ID or blood bank ID band using the label below.

- Mothers Name: Smith, Mary Sue
- Mom's DOB: 11-25-56
- Baby's Name: Smith, G
- Baby's 5 Digit or BB ID: 53697BGY
- Date: 7-30-99 Time: 1800
- Phlebotomist initials: LMS.

Do not issue the mother a blood bank bracelet for the baby's transfusion.

Baby's specimen – has NOT left hospital since birth (MB or NICU)

Obtain a purple top (EDTA) microtainer heel stick from the baby. If the baby is being identified using the five-digit baby number, label the tube with the baby's name, medical record number or date of birth, date drawn, time drawn, location, phlebotomist's initials and the five-digit baby number of the infant. **A blood bank bracelet is not issued.**

Baby's specimen – left hospital and has returned or is coming from a different facility (outpatient lab and CC use this process)

Obtain an EDTA microtainer heel stick tube and prepare a blood bank bracelet.

Label the bracelet with the **baby's** name, medical record number or date of birth, date drawn, time drawn, phlebotomist's initials and the location. **Attach** the blood bank bracelet to the baby's body on a location in which it will not be disturbed (ankle or wrist). Attach the long yellow sticker to the microtainer. Outpatient and CC labs use one envelope per procedure.

NOTE: The specimen label with the medical record number and blood bank ID number (three letters, four numbers) written on the label, should be put in the outside pocket of the biohazard bag when transporting the specimen.

Please call blood bank at ext. 32062 if any questions arise.

Blood Culture Collection

NOTE: Each set of blood cultures requires a separate venipuncture.

- 1 Prepare patient as defined in "Patient Identification" and "Patient Preparation" sections.
- 2 Wash hands. Put on properly fitting gloves.
- 3 Cleanse the rubber stoppers on the blood culture bottle(s) with 70 percent isopropyl alcohol. Do not use chlorhexidine or iodine. Allow to air dry completely.
- 4 Apply tourniquet and select venipuncture site.
- 5 Remove tourniquet, open the chlorhexidine gluconate swab stick. Using a back and forth friction scrub, apply the chlorhexidine to the venipuncture site for one minute. Turn swab stick over and continue cleansing for one minute. For newborns younger than 2 months old, cleanse the site with iodine in a circular motion from the center outward.
- 6 Allow the chlorhexidine to dry for 90 seconds. The site must dry completely. Do not palpate or blow on the vein after it has been disinfected. For newborns, allow the iodine to dry at least one minute and then remove with sterile water prior to venipuncture.

7 Reapply tourniquet and perform the venipuncture following procedures described on preceding page using a winged collection needle and sterile syringe obtaining up to 20 ml blood. For newborns, draw 0.5 to 1.0 ml blood. **Refer to blood volume chart below.** Perform the venipuncture without retouching the site. If absolutely necessary to palpate the site of venipuncture, put on sterile gloves after swabbing the site.

Age/Size	Specimen Requirements		Total Blood Volume
	Anaerobic (Red bottle)	Aerobic (Purple bottle)	
Adults over 81 lbs	10 ml	10 ml	20 ml
13 – 37 kg (28.6 – 81 lbs)	8 ml – 10 ml	8 ml – 10 ml	16 ml – 20 ml
2.2 – 13 kg (4.4- 28.6 lbs)	1 ml – 3.5 ml	1 ml – 3.5 ml	2 ml -7 ml
1-2kg (2.2-4.4 lbs)	1 ml – 2 ml	1 ml – 2 ml	2 ml– 4 ml
Children <1 kg (2.2lbs)	N/A aerobic bottle only	0.5ml – 1ml	Less than 1 ml only use the Aerobic bottle

- 8 If multiple specimens for testing need to be obtained at the same time, draw blood cultures first with the syringe attached, or attach a second syringe to collect blood for other samples. A vacutainer adapter may be attached if necessary to draw the remainder of the samples.
- 9 Release the tourniquet (within one minute), place a gauze square over the puncture site and withdraw the needle. Activate the safety device of the butterfly.
- 10 Remove safety activated winged collection set from the syringe and put into the sharps container.
- 11 Apply a blood transfer device to the syringe. Inoculate the anaerobic bottle first (do not allow any air to enter the anaerobic bottle), then inoculate the aerobic bottle. Divide the specimen equally, approximating the amounts. If less than 1 ml is obtained for pediatric or infant blood cultures, inoculate only the aerobic bottle unless otherwise instructed by the physician.
- 12 Discard the syringe and transfer device into the sharps container.
- 13 Apply pressure to the site until bleeding has completely stopped. Inspect the puncture wound. When the bleeding has stopped, apply a bandage. If bleeding continues, apply pressure until bleeding has stopped. Prolonged bleeding may be related to the patient's disease or medication.

Exception: A bandage should never be applied to patients younger than 2 years unless the patient is under close observation by an adult until the bandage is removed. Small children may choke on bandages. If a bandage is applied, instruct the adult to remove it within two hours.

- 14 Label specimen bottles before leaving the patient as defined in the labeling section of this procedure. For blood cultures, also note on the specimen label:
- series number (ex. 1 of 2 or 2 of 2) of the blood culture
 - site on the patient where drawn
 - volume (ml) in each bottle
- 15 Compare the labeled specimen to the patient's identification bracelet, requisition or ask the patient to confirm the tube is properly labeled, especially the spelling of the names and date of birth.
- 16 Wash hands thoroughly after removing gloves.

NOTES:

- 1 Blood may fail to enter the vacutainer tube for the following reasons.
- The needle may not have been introduced far enough. Advance the needle slightly.
 - If the needle seems to have gone to the side of the vein, partially withdraw the needle and readjust slightly (back and forth movement only).
 - If you think you have gone completely through the vein, partially withdraw the needle and readjust slightly.
 - Check using another vacutainer tube as the vacuum may be lost.
 - Check to see that the vacutainer needle is securely fitted to the adaptor.
 - If you still cannot obtain the specimen, release the tourniquet, withdraw the needle, activate the safety device, apply pressure (until bleeding has stopped) and apply an adhesive bandage. Select a vein from the other arm.
- After two attempts (legal limit), enlist the help of another phlebotomist.**
- 2 If you are unable to locate a vein:
- You may attempt a foot vein provided you have a written physician's order on patients older than 2 years.
 - Collect a finger stick specimen if the specimen type is acceptable for the testing ordered.
 - Blood may be collected **below** an IV if necessary and if the following protocol is followed:
 - Have a nurse turn off all infusing products for two minutes.
 - Apply the tourniquet below or distal to the IV.
 - Perform venipuncture in a vein other than the one with the IV.
 - Have the nurse resume IV fluids. Label all blood sample tubes as defined in the specimen labeling section

- 3 Avoid collecting blood above a known previous active IV site within 24 to 48 hours of the time when the intravenous infusion was discontinued.
- 4 If the **outpatient**, at the main lab, experiences an adverse reaction to the collection procedure, follow hospital policy and call a “Code White.” If the reaction occurs at the **satellites** or an **off-site location**, use the pull alarm or alert the on-site nursing staff or physician. Use the page button on the telephone and call a “Code White” if at the satellites.

**Maximum blood volume to be withdrawn from infants and pediatric patients within 24 hours:
(Anne and Robert H. Lurie Children’s Hospital of Chicago)**

Patient's Weight (lbs)	Patient's weight (kg)	Maximum amount to be drawn at any one time within 24 hours(ml)
<2.2	<1	Discretion of the clinician
2.2	1	2.5
4.4	2	4.5
6.6	3	6
8.8	4	8
11	5	10
13.2	6	12
15.4	7	14
17.6	8	16
19.8	9	18
22	10	20
24.2-33	11-15	22-30
35.2-44	16-20	32-40
46.2-55	21-25	42-50
57.2-66	26-30	52-60
68.2-77	31-35	62-70
79.2-88	36-40	72-80
90.2-99	41-45	82-90
101.2-110	46-50	92-100
>110	>50	100

Newborns, neonates, and young children have limited blood availability. Thus, repeated venipunctures may cause iatrogenic anemia and increase transfusion needs. This chart is aimed at outlining the amount of blood that can be safely drawn from a pediatric patient on a weight basis in a 24-hour period.

REFERENCES:

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2. College of American Pathologists Lab General Checklist, Gen. 40500