central peninsula hospital 250 Hospital Place Soldotna, AK 99669	**POLICY TITLE:** Phlebotomy Collections	**DEPARTMENT:** CPGH – Facility Wide **CATEGORY:** Laboratory Services **SECTION:** General Laboratory
	POLICY NUMBER: CPGH.700.085	**EFFECTIVE DATE:** November 2023 **Original Date of Policy:** GL-126 - 11/90
	AUTHORIZED BY: Laboratory, Medical Director	**Revised:** LAB.700.090 – 8/15,3/17, 11/23 (GL-126 - 9/91, 6/92, 3/97, 7/03, 3/04, 9/04, 10/07,4/17)7/19, changed to CPGH.700.085 7/19, 3/20, 9/20 **Reviewed**: 9/91**,** 6/92, 4/95, 3/97,12/97, 7/99, 7/01, 7/03, 12/02, 3/04, 9/04, 10/07, 10/09, 12/10, 8/11, 7/13, 8/16,4/17, 7/19, 6/20, 9/21, 8/22, 6/23

APPLIES TO: The collection of blood samples performed by hospital personnel.

RESPONSIBILITY: All personnel collecting blood specimens

SCOPE: Hospital personnel collect blood specimens in any hospital areas. Lab assistants collect blood specimens in the hospital building, or as directed by contractual agreements.

POLICY: Standard Universal Precautions and disposal of infectious wastes and sharps will be used for all blood collections. All phlebotomy procedures will be performed as outlined in procedure below. **Venipuncture of the foot may only be performed by written order of the patient's practitioner**.

PRINCIPLE: Blood is the most frequent specimen analyzed in the laboratory. It is of the utmost importance to maintain the integrity of the blood sample during and after collection. Blood is susceptible to changes when exposed to temperature extremes, open air, and manual manipulations.

MATERIALS:

- Gloves
- Tourniquet
- 70% Isopropyl Alcohol, Chloraprep, or Iodine swab antiseptic
- Gauze
- Needle and evacuated tube holder
- Winged needle set and syringe
- Lancet device (Tenderfoot)
- Automated lancet
- Appropriate tubes for testing
- Sharps container
- Adhesive bandages
- Labels

PROCEDURE:
Venipuncture

Introduce and Identify

1. Introduce yourself and state where you work.
2. Identify patient according to hospital procedures (armband must be present on Emergency Department and In-house patients) by having the patient state their full name, spell it if necessary, state date of birth and compare these to patient's wristband and each label.
3. Explain the procedure that you will be performing.
    - If you leave the patient's location prior to the draw, you must re-verify the patient's identity.

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4. Ensure all labels belong to your current patient and review each label for any special collection instructions (on ice, protect from light, additional tubes, fasting, etc…).

Patient Preparation

- Make sure patients are not eating, drinking, or chewing gum. They should not have a thermometer, toothpick, or any other foreign object in the mouth when having blood drawn.
- Do not draw on the same side as a mastectomy.
- Avoid extensively scarred, bruised, or edema areas.
- Do not draw from limb with an IV.
    - If no other site for venipuncture is available, ask the patient's nurse to turn off the IV for a few minutes.
    - If the venipuncture must be performed on a limb that has an active IV running, the tourniquet placement and chosen site must be below the IV site.

Site Selection

5. Don gloves
6. Position patient's arm in a position that is comfortable to the patient.
    - The arm should be extended in a straight-line from shoulder to wrist and not bent at the elbow.
    - The hand should be lower than the elbow.
7. Tourniquet should be place approximately 3-4 inches above intended venipuncture site; avoid leaving the tourniquet on too long. Apply the tourniquet over the top of gown or sleeves, so it may be seen and removed after the procedure.
    - Do not apply a tourniquet over an open sore.
    - Do not apply tourniquet to the arm on the side of a mastectomy.
    - The tourniquet should feel slightly tight to the patient. It should not be so tight that it pinches or hurts.
8. Palpate the vein. This will determine size, depth and direction of vein.
9. If the tourniquet is applied during vein selection it should be released during the cleansing process.

Site Preparation

10. Prepare venipuncture site adequately with Alcohol, Chloraprep or Betadine.
    - **Alcohol**: Scrub the intended collection site vigorously with back-and-forth strokes.
        - Use sufficient pressure to remove surface dirt and debris. If the site is especially dirty, clean it again with a new alcohol pad. Allow the area to dry.
    - **Betadine**: Cleanse the site using a circular motion, moving outward in concentric circles.
    - **Chloraprep**: Scrub the intended collection site vigorously with repeated back-and-forth strokes covering a 4 inch by 4-inch area for at least 30 seconds, allow the area to dry.
        1. Do not blow on the area or fan area with hand.
        2. Do not contaminate the site by drying with non-sterile gauze. Site should air-dry.
        3. Do not touch the site after cleaning. If it is necessary to re-palpate the vein the site must be cleaned again unless the gloved finger has first been cleaned in the same manner as the collection site.

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Order of Draw

11. Prepare tubes for draw in the correct order:
    - Sterile tubes (for blood cultures)
    - Blue top (coagulation)
    - Red/Yellow top (most drugs and send out tests)
    - Green top (chemistry, genetic studies, POC)
    - Purple top (hematology, Blood Bank)
    - Gray top (glucose, lactic)
    - All other tubes

Needles/Collection Devices

12. Make sure the needle is securely fastened to the holder or syringe.
    - If using an evacuated tube holder, make sure the first tube is properly seated in the holder.
    - If using a butterfly needle see the Winged (Butterfly) Needle collection procedure section below.
13. Place equipment within easy reach.
14. Reapply the tourniquet, being careful not to touch the cleansed area.
15. Remove needle cover JUST PRIOR to needle insertion.

Drawing blood

16. Grasp the patient's arm with your non-dominant hand. Using your thumb, pull the skin taut 1-2 inches below the intended venipuncture site.
    - You may have the patient make a fist, but this is not necessary. Fist pumping should be avoided.
17. Line the needle up with the vein with the bevel of the needle facing up and pointing in the direction of venous flow.
18. Warn the patient of the needle stick unless requested otherwise.
19. Insert the needle at a 15 to 30-degree angle, using one smooth motion to penetrate first the skin and then the vein.
20. Securely anchor the tube holder, continue to fill and replace tubes until blood is drawn (see correct order of draw in above section).
    - As soon as blood flows freely into the apparatus remove the tourniquet.
    - Try to maintain the arm and the tube in a downward position so that blood fills the tubes from the bottom up and does not contact the needle in the tube holder.
    - To ensure a proper ratio of additive to blood, let the tube fill until the vacuum is exhausted and the blood ceases to flow.
    - Mix tubes with additives immediately by gently inverting 5-8 times.
        - Vigorous mixing or shaking of tubes can cause hemolysis.
21. Once the last tube has been filled, it must be removed from the holder before the needle is removed from the arm.
22. Adhere to any special handling instructions (on ice, protect from light, etc…), may be listed on specimen labels.

Post-Draw Care

23. Quarter fold clean gauze.
24. Withdraw the needle and activate the safety device in one smooth motion while immediately applying pressure to the site using the quartered gauze.
25. Ask the patient to maintain steady pressure.
26. Carefully dispose of the needle and holder in the sharps container.

Adverse Reactions/Complications

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27. See below how to handle the following complications:
    - **Hematoma:** Immediately remove the needle and apply pressure to site. Inform patient they should expect a bruise, and provide an ice pack for them to apply if desired.
    - **Bleeding:** Hold firm pressure on site until bleeding has stopped. Then apply a pressure bandage. If the bleeding continues more than 20 minutes, refer the patient to the ER for evaluation.
    - **Fainting:** If risk of fainting is known prior to beginning draw, place patient in reclined chair or allow them to lay down on cot. When patient faints, ensure they do NOT fall and call for help! Place ice pack on the back of patient's neck. Once alert, offer juice or water and ensure the patient is no longer dizzy before allowing the patient to get up. They may need wheelchair. If patient seizes or is having difficulties call the ER for assistance.
    - **Nerve Injury:** Immediately remove the needle and bandage site. Inform the patient that pressure may have been put on a nerve, provide an ice pack, and ask them to let us know if the pain does NOT subside in a couple of days. If extreme pain or concern from patient, take to ED for evaluation by provider. Email supervisor to inform them of potential injury.
    - **Hemolysis** can falsely elevate results and is caused by squeezing the heel too hard during a heel stick, or putting too much pressure on the syringe during a butterfly draw. Also can be caused from leaving the tube on ice for extended periods.
    - **Clotting** can be caused by not inverting tubes well enough, slow draws, blood sitting in the syringe for too long prior to transfer, and overfilling tubes.
        - Microtainer tubes, especially lavenders, frequently clot. This is caused by not tapping the pedi tube after every drop, over filling, taking too long to obtain sample, and not inverting tubes.

Labeling Tubes

28. Label the tubes by peeling the label from its backing and placing the adhesive side to the tube over the top of the paper label on the tube. Leave a clear "window" so the specimen may be observed. Apply the label with the patients name at the stopper end; this facilitates reading the tubes when they are placed in a rack or holder.
29. Label must include patient name, patient date of birth, date drawn, time drawn, and initials of the person collecting.

Final Steps

30. Examine the patient's arm to see if bleeding stopped and apply adhesive bandage, tape or place coban over clean gauze.
31. Tell patient when they can expect results from the tests, if performing in-house 2-3 hours, if a reference send-out 3-5 days.
32. Thank the patient for their cooperation. Ask the patient if there is anything else the patient requires. Obtain the help of patient's care taker if necessary.
33. Remove and discard gloves appropriately. Disinfect hands.
34. Place specimens in a biohazard bag for transportation. Place only one patient's specimens in each bag.

The Final Check

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- All in-house patients, NOT outpatients, must have wristband on their wrist prior to draw (inpatients, ED, surgery, etc…).

35. Compare every labelled tube drawn to patient's wrist band, saying last 3 digits of medical record number out loud for every tube. This is the "Final Check".

Extra Tubes

- Extra tubes are drawn at the same time as other tubes, following Order of Draw.
- Extra tubes are drawn on patients who only have 1-2 tube colors required, to make the "rainbow" so the lab has tubes ready for the physician to add orders.
- Lab places order in the EHR for all extra tubes based on color needed "extra red, extra green, extra lavender, extra blue" which generates an instrument ready (bar-coded) label that can be scanned.
- Having an instrument-ready label on the extra tube prevents the tubes from getting lost, as they each have their own specific location.

Procedural Notes

- Do not attempt venipuncture on a patient more than two times to obtain a specimen. Get another person to try: phlebotomist, medical technologist, nurse, or doctor. After 3 different phlebotomists have been unsuccessful at obtaining blood sample on a patient, notify RN. Lab phlebotomists will not continue to poke patient, patient's care team will decide next step of action-if patient gets a PICC or central line, for example. New staff may try later for the next scheduled draw.
- Heat may be applied at site of venipuncture if veins are particularly difficult.
- Blood cultures - (See laboratory policy Blood Culture Collection CPGH.705.080.)
- For possible cross matches - (See Acceptable Blood Bank Specimen Policy CPGH.701.030.)

Pediatric draws

- Physical restraint is usually required.
- This is most easily accomplished by having them sit upright in their parent's lap. The parent places an arm around the child over the arm that is not being used. The other arm supports the venipuncture from behind, at the bend of the elbow.

Limitations

- Central line access for the purpose of collecting a blood sample will not be performed by laboratory staff. Request assistance from the nursing staff.
- Arterial access will not be attempted by laboratory staff. In the event of an accidental arterial stick, carefully remove the needle as soon as it is determined that an artery may have been accessed. Apply pressure on the site for at least 5 minutes and securely place a pressure bandage on the site. Notify the clinical lab of the possibility that the sample is arterial.

PROCEDURE: Winged (Butterfly) Needle

1. Follow Steps 1-11 above before continuing to the next steps below.
12. Winged needle devices should be used with a syringe to gently control the vacuum during the draw. Avoid attaching it directly to the evacuated tube hub.
13. Open the package and remove the winged-device. Gently stretch the tubing to remove any curls in the tubing.

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14. Remove the luer cap and attach the needle to the syringe.
15. Pull on the syringe plunger to see that it moves freely and push it all the way back into the barrel of the syringe.
16. Grasp the wings of the device, remove the needle sheath, and insert the needle at a 15 to 30-degree angle, using one smooth motion to penetrate first the skin and then the vein.
17. Securely anchor the needle with one hand and work the plunger with the other hand.
18. Observe for the presence of blood in the chamber. Gently pull back on the syringe to collect blood. Avoid excessive pressure.
19. Once the collection is completed, gently cover the site with a clean quarter-folded gauze, and press down on the retract button. The needle will retract out of the skin and lock into the safety position.
20. Immediately apply pressure to the site with gauze. Avoid pressing on the site until the button has been depressed and the needle withdraws.
21. Ask the patient to maintain steady pressure.
22. Carefully dispose of the winged needle device in the sharps container.
23. Use a transfer device to transfer blood from the syringe to the evacuated blood tubes.
    - Open the transfer device package.
    - Insert the syringe into the hub of the transfer device. Rotate the syringe clockwise to secure syringe to hub.
    - With syringe tip facing down, center evacuated tube or blood culture bottle and push forward into holder of blood transfer device. Follow Order of Draw (Step 11 above).
    - After removing the last tube discard the entire assembly in sharps container. Do NOT unthread syringe from the Blood Transfer device prior to disposal.
        - If you have more than one syringe, use a new transfer device for each syringe.
24. Return to Step 27 above to finish collection.

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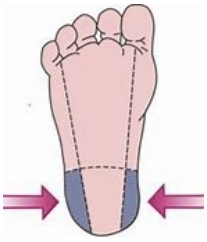
PROCEDURE:
Heel Stick

1. Wash hands thoroughly. Introduce yourself and briefly explain the skin puncture procedure.
2. Identify the baby per patient identification policy, using 2 patient identifiers, name and date of birth matching stated information to the patient's identification band. For outpatients, ask the guardian to spell the baby's name and state the date of birth.
3. The skin puncture site should be warm, pink and free of scars, cuts, bruises or rashes. To avoid puncturing bone, heel puncture should only be performed on the plantar surface of the heel, medial to an imaginary line drawn extending from the middle of the great toe to the heel or lateral to an imaginary line drawn from between the fourth and fifth toes to the heel. See shaded area of image below:



4. Warm the site using an Infant heel warmer, remove after 5 minutes.
5. Don gloves.
6. With the baby in a supine position, clean the puncture site with an alcohol pad. Allow to air dry. Do not contaminate the cleaned area.
7. Remove the Tenderfoot lancet from the blister pack. Grasp the heel firmly but gently with the index finger wrapped around the ankle and below the puncture site.
8. Remove the safety clip without triggering the device or touching the blade area.
9. Perform the puncture perpendicular to the lines of the footprint, using the lancet device. Ensure that the device has made light contact with the skin and depress the trigger.
10. Immediately remove the device from the infant's heel. Wipe the first drop of blood with a dry gauze.
11. Position the site downward and continue to apply moderate pressure proximal to the puncture site. Alternate pressure and release to allow the foot area to refill with blood.
12. Collect blood using the correct microtainer tube, capillary tube or newborn metabolic screen card. For capillary blood gases, collect the tube carefully to prevent the introduction of air bubbles into the tube. Fill the collection container to the proper level.
13. When the collection is complete, apply pressure to the site until the bleeding stops. Keep the site elevated while pressure is applied.
14. Label specimens in the presence of the patient, with the full name, date of birth, date and time of collection and the collector's initials.
15. Dispose of contaminated materials in the appropriate waste or sharps containers.
16. Perform the Final Check by comparing every labelled specimen drawn to patient's wrist band, saying last 3 digits of medical record number out loud for every tube.

PROCEDURE:
Finger Stick

1. Wash hands thoroughly. Introduce yourself and briefly explain the skin puncture procedure.
2. Identify the patient per patient identification policy, using 2 patient identifiers, name and date of birth matching stated information to the

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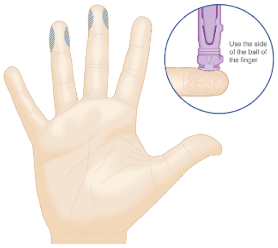
patient's identification band. For outpatients, ask the patient or guardian to spell the patient's name and state the date of birth.

3. The skin puncture site should be warm, pink and free of scars, cuts, bruises or rashes. If the hand is cyanotic or cold, it may be best to warm the area with a warming device for several minutes before collection.
4. Support the arm on a firm surface and have the patient extend the hand with the palm facing up.
5. The best site is on the 3rd or 4th finger on the non-dominant hand. Do not use the tip, center or side of the finger to avoid vessels, nerves and bone. The index finger tends to be more calloused, and the pinky finger has less tissue over the bone. See picture below:



6. Don gloves. Select and clean the site with an alcohol pad and allow to dry.
7. Grasp the finger between the thumb and index finger. Using the sterile puncture device, puncture the skin perpendicular to the whorls of the fingerprint, pushing the lancet into the finger until you hear a click. This allows the blood to be collected easily.
8. Wipe away the first drop of blood with a dry gauze.
9. Position the site downward and apply moderate pressure proximal to the puncture site. Release and reapply the moderate pressure to allow the finger to perfuse. Do not squeeze or aggressively massage the site.
10. Proceed to collect the blood in the proper microtainer or capillary device. For capillary blood gases, collect the tube carefully to prevent the introduction of air bubbles into the tube. Fill the collection container to the proper level.
11. When collecting multiple microtainer tubes, fill the purple tube first and mix well during collection by gently tapping the tube, then collect the rest of the tubes.
12. When the collection is complete, have the patient hold a small dry gauze pad over the puncture site, until it stops bleeding. A bandage may be applied over the site if needed.
13. Cap and label specimens in the presence of the patient, with the full name, date of birth, date and time of collection and the collector's initials.
14. Dispose of contaminated materials in the appropriate waste or sharps containers.
15. Perform the Final Check by comparing every labelled specimen drawn to patient's wrist band, saying last 3 digits of medical record number out loud for every tube.

REVISION RESPONSIBILITY: Administrative Director of Laboratory and/or designee(s)

APPROVED BY: Administrative Director and the Medical Director

REFERENCES:

Todd, Sanford, Davidsohn, and Henry, Clinical Diagnosis and Management by Laboratory Methods 17th Edition, 1987, pages 578 and 579.
Phlebotomy Essentials, 2nd Edition, McCall and Takersley, 1998, pgs 205-227, and 238-251.

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BD Blood Transfer Device, Package insert, Becton, Dickinson and Company, 2010
BD Eclipse Blood Collection Needle, Package insert, Becton, Dickinson and Company, 2010
BD Vacutainer Push Button Winged Infusion set, Package Insert, Becton Dickinson, 2013
http://www.bd.com/vacutainer
Order of Draw (CLSI H3-A6, Vol 23, No 32, 2007)

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