

**ARNOT HEALTH
POLICY & PROCEDURE MANUAL**

POLICY #: LS.PAL.0002

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TITLE: BLOOD SPECIMEN COLLECTION & LABELING PROCEDURES

DATE OF ISSUE: 9/21/2006

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APPROVAL: Dr. Lenhardt, MD, PhD 7/20/17

Dr. Wang, MD 7/20/17

Judy Wolf, MA, MT (ASCP) 7/20/17

Noemi Bentley, MT 7/20/17

FACILITIES COVERED: AOMC AMS SJH IDMH

OWNER(S): Laboratory, CLA Supervisor

PURPOSE:

To serve as a guide for all blood specimen collectors in all clinical settings with varying levels of expertise, education and training and with strict adherence to the guidelines set forth by the Clinical Laboratory Standards Institute (CLSI).

MATERIALS:

1. Tourniquet
2. 70% isopropanol pads
3. Gauze pads. Cotton balls are not recommended because of the possibility of dislodging the platelet plug at the venipuncture site.
4. Needle and tube holder
5. Syringes
6. Butterfly sets
7. Appropriate tubes.
 - a. The Pink tube has been added to our list of specimen tube requirements. A pink tube is to be drawn specifically for all Blood Bank orders.
8. Adhesive bandage/tape
9. Permanent marker or pen (not gel or felt tip pens)
10. Gloves and other appropriate personal protective equipment
 - a. The finger of the glove may not be torn off in order to palpate the vein.
 - b. Phlebotomy devices must reflect the most current local and regional safety regulations. The use of engineering and work practice controls should eliminate occupational exposure or reduce it to the lowest feasible extent (e.g., safety needles, shielded needle devices). In order to prevent potential worker exposure, the needle safety feature should be activated immediately after specimen collection and discarded without disassembly into a sharps container.

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Materials continued:

11. Hand/ heel warmers (commercially prepared)
12. Microtainers and lancets for skin punctures with varying depths and lengths for preemies, newborns, young children and adults
13. Puncture-resistant needle disposal container

IDENTIFICATION AND LABELING PROCEDURE:

1. Obtain the Lab order bar-code labels. Match accuracy of orders on the labels with the doctor's requisition for outpatients or with the nurse's station for inpatients.
 - a. Pre-labeling of tubes is not acceptable.
2. Assemble materials required.
 - a. Remember to include a pink tube if there is an order for Blood Bank. Only draw a pink top tube with a valid Blood Bank order.
3. Approach and identify the patient. Identification of a patient is crucial. The two patient identifiers used by our facility are patient's first and last name and date of birth. All patients must be properly identified prior to drawing blood. There are no exceptions to this rule. Regardless of clinical setting the phlebotomist must ensure that the blood specimen is being drawn from the correct individual.
 - a. Ask the patient to state their first and last name and date of birth. Compare them with the lab labels, doctor's requisition and patient's wrist ID band, if present. For unconscious, comatose, young children or dependent adults ask the nurse or the patient's caretaker to identify the patient by the patient's first and last name and date of birth. Sleeping patients should be awakened before drawing blood as there might be unexpected movements or jerks either while introducing the needle or while it is in place in the arm.
 - b. If there is a Blood Bank order for Type & Screen or Type & Cross, two people must be involved in the patient identification at the time of sample collection. **(Please see exceptions on Policy #LS.BBL.0096).** One of the two must be licensed (RN, LPN, MD, or MT). One person verifies the patient's full name and date of birth against the registration/ admission bracelet. The second person verifies the patient's full name and date of birth against the lab label. Both collector codes (Quadrated #) must be on the pink tube.
 - c. When drawing inpatients, trays may be set on patient surfaces if there is a protective covering such as a disposable pad. The phlebotomist must not rely on the bed tag, charts or records placed on the bed, nearby tables or equipment. All hospital and ED patients will have an identification bracelet. If the patient is not wearing a bracelet, the blood is not to be drawn until the patient is properly identified. Failure to have patients properly identified is cause for an incident report. The ID bracelet is to contain the patient's full legal name, date of birth and if admitted, their medical record number and admitting physician.

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IDENTIFICATION AND LABELING PROCEDURE continued:

4. Assess patient. Verify the patient's fasting status or diet restrictions as appropriate. Patients with a history of syncope must be recumbent. There are no concerns for latex sensitivity as our facility orders non-latex supplies only.
5. The patient should be either seated or lying down while having blood drawn. A patient should never be standing or sitting on a high stool. Have parents attend small children. Seated patients should have an available, comfortable arm rest.
6. Apply gloves to previously washed hands. (Alcohol foam is acceptable).
7. Apply the tourniquet three to four inches above the intended venipuncture site. The tourniquet should not be so tight that it pinches or hurts the patient. If the patient has a skin problem, the tourniquet should be applied over the patient's gown or a piece of gauze pad.

VENIPUNCTION PROCEDURE:

Collections outside of the antecubital fossa and dorsal hand must ONLY be attempted by a licensed professional with a thorough knowledge of the area's anatomy and the risks involved.

VEIN SELECTION:

The preferred venipuncture site is the antecubital fossa which is the area of either arm that is anterior to (in front of) the bend of the elbow where a number of large veins lie relatively near the skin's surface. See Appendix A.

The phlebotomist must prioritize antecubital vein selection as follows:

- a. Veins in the median aspect (center), i.e., median and lateral aspect of the median cubital veins. Attempt to locate these veins on either arm before considering alternative antecubital veins.
- b. Veins in the lateral aspect (outer), i.e., cephalic vein and the accessory cephalic vein: While injuries to the lateral nerve during venipuncture are rare, these veins must not be considered unless other veins in the median aspect of the antecubital area have been ruled out.
- c. Veins in the medial aspect (inner), i.e., basilica vein and medial aspect of the median cubital vein. Venipuncture attempts to these veins are more likely to injure the brachial artery and the median antebrachial cutaneous nerve. Therefore, collections from the veins in the medial aspect of the antecubital area must not be considered unless no other vein provides confidence that it can be safely and successfully accessed.

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VEIN SELECTION continued:

- If antecubital veins are not acceptable or unavailable, veins on the back of the hand are also acceptable for venipuncture.
- Foot draws, (ankles or any part of the lower extremities) must not be attempted without documented permission of the physician because of the potential for significant medical complications (egg, phlebitis, thrombosis, tissue necrosis).
- **The thumb-side of the wrist is NOT acceptable.**
- Veins on the palmar surface of the wrist and the lateral wrist above the thumb to the mid-forearm must not be used. The basilic vein should be the last choice for phlebotomy due to the risk of injury.
- **CLSI now extends the “risky area” to include the median aspect of the median cubital vein as it approaches the basilic vein.**
- Arterial puncture, aside from being more painful to the patient, could pose greater risk of injury and complications. They must not be considered an alternative to venipuncture. Results obtained from arterial specimens are not equivalent for many analytes.
- **Venipunctures must not be performed on the scalps of newborns without physician permission and specialized training.**
- A physician must provide written permission before a venipuncture is performed on the side on which mastectomy has been performed because of the potential for complications due to lymphedema, a potentially devastating complication that leads to progressive edema, pain, and recurrent infections.

VENOUS BLOOD COLLECTION PROCEDURE:

1. Use the tip of the finger to palpate the vein. This helps to determine depth, direction and size. If you must remove your glove to re-palpate the vein, you must repeat cleansing the site. The phlebotomist must put new gloves on before the venipuncture is performed. Gloves must remain intact during the procedure. Fingertips of the gloves must not be removed.
 - a. Release the tourniquet during the cleansing process. Tourniquet application for preliminary vein selection should not exceed one (1) minute as localized stasis with hemoconcentration and infiltration of blood into tissue can occur. This may result in erroneously high values for all protein-based analytes, packed cell volume and other cellular elements.
2. Clean the site with 70% isopropyl alcohol. The puncture site must be cleansed to minimize microbiological contamination of the specimen and patient infection. If the specimen is being collected for a blood alcohol level analysis, use a non-alcohol based cleanser.

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3. Use sufficient pressure to remove surface dirt and debris.

VENOUS BLOOD COLLECTION PROCEDURE continued:

4. Allow the site to air dry for 30 seconds. This practice prevents the patient from experiencing a burning sensation when the venipuncture is performed and allows optimal decontamination.
5. Reapply tourniquet being careful to avoid cleansed site.
6. If venipuncture proves difficult and the vein requires repalpation after cleansing, the site must be cleansed again. You can also repalpate above and below the intended puncture site, but not the site itself.
7. Remove the needle cover and discard.
8. Visually inspect the needle for obstructions, imperfections or barbs.
9. Line the needle with the vein beveled side up. Insert the needle into the vein at a 15-30 degree angle using one smooth motion to penetrate first the skin and then the vein.
10. Hold the needle and adaptor steady while using your thumb to push the evacuated tube to the end of the holder.
11. To avoid possible test result error due to cross contamination from tube additives follow the order of draw:
 - a. Venous blood collection (the same for both glass and plastic venous blood collection tubes):
 1. blood culture
 2. trace elements
 3. blue top
 4. red top
 5. gold top
 6. green top
 7. purple top
 8. pink top
 9. gray top

b. Microtainer Collection

The order of collection for Microtainers differs from that of venipuncture. If multiple specimens are to be collected, including EDTA specimens, the EDTA specimen is collected first to ensure adequate volume and accurate hematology test results. Other additive specimens are collected next. Specimens requiring serum are collected last.

- ii. The same should be adhered to when using a syringe or butterfly setup.
- iii. When using a winged blood collection set (butterfly) for venipuncture and a coagulation tube (blue) is the first tube to be drawn, a discard tube should be

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drawn first. The discard tube must be used to fill the butterfly tubing dead space and to assure maintenance of the proper anticoagulant/blood ratio and does not need to be full. The discard tube should: be blue or red (no additive/ no clot activator/ no gel).

11. If there is a risk of vein collapse, remove the tourniquet as the last tube fills. Otherwise release the tourniquet as soon as possible after the blood begins to flow. Do not change the position of the tube until it is removed from the needle.
12. Fill each tube as required. The tube should be allowed to fill until the vacuum is exhausted and blood flow ceases. For tubes that contain additives this will ensure there is a correct ratio of blood to additive.

Remove the tube using a twisting, pulling motion. Always remove the last tube collected from the needle/holder prior to withdrawing the needle from the vein. If only one tube is collected, this must be removed prior to withdrawing the needle from the vein. Tubes that contain anticoagulants must be gently inverted 5-10 times. To avoid hemolysis do not mix vigorously.
13. When all the tubes are sufficiently full place clean gauze over the venipuncture site, pull the needle out with one clean motion and apply pressure with the gauze. Do not apply pressure before the needle is removed.
14. Hold the clean gauze over the venipuncture site for 3-5 minutes. Patients who are able can perform this task. Do not bend the arm up but keep it extended or raised. Difficult draws, patients having a Protime drawn or are taking blood thinners need to apply pressure for 5-10 minutes.
15. Observe the site for 5-10 seconds before applying a bandage/tape.
16. During computer downtime and the labels are not available at the time of draw, properly label tube(s) with patient's full name, date of birth, location, test, date and time of collection and your Tech Code/ Quadramed number. Due to smearing, gel or felt tip pens must not be used. Label tubes only after they are filled. If applicable, tube labels must be compared to the wrist band.
17. Properly dispose of the needle in an approved needle container.
18. Specimens must be labeled at bedside for inpatient or at the chair for outpatient before patient leaves.
19. Write your Tech Code and the time of draw on the specimen barcode label and on the requisition.
20. If patient was drawn on the floor/ unit or Nursing Home, document venipuncture on the nursing station lab logbook.
21. Thank the patient. Remove your gloves and wash hands or use alcohol foam.

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SKIN PUNCTURE PROCEDURE:

If the tests can be performed on minimal volumes, skin punctures can be a valid alternative.

FINGERSTICKS:

1. Should not be done on infants less than 1 year of age. Their fingers are too tiny and bone penetration could occur and lead to gangrene, septicemia, and complications that could include amputation, even death.
2. Finger-sticks are off-limits on the same side as a mastectomy without physician's permission. The rationale is that any trauma to the affected site can result in infection and lead to lymphedema

FINGERSTICK PROCEDURE:

1. Follow patient identification and cleansing process as mentioned above.
2. Allow alcohol to dry to avoid hemolysis which could potentially alter the results of the tests.
3. Perform finger punctures on the center of the distal phalanx on the palmar surface; do not perform them on the side or tip of the finger because the tissue thickness in these areas is about one half of that in the center of the finger.
4. Do not puncture deeper than 3.1 mm because the distance from the surface to the bone may vary from 3.1 to 10.9 mm.
5. Wipe away the first drop of blood with a dry gauze pad since the first drop is most likely to contain excess tissue fluid.
6. An adequate flow of blood is obtained by applying moderate pressure without squeezing the finger.
7. Collect in appropriate microtainer tube(s) in the reverse order of draw that is recommended for routine venipuncture. Seal the cap and gently invert to mix. Do not shake.
8. Following collection, apply direct pressure to the area with a clean gauze pad and slightly elevate the finger until the bleeding stops. It is advisable to apply adhesive bandages/tape.
9. Follow labeling procedure as mentioned above.

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HEEL-STICKS:

1. Heel-sticks are recommended for infants less than 1 year old.
2. The infant's foot should be warmed prior to blood collection using an approved warming device. Pre-warming a patient's heel or finger prior to a skin puncture increases the blood flow seven fold.
3. The directions for the use and activation of the commercial Infant Heel Warmer indicated at the back of the warming device must be followed.
 - a. Blood must not be obtained from the central area of an infant's foot (area of the arch). Punctures to this area may result in injury to nerves, tendons and cartilage.
 - b. Blood must not be obtained from the posterior curvature of the heel and from swollen or previously punctured site because accumulated tissue fluid will contaminate the blood specimen.

HEEL-STICK PROCEDURE:

1. Follow patient identification and cleansing process as mentioned above.
2. Warm the site with the commercially prepared warmer. Do not use a hot, moist towel as an alternative as this may cause discomfort to the patient or burn. Follow the activation procedure for heel warmers found on the outside packet.
3. After cleansing the site with alcohol, the skin must be completely dried before puncture because any remaining alcohol will cause hemolysis of blood that touches it. Povidone iodine or Betadine should not be used to clean skin puncture sites because blood contaminated with it may have falsely elevated levels of potassium, phosphorus, uric acid and bilirubin.
4. Make a single puncture perpendicular to the surface of the skin in one smooth motion. The limit of puncture depth on infant heels according to CLSI is 2.0 mm. No recommendations for preemies exist.
5. After the full depth of the lancet's blade has penetrated the skin, remove the lancet in one upward motion and immediately discard it into an appropriate sharps container. An immediate repeat puncture (double sticking) at the same site must be avoided.
6. Wipe away the first drop of blood with a dry gauze pad since the first drop is most likely to contain excess tissue fluid.
7. An adequate flow of blood is obtained by applying moderate pressure without squeezing the leg, ankle and ball of the foot in a 'milking' motion.

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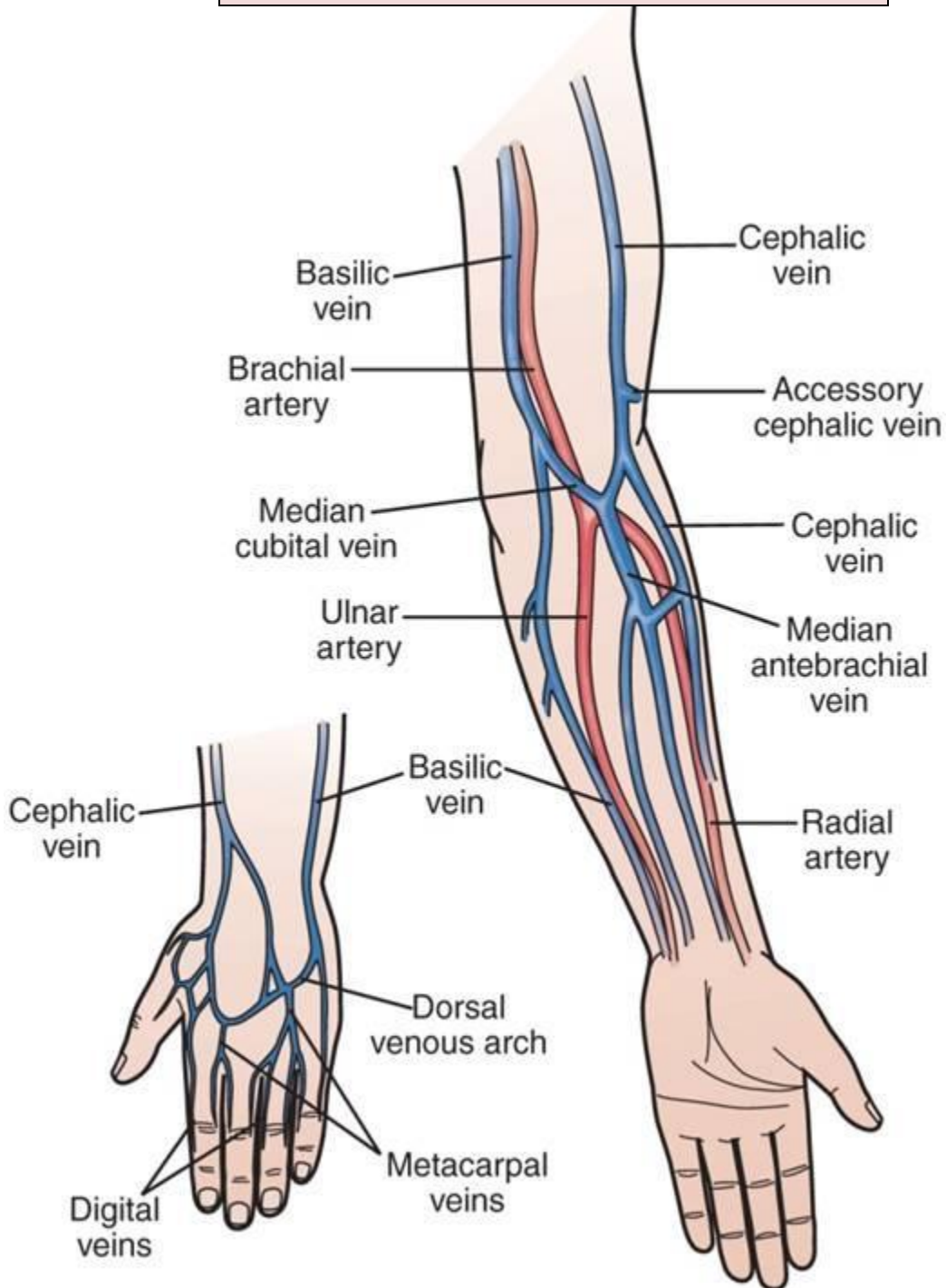
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8. Collect the specimen in microtainer tubes following the reverse order of draw that is recommended for regular venipuncture. Seal the cap and gently invert to mix. Do not shake.
9. Following collection, apply direct pressure to the area with a clean gauze pad and slightly elevate the extremity until the bleeding stops. It is advisable to apply adhesive bandages/tape.
10. Follow labeling procedure as mentioned above.

APPENDIX A:

Venipuncture sites arm and hand



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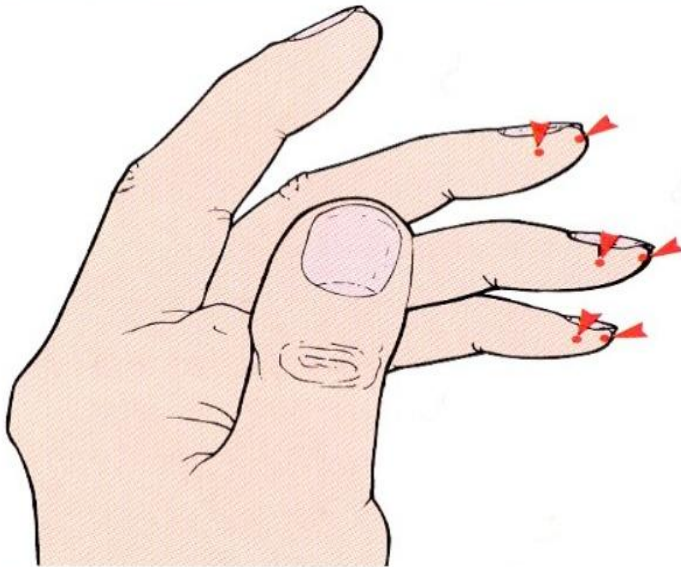
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APPENDEX B:

Finger-stick sites indicated by arrows



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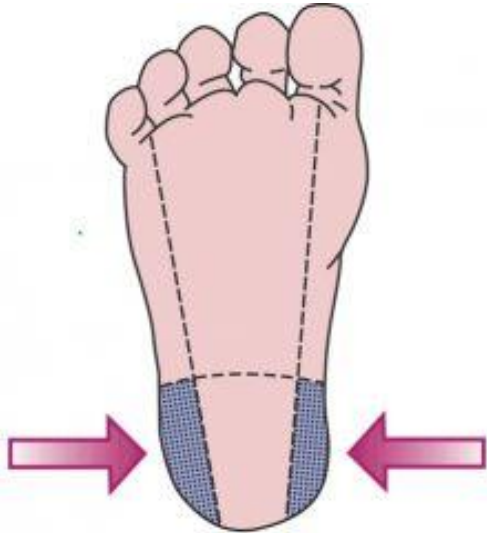
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APPENDIX C:

Heel-stick sites in shaded areas only



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Prepared by: Noemi Bentley, Phlebotomy/CLA Supervisor, 9/21/2006

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| Revised By: Noemi Bentley, BSMT Phlebotomy/CLA Supervisor @ AOMC <hr/> Revisions Made: 1. Added new guidelines from April 2017 GP41 edition of CLSI Collection of Diagnostic Venous Blood Specimens 2. Incorporated venipuncture and skin puncture procedures into one 3. Added labeling of specimens at the chair or bedside. 4. Added computer downtime to item #16 | Date: 7/20/2017 Date: 03/28/2018 Date: 11/02/2018 |
| Terence Lenhardt, MD, PhD Medical Director @ AOMC and IDMH | Date: 7/20/2017 |
| Dr. Yafei Wang, MD Medical Director @ SJH | Date: 7/20/2017 |
| Judy Wolf, MA, MT (ASCP) System Director of Laboratory Services | Date: 7/20/2017 |

Reference:

CLSI 6th edition H3-A6, Vol.27, No.26, copyright October 2007 (Replaces H3-A5, Vol.23, No.32).
 CLSI Collection of Diagnostic Venous Blood Specimens, April 2017 GP41
 Becan-Mcbride K., Textbook of Clinical Laboratory Supervision 1982 Phlebotomy Skills Training, CLSI (formerly NCCLS) 2005
 CLSI Procedures and Devices for the Collection of Diagnostic Capillary Blood Specimens; Approved Standard – Fifth Edition
 Collection and Handling of Laboratory Specimens- A Practical Guide by Jean Stockbower and Thomas Blumenfeld

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Center for Phlebotomy Education (Compilation of Blood Specimen Collection FAQs) by Dennis Ernst

Annual Review:

NB 1/12/07; NB 8/01/08; NB 6/19/09; NB 8/03/10; NB8/02/11; NB 8/4/12; NB 8/7/13;
NB 8/11/14; NB 4/10/15; NB 12/08/16; NB 1/25/17; NB 3/3/17; NB 7/17/17; NB
03/28/18; NB 1/10/19; NB 1/08/20