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 Owner: Olive Romero: Administrative  
           Laboratory Director  
 Policy Area: Laboratory - Phlebotomy  
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## Collection and Handling of Lab Specimens

### Principle:

Specimens of good quality are required if the laboratory is to provide results of consistently high quality. The following uniform guidelines are to insure the collection and preservation of quality specimens and to insure maximum patient safety and comfort. The following procedure is split into 4 sections to include: Specimen Collection, Specimen Handling, Specimen Preservatives and Additive and Specimens collected by Nursing.

### Patient Preparation

### Specimen Collection

#### General Considerations:

Most laboratory specimens consist of plasma, whole blood, or serum to be obtained by venipuncture, and this will be assumed to be the routine type of specimen unless otherwise stated. Since capillary specimens may yield different results, those procedures will be covered individually.

#### A. In-Patient Identification:

The most vital aspect of quality is to assure that specimens are from the correct individual. Because of this, the process of identification must be methodical and complete for every patient and will consist of the following steps:

1. The computer label(s) include patient's name, medical record number, age, sex, location, and accession number. The label(s) will also indicate the tests that have been ordered, specimen requirement, and the number of tubes needed. Always check the header label for comments regarding specific collection information.
2. At the patient's side, identify yourself by name and state why you are there.
3. Ask the patient to identify himself by name. Do not state the name desired in this request.
4. Ask patient their birthdate.
5. Compare the ID wristband information with your request label and with the verbal information given. The name and number used for identification (QM#) **must** match exactly. If the patient either has no wristband or an error is detected, this must be corrected before proceeding further. If an extreme medical emergency exists and the patient does not have a proper ID band, the attending physician or nursing representative should identify the patient and this incident must be reported to the Laboratory Director. Trauma bands or the Typenex System are used for unidentified patients. **No In-**

**Patient may be drawn without a wristband attached.**

6. After collection of your specimen, it must be initialed and labeled at the bedside with the time/date of collection.

**B. IV & Graft Precautions**

Many patients in the hospital will have intravenous catheters to administer drugs, nutrition, and/or fluids. I.V fluids will affect results. Avoid the possibility of contamination using the following rules.

1. **Do not draw blood above or below any running I.V.**
2. If no other site is available, you may draw above or below an I.V. that has been turned off for 2-3 minutes prior to venipuncture. All adjustments to the I.V. including turning off before venipuncture and restarting after venipuncture must be performed by a nursing representative. The Phlebotomist must inform the Nurse when the draw is complete so that the I.V. is re-started. Best rule to remember – try to obtain specimens from a different limb than the one with an I.V. if at all possible.
3. **Do not draw in the same arm which contains a dialysis graft or is a graft surgical site.**

**C. Patient Safety:**

Collecting specimens by venipuncture should not be hazardous to the patient, and to help keep this procedure as safe as possible the following precautions should be observed:

1. Under ideal conditions, the patient should be lying flat (supine) during the venipuncture and for at least 5-10 minutes after. During the rest period after venipuncture, protective bedside rails must be raised to prevent the patient from falling.
2. No patient may be drawn while standing.
3. Phlebotomy may not be attempted more than 2 times by the same Phlebotomist on one patient.
4. If an accidental arterial puncture occurs, the site must have direct pressure applied for a minimum of 5 minutes.
5. Because of generally poorer circulation in the lower extremities, permission from nursing must be obtained prior to drawing in this location. The only acceptable alternative site for venipuncture is the hand.
6. Make sure every patient gets an adhesive bandage applied to the venipuncture site, to remain on for at least 30 minutes. Elastic bandaging (Coban) should be used for patients who are receiving anticoagulation therapy.

**D. Latex Allergy**

Prior to applying the tourniquet all patients should be asked if they have Latex Allergy. Non-latex tourniquets and bandaging must be used if the patient has a latex allergy. Please note that Coban Self-Adherent Wrap **does** contain Latex and should not be used on allergic patients.

**E. Venipuncture Technique**

The actual technique of venipuncture is an acquired talent that must be demonstrated and practiced. Following is a brief summary of the required steps, and some notes about the technical differences between "syringe" and vacutainer" techniques. Venipuncture is generally reserved for patients greater than 2 years of age. See note under capillary technique for exceptions.

1. Venipuncture Procedure
  - a. Identify the patient, select the site for venipuncture (preferably the antecubital area of the arm) and assemble the necessary equipment (venipuncture apparatus, tourniquet, alcohol swab, dry

cotton swab and bandage).

**NOTE: Current policy requires laboratory personnel to wear protective gloves and lab coats when drawing all patients.** Protective goggles and masks are also available if splash hazard is anticipated.

- b. Apply the tourniquet midway between shoulder and elbow for a maximum of 1 minute prior to venipuncture.
- c. Cleanse the venipuncture site with 70% alcohol swab using a vigorous circular scrub and then allow to air dry.
- d. Perform the venipuncture and withdraw the required volume of blood using proper order of draw.
- e. Release the tourniquet.
- f. Withdraw the venipuncture needle and immediately apply pressure with gauze sponge.
- g. Engage the needle safety device using only one hand.
- h. Label tubes immediately and completely.
- i. Examine venipuncture site for evidence of continued bleeding and apply bandage over gauze if no bleeding is noted. If bleeding continues to occur, apply direct pressure to site for 5 minutes and re-examine site until bleeding stops.
- j. Dispose of the contaminated equipment (needles, etc.) in approved containers.

## 2. Vacutainer Notes

Use of the vacutainer system is the preferred method because it is generally faster, safer, more aseptic, and less expensive. The quality of the specimen is better because blood is delivered directly from the vein into the collection tube without transfer or delay.

- a. Make sure that each tube fills completely before proceeding to the next tube.
- b. As soon as a tube is removed, it must be **gently** inverted 6-9 times to insure mixing of the specimen with the tube additive.
- c. Remove the last vacutainer from the needle before withdrawing needle to prevent leakage from the tube and to prevent residual vacuum from causing painful withdrawal of the needle.

## 3. Syringe Notes

Use of a syringe is generally reserved for those patients who are very difficult to draw. This is the recommended venipuncture technique for infants less than 2 years of age.

- a. Do not try to withdraw blood faster than the blood flow into the vein – the subsequent collapse of the vein may hemolyze the specimen rendering it worthless for many tests.
- b. When transferring blood from the syringe to the tube a blood transfer device must be used.
- c. Needles smaller than 22 gauge should be used with caution due to risk of hemolysis.
- d. Use of a butterfly set with a syringe is recommended in children and with very small veins.
- e. Always engage the needed safety device as soon as possible following the draw.

## F. Arterial specimens and specimens drawn from Arterial or Venous Catheters.

Laboratory personnel do not perform arterial puncture. Specimens drawn from arterial or venous catheters may be obtained only by nursing personnel. Special handling is required:

- All fluid should be removed from the line by withdrawing into a "waste" syringe a total volume of

8-10ml. This waste is then discarded appropriately. A sterile syringe is used to remove the test sample. Needless transfer of blood must be used into collection tubes.

#### G. Capillary Samples

Capillary samples are generally collected only on patients less than 2 years of age or by request of the physician. If the specimen requirements are for venous blood, the venipuncture should be performed by the most capable phlebotomist present, or in the case of newborns, only by the physician or nursing staff. The collection of capillary blood results in a very fragile quality specimen so many precautions need to be taken. Selection of site for skin puncture is critical to avoid harming the child and to maximize blood flow. For patients less than 1 year of age a heel puncture is advised, and should be performed with the following limitations in mind:

- Select a site, being careful to avoid the Achilles tendon area and the bottom (plantar) surface of the foot.
- Do not use a bruised, swollen, or recently puncture site. Select a new site for each puncture to avoid the possibility of introducing infection into a previous site.

Good capillary circulation is of paramount importance for an acceptable sample. Use a warmed (but **not** hot) 39-44 C towel or diaper to wrap the foot in. An infant "heel warmer" may also be used for 3-5 minutes prior to puncture. Ensure the heel warmer is facing away from the infant when activated.

1. Cleanse the site with an alcohol swab and dry.
2. Puncture with 1 stroke perpendicular to the skin surface.
3. Wipe away the first drop and collect the specimen by allowing it to flow into the collection vessel. Avoid squeezing near the puncture site but instead using a gentle pressure away from the site. Squeezing may introduce contaminants, hemolysis, or start premature clotting of the specimen. Work rapidly to collect sample before clotting initiates. A repeat puncture is preferable to a poor specimen.
4. Apply pressure when done and check for continued bleeding.
5. Bandage the puncture site.

#### H. Urine Specimens

One of the easiest specimens to collect and sometimes most valuable is the urine specimen. These fall into 2 broad classes, random and timed.

##### 1. Random Urines

The preferred random specimen for non-timed tests is either a clean catch midstream or catheterized collection.

- a. Catheterized specimens will be collected by nursing staff by aseptically removing approx. 15 of urine from the catheter set and transferring to a sterile specimen container.
- b. Clean catch midstream specimens are usually collected by the patient who should be given the following instruction:
  1. Cleanse the urethral area and surrounding tissue using a antiseptic (benzalkonium chloride) towelette.
  2. Urinate a small amount into the toilet.
  3. Urinate into a sterile cup being careful to avoid skin contact with the specimen or container.
  4. Cap and seal container.

## 2. Timed Urine Collection (24 or 12 Hour)

Timed urine is collected by having the patient empty his/her bladder and discards this sample at the beginning of a timed period. All subsequent urine is collected during the time period. The bladder should be emptied and this urine is added to the entire collected specimen at the end of the timed period.

### I. Microbiology Specimens

Collection of microbiology specimens by the laboratory is limited to those specimens not requiring opening or debridement of a wound. For those specimens, specific detailed instructions are available in the microbiology section. The usual specimens collected for laboratory analysis include throat, urine, sputum and stool cultures. Immediate transportation to the laboratory for processing is imperative for all microbiology specimens. All specimens must be placed in a sealed Biohazard bag prior to transport.

#### 1. Throat

Using suitable collection system (polyester-tipped swab with ampule of transport media to prevent drying) swab inflamed area of throat being careful not to contaminate with mouth flora. Transport to laboratory immediately. Swabs which have dried during a delay in transit are not acceptable.

#### 2. Urine

Clean catch midstream collected in a sterile container. PEDI-bag devices may be used for collection of infant urine after applying around urethra.

#### 3. Sputum

Obtain specimen resulting from deep cough. If possible, have patient rinse mouth well and gargle with water (not with mouth wash) prior to collection. Specimen should be expectorated directly into a widemouth sterile screw cap container.

#### 4. Stool

- a. For stool culture and stool examination for ova and parasites, a plastic lidded container is provided by the laboratory.
- b. Patient should defecate directly into container whenever possible.
- c. If patient is unable to defecate into container, a clean piece of newspaper can be placed on the toilet between the seat and the bowl and a portion of the stool can be scooped into the container – or a **clean** bed pan may be used for patients who cannot leave their bed. For infants, a clean piece of waxed paper can be used as a diaper liner and the resultant specimen can be transferred to the container.
- d. Fecal specimens scooped from the water in the toilet or contaminated by urine are unacceptable.

### J. Handling of Specimens after Collection

Most laboratory specimens are quite fragile and unstable after collection and should always be transported to the laboratory within 1 hour. There are also tests that require **immediate** transport of specimens to the laboratory, possibly on ice, at room temperature or in a heat block, so if in doubt transport immediately and observe collection instructions for each test requested. STAT specimens are identified by a bright orange sticker which says "STAT" in order to expedite testing.

#### A. General Procedures

1. Vacutainers – All vacutainer tubes containing an additive are mixed by gently inverting 6-8 times.

2. Microtainers – Since the first drop will have an excess of tissue fluid, this should be blotted away and not collected for testing. Ensure microtainers are not overfilled so that correct dilution ratio is observed.
3. Culture Swabs – These come either as dry swabs with transport media, or as total anaerobic systems. Microbiology staff can provide information as to which is most appropriate for use. These should always be transported to the laboratory immediately for processing.

**B. Specific Procedures**

1. Serum – Obtained from blood that is collected without anticoagulants allowed to clot, centrifuged, and the clear fluid removed for testing.
2. Clotted Whole Blood – Specimen is retained in the original collection tube without additive.
3. Plasma and Whole Blood – Collected in a tube with an additive which prevents clotting. Those additives commonly include oxalate, heparin, EDTA, and citrate. Select correct additive for testing required or contamination may occur. Plasma is removed by centrifugation.

**C. Contamination/Isolation**

Patients are frequently hospitalized for treatment of infections and may, therefore, be placed in an isolation room for protection. Instructions on how to approach the patient and handle items that enter or leave the room are clearly posted next to the patient's door.

Any specimen received by the laboratory is considered capable of containing infectious agents. Standard blood and body fluid precautions must always be employed. All collection tubes are clearly labeled with an expiration date, after which they may not be used and should be discarded. Tubes must be checked prior to use to ensure they are not used beyond their expiration date.

# Specimen Labeling Specimen Receipt Collection of Reference Lab Specimens

Reference Lab specimens are collected as directed in MobiLab notes or on Meditech collection label.

## Attachments:

### Approval Signatures

Step Description	Approver	Date
Laboratory Medical Director	Brady Feliz: Physician, Laboratory Medical Director	08/2017
	Olive Romero: Director of Laboratory Services	08/2017