

# Phlebotomy Guide

## Specimen Collection

- Scan patient and print labels at the bedside after identification for proper PPID
- Once a tourniquet has been placed on the patient, it must not be on longer than 1 minute
- Proper order of draw must be followed for the most accurate results
- Invert each tube after filling (4-8 times); inversions should not be fast or harsh
- Label each tube to the specimen labeling requirements (guide on last page)
- Only after specimen collection should labels be scanned as collected; scanning them prior (or not at all) may cause rejected specimens and redraws.
- Send to lab following collection, waiting no more than 10-15 minutes
- Ideally, one tube per barcoded label should be drawn

## Order of Draw

### Blood Cultures

#### Blue (Sodium Citrate) 1.8mL and 2.7mL; cannot have clots

- Coag Testing
- PT, PTT, APTT, Factor Testing
- Required to be filled to the top clear fill line; any short samples will be rejected and required to be redrawn.
- Platelet Function Testing must be walked to the lab, it cannot be sent via pneumatic tube.

#### Blue-White (Sodium Citrate) 2mL; cannot have clots

- Coag Testing
- Plavix & Aspirin Testing
- Not interchangeable with the standard blue top, must be walked to the lab

#### Red (non-additive) 6mL; tube will clot

- Chemistry Testing
- Drug Levels, Medication Levels, Send Out Testing

#### Gold (SST) 5mL; tube will clot

- Serology, Immunology, Infectious Disease, Send Outs, Backup for most Chemistry testing
- TSH, HEP B AB, HIV, Rubella, Preg Qual, Lyme AB...

#### Light Green (Lithium Heparin) 3mL or 4.5mL; cannot have clots

- Chemistry Testing
- CMP, BMP, Potassium, Magnesium...

#### Dark Green (Sodium Heparin) 4mL; cannot have clots

- Chemistry Testing, Hematology Testing
- Used for TEG with Platelet Mapping

#### Lavender (K2EDTA) 4mL or 6mL; cannot have clots

- Hematology Testing, Chemistry Testing
- CBC, a1C, Ammonia, Sedimentation Rate
- If testing requirements state a 4mL tube, a 6mL cannot be used in replacement.

#### Pink (K2EDTA) 6mL; cannot have clots

- Blood Bank Testing Only
- While the same additive as the lavender top, the pink tube specifically denotes blood banking.

#### Gray (Sodium Fluoride Potassium Oxalate) 2mL or 4mL (actively receiving both); cannot have clots

- Chemistry/Send Outs; Lactic Acid and Cyanide only
- Required to be filled to the second thick line on the manufactures label
- Any short samples will be rejected and required to be redrawn

## Microtainer Order of Draw

- Lavender; most likely to clot, along with inversions, roll the tube back and forth to promote mixing additive
- Green
- Gold
- Red
- Microtainers should always be collected in the reverse order of draw.
- It is unacceptable to scoop blood from a venipuncture site, into a microtainer.

## Specimen Labeling Requirements

- Labels are required to be placed so the patient's name is at the top of the tube. This ensures the barcode reader on the automation line can scan and properly distribute.
- The label should go over the manufacture label, leaving a 'viewing window' for the lab techs to see the specimen.
- The barcoded label must always be placed on the tube. It is unacceptable to place the square aliquot on the tube unless using a microtainer, then the barcoded label must be sent to the lab with the specimen.
- Each tube is required to have an individual label. It is unacceptable to group several tubes under one label.
- Any hand writing on the tube should be done in **RED** ink.
- Never peel labels off and attempt to relabel with them. Always reprint new labels instead.

## Blood Bank Bands

- If a pink top tube is ordered, a corresponding blue blood bank band is needed.
- Preparing a new blood bank band:
  - Place an aliquot from a patient specimen label on the paper band insert.
  - The patient's name and MRN should be visible on the face side of the insert. If an aliquot is unavailable, label it with the patient's full name, MRN, & DOB using a patient chart label, beaker extra patient label or handwritten. Place one of the available 5-digit BBID# stickers on the paper insert; left of the perforation Slide insert into the blue arm bard, tear at the perforation and place the band on the patient so the patient info is forward facing, clasp band with other bands.
- Before labeling the tube with the barcoded label, place the other 5-digit BBID# on the **TOP** of the tube, horizontally.
- Ensure there is no patient information cut off the barcoded label, FDA requirements state that no information (Name, DOB, MRN, etc.) may cut off. Having any information cut off will cause a rejection and a redraw. To avoid rejection, place second aliquot around the bottom of the tube.
- If a patient is already banded, do not reband. Handwrite the 5-digit BBID# onto the new label in red ink
- If a patient has two blood bank bands on, call Blood Bank (3-6760) and confirm which band is being used and remove other.
- If the patient name on the band is illegible, the band may be removed, and patient information replaced (keep the same BBID# and place back on the patient. Only the person who removed the band may re-band with the same insert and BB#s.
- The blood bank band must remain on the patient to stay valid. The band cannot be on the table, desk, chart, bed, or whiteboard. Two bands may be put together to accommodate for swelling, or an ankle may be used.
- If you are moving bands for any reason, please move all bands (including blood bank) so they are together.
- If the patient is missing the white ID band, a blood bank band cannot be placed on the patient.

## Blood Culture Collection

- A 30-second vigorous scrub with the Chlorhexidine Gluconate swab stick is used for cleansing skin.
- The site must be kept as sterile as possible.
  - The site must not be repalpated after cleansing (may cause contaminations)
  - All syringes should be kept in sterile packaging before filling & placed back into sterile packaging after filling.
  - Placing unused or filled syringes on the bed, bedside table, or carts may cause a contamination.
- All blood culture bottles must be prepped before filling. Using an alcohol swab, clean the tops and sides of the plastic cap. Pop caps and another alcohol swab will be used to clean the rubber stopper. Leave swabs in place until filling
- Blood Culture Bottles:
  - Green Top (aerobic) - needs to be drawn first in sequence. Holds 5-10mL
  - Orange Top (anaerobic) - needs to be drawn second in sequence. Holds 5-10mL
  - Yellow Top (Pediatric Aerobic/Anaerobic) - Single bottle used for pediatric patients. Holds 1-4mL
  - Peds bottles may be used on adults, though an adult set is preferred as it can catch infections quickly and efficiently.
  - 1-4mL = Pediatric Bottle; 5-9mL = Green Top Aerobic Bottle; 10+ mL = Green Top and Orange Top
- All blood cultures are documented correctly.
  - When documenting, each set must be at least one minute apart, if from separate sites OR 10-15 minutes apart if from the same site. For example: Left AC at 1201, Right AC at 1202.
  - The source (site) should be documented as well (Antecubital, left; hand, right; ART Line, PICC Line, etc.).
- Labeling: when labeling blood cultures, the accession numbers should be kept together for each set (i.e. set 1 will have accession number ending in 49, set 2 will have accessions numbers ending in 50.
- Additional Information:
  - \* **Blood culture should never be collected via a peripheral IV or IV start.**
  - \* Cultures may be collected from Central Venous Catheter Lines **only** if the Dr wants to determine if line is contaminated. The cap on the central line must be replaced before drawing for blood cultures
  - \* If more than one set of blood cultures is ordered, alternate sites must be used for each. Both sets may not be collected from a line unless specifically requested by the Physician. If one set is a line collect, the second Must be a poke.
  - \* If a draw is unsuccessful and must be repeated, the sterile prep must also be repeated.
  - \* If the patient has an allergy to chlorhexidine, alcohol followed by iodine may be used, still scrubbing for 30 seconds total.

## Reading Specimen Labels

Many specimens with special requirements will have specific details shown underneath the tube color.

For any label stating "Send on Ice", ice should be placed in the zip portion of a biobag with the tube in the outside pocket.

These specimens can include:

**Lactic Acid**

**Ammonia**

**Homocysteine In House**

These specimens must be sent to the lab within 15 minutes of **documented collection**. If not sent to the lab within 15 minutes, it will cause specimen rejection and will need to be redrawn.

Some requirements such as "Do Not Open" are for the lab techs. The caps of these tubes must not come off.

Light Protect Specimen: place tube in an amber bag or glove then place into a biobag

If "Test Directory" is stated, using CovenantLab.com or calling Central Processing should be done to ensure proper collection

Each label indicates the color of the tube it must be placed on. If these labels are placed incorrectly, it will cause cancellations will lead to cancellation of specimens and delays in results.

## Venous Blood Gas

A Venous Blood Gas/Profile Critical Care specimen is drawn in a light green lithium heparin (separate from any additional chemistry testing) and needs to be placed on ice.

Specimen will need to be given to Respiratory Therapy for testing. Do not send specimens to the lab.

## Capillary Specimens

After poking for a capillary specimen, it is important to wipe the first drop away. Failure to do so, may cause clotting.

There are no microtainer alternatives for the Blue Tops or Gray Tops. These tubes cannot be collected via capillary.

Always warm the finger for a few minutes before poking, it helps promote capillary refill and a better sample

When collecting, ensure that there is no scraping of the finger. All blood must come from drops into the tube, not scraped.

## TEG Testing

All TEG testing requires that a single blue top discard tube be drawn first. Specimen should be drawn with a 21g vacutainer or larger to promote specimen quality and allow for best results.

TEG: One Blue Top Sodium Citrate Tube

TEG Trauma: One Blue Top Sodium Citrate Tube

TEG Platelet Mapping: One Blue Top and One Dark Green Tube drawn within the same poke.

## Special Requirement

There are specific tests that Covenant offers that requires specialty tubes such as: Karius, QuantiFERON TB Gold, Heavy Metals

To obtain the tubes needed, Central Processing in the Main Lab will need to be called.

If a Miscellaneous Test is ordered, the Main Lab may need to be contacted to determine which tube is required and any special collection or transport considerations that might be needed.

## Additional Considerations

When drawing an Ethanol (ETOH) level, iodine must be used to cleanse the skin. If there's an allergy, then use soap & water to cleanse. Using alcohol can cause false elevations in results.

If using a vacutainer to collect, the tube should be disengaged for every readjust done.

For any specimens that need to be placed on ice, it is advised that a biobag of ice is taken into the room before collection.

\*If ice is kept in separate room from biobags, the biobags cannot be taken in as they are considered dirty.

All draws must come from below a running IV, as well as the tourniquet being placed under the running IV

For any Heparin draws, the IV must be stopped for 3 minutes before collecting from the same limb

Once blood has been transferred into a tube, it cannot be poured into another. This will cause critical results and redraws.

If results are inconsistent on a lab draw, all the orders from that specific time frame will need to be recollected.

No extra tubes should be drawn on a patient. Extra tubes are rarely used (1-2%) and do create backups in the lab.

If a specimen comes from a line draw, please update the collection type in EPIC. The default is "nurse collect venipuncture" and updating it can allow the lab to more accurately put out results or errors in draws. Your reference ranges may change!

If using a microtainer for Blood Bank, 4 in total will be needed.

When removing the needle, pressure should not be placed until **after** the needle has been removed.

Vacutainers will always give the best sample quality, followed by straight needles with syringe attached.

If unable to collect one tube for every label, lab may be consulted to determine which labels to place.

## Prevention of Clotted Specimens

Inversion of tubes as soon as you remove them from the vacutainer or a syringe. This immediate inversion will allow for proper mixing of the anticoagulants

Timely transfer the blood from the syringe(s) to tubes. Blood starts clotting immediately and because the syringes don't have an anticoagulant in them, it must be transferred into tubes quickly after collection

Practice extra caution when using a micro-lavender tube. These tubes have a spray-coated EDTA and it can be very difficult to capture all the EDTA to prevent clotting. When using a microtainer, attempt to get the blood down all sides of the collection tube. Once done, perform inversions and then roll the tube to capture and mix the rest of the EDTA.

Do not invert filled syringes. Inversion of these syringes actually **promotes** the clotting factors.

## Prevention of Hemolyzed Specimen

When using syringes ensure that the plunger is only 1-2mLs ahead of the blood line. Pulling back too hard and/or too fast can increase the pressure and burst the red blood cells.

Make sure the appropriate needle size is being used. A gauge that is too large or too small for a vein can increase the risk of pressure on the red blood cells.

Always follow proper inversions, inversions should be gentle and turning the tube 180 degrees. Tubes should not be shaken, dropped, thrown, tossed, etc.

Prolonged tourniquet use should be avoided, red blood cells can break down in stagnant blood.

## Prevention of Quantity Not Sufficient Specimens

To prevent specimens from rejection for being insufficient quantity, there are minimum fill volumes for each tube.

Blue Sodium Citrate: Required to be filled to the top clear line. Specimen will be rejected if it is filled below the line.

Blue-White Sodium Citrate: Required to be filled to the black triangle mark. Specimen will be rejected if filled below the mark.

Red Non-Additive: Minimum of half-filled (roughly 2.5mL)

Gold SST: Minimum of half-filled (roughly 2.5mL)

Light Green Lithium Heparin: Minimum of half filled if a 4.5mL tube is used and a minimum of 2mL if a 3mL tube is used

Dark Green Sodium Heparin: Required to be filled to the top white line (seen just above the words BD Vacutainer)


Lavender K2EDTA: Minimum of 1mL

Pink K2EDTA: First type & screen should be completely full if possible, additional draws minimum of 3mL

Gray Sodium Fluoride Potassium Oxalate: Required to be filled to the second indicator on the tube, the line is strictly on the gray of the manufacture's label. We do actively receive both 2mL and 4mL tubes.

Always completely fill any send out tubes

For additional guidance, the test directory (CovenantLab.com) may be utilized. For any test that requires serum or plasma, double the minimum fill volume listed.



**Properly Labeled Specimen**

- Label placed on specimen, so patient's name is at the top of the tube
- Place label on top of manufacturer label
- Vertical barcode alignment – barcode should be closer to the cap
- Leave a window so lab can see the specimen
- Double check all labels and document collection information (date, time, collector) in Epic before sending them to laboratory
- If placing a new Blood Bank ID sticker on specimen, place at the top of the tube, between the cap and the specimen label – be sure not to cover any patient information on specimen label



**Improperly Labeled Specimens**

- Upside Down**  
Label is not placed with patient name at top. (Notice location of specimen barcode)
- Wrong Orientation and Crooked**  
Labels not able to be read by barcode readers
- Overlapping Cap**  
Unable to remove the cap to access specimen without removing label
- Bunching Specimens**  
EACH specimen needs its own individual label - never bunch/group specimens together on with 1 label