

Order of Draw of Blood Collection Tubes

The procedure follows guidelines set forth by the Clinical and Laboratory Standards Institute™ (formerly known as NCCLS) in order to insure that quality specimens are collected for laboratory testing.

- All plastic tubes must be **gently inverted** 5-10 times to provide thorough mixing of the additives.
 - Shaking the tube may cause hemolysis of the blood.
1. **Blood cultures should always be drawn first** to reduce the potential hazard bacterial, fungal, quantitative, CMV and/or other specimen contamination. Blood culture vials and tubes:
 - a. Blue, Purple and Pink culture vials contain enriched Soybean-Casin broth with CO₂ and are used for bacterial and fungal blood cultures.
 - b. Yellow stopper tubes contain nutrient solution and Black stopper Isolator tubes contain a blood lysis solution.



2. Light Blue tubes must be drawn prior to collection of serum tubes to prevent contamination with clot activator and interference with the coagulation cascade.
 - a. Light Blue stopper tubes contain sodium citrate most often used for coagulation studies.
 - b. 1 mL of blood into a light blue 3.2% citrate discard tube must be collected prior to drawing light blue top tube(s) for the following special coagulation studies: Platelet Function Screen and Whole Blood Platelet Aggregation of Platelet Mapping. A discard tube is not required for any other Special Coagulation testing.

3. Serum tubes are coated on the inside walls with clot activator because the surface of a plastic tube does not promote coagulation.



- a. Royal Blue (non-additive) stopper tubes are metal-free and are mainly used for toxicology, trace metal analysis and nutritional studies.



- b. Red stopper tubes are used mainly for serology and chemistry tests. They may also be used for testing in Blood Bank.



- c. SST (serum separator tubes) have a red stopper with a yellow ring on top and are used for a wide variety of testing. These tubes contain a gel which separates the cells from the serum when the tube is centrifuged.

4. Tubes with additives:



- a. Green stopper tubes contain **lithium** heparin and are used for most tests that require plasma. Green stopper tubes are also used for NH₃ which requires immediate transport.



- b. Green stopper tubes containing **sodium** heparin are used for special testing such as Cytogenetics. The tubes are available on units in 9 mL size only.



- c. PST/PLAST (plasma separator tubes) have a green stopper with a yellow ring on top and are used for a wide range of testing. These tubes contain a gel which separates the cells from the plasma when the tube is centrifuged. An SST is an acceptable substitute for any testing that identifies PST/PLAST as the primary tube.



- d. Lavender stopper tubes contain EDTA and used for hematology studies.



- Royal Blue (EDTA) stopper tubes are mainly used for whole blood heavy metal testing (i.e., lead, manganese, chromium).



- e. Pink stopper tubes are used for testing in Blood Bank, i.e. blood typing, crossmatching, and antibody screens.

- f. Research kits (collected after all diagnostic labs have been obtained).

Exceptions to the order of draw:

- When the routine order of draw has the phlebotomist drawing a large number of one kind of tube before drawing others, it may be advisable to draw at least one of each color before drawing the large group, if it appears there may be difficulty obtaining all of the requests. This way, if the flow stops early, the phlebotomist has a better chance of getting all the tests done.
- When collecting blood from any VAD which is routinely flushed with heparin, coagulation tubes should be collected by venipuncture. This is the best option for pediatric patients. If venipuncture is not possible:
 - Draw the light blue last after 20 mL of blood has been withdrawn for other testing or as waste. Just prior to drawing the light blue tube as the last tube, draw one mL into a discard light blue to prevent cross contamination from the additive of a tube that was previously drawn.
 - For pediatric patients, one must consider the maximum draw volume that is allowed.
 - The procedure above can be followed using a 10 mL waste instead of 20mL.
 - Drawing the minimum specimen volume should be the norm for pediatric patients.