

Specimen Collection and Processing Guidelines for Coagulation Testing

Collection of Coagulation Specimens

1. A clean venipuncture is essential to avoid platelet and coagulation activation. A discard tube must be used when drawing with a winged blood collection set. It is important to remove the air from the winged collection kit to ensure proper blood volume is obtained.
2. **Collection Tube:** Blood should be collected in blue-top 3.2% buffered sodium citrate tube.
3. **Fill Volume:** Evacuated collection tubes must be filled to completion to ensure that a 9:1 blood-to-anticoagulant ratio is achieved. Under-filling of citrate collection tubes results in an increased anticoagulant-to-blood ratio and can extend clot-based coagulation assays. Note: Never combine two under-filled tubes together.

Please print and use the Volume Guide for Coagulation Testing to ensure proper draw volume.

4. **Mixing:** Mix specimen gently by inverting tube end over end a minimum of 3-4 times to ensure adequate mixing of the anticoagulant with the blood. Avoid vigorous mixing.
5. Observe for the presence of clots, specimens containing fibrin clots will be rejected.
6. Avoid contamination of the specimen with heparin from indwelling lines. If sample is obtained from indwelling lines, the line should be flushed with 5mL of saline, followed by a 5 mL blood discard.

Platelet Poor Plasma Preparation

1. Creating Platelet poor plasma should ideally take place within 1 hour of collection time; however it must be completed within 4 hours of collection time.
2. Centrifuge blue-top tube for 10 minutes.
3. Using a plastic transfer pipette carefully remove plasma from cells, being careful not to disturb the cells.
4. Deliver plasma into plastic aliquot tube, cap and re-centrifuge for 10 minutes.
5. Using a second plastic pipette remove the top portion of plasma, leaving approximately 250µL undisturbed in bottom of the tube.
6. Transfer the plasma into a properly labeled plastic aliquot tube and freeze.
7. Each aliquot tube should also be labeled with a "platelet-poor plasma" sticker.
8. Transport to the laboratory frozen surrounded by an adequate amount of dry ice. Previously frozen specimens that have thawed during transport are unacceptable for testing.

Volume Guide for Coagulation Testing

Minimizing preanalytical errors for Coagulation tests.

- Assemble needle in holder; always fully seat and hold a citrate tube on the back end of the needle while filling
- Allow the tube to fill until the vacuum is exhausted and blood flow ceases
- Tubes should fill between $\pm 10\%$ of the stated draw volume of the tube.¹
- A discard tube (without additives) must be used if only a citrate tube is to be drawn using a winged blood collection set. It is important to remove the air from the blood collection set to ensure the proper blood volume is obtained in the coag tube
- Do **not** fill tubes from other tubes or combine two partially filled citrate tubes
- If the specimen is drawn with a syringe, do **not** fill the BD Vacutainer® Citrate tube beyond the maximum fill level. Do not force blood into tube
- Immediately after draw, gently invert tube three to four times; do **not** shake

BD Vacutainer® Plus Plastic Citrate Tube

BD Vacutainer® Plus Plastic Citrate Tube Draw Volume Guide

Sufficient volume achieved if blood drawn falls above minimum fill indicator. For blood transfer, **do not** fill above illustrated dashed maximum line.

Note: The quantity of blood drawn into evacuated tubes varies with altitude, ambient temperature, barometric pressure, tube age, venous pressure and filling technique.

Now with Minimum Fill Indicator
Represents minimum volume of blood required for appropriate analysis

Ref. # 363083
2.7 mL Draw Tube
13 mm x 75 mm Full Draw

Ref. # 363080
1.8 mL Draw Tube
13 mm x 75 mm Full Draw

Maximum Fill*
Minimum Fill Indicator

*According to CLSI guideline, Dec. 2003, Doc. H1-A5, Vol. 23, No. 33.

References

1. Clinical Laboratory Standards Institute. Tubes and Additives for Venous Blood Specimen Collection; Approved Standard — Fifth Edition, 2003; 16(13):27. Document H1-A5.
2. Clinical Laboratory Standards Institute. Collection, Transport, and Processing of Blood Specimens for Testing Plasma-based Coagulation Assays; Approved Guideline — Fourth Edition, 2003; 15(20):4. Document H21-A4.