

## Reducing Hemolysis – UCH Clinical Laboratory

Difficult venipuncture and improper handling of collected specimens increases the risk of specimen hemolysis and rejection. Certain laboratory tests are inaccurate when specimens are hemolyzed. The following guidelines are used during collection and delivery of specimens to reduce the degree of hemolysis.

### Venipuncture

- Use straight needle venipuncture. Avoid collecting through a VAD or during an IV start.
- The largest bore needle available should be used. Typical needle sizes for venipuncture that help reduce hemolysis range from 16-21 gauge.
- Avoid winged infusion sets (i.e., “butterflies”) with small-gauge needles attached to vacuum tube adapters.
- When using a syringe:
  - Make sure the needle is fitted securely on the syringe to avoid frothing.
  - Apply gentle, steady pressure when pulling the plunger back. Avoid pulling the plunger back too forcibly.
  - After safely removing the needle, gently transfer the syringe’s contents into a non-gel tube by drizzling the blood down the side of the tube. Use a plain Dark Green no gel tube (**Lithium Heparin** only) or a Red top no gel in order to reduce damage to the red blood cells.
- Limit tourniquet time to 1 minute or less before accessing the vein. Discontinue sluggish draws that can be caused by collapsed veins and improper needle placement.
- Gently invert tubes with additives as recommended by the manufacturer of the tube. Avoid vigorously mixing.
- Fill tubes to the correct volume. Underfilling the tube can promote hemolysis.

### Capillary Blood Collections

- Allow alcohol cleansed puncture site to fully air dry
- Avoid “milking” the puncture site
  - Pre warming increases capillary blood flow and may minimize the necessity to exert additional pressure to the site
- Mix well, but avoid vigorous, excessive mixing of the specimen after collection

### Delivery

- To avoid shaking, gently hand deliver the specimen to the Clinical Laboratory. Avoid use of the pneumatic tube station as this increases the risk of red blood cell damage.
- Keep the specimen in a vertical, closure-up position on delivery. The position promotes complete clot formation and reduces agitation of the tube contents.
- Unit representative should inform the lab staff that they are delivering a fragile sample that requires special handling and centrifugation.



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### **References**

Collection of Diagnostic Venous Blood Specimens; Approved Guideline – Seventh Edition – GP41 ED7:2017 CLSI, 2017

Procedures for the Handling and Processing of Blood Specimens for Common Laboratory Tests; Approved Guideline – Fourth Edition – GP44-A4 CLSI, 2010

WHO Guidelines on Drawing Blood; Best Practices in Phlebotomy – World Health Organization, 2010