


















Specimen Collection Tubes


Remember: Always check the expiration date on the tubes and transport kits prior to collection.

Expired tubes will NOT be processed by the laboratory, and the sample must be redrawn to ensure accurate results.

The vacuum blood collection tube does not fill completely to the stopper, but only to the required level. Proper dilution of the blood and additive in the tube is critical. Be sure that each tube is allowed to fill until the blood flow stops. If unsure, wait until an additional 1-2 seconds before removing the tube from the holder and withdrawing the needle from the arm. Improperly filled tubes will be rejected by the laboratory, and the sample must be re-drawn to ensure accurate results.

| Order of Draw | | Order in which the tubes should be collected to minimize cross contamination | Invert Tube | Effects of under filling. |
|---|------------------------------------|---|-------------------------------|--|
|  | <u>Clear</u> | Discard Tube- *When using a winged blood collection set (butterfly) for venipuncture and a <u>coagulation (citrate) tube</u> is the first specimen to be drawn, a <u>discard tube should be drawn first</u> . This discard tube must be used to fill the tubing's "dead space" with blood. This important step will ensure maintenance of the proper blood-to-additive ratio of the blood specimen. This discard tube should be a non additive or coagulation tube. | N/A | |
|  | Bact/Alert Bottles | Bact/Alert bottles used for blood cultures. Blood in Bact/Alert bottles using aseptic techniques. Collection recommendations: Adult: 5-10 mL per bottle, Collect two from separately prepared sites. Pediatric: 1-4 mL in yellow pediatric bottle. | Invert tube gently 3-5 times. | An optimal volume of blood per culture is critical because the concentration of organisms in most cases of bacteremia is low, especially if the patient is on antimicrobial therapy. |
|  | <u>Light Blue</u> | (Na/citrate 3.2) *When using a winged blood collection set (butterfly) for venipuncture and a <u>coagulation (citrate) tube</u> is the first specimen to be drawn, a <u>discard tube should be drawn first</u> . | Invert tube gently 8-10 times | Coagulation results are erroneously prolonged. (a completely filled tube is required) |
|  | <u>Gold</u> | (SST) Gel barrier tube. Allow to clot for 30 minutes, before centrifuging. | Invert tube 4-5 Times | Poor barrier formation: Insufficient sample |
|  | <u>Red</u> | Clot Activator. Allow to clot for 30 minutes, before centrifuging. | N/A | Insufficient sample |
|  | <u>Royal Blue (Dark/Navy) Blue</u> | Clot Activator. Allow to clot for 30 minutes before centrifuging. Trace elements serum tube.  | Invert tube gently 8-10 times | Choose the correct Royal (Dark/Navy) tube they look similar. Remove cells promptly after centrifugation and store in a metal free vial if appropriate. |
|  | <u>Green</u> | Sodium or Lithium Heparin. The green top heparin tubes contain either the lithium or sodium salt of the heparin anticoagulant. Lithium heparin should not be used for lithium determinations. All of the heparin is spray dried on the wall of the tube. | Invert tube gently 8-10 times | Using plasma instead of serum speeds the testing process by eliminating fibrin clots and yielding greater specimen volume. |
|  | <u>Royal Blue (Dark/Navy) Blue</u> | Na ₂ EDTA-Trace element analysis requiring whole blood. Trace Elements EDTA for whole blood.  | Invert tube gently 8-10 times | Choose the correct Royal (Dark/Navy) tube they look similar. |

|  | <u>Lavender</u> | (EDTA) stands for Ethylenediaminetetracetic acid. EDTA functions by binding calcium in the blood and keeping the blood from clotting. | Invert tube gently 8 -10 times. | Erroneously low blood cell counts and hematocrits; morphologic changes to RBC's staining alterations. | | | | | | | | | | | | |
|---|------------------------------------|--|---------------------------------|---|----------------|-------------------|----------|----------|-------------|---------|---------|----------|----------|----------|------------------------------|--|
|  | <u>Pink</u> | (k2EDTA) Plus tubes are intended for routine immunohematology testing, including red cell grouping, Rh typing and antibody screening. **Blood Bank samples require the collector who confirmed positive patient identification sign the ordering requisition and the special labeling requirements indicated on the tube. | Invert tube gently 8- 10 times | Positive screening results require additional testing (work-up). Insufficient sample would require re-collection. | | | | | | | | | | | | |
|  | <u>GRAY</u> | Potassium Oxalate/sodium fluoride. Sodium fluoride acts as the glycolytic inhibitor and prevents the cells in the blood from utilizing the glucose. The glucose is stable for 24 hours. | Invert tube gently 8-10 times | | | | | | | | | | | | | |
|  | <u>ACD Vacutainer</u> | <p>ACD is available in two formulations. Both solutions are comprised of trisodium citrate, citric acid and dextrose. The formulations are as follows:</p> <table border="1" data-bbox="443 550 1392 735"> <thead> <tr> <th></th> <th>ACD Solution A</th> <th>ACD Solution B</th> </tr> </thead> <tbody> <tr> <td>Trisodium citrate</td> <td>22.0 g/L</td> <td>13.2 g/L</td> </tr> <tr> <td>Citric Acid</td> <td>8.0 g/L</td> <td>4.8 g/L</td> </tr> <tr> <td>Dextrose</td> <td>24.5 g/L</td> <td>14.7 g/L</td> </tr> </tbody> </table> | | ACD Solution A | ACD Solution B | Trisodium citrate | 22.0 g/L | 13.2 g/L | Citric Acid | 8.0 g/L | 4.8 g/L | Dextrose | 24.5 g/L | 14.7 g/L | Invert tube gently 3-5 times | Choose the correct solution for test required, both tubes look the same. |
| | ACD Solution A | ACD Solution B | | | | | | | | | | | | | | |
| Trisodium citrate | 22.0 g/L | 13.2 g/L | | | | | | | | | | | | | | |
| Citric Acid | 8.0 g/L | 4.8 g/L | | | | | | | | | | | | | | |
| Dextrose | 24.5 g/L | 14.7 g/L | | | | | | | | | | | | | | |
|  | <u>SPS</u> | Sodium Polyanetholesulfonate 6.0 mg Used for AFB culture on blood. | Invert tube gently 8-10 times | | | | | | | | | | | | | |
|  | <u>SPS</u> | Sodium Chloride | Invert tube gently 8-10 times | | | | | | | | | | | | | |
|  | <u>Quanti-FERON-TB Gold</u> | One Cellestis QuantiFERON-TB Gold In-Tube collection kit, each containing three tubes, nil, TB, and mitogen) Immediately after filling tubes, shake then 10 times just firmly enough to ensure that the entire inner surface of the tube is coated with blood to solubilize antigens on tube walls. Over energetic shaking may cause gel disruption and could lead to aberrant results. If the blood is not incubated immediately after collection, remixing of the tubes by inverting 10 times must be performed immediately prior to incubation. | Invert tube gently 8-10 times | | | | | | | | | | | | | |

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|--|--|--|-------------------------------------|--|
|  | <p><u>NMR</u> <u>LipoProfile</u> <u>(Includes,</u> <u>LIPID)</u></p> | <p>NMR includes a LIPID Profile (CHOL, TRIG, HDL, LDL) Z serum clot activator (Greiner) centrifuge to separate serum from cells within 1 hour of collection or keep refrigerated and centrifuge within 4 hours. Do no aliquot sample into a pour off tube. Keep in original collection tube.</p> | <p>Invert tube gently 3-5 times</p> | |
| | | <p>Additional specialty collection tubes are available by contacting the Laboratory Client Service at 440-329-7531.</p> <p>For specific test requirements go to: www.testmenu.com/EMHhealthcare</p> | | |

Why invert the tubes?

- Most tubes contain an *ADDITIVE* or *CLOT ACTIVATOR* that needs to be mixed with the blood sample.
- Tubes with anticoagulants such as EDTA needs to be mixed to ensure the specimens does not clot.

How?

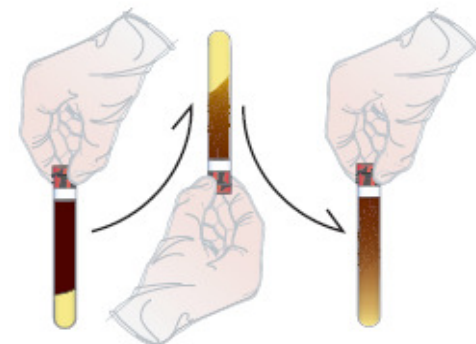
- Holding tube upright, gently invert 180 and back.
- Repeat movement as prescribed for each tube. 5-10 times

When?

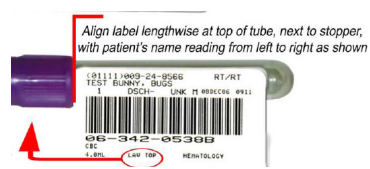
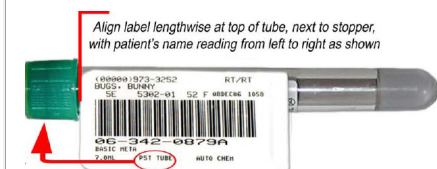
- Immediately after drawing.

Consequences if not mixed:

- Tubes with anticoagulant will clot
- SST tubes may not clot completely
- Specimens will often need to be re-collected.



When using a sticker to label the sample always place your labels straight and not wrinkled.



Label must not be wrinkled on tube.

Sample labeling:

All samples must be labeled at the bedside (in front of the patient) with the patient's full legal name, date of birth, collection date, time and site/source if culture. Label the sample container not the lid or the transport bag. Secure all containers by checking the cap or lids to insure sample integrity or avoiding any leakage.

Sample Orders:

Patient identifiers on the specimen container and the laboratory order form must match in order for the specimen to be processed. When submitting specimens for testing provide a copy of the patient's demographics, insurance card and a copy of the patient's photo ID.

Samples and supplies: Remember do not store your supplies or place samples outside (lockbox) when the weather is extreme.

Cold or hot weather can affect the vacuum within your collection tubes, causing them to malfunction. Extreme temperatures, both cold and hot weather can cause red blood cells to lyse producing erroneous results. Cell lyses is a process in which a cell is broken down or destroyed as a result of some external force or condition.

Questions: concerning collection, transport or storage, contact the Laboratory Client Services at 440-329-7531.