

# Specimen Collection and Preparation

Laboratory test results are dependent on the quality of the specimen submitted. It is important that all specimens and request slips be properly labeled with the name of the patient, collection date, and the origin (source) of the specimen, when applicable.

## Blood Collection

Most laboratory tests are performed on anticoagulated whole blood, plasma, or serum. In general, specimens should be refrigerated until placed in the courier box for transport to the laboratory. Please see our individual test directory section for specific requirements.

- **Plasma:** Draw a sufficient amount of blood with indicated anticoagulant to yield necessary plasma volume. Gently mix blood collection tube by inverting 6 to 10 times immediately after draw. If required, separate plasma from cells by centrifugation within 20 to 30 minutes.
- **Serum:** Draw a sufficient amount of blood to yield necessary serum volume. Allow blood to clot at ambient temperature, and then, separate serum from clot by centrifugation within 20 to 30 minutes. Caution: avoid hemolysis.
- **Whole Blood:** Draw a sufficient amount of blood with indicated anticoagulant. Gently mix blood collection tube by inverting 6 to 10 times immediately after draw.

## Specimen Collection Tubes Available

The following is a list of tubes referred to in SVI's specimen requirements:

- **Green-Top (Sodium Heparin) Tube:** This tube contains sodium heparin—used for collection of heparinized plasma or whole blood for special tests.  
Note: After tube has been filled with blood, immediately invert tube several times in order to prevent coagulation.
- **Grey-Top (Potassium Oxalate/Sodium Fluoride) Tube:** This tube contains potassium oxalate as an anticoagulant and sodium fluoride as a preservative—used to preserve glucose in whole blood and for some special chemistry tests.

Note: After tube has been filled with blood, immediately invert tube several times in order to prevent coagulation.

- **Lavender-Top (EDTA) Tube:** This tube contains EDTA as an anticoagulant—used for most hematological procedures.

Note: After tube has been filled with blood, immediately invert tube several times in order to prevent coagulation.

- **Light Blue-Top (Sodium Citrate 3.2%) Tube:** This tube contains sodium citrate as an anticoagulant—used for drawing blood for coagulation studies.

Note: It is imperative that tube be completely filled. The ratio of blood to anticoagulant is critical for valid prothrombin time results. Immediately after draw, invert tube 6 to 10 times in order to activate anticoagulant.

- **Light Green-Top (Lithium Heparin) Tube:** This tube contains lithium heparin and plasma gel separator—used for collection of heparinized plasma or whole blood for chemistry tests.

Note: After tube has been filled with blood, immediately invert tube several times in order to prevent coagulation.

- **Pink-Top, 7-mL (EDTA) Tube:** This tube contains EDTA as an anticoagulant—used for most Blood Bank procedures. Tube must be full.

- **Red-Top Tube:** This tube is a plain VACUTAINER® containing no anticoagulant—used for collection of serum for selected chemistry tests as well as clotted blood for immunohematology and therapeutic drug monitoring.

- **Royal Blue-Top Tube:** There are 2 types of royal blue-top Monoject® tubes—1 with the anticoagulant EDTA and the other plain. These are used in the collection of whole blood or serum for trace element analysis. Refer to individual metals in individual test listings to determine tube type necessary.

- **Serum Gel Tube:** This tube contains a clot activator and serum gel separator—used for various laboratory tests.  
Note: Invert tube to activate clotting; let stand for 20 to

30 minutes before centrifuging for 10 minutes. If frozen serum is required, pour off serum into plastic vial and freeze. Do not freeze VACUTAINER(S)®.

- **Special Collection Tubes:** Some tests require specific tubes for proper analysis. Please contact the appropriate lab prior to patient draw to obtain correct tubes for metal analysis or other tests as identified in individual test listings.

- **Yellow-Top (ACD) Tube:** This tube contains ACD—used for drawing whole blood for special tests.

## Blood Collection Guidelines from CAMC LabWorks Clients:

Since prolonged stasis may result in alteration of some chemical values, a tourniquet should be used for a minimum period of time.

Blood should not be drawn while intravenous solutions are being administered or in same syringe used to inject these solutions.

Blood specimens should be put into tube appropriate for test requested. ALL TUBES SHOULD BE INVERTED SEVERAL TIMES IMMEDIATELY AFTER DRAW.

If a patient has received radioisotope material just prior to blood drawn for any radioassay, test results may be invalid.

Gross lipemia can interfere with some assays. Therefore, it may be advisable to delay blood collection directly following a heavy meal.

### Special Instructions for Use of Serum Separator Tubes—Blood Collection, Separation, and Transport Tube All-In-One

1

Draw blood specimen using usual venipuncture technique.  
Fill tube completely.



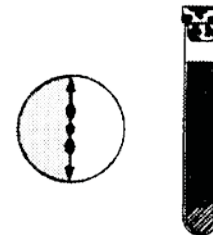
2

GENTLY invert serum gel tube 5 times to mix clot activator with blood.



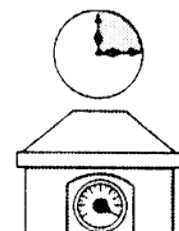
3

Allow blood to clot upright for a minimum of 30 minutes, but no longer than 1 hour.



4

Centrifuge specimen for 15 minutes at 1,000 rpm to 1,300 rpm.



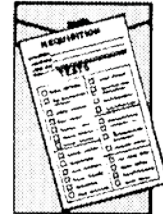
5

Remove specimen from centrifuge. Barrier will have formed, separating cells and serum.



6

Specimen in serum gel tube is now ready to be transported to the laboratory.



### Order of Tube Collection

Very often, multiple blood assays are ordered on patients. Whether the health-care worker chooses to use a multiple- draw, evacuated tube collection system or a plastic syringe, there are certain guidelines for delivery of blood and proper collection tubes.

- Evacuated Tube Collection System
  - Blood culture tubes (sterile)
  - Citrate (light-blue top) or coagulation tubes
  - Non-additive or serum tube (red-top or serum gel)
  - Heparin (green-top) tubes
  - EDTA (lavender-top) tubes
  - Potassium oxalate/sodium fluoride (grey-top) tubes
- Plastic Syringe Collection
  - Blood culture tubes (sterile)
  - Citrate (light-blue top) or coagulation tubes
  - Other anticoagulated tubes then are filled and mixed as quickly and safely as possible
  - Lastly, tubes without anticoagulants are filled (red-top or serum gel)