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, DOB, collection date, and the origin (source) of the specimen, when applicable.

If there is any doubt or questions regarding the type of specimen that should be collected, it is imperative that Client Services be called to clarify the order and specimen requirements.

Blood Collection
Most laboratory tests are performed on anticoagulated plasma, serum, or whole blood. 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 the indicated anticoagulant to yield the necessary plasma volume. Gently mix the blood collection tube by inverting six to ten times immediately after draw. If required, separate plasma from cells by centrifugation within 20-30 minutes.
- **Serum:** Draw a sufficient amount of blood to yield the necessary serum volume. Allow blood to clot at ambient temperature, and then, separate serum from clot by centrifugation within 20-30 minutes. Caution: avoid hemolysis.
- **Whole Blood:** Draw a sufficient amount of blood with the indicated anticoagulant. Gently mix the blood collection tube by inverting six to ten times immediately after draw.

Specimen Collection Tubes Available
The following is a list of tubes referred to in Boulder Community Hospital Laboratory’s (BCHL) specimen requirements:

- **Dark Green-Top Tube (Sodium Heparin):** This tube contains sodium heparin — used for the collection of heparinized plasma or whole blood for special tests.
  **Note:** After the tube has been filled with blood, immediately invert the tube several times in order to prevent coagulation.
- **Grey-Top Tube (Potassium Oxalate/Sodium Fluoride):** 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 the tube has been filled with blood, immediately invert the tube several times in order to prevent coagulation.
- **Lavender-Top Tube (EDTA):** This tube contains EDTA as an anticoagulant — used for most hematological procedures.
  **Note:** After the tube has been filled with blood, immediately invert the tube several times in order to prevent coagulation.
- **Light Blue-Top Tube (Sodium Citrate):** This tube contains sodium citrate as an anticoagulant — used for collection of blood for coagulation studies.
  **Note:** It is imperative that the tube be completely filled (to the fill line at the top of the tube). The ratio of blood to anticoagulant is critical for valid prothrombin time results. Immediately after draw, invert the tube six to ten times in order to activate the anticoagulant.
- **Pink-Top Tube:** This tube contains EDTA as an anticoagulant — used ONLY for Blood Bank.
- **Red-Top Tube:** This is a plain VACUTAINER® containing no anticoagulant — used for collection of serum for selected chemistry tests. Tubes contain a clot activator (Silica).
- **Royal Blue-Top Tube:** There are two types of royal blue-top Monoject® tubes — one 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 the individual metals in the individual test listings to determine the tube type necessary.
- **Serum Separator Tube (SST®) Gold-Top or Tiger-Top:** This tube contains a clot activator and serum gel separator — used for various laboratory tests.
  **Note:** Invert the tube to activate the clotting; let stand for 20-30 minutes before centrifuging for 10 minutes. If frozen serum is required, pour off serum into plastic vial and freeze. Do not freeze VACUTAINER® tube.
- **Special Collection Tubes:** Some tests require specific tubes for proper analysis. Please contact BCHL prior to patient draw to obtain the correct tubes for metal analysis or other tests as identified in the individual test listings.
- **Yellow-Top Tube (ACD):** This tube contains ACD — used for the collection of whole blood for special tests.
- **Pearl-Top Tube (EDTA) Plasma Separator Tube:** This tube contains a clot activator and plasma gel separator — used for various laboratory tests.
Specimen Collection Tubes Order of Draw
Specimen collection tubes should be collected in the following order:

- VACUTAINER® system and syringe draws: royal blue (trace metal specimen), sterile (cultures), discard tube, blue (sodium citrate), red, gold (serum separator), green (sodium heparin), lavender, pink, or pearl (EDTA), grey (potassium oxalate/sodium fluoride), others

Discard Volumes when Collecting Blood from Indwelling Lines
In order to insure that a specimen is not contaminated or diluted, the following protocol must be followed when blood is collected from a line:

- Always waste 10 mL before drawing any blood for testing.
- When drawing specimens for coagulation testing, draw 20 mL before the light blue-top (sodium citrate) tube is filled (1=waste and 1=extra red- or yellow-top [ACD] tube).
- When drawing specimens for coagulation testing and when heparin is being infused in the line, draw 30 mL before the light blue-top (sodium citrate) tube is filled (1=waste and 2=extra red-top)