

# 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.

If there is any doubt or question regarding the type of specimen that should be collected, it is imperative that Bozeman Health Laboratory Services (414-1010) be called to clarify the order and specimen requirements.

## 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 the individual test listing 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 the 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 for 20 to 30 minutes. 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

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

- **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 used for certain special chemistry tests.  
**Note:** After tube has been filled with blood, immediately invert several times to prevent coagulation.
  - **Lavender-Top (EDTA) Tube:** This tube contains EDTA as an anticoagulant—used for most hematological tests.  
**Note:** After tube has been filled with blood, immediately invert several times to prevent coagulation.
  - **Light Blue-Top (Sodium Citrate) Tube:** This tube contains sodium citrate as an anticoagulant—used for coagulation studies.  
**Note:** It is imperative that the tube be completely filled to the fill line. The ratio of blood to anticoagulant is critical for valid prothrombin time results. Immediately after draw, invert tube 6 to 10 times to activate the anticoagulant.
  - **Light Green-Top (Lithium Heparin) Tube:** This tube contains lithium heparin—used for collection of lithium heparin plasma for most chemistry tests.  
**Note:** After tube has been filled with blood, immediately invert several times to prevent coagulation.
  - **Pink-Top (K2 EDTA) Tube:** This tube contains K2 EDTA as an anticoagulant—used for most Blood Bank testing.  
**Note:** After tube has been filled with blood, immediately invert several times to prevent coagulation.
  - **Plain, Red-Top Tube:** This tube is a plain tube containing no anticoagulant—used for collection of serum for selected chemistry tests as well as clotted blood for immunohematology.
  - **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 for collection of whole blood or serum for trace element analysis. Refer to individual metals in individual test listings to determine tube type necessary.
  - **Special Collection Tubes:** Some tests require specific tubes for proper analysis. Please contact BDH prior to patient draw to obtain correct tubes for metal analysis or other tests as identified in individual test listings.
  - **Yellow-Top Tube (ACD):** This tube contains ACD — used for drawing whole blood for special tests.
- **Dark Green-Top (Sodium Heparin) Tube:** This tube contains sodium heparin—used for collection of sodium heparin plasma or whole blood for special tests.  
**Note:** After tube has been filled with blood, immediately invert several times to prevent coagulation.
  - **Gold-Top, 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 in original tube.

## Urine Collection

24-Hour Urine Collections: Bozeman Health Laboratory Services provides 24-hour urine collection containers.

Use the following procedure for correct specimen collection and preparation.

- Warn patient of presence of potentially hazardous preservatives in collection container.
- Instruct patient to discard **first-morning** specimen and to record time of voiding.
- Patient should collect all subsequent voided urine for remainder of the day and night.
- Collect **first-morning** specimen on day 2 at same time as noted on day 1.
- Mix well before aliquoting and provide total volume of 24-hour urine collection.

Routine Collections: For routine analysis and microscopic evaluation, have patient void into a clean container. Specimen should be capped, labeled, and refrigerated until courier pickup time. A “clean-catch” or midstream specimen is preferred. Patient should first void a small amount of urine which is discarded. Some of the urine should then be collected in a clean container before voiding is completed.

If delays are anticipated in sending specimen to the laboratory, a portion of the specimen should be aliquoted into a grey urine culture transport tube (boric acid) should any culture work also be desired or indicated.

## Pathology Specimens

Proper handling of Pathology Specimens:

Specimens removed surgically for routine processing should be placed in 10% neutral buffered formalin and sent to the histology laboratory. Gastrointestinal (GI) biopsies and prostate needle cores should be placed in G.I. fixative.

All submitted tissues are to be properly identified on the outside of an appropriate container or bottle (not on lid) with the patient’s name, birth date, source of specimen, and doctor’s name. A requisition slip with matching information should accompany each specimen. In addition, clinical information such as pre-operative diagnosis should be included on the requisition slip. Any specimen container that is not properly identified or requisition not properly filled out will be returned to the physician’s office for proper labeling.

The laboratory provides specimen transport bags with biohazard markings for packaging specimens that will be sent for analysis. These bags have 2 compartments. One compartment is for the specimen, and 1 is for the paperwork. All pathology specimens sent to the laboratory should be sent in 1 of these bags.

For questions concerning handling call Bozeman Health Histology Laboratory at 414-2102.