

Specimen Collection and Preparation

Laboratory test results are dependent on the quality of the specimen submitted. It is important that all specimens and request forms be properly labeled with 2 patient identifiers (patient's first and last name, unique identifying number [eg, medical record number], or date of birth), collection date, and the origin (source) of the specimen, when applicable.

To help ensure the identity of the specimen, every Saint Luke's Regional Laboratories (SLRL) test request form has pre-numbered specimen labels that provide unique patient identification.

Specimen Identification

All specimens received at SLRL must have appropriate labeling to positively identify that specimen. Incomplete or inaccurate information could lead to a delay in testing or possible rejection of the specimen by SLRL. When preparing a specimen for testing at SLRL, the following steps should be followed:

1. Obtain an SLRL test request form. Complete patient information, billing information, indicate requested tests, and list an ICD-9 code for each test requested. Write patient's last name on the laboratory identification number labels found in the middle, left-hand side of the form.
2. After collecting the appropriate specimens for the requested tests, write the patient's first and last name on the paper label on the specimen tube(s). Attach a laboratory identification number label to each specimen. If you run out of the printed number labels, write the laboratory identification number on the remaining specimens.
3. **Blood Bank specimens must include the patient's full name, date of birth, date of collection, and initials of phlebotomist.**

The following are general guidelines to be used on specimen collection. Please refer to the "Alphabetical Test Listing" before collecting any specimen to obtain specific instructions for that specimen. If you have any questions about specimen collection, please call our Client Services department at 816-932-3850 or 800-583-6086.

Blood Collection

In general, specimens should be refrigerated in an upright position until they are transported to the laboratory. Please refer to the "Alphabetical Test Listing" for specific handling requirements.

Whole Blood—Draw a sufficient amount of blood with the anticoagulant indicated. Gently mix—by inverting the tube 5 to 10 times.

Note: Tubes intended for whole blood analysis are **not** to be centrifuged and separated.

Coagulation Specimens—Draw the ordered plain, red-top clot tube(s) or a 5-mL discard tube prior to the light blue-top tubes to avoid tissue fluid contamination. Collect specimens with minimal trauma into evacuated light blue-top tubes (containing 3.2% or 3.8% buffered sodium citrate), ensuring that they are filled to the correct level, and mix thoroughly by gentle inversion.

Plasma—Draw sufficient whole blood in the anticoagulant indicated to provide the required volume of plasma in the individual test listing. Whole blood specimens should be inverted 5 to 10 times immediately after they are drawn. If required, separate plasma by centrifugation within 20 to 30 minutes of draw. Please indicate on the pour-off tube what anticoagulant was used.

Listed below are the NCCLS "order of draw" recommendations to follow when using additive containing tubes.

First—tube containing SPS or ACD (yellow-top)

Second—tube containing sodium citrate (blue-top)

Third—tube containing clot activator (green-top)

Fourth—tube containing lithium heparin or sodium heparin (green-top)

Fifth—tube containing EDTA-K3 (lavender-top)

Sixth—tube containing potassium oxalate/sodium fluoride (grey-top)

Serum—Draw sufficient whole blood to obtain the volume of serum indicated in the individual test listing. Allow the blood to sit at ambient temperature for 20 to 30 minutes; then centrifuge for at least 10 minutes with caps in place. Avoid hemolysis.

Fasting Specimens

Most fasting specimens require only an overnight fast as indicated in the test listing. However, a number of tests require more stringent dietary regulation. For these tests, the patient should have nothing by mouth for 12 to 14 hours prior to the test. On the evening before the specimen is drawn, the evening meal should be completed by 6 p.m. and should contain no fatty foods.

Blood Collection Tubes

Blood collection tubes are designated by the color of the stopper. All of the collection tubes will have the contents listed on the paper label that is attached to the tube. Please refer to

these contents to ensure that the correct tube is being used. This is particularly important when drawing specimens that require an anticoagulant.

Listed below are additional guidelines concerning blood collection tubes:

- Note the **expiration dates** on the tubes before drawing.
- Vacuum may be lost if the tube is dropped or if the top has already been pierced by a needle (repeat draw).
- The volume of blood drawn should be approximately 2 1/2 times the amount of serum/plasma required.
- Avoid shaking blood in the tubes. Only tubes with anticoagulant require mixing. Gently invert these tubes 5 to 10 times after draw.
- Store blood specimens appropriately—extreme hot or cold temperatures will cause hemolysis.
- Health and Safety Precautions—blood and body fluids are infectious and capable of transmitting human immunodeficiency and hepatitis viruses.

Drugs of Abuse—Urine

Please contact Client Services to discuss collection procedures and specimen transport.

Specimens for Virus Isolation

The search for viruses requires adequate and satisfactory collection of appropriate specimens from patients. Use rayon-, Dacron®, or cotton-tipped swabs to collect the appropriate specimen. **Do not use Culturettes®**; they are not an acceptable means of isolating viruses. **Do not use Caligswabs®** as they will inhibit the growth of viruses. After collection, place the swab in viral transport media, leave the swab in the tube, and secure screw-capped lid tightly. Specimens placed in inappropriate media may be rejected. Please be sure that all containers are properly sealed and labeled with the patient name, date of collection, and source of specimen. Improperly sealed containers may be rejected since they are a potential health hazard to yourself and all who handle them. Specimens not labeled will be rejected.

Certain viruses are heat labile, ie, cytomegalovirus, herpes simplex virus, and respiratory syncytial virus (for isolation and not enzyme-linked immunosorbent assay). Specimens from which these viruses are being isolated need to be transported as soon as possible.

The viral transport media is available, free of charge, through SLRL. Please also remember we have a courier service available for your benefit and use.

The following collection instructions should be used when obtaining specimens for virus isolation. Other specimen collection information is found in the individual test listing. For

specimens that will be shared with Microbiology, follow “Specimens Submitted for Multiple Tests Within Microbiology” instructions outlined at the end of this section.

Nasal Wash—Tilt the patient’s head back at a 70° angle. Insert a rubber bulb syringe (1 oz. tapered, containing 3 mL to 7 mL of sterile phosphate-buffered saline [PBS]) until it occludes the nostril. Collect the specimen with one complete squeeze and release the bulb. Deposit aspirate in screw-capped, sterile bottle. Store the specimen at 4° C and transport on wet ice.

Nasopharyngeal Swabs—A pair of sterile swabs are passed lightly but firmly across the tonsillar pillar, then across the posterior pharynx, and out across the lateral tonsillar pillar. If sampling is deemed inadequate, repeat the process. Place swabs in viral transport media. Store the specimen at 4° C and transport on wet ice.

Specimens Submitted for Multiple Tests Within Microbiology

1. Urine specimens for both urinalysis (UA) and culture should be collected in separate, sterile, screw-capped containers, if possible.
2. For optimum specimen handling efficiency, collect individual swab specimens for aerobic bacterial and any other culture types performed in Microbiology. If testing required is for anaerobic microorganisms and/or viruses in addition to the routine aerobic bacterial culture, two specimens must be collected and sent to the laboratory in either viral or anaerobic transport media as appropriate.
3. Fluid aspirates for any cultures may be sent to the laboratory in a screw-capped, sterile transport tube, and the culture(s) specified can be set up from the single tube.
4. Tissue specimens for any bacterial, acid-fast *Bacillus*, or fungus culture should be submitted in a sterile, screw-capped culture tube containing no more than 0.5 mL of sterile saline to keep the specimen hydrated.
5. Skin scrapings for fungal culture should be submitted in a sterile, screw-capped container without any saline added.

Safe and Appropriate Handling of Specimens for Microbiology

1. **Specimen Integrity**—Screw lids tightly closed on all sterile containers. Due to the possibility of contamination, spilled specimens may be rejected for culture.
2. **Exposure Control**—Place all specimens in a secondary transport container. SLRL supplies plastic transport bags for this purpose. This OSHA guideline is to prevent exposure in the event of a leak or spill.

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3. **Prompt Delivery**—Microorganisms have a very limited viability under transport conditions. Prompt delivery is essential for optimal recovery. Cerebrospinal fluid must be received in the laboratory within 1 hour of collection. Other specimens requiring urgent delivery include eye specimens, wounds, body fluids, and specimens for anaerobic culture. Extreme delays in delivery may result in rejection of specimen for culture. Any questions concerning time limits on specific specimens may be referred to Microbiology at 816-932-2422 or 800-583-6086.