



Specimen Collection Manual

St. Luke's Laboratory

Specimen Collection Manual

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Blood Specimen Collection

Venipuncture

This procedure describes best practices for collection of blood specimens by venipuncture, to include vacutainer, syringe, and butterfly systems.

PROCEDURE

1. Verify provider orders and refer to St. Luke's Comprehensive Test Directory for specimen requirements.
2. Perform patient identification including full patient name and date of birth.
3. Perform hand hygiene and use appropriate PPE.
4. Assemble supplies (vacutainer tubes, alcohol swab, tourniquet, and needle/vacutainer device).
5. Cleanse the site and apply the tourniquet.



6. Insert the needle smoothly at a 15–30-degree angle.
7. Place tubes in vacutainer following correct order of draw. (See page 4)
8. Mix specimen containers gently after removing from vacutainer system.
9. Release the tourniquet and remove the needle. Activate the safety device.
10. Apply pressure until bleeding stops and bandage the patient's arm.
11. Label all specimen containers with patient information (Name, date of birth), date and time of collection, and collectors' initials.
12. Dispose of all supplies in appropriate receptacles (including sharps containers), including tourniquets.

➤ Helpful Hints

- If using a syringe, or a butterfly device with syringe, after removing the needle from the patient's arm, add an adapter. Fill tubes according to order of draw, mixing gently as tubes are filled.
- If ABO CAP is required, it must be collected by a separate collector.
- If a transfusion is anticipated, specimen collection must occur at the St. Luke's hospital campus where the transfusion is to occur.
- Prenatal screening and ABO/RH testing do not require a signed transfusion request form.



Blood Specimen Collection

Order of Draw			
Greiner Tube Color	Tube Name	Mix by Inversion	BD Tube Color
	Blood Cultures	8 – 10 times *collect aerobic bottle first	
 *fill to black arrow	Light Blue (Sodium Citrate) Tubes	4 times	 *fill to minimum indicator line
	Red Or Gold (Serum) Tubes	5 – 10 times Clotting time: 30 minutes	 Trace Metal Serum
	Dark Green Or Light Green (Heparin) Tubes	8 – 10 times	
	Lavender Or Pink (EDTA) Tubes	8 – 10 times	 Trace Metal EDTA
	Grey (Sodium Fluoride) Tube	8 – 10 times	

Blood Specimen Collection

Blood Culture

This procedure describes best practices for collection of blood specimens when blood cultures are ordered.

PROCEDURE

1. Verify provider orders and refer to St. Luke's Comprehensive Test Directory for specimen requirements.
2. Perform patient identification including full patient name and date of birth.
3. Perform hand hygiene and use appropriate PPE.
4. Assemble supplies (blood culture bottles, alcohol swab, chlorhexidine, tourniquet, sterile syringes, and sterile Luer lock transfer device, or winged-butterfly needles with extension tubing and collection barrel).
5. Cleanse the site using chlorhexidine. Scrub vigorously for 30 seconds and allow to dry for 30 seconds or until completely dry. Do not touch the site after cleansing, if you do, you must clean site again. Apply the tourniquet.
6. Cleanse the top of each blood culture bottle with an alcohol prep pad. Leave pad on top of vial until blood is ready to be injected into bottle.
7. Insert the needle in patient's arm smoothly at a 15–30-degree angle
8. When using the Blood Collection Set ("butterfly") the phlebotomist MUST carefully monitor the volume collected by means of the 5 ml graduation marks on the vial label. The use of lower or higher volumes may adversely affect recovery and/or detection times.
9. The blood vials should be filled while in the upright position. Fill the aerobic bottle first, because the needle is initially filled with air, and that air will be drawn into the tube along with the blood. When you fill the anaerobic bottle, the needle is already filled with blood.
10. Mix specimen containers gently after removing from vacutainer system.
11. Release the tourniquet and remove the needle. Activate the safety device.
12. Apply pressure until bleeding stops. Bandage the patient's arm.
13. Label all specimen containers with patient information (Name, date of birth), date and time of collection, and collectors' initials. Note draw site on the requisition or in Epic.
14. Dispose of all supplies in appropriate receptacles (including sharps containers), including tourniquets

➤ **Helpful Hints:**

- A separate draw is not required for blood cultures. Special precautions must be taken on venipuncture to ensure:
 - Collection site is adequately cleansed with chlorhexidine
 - Blood culture bottles are cleansed with an alcohol pad



Blood Culture Bottle Requirements Per Venipuncture/CVAD Draws		
Bacterial Blood Culture Volume for Adults & Children > 40 kg	Aerobic Bottle Volume	Anaerobic Bottle Volume
16 – 20 mL	Split equally between aerobic and anaerobic bottle	
13 – 16 mL	8 mL	5 – 8 mL
10 – 12 mL	5 – 7 mL	5 mL
5 – 9 mL	entire blood amount	0
Bacterial Blood Culture Volume for Infants and Small Children less than 40 kg	Pediatric Aerobic Bottle Volume	
1 – 3 ml	entire blood amount	
Fungal or AFB Blood Culture Volume for Infants and Small Children less than 40 kg	Myco F/Lytic bottle	
1 – 3 mL	1 – 3 mL	
*Difficult adult blood draws with volumes less than or equal to 3 ml may be collected into pediatric bottle.		

Blood Specimen Collection

Finger Stick

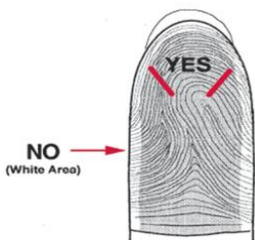
This procedure describes best practices for collection of blood specimens by capillary puncture of the finger, commonly used for point-of-care testing.

PROCEDURE

1. Verify provider orders and refer to St. Luke's Comprehensive Test Directory for specimen requirements.
2. Perform patient identification including full patient name and date of birth.
3. Perform hand hygiene and use appropriate PPE.
4. Assemble supplies (microtainer/strip, alcohol swab, dry gauze, and retractable lancet device).



5. Cleanse the site.
6. Place the lancet onto the pad of the finger (index, ring, or middle) perpendicular to the fingerprint.



7. Puncture the site with the device.
8. Wipe away the first drop of blood with dry gauze.
9. Gently apply pressure to the tissue surrounding the puncture site.
10. Place blood onto strip or into microtainer following order of draw (see page 8).
11. Mix specimen containers gently after filling to at least the minimum volume line.
12. Apply pressure until bleeding stops. Bandage the patient's finger.
13. Label all specimen containers with patient information (Name, date of birth), date and time of collection, and collectors' initials.
 - a. When using electronically generated labels, the label must bear at a minimum the patient's and last name and patient specific identifier. Collector identification and collection date and must be available in the LIS.
14. Dispose of all supplies. Gauze, tourniquet, alcohol, can be disposed of in gray trash receptacles.



➤ Helpful Hints:

- To improve blood flow to the patient's hand, an approved heat pack may be applied. Place the heat pack on the finger and apply for 5-6 minutes.
- Finger stick collection is not appropriate on children under 2 years of age.

Blood Specimen Collection

Heel Stick

This procedure describes best practices for collection of blood specimens by capillary puncture of the heel, commonly used for infants 12 months and younger.

PROCEDURE

1. Verify provider orders and refer to St. Luke's Comprehensive Test Directory for specimen requirements.
2. Perform patient identification including full patient name and date of birth
3. Perform hand hygiene and use appropriate PPE.
4. Assemble supplies (microtainer/strip, alcohol swab, dry gauze, heat pack, and retractable lancet device)



5. Warm the site using an approved heat pack for at least 3 minutes.
6. Cleanse the site allow to dry completely.
7. Place the lancet opening flush against the heel so that its center point is vertically aligned with the desired incision site.
8. Puncture the site with the device.



9. Wipe away the first drop of blood with dry gauze.
10. Gently apply pressure to the tissue surrounding the puncture site.
11. Place blood into microtainer following order of draw. (See page 8)
12. Mix specimen containers gently after filling to at least the minimum volume line.
13. Apply pressure until bleeding stops. **DO NOT APPLY BANDAGE.**
14. Label all specimen containers with patient information (Name, date of birth), date and time of collection, and collectors initials.
 - a. When using electronically generated labels, the label must bear at a minimum the patient's first and last name and patient specific identifier. Collector identification and collection date and time must be available in the LIS.
15. Dispose of supplies. Gauze, tourniquet, can be disposed of in gray trash receptacles.

➤ Helpful Hints:

- Do not excessively milk (squeeze) the foot, it causes hemolysis and alters patient results.
 - Avoid repeated use of the same site and areas with a hematoma.
 - For PKU, completely saturate the 5 circles without touching the heel.
- Use of a plastic capillary tube would equal 1 circle. Complete appropriate paperwork



Good Specimens











Bad Specimen



Helping all people live healthy lives

BD Microtainer™ Tubes with Microgard™ Closure Tube Guide and Order of Draw

Catalog #/Closure Color	Additive	Mix by Inverting	Laboratory Use
 365974 Lavender	FIRST K ₂ EDTA	10x	For whole blood hematology determinations. Tube inversions prevent clotting.
 365965 Green	Lithium Heparin and Gel for plasma separation	10x	For plasma determinations in chemistry. Tube inversions prevent clotting.
 365985 Mint Green			
 365987 Mint Green			
 365992 Grey	NaF/Na ₂ EDTA	10x	For glucose determinations. Tube inversions ensure proper mixing of additive and blood.
 365967 Gold	Clot Activator and Gel for serum separation	5x	For serum determinations in chemistry.
 365978 Gold			
 365963 Red	LAST No additive	0x	For serum determinations in chemistry, serology and blood banking.



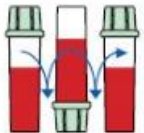
365976
Tube Extender



Processing of Tubes

Why

- Most tubes contain an additive or clot activator that needs to be mixed with the blood sample.
- Tubes with anticoagulants such as EDTA need to be mixed to ensure the specimen does not clot.



How

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

When

- Immediately after drawing.

Consequences if not mixed

- Tubes with anticoagulants will clot.
- BD SST™ tubes may not clot completely.
- Specimen will often need to be redrawn.

BD Vacutainer Systems
Pharmaceutical Solutions
1 Jackson Drive
Franklin Lakes, NJ 07417

BD Vacutainer Technical Services: 1.800.631.0174
RD Customer Service: 1.888.237.7762
www.bd.com/vacutainer

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Microbiology Specimen Collection

Throat Swab

This procedure describes best practices for collection of throat specimens necessary for culture or point-of-care testing.

PROCEDURE

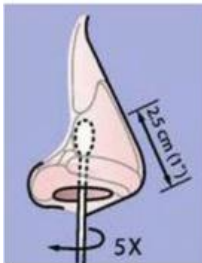
1. Verify provider orders.
2. Perform patient identification including full patient name and date of birth.
3. Perform hand hygiene and use appropriate PPE.
4. Gather appropriate swab and tongue blade, referencing St. Luke's Comprehensive Test Directory.
5. Collect the specimen by instructing the patient to tilt head backward, open mouth and say ahhhh, depress tongue with tongue blade, vigorously sweep between tonsillar pillars, without touching lips, teeth, tongue, and cheeks, and carefully remove swab without striking oral structures.
6. Immediately place swab into transport tube, breaking the applicator shaft at the pink breakpoint line. Screw on the cap.
7. Label specimen containers with patient information (Name, date of birth), date and time of collection, and collectors' initials.
8. Dispose of all supplies in gray trash receptacle.

MRSA Swab

This procedure describes best practices for collection of MRSA nasal specimens.

PROCEDURE

1. Verify provider orders.
2. Perform patient identification including full patient name and date of birth
3. Perform hand hygiene and use appropriate PPE.
4. Gather appropriate swab, referencing St. Luke's Comprehensive Test Directory.
5. Collect the specimen by inserting the swab into the nostril no more than 1.5 cm, rotate the swab against the interior nares 5 times applying pressure. Repeat in the second nostril with the same swab.



6. Immediately place swab into transport tube, breaking the applicator shaft at the scored breakpoint line. Screw on the cap.



7. Label specimen containers with patient information (name, date of birth), date and time of collection, and collectors' initials.

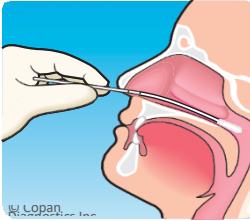
Microbiology Specimen Collection

Nasopharyngeal Collection

This procedure describes best practices for collection of Nasopharyngeal specimens for viral culture and PCR panels.

PROCEDURE

1. Verify provider orders.
2. Perform patient identification including full patient name and date of birth.
3. Perform hand hygiene and use appropriate PPE.
4. Gather appropriate swab and viral media, referencing St. Luke's Comprehensive Test Directory.
5. Collect the specimen by tilting the patient's head back 70 degrees and gently inserting the flexible swab through the nostril parallel to the palate until resistance is encountered.
6. Ensure head is properly secured to prevent patient removing swab prematurely.
7. Roll the swab against the nasopharyngeal mucosa 2-3 times, leaving in place for several seconds to absorb secretions, slowly remove swab.



8. Immediately place swab into viral transport media, breaking the applicator shaft at the scored breakpoint line. Screw on the cap.



9. Label specimen containers with patient information (name, date of birth), date and time of collection, and collectors' initials.

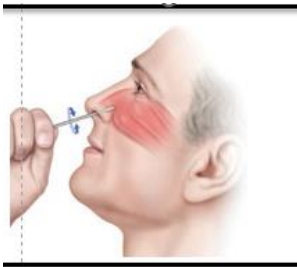
Microbiology Specimen Collection

Mid-turbinate Collection

This procedure describes best practices for collection of Mid-turbinate nasal collection specimens for COVID-19 testing.

PROCEDURE

1. Verify provider orders.
2. Perform patient identification including full patient name and date of birth.
3. Perform hand hygiene and use appropriate PPE.
4. Gather appropriate swab and transport container, referencing St. Luke's Comprehensive Test Directory.
5. Collect the specimen by tilting the patient's head back 70 degrees and gently inserting the flexible swab into the nostril until resistance is encountered at the level of turbinate (less than one inch).
6. Ensure head is properly secured to prevent patient removing swab prematurely.
7. Roll the swab against the mucosa 4-5 times while apply either internal or external pressure against the side of the nose slowly remove swab.
8. Using the same swab, repeat the process on the second nostril.



9. Immediately place swab into viral transport media or clean vial (refer to Comprehensive Test Directory), breaking the applicator shaft at the scored breakpoint line.
Screw on the cap.



10. Label specimen containers with patient information (name, date of birth), date and time of collection, and collectors' initials.

Microbiology Specimen Collection

Sputum

This procedure describes best practices for collection of sputum specimens for culture.

PROCEDURE

1. Verify provider orders and refer to St. Luke's Comprehensive Test Directory for specimen requirements.
 2. Perform patient identification including full patient name and date of birth.
 3. Perform hand hygiene and use appropriate PPE.
 4. Gather appropriate collection cup, referencing Sputum Specimen Collection
 5. Ask the patient to rinse their mouth. The patient should take three or four slow deep breaths and then cough after a full inhalation.
 6. Cap the container immediately after collection.
 7. Label specimen containers with patient information (name, date of birth) date and time of collection, and collector's initials.
 8. Dispose of all supplies in gray trash.
- **Helpful Hints:**
- Specimens with saliva or postnasal discharge will be rejected.
 - 2-3 tablespoons may be necessary if multiple tests are ordered

Non-Blood Samples

Urine/Fluids

This procedure describes best practices for patient self-collection of samples.

PATIENT INSTRUCTIONS

Provide patients with the written instruction sheet from St. Luke's Comprehensive Test Directory.

1. Clean Catch
2. Random urine collection for Chlamydia/GC testing (dirty catch):
3. Timed Urine Collection
4. Post-Vasectomy Semen
5. Stool Collection

PROCEDURE: Prior to specimen collection

1. Verify provider orders.
2. Provide patient appropriate collection instructions including labeling information and collection kit.

PROCEDURE: After specimen collection

1. Verify at the time of specimen drop off that it is labeled with patient name, date of birth and date of collection.
2. Verify provider orders.
 - a. For 24-hour urine, ask for patient's height and weight and perform venipuncture if needed.
 - b. For semen analysis, complete the Semen Analysis Patient Questionnaire located in the St. Luke's Comprehensive Test Directory.

➤ **Helpful Hints:**

- Patient education/instructions for collection can be printed from St. Luke's Comprehensive Test Directory.
- Ensure lid is tightened to avoid leakage in transport.
- Do not transport specimen collection cup to the laboratory with needle lid attached.
 - Aliquot urine into appropriate collection tubes prior to transport to laboratory.

Specimen Processing

Receiving, Storage, Packaging for Transport of Specimens

This procedure describes best practices for packaging of specimens to testing sites while maintaining specimen integrity. Also describes best practices for processing blood specimens by centrifugation to maintain specimen integrity.

PROCEDURE

1. Verify provider orders and specimen requirements. Wear appropriate PPE when handling specimens.
 2. Make sure specimen is labeled with full patient name, date of birth, date/time of collection and collector's initials. before transport.
 3. Verify if centrifugation is necessary before transport.
 4. Check specimen stability and temperature requirements. Aliquot If necessary.
 5. Maintain specimen at recommended temperature until transport.
 6. Non- Epic Clinics: Place all specimens from one individual patient into single biohazard bag. Prior to courier arrival, place all individual specimen bags with the same temperature requirements into one large biohazard bag.
 7. Epic Clinics: Create a tracking batch and place all specimens that are the same temperature on the list in one. big bag.
- **Helpful Hints:**
- If testing has special requirements (short stability, special processing) referral and transport to a hospital campus is recommended.
 - Lawson order # for small specimen bags: 188693; Lawson order # for large specimen bags: 188695.

Centrifuge Operation

PROCEDURE

1. Check specimen requirements before centrifuging.
 2. Clot tubes should be centrifuged after clot formation (20-30 minutes at room temperature)..
 3. Make sure the centrifuge is balanced properly.
 4. Close the lid and press start or go.
 5. Verify the rotor has stopped completely before removing specimens.
 6. Remove all specimens and place upright in rack until transported to testing location.
- **Helpful Hints:**
- Refer to the owner's manual for centrifuge speed and time.
 - Specimens may only be centrifuged once in the original tube.
 - If serum or plasma needs to be re-centrifuged remove the plasma/serum from the original tube using a pipette and put into a pre labeled aliquot tube and re-spun.

Aliquoting

PROCEDURE

1. Determine if aliquoting of the specimens is needed.
 2. Wear appropriate PPE for aliquoting.
 3. Verify the specimen is appropriate for desired test.
 4. Consult the Comprehensive Test Directory for the amount needed and stability.
 5. Label with aliquot tube with patient full name, date of birth, and date/time of collection and collector's initials.
 6. Aliquot into the appropriate pre-labeled container using a pipette carefully approximating the volume.
 7. Cap tightly and store at appropriate temperature.
- **Helpful Hints:**
- Reprint of label may be required. Carefully verify reprinted labels include correct patient information, collection, and specimen type.
 - Some tests require special aliquot tubes (heavy metals, light protected).
 - Aliquots may not be returned to the original tube after aliquoting.

Add-On Testing

This procedure describes best practice for adding tests to a previously collected specimen.

PROCEDURE

1. Fax completed add-on request form to customer service at (208) 381-8870. Physician signature is required to add tests to previously collected specimens.
 2. Do not duplicate the add-on request in EPIC.
 3. Customer service will add on test(s) if possible. If unable to add on, customer service will contact the requesting clinic or physician.
- **Helpful Hints:**
- Check Comprehensive Test Directory for stability to add on.
 - Specimens are kept refrigerated for 7 days. Please contact the laboratory with any add-on questions.

Order Requisition

Requisition is available in the Comprehensive Test Directory

Specimen Rejection

Samples will be rejected (cancelled or recollection requested) based on the following criteria.

- Inadequate volume
- Use of wrong collection device, method, or container
- Hemolysis
- Clotting
- Inappropriate patient preparation
- Improper handling or transport
- Leaking container/contaminated specimen
- Unacceptable specimen type or source
- Unlabeled, mislabeled specimen or requisition, or mismatched specimen and requisition information
- Incomplete collection information in Epic
- Specimens not meeting stability criteria for add on testing.
- ABO Cap same collector as Type and Screen

All specimens that fall under the above criteria will be disposed of after contacting the ordering provider, and documentation completed in the EMR.

Irretrievable Specimens that are unique and/or difficult to recollect that are mislabeled/unlabeled such as:

- Cerebral Spinal Fluid and other body fluids
- Biopsy specimens
- Autopsy specimens
- Supra-pubic aspirate on newborn, or mini catheter on a child <5 years, may be tested at the discretion of the Laboratory Director/Manager or the Medical Director.

Person responsible for relabeling specimen will do so at the laboratory where the specimen is located and label the specimen and fill out the attestation form that will stay with the permanent medical record

General Guidelines

STAT Courier

This procedure provides information on STAT testing requests.

PROCEDURE

1. Assess the need for STAT testing and refer to your site's STAT workflow.
2. Collect the specimen and process according to protocol.
3. If courier pick up is needed, call SL dispatch: (208) 381-2506.

STAT Tests: Offered for courier services

• BNP		Gram stain
• Body Fluid cell count w/ differential		Neonatal, bilirubin
• CBC w/ differential		PT/PTT
• C. difficile		Serum pregnancy (qualitative and quantitative)
• Chemistry panel (CMP, BMP, Lytes, Glucose)		Troponin I
• D-dimer		UA Microscopic
• Digoxin		

➤ Helpful Hints:

- St. Luke's Dispatch: (208) 381-2506.
- Do not call for a courier until sample is packaged and ready for transport.

Routine Courier Pick-Ups (lab specimens only)

PROCEDURE

1. Collect patient sample.
2. Package sample maintain appropriate temperature and be sure it is ready for transport.
3. Call St. Luke's Dispatch at (208) 381-2506 to request pickup.
4. St. Luke's dispatch will send appropriate courier to pick up sample (pickup will be same day).

Supply Ordering

This procedure describes the process for ordering lab supplies.

PROCEDURE

1. Most specimen collection supplies are orderable through St. Luke's Business Center RSS/Lawson or Clinic Support Par Levels for St. Luke's Clinics.
2. Non-St. Luke's Clinics may obtain supplies used for testing at a St. Luke's facility by faxing a supply request form.
3. Specialty tubes may be obtained from the Core Laboratory by contacting (208) 381-8854, or by faxing the Supply Request form to (208) 381-8879.

➤ Helpful Hints:

- Specialty tubes may take some time to be ordered and delivered. Please plan accordingly.
- It is important to maintain your inventory and check expiration dates.
- Supply Request form is available on the Comprehensive Test Directory.

