

**Policy
Title:**

SPECIMEN HANDLING

SPECIMEN TUBE TYPES

Specimen Collecting Tubes:

Red Top	Plain tube containing clot activator - used for collection of serum for selected chemistry tests; secondary Blood Bank specimen.
Yellow-Red/Tiger Top	Also known as SST or gel tube. Contains clot activator and serum gel barrier - used for collection of serum for select chemistry tests
Light -Blue Top	Contains Sodium Citrate anticoagulant - used for coagulation studies. Must fill this tube to manufacturer's fill mark.
Lavender Top	Contains EDTA as an anticoagulant - used for most hematological procedures, cell counts, and as primary Blood Bank Specimen.
Green Top	Contains Lithium Heparin - used for collection of heparinized plasma or whole blood for special tests.
Green Separator	Contains Lithium Heparin and gel barrier - used for collection of heparinized plasma for most routine and STAT chemistry tests.
Gray Top	Contains Potassium oxalate as an anticoagulant and sodium fluoride as a preservative - used to preserve glucose in whole blood and for select chemistry tests.
Royal Blue Top	There are two types of royal blue tops - one with coagulant EDTA and the other plain. These are used in the collection of whole blood or serum for trace element analysis.
Yellow Top	Contains ACD Solution - used for collection of whole blood for special tests.

Collection Tube Description

DESCRIPTION & COLOR	ADDITIVE IN TUBE	SAMPLE SIZE	SERUM/ PLASMA*
Red	None	5 ml	2-3 ml
Red	None	3 ml	1.5-2 ml
Yellow-Red	Silicon Gel	4 ml	1 ½ -2 ml
Red/Grey	Silicon Gel	8.5 ml	4-5.5 ml
Lavender	EDTA	2 ml	NA
Lavender	EDTA	4 ml	1.5-2 ml
Blue	Na Citrate	3.5 ml	2.0 ml
Blue	Na Citrate	1.8 ml	1.0 ml
Grey	Na Fluoride	4 ml	1.5-2 ml
Green	Li Heparin	5 ml	2-3 ml
Green PST	Li Heparin Gel	4.5 ml	2.5-3 ml
Green	Na Heparin	5 ml	2.5 ml
Yellow	Sterile, ACD	7 ml	3-4 ml
Royal Blue	Na EDTA	7 ml	3-4 ml
Microtainer, lav	EDTA	0.5 ml	NA
Microtainer, green w/gel	Heparin	0.5 ml	0.2 ml
Microtainer, green no gel	Heparin	0.5 ml	0.2 ml
Microtainer, red	None	0.5 ml	0.2 ml

*Approximate recovery from patient with normal Hct and tube well filled.

PHLEBOTOMY BLOOD VOLUME GUIDELINES

PURPOSE:

To ensure the correct volume of blood is collected without drawing excessive amounts, especially from neonatal and pediatric patients.

PROCEDURE:

1. Review the physician's orders to determine the test(s) to be collected.
2. Consult lab user's guide for required volumes. (NOTE: these volumes generally allow enough specimen for repeat testing.)
3. Calculate the total volume needed for each tube type. Select the tube size that meets needed requirements.
4. For large volume, pediatric, or difficult draws, it may be necessary to consult the technical departments for minimum amounts.
5. Maximum amounts of blood to be drawn on patients under 14 years are listed below.

Weight lb.	Weight kg (approx.)	Maximum Amount to be Drawn at Any One Time (ml)	Maximum Amount of Blood During a Given Hospital Stay (<1 mos)
6-8	2.7-3.5	2.5	23
8-10	3.5-4.6	3.5	30
10-15	4.5-6.8	5	40
16-20	7.3-9.1	10	60
21-25	9.5-11.4	10	70
26-30	11.8-13.6	10	80
31-35	14.1-15.9	10	100
36-40	16.4-18.2	10	130
41-45	18.6-20.5	20	140
46-50	20.9-22.7	20	160
51-55	23.2-25.0	20	180
56-60	25.5-27.3	20	200
61-65	27.7-29.5	25	220
66-70	30.0-31.8	30	240
71-75	32.3-34.1	30	250
76-80	34.5-36.4	30	270
81-85	36.8-38.6	30	290
86-90	39.1-40.9	30	310
91-95	41.4-43.2	30	330
96-100	43.6-45.5	30	350

COLLECTING A BLOOD SAMPLE

GENERAL INFORMATION:

1. It is important to have all equipment, supplies, and requisition ready for the procedure.
2. Wash your hands before and after contact with each patient.
3. Gloves must be worn when performing any venipuncture/fingerstick.

MATERIALS & EQUIPMENT:

Straight-draw needles (21 or 22 g) or winged device (suitable gauge needle)

Vacutainer tubes

Vacutainer holders

Syringe with 21 or 23g needle and blood transfer device (See Procedure for Blood collection by Syringe)

Latex-free, single-use tourniquet

70% Isopropyl Alcohol swabs

Gauze sponges

Paper Tape or Latex-free bandage

Latex-free disposable gloves

Chloraprep Applicator Prep (NOT Swabs)

PROCEDURE:

Patient Preparation

1. Ensure that the patient is registered prior to collection of blood sample.
2. Phlebotomist washed hands in presence of the patient.
3. Examine the Order/Requisition for the following items:
 - a. Patient's name
 - b. Date of Birth
 - c. Provider's Signature
 - d. Diagnosis
 - e. Medical Record number
4. **Identify the patient:** always ask the patient to spell his/her full name and state his/her birth date, comparing what is stated to the information on order labels and ID bracelet. If the patient is too young, unconscious or mentally incompetent, ask a nurse or relative to identify the patient by name and date of birth.
5. Ensure that the blood specimen to be drawn is from the individual designated on the requisition form by comparing the information given by the patient with the information on the patient identification bracelet and/or requisition form. Report any discrepancy however minor to the appropriate person: for an inpatient or ED patient - have the nurse identify the patient by name and identification number, before obtaining the specimen; for an outpatient - verify with the patient and notify registration. It will be necessary for Laboratory staff to reprint the test order labels with the corrected patient information for accurate processing and analysis.
6. Question patient about diet restrictions if indicated for test ordered.
7. Position patient comfortably in chair or bed.

Locate Venipuncture Site:

1. Ask the patient to make a fist.
2. Apply tourniquet approximately 3-4 inches above the bend of the elbow. It should be tight but not painful to the patient. Do not leave tourniquet on for more than one minute.
3. Select Vein Site:
 - a. Preferred veins - the larger and fuller median and cephalic veins are used most frequently but wrist and hand veins are also acceptable for venipuncture. Do not attempt to draw from sites other than the hand, wrist or arm.
 - b. Sites to avoid - the following sites should be avoided:

- Mastectomy - because of lymphostasis, specimens drawn from the side on which a mastectomy was performed may not truly be representative specimens.
 - Hematoma - specimens collected from a hematoma area may cause erroneous test results. If another site is not available, draw the specimen distal to the hematoma.
 - IV - never draw *above* an IV. Specimens should be drawn from the opposite arm. If the IV arm is the only option: 1.) ask nursing if the IV may be shut off temporarily for the blood draw *and* 2.) ask nursing to shut the IV off. Laboratory staff must never turn an IV off or on. After the IV has been stopped, **wait at least 2 minutes** to begin the venipuncture. Notify nursing when the venipuncture is complete so they can restart the IV fluid.
 - Extensive scarring - avoid healed burn areas.
4. Palpate and trace the path of veins several times with the index finger. Avoid thrombosed veins that lack resilience, feel cord-like and roll easily. If superficial veins are not readily apparent, you can force blood into the vein by massaging the arm from wrist to elbow or by lowering the arm over the bedside.
Note: Use a smaller gauge needle or syringe for patients with fragile threadlike or “rolling” veins.
 5. Release single-use tourniquet while you assemble supplies.
 6. Review the provider’s orders and select the appropriate tubes and supplies required for the venipuncture collection.

Perform Venipuncture:

1. Open the needle and screw securely onto Vacutainer holder or syringe without removing the sheath.
2. Alcohol wipe and gauze sponges should be within your reach.
3. Don gloves
4. Prepare the site by cleansing with a sterile 70% alcohol wipe using a circular target motion. Allow site to air dry. Drying the site is essential to avoid hemolysis caused by alcohol. If a blood alcohol is to be drawn, cleanse the site with Benzalkonium Chloride using a circular target motion. Allow site to air dry.
 - a. If a blood culture is to be drawn, cleanse the site first with a ChloroPrep applicator prep. Scrub the site for 30 seconds with the ChloroPrep applicator prep using a circular target motion. Allow site to air dry for 30 seconds. Then cleanse site with 70% alcohol wipe using a circular target motion. Allow to air dry. Refer to Protocol for Blood Culture Collection for the complete collection procedure.
5. Reapply single-use tourniquet.
6. Once the site has been cleansed, the patient’s arm may be held below the site, pulling the skin tight with the thumb. It is very important to anchor the vein to prevent it from rolling.
7. Hold the Vacutainer needle assembly (with the first tube in place) between your thumb and index, third and fourth fingers. Your fingers should never come in contact with the exposed needle. The needle should run in the same direction as the vein and should be inserted at approximately a 15 degree angle with the bevel side upward, slightly below the prominent/palpable vein.
8. Once the needle is in the vein, gently push the test tube forward to puncture the rubber stopper and allow blood to fill the tube. Hold firmly onto the Vacutainer holder to prevent the needle from moving as you push the test tube onto the needle.
9. The “Order of Draw” or “Fill” (with Vacutainer or syringe method) is as follows:
 - a. Blood Culture bottles (tops must first be cleansed with 70% alcohol & air dried)
 - b. Light Blue top (citrate)
 - c. Red, Gold or “mottled” top (with or without clot activator or gel, serum tubes)
 - d. Green top (sodium or lithium heparin with or without gel)
 - e. Lavender, Pink or Tan top (EDTA)
 - f. Gray top (Sodium fluoride)

- g. Miscellaneous tubes (dark blue heavy metal tubes, ACD tubes)
 - h. Always draw non-additive tubes before additive tubes to avoid additive contamination of non-additive tubes which can result in erroneous results.
10. When using a winged device, more commonly known as the “butterfly”, it is necessary to draw a non-additive tube (red or gold top) before filling the citrated tube (blue top). This is due to the air in the butterfly tubing, which enters the first tube filled. This is done to insure proper specimen/anticoagulant ratio, which is critical to coagulation testing.
 11. If blood has been collected into one tube, it should never be transferred to another tube.
 12. Remember to mix the tubes gently by inversion. Do not shake.
 13. Release the single-use tourniquet as blood flow is established.
 14. Fill the tube until the vacuum is exhausted and blood flow ceases. This will ensure that there is a correct ratio of anticoagulant to blood. When blood flow ceases, remove the tube from holder and insert the next tube.
 15. After the last tube has been removed, lightly place gauze over the venipuncture site.
 16. Remove the needle quickly and apply pressure with the dry gauze pad. Immediately activate the needle safety sheath.
 17. Apply pressure to the site for two minutes, or until bleeding has stopped. DO NOT BEND arm. The arm may be elevated.
 18. Dispose of the needle/Vacutainer holder in a puncture proof sharps container. Never recap the needle.
 19. Label the tubes at the patient’s side upon completion of the venipuncture. Tubes should not be left on the bench unlabeled. Tubes must not be pre-labeled.
 20. Check the venipuncture site and verify the cessation of bleeding. Do not wipe the site. Apply a paper tape or latex-free bandage over a small piece of gauze to the site.
 21. Discard the single-use tourniquet, remove gloves and wash hands.

FINGERSTICKS:

1. Gloves are mandatory for this procedure.
2. Choose a finger that is not cold, cyanotic or swollen. If the patient’s hands are cold, wrap one of them in a warm towel for 10 to 15 minutes before the puncture is performed. The puncture should be at the palmar surface of the distal phalanx of the middle or ring finger of the non-dominant hand.
3. With alcohol swab, cleanse the site. Allow to completely air dry. Do not wipe dry.
4. Remove the lancet from its package without touching the blade area.
5. Hold the patient’s finger firmly with one hand. Hold the lancet at a 90 degree angle to the finger, perpendicular to the lines of the fingerprint. Using moderate pressure, quickly depress the lancet plunger completely, then release and remove the lancet. Discard lancet in a puncture-proof biohazard container.
6. Wipe the first drop of blood away with clean gauze. Collect the specimen by allowing drops of blood to fill the microsample tube. A free-flowing puncture is essential to obtain accurate test results. Do not use excessive squeezing to obtain blood.
7. Gently massage the finger from base to tip to obtain the proper amount of blood for the tests required but DO NOT SQUEEZE.
8. Each type of microsample has a different collection tube and blood volume requirement. Gently agitate microsample tubes during collection to avoid clotting of the sample.
9. Label the blood tubes at the patient’s side with first and last name, date of birth, collection time and date, and collector’s initials.

COLLECTING A URINE SAMPLE

Label the sample container with at least two identifiers prior to giving the container to the patient.

Clean Catch Urine Collection (DO NOT USE FOR GC/CHLAMYDIA by PCR)

Females:

1. Wash hands with soap and water, rinse and dry.
2. Separate the labia and hold them apart; continue to hold the labia apart until the sample is collected.
3. Cleanse urethral opening/vulva with towelettes provided, using a front to back motion.
4. Repeat step 3 for a total of 3 passes.
5. Continue to hold labia apart and allow first flow of urine to pass into toilet (Do not stop the flow of urine).
7. Collect the midstream portion of urine in container.
8. Place the lid on the container and label the container (not the lid).
9. The container needs to be labeled with the patient's first and last name, date of birth, date and time of collection, collector's initials, and sample type.

Males:

1. Wash hands with soap and water, rinse and dry.
2. Cleanse penis with towelettes provided.
3. If the patient is uncircumcised, retract the foreskin and keep it retracted until the sample is collected. Rinse with water.
4. Allow first flow of urine to pass into toilet. (Do not stop flow). Collect midstream urine in a sterile container
5. Place the lid on the container and label the container (not the lid).
6. The container needs to be labeled with the patient's first and last name, date of birth, date and time of collection, collector's initials, and sample type.

Straight catheter collection

1. Prior to catheterization, the patient should force fluids until the bladder is full.
2. Clean urethral opening (and the vaginal vestibule in females) with soap and water. Rinse.
3. Pass the catheter into the bladder using sterile technique.
4. Discard the first several milliliters of urine (as it may contain organisms lodged in the catheter during insertion).
5. Collect a sample from mid or later flow into a sterile container.
6. Place a lid on the container and label the container (not the lid).
7. The container needs to be labeled with the patient's first and last name, date of birth, date and time of collection, collector's initials, and sample type.

Transport

- Transport samples to the laboratory as soon as possible. If the specimen cannot be analyzed within two hours, refrigerate the specimen at 4°C. Bacterial counts will remain stable at 4°C for 24 hours.

24-Hour Urine Collection

Container:

24-Hour Urine Jug, 2500 mL

Brown Jug, See Urine pH Adjustment and Preservatives:
24- hour Collection

Instructions for the patient:

1. Always refrigerate specimen during collection.
2. To begin the 24-hour collection, urinate into the toilet. Mark this time on the slip attached to the 24-hour container in the section labeled "COLLECTION BEGUN".
3. Collect and save all urine for the next 24 hours. Refrigerate sample during collection.
4. Urinate at EXACTLY 24 hours after the collection began and include this urine in the collection. If you are unable to void at this time, obtain a specimen as soon as possible. Record the time in the section "COLLECTION COMPLETED".
5. If the collection container contains an acid preservative, void into a clean urine cup and transfer the urine to the jug carefully, so as not to splash acid on yourself. Refrigerate sample.

Instructions for the office:

1. Call the LRH lab at 444-9527 and ask for a 24-hour urine container for whichever test you want as it may need preservative in it. We will send it out as soon as possible. Or you can send the patient to the laboratory to pick one up.
3. Before giving the container to the patient label it with two patient identifiers. When you get the urine container back from the patient, make sure the **beginning and ending times** are written on the container.
4. Refrigerate the sample until it is sent to the laboratory.
5. An outpatient laboratory requisition must be completed and sent in with the sample, as well as the Collection of 24-Hour Urine Specimen Form

pH Adjustment Preservatives: 24-Hour Collection

When a 24-hour urine collection is submitted, the collection sheet should be checked to be sure the correct preservative is in the sample for the tests ordered. Mix the sample well before measuring and aliquoting and check for additional handling instructions.

Bottles containing any preservative will have appropriate labels.

LITTLETON REGIONAL HEALTHCARE LABORATORY
Collection of 24 Hour Urine Specimen Form

PATIENT: _____ **TESTS:** _____

PATIENT DOB: ____/____/____

INSTRUCTIONS FOR PATIENT OR INPATIENT NURSING:

COLLECTION: ALWAYS REFRIGERATE specimen during collection. Bottle must contain correct preservative for tests ordered.

- A. Have patient void urine. DISCARD THE SAMPLE. Record the time ("Collection Begun") below.
- B. Collect and save all urine for the next 24 hours.
- C. Exactly 24 hours after the collection is begun have the patient void urine and include this specimen. If the patient is unable to void at this time, obtain a specimen as soon as possible. Record the time ("Collection Complete") below.

Collection Begun

Month: _____ Day: _____ Time: _____ am / pm Print your Name: _____

Collection Completed

Month: _____ Day: _____ Time: _____ am / pm Print your name: _____

Number of containers in collection: _____ This Container # _____

Laboratory personnel must fill in this section when processing specimen. Verify appropriateness of preservative Used.

Total Volume: _____ mLs Measurer's initial: _____ Comments: _____

THERAPEUTIC DRUG MONITORING GUIDE

Drug Class	Drug	Usual Sampling Time	Therapeutic Range	Toxic
Antibiotics	Amikacin	Peak: 1 H after infusion Trough: prior to next dose	Peak 15-25ug/mL Trough <5 ug/mL	peak >36 trough >6
	Gentamicin	Peak: 30 min after IV dose Trough: 30 min prior to next dose	Peak 5-10 ug/mL Trough <2 ug/mL	peak >12 trough>2
	Tobramycin	Peak: 1 H after infusion Trough: prior to next dose	Peak 5-10 ug/mL Trough <1.5 ug/mL	peak >12 trough >1.5
	Vancomycin	Trough: prior to next dose	Trough 5-10 ug/mL	trough >25
Antiepileptics	Carbamazepine	Immediately prior to next dose	4-12 ug/mL	>15
	Phenobarbital	Varies, prior to next dose	15-40 ug/mL	>40
	Phenytoin	Varies, prior to next dose	10-20 ug/ml neonate:6-14 ug/mL	>20
	Valproic Acid	Immediately prior to next dose	50-100 ug/mL	>100
Broncho-dialators	Theophylline	Oral: 2 hr post-dose (fast) 6-8 hr post-dose (slow) Peak: 30 min after IV dose Trough: 30 min prior to next dose	8-20 ug/mL neonate:6-11 ug/mL	>20
Cardiac Drugs	Digoxin	Peak: 30 min after IV dose Trough: 30 min prior to next dose	0.8 - 2.0 ug/L	Adult >2.5 Child >3.0
Psychoactive Agents	Lithium	12 hours after last dose	1.0 - 1.2 mmol/L	>2.0

HANDLING BLOOD SAMPLES

Refer to specific specimen needed for correct handling instructions:

1. Sample type: **Serum** = Serum Gel Tube

Note: BLOOD BANK DOES NOT ACCEPT GEL TUBES

- a. Following collection gently invert 10 times. This mixes clot activator with the blood.
- b. Allow to clot 30 minutes. This minimizes hemolysis and yields more serum. However, if time goes beyond 1-hour glycolysis occurs (decreasing glucose) and there can be a shift of substances from cells to the serum (increasing potassium may interfere with some enzyme assays).
- c. Centrifuge 15 minutes at approximately 3200 rpm. Centrifugation causes the red cells and serum to separate into distinct layers, separated by a gel barrier.
- d. Keep the tube upright after spinning and during storage. Store at indicated temperature and submit to laboratory.
- e. **IMPORTANT:** If any red cells remain in the serum, transfer serum to another plastic tube, respin and transfer serum to another plastic tube. Store as indicated and submit to laboratory. **Do not respin a gel tube.**

2. Sample type: **Whole Blood**

Lavender top	Yellow top (ACD, tube must be full)
Green Top	Grey Top

- a. Gently invert specimen 8 times immediately following venipuncture. This mixes anticoagulant with blood to prevent clotting.
- b. **DO NOT SPIN.** Store as indicated until submitted to laboratory.

3. Sample type: **Plasma** = Light Blue top (Tube must be full)- invert to mix 4 times

Lavender top- invert 8 times

Green top- invert 8 times

- a. Gently invert specimen 8 times immediately following venipuncture. This mixes anticoagulant with the blood to prevent clotting.
- b. Centrifuge 15 minutes at approximately 3200 rpm. The centrifuging causes the red cells and plasma to separate into distinct layers.
- c. Immediately transfer the plasma to the plastic tube. Label the tube "plasma". **DO NOT** store plasma on cells. Hemolysis can result which can interfere with testing.
- d. **IMPORTANT:** If any red cells remain in the plasma, respin and transfer to another plastic tube. Store as indicated and submit to laboratory.

COAGULATION SPECIMEN HANDLING

SPECIMEN REQUIREMENTS

Sodium citrate is the anticoagulant of choice for coagulation testing. Nine volumes of blood are added to one volume of sodium citrate. Several sized tubes are available (1.8 mL, 2.0 mL and 4.5 mL draw tubes), but each must contain sodium citrate and have a final concentration of 3.2 %. Refer to “Preanalytical Variables” section of this manual for adjustment of specimens with high hematocrits. Other anticoagulants are unacceptable for coagulation testing.

The Greiner Vacuette 3.0 mL 3.2% buffered sodium citrate tube is only used when a larger volume of plasma is required for reference lab send-out testing. Greiner Vacuette tubes have a fill-level mark on the tube label in the form of a black arrow - minimum fill level (bottom of arrow), maximum fill level (top of arrow), nominal fill level (arrow tip). This ensures a reliable, correct blood to additive ratio.

90% of the expected fill in both types of tubes must be achieved to be satisfactory or specimen will be rejected for coagulation testing. Overfilled specimen tubes will also be rejected for coagulation testing.

Samples should be drawn as the second or third tubes when part of a multiple draw using a Vacutainer or when adding to tubes from a syringe. Order of draws as follows:

Blood cultures

Tubes with no additives

Coagulation tubes

Tubes with additives

When only a coagulation tube is drawn, if the venipuncture is prompt and atraumatic, only the one tube need be drawn.

If using a butterfly needle, a first tube must be drawn and discarded.

Tourniquet time is critical and should not be on the arm over one minute. The tourniquet remains on during collection of samples to prevent flushing acid metabolites into the phlebotomy site. The fist must not be pumped.

Clotted specimens are not acceptable. Check for clot formation by gentle inversion. To obtain plasma sample the capped specimen is centrifuged for 15 minutes at 3200 rpm. Samples that have visible hemolysis should not be used because of possible clotting factor activation and end point interference. The APTT is more affected than the PT by hemolysis. Icteric specimens may cause problems. Lipemia may also cause interference.

SPECIMEN STORAGE

The allowable time interval between collection of the specimen and testing of the sample will depend on the temperature encountered during transport and storage of specimen. Specimens for coagulation testing should be processed and stored as follows:

1. **PT** – specimens for PT assays **uncentrifuged or centrifuged** with plasma remaining on top of the cells in an unopened tube kept at **18-24° C** should be tested **within 24 hours** from time of specimen collection.
2. **APTT** – specimens for routine APTT assays and other assays (Fibrinogen) **uncentrifuged or centrifuged** with plasma remaining on top of the cells in an unopened tube kept at **18-24° C** should be tested **within 4 hours** of specimen collection.

If the testing is not completed within 24 hours for PT specimens and 4 hours for APTT and other assay specimens, double-spun plasma should be removed from the cells and frozen at –20° C for up to two weeks. Frozen samples should be rapidly thawed at 37° C while gently mixing and tested immediately; if testing cannot be performed immediately, the sample may be held for a maximum of 2 hours at 4° C until tested. The APTT may be affected on specimens that have been frozen.

SEMEN ANALYSIS / Post Vas ONLY
PATIENT INSTRUCTIONS for the
COLLECTION OF SEMINAL FLUID FOR POST VASECTOMY SEMEN ANALYSIS

Your physician has asked that you provide the Laboratory with a semen specimen. We perform one type of examination at Littleton Regional Healthcare Laboratory referred to as the Post Vasectomy (or Post-Vas) Semen Analysis. Other types of semen analyses must be scheduled in advance with the LRH pathologist for transport to Mayo Medical Laboratories.

Please label the specimen container with your name, date of birth, date & time of collection. Also complete the Semen Analysis Specimen Collection Form provided by your physician or LRH Laboratory. This collection form **MUST** accompany your specimen to LRH Laboratory.

In order to provide the best possible semen sample, it is important that you follow these instructions carefully. Specimen analysis will begin upon submission to LRH Laboratory.

WHEN TO SUBMIT:

1. Post vasectomy semen specimens are accepted for analysis Monday-Friday from 8am to 12noon **only**. Specimens are not accepted on weekends or holidays.

INSTRUCTIONS:

1. Do not have intercourse for three days prior to your sample collection.
2. Complete the Semen Analysis Specimen Collection Form and submit to LRH Laboratory along with your semen specimen.

THE DAY OF THE TEST:

1. Collect the **entire** ejaculated sample by masturbation. Please urinate prior to masturbation. If possible, **DO NOT USE LUBRICANTS**. Specimen cups will be provided by LRH Laboratory or your physician's office. If you do not have a specimen cup, use a sterile jar with a screw top lid.

Note: **BE SURE THAT THE SPECIMEN CUP IS LABELLED WITH YOUR NAME, DATE of BIRTH, and the TIME & DATE of COLLECTION PRIOR TO SUBMITTING THE SEMEN SAMPLE.**

2. If it is possible for you to do so, it is best to collect the sample at the Laboratory. If this is not comfortable for you, you will have to transport the sample from home. **If transported from home, the specimen should arrive at the Laboratory no later than ONE HOUR after collection. It must be kept at body temperature to protect it from excessive cold or heat.**

WHEN ARRIVING AT LITTLETON REGIONAL HEALTHCARE:

1. Register at the LRH registration desk.
2. Proceed to the Laboratory and submit your labeled sample, completed Semen Analysis Collection Form and registered physician order requisition to the lab phlebotomist or technologist.

QUESTIONS: Please call the Laboratory at 603-444-9527

SEMEN ANALYSIS SPECIMEN COLLECTION FORM

SUBMIT SPECIMEN FOR ANALYSIS 8am to 12noon MONDAY TO FRIDAY only

ACCOUNT# _____ PATIENT _____
DOB _____

To assure the most accurate results, the following information is required from the patient:

- 1) Method of specimen collection: _____
- 2) Number of days of abstinence: _____
- 3) Date & Time of collection: _____
- 4) Specimen kept at body temp: _____
- 5) Type of container: _____

Required information for Post Vasectomy Semen Analysis
at Littleton Regional Healthcare Laboratory

MICROBIOLOGY

ACCEPTABILITY OF SPECIMENS

The following deficiencies are commonly encountered and significantly compromise the interpretation of culture results. Alternative approaches may be suggested if specimens fit into any of the following categories:

- A. Specimens potentially hazardous to personnel
 - 1. Specimens in uncapped or inadequately sealed containers
 - 2. Containers which show evidence of external contamination by the specimen.
 - 3. Specimens submitted in syringes with unprotected needles.
- Inadequate containers
 - 1. Non-sterile containers
 - 2. Cracked containers
 - 3. Closed systems (e.g. blood culture bottles) which have been opened.
- C. Labels
 - 1. Specimen container not labeled with patient's name, date of birth, site, source, date and time of collection, collector's name or initials.
 - 2. Label on specimen and test request do not match.
- D. Swabs
 - 1. Dry swabs (except for swabs for throat strep screens).
 - 2. Inappropriate swab types.
- E. Anaerobes
 - 1. Specimens submitted in an aerobic atmosphere
 - 2. Specimen not transported to lab in timely manner.
- F. Urine
 - Indwelling catheter tips; Urine collected through the indwelling catheter is acceptable.

MICROBIOLOGY SPECIMEN COLLECTION AND TRANSPORT

A. Safety considerations:

- 1. Follow universal precautions guidelines. Treat all specimens as potentially hazardous.
- 2. Personnel should use appropriate barrier protection when collecting or handling specimens.
- 3. Do not contaminate the external surface of the collection container and/or its accompanying paperwork.
- 4. Minimize the direct handling of the specimens in transit from the patient to the laboratory whenever possible. Use plastic sealable bags with a separate pouch for the requisition.

B. General guidelines for proper specimen collection:

- 1. Before collecting the specimen, consider the risk/benefit of the collection procedure to the patient.
- 2. Collect specimen before administering antimicrobial agents when possible. Note any antibiotic the patient is receiving on the culture order.
- 3. Collect specimen with as little contamination from indigenous microflora as possible.
- 4. Utilize appropriate collection devices.
- 5. Clearly label the specimen container with the patient's name, date of birth, the date and time of collection, site and source.

6. Collect an adequate amount of specimen.
7. Identify the specimen source and/or specific site correctly so that proper culture media will be selected during processing.
8. If a specimen is to be collected through intact skin, cleanse the skin first.
9. Collect specimen in E-swab devices or sturdy, sterile, screw-cap, leak proof containers with lids that do not create an aerosol when opened.

C. General guidelines for proper specimen transport:

1. Transport all specimens to the laboratory promptly to ensure the survival and isolation of fastidious organisms and to prevent overgrowth of more hardy bacteria.
 - a. Transport urine and respiratory specimens within 1 hour of collection unless they are refrigerated.
 - b. Most specimens should be less than 2 hours old when received. Some fecal samples must be received within 1 hours of collection unless preservative is appropriate for the test ordered.
2. Alternatives to prompt delivery:
 - a. Refrigerate most specimens at 2-8°C. CSF, blood cultures, stool cultures, anaerobic culture should not be refrigerated. Refer to specific following guidelines:
 1. If blood culture is drawn, hold it at room temperature.
 2. Specimens that may harbor temperature sensitive organisms such as *Neisseria* species should be left at room temperature.
 3. For anaerobic specimens, use anaerobic transport system and maintain at room temperature. Wound and body fluid specimens submitted in other containers must be received within one hour of collection.
 4. Stool specimens:
 - For bacterial culture, submit stool specimen in clean container. Fecal specimens must be received within one hour of collection or placed into an Orange capped Para-Pak container
 - For parasitology examination, mix stool with preservative in both vials in the Para-pak collection kit.
 - For detection of *C. difficile* and Fecal Lactoferrin, submit stool in a clean, sterile plastic container.
 5. Hold CSF specimens at room temperature (unless they are to be cultured for viruses).
 6. All specimens for viral culture must be refrigerated.
 7. Specimens submitted for Herpes (M40 viral media) or vaginal pathogens for Cepheid MVP Xpress (Xpert Swab Specimen Collection Kit), must be collected in the appropriate containers.
3. Use of specimen transport systems:
 - Aerobic transport methods are listed in Table 1.
 - When using an E-tube swab for collection and transport of specimens, the test request should be considered prior to specimen collection.
 - E-swab transport systems are also used to ensure the viability of anaerobic organisms in transit to the laboratory. Speedy transport is vital.
 - Required transport methods for various specimens are listed in Table 2.

Table 1 - Transport Systems for aerobic specimens

System	Comments
Swab Transport System (example: E-swab)	Sterile, disposable culture collection and transport system consisting of plastic tube containing a rayon-tipped swab and liquid transport medium. Maintains viability for 24-48 hours for most organisms. (Not anaerobes or facultatives).
Sterile tubes (screw-cap glass or plastic tubes, sterile Vacutainer tubes without additives)	Useful for collection of sterile fluids, bronchoalveolar lavage, drainage, or brush specimens.
Para-Pak Stool Transport System	Two vials containing PVA and formalin are used for O&P detection. One orange vial containing Cary-Blair media for stool culture or GI panel PCR. A sterile, plastic cup or vial is used for C. difficile detection.
CT/NG swab Collection kit	Use the Xpert Swab Specimen Collection kit
Urine CT/NG Transport vial	Chlamydia/Gonorrhea urine transport vial; first (dirty) void, not clean catch
Tissue, Aspirates	Tissue must be in a sterile specimen container. Aspirates should be in a syringe without needle.
Cepheid Xpert Xpress MVP	Use the Xpert Swab Specimen Collection kit
Herpes 1+2 by PCR	Use viral transport media (Copan UTM-RT) provided by the laboratory. Break swab shafts at the score points.

Table 2 - Specimen Transport Guide

Source and type of specimen	Transport Method for Bacterial Culture
Blood	2 blood culture bottles (10 ml) per set used for adult blood collection, 1 pedi bottle (1-3 ml) for pediatric collection.
CNS CSF, Ommaya fluid Brain abscess CNS biopsy	Transport immediately Sterile screw-cap container/tube E-tube If specimen is small, send in sterile cup with small amount of 0.85% NaCl (never place in formalin).
Gastrointestinal system Feces, Rectal swab Gastric lavage or washings, Duodenal aspirate Rectal biopsy, Sigmoidoscopy specimen	Clean container. Place swab in medium. Sterile screw-cap cup or sputum trap; transport immediately. If specimen is small, send in sterile cup with < 1 ml of 0.85% NaCl. (Never place in formalin).
Eye Conjunctival scrapings Corneal scrapings, Intraocular fluid	Send prepared smears and E-tube / sterile container. Send prepared smears and E-tube / sterile container, anaerobic transport system.
Genital tract, female Amniotic fluid, Bartholin fluid, Fallopian tube Cervical, urethral, vaginal, vulval Endometrial	E-tube transport system with 1-2 ml of sample E-tube / Swab, viral or chlamydial transport. (UTM-RT) Additional swab in Affirm Ambient Transport system for Trichomonas, Candida, or Gardnarella. Sterile screw-cap cup or tube or E-tube.
Genital tract, male Anal swab, urethral, penile lesion Epididymis Semen, prostatic massage	E-tube transport system with 1-2 ml of sample E-tube / Swab, viral or chlamydial transport. (UTM-RT) Sterile screw-cap cup, tube or E-tube transport system
Lower respiratory tract Lung biopsy Expectorated or induced sputum Tracheal or endotracheal aspirate Bronchoalveolar lavage fluid & Bronchial washings Transbronchial biopsy & Bronchial brush Transtracheal aspirate & Lung Aspirate	Sterile screw-cap cup; if specimen is small, add <1 ml sterile 0.85% NaCl (never place in formalin). Sterile screw-cap cup. Sputum trap or sterile screw-cap cup or tube. Sterile screw-cap tube with 1-2 ml of 0.85% NaCl. E-tube transport system or sterile screw-cap cup or tube.
Upper respiratory tract Throat, nasal, nasopharyngeal swab, Oral culture Tympanocentesis fluid & Sinus aspirate Nasopharyngeal suction & Nasal washings	Swab transport or virus transport system. (UTM-RT) E-tube transportation vial. Sterile screw-cap cup or vial transport system.

Sterile body fluids (excluding CSF, urine, blood) Pleural, peritoneal, ascites, joint, synovial, pericardial and amniotic fluid aspirates	Anaerobic transport system or sterile tube/container.
Subcutaneous tissue and skin Ulcers or nodules, superficial wounds (bacterial) Exudate, Biopsy, Burn specimens & Superficial fungal lesion material	Syringe aspiration (use 0.85% NaCl injected subcutaneously if initial attempt at aspiration is not successful) is preferable to a swab specimen. E-tube transport system; or sterile tube/container. Sterile screw-cap cup (if specimen is small, add <1 ml sterile 0.85% NaCl to prevent drying). Sterile screw-cap container
Deep Wounds, aspirates, tissues Site wounds, Deep wounds, or abscesses, soft tissue aspirates Bone, Skin punch biopsy	E-tube transport system, syringe aspirates or tissue are preferred specimens. Sterile, screw-cap container
Urine Clean catch, Ileal, conduit, Straight catheter Suprapubic aspirate Bladder washout & Bilateral ureteral catheterization	Sterile screw-cap cup or tube

PACKAGING LABORATORY SAMPLES FOR TRANSPORT WITH COURIER

Each office is responsible for getting samples ready for the courier to pick up for delivery to the lab, and we appreciate your help with this. In order to ensure optimal service for all of our clients, we ask that samples be packaged and ready to go prior to the courier arriving.

1. Inspect each primary container (the container in direct contact with the sample) prior to packaging for the courier pick up. Look for evidence of leaks and please carefully turn screw-capped containers upside down to ensure that their lids are on securely. A leaky sample may contaminate other patient's samples and may render one or more samples unacceptable for testing.
2. Package like sample types together at the appropriate temperature. By putting same sample types in one bag it expedites unpacking and will decrease turnaround time.
3. Put the requisitions corresponding to the samples in the back pocket of the specimen transport bag. If a patient has multiple samples that require storage at different temperatures, place a copy of the lab requisition with each sample.
4. Keep a record of what you give to the courier for transport. Make sure you have packed all of the samples for the tests requested.
5. Complete and send a specimen transport log, recording patient names and specimen types sent.