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Title:

Riverview Health Laboratory Client Services Guidelines

Approvers:	
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Reviewed By: • Director-Laboratory Services, Lab Manager - Quality, Blood Bank, and Client Development • Last Periodic Review: 08/31/2023	**Writer:** Laboratory Services
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Principle:

1. Riverview Health Laboratory provides laboratory services seven days a week, twenty-four hours a day. Specialty areas within the laboratory include Chemistry, Hematology, Coagulation, Microbiology, Blood Bank, Serology, Urinalysis, Cytopathology, Anatomic Pathology.
2. Riverview Health is certified to perform testing under the Clinical Laboratory Improvement Amendments of 1988 (CLIA), College of American Pathologists (CAP), American Association of Blood Banks (AABB) and the Food and Drug Administration (FDA).

Procedure:

1. Contact Lab Client Services staff with questions at 317-776-7241.
2. Lab Client Services will provide assistance in the following areas:
    a. Courier or Sample Pick up and Transport to Lab
        i. Couriers are available to deliver supplies and transport collected specimens.
        ii. Courier pickups are scheduled with multiple stops throughout the day, including weekends.
        iii. All courier vehicles are equipped with storage containers to ensure the integrity of specimens during transport.
    b. Supply Orders
        i. Riverview provides clients with the supplies to collect and transport specimens to be tested at Riverview Health.
        ii. Supply order forms are available upon request and supplies can be ordered by sending the form via fax to the laboratory.
    c. Test Menu and Test Requests
        i. See table below (3) for Required Elements of an Order.

ii. Custom request forms are available upon request. General Laboratory Requisitions may be used and are available upon request.
iii. The laboratory will perform tests only at the written or electronic request of an authorized person. The request must include specific patient and specimen information as well as the tests to be performed.

d. Test Results Reported
   i. Additional copies or reports should be directed to Health Information during normal business hours.

e. The following information may also be found in the Lab Test Catalog at RIVERVIEW.ORG.
   i. Patient Preparation needs such as fasting or method of collection
   ii. Specimen requirements, handling and acceptability
   iii. Outpatient Lab hours and drop off locations.

3. **Required Elements of an Order**

Item	**Details and Instructions**
Patient Information	Patient demographics (to assign proper reference ranges) 1. Name 2. DOB 3. Gender 4. SSN or MR #
Specimen Collection	1. Date/time of collection 2. Initials of collector / unit / facility 3. Method a. Urine – CCMS or Cath b. Venous, Arterial, Capillary 4. Source a. Wound – site b. Culture – site/type **c.** Plasma –preservative used
Additional Information	1. Priority – Routine, Timed, Stat 2. Call instructions if appropriate 3. Fax copies to instructions if needed
Diagnostic Narrative / Medical Necessity	Indicate the reason for ordering each test 1. Narrative descriptions are required 2. ICD codes may also be included.
Billing Information:	Insurance (commercial), Medicare, Medicaid, Self-Pay – Submit the following: 1. Responsible party information – Policy Holder. 2. Policy holder employer 3. Insurance company name and address, insurance number 4. Medicare, Medicaid number and eligibility status
Ordered Tests	1. Panel or Individual test 2. Indicate if test is diagnostic or screening.

Recurring / Standing Orders	1. A test or series of tests that will be repeated at regular intervals for a fixed period (no longer than 1 year). 2. Diagnosis must support the recurring order. 3. Must also include: a. Duration (up to 1 year) b. Interval of service (daily, weekly, monthly, etc) 4. Changes will require a new order
Advanced Beneficiary Notice for Outpatient Service for Medicare beneficiary	1. When it is believed that a test will not be covered by Medicare, the ordering provider should convey this to the patient. 2. When the notification is made to the patient, an ABN form is presented according to Advanced Beneficiary Notice - Laboratory Testing 3. Submit a copy of the form with the lab request/order
Provider Signature	1. Orders must be authorized with physician's signature, written or electronic and date of test request. 2. All phone/verbal orders are followed up with a written verification or confirmed valid test request.

4. Specimen Collection and Handling

a. The following procedures are available for additional instruction and guidance on collection and handling of quality laboratory samples.
   i. Venipuncture Blood Collection
   ii. Pediatric Phlebotomy Guidelines
   iii. Adverse Reactions to Phlebotomy
   iv. Capillary Blood Collection
   v. Transfusion Patient Positive Identification and Specimen Collection
   vi. Specimen Processing Workflow - Laboratory

5. Collection, Storage, and Handling of Specimens Prior to Transport

Sample Type / Container	Handling and Storage Instructions
Whole Blood 1. **Blue –** Sodium Citrate (3.2%) for coagulation testing (PTINR, aPTT, etc) 2. **Purple –** EDTA for hematology testing (CBC, H&H, Sed rate, HbA1c) 3. **Green –** Lithium Heparin for chemistry testing (Metabolic panel, Cardiac enzymes, etc.)	1. Whole blood is drawn into tubes with an anticoagulant. 2. Once tube is filled, it must be inverted 5 times to adequately mix and prevent blood clotting. 3. Submit entire tube for testing. 4. It is preferred not to separate/aliquot samples.
Plasma (not clotted, and spun) **Blue, Purple, Green**	1. Plasma is obtained by drawing a whole blood sample and then centrifuging to separate the plasma from the cells.

	2. Plasma contains clotting factors, serum does not. 3. Some require immediate separation while others may need to be spun twice to remove platelets. 4. Typically spin at 3000 rpm for 10 minutes. Transfer plasma into a transport tube. 5. Clearly label as plasma and type (citrate, EDTA, heparin)
Serum 1. **Red – No Additive** 2. **Gold – Serum Seperator Gel barrier** 	1. Serum is obtained by drawing blood into red or gold top and allowing 20 minutes for clotting of sample. Then centrifuge for 10 minutes at 3000 rpm to separate the serum from the cells. 2. Serum must not sit for prolonged period and should be separated from the cells by gel or transferred into a transport tube. 3. Transferred samples must clearly be labeled as serum (gold SST) or (red no additive).
Urine	• Routine UA (urinalysis) requires 10 mL of urine in a screw capped, clean, plastic urine container or transport kit. • Sample is kept refrigerated until transport if not tested within 2 hours. • Urine for cultures is submitted in a grey top urine collection tube with preservative.
Body Fluid for Cell Count / Crystals	• All types of body fluids should be put into a purple top EDTA tube. • A fluid in a plain red tube or syringe may clot and prevent testing. • Body fluid samples should never be sent in a syringe with needles attached.
Microbiology Samples	• Send in appropriate sterile container. • See Non-Blood Specimen Containers aide for transport media and swabs required for adequate recovery of organisms. • Contact Microbiology department at 317-776-7241 for detailed instructions if needed.

6. Standard Order of Draw

a. Blood collection tubes must be drawn in a specific order to avoid contamination of additives between tubes and for sterility when blood cultures are drawn.
   i. Chemistry tests performed on gold, red, or green tubes collected AFTER the purple tube will have the following problems due to preservative contamination:

1. Elevated potassium (K+) due to additive in the purple tube being transferred to the blood in the chemistry tube.
2. Decreased Calcium (Ca) due to the EDTA additive in the purple tube binding the calcium in the sample to prevent clotting.

ii. Coagulation studies performed on blue/citrate tubes collected AFTER a gold tube or heparin tube may give incorrect results due the effects of the additive on the sample.

b. The recommended order is:
   i. Blood culture tube (Aerobic then Anaerobic)
   ii. Non-additive tube (red-top tube)
   i. Coagulation tube (blue/citrate)
   ii. Gel separator (gold)
   iii. Heparin (green)
   iv. Purple EDTA (Lavendar)
   v. Oxalate/ fluoride (grey)

7. **Specimen Labeling Requirements:**
   a. Specimens must be labeled with:
      a. the patient name,
      b. date of birth or medical record number,
      c. time and date of collection,
      d. and collector/phlebotomist ID.
   b. The label on the specimen must match the information on the requisition.
   c. A specimen may be rejected due to improper labeling.
   d. To ensure correct specimen labeling samples are labeled at the time of collection and in the presence of the patient.
8. **Storage and Transport Temperature**
   a. Specimens must be stored at the temperature indicated in the Lab Manual. Contact Client services for instructions on storage and transport requirements.
9. **Specimen Quality**
   a. Specimen quality or integrity is evaluated prior to testing samples. The following frequently noted sample integrity issues may require a sample to be rejected or cause an inability to report out final results for a sample submitted.
      i. Delayed centrifugation
         1. Serum tubes should be centrifuged and separated once clotted (20 minutes). Glucose and other chemistries are affected by prolonged contact with the cells (clot).
      ii. Hemolysis
         1. Rupture of the red blood cells releases extra potassium into the serum/plasma and discolors the otherwise yellowish liquid. The amount of hemolysis is noted by variation in color from pinkish to bright red.
         2. Many lab tests are affected by moderate and severe hemolysis.
         3. Hemolyzed specimens are not suitable for cell counts or Hct & Hgb.
      iii. Inadequate Draw – Quantity Not Sufficient (QNS)
         1. Coagulation tests require a full tube of blood. The ratio of anticoagulant is specific for the volume of specimen.
      iv. Clotted Specimens

1. All hematology and coagulation testing utilizes anti-coagulated blood. Blood clots in the sample will cause incorrect results for these tests.
2. Platelet counts will be falsely decreased, other cell counts will also be affected as well as calculated red cell indices and values.

v. Lipemia / IV contamination
   1. Lipemia results either from grossly elevated fats/lipids in the blood sample or from IV fluid contamination. The serum/plasma appears milky white.
   2. Depending on the cause, it can interfere with a variety of chemistry tests. It can falsely elevate ALT and AST. It can also affect CBC test results.
   3. Be sure a patient has adequately fasted prior to collection, if needed.
   4. Dilution of blood samples with IV fluid results from collection above an active IV and may interfere with all lab testing. Draws must be performed below active IV sites or using alternate side of the body.

vi. Prolonged storage, poor preservation, or old specimens
   1. Hematology specimens must be tested within 24 hours. Old specimens will yield unreliable cell counts and distorted cell morphology.
   2. Coagulation plasma should be centrifuged, separated, and stored appropriately until testing can be performed.

10. **Test Results and Reports**
    a. Laboratory reports are generated four times a day and are auto-faxed directly to - the physician's office or clinic as arranged.
       i. To arrange this service, a Fax Authorization form is required.
    b. Electronic Medical Record (EMR) with live interface connection to Riverview will have results available upon test completion/verification.
    c. All other reports are printed and faxed according to the original order / requisition.
    d. A pathologist is available to answer questions for physicians or other licensed practitioners at 317-776-7242 during normal business hours.