Specimen Collection Manual

Reviewed and Approved by:

[Signature]
Medical Director

[Signature]
Date
9/02/16
# TABLE OF CONTENTS

## Directory of Services
- Reference Guide 2
- On-line Procedure Catalog 2
- Hours of Operation 2
- Client Services 2
- Guthrie Reference Laboratories 2
- Confidentiality 2
- Lab Department Contacts 2
- Regional Office Phlebotomy Sites 3
- Ordering Laboratory Tests 3
- Specimens Received in Laboratory 3
- Proper Identification of Specimens 4
- Specimen Rejection Criteria 4
- Test Additions After Specimen Submission 4
- Quality Assurance 4
- Stat Services 5
- Reporting 5

## Patient and Specimen Preparation
- Supplies 5
- Patient Preparation 5

## Blood Sample Collection
- Venipuncture Procedure 6
- Difficult Venipuncture 7
- Adverse Reactions 7
- Uncooperative Patients 7
- Patient Refusal 7
- Finger Puncture 7
- Heel Puncture 8
- PKU Testing 8
- Safety Precautions 8

## Specimen Collection
- Sputum 9
- Stool 9
- Blood Bank Specimens 9
- Urine 9
- 24-Hour Urine Collection 10
- 24-Hour Urine Preservative Guide 10
- Therapeutic Phlebotomy 10

## Specimen Processing
- Centrifuge 11
- Plasma 11
- Serum 11

## Blood Smear Preparation
- Smear preparation 12

## Bacteria / Microbiology Cultures
- Aerobic Culture 12
- Anaerobic Culture 12
- Mycobacterial/TB Culture 12
- Fungal Culture 13
- Parasites 13
- Blood Cultures 13

## Blood Bank
- Out-Patient Transfusion 13
- In-Patient Transfusion 13
- Informed Consent 13
- Autologous Donation 13

## Cytology
- Specimen Collection 14
- ThinPrep Collection 14
- FNA Smear Preparation 14
- Respiratory Tract Specimens 15
- Gastrointestinal Tract Specimens 15
- Body Fluids 15
- Cerebrospinal Fluids 15
- Urines 16
- Breast Secretions 16

## Flow Cytometry
- Epic orders 17
- Synonyms 17

## Surgical/Anatomic Pathology
- Preparation of tissue samples 17

## Virology
- Virology Tests Offered 17
- Virology Specimen Storage and Transport 17

## Specimen Storage, Packing and Transport
- Storage and transport 18
- Packing list 19

## Computer Down-Time
- Out-Patient Lab Order Entry 20
- Cytology Procedure During Down-Time 20

## Attachments
- Down-Time Log Sheet
- Test Tube Order of Draw
Directory of Services

Reference Guide
This directory can be used as a reference. It contains information required to order and procure Guthrie Laboratory testing. This directory is available on the Guthrie intranet and internet. Individual test requirements are listed in the EPIC procedure catalog.

Guthrie and its reference laboratories are constantly increasing their test menus and improving their services. The most important changes are communicated to all offices by means of the EPIC homepage or memo. Links to reference lab requirements can be provided.

On-Line Lab Procedure Catalog or Other Test Information
Laboratory test requirements are continually changing. Guthrie’s laboratory offers an on-line lab test/procedure directory plus more information on the intranet. These options provide the most up-to-date specimen collection requirements.

Accessing the procedure catalog
- Access EPIC
- Under main EPIC button
- Search Procedure Catalog for information on clinical tests
- Printed information is available upon request

Hours of Operation
Sayre: Outpatient Phlebotomy
Monday-Friday 7:00 AM - 5:30 PM and Saturday from 7:00 AM - 12:00 noon.
The phlebotomy unit is closed on Sundays and holidays.

Corning: Outpatient Phlebotomy
Monday-Friday 7:00 AM - 6:00 PM and Saturday 8:00 AM - noon.

Troy: Outpatient Phlebotomy
Monday-Friday 6:00 AM - 7:00 PM and Saturday from 7:00 AM - 12 noon.

All laboratories are open for testing and to accept specimens 24 hours a day, 7 days per week without exception.

Laboratory Client Services
Sayre laboratory support representatives are available Monday – Friday 7:30 AM – 5:00 PM
Phone: (570)887-4719 or toll free: (844) 617-4719
Fax (570)887-4729.

Corning laboratory office support is available Monday – Friday 8:00 AM – 4:30 PM
Phone: (607)937-7271

Guthrie Reference Laboratories
Tests not performed in the Guthrie laboratory system will be sent to one of the following New York State accredited laboratories:
- Quest Diagnostics
- LabCorp
Additional specialized laboratories may also be utilized.

Confidentiality
Guthrie is committed to protecting the confidentiality of individuals’ private lab test results and other personal information in compliance with all federal, state and local regulations. Anonymous testing is only available through your County Health Department. For a complete list of health departments, refer to Guthrie’s Home-Base or contact the laboratory client services department.

Lab Department Contacts

**Administration**
Senior Director
Jerry Flynn

**Sayre**
Quality Assurance
Elaine Ephlin M.T. DLM
Regional Office Coord.
Tonya Wilhelm M.T.
Point of Care Coord.
Mike Katchuk M.T.
Blood Bank Supervisor
Barb Tubby M.T. SBB
Core Lab Manager
Nicole Osman M.T.
Hematology Supervisor
Donna Owen, MT
Anatomic Pathology Manager
Roberta Demoski, CT
Histology Supervisor
Ed Sperduto
Microbiology Supervisor
Maureen Villanti M.T. SM
Phlebotomy Supervisor
Ruby Mosier
Lab Lead Educator
Kim Swingle, M.T.

**Corning**
Asst Admin
Patricia Butray-Frey, MT, MS
Quality
Mary Ann Plumley, MT
Core Lab
Kathy Lovell- Gill, MT
Blood Bank
Melissa Bevins, MT
Micro/Send outs
John Haig, MT
Histology
Linda Stirpe

**Troy**

**Pathologists**
Medical Director
Rick Hartman .D.O
Pathologists
Cristina Aguilar, M.D.
Javad Beheshti, M.D.
Perry Bradstreet, M.D.
Hani Hojjati, M.D.
Joseph King, M.D.
Ashit Sarker, M.D
Path Office Supervisor
Connie Strope
Regional Office/Patient Service Collection

Phlebotomy Sites
For optimal patient convenience, patients may have blood samples collected at any of Guthrie’s regional offices or at Guthrie patient draw stations. Patients are encouraged to call their local Guthrie office/draw station to confirm availability of services and times of operation to ensure maximum convenience. Some offices request that the patient makes a lab appointment. Patients from non-Guthrie providers may have laboratory samples collected at any Guthrie offices/draw stations provided a written request or prescription has been submitted or provided. Guthrie satellite offices include:

Offices: *Office updates are available on website

<table>
<thead>
<tr>
<th>P.A. Sites</th>
<th>N.Y. Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athens</td>
<td>Apalachin</td>
</tr>
<tr>
<td>Canton</td>
<td>Bath</td>
</tr>
<tr>
<td>Dushore</td>
<td>Big Flats</td>
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<tr>
<td>Mansfield</td>
<td>Corning Centerway</td>
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<tr>
<td>Mansfield Univ.</td>
<td>Corning Hospital</td>
</tr>
<tr>
<td>Towanda</td>
<td>Corning-Steuben</td>
</tr>
<tr>
<td>Troy Clinic</td>
<td>Erwin</td>
</tr>
<tr>
<td>Troy Hospital</td>
<td>Ithaca</td>
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<tr>
<td>Tunkhannock</td>
<td>Owego</td>
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<tr>
<td>Wellsboro</td>
<td>Southport</td>
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<tr>
<td>Wyalusing</td>
<td>Vestal</td>
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<td></td>
<td>Watkins Glen</td>
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<td></td>
<td>Waverly</td>
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</tbody>
</table>

**Draw Stations:**
- Bath Patient Service Center
- Erwin Patient Service Center

**Ordering Laboratory Tests**

All laboratory orders must be entered in the EPIC computer system.

**Test Requisitions**

Specimens received must be accompanied by a written request from the provider or preferably Guthrie’s electronic lab request generated from the EPIC computer system. Requisitions must contain the following information:

- Patient’s full name
- MRN#
- DOB
- Name and Dr. # of ordering provider
- Appropriate diagnosis code
- Any special instructions

Other information needed:

- Location
- Specimen type (site/source), if not blood
- Identity of the collector
- Date and time of collection
- Test requested
- Type of infection and/or organism expected when appropriate
- Insurance information

**Specimens Received in Any Laboratory**

It is the responsibility of the collecting/receiving location to confirm the specimen is properly labeled with:

- Patient’s first and last name
- MRN#
- DOB
- Date and time of collection
- Collector’s I.D. (Epic logon or collector’s name)
- Specimen site and source for non-blood specimens

To confirm the laboratory test results are sent to appropriate provider

- A copy of the lab requisition must be sent to the lab client services department IF the order is a hard copy order.
- The ordering physician must be entered in the computer system to confirm the lab results are routed properly.
- Additional result copies may be routed to other providers by entering the provider’s name in the results routing EPIC activity.
Proper Identification of Specimens
All specimens are labeled in the presence of the patient using 2 forms of patient identification. Laboratory orders placed into the EPIC computer system will generate barcode labels for each sample to be collected. The EPIC labels are placed on the specimens immediately after collection, at patient bedside or chairside.

When a barcode label is not available, hand-written labels must clearly list the following information on the patient specimen, see general lab label (storeroom item #5482)

Outpatients’ identity will be confirmed by asking the patient to state their name and date of birth. When available, outpatient identification bands are used to identify outpatients. The identification band is scanned and the patient is asked to state their name and date of birth to confirm patient identification.

Specimen Labels:
All specimens must have an EPIC barcode label. If the EPIC label must be placed over an existing label, care must be taken not to obscure the two forms of patient identification, name and date of birth or name and MRN number.

Specimen Rejection Criteria
Any specimen not meeting the defined acceptance criteria will be rejected as per policy. If a test is cancelled, the originating location/collector will be notified of the need to re-collect or re-order.

Reasons for potential specimen rejection may include the following:
- Specimen not labeled
- Labels and information for both patient A and patient B on same sample
- No site or source provided for samples that require site and source
- Wrong or inconsistent information regarding site, source, or patient information
- Labels not correcting placed (i.e. on lid)
- Illegible information
- If one of the labels is unreadable enough to question the identity – *often a judgment call on the part of the lab*
- Minor misprints of labels that are obvious misalignments – *often a judgment call on the part of the lab*

Patient samples that are deemed irretrievable (i.e. spinal fluid) every effort will be made to determine the appropriate identifying information in order to process and test the sample. In this instance a Laboratory Unacceptable Specimen Authorization Form MUST be completed and signed by the individual accepting responsibility for the specimen identification.

Test Additions after Specimen Submission
EPIC Patients – Lab tests may be added to existing specimens by placing a laboratory communications order or placing an add on order in the EPIC computer system. If for any reason the lab test cannot be performed, the laboratory staff will notify the patient’s nurse, unit clerk, or the outpatient office to request a redraw. If specimens are too old or not appropriate for adding on, the EPIC computer system will route this order for new specimen collection.

Verbal Orders – Laboratory add on orders must be ordered in the EPIC computer system. Laboratory client services may take verbal orders to add on tests provided the sample volume is sufficient and meets the test requirements. When the verbal order is received, lab personnel will order the test as a verbal order and then read back the order to the requesting individual. The verbal order is documented as “Verbal Order” in the computer system.

Quality Assurance
As part of the organization’s on-going efforts to reduce medical errors and to confirm the reporting of accurate, high quality test results, the Guthrie Laboratories have established guidelines for the ordering and collection of laboratory tests that are consistent with state and federal regulations. Laboratory specimens submitted that do not meet these guidelines will be rejected. See specimen rejection criteria. The appropriate personnel will be notified at the time of specimen rejection and the rejection will be documented in the computer system. The patient will not be billed for the rejected test.

If patient samples that are deemed irretrievable (i.e. spinal fluid), every effort will be made to determine the appropriate identifying information in order to process and test the sample. In this instance a Laboratory Unacceptable Specimen Authorization Form MUST be completed and signed by the individual accepting responsibility for the specimen identification.
Stat Services

**STAT LAB TESTS**: Selected tests are available on a STAT (emergency) basis. STAT results are reported electronically as soon as possible, usually within 45 minutes. Written and/or electronic reports will follow per routine medical report delivery system.

STAT tests include:
* Consult each organization policy for a list in policy form.

<table>
<thead>
<tr>
<th>Test</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>Fluid Cell Count and Glucose</td>
</tr>
<tr>
<td>Acetone</td>
<td>Frozen Sections</td>
</tr>
<tr>
<td>Alcohol</td>
<td>Gram Stain</td>
</tr>
<tr>
<td>ALT/AST</td>
<td>Glucose</td>
</tr>
<tr>
<td>Ammonia</td>
<td>HCG Qualitative (serum or urine)</td>
</tr>
<tr>
<td>Amniseur</td>
<td>HCG-Quantitative (serum)[1-2 Hours]</td>
</tr>
<tr>
<td>Amylase</td>
<td>Influenza – A/B</td>
</tr>
<tr>
<td>Antiglobulin Testing:</td>
<td>Intra Op Consult - Gross</td>
</tr>
<tr>
<td>direct and indirect coombs test</td>
<td>Lactic Acid</td>
</tr>
<tr>
<td>Bilirubin, neonatal</td>
<td>Lipase</td>
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<tr>
<td>Bilirubin, total and direct</td>
<td>Lithium</td>
</tr>
<tr>
<td>BMP</td>
<td>Magnesium</td>
</tr>
<tr>
<td>BNP (NT Pro BNP)</td>
<td>Mononucleosis Test</td>
</tr>
<tr>
<td>Calcium</td>
<td>MRSA screen by PCR 92 Hour turnaround</td>
</tr>
<tr>
<td>CBC with Diff</td>
<td>Myoglobin (serum)</td>
</tr>
<tr>
<td>C Diff by PCR (90 minute turnaround)</td>
<td>Osmolality (serum or urine)</td>
</tr>
<tr>
<td>Chlamydia/GC screen by PCR (2 Hour turnaround)</td>
<td>Platelet Count</td>
</tr>
<tr>
<td>Chloride</td>
<td>Potassium</td>
</tr>
<tr>
<td>CMP</td>
<td>PT/INR (Prothrombin Time)</td>
</tr>
<tr>
<td>CPK, CPK MB Isoenzymes</td>
<td>PTT (Partial Thromboplastin Time)</td>
</tr>
<tr>
<td>CKMB – MB</td>
<td>Rapid Strep Screen</td>
</tr>
<tr>
<td>CO₂</td>
<td>RSV Resp. Sncytial Virus</td>
</tr>
<tr>
<td>Creatinine/ eGFR</td>
<td>Salicylate</td>
</tr>
<tr>
<td>D-Dimers:</td>
<td>Sodium</td>
</tr>
<tr>
<td>Drugs of Abuse Screen Urine</td>
<td>Spinal Fluid Analysis (Cell Count, Glucose, Protein, Gram Stain)</td>
</tr>
<tr>
<td>Screen</td>
<td>S.pneumoniae urinary antigen</td>
</tr>
<tr>
<td>Phenobarb, Dilantin, Vancomycin, Valproic Acid, Gentamicin, Tobracin from the ED</td>
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</tr>
<tr>
<td>Erythrocyte Sedimentation Rate</td>
<td>Troponin 1 (45 to 1 hour turnaround)</td>
</tr>
<tr>
<td>FFN (Fetal Fibronectin)</td>
<td>Type and Crossmatch</td>
</tr>
<tr>
<td>Fibrinogen</td>
<td>Urea Nitrogen</td>
</tr>
<tr>
<td>Fibrinogen Degradation Products</td>
<td>Urinalysis</td>
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**Reporting**
Specimens are processed upon receipt. Reporting times vary depending on the nature of the test, the analytical time required for the procedure and the method of reporting.

**Critical Values**: Critical Values are those results so far below or so far above the reference range that they have life threatening potential. The result must be verified and the attending physician informed.

- **Out-patients during normal working hours**, the laboratory will call the physician's office foot-noting the first and last name of the individual taking and reading back the test result.

- **Out-patients after normal office hours**, the lab will make every attempt to notify the ordering provider. After three documented attempts, the pathologist on-call will be notified.

**Patient and Specimen Preparation**
Test results are only as meaningful as the quality of the specimen submitted. Correct patient identification and preparation, as well as specimen collection, specimen processing and transportation are all essential to accurate test results. Refer to the EPIC procedure catalog for patient preparation and specimen collection requirements. Procedure catalog printed materials are available upon request.

**Supplies**
High volume specimen collection supplies are available from the Guthrie storeroom. Regional offices may request low volume supplies using a “specimen collection supply request”, available on the lab intranet.

**Patient Preparation**
Many tests require specific patient preparation. Refer to the EPIC procedure catalog.

**Fasting Requirements** – Fasting is defined as no consumption of food or beverage, other than water, for at least 8 hours before testing. However, lipid profile testing recommends a 12 hour fast for accurate test results.
Blood Sample Collection
Gloves must be worn while collecting any patient sample. Wash hands thoroughly before beginning any phlebotomy procedure using warm, soapy water or approved disinfectant.

Venipuncture Procedure
1. Locations with patient identification bands must scan the patient wristband to open the electronic EPIC laboratory orders. This information must match the computer lab orders or the paper laboratory request.
2. Locations without patient identification bands must ask the patient to state their name and date of birth. This information must match the computer lab orders or the paper laboratory request.
3. Prior to specimen collection, ask the patient to confirm their identity by providing the printed labels for their review.
4. Assemble necessary equipment:
   - Collections tubes
   - Tourniquet
   - Gauze pads
   - 70% Alcohol Prep pad
   - Band-Aids
   - Gloves
   - Needle (22 gauge or less)
   - Vacutainer adapter
   - Syringes if necessary (10, 20, 30 ml)
5. While wearing gloves, apply tourniquet 3-4 inches above collection site. Never leave the tourniquet on for greater than 1 minute. If a tourniquet is used for preliminary vein selection, release it and reapply for venipuncture.
6. Cleanse the puncture site using a 70% alcohol prep pad by wiping from the center of the site to the periphery. Allow skin to dry and do NOT re-palpate the site.
7. Ask the patient to make a gentle fist but do not use vigorous hand pumping which can lead to erroneous lab results.
8. Thread the appropriate needle into the Vacutainer adapter or syringe. Unsheathe the needle and inspect, looking for any irregularities and that the opening is clear.
9. Firmly anchor the vein by placing your thumb 1-2 inches below the venipuncture site.
10. Insert the stopper of the first test tube into the Vacutainer adapter. Do not push the tube onto the needle. This will cause a loss of vacuum.
11. Insert the needle into the vein, bevel side up. Puncture the stopper of the first tube and grasp the edge of the adapter to provide stability. Instruct the patient to open their hand until the flow of blood has begun.
12. Fill the tube until the vacuum is exhausted. Remove the tube from the adaptor and insert subsequent tubes making certain to fill each tube completely. See Test Tube Guide and Order of Draw.
13. Test tubes should be gently inverted 5-10 times immediately after being removed from the needle hub. Do NOT shake or mix vigorously.
14. Remove tourniquet, remove needle, placing gauze pad over the site. Apply pressure for 2-5 minutes or until bleeding stops. Cover venipuncture site with a clean bandage. If bleeding doesn’t cease, contact the nurse or pathologist.
15. For vacutainer needles, engage safety cover, and discard needle assembly into red sharps container.
16. Properly label all samples using the computer generated bar-code label or a hand-written laboratory label. Labels should be shown to patient to aid in Positive patient ID. Make sure the date/ time and collector identification can be tracked in computer or on the sample.
17. Wash hand thoroughly after phlebotomy using soap and water or approved disinfectant.

Additional Considerations:
Hematoma Prevention.
- Puncture the uppermost wall of the vein.
- Remove the tourniquet before removing the needle.
- Make sure the needle fully penetrates the uppermost wall of the vein. Partial penetration may allow blood to leak into the soft tissue.
- Avoid superficial veins
- STOP the venipuncture if excessive bleeding occurs. A large lump will appear at the site of the venipuncture.
- Always apply pressure using a gauze pad.

Hemolysis Prevention:
- Mix anticoagulated tubes gently by inverting 8 times.
- Avoid drawing blood from a hematoma
- Avoid using too small a needle
- Allow alcohol skin prep to dry before venipuncture

*When using a syringe, draw the desired amount of blood by pulling back slowly on the syringe plunger and transfer blood using a Saf-T Holder Device. Attach the device to the end of the syringe and dispense the blood into the appropriate tubes as soon as possible to avoid specimen clotting. See figure below.
DIFFICULT VENIPUNCTURE
1. Change the position of the needle. If the needle has penetrated too far into the vein, pull it back slightly. If it has not penetrated far enough, advance the needle further into the vein. Rotate the needle a half-turn.
2. Try another test tube. The vacuum may be exhausted.
3. Loosen the tourniquet. If applied too tightly, the blood flow will be restricted. Reapply loosely.
4. Probing should be minimized. If a small surface vein must be used, a 22 gauge needle or a butterfly may be used.
5. Never attempt a venipuncture more than TWICE. Contact the supervisor or another phlebotomist for assistance. After 4 unsuccessful attempts, notify the attending physician.
6. If the patient refuses blood collection, do not argue with the patient, contact the physician or patient’s nurse or appropriate office.

ADVERSE REACTIONS
Fainting- If the patient is sitting, lower his/her head and arms, check to be sure airway is clear and administer a cold pack behind the patient’s neck. If available, transfer patient to a room to lie down and provide fruit juice or water. If the patient does not respond, notify the pathologist or office physician.

Nausea / Vomiting- Make the patient comfortable. Instruct the patient to breathe deeply and slowly. Provide an emesis basin and or cool cloth for comfort. Give the patient a glass of water to rinse out mouth.

Convulsions- Prevent the patient from injuring himself. Do NOT restrain the patient. Protect patient’s head from injury using a pillow when necessary. If patient is erect, prevent shock of fall.

Cardiac Arrest- Sayre Campus, dial 77.
Regional office, contact physician.

UNCOPERATIVE PATIENT / CHILD
Due to patient’s condition, fear, or age a patient may resist attempts at blood collection. Always make an attempt to enlist the cooperation of the patient to obtain the sample. Always explain the procedure to the patient and/or parent to calm any fears.

Infant Out-patients- Whenever possible, use pediatric collection table with the safety strap or an examination table with the help of the parent to assure the infant does not fall or harm himself. Place an under-pad on the collection table and have the parent gently rest the infant on the under-pad. Secure the safety strap or ask the parent to help restrain the infant.

Infant Hospital In-patients- To prevent injury, collected the blood sample while the infant is in a bassinet.

Small Children Enlist the help of the parents or another phlebotomist to restrain the child.

Older Children- First try to enlist the child’s help then use parental restraint if necessary. Another phlebotomist may also be of assistance.

Adult- Do NOT proceed with the venipuncture. Inform the ordering provider and proceed as instructed.

Abusive Patient- Do not proceed with venipuncture. Call the security department or office supervisor if necessary.

PATIENT REFUSAL
If a confused or mentally challenged patient requires a phlebotomy and refuses to have the blood draw do not force or agitate the patient. Delay the procedure and make another attempt. If this fails, notify the patient’s provider. Document this notification.

FINGER CAPILLARY PUNCTURE
Finger puncture (capillary puncture) is recommended for children ages 1-3. Adult finger puncture may be used when repeated venipunctures have been unsuccessful. Finger puncture (capillary puncture) must be clearly documented on the sample as capillary punctures will alter some tests results. The skin puncture site must be non-edematous as the accumulation of tissue fluid will contaminate the blood sample.

Use the index, middle or ring fingers. The side of the fingertip pad, away from the fingernail is the optimal site for skin puncture. See figure below. Avoid calloused areas or previous venipuncture sites. Do not use the thumb. Use a lancet for adult finger-puncture which will create a 1.5 mm deep x 1.5 mm length incision.

1. Cleanse the selected finger pad with 70% alcohol prep pad. Allow to dry.
2. Firmly grasp the patient’s finger with one hand and the lancet in the other hand.
3. Hold the lancet on the site with moderate pressure, depress the plunger.
4. Immediately release the plunger and dispose of the lancet in a sharps container.
5. Holding the finger downward, gently express blood, collecting droplets using a collection device. Touch the tip of the Collector to the underside of the drop of blood. Blood will flow freely through the Collector and into the tube.
6. Fill tubes to desired level and twist off the Collector and replace with colored plug.
7. Properly label all samples using the computer generated label. Confirm the date, time and collector ID are and on the tubes and/or documented in the computer system.

Capillary puncture, lancet use provided by BD.
HEEL PUNCTURE
Heel blood sample collection is recommended for infants under the age of one.

Use the side of the foot. See figure below. Use a lancet for infant heel-sticks which will create a 1.25 mm deep x 2.5 mm length incision.

1. The skin may be warmed for a few minutes to increase blood flow. Follow the activation instructions found on the heel warmer kit.
2. Cleanse the area with a 70% alcohol prep pad. Allow the skin to dry.
3. Firmly grasp the lancet with one hand and firmly grasp the finger or heel with the other.
4. Hold the lancet on the site with moderate pressure.
5. Depress the plunger.
7. Wipe away the first drop of blood using a gauze pad.
8. Collect the blood sample into the appropriate microtainer tube using a collector vent hole in the upward position. Touch the tip of the collector to the underside of the drop of blood. Blood will flow freely through the collector and into the tube.
9. Fill tubes to desired level and twist off collector and replace with colored plug.
10. Properly label all samples using the computer generated bar-code label. Scanning the ID band will generate order labels. Ensure that the date/time and collector ID is present on specimen and in the system.

PKU Testing
PKU’s are performed on every newborn baby to determine congenital hypothyroidism. See the phlebotomy PKU procedure located in compliance 360.

Safety Precautions
Use standard precautions when handling specimens containing blood or other potentially infectious material. Work areas must be disinfected daily with 10% bleach or other approved disinfectant. Work areas contaminated with potentially infectious material must be disinfected immediately.

Hand Washing: Gloves must be worn and changed after each phlebotomy procedure. Hands must be disinfected using soap and water or approved waterless antiseptic between each patient.

Sharps Disposal: Needles, lancets and any other sharps that can easily puncture the skin should be handled with extreme caution. Needles must not be recapped, bent, broken or cut. Needles should not be removed from syringes or vacutainer adapters. Dispose of the entire device with the needle attached. Red sharps biohazard containers should not be over filled; fill to the indicated level only.
Sputum
The preferred sputum specimen is an early morning expectorated sample obtained after a deep cough. Do not pool sputum samples. Patient should rinse mouth with water before sputum is collected. Avoid adding saliva or nasopharyngeal discharges to the sputum sample. Collect sputum in a sterile container. Lower respiratory tract specimens should be collected by bronchoscopy or transtracheal aspiration avoiding contamination by oropharyngeal flora. Store and transport sputum specimens refrigerated.

Stool
Provide individual containers for each stool test. Stool that is frozen cannot be thawed and separated.

Chemistry Testing: Collect timed specimens (12, 24, 48, 72 hours) in a plastic container, available from the laboratory. Properly label the container. Printed instructions and labels are available in the procedure catalog in EPIC.

Culture and Sensitivity: Refer to Culture and Sensitivity, stool in the procedure catalog section for collection instructions.

Ova and Parasites: Refer to Ova and Parasites in the procedure catalog in EPIC for collection instructions.

Semen Specimens (Post-Vasectomy Only)
Semen specimens for fertility testing must be delivered immediately to the GMG-Sayre hospital laboratory. Fertility samples cannot be accepted at any office.

Post-vasectomy semen samples may be accepted. The source, date and time of specimen collection must be noted on the label. Store and transport at room temperature.

Blood Bank Specimens
Guthrie Out-Patients: A patient who requires a blood /blood product transfusion must have blood specimens collected at one of Guthrie’s Hospital labs. Patients will receive an outpatient identification wristband which must remain in place from the time the blood sample is collected until the blood transfusion is complete.

The Guthrie Laboratories will direct requests for autologous blood collections to the local Red Cross.

Urine
The normal composition of urine varies considerably during a 24-hour period. Submit a first morning voided specimen whenever possible as it has a more uniform volume and concentration, its lower pH helps preserve formed elements. Mid-stream urine collection is best to help prevent contamination. Unpreserved urine specimens must be refrigerated within 24 hours.

Urinalysis: Urine specimens must be collected in a dry, clean specimen container. Transfer the urine into a yellow-top urine test tube. The yellow-top urine tube is not acceptable for urine culture. Store and transport urine samples refrigerated.

Culture and Sensitivity: Preferably clean catch urine specimens should be submitted in gray-top preservative tubes which may be stored at room temperature for up to 48 hours. A sterile specimen container is also acceptable if the urine sample is stored refrigerated.

Cytology: Refer to the cytology section for urine collection instructions.
24-Hour Urine
Proper collection, preservation and accurate measurement of the volumes of 24-hour urines specimens are essential for accurate test results. Patients should be carefully instructed in the correct collection procedure. Printed instructions / labels are available on the Guthrie home-base, clinic lab, lab test directory.

1. Obtain a container with the proper preservative by contacting the laboratory three days in advance of desired day of collection. See procedure catalog for specific preservative requirements.
2. Label all containers correctly with patient’s first and last name, MRN#, provider, and test to be performed. Printed instructions are available.
3. Give the LABELED urine container to the patient. Provide a carry bag for the container.
4. Patient instructions: Unless the physician indicates otherwise, instruct the patient to maintain normal liquid intake. DO NOT consume alcoholic beverages.
   a. On wakening, the patient empties his bladder; the urine is discarded and the time noted. This starts the timed period. Record the start time on the 24-hour urine container.
   b. Collect all specimens voided after the initial specimen into the appropriate container. For analysis requiring HCL preservative, have the patient collect each void in a smaller container and carefully pour the urine into the 24-hour container to avoid HCL acid burns.
   c. The first specimen voided the following morning at the same time as the previous morning’s first voiding is added to those already collected. This is the end of the 24-hour collection. Record the ending time on the 24-hour urine container.
   d. If more than one 24-hour urine collection is ordered requiring different additives (i.e. 5HIAA and Potassium) the patient must collect two separate 24-hour urine samples. The 24 hour urine sample requiring a preservative should be collected first followed by the un-preserved 24 hour urine sample. Two different tests requiring two different preservatives cannot be combined.
5. 24-hour urine samples must be stored and transported refrigerated.

NOTE: If a creatinine clearance is ordered, a serum creatinine must be drawn during the 24-hour urine collection process. Regional offices will submit the urine specimen accompanied by the serum creatinine. The orders entered into the computer should be both the serum creatinine as well as the 24-hour urine creatinine.

24-Hour Urine Preservative Guide

ACID WASHED
BORIC ACID (4 Tablets)
HCL 6 NORMAL (25 ml)
NO PRESERVATIVE
MULTIPLE CONTAINERS

In the interest of being patient friendly – containers will be issued without preservative, with instructions to keep refrigerated. Preservatives will be added upon receipt in the laboratory.

Therapeutic Phlebotomy
Therapeutic phlebotomies are performed to remove blood from a patient for his/her benefit. This blood is discarded. All therapeutic phlebotomies are to be scheduled with the Guthrie infusion center. A consent form is required before a therapeutic phlebotomy can be performed.
Specimen Processing
Observe standard safety precautions at all times. Use personal protective equipment, gloves and impervious lab-coats while processing any patient sample.

Centrifuge
Operate centrifuges according to the manufacturer’s instructions. All centrifuges need to be calibrated annually for accuracy. In the event of a centrifuge malfunction, contact the regional laboratory coordinator to arrange for a replacement.

Whole Blood
Collect an adequate volume of blood. Fill the tube to capacity, since partial filling will result in distortions caused by the osmolality of the anticoagulant. When collecting test tubes containing additives, i.e. purple and pink-top tubes containing EDTA or blue-top tubes containing sodium citrate, immediately mix the blood thoroughly by inverting 8 times (Blue top tubes are never to be under filled). Incomplete mixing or delay in mixing after phlebotomy will result in microscopic partial clotting of the sample which can cause inaccurate test results. Unless otherwise directed, never freeze whole blood or place specimen directly in contact with cool packs which results in hemolysis.

Plasma
For many tests performed using plasma, a PST, plasma separator light green-top tube is recommended. Evacuated tubes used to collect plasma specimens contain anticoagulant. Fill the tube to capacity, since partial filling will result in dilution of the sample.
- Following blood collection, immediately mix the tube by inverting the tube gently 5-10 times.
- Centrifuge for at least 10 minutes at 3,300-3,500 RPM within two hours of collection.
- Refer to specific test requirements in the general test section for detailed processing instructions.

Serum
For most tests performed using serum a serum separator tube (SST, mustard-top tube) is recommended. SST tubes are not acceptable for some drug level testing. Fill the test tube to capacity, since partial filling will result in higher serum concentrations of tube additives (clot activators), which are known to alter the results of some tests.
- Following blood collection, immediately mix the tube by inverting the tube gently 5-10 times. Less than 5 inversions will result in incomplete clotting and incomplete separation of red cells from serum. Hemolysis or even a small number of red cells remaining above the gel in contact with serum will elevate results with some tests like serum potassium and LDH.
- Allow blood to clot in an upright position for at least 30 minutes, but NOT longer than 2 hours before centrifugation.
- Centrifuge for at least 10 minutes at 3,300-3,500 RPM WITHIN 2 hours of collection.
- NOTE Serum separator tubes should not be refrigerated before centrifugation.
- Tubes must remain closed, stoppered, at all times during the centrifugation process.
- Refer to specific test requirements in the general test section for detailed processing instructions.

Frozen Serum or Plasma Specimens
Often serum or plasma specimens need to be frozen, refer to specific test requirements in the general test section. Serum or plasma must be separated into a plastic vial and frozen immediately. Do not freeze serum or plasma separator test tubes (SST or PST). Do not freeze any glass containers.

Note: If more than one test is requested on a frozen specimen, split the sample prior to freezing as the sample integrity is compromised with repeat freezing/thawing cycles.
**Blood Smear Preparation**

Blood smears must be made when a CBC test will not be performed within 24 hours of specimen collection. A peripheral smear is used to perform a manual WBC differential whenever significant abnormalities are detected with the automated procedure. Fresh blood is required to prepare an adequate smear and cannot be made with blood greater than 24 hours old.

**PROCEDURE:**

1. Label the slide with a printed Bar-Code label if available OR use a **pencil** to write the patient’s full name and B# on the frosted end of the slide.

   Specimen should be on the top of the slide

   Bar-Code label should be placed on the back side of frosted edge of the slide

2. Mix the blood specimen well by inverting the test tube 8 times or placing it on a test tube rocker.

3. Insert a “Diff-Safe” dispenser (available from the Guthrie laboratory) through the rubber stopper of the blood filled test tube. Carefully place a small drop of blood (approximately 5-7 mm in diameter) ½ inch from the frosted end of the slide, in the middle, by holding the tube upside down and placing the diff-safe dispenser on a clean glass slide and gently pushing down.

4. Hold the end of the stationary slide containing the drop of blood and position the “spreader slide” with the thumb on the edge of one side and two fingers on the edge of the slide.

   Place the end of the spreader slide just in front of the drop of blood, holding the slide at a 25-30 degree angle. Allow the blood to spread along the back edge of the spreader slide.

5. Keeping the spreader slide angled, immediately push the spread slide forward over the entire length of the slide using a smooth rapid stroke. The blood will be pulled behind the spreader slide creating a thin film.

6. A “feathered” edge should be observed at the end of the smear. There should be no lines, ridges or bubbles. The entire smear should cover no more than 2/3 the area of the slide.

7. Allow the smear to air dry. **DO NOT** use FIXATIVE.

8. Place the dry slide in a slide holder and send it with the courier to the Guthrie laboratory for staining and interpretation. **DO NOT** transport the slides in the refrigerated coolers. Condensation will cause the blood smears to smudge.

**Common Causes of poor blood smears**

1. The drop of blood was too large or too small.
2. The spreader slide was pushed across the slide in a jerking manner.
3. Failure to keep the entire edge of the spreader slide against the slide while making the smear.
4. Failure to keep the spreader slide at a 25-30 degree angle with the slide (increasing the angle results in thicker smear, whereas a smaller angle yields a thin smear).
5. Failure to push the spreader slide completely across the slide.

**Procedure Notes**

1. Glass slides must be scrupulously clean, **DO NOT** reuse glass slides
2. Make the smear immediately after placing the drop of blood on the slide. Any delay will result in abnormal distribution of white cells.

3. Smears that are made improperly cannot be tested. Using improper smears will lead to incomplete test results.
Bacteria Cultures
Successful isolation of potential pathogens depends upon proper specimen collection, proper transport and timely delivery to the laboratory. It is extremely important to refer to the respective test in the test directory for specific instructions. Always note the sample source when collecting specimens. Specimen should be collected prior to administering any antimicrobial therapy. Most cultures should be collected as early as possible in the course of the disease process. Always collect sufficient quantity, use appropriate transport devices (tightly sealed, sterile leak-proof containers), deliver promptly to ensure minimum delay and processing, and preserve specimens if processing is delayed. Note that some specimens should not be refrigerated such as CSF, blood, and anaerobic cultures. Handle all microbiologic specimens as potentially hazardous and follow universal precautions.

Refer to the Microbiology Specimen Collection Guide for photos of collection containers.

Aerobic Culture
See procedure catalog, culture and sensitivity for specific collection requirements. Make certain to properly label samples noting the specimen, site and source on all samples.

Specimens Acceptable for Aerobic Culture:
- All body fluids / tissue / swabs are acceptable

Anaerobic Culture
All anaerobic cultures will automatically have an aerobic culture performed as well. Use the BBL-Vacutainer Anaerobic Collector (gray stopper tube) Transport System whenever possible. This anaerobic system may be used for swabs, fluids and small tissue samples.

- Always check the kit indicator pad located in the bottom of the tube. If this pad is pink, DO NOT USE.
- Make certain the kit is not expired prior to use.

Tissue specimens that will not fit into the anaerobic collector may be submitted in a sterile container and IMMEDIATELY transported to the lab, however samples collected using this method are not acceptable for transport from regional offices.

Large volume, non-bloody, body fluids (> 3ml) may be collected in a syringe. Remove the needle, expel air, re-cap the syringe and transport IMMEDIATELY to the lab. Samples collected using this method are not acceptable for transport from regional offices.

Store and transport all anaerobic cultures at room temperature.

Specimens Acceptable for Anaerobic Culture:
- Abscess aspirates
- Blood Culture
- Body fluids
- Bone
- Bronchial brush
- CSF (cerebrospinal fluid)
- Deep wounds
- Genital specimens from culdocentesis or abscess
- Suprapubic bladder aspiration
- Tissue
- Transtracheal aspiration

Mycobacteria / TB Culture
At this time all Mycobacterial cultures are sent to reference laboratories. Allow 8 weeks for final test results. Refer to procedure catalog for further specimen collection instructions.

Fungal Culture
Hair, skin and nail fungal cultures should include both abnormal hairs removed with forceps and scales collected by scraping. Take nail specimens from the proximal portion of the nail plate. Do not submit initial nail clippings (tips of nails). Nail clippings of at least 3 mm in length should be obtained. Submit all hair, nail and skin specimens in a sterile container.

Store and transport at room temperature. Label samples noting the specimen source. Do not submit specimens if the patient is currently undergoing antifungal therapy.

Specimens Acceptable for Fungal Culture:
- All body fluids / tissue / swabs are acceptable including Hair, Skin, Nail (see above)

Parasites
Refer to procedure catalog for specific collection instructions. No more than two or three specimens (one every two or three days) should be accepted for extensive exam. No more than two specimens over a 2 to 3 day period should be accepted for antigen testing.

Specimens Acceptable for Parasite Detection:
- Stool
  - Basic Ova and Parasite Test includes (Guthrie)
  - Giardia and Cryptosporidium Antigen
  - Extensive Ova and Parasite Test includes
  - Giardia and Cryptosporidium Antigen (Guthrie)
  - Microscopic examination (Quest)
- Perianal region - pinworm detection
- Vaginal – Trichomonas detection
- Various – Worm / Insect identification (reference lab)

Blood Cultures
Refer to procedure catalog for specific collection instructions.
Cytology

Cytology Business hours Monday thru Friday 7:00am – 4:30pm.

Questions about obtaining cytology supplies can be addressed by calling the Cytology Department at 570-887-5610.

**Specimen Collection:** The quality of the cytology diagnosis depends in equal measure to the excellence of the clinical procedure used to secure the sample. The best quality smears especially from fine needle aspirates are those obtained with the cytologists in attendance.

### ThinPrep Pap Collection

**Plastic Spatula:**

- Obtain an adequate sampling from the ectocervix using a plastic spatula
- Rinse the spatula as quickly as possible into the PreservCyt® Solution vial by swirling the spatula vigorously in the vial 10 times. Discard the spatula.

**Endocervical Brush:**

- Obtain an adequate sampling from the endocervix using an endocervical brush device. Insert the brush into the cervix until only the bottom-most fibers are exposed. Slowly rotate ¼ or ½ turn in one direction. DO NOT OVER ROTATE.
- Rinse the brush as quickly as possible in the PreservCyt® Solution by rotating the device in the solution 10 times while pushing against the vial wall. Swirl the brush vigorously to further release the material. Discard the brush.

**Broom-Like Device:**

- Obtain an adequate sampling from the cervix using a broom-like device. Insert the central bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the ectocervix. Push gently, and rotate the broom in a clockwise direction 5 times.
- Rinse the broom as quickly as possible into the PreservCyt® Solution vial by pushing the broom into the bottom of the vial 10 times, forcing the bristles apart. As a final step, swirl the broom vigorously to further release material. Discard the collection device.

**Labeling and Transportation:**

Tighten the cap so that the torque line on the cap passes the torque line on the vial.

Record the patients name and MRN on the vial

Record the patient information and medical history on the cytology requisition form.

Place the vial and requisition in a specimen bag for transport to the laboratory.

**FNA Smear Preparation:**

Complete a cytology lab requisition for request in EPIC

Label frosted-end glass slides using a **pencil or Leica marking pen**, noting patient’s first and last name, medical record number (MRN), and site of specimen.

Retrieve the needle from the physician performing the FNA and place a small drop on one labeled microscope slide. Immediately place a second labeled clean microscope slide (face down) over the small drop of specimen on the first slide and pull apart. Immediately spray one microscope slide with BD Clay Adams™ Brand Spray-Cyte Water Soluble Fixative and set the second slide aside to air dry. The fixed slide can also be fixed by immersing the slide into 95% Ethyl Alcohol for 3-5 minutes, then removed and allowed to dry. Label the slide fixed or air-dried by writing “Air” or “Fixed” on the frosted-end with a pencil or Leica marking pen. The “Fixed” slide is sprayed with spray fix or immersed in alcohol, while the “Air” is not fixed. The slides, once dried, can be placed in a slide container for transport. The remaining contents of the FNA needle are to be rinsed into a ThinPrep CytoLyt® container (labeled with last name, first initial, MRN, and site of specimen) by drawing the CytoLyt® fluid into the needle hub and expelling it back into the CytoLyt® container. Once completed, the needle can be then discarded into a sharps container. Submit 1-5 passes of material from any source that can be evaluated cytologically. Cyst contents should be submitted as fluids and not smears. Slides in the slide container, CytoLyt® container, along with hand written or computer generated requisition form are to be placed in a biohazard bag and brought to the laboratory. Specimens placed in CytoLyt® can be left at room temperature (15°C-30°C) during transport and overnight. Slides can be store at room temperature (15°C-30°C) or refrigerated (2°C-8°C).

Questions about obtaining cytology supplies can be addressed by calling the Cytology Department at 570-887-5610.
Respiratory Tract Specimens:

Sputum:
Complete a cytology lab requisition for request in EPIC

Sputum’s are obtained fresh from a spontaneous deep expectoration or obtained using an aerosol method. Regardless of the method of collection, the specimen is to be expelled into a sterile container without fixative. The specimen container should be labeled with the patient’s first and last name, medical records number, and source of specimen. This information can be hand written, using the Leica Black marking pen, or can be labeled with a computer generated label. The labeled container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and brought to the lab during Cytology business hours can be room temperature (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C.

Bronchial Washing:
Complete a cytology lab requisition for request in EPIC.

Bronchial washings are obtained fresh during bronchoscopic procedures. The specimen is put into a sterile container with the patient’s first and last name, medical records number, and source of the specimen. This information can be hand written, using the Leica Black marking pen, or can be labeled with a computer generated label. The labeled container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and brought to the lab during Cytology business hours can be room temperature (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C.

Bronchial Brushing:
Complete a cytology lab requisition for request in EPIC.

Bronchial brushings are obtained during bronchoscopic procedures. Once the brush has a patient’s specimen, it is to be agitated into a sterile container with sterile saline or agitated into a ThinPrep CytoLyt® Solution 30ml container. The agitation assures the cells will be sloughed into the solution and not stuck on the brush. The specimen container is to be labeled, using the Leica Black marking pen or a computer generated label, with the patient’s first and last name, medical records number, and source of the specimen. The container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and brought to the lab during Cytology business hours can be room temperature, (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C. Specimens placed in CytoLyt® can be left at room temperature (15°C-30°C) during transport and overnight.

Gastrointestinal Tract Specimens:
(Includes Esophagus, Stomach, Duodenum, and Colon)

Endoscopic brushings:
Complete a cytology lab requisition for request in EPIC.

Brushings are obtained during endoscopic procedure where a targeted specimen is obtained. Once the brush has a patient’s specimen, it is removed from the endoscope and agitated into a sterile container with sterile saline or agitated into a ThinPrep CytoLyt® Solution 30ml container. The agitation assures the cells will be sloughed into the solution and not stuck on the brush. The specimen container is to be labeled, using the Leica Black marking pen or a computer generated label, with the patient’s first and last name, medical records number, and source of the specimen. The container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and brought to the lab during Cytology business hours can be room temperature, (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C.

Body Fluids:
(Pleural, Pericardial, Ascitic, Peritoneal Washing, and Cyst fluids)
Complete a cytology lab requisition for request in EPIC.

Specimens are to be collected in a 500ml empty evacuated container, tubes, or syringes. Preferably, body cavity fluids are to be bed sent fresh to the cytology laboratory. The specimen is to be labeled using the Leica Black marking pen or a computer generated label, with the patient’s first and last name, medical records number, and source of the specimen. The container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and transported to the lab during Cytology business hours can stored at room temperature (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C.

Cerebrospinal Spinal Fluids:
Complete a cytology lab requisition for request in EPIC.

CSF is collected via a spinal tap or through a shunt in the patient. The specimen is to be labeled using the Leica Black marking pen or a computer generated label, with the patient’s first and last name, medical records number, and source of specimen. The specimen is to be sent to the laboratory fresh, (room temperature which is 15°C-30°C) and as quickly as possible in a biohazard bag. After hours, which are after 4:30 Monday-Friday and all day Saturday and Sunday, the specimen is to be sent to the Hematology department where two air-dried smears and two spray fixed smears(with BD Clay Adams™ Brand Spray-Cyte Water Soluble Fixative) are to be prepared (Regardless of Cytology requests/orders).
Urines:
Voided:
Complete a cytology lab requisition for request in EPIC.

Cleanse the opening of the urethra before collecting the urine. A sterile container is used to catch the urine as it voids from the urethra. It is preferred to obtain enough urine to cover the bottom of the container. The specimen is to be labeled, using the Leica Black marking pen or computer generated label, with the patient’s first and last name, medical record number, and source. The labeled container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and brought to the lab during Cytology business hours can be room temperature, (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C.

Catheterized:
Complete a cytology lab requisition for request in EPIC.

A urine sample is collected from a patient’s catheter and placed in a sterile container. The specimen is to be labeled using the Leica Black marking pen or a computer generated label, with the patient’s first and last name, medical record number, and source of the specimen. It is important to note on the requisition that the urine is collected from a catheter. The container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and brought to the lab during Cytology business hours can be room temperature, (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C.

Bladder Washing/Bladder Barbotage:
Complete a cytology lab requisition for request in EPIC.

Urine that is collected during a cystoscopy, where the cystoscope is inserted into the bladder and washed to obtain urine directly from the bladder, should be placed in a sterile container. The specimen is to be labeled using the Leica Black marking pen or a computer generated label, with the patient’s first and last name, medical records number, and source of the specimen. It is important to note on the requisition that the urine is collected from a cystoscope. The container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and brought to the lab during Cytology business hours can be room temperature, (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C.

Kidney/Renal Pelvis Washing/Brushing:
Urine that is collected during a cystoscopy should be placed in a sterile container. The specimen is to be labeled using the Leica Black marking pen or a computer generated label, with the patient’s first and last name, medical records number, and source of the specimen. It is important to note on the requisition that the urine is collected from a cystoscope. The container and requisition forms are to be placed in a biohazard bag and brought to the laboratory. Fresh specimens collected and brought to the lab during Cytology business hours can be room temperature, (15°C-30°C), however, if collection is outside of Cytology business hours, the specimen should be refrigerated at 2°C-8°C.

Breast Secretions:

Nipple Discharge:
Complete a cytology lab requisition for request in EPIC.

The specimen is to be collected by applying a clean labeled microscopic slide directly to the nipple. The slide should be label on the frosted-end glass using a pencil or Leica marking pen, noting patient’s first and last name, medical record number (MRN), and source of the specimen. The slide should immediately be spray fixed with BD Clay Adams™ Brand Spray-Cyte Water Soluble Fixative and allowed to dry. Label the slide fixed by writing “Fixed” on the frosted-end with a pencil or Leica marking pen. Once the slides are dried they are placed in a slide container for transport. Slides in a slide container, along with hand written or computer generated requisition form are to be placed in a biohazard bag and brought to the laboratory. Slides can be stored at room temperature (15°C-30°C) or refrigerated (2°C-8°C).

Breast Secretions:
Complete a cytology lab requisition for request in EPIC.

The specimen may be collected via a swab or spatula and agitated directly into a ThinPrep CytoLyt® Solution 30ml sterile container. The agitation assures the cells will be sloughed into the solution and not stuck on the collection device; the collection device can then be discarded. The specimen is to be labeled using the Leica Black marking pen or computer generated label, with the patient’s first and last name, medical record number, and source of the specimen. The specimen then can be placed in a biohazard bag and transported to the laboratory. Specimens placed in CytoLyt® can be left at room temperature (15°C-30°C) during transport and overnight.
Flow Cytometry
Immunophenotyping is referred to one of Guthrie’s reference laboratories.

Epic orders:
- T-cell Subsets
- T&B-cell Subsets
- Leukemia/Lymphoma Panel

Common synonyms used for ordering flow cytometry testing are:
- T&B cell quantitation (total)
- Helper/suppressor T cells (CD4/CD8)
- Natural Killer Cells
- CD4 Count
- T&B Lymphocyte Subset Assay
- Lymphocyte Receptor Studies
- Lymphocyte Subset Identification
- T&B Lymphocyte Analysis, Assay
- Lymphocyte Marker Studies
- Lymphocyte Subset Analysis, Typing
- T&B Cell Typing
- T&B Lymphocyte Assay

Refer to the procedure catalog for specific specimen collection requirements.

Virology
Virology tests Guthrie Offers:
- Influenza A and B
- Respiratory Syncytial Virus (RSV)
- Rotavirus antigen tests

Other viral tests/cultures are referred to reference laboratories.

Virology Specimen Storage and Transport
Specimens for viral isolation should be collected when the virus is at its highest concentration, during the acute phase of the illness. Routine testing (Influenza AB, RSV) is not recommended outside of the respiratory virus season due to low specificity. Conventional viral culture can routinely detect the following viruses: adenovirus, cytomegalovirus (CMV), enterovirus, herpes simplex virus, varicella-zoster which can take up to 4 weeks for final test results.

The Guthrie Laboratory Send-out department provides viral specimen kits upon request.
- Cervical
- Lesion/other
- Urethral

Always check the expiration date of the viral kits prior to specimen collection. All virology samples MUST be placed in M4 media within 2 hours of specimen collection, stored and transported refrigerated. All samples must be properly labeled noting the samples site and source. Refer to the procedure catalog for the most up to date specific collection instructions. Refer to the procedure catalog for specific specimen requirements regarding Chlamydia, Clostridium difficile (C. diff), RSV and Rotavirus testing.

Surgical/Anatomic Pathology
All surgical/anatomic pathology services are provided by the Guthrie Medical Group-Sayre Laboratory. The Anatomic Pathology department is open Monday through Friday, 8 a.m. to 5 p.m. All specimens picked up or received after 4 p.m. or on weekends will be processed the next working day. A pathologist on-call can be contacted through the Guthrie telephone operator.

For Routine Specimens:
Immediately place biopsy specimen in a tightly secured container with 10% neutral buffered formalin. Sample must be completely submerged in formalin, do not allow the specimen to dry. Use a separate container for each separately identified specimen. Do not force a large specimen into a small container. Formalin must surround the tissue. Label samples with the correct patient label, noting the site and source of each specimen. Place the labels on the body of each container, labeling the lids is unacceptable.
- Site, where the specimen was removed (left foot)
- Source, what the specimen is (mole, lesion, CSF)

Specimen Requiring an Intraoperative Consultation (IOC):
If an IOC is required the specimen needs to be sent down to the lab fresh and as soon as possible. During normal business hours contact the histology department at (570) 887-4173 to let them know the specimen is coming down to the lab. For IOC that occurs afterhours, the on-call pathologist must be called through the Guthrie telephone operator.

Specimens Requiring Special Handling:
Certain specimens require special handling and may need to be sent to the fresh (without formalin). These specimens include:
1. Breast Tissue (biopsy, excision, partial or total mastectomy)
2. Lymph Nodes or Other Tissue for Flow Cytometry (biopsy or excision)
3. Calculi for Chemical Analysis
4. Gross Only Specimens (medical devices, medical/legal cases, teeth, etc.)
5. Tissue for Immunofluorescence (fresh or saline)
6. Tissue for Gout
7. POC for Cytogenetics
8. Large Specimens that cannot fit in the largest container available (for example total colon, leg amputation, etc.)

For further details, refer to the Surgical Pathology Specimen Collection and Handling Policy located on the intranet.
Specimen Storage

Appropriate storage and transport temperatures are essential for accurate laboratory testing. Using a calibrated thermometer, all specimen storage areas must be monitored and documented daily.

- Room temperature storage: 15° - 30°C
- Refrigerated storage: 2° - 8°C
- Frozen storage: 0° - -20°C

See specific test in the procedure catalog for specific requirements.

Room Temperature: Specimens to be stored and transported at room temperature should be kept between 15°- 30°C and must not be placed in an environment where they would be exposed to extremes of heat or cold. Specimens must be placed in biohazard bags and transported in a room temperature cooler, an insulated cooler without cold packs.

Refrigerated: Specimens to be stored and transported at refrigerator temperature should be kept between 2°- 8°C, and may be stored using a household or commercial refrigerator (that is not used for to store food) and transported using a cooler with cold packs. All tests that do not specify otherwise should be maintained at refrigerator temperature. Refrigerated specimens will be placed upright in a test tube rack, insert the entire rack into a biohazard bag and transport using an insulated cooler that contains ice packs. Blood samples should never come in direct contact with ice.

Frozen: Specimens that are to be frozen must be transferred to a plastic vial and with a secure lid. The vial should be placed in a bio-hazard bag and placed in the freezer. Samples may be stored in a household or commercial frost-free freezer (that is not used to store food) at -20°C until transported to the laboratory. Frozen specimens will be transported using an insulated cooler containing dry ice. If more than one test is ordered on a frozen specimen, split the sample prior to freezing. The specimen integrity is compromised with repeat freezing/thawing cycles.

Temperature logs can be found on the Guthrie Laboratory Department Intranet site.

Specimen Packing and Transport

All specimens will be packaged and transported in a manner designed to minimize the likelihood of exposing personnel or the public to any source of infection or hazard. The transportation of these samples will be in a manner to maintain their original condition as much as possible, so that they do not become unsatisfactory for testing.

1. All exterior containers containing specimens will be labeled with the patient service center / lab name and address.
2. All transport containers will be marked "Infectious" or have the "biohazard" symbol.
3. All primary containers (tubes, vials, containers) will be clearly marked with patient’s name and date and time of collection. These containers will be securely closed or sealed.
4. All primary containers will be placed in a secondary container for shipment.
5. When applicable the secondary container will contain absorbent material around specimen.
6. The secondary container should be leak-proof. The secondary containers could include a transport bag or other closeable container containing absorbent material.
7. These secondary containers are then to be placed in a protective outer box or transport bag.
8. The transported specimens will be accompanied by an accession log/packing list with all specimens documented.
9. When received at the primary laboratory, the date and time of receipt will be documented.
10. During transport any breakage or spilling will be promptly cleaned up using a biohazard spill kit and standard precautions.

Refrigerated Specimens:
1. Place a frozen cool pack in the bottom of a transport cooler.
2. Place 3-4 paper towels (for insulation) over the cool pack. Specimen must Not come in direct contact with ice.
3. Place the rack of refrigerated specimens into a Ziploc bag.
4. Insert the bag covered rack of refrigerated specimens into the transport cooler.
5. Place 3-4 paper towels over the specimens.
6. Place a second frozen cool pack on top of the paper towel covered samples.
7. Immediately close the cooler container.
Frozen Specimens
Use plastic containers when sending frozen specimens. Keep specimens frozen at collection site until courier pick-up.
1. Couriers will pack frozen specimens on dry ice located in the courier van.

Ambient Specimens
1. Place room temperature specimens into a Ziploc plastic bag.
2. When room temperature, ambient insulated coolers are available, place the Ziploc bag of room temperature specimens into the ambient cooler.
3. Insulated coolers protect room temperature specimens from extreme temperatures.
4. Immediate close the cooler container.

Creating a Packing List
A packing list is a list of specimens that will be sent to another lab for testing. This list is sent along with the specimens.

1. Click the Epic button > Packing List Editor.
2. On the Packing List Lookup window, select the Create option.
3. In the List Type field, select the type of packing list you're creating (for example, a refrigerated list, room temperature, cytology list, AP/Surg list). The system generates an ID for the list.

Send out Bench Activity: Is used to find specimens that have not been scanned onto a packing list. After scanning all specimens onto the appropriate packing list, the send out bench should be empty.

Any specimen displayed in Send out Bench must be investigated and the appropriate action taken:

- If there is a specimen, click Add Test(s). The tests you selected disappear from the list on the left and are added to the report on the right.
- If the specimen could not be collected, click specimen update and order a redraw.
- Tests should only be canceled if the provider no longer wants tests results.

Send A Packing List To Another Lab: After adding all the appropriate containers to a packing list, you need to indicate that the list is complete and that the associated containers are ready for pickup.

1. To do this, click Ready. When you mark a packing list as Ready, a few things happen:
2. The packing list is locked in the system, meaning no more containers can be added. This ensures that no extra containers get added to the list accidentally.
3. The packing list’s status changes to Ready for pickup.
4. The packing list prints.

Office packing list with samples traveling to Sayre.

4. Click ✔ Accept. The Packing List Editor opens.
5. Scan the specimen barcodes to add the specimens to the list.
6. If you want to see if there are other specimens that could be added to the list, click Send out Bench to find and if there is a specimen, add them to the packing list.
When the package is picked up, click Picked Up. The packing list is closed and can no longer be unlocked for editing.

**Packing List Editor:** You have the actual specimen in your hand ready to scan

**Send Out Bench Activity:** Search for samples to add to a packing list before sending

**TROUBLE SHOOTING A PACKING LIST:**
If a specimen will not scan onto a packing list:

1. Specimens must be “Received” into the current lab in order to be placed onto a packing list. Go to the Receiving activity and receive the sample.
2. Confirm the Epic Log-In Department. If specimens were collected in the collection activity using the wrong log-in department, the specimens will not scan onto the packing list.
3. Confirm specimen storage temperature matches the packing list temperature.

**Computer Downtime:**
In the event of computer downtime and laboratory orders cannot be entered into the EPIC computer system, a manual paper requisition must be completed.

Guthrie Lab requisitions are available from the Guthrie Storeroom item #4719 or by calling the Laboratory client services dept. Laboratory prescriptions are also acceptable but not preferred.

All specimens must be labeled immediately after specimen collection in presence of patient using hand-written, or Niceware labels.

Universal lab labels are available from Guthrie’s storeroom, item #5482. Refer to proper identification of specimens for labeling procedure.

Universal down-time lab request tickets are available from Lab Client Services or in office down time red packet.

**Regional Office Out-Patients: EPIC Computer System**
Complete a Computer Down -Time Log Sheet available on Guthrie Intranet or photocopy the down-time form on the following page.

Specimens must be labeled with the following:

1. Patient’s name
2. B# or DOB
3. Date/time of collection and collector ID
4. Test

Once the faxed log sheet is received in Guthrie, Sayre, the laboratory will enter the orders into the appropriate computer system. **DO NOT** place any orders in the EPIC computer system that have been faxed to Guthrie, Sayre. This will result in duplicate lab orders. Once the log sheet has been faxed and the computer system becomes operational after 3:00 pm, the Sayre lab will print bar-code labels to each regional office. Place the bar-code labels on the samples prior to the courier pickup, making certain to place the correct label on the correct specimen. If this is not possible due to circumstances of the downtime, the Sayre laboratory will print the labels in Sayre and place them over the hand-written labeled containers when they arrive.

**Computer Becomes Operational Prior to 3:00 PM**
Using the completed Computer Down-Time Specimen Log Sheet, enter the laboratory orders into the EPIC Computer System. Label all specimens using the computer generated bar-code labels.

**Cytology Specimens during down time:**
All pap-smear cytology requests and specimens will be held in the office until the computer system becomes operational.

All other cytology specimens (urine, sputum, etc.) must be sent to the lab without delay with a completed cytology request ticket. Retain a copy of the cytology request in order to enter the cytology test in the computer system once it becomes operational.

If you have any questions regarding this procedure during Lab Order Entry down-time, please contact laboratory Client Services 570-887-4719 with any questions.

Fax the completed log sheet to laboratory client services: **570-887-4729 at 3:00 PM** the same business day.

Fax lines may be busy, keep trying, others office may be faxing their log sheets also.
### Test Tube Guide and Order of Draw

<table>
<thead>
<tr>
<th>Tube</th>
<th>Additive</th>
<th>Item #</th>
<th>Laboratory Use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>blood cultures</strong></td>
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<tr>
<td></td>
<td>Bactec Aerobic grey cap</td>
<td>9617</td>
<td>Make certain to follow the blood culture procedure</td>
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<tr>
<td></td>
<td>Bactec Aerobic orange cap</td>
<td>10595</td>
<td>using ChlorPrep One-Step - Item #22960</td>
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<tr>
<td></td>
<td>Bactec Peds pink cap</td>
<td>9616</td>
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<tr>
<td></td>
<td>Plain (<strong>ORANGE</strong> Quest sticker)</td>
<td>7ml</td>
<td>see lab</td>
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<td></td>
<td>Trace element no additive (serum tube)</td>
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<td>supply request</td>
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<td></td>
<td>Carefully pour, do not pipet, serum into a trace element vial</td>
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<tr>
<td><strong>blue</strong></td>
<td>Sodium Citrate Tube</td>
<td>4.5ml</td>
<td>89</td>
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<tr>
<td></td>
<td>Fill test tube completely</td>
<td></td>
<td>Coagulation testing.</td>
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<td></td>
<td>Proper mixing prevents clot formation</td>
<td></td>
<td>PT, PTT, TPT, Protein S, Protein C</td>
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<td></td>
<td></td>
<td>Anti-Thrombin III, Lupus Anti-Coagulant</td>
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<tr>
<td><strong>red</strong></td>
<td>Serum Tube with clot activator</td>
<td>4ml</td>
<td>2219</td>
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<td></td>
<td>Allow 30 min. for clot formation</td>
<td>10ml</td>
<td>Serum testing for chemistry tests.</td>
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<tr>
<td></td>
<td>Spin and separate serum into a plastic vial</td>
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<td>Digoxin, Dilantin, Drug Levels, Homocystine</td>
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<td>Lithium, Theophylline, PTH Intact (Quest)</td>
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<tr>
<td><strong>mustard</strong></td>
<td>SST Gel Separator w/ clot activator</td>
<td>5ml</td>
<td>1234</td>
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<td></td>
<td>Allow 30 minutes for clot formation</td>
<td></td>
<td>Serum testing for chemistry tests</td>
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<td></td>
<td>CA125, CA15-3, CA19-9, Free-PSA (sendout), Hepatitis, T3, T4, Free T4, TSH, FSH, LH, B12, B12 Folate (amber)</td>
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<tr>
<td><strong>green</strong></td>
<td>Sodium Heparin Tube</td>
<td>10ml</td>
<td>94</td>
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<td>Amino Acids, Vitamin K, HLA B27</td>
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<td>Flow Cytometry</td>
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<tr>
<td><strong>lt green</strong></td>
<td>Lithium Heparin</td>
<td>4.5ml</td>
<td>2033</td>
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<td></td>
<td>PST Gel Separator Tube</td>
<td></td>
<td>Plasma testing for chemistry tests</td>
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<td></td>
<td>Proper mixing prevents clot formation</td>
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<td>Ammonia, BMP, CMP, Electrolytes, PTH Intact (Guthrie)</td>
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<td></td>
<td>Lipid Profile, Hepatic Function, PSA (Guthrie)</td>
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<tr>
<td><strong>black ESR</strong></td>
<td>3.2% Sodium Citrate</td>
<td>5ml</td>
<td>65219</td>
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<td></td>
<td>Fill test tube completely</td>
<td></td>
<td>Sed. Rate Only (erythrocyte sedimentation rate)</td>
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<td>Invert 8-10 times for proper mixing</td>
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<td>Do not remove tube rubber stopper under any circumstances</td>
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<tr>
<td><strong>lavender</strong></td>
<td>EDTA Tube</td>
<td>3ml</td>
<td>1012</td>
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<td></td>
<td>Proper mixing prevents clot formation</td>
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<td>Whole blood testing</td>
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<td>CBC, Glyco, Retic, Cyclosporin, Histamine</td>
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<td>Cystic Fibrosis, Mono, RBC Folate</td>
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<td><strong>pink</strong></td>
<td>K2 EDTA</td>
<td>6ml</td>
<td>40075</td>
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<td>Whole blood testing for blood bank</td>
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<td>Type and Screen, Type and Cross, Direct Antiglobulin (DAT)</td>
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<td>K2 EDTA (no label on tube)</td>
<td>5ml</td>
<td>see lab</td>
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<td>Trace element EDTA additive</td>
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<td>supply request</td>
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<td>Whole blood or plasma element tests: arsenic, cadmium, heavy metal screen, mercury (Lead=Tan tube)</td>
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<tr>
<td><strong>white</strong></td>
<td>EDTA (NA2)</td>
<td>6ml</td>
<td>see lab</td>
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<td>Hepatitis C - Heptimax</td>
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<td><strong>gray</strong></td>
<td>Potassium Oxalate</td>
<td>5ml</td>
<td>see lab</td>
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<td>Alcohol</td>
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<td>Lactic Acid</td>
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<td><strong>yellow</strong></td>
<td>ACD solution B</td>
<td>6ml</td>
<td>see lab</td>
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<td></td>
<td>HLA B27</td>
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<td></td>
<td>ACD solution A</td>
<td>8.5ml</td>
<td>supply request</td>
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<td>HLA typing - oncology patients - # of tubes depends on patient’s WBC count, call blood bank 882-4218</td>
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<tr>
<td><strong>yellow urine</strong></td>
<td>no additive, urine specimen only</td>
<td>5-10ml</td>
<td>see lab</td>
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<td>urine microalbumin, urine drug screen</td>
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<td>urine chemistry, urine osmolality</td>
</tr>
</tbody>
</table>

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**Addendum 1** GMG-708-0002 Venipuncture Procedure

*revised 9/22/16*
<table>
<thead>
<tr>
<th>Name (Last, First)</th>
<th>B#</th>
<th>Diag. Code</th>
<th>Doctor</th>
<th>Draw Time</th>
<th>CBC</th>
<th>CBC (No Diff)</th>
<th>PT</th>
<th>PTT</th>
<th>A1C</th>
<th>BMP</th>
<th>CMP</th>
<th>Liver</th>
<th>TSH</th>
<th>CK</th>
<th>Amylase</th>
<th>Lipase</th>
<th>UA w/ Rfx</th>
<th>Microalbumin</th>
<th>Additional Tests or Comments</th>
<th>Initials</th>
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Comments:

attachment 1 revised 9/22/16

GMG-700-0031 LIS Computer Downtime