BRISTOL HOSPITAL
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BRISTOL HOSPITAL LABORATORY – SPECIMEN COLLECTION MANUAL

SECTION I: GENERAL GUIDELINES AND SPECIMEN ACCEPTANCE

1.0 PRINCIPLE:

For accurate laboratory testing, all specimens must be ordered by appropriate personnel, collected in the appropriate tube and properly labeled. A list of tube types is available as Appendix I to this manual. Additional procedures for specific tests not detailed in this manual are available in the Phlebotomy Manual and/or department specific Laboratory Manuals.

2.0 GENERAL PROTOCOL:

2.1 Only a physician or other approved practitioner may order laboratory tests

2.2 Requests for all inpatient laboratory services will be entered into the hospital information system (HIS)

2.3 All outpatient specimens should be accompanied by a completed requisition

2.4 All laboratory orders for morning rounds should be received by 0500

2.5 Orders may be scheduled as routine, urgent, timed or STAT

2.6 For Add-On testing, place an "AOT" order in the HIS and type in the test(s) you want to order. The order will generate in the laboratory. If quantity is insufficient or there are other issues with adding on a test to the sample, the laboratory will contact the ordering provider or floor.

2.7 The following information is required on every written requisition:

- Ordering providers name, address, and phone number
- **Patient's full name**, **date of birth**, **and gender (M or F)**
- Date the order was written
- **Date** and **time** of when specimen collected (when applicable)
- Test(s) requested and source when applicable (source is required for most microbiology and histology specimens)
- Clinical Diagnosis
- **For PAP Smears** - the patient's last menstrual period, history of previous abnormal smear, and/or any other relevant information

3.0 SPECIMEN ACCEPTANCE:

3.1 **Specimen Identification – At least 2 patient identifiers is required on each specimen.**

3.2 Each patient must have on a wrist/ankle band marked with the **patient's full name**, **date of birth** and **Medical Record Number**.

3.3 All specimens must be labeled with the **patient's full name**, **date**, and **Medical Record Number** and/or other unique identifier located on the wrist/ankle band and dated. This information may be generated using the LIS/HIS system on the Mobilab label or other laboratory test label.

3.4 Blood Bank samples must include the initials of the person drawing the specimen and must be labeled by the same person. Under no

circumstances will an incorrectly labeled specimen be accepted by the Blood Bank.

4.0 SPECIMEN REJECTION:

- 4.1 Improper tube collection
- 4.2 Quantity not sufficient for collection for anti-coagulated tubes
- 4.3 Collection quantity too full for anti-coagulated tube
- 4.4 Quantity not sufficient for Urinalysis testing (less than 5 mL), exception is pediatric patients
- 4.5 Clotted specimens for Hematology testing
- 4.6 Unlabeled or mislabeled specimens

Note: All collecting individuals and/or locations will be notified when a specimen is rejected and requires a new specimen.

5.0 MISLABELED/UNLABELED, IRRETRIEVABLE SPECIMENS:

This category is for specimen samples that would be difficult to repeat or recollect. In these cases, we would require the Irreplaceable Specimen Form to be utilized (Form CP-1)*.

- 5.1 Anatomic Pathology tissue specimens
- 5.2 Cerebral Spinal Fluid
- 5.3 Body Fluid Samples (excluding urine)
- 5.4 Timed tests
- 5.5 Blood Cultures prior to antibiotic administration
- 5.6 Urine samples from children under the age of 12
- 5.7 Specimens collected during emergency situations

*See Identification of an Irreplaceable Specimen Form (CP-1).

6.0 INCOMPLETE/PARTIALLY IDENTIFIED SPECIMENS

This category is for specimens that don't completely meet labeling requirements.

- 6.1 The collector will be required to come to the Laboratory to complete specimen labeling
- 6.2 The facility that sent the specimen will be contacted to obtain complete Patient information

7.0 REJECTION OF SPECIMEN BASED ON CONDITIONS AFFECTING PERFORMANCE

- 7.1 Some specimen analysis may be deemed unacceptable by the Laboratory due to factors involving clotted or hemolyzed specimens. If these specimens are deemed unacceptable for analysis the Laboratory will contact the responsible person. See Procedure for Acceptance/Rejection of Laboratory Specimen – CP009

Identification of an Irreplaceable Specimen Form

Date: _____

Patient Name on Requisition: _____

Medical Record#: _____ Patient Location: _____

Patient Name on Specimen: _____

Laboratory Accession #:_____

Date/Time Collected: _____ Date/Time Received: _____

Type of Specimen **(Circle One):** Blood Urine Fluid Tissue Sputum
Other: _____

Test(s) Requested: _____

Error Type (Check One):

____ Identification Inaccuracy: Unlabeled or Insufficient Patient Identification Labeling
____ Mislabeled Specimen
____ **Safety Hazard**: Contaminated needles or other sharps accompanying the specimen (i.e. the laboratory will not accept a specimen with a needle/sharps affixed to the specimen.)
____ Other Sub-Optimal Specimen (Define):_____

Authorized Attestation:

1. The specimen described above is considered sub-optimal as a test specimen by the Clinical Laboratory.
2. I have deemed the specimen irretrievable and/or irreplaceable.
3. Diagnosis and/or treatment of the patient based on the results of this specimen are the ordering/authorizing provider's responsibility. The medical record for this specimen will include documentation of Irreplaceable Specimen Form Utilized.

Patient Name: _____ Patient MR#: _____

Attestation of the Person Confirming Specimen Identification: _____

Specimen Accepted By: _____

Date: _____ Time: _____

Form CP-1

SECTION II: BLOOD BANK

1.0 PRINCIPLE:

At the time of specimen collection, transfusion recipients must have a securely attached identification bracelet that contains **patient's full name, date of birth** and or another unique identification number such as the patient's Medical Record Number.

Blood bank specimens should be submitted using an EDTA tube, with at least 5mL of specimen. Each specimen is identified with a securely attached label including the **patient's full name, date of birth, date, time, phlebotomist initials** and or another unique identification number such as the patient's Medical Record Number or yellow bracelet.
The specimen must be labeled before leaving the patient's side. All identification information must be legible and indelible. Requests for blood components must contain sufficient information for positive identification of the recipient, and clearly indicate the products requested.

2.0 SPECIMEN ORDERING:

The Blood Bank LIS system dictionary is structured so that each test and blood product has a separate code. This facilitates entering multiple orders on patient. Specimen ordering instructions are found in the LIS Manual.

ORDERING IN THE HOSPITAL INFORMATION SYSTEM - The following condensed guide may be helpful when ordering Blood Bank tests and blood products in the HIS system.

BLOOD BANK INDEX	OPTIONS	FURTHER OPTIONS
RBC COMPONENETS	Type & Crossmatch Add on Units	Select Product Select # of Units
OTHER PRODUCTS	Single Donor Unit Platelets Pre-Pooled Unit Platelets Cryoprecipitate Pre-Pooled or Single Fresh Frozen Plasma Rh Immune Globulin (Full Dose 300 mg or Mini 50 mg)	
TRANSFUSION INSTRUCTIONS	Instructions for transfusion of blood products	
TYPE & SCREEN		
BLOOD BANK TESTS	Red Cell Antibody Titer, Direct Coombs Direct HLA-ABC typing, HLA-DR typing Platelet Antibody Evaluation - Send Out Transfusion Reaction Workup Type & Screen, Maternal Fetal Screens (Rhogam Workup), Acid Elutions, Antibody titers, Antigen and Antibody Testing, ABORH Re-types **Post Transfusion:** Fibrinogen, H&H, Platelet Count, PT/PTT	

3.0 SPECIMEN COLLECTION:

TYPE OF ORDER	TEST PERFORMED	PRACTICAL APPLICATION
TYPE AND CROSS MATCH	ABO Rh Antibody Screen & Cross Match	If blood is ordered on **HOLD**, crossmatched unit will be available for up to 3 days. If the orders are marked **STAT** or **TO BE GIVEN**, the Blood Bank will inform the nursing unit when the blood is available.
TYPE AND SCREEN	ABO Rh Antibody Screen	Once TYSC is completed and antibody screen is negative if an RBC transfusion is required, blood products can be released within 5 minutes after an immediate-spin crossmatch. If antibodies are present, crossmatches will take longer to complete.

4.0 PROCEDURE FOR PRETRANSFUSION TESTING - (Type and Cross Match, Type and Screen, Type and Hold, Neonatal Recipient Testing, Blood Bank Hold Specimens, and RhIG workups):

Patient has identification bracelet with BH Record number:

- Verify patient's identity by either scanning patients wristband using Mobilab or through verbal/written documentation
- Ask patient to state their **full name** and **date of birth**. If the patient is unable, ask a knowledgeable person to confirm this information
- Emergency name protocol may be used if the patient's name is not known (example: John Doe)
- Verify that the **patient's full name** and **Bristol Hospital (BH) Number** on the identification bracelet match exactly. (If not, you must properly band the patient with a new BH ID bracelet or yellow bracelet
- Resolve discrepancies before proceeding further
- Obtain patient blood specimen using standard venipuncture technique
- Label the specimen with **patient's full name, date of birth, date, time,** and **phlebotomist initials.** A Mobilab label is acceptable as long as the information is correct on the label.
- Ensure that the information on the specimen label and test requisition and or Mobilab match exactly
- For downtime procedures, send labeled specimen and test downtime requisition together to the Blood Bank.

If patient does not have a BH identification bracelet:

- Verify patient's identity and resolve discrepancies as above
- Prepare a Typenex identification bracelet
- Attach completed bracelet containing the **patient's full name, date of birth, date, time**, and **phlebotomist initials** to the patients' extremity (preferably wrist).
- Affix one Typenex sticker to the test requisition, if needed
- Obtain blood by standard venipuncture technique
- Label specimen before leaving the patient's side and affix Typenex sticker to the specimen
- Ensure that all information is correct/matches
- Send labeled requisition and specimen to the Blood Bank along with the extra Typenex stickers

5.0 PROCEDURE FOR SPECIMENS NOT FOR PRETRANSFUSION TESTING

(Prenatal Type and Screen, Cord Blood Testing, and Diagnostic Immunohematologic Testing):

5.1 Label specimen with **patient's full name, date of birth, date, time**, and **phlebotomist initials**

5.2 These specimens are not suitable for pre-transfusion testing unless the patient identification and labeling procedure is followed

6.0 DELIVERY OF BLOOD PRODUCTS:

6.1 Only authorized personnel may transport blood products

6.2 A complete **"Request for Blood Products"** must be presented to the Blood Bank to obtain blood products. The form must contain the **patient's full name**, **date of birth**, **identification number**, and **location**

The amount and kind of blood product must be indicated, this includes any special product attributes (e.g. irradiation, CMV-seronegative, etc.)

7.0 STORAGE OF BLOOD:

7.1 Blood can only be stored in monitored refrigerators in containers approved by the Blood Bank

7.2 Blood normally stored at 1 - 6°C will exceed 10°C in approximately 30 minutes at room temperature. Therefore, untransfused products must be returned to the Blood Bank within 30 minutes, otherwise they will be discarded

8.0 TRANSFUSION PROTOCOL:

8.1 The individual starting the transfusion must chart and complete the electronic Blood Transfusion Record in TAR (HIS system)

8.2 Do not routinely send the Blood Bank copy of the Blood Transfusion Record Form or the empty blood bag to the Blood Bank at the conclusion of a transfusion. If however, a patient has experienced a transfusion reaction then send both the completed

Transfusion Record Form and blood bag in a sealed plastic bag to Blood Bank

8.3 If we are experiencing a computer downtime then a Blood Transfusion Record Form should be scanned by the transfusionist into the patients' medical records once the computers are back on line.

9.0 TRANSFUSION REACTIONS:

9.1 If a reaction is suspected, **immediately** stop the flow of blood but keep the infusion site open with a saline infusion

9.2 **Immediately** notify the Blood Bank and Attending Physician

9.3 Obtain required EDTA blood sample (purple top tube)

9.4 Fill out a "Transfusion Reaction Section" on Blood Transfusion Record. Send a copy along with the Blood Bank copy of the flow sheet, the specimens, and the blood bag with attached IV tubing and solutions to the Blood Bank.

10.0 BLOOD COMPONENTS AND BLOOD PRODUCTS: For more details of these items, please refer to the ARC/AABB Handbook available in the Blood Bank. Use regular blood filter for all product.

10.1 **LEUKOREDUCED RED BLOOD CELLS**

- Prepared from a single unit of whole blood
- Hematocrit approximately 55 – 60%
- Not necessary to add saline to product

10.2 **FRESH FROZEN PLASMA**

- Requires 15 minutes for thawing
- Expires 24 hours after thawing

10.3 **RED BLOOD CELLS DEGLYCEROLIZED** – Are not stored at Bristol Hospital. They are obtained through American Red Cross (ARC).

- Requires a special order to Blood Bank
- Requires several hours for thawing and deglycerolization
- Unit expires 24 hours after deglycerolization

10.4 **HLA TYPING**

- Typing is performed by American Red Cross Blood Services New England Division in Deeham, MA
- Contact Blood Bank for specimen requirements

10.5 **CRYOPRECIPITATE**

- Used as a source of fibrinogen
- Pre-pooled units (equivalent to 5 single units) expires 6 hours after thawing
- Requires 15 minutes for thawing

10.6 **LEUKOREDUCED PLATELETS PHERESIS**

- Requires special order to Blood Bank. All platelet products ordered as needed from ARC, not available in BH inventory
- Equivalent to 4-6 platelet concentrates
- Expires 5 days after collection
- Pre-pooled may be substituted (per providers approval) if single donor not available from ARC. Equivalent to 5 platelet concentrates

10.7 **LEUKOREDUCED CROSSMATCHED PLATELETS PHERESIS**

- Indicated in patients who are refractory to standard platelet products
- Requires special order to Blood Bank and platelet
- alloimmunization screening test prior to ordering
- Expect 24-48 hour delay in product availability

10.8 **OUTPATIENT TRANSFUSIONS**

- Must be booked in advance through Centralized Scheduling ext. 3020

11.0 REFERENCES:

11.1 College of American Pathologists, Laboratory Accreditation Program

11.2 Department of Health and Human Services, Centers for Medicare and Medicaid Services, CLIA 88, Final Rule

11.3 ARC Blood Services Division, Connecticut Chapter – Farmington, CT 06032

11.4 AABB Technical Manual, 16th Edition, Bethesda, MD 20814-2749. Pages 438-442.

SECTION III: CHEMISTRY

1.0 PRINCIPLE:

Proper analysis in chemistry requires the collection of an appropriate volume of blood into the correct tube type. Tubes must be properly labeled and transported (see General Guidelines and Specimen Acceptance). Information regarding tube type and specific requirements is available in the Hospital Information System (HIS). For questions regarding specific tests contact the Laboratory at 860-585-3217.

2.0 GENERAL SPECIMEN REQUIREMENTS:

2.1 The most common sample for chemistry testing is whole blood serum or plasma. The preferred collection method for adults is venipuncture using vacuum collection tubes. The method of collection is similar for whole blood, serum or plasma except for the anticoagulant used. Certain analyses require containers with preservative and/or anticoagulants, while others do not. The color of the stopper of the collection tube specifies the anticoagulant content. See HIS for correct tube type.

2.2 Blood should be obtained from a freely flowing venipuncture performed according to current nursing or laboratory venipuncture procedure. Tubes should be collected in the correct "Order of Draw":

- Blood Culture(s)
- *Citrate(Blue Top Tube)
- SST Gel Separator Tube (Gold or Tiger Top Tube)
- Serum Tube (glass or plastic)(Red Top Tube)
- PST Gel Separator Tube w/ Heparin
- Heparin Tube (Green Top Tube)
- EDTA Tube (Purple/Pink Top Tube)
- Oxalate and Fluoride (Gray Top Tube)

* When a blue Citrate tube is needed for collection a discard tube is required when using a winged tipped set (butterfly). The discard tube should be another blue-top tube or a plain red-top tube.

2.4 All tubes should be immediately inverted after collection per manufacturer's recommendations.

2.5 Deliver specimens to the laboratory promptly.

2.6 Avoid hemolysis. Erythrocytes contain certain analytes (LD, AST, K, ALT) in concentration many times higher than in the plasma. When red cells are hemolyzed, there is release of these analytes and dilution of plasma resulting in erroneous laboratory values. Also, hemolysis may interfere in analytical methodologies.

Valid measurement of analytes in serum or plasma requires prompt separation from the blood cells. When left unseparated, analytes shift between the cells and the plasma or serum and glucose is consumed. Some analytes are unstable at room temperature. Drawing extra tubes of blood on patients and holding them as a contingency against some unforeseen need for more tests can lead to erroneous results and is a dangerous practice that should be avoided.

3.0 FOR SPECIMENS DRAWN OFF CAMPUS

3.1 Red-top and SST (serum based samples) tubes must stand for 30 minutes to allow complete clotting, centrifuged, and then the serum separated and refrigerated until delivered to the laboratory. For specimen requirements, check the HIS system.

3.2 Purple-top tubes for certain chemistry tests may be kept at room temperature for up to 8 hours. After 8 hours, refrigerate until delivery.

3.3 Green-top tube handling depends on the specific test ordered. Some tests require specimens to remain on ice post collection. See HIS for specific test requirements.

4.0 LABORATORY SPECIMEN STORAGE TEMPERATURE REQUIREMENTS

Storage Method	Centigrade (Celsius) Temperature Range
Refrigerated	2 - 8 ° C
Frozen	Less than or equal to -20 ° C
Room/ Ambient	22 – 25 ° C

5.0 DRAWING SAMPLES FROM A LINE

If sample is to be drawn from a line, be sure to draw approximately 5-10 mL for adults in a first "flush" syringe (20 mL to clear any heparin from the line if coagulation tests are desired). Then draw the syringe for the desired tests.

6.0 REFERENCES:

4.1 College of American Pathologists, Laboratory Accreditation Program

4.2 Department of Health and Human Services, Centers for Medicare and Medicaid Services, CLIA 88, Final Rule

SECTION IV: COAGULATION

1.0 PRINCIPLE:

Coagulation testing is very dependent on proper venipuncture and specimen collection. Many factors can affect the accuracy of coagulation testing and specific protocols should be followed. Coagulation tests performed at Bristol Hospital Laboratory include the following: PT, APTT, TT, DDIMER and Fibrinogen.

2.0 PREANALYTIC VARIABLES:

2.1 The patient should be drawn in a low stress environment to minimize the effects of stress on coagulation factors such as Factor VIII

2.2 A traumatic venipuncture i.e. not inflicting or causing damage or injury is necessary to avoid activation of tissue factors such as Factor VII

2.3 In order to avoid hemolysis and thrombogenicity due to preanalytical variables a few things should be taken into consideration when preparing to draw blood:

- Selecting the appropriate needle gauge based on the amount of blood to be drawn
- Patients Age
- Size and depth of vein selected
- Tourniquet should be released as soon as a free flow of blood is achieved from patient:
- Selecting the appropriate needle gauge based on the amount of blood to be drawn
- Patients Age
- Tourniquet should be released as soon as a free flow of blood is achieved

2.5 When a series of various types of vacutainer tubes are drawn, the coagulation tube should be the first tube in the series and should never be drawn after a heparin or EDTA tube in order to avoid cross contamination of anticoagulants

2.6 When using a winged blood collection set for venipuncture and the coagulation (blue top citrate) tube is the first specimen tube to be drawn, a discard tube should be drawn first. The discard tube must be used to fill the blood collection set tubing's **"dead space"** with blood but the discard tube does not need to be completely filled. This important step will ensure maintenance of the proper blood-to-additive ratio of the blood specimen. The discard tube should be a non-additive (Red Top Tube) or Coagulation tube.

3.0 For patients on Heparin Therapy:

3.1 Specify time the blood is to be drawn

3.2 Generally, the blood for the PTT should be drawn approximately one hour **BEFORE** the next scheduled heparin dose, regardless of whether the dose is given every 4 or every 6 hours

3.3 The next dose of heparin should be withheld until the test results are available

4.0 Specimen Transport Storage:

Coagulation specimens that are drawn at offsite facilities are uncentrifuged and are transported at room temperature. Due to the labile properties of Factor V and VII, the following guidelines should be observed:

- 4.1 Prothrombin times should be tested within 24 hours if left at room temperature
- 4.2 Activated partial thromboplastin times should be tested within 8 hours
- 4.3 Other coagulation assays such as thrombin time, Protein C, Protein S, Factor V, and Factor VIII should be tested within 4 hours from draw time
- 4.4 If testing must be delayed beyond these time frames, tubes should be double spun to obtain platelet poor plasma and frozen at -20°C for up to 2 weeks or at -70°C for up to 6 months. Due to warming cycles, do not use frost-free freezers
- 4.5 Specimens may be sent through the hospital' s pneumatic tube system with no deleterious effect
- 4.6 Coagulation tubes that have been tested are stored in specimen racks and are placed in a designated storage location in each facility

5.0 REFERENCES:

- 5.1 BD Diagnostics Preanalytical Systems, www.bd.com/vacutainer
- 5.2 Collection, Transport, and Processing of Blood Specimens for Testing Plasma-Based Coagulation Assays; Approved Guideline-Fourth Edition. NCCLS. Copyright 2003

SECTION V: HEMATOLOGY

1.0 PRINCIPLE:

Specimens submitted to Hematology include a complete blood count and the following individual components:

- Blood cell differential
- Manual differential
- Reticulocyte count
- Body fluid analysis and cell count
- Smears for parasite examination
- Sedimentation rates (ESR)
- Bone marrow studies (***refer to 3.0 below***)

2.0 SPECIMEN REQUIREMENTS AND PROCESSING:

2.1 All specimens must be labeled with the LIS computer barcode label. The label must include the **patient's full name, date of birth** the **medical record number,** and **test(s)** to be performed.

2.2 Specimens for CBC must be collected in the appropriate anticoagulant (BD Lavender Top Tube containing EDTA).

2.3 Specimen must contain an adequate blood to anticoagulant ratio as indicated below.

- 5 mL EDTA tubes require a **minimum** of 1 mL
- 3 mL EDTA tubes require a **minimum** of 1 mL
- Minimum of 250 uL in an EDTA microtainer.

3.0 HEMATOLOGY TESTS:

The requests for Hematology are ordered on the HIS system. The following are some of the more common tests ordered.

- **PLT** (Platelet Count)
- **RETIC** (Reticulocyte Count)
- **ESR** (Erythrocyte Sedimentation Rate)*
  (*a **minimum** of 1 mL of blood required to perform this test).
- **CBCAD** (Complete Blood Count with automated differential)

This test consists of the following: White Blood Cell Count (WBC)
Red Blood Cell Count (RBC)
Hemoglobin (HGB)
Hematocrit (HCT)
Red Cell Indices (IND)
Differential (DIFF)
Platelet Count (PLT)
Automated 5-part differential

4.0 BONE MARROW STUDIES - this test should be coordinated with the automated Hematology Department.

5.0 **CHROMOSOME ANALYSIS** – this test is sent to a preferred reference laboratory. (Neogenomics, UCONN, MAYO, etc.)

Please call the Automated/Hematology Lab in advance to Schedule these Studies

- Peripheral blood and marrow aspirations may be used for these studies
- A history sheet (obtainable from the Automated Laboratory) must accompany the specimen

6.0 **FLUID CELL COUNTS**

- Minimum of 1 mL of fluid in a container if not bloody
- Bloody specimens should be submitted in EDTA tube to prevent spontaneous coagulum

7.0 **REFERENCES:**

7.1 College of American Pathologists, Laboratory Accreditation Program

7.2 Department of Health and Human Services, Centers for Medicare and Medicaid Services, CLIA 88, Final Rule

SECTION VI: MICROBIOLOGY

When collecting any specimens, employees must follow their Facility's guidelines for Standard Blood/Body Fluid Precautions, Isolation Precautions and OSHA Blood Borne Pathogen Standards as outlined in the Facility's Exposure Control Plan.

Specimens should always be collected **before** antimicrobial therapy is initiated. Collection during therapy may suppress the growth of pathogenic organisms resulting in a false negative culture.

Collection of all culture samples should be preceded by skin decontamination. The site should be cleaned with soap and then isopropyl alcohol, if appropriate. A source/site must be specified for all specimens submitted.

In the event that a specimen cannot be processed, specimens will be held for 7 days. Physicians may consult with laboratory at ext. 3217

SPECIMEN LABELING

Every specimen must be clearly labeled with the **patient's full name, date of birth, specimen type** and **source** and the **date** and **time** of collection. Unlabeled or mislabeled specimens cannot be processed.

Swab and Transport Media (Swabs are not appropriate for the collection of mycobacteriology (AFB) or fungus cultures. Tissues, fluids or scrapings should be submitted.

Unacceptable Specimens for Culture: The following specimens are unsatisfactory for culture and cannot be accepted by the laboratory:

- Foley Catheter Tips
- Needled Syringes
- Vaginal Lochia
- Bowel Contents
- Vomitus
- Gastric contents will only be accepted for AFB culture

Ear Cultures

External

- Cultures of the **external ear** are of limited value since normal skin flora are found in this area. In order to obtain an adequate significant culture there should be a visible purulent drainage.

Middle

- Cultures from the **middle ear** cannot be collected using a sterile transport swab. The physician must collect an aspirate from the middle ear using a syringe. The fluid should be inoculated into a yellow top SPS tube for transport to the laboratory.

Ear Collection Procedure

Instructions for Use:

- Obtain a swab (blue cap with gel Amies Medium Transport)
- Clean external ear with a sterile swab and saline
- Peel open the BBL Culture Swab Plus pouch
- Remove cap from transport tube
- Remove applicator swab and collect specimen (Amies Medium Transport) and collect new drainage as it appears (during specimen collection, the applicator tip should only touch the area where the infection is suspected to minimize potential contamination)
- Place applicator swab in transport tube
- Label specimen with **patient's full name, date of birth** the **specimen type** and **source** and the **date** and **time** of collection. Unlabeled or mislabeled specimens cannot be processed.
- Send specimen to the laboratory for immediate analysis

Eye Cultures - "Eye" cultures are actually cultures of the conjunctiva. Cultures should be properly labeled indicating which eye was cultured i.e. left or right. If both eyes were cultured, a separate specimen should be collected from each eye. Use a blue capped culture swab (Amies Medium Transport Transport) for collection.

Eye Collection Procedure

Instructions for Use:

- Obtain a swab (blue cap with gel Amies Medium Transport)
- Peel open the BBL Culture Swab Plus pouch
- Remove cap from transport tube
- Remove applicator swab and collect specimen (during specimen collection, the applicator tip should only touch the area where the infection suspected to minimize potential contamination)
- Place applicator swab in transport tube
- Record **patient's full name, date of birth** the **specimen type** and **source** and the **date** and **time** of collection. Unlabeled or mislabeled specimens cannot be processed.
- Send specimen to the laboratory for immediate analysis or store at room temperature

Note: If ***Chlamydia trachomatis*** is suspected a viral culture may be collected for Chlamydia Culture (see **Collection** Materials).

Body Fluid Cultures - Collection of normally sterile body fluids by percutaneous needle aspiration should always be preceded by appropriate skin decontamination. Spinal fluid is transported to the laboratory in the original collection tube and all other fluids should be inoculated into a yellow SPS tube or a sterile specimen container to prevent clotting. Specimens should be kept at room temperature and transported to the laboratory immediately.

Respiratory Cultures and Other Rapid Testing

Respiratory Specimens:

The laboratory performs a gram stain on all sputum specimens. Specimens containing a significant number of squamous epithelial cells indicate the presence of superficial (oropharyngeal) contamination. In such cases the laboratory will note the presence of oropharyngeal contamination

and the specimen **will not** be processed for further culture.

First morning sputum specimens are the best especially if a mycobacteria (AFB) culture has been ordered. Specimens for AFB cultures should be refrigerated immediately after collection to minimize the growth of normal oral flora. One sputum per 24 hour period is accepted.

Nasal Cultures - Nasal/nose cultures are of limited value and should only be used for the detection of ***Staphylococcus Aureus*** colonization. Use a blue capped culture swab for collection (Amies Medium Transport). Swab should be inserted 1-1.5cm into the nose and rotated slowly.

Nasal Collection Procedure

Instruction for Use:

- Peel open the BBL Culture Swab Plus pouch
- Remove cap from transport tube
- Remove applicator swab and collect specimen (during specimen collection, the applicator tip should only touch the area where the infection suspected to minimize potential contamination)
- Place applicator swab in transport tube
- Record **patient's full name, date of birth** the **specimen type** and **source** and the **date** and **time** of collection. Unlabeled or mislabeled specimens cannot be processed.
- Send specimen to the laboratory for immediate analysis or store at room temperature

Nasopharyngeal Specimens for Direct Fluorescent Antibody (DFA) Smear and Culture for Bordetella Pertussis

1. **Kit Contents** (obtain kits directly from the Microbiology Lab)
   - Directions for the collection process
   - Transport system containing 2 aluminum shaft dacron swabs
   - 1 vial liquid casamino acid
   - 1 Regan Lowe agar slant
   - Glass slide with etched circles
   - Cardboard slide holder

2. **Precautions**
   - For optimal results, specimens should be obtained early in the course of disease, preferably during the first week and before the characteristic cough occurs.
   - **DO NOT** use the transport medium if it has expired.
   - A positive DFA stain of a nasopharyngeal smear may be obtained even after the patient has been on antibiotic therapy for 48 hours. Laboratory diagnosis by DFA stain is not dependent on viable cells.
   - For optimal results, each side of the nasopharynx should be separately sampled.
   - Allow kit to warm to room temperature before inoculation

Bordetella Pertussis Collection Procedure

Instructions for Use

- Immobilize the patient's head and gently pass the swab through one nostril until it reaches the posterior nares. Leave the swab in place for 15 to 20 seconds
- After removing the swab from the nares, insert it into the vial of casamino acid, remove it, and streak surface of agar by rotating over entire surface

- Using second swab obtain another specimen for the other nare
- Dip the swab in the vial containing casamino acid and prepare two smears by touching the swab to the area the etched circles of the glass slice
- Allow the slide to air dry
- Label the glass slide and the transport tube with the **patient's full name**, and the collection **date** and **time**.
- Place the glass slide in the cardboard slide holder
- Specimens should be kept at room temperature. Transport the cardboard slide holder containing the glass slide and the transport tube to the laboratory immediately (transport should occur within 2 hours of specimen collection)

Throat Culture Collection Procedure

Instructions for Use:

- Peel open the BBL Culture Swab Plus pouch
- Remove cap from transport tube
- Remove applicator swab and collect specimen (during specimen collection, the applicator tip should only touch the area where the infection suspected to minimize potential contamination)
- Place applicator swab in transport tube
- Record **patient's full name, date of birth** the **specimen type** and **source** and the **date** and **time** of collection. Unlabeled or mislabeled specimens cannot be processed
- Send specimen to the laboratory for immediate analysis or store at room temperature

Sinus Cultures - If a bacterial sinusitis is suspected, the physician should obtain a needle aspirate of sinus fluid. Nose and nasopharyngeal cultures are suboptimal. This aspirated fluid should be inoculated into a sterile specimen container and transported to the laboratory immediately.

Group A Strep Throat Culture and Rapid Strep Test - Swab only the back of the throat between and around the tonsillar area, avoid the tongue, teeth and cheeks. A tongue blade depressor should be used when swabbing the throat. Use a Liquid Stuart Medium for collection.

Influenza A and B Rapid Antigen Detection

Use a "flocked swab" for collection. Nasopharyngeal washes, aspirates, swabs and throat swabs are acceptable. Submit nasopharyngeal washes or aspirates in a sterile specimen container. Swab specimens should be collected using a dry flocked swab (dacron or rayon).

Procedure

Use a dry flocked swab or a viral culture collection kit

Instructions for use:

Nasal Aspirates

- Insert a depressed bulb syringe deeply into either nare and suction while withdrawing. Expel collected specimen into a sterile container.

Nasopharyngeal Swab

- Insert the swab beneath the inferior turbinate of either nare and vigorously rub and roll the swab against the mucosal surface.

*Note: If collected in Viral Transport Medium swirl swab in medium for 10 seconds then break the swab shaft by bending it against the vial wall evenly at the pre-scored line.

Throat Swabs

- Vigorously rub a rayon swab on both tonsillar surfaces and the posterior pharynx.

Label swab with **patient's full name, date of birth** the **specimen type** and **source** and the **date** and **time** of collection.

Sputum Collection Procedure:

1. Before collecting a sputum specimen, the patient should rinse their mouth with water and remove dentures. Rinsing the mouth lessens the contamination of sputum specimens from oropharyngeal secretions and their associated normal oral flora.
2. Patients should be instructed to cough as deeply as possible. Appropriately collected induced specimens or aspirations are recommended for adult patients who cannot produce acceptable sputum samples.
3. Collect the sputum specimen in a clean sterile specimen container. The traps used with suction devices are also acceptable.
4. The specimen should be transported to the laboratory immediately.

Stool Collection:

Clostridium Difficile Antigen/Toxin Assay - Soft, liquid, or watery stool specimens are acceptable. Testing is only performed once every 7 days. Fresh specimens should be transported to the laboratory immediately any specimen delayed in transport should be refrigerated or stored on ice.

Collection of Stool using a Sterile Container:

- **AVOID** using any antacid, barium bismuth, anti-diarrheal medication or oily laxatives prior to the collection of the specimen
- Empty your bladder completely **before** trying to collect stool specimen
- Collect the specimen in a clean dry container **(do not take stool sample directly out of the toilet).** You must use a "Speci-pan", bed pan, aluminum foil, or plastic wrap suspended over the water in the toilet bowl to collect the specimen. Remember specimen cannot be contaminated with urine.
- Place 5 – 10 grams of specimen in the container for transport
- Label container with **patient's full name, date of birth** and the **date** and **time** of collection
- Refrigerate or place on ice **immediately**. Sample must be returned to Laboratory **ASAP**

Collection of Stool using a Transport Media:

- **AVOID** using any antacid, barium bismuth, anti-diarrheal medication or oily laxatives prior to the collection of the specimen
- Empty your bladder completely **before** trying to collect stool specimen

- Collect the specimen in a clean dry container **(do not take stool sample directly out of the toilet).** You must use a "Speci-pan", bed pan, aluminum foil, or plastic wrap suspended over the water in the toilet bowl to collect the specimen. Remember specimen cannot be contaminated with urine.
- Using spoon inside the vial lid place 5 – 10 grams of fresh stool specimen in vial
- Fill to the **red fill line** on the outside of vial **(DO NOT OVERFILL)**, screw lid on tightly, carefully invert vial
- Do **not** pour out any liquid. Do **not** drink the liquid, it is poisonous. Should it be ingested, contact National Poison Control immediately at 1-800-222-1222 or dial 911
- Label container with **patient's full name, date of birth** and the **date** and **time** of collection
- Specimens collected into transport media such as Cary Blair or C&S are also acceptable and can be transported at room temperature

Giardia/Cryptosporidium - The ideal specimen for Giardia/Cryprtosporidium is a non-formed, preferably diarrheal, stool specimen. Fresh stool samples are collected in an Enteric container and or sterile container. The bladder should be completely emptied **before** the collection process as well as avoiding the use of any antacid, barium bismuth, anti-diarrheal medication or oily laxatives prior to collection.

Collection of Stool using a Transport Media:

- Collect the specimen in a clean dry container **(do not take stool sample directly out of the toilet).** You must use a "Speci-pan", bed pan, aluminum foil, or plastic wrap suspended over the water in the toilet bowl to collect the specimen. Remember specimen cannot be contaminated with urine.
- Collect using a Para Pak Ecofix Vial
- Using spoon inside the vial lid place 5 – 10 grams of fresh stool specimen in vial (especially portions that appear bloody, slimy, or watery)
- Fill to the **red fill line** on the outside of vial **(DO NOT OVERFILL)**, screw lid on tightly, carefully invert vial
- Do **not** pour out any liquid. Do **not** drink the liquid, it is poisonous. Should it be ingested, contact National Poison Control immediately at 1-800-222-1222 or dial 911
- Label container with **patient's full name, date of birth** and the **date** and **time** of collection
- Transport vial to the laboratory ASAP at room temperature.

Note: Specimens that are not received in this container cannot be processed.

Stool Cultures - The ideal specimen for a stool culture is a non-formed, preferably diarrheal, sample. Bacterial enteric pathogens should not be ruled out based on a single negative specimen therefore, multiple specimens should be collected. Three separate specimens, collected on 3 separate days, should be obtained. The submission of formed stools may produce erroneous false positive results and **will not** be processed.

Collection of Stool using a Transport Media:

- Collect the specimen in a clean dry container **(do not take stool sample directly out of the toilet).** You must use a "Speci-pan", bed pan, aluminum foil, or plastic wrap suspended over the water in the toilet bowl to collect the specimen. Remember specimen cannot be contaminated with urine.
- Collect using a Para Pak C&S Vial
- Using spoon inside the vial lid place 5 – 10 grams of fresh stool specimen in vial (especially portions that appear bloody, slimy, or watery)
- Fill to the **red fill line** on the outside of vial **(DO NOT OVERFILL)**, screw lid on tightly, carefully invert vial
- Do **not** pour out any liquid. Do **not** drink the liquid, it is poisonous. Should it be ingested, contact National Poison Control immediately at 1-800-222-1222 or dial 911
- Label container with **patient's full name, date of birth** and the **date** and **time** of collection
- Transport vial to the laboratory ASAP at room temperature.

Note: Routine culture includes culture for ***Salmonella, Shigella*** and ***Campylobacter.***

Ova and Parasites (By Pathologist Consult ONLY) - The ideal specimen for Ova and Parasite is a non-formed, preferably diarrheal, stool specimen. Fresh stool samples are collected in a sterile container and then placed in the Para-Pak Eco fix stool vial system. This system contains one green capped vial. The bladder should be completely emptied **before** the collection process as well as avoiding the use of any antacid, barium bismuth, anti-diarrheal medication or oily laxatives prior to collection.

Collection of Stool using a Transport Media:

- Collect the specimen in a clean dry container **(do not take stool sample directly out of the toilet).** You must use a "Speci-pan", bed pan, aluminum foil, or plastic wrap suspended over the water in the toilet bowl to collect the specimen. Remember specimen cannot be contaminated with urine.
- Collect using a Para Pak Ecofix Vial
- Using spoon inside the vial lid place 5 – 10 grams of fresh stool specimen in vial (especially portions that appear bloody, slimy, or watery)
- Fill to the **red fill line** on the outside of vial **(DO NOT OVERFILL)**, screw lid on tightly, carefully invert vial
- Do **not** pour out any liquid. Do **not** drink the liquid, it is poisonous. Should it be ingested, contact National Poison Control immediately at 1-800-222-1222 or dial 911
- Label container with **patient's full name, date of birth** and the **date** and **time** of collection
- Transport vial to the laboratory ASAP at room temperature.

The presence of parasites cannot be ruled out based on one negative examination. Repeat examinations may be indicated when the first examination is negative. There are a number of substances that can lead to the masking of parasites, such as antacids, enemas, and antimicrobial or anti-parasitic drugs. Specimens collected within 10 days of a barium enema are unacceptable.

Fecal Occult Blood - Fecal specimens should be collected from bowel movements over 3 days

and sampled from 2 different sections of each fecal specimen to increase detection of occult blood.

- Apply a thin smear of fecal specimen using the wooden applicator to each box using a different section of specimen for A and B.
- Close flap and transport to laboratory within 14 days.

Scotch Tape/Pinworm Collection (*Enterobius Vermicularis)*

The specimen must be collected first thing in the morning **before** the patient gets out of bed and before washing or using the bathroom.

Instructions for use

- Hold the buttocks open with thumb and forefinger to expose the rectal opening
- Press the sticky side of the paddle or scotch tape against the skin surrounding the rectal opening using moderate pressure. Be sure to sample both sides.
- Place the paddle back into the vial. Screw the lid on securely
- Label the vial with the **patient's full name**, **date of birth** and **date** and **time** of collection
- Deliver the specimen and all accompanying paperwork to the Bristol Hospital Laboratory

Urogenital Culture and Collection:

Routine genital cultures for both males and females are of minimal value. Cultures should specify specific organisms such as group B strep or *Neisseria gonorrhoeae* or conditions such as bacterial vaginosis.

Procedure for Collecting Genital Specimens:

1. The transport swab consists of a rayon swab on a plastic shaft secured to a cap. The swab contained within the cap is inserted into a plastic transport tube containing Amies medium without charcoal following specimen collection. Amies medium supports the recovery of both aerobic and anaerobic bacteria.
2. Open transport swab pack, and peel apart at the point labeled "TO OPEN" until the swab cap is visible.
3. Remove the sterile swab and collect specimen.

Female

- If gonorrhea is suspected, cultures should be taken of the discharge from the cervix.
- Specimens for bacterial vaginosis should be collected from the vagina.
- A vaginal/rectal specimen should be collected from pregnant females to screen for group B strep colonization.

Male

- Specimens should be collected using a Mini-tip wire swab. Insert the swab 2 to 4 cm into the urethra. Rotate for approximately 5 sec and withdraw the swab.
- If gonorrhea is suspected, penile discharge may also be collected.
- Remove the transport tube of medium from the package.
- Remove and discard the cap from the tube. Place the swab into the medium, and push the swab cap firmly onto the tube.
- Label and send to the laboratory immediately.
- Specimens should be stored at room temperature prior to transportation to the laboratory.
- If a viral agent is suspected the specimen must be collected using the

Genital Specimens

Routine genital cultures of both males and females are of minimal value. Cultures should specify specific organisms such as group B strep or ***Neisseria gonorrhoeae*** or conditions such as bacterial vaginosis.

PROCEDURE FOR COLLECTING GENITAL SPECIMENS:

Female

- Remove the sterile swab and collect specimen
- If gonorrhea is suspected, cultures should be taken of the discharge from the cervix.
- Specimens for bacterial vaginosis should be collected from the vagina
- A vaginal/rectal specimen should be collected from pregnant females to screen for group B strep colonization
- Label swab with **patient's full name, date of birth** the **specimen type** and **source** and the **date** and **time** of collection
- Specimens should be stored at room temperature prior to transportation to the laboratory

Male

- Specimens should be collected using a Mini-tip wire swab. Insert the swab 2 to 4 cm into the urethra. Rotate for approximately 5 sec and withdraw the swab
- If gonorrhea is suspected, penile discharge may also be collected
- Label swab with **patient's full name, date of birth** the **specimen type** and **source** and the **date** and **time** of collection
- Specimens should be stored at room temperature prior to transportation to the laboratory

Note: If a viral agent is suspected the specimen must be collected using the Universal Viral Transport System

Procedure for Collection of Specimens for N. *gonorrhoeae* and/or C. *trachomatis* using the digene® Female Swab Specimen Collection Kit for females only; which is done in house:

Collection of female endocervical specimens

- Open pack. Remove the transport tube.
- Remove excess mucus from the cervical os and surrounding ectocervix using 1 of the 2 specimen collection swabs provided. Discard the swab.
- Insert the swab into the endocervical canal and rotate it through 5-180° turns, alternating in opposite directions.
- Rub swab firmly over the entire area of the transformation zone.
- Withdraw the swab carefully, avoid contact with vaginal mucosa.
- Insert the swab to the bottom of the transport tube. Snap off the shaft of the score line, and cap the tube securely.

Procedure for Collection of Specimens for *N. gonorrhoeae* and/or *C. trachomatis* using the GenProbe Collection and Transport System (Sent to Reference Laboratory):

1. Collection of **male** urethral specimens
    - Open pack. Remove the transport tube.
    - Collect the urethral specimen at least one hour after urination.
    - Insert the small-tipped specimen swab 2 to 4 cm into the urethra. Rotate for approximately 5 sec and withdraw the swab.
    - Verify that all of the swab specimen transport buffer is at the bottom of the transport tube. If necessary, tap or shake the solution to the bottom.
    - Unscrew the cap; insert the swab and break the swab at the score line. Screw the cap until it clicks in place.
    - Store swab at 2-30°C (refrigerated or room temperature) prior to transport to the laboratory.
2. Collection of **female** endocervical specimens
    - Open pack. Remove the transport tube.
    - Remove excess mucus from the exocervix with the large-tipped swab provided in the collection kit. Discard the swab.
    - Insert the small-tipped swab into the endocervix and rotate for approximately 15 to 30sec and withdraw the swab. Avoid contact with the vaginal wall.
    - Verify that all of the swab specimen transport buffer is at the bottom of the transport tube. If necessary, tap or shake the solution to the bottom.
    - Unscrew the cap; insert the swab and break the swab at the score line.
    - Screw the cap until it clicks in place.
    - Store swab at 2-30°C (refrigerated or room temperature) prior to transport to the laboratory.
3. Collection of urine samples (**male or female**)
    - Instruct the patient not to urinate for at least one hour prior to collection.
    - Collect the first 15 to 20 mL of voided urine (the first part of the stream) in a sterile specimen cup.
    - Close the cup securely.
    - REFRIGERATE the specimen immediately at 2-8°C or store frozen at– 20°C or below. Specimens must be transported to the laboratory at 2-8°C.

Note: For the most optimal specimen, the first urine in the morning is recommended.

AMNISURE - Collection kits can be obtained from the Microbiology Laboratory

Instructions for Use: (No speculum exam required)

- Take the solvent vial by its cap and shake well to make sure all liquid in the vial has dropped to the bottom. Open the solvent vial and put it in a vertical position
- To collect a sample from the surface of the vagina use the sterile polyester swab provided. Remove the sterile swab from its package following instructions on the package. The polyester tip should not touch anything prior to insertion into vagina. Hold the swab in the middle of the stick and while patient is lying flat on her back, carefully insert the polyester tip of the swab into the vagina until the fingers contact the skin no more than 2-3 inches (5-7cm deep). Withdraw the swab from the vagina **after 1 minute**
- Place the polyester tip into the vial and rinse the swab in the solvent by rotating for 1

minute.
- Remove and dispose of the swab and transport to the laboratory immediately

Note: Testing is only accurate when completed within 30 minutes of collection.

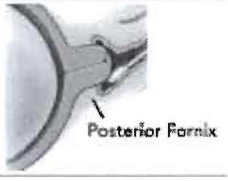
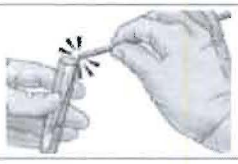
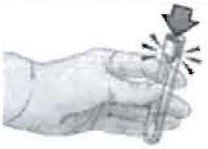
FETAL FIBRONECTIN

Specimens for fetal fibronectin testing should be collected prior to collection of culture specimens, digital cervical examination or vaginal probe ultrasound. Specimens should not be collected if the patient has had sexual intercourse within the last 24 hours of sampling time.

Instructions for use:

- The specimen should be collected prior to a digital cervical exam, collection of culture specimens, or vaginal probe ultrasound exams
- Do not contaminate the swab or specimen with lubricants, soaps, disinfectants, or creams
- Do not collect specimen if patients have had sexual intercourse within 24 hours prior to sampling; moderate or gross vaginal bleeding; advanced cervical dilation (3 cm or greater); rupture of membranes; gestational age <22 weeks or >35 weeks; or suspected or known placental abruption or placenta previa
- During a speculum examination, lightly rotate the swab across the posterior fornix of the vagina for approximately 10 seconds
- Remove swab and immerse tip in buffer. Break shaft of swab at score, align with hole in tube cap and tightly close to seal
- Transport specimens to laboratory promptly, store on ice is delay is >8 hours
- Record **patient's full name, date of birth** the **specimen type** and **source** and the **date** and **time** of collection

Specimen Collection Procedure

STEP 1	Collect specimen prior to digital examination or manipulation of the cervix to avoid sample contamination.	
STEP 2	During speculum exam, lightly rotate swab across posterior fornix of the vagina for 10 seconds to absorb cervicovaginal secretions.	
STEP 3		Remove swab and immerse tip in buffer. Break the shaft at the score even with the top of the tube.
STEP 4	Insert the swab shaft into the hole inside the tube cap and push down tightly over the shaft, sealing the tube with a click. Ensure the shaft is inserted securely to avoid leakage. Label, and send fetal fibronectin sample to a lab near you.	

Vesicles for HSV/VZV DFA

Collection of vesicle fluid for Herpes Simplex Virus and/or Varicella Zoster Virus for DFA testing:

Supplies needed:

1. Scalpel
2. Sterile swab
3. Glass slide
4. Slide holder/container

Collection Instructions:

1. Lift the roof off of the vesicle and remove excess fluid with a sterile swab.
2. Scrape the base of the lesion thoroughly with a scalpel blade.
3. Spread cellular material collected on the edge of the blade in two separate circles on a glass slide.
4. Label the slide with 2 patient identifiers and allow to air dry.
5. Place slides in a slide holder (cardboard or plastic) and transport to the laboratory.

VESICLE SPECIMENS FOR HERPES SIMPLEX VIRUS AND/OR VARICELLA ZOSTER VIRUS RAPID DIRECT FLUORESCENT ANTIBODY SMEAR

The direct immunofluorescent technique is very useful for the rapid differentiation of herpes simples and varicella zoster viruses. Fluorescein conjugated monoclonal antibodies are used to stain cytological preparations for the virus specific antigens of VZV 1 & 2 and HSV. The sensitivity of the immunofluorescent stain compared to the HSV tissue culture is 78-88% and is almost 100% for VZV compared to tissue culture.

The Tzanck smear (Giemsa or Wright stained slides) used to demonstrate cytologic changes cannot differentiate these two viruses and is a much less sensitive method than direct detection with immunologic reagents. The Tzanck smear cannot be relied on to exclude the diagnosis of HSV in critical situations.

Procedure:
Contact the Microbiology Lab for supplies at 860-585-3563.

Acceptable Specimens:

A suitable specimen for herpes simplex and varicella zoster virus direct examination is a scraping of the vesicle.

Instructions for use:

- Lift off the roof of the vesicle and remove excess fluid with a sterile swab. This can be used as a culture specimen.
- Scrape the base of the lesion thoroughly with a scalpel blade. Gross bleeding should be avoided.
- Be sure the rough surface of the slide provided is facing upwards. Label the frosted end of the slides with the patient name.
- Spread cellular material collected on the edge of the blade on all wells of the slide(s).
- Place slide(s) in the cardboard slide holder and transport to the laboratory.

Wound Cultures - If there is evidence of superficial contamination and multiple potential pathogens are isolated, these may be reported generically without antimicrobial susceptibility testing and with the indication that isolates may not be related to infection. Cultures are held for 7

days pending any consultation to perform additional work on the specimen. Use a blue capped culture swab (Amies Medium Transport) for collection. Properly decontaminate the site of collection.

Wound Collection Procedure
Instructions for Use:

- Peel open the BBL Culture Swab Plus pouch
- Remove cap from transport tube
- Remove applicator swab and collect specimen (during specimen collection, the applicator tip should only touch the area where the infection suspected to minimize potential contamination)
- Place applicator swab in transport tube
- Record **patient's full name**, **date of birth** the **specimen type** and **source** and the **date** and **time** of collection. Unlabeled or mislabeled specimens cannot be processed
- Send specimen to the laboratory for immediate analysis or store at room temperature

The collection of Body Fluid or Tissue is preferable to the collection of specimens on swabs

UNLISTED TESTS

If there are any unusual specimens or test requests that are not covered in this manual, you may contact the Laboratory or Dr. Michele Normandin, Director of Microbiology @ ext. 3217 to discuss specimen collection or transport requirements as well as test appropriateness.

SECTION VII: PATHOLOGY

The following procedure is maintained by the Bristol Hospital Peri-Operative Center and is available on the Bristol Hospital Website as "Specimen Handling Policy" under "Peri-Operative Services – OR". A more detailed version of this policy is maintained in the Anatomic Pathology Manual "Department of Pathology Policies and Procedures."

For specific questions regarding specimen processing, please call the Histology Department at ext. 3555 or contact a Pathologists directly.

***Note** - All policies and procedures represent our current knowledge and judgment regarding the issue covered by this policy. If you can think of a better way to handle the issue covered in this policy and procedure, or if this policy and procedure needs to be revised to reflect changes that have occurred, please bring your issues and or concerns forward so that we may consider improving this policy and procedure accordingly.

1.0 PURPOSE

The purpose of this policy is to outline a consistent process for specimen labeling and submission from the Operating Room, Outpatient/Minor procedure rooms, Physicians Offices and Endoscopy to the Department of Pathology.

2.0 POLICY STATEMENTS

All personnel involved with specimen submissions are responsible for the accurate and safe processing of all patient specimens.

3.0 DEFINITIONS

3.1 Specimen:
Tissue, blood, body fluids, or foreign bodies (e.g. coins, screws, etc.) removed from a patient for pathological, microbiological, or gross examination.

3.2 Chain of Custody:
Legal term referring to the process of maintaining, securing and documenting the chronological history of evidence.

3.3 Frozen Section:
The method for preparing selected tissue in which it is moistened, rapidly frozen, and sliced by a microtome for prompt examination by a pathologist.

4.0 SCOPE OF AUTHORITY / COMPETENCE

Peri-operative Registered Nurses and Surgical Technologists

5.0 PROCEDURE:

Universal Precautions will be used for handling all specimens. Specimen containers will be secured tightly and placed into plastic bags to prevent leaking of solutions. Sharp and bloody edges of specimens (e.g. limb amputations) should be wrapped to prevent injury or exposure to staff handling the specimen.

6.0 SPECIMEN IDENTIFICATION AND LABELING

6.1 Specimens submitted to the laboratory for pathological examination must be labeled correctly with a patient identification label indicating the **patient's full name**, **date of birth**, **specimen site** and **name of the specimen**.

6.2 Staff should confirm pre-operative diagnosis and pertinent information with the surgeon to be included in the patient's record and on the pathology requisition form.

6.3 Abbreviations are not acceptable. **"Right"** and **"Left"** must be clearly written.

6.4 When indicated by the surgeon, critical information such tissue margins, orientation, special tests or disposition is accurately indicated in the description area of the pathology requisition form.

7.0 REQUISITION FORM AND SPECIMEN LOGBOOK

7.1 Corresponding information on the pathology requisition form as to specimen identification must accurately match the information in the Perioperative record, on the label of the specimen container, and in the specimen logbook.

7.2 Specimens requiring intra-operative consultation with the pathologist will have a priority sticker on the requisition form, a phone extension for call back and a priority sticker in the specimen logbook.

7.3 The specimen logbook requires:

7.3.1 **Date**, **time** and **initials** of individual entering information into the logbook **patient's full name**, **date of birth**, and **medical record number** indicated on the patient sticker

7.3.2. Specimen description

7.3.3. Specification as to whether the specimen is frozen, fresh or permanent, and the total number of specimen containers.

7.4 A second verification is required for all specimens logged into the specimen logbook prior to leaving the Operating Room or Outpatient Surgery Departments. A second RN or surgical technician completes the double check with his/her initials and the time of verification.

8.0 HAZARDOUS SPECIMENS

8.1 Specimen containers will be appropriately labeled when required for hazards, such as formalin content. For fresh specimens, use pre-labeled biohazard bags or place biohazard sticker on container. For large fresh specimens (e.g. placenta, large limb amputation), use 2 biohazard bags. For large permanently-fixed

specimens (e.g. colon), use an appropriately sized hard plastic container with biohazard indication and place into two red plastic bags.

8.2 For specimens considered radioactive (sentinel lymph node biopsy), a radioactive hazard sticker must be placed on the specimen container, pathology requisition and in the specimen logbook.

9.0 SPECIMENS FOR PERMANENT FIXATION (formalin)

9.1 For specimens placed into formalin for permanent fixation, the time the specimen was placed into formalin must be indicated on the pathology requisition as well as the out of body time. All specimens placed into formalin must be completely submerged with enough solution to adequately cover the specimen.

9.2 Specimens too large for placement into a rigid container must be double-bagged and indicated with a biohazard sticker and patient label on the outside bag. Additional labels for specimen identification and biohazard indication should be on the outside of the rigid container.

10.0 SPECIMENS WHICH MAY BE PLACED INTO FORMALIN FOR PERMANENT FIXATION INCLUDE, BUT ARE NOT LIMITED TO*

- appendix
- biopsies
- bladder, prostate
- bone, tendon, fascia
- colon
- cervical cone biopsies, leeps
- currettings, all
- gall bladder
- ganglion
- lymph node
- mucosa, all
- nasal specimens
- tonsils, adenoids
- skin, all
- uvula
- uterus, ovaries, fallopian tubes

***NOTE:** The surgeon may request fresh or frozen examination for any specimen at his or her discretion.

11.0 SPECIMENS FOR FRESH EXAMINATION OR FROZEN SECTION

11.1 A priority handling sticker must be placed onto the pathology requisition, specimen container, and the specimen logbook.

11.2 Specimens indicated for frozen section or fresh examination must be processed immediately ***do not*** place into formalin. Time biopsy/tissue removed will be indicated on the requisition form.

11.3 Large limb amputations are to be placed into two large red biohazard bags and then into a large rigid container prior to sending to the lab. Patient/specimen identification and biohazard labels are to be placed onto the outer bag and then the outside of the container holding the specimen.

11.4 Fluid/cell block specimens must be sent immediately or placed into the refrigerator in the soiled utility room until they can be processed in the lab.

12.0 SPECIMENS/TISSUES WHICH MAY BE SENT FRESH FOR EXAMINATION OR FROZEN EXAMINATION SECTION INCLUDE BUT ARE NOT LIMITED TO

- fetus
- fluid for cytology (refrigerate immediately)
- Pap smear (use collection kit)
- placenta (even when for disposal)
- sentinel lymph node for touch prep

Tissue for special testing: call ahead to lab for courier scheduling

- muscle biopsy
- nerve biopsy
- renal biopsy
- flow cytometry
- chromosomal/cytogenetic studies
- Oncotech specimens
- Oncotype specimens

13.0 SPECIMENS FOR GROSS EXAMINATION ONLY

Certain specimens do not require microscopic examination, including inanimate objects and tissue specimens that would not reveal useful diagnostic information. The following specimens may be submitted for gross examination only:

- Orthopedic hardware
- foreign bodies, such as coins or metal fragments
- bullets/knives (unless medico-legal implications)
- gall stones
- silicone implants
- vascular devices/grafts
- explanted medical devices (if recall/defective, for identification purposes)
- teeth
- skin from plastic surgery reconstruction (scar revision)
- rib (as part of rib resection with no history of malignancy or gross lesions)

- nasal septum
- stapes (if removed to treat otosclerosis)
- tonsils of children < 15 years of age
- fingernails/toenails if no clinical indication
- resected digit/extremity for obvious gangrene secondary to arteriosclerosis
- kidney, ureteral etc. calculi

14.0 SPECIMENS EXEMPT FROM PATHOLOGICAL EXAM

- vascular grafts/devices
- pacemaker leads/generators
- orthopedic devices/hardware
- cosmetic implants
- dental appliances
- ear prosthesis
- intra-ocular lenses
- penile prosthesis
- dialysis catheter
- contraceptive devices
- bone with articular surfaces (i.e. hip/knee with diagnosis of degenerative arthritis)
- placenta, if no examination requested by physician (may be held in morgue for 7 days)

- skin from plastic reconstruction or as deemed necessary by surgeon (includes neonatal foreskin

EXCEPTION:

Upon request of the attending physician, any of these specimens may be submitted for examination of unusual findings and gross and microscopic examination of separate or attached tissue. Indicate request on pathology requisition.

15.0 PHYSICIAN OFFICE SPECIMEN SUBMISSION

- Patient requisitions must be filled out completely.
- Specimen containers must have **patients full name**, **date of birth**, **site of origin**, and which side (**Right** or **Left**). Do not use abbreviations for side.
- All information on requisition and specimen container must match.
- All tissue specimens should be placed in 10% NBF.
- Fresh tissue for special studies should be submitted immediately to the lab. Call Laboratory ext. 3217 for immediate courier pick-up.
- All pap smears are submitted in Thin Prep vials.
- All CT/GC testing done at Bristol Hospital needs to be submitted in Qiagen Female Swab Collection kits. All other male and urine CT/GC testing are submitted in GenProbe collection devices for Mayo Lab.

- All fluids for cytology should be submitted fresh and delivered to the laboratory immediately, with the exception of urines. If there is a specimen with RPMI please call the Lab ext. 3217 for immediate courier pick-up.
- All direct smears are air-dried. They need to be labeled with **patients full name**, **date of birth** and **site of origin**.

16.0 DOCUMENTATION

Documentation on the Perioperative record includes:

16.1 Name and Type of Specimen

16.2 Specific location as to where specimen was obtained from, including laterality if indicated (no abbreviations).

16.3 The time specimen was obtained and if sent for fresh or frozen section studies or permanent in formalin.

16.4 If a specimen is discarded, documentation should include: what the specimen is, how it is discarded, and where the specimen is discarded into bio-hazardous waste per hospital policy (refer to the Hazardous Waste and Material Management Plan).

17.0 FORENSIC SPECIMEN

17.1 Bullets and other forensic evidence (biopsies, cultures, etc.) will be labeled with the **patients full name**, **medical record number**, **location** of the body where the evidence was collected, the **date** and **time** it was collected. This information will be documented on the Operative Record.

17.2 The item(s) will be handled while maintaining chains of custody needed by the Police Department. Chain of Custody paperwork, obtained from the Security office, must be completed and signed before releasing evidence to law enforcement or the lab. Please refer to Bristol Hospital Department of Emergency Care Services "*Legal and Forensic Evidence-Chain of Custody.*"

17.3 Document **how**, **when** and to **whom** the item(s) are released.

18.0 SPECIMEN TRANSPORT AND DELIVERY

18.1 Specimens and a corresponding requisition form must accompany the specimen when prepared for delivery to pathology.

18.2 Specimens not needing immediate transport to the laboratory may be left in the soiled utility room **after** they are logged into the Specimen logbook. Specimens in formalin may be left in a bucket on the counter next to the logbook. Cultures and other specimens for cytology must be placed into the refrigerator.

18.3 The Operating Room will deliver accumulated specimens to the Pathology Department three times daily during operating hours and Pathology will pick up accumulated specimens twice daily. Specimens will be transported in the pathology.

cooler. Those too large to fit into the cooler will be double-bagged and carried to the lab.

19.0 EXPLANTED TISSUE/DEVICES REQUESTED BY PATIENTS:

Orthopedic hardware may be returned to patients upon appropriate decontamination in Central Sterile Processing and following terminal sterilization in the Operating Room, as it is no longer considered bio-hazardous. Documentation including a copy of the corresponding autoclave cycle printout with patient sticker will be maintained in the OR. Additionally, documentation in the patient's perioperative record will indicate the process and subsequent release of explanted hardware according to policy.

Bio-hazardous tissue and devices removed from patients and not subjected to terminal sterilization may not be returned to them without prior permission of the Department of Health. Please call the hospital risk manager for any questions.

Please refer to Bristol Hospital Department of Pathology, Policies and Procedures

"*Guidelines for Specimen Submission to Anatomic Pathology Laboratory*" for specifications and handling of specimens requiring pathological examination.

20.0 STAFF / PATIENT RESOURCE LINKS

Bristol Hospital Department of Pathology, Policies and Procedures "*Guidelines for Specimen Submission to Anatomic Pathology Laboratory.*"

Bristol Hospital Department of Emergency Care Services Policy #1011 ***"Legal and Forensic Evidence-Chain of Custody."***

21.0 ADMINISTRATIVE LINKS

REFERENCES:

"Recommended Practices for Care and Handling of Specimens in the Peri-Operative Environment". *AORN Standards and Recommended Practices for Peri-Operative Nursing.*

Denver: Association of Operating Room Nurses, Inc., 2008; pp. 557-564.

Phillips, N. (2007). Berry and Kohn's Operating Room Technique (11th ed.). St. Louis: Mosby.

Cytology

1.0 PRINCIPLE:

Cytologic examination involves the microscopic examination of cellular elements either in fluids, exfoliated specimens, or needle aspiration, from solid tissues. Successful cytologic examination requires proper collection techniques as well as proper preservation techniques to avoid artifacts that obscure cellular detail such as crush artifact and air drying.

2.0 SPECIMENS: Non-Gynecologic Specimens

Non-Gynecologic specimens include pleural, abdominal, pericardial fluids, bronchoscopic specimens (washings and brushings), urinary tract specimens, nipple discharges, cerebrospinal fluids and fine needle aspirations (radiology guided or from physician's offices).

Gynecologic specimens comprise Pap smears, both conventional and monolayer techniques (Thin Prep).

2.1 MATERIALS NEEDED FOR COLLECTION:

- 2.1.1 Instruments for collection
- 2.1.2 *Cytology Fixative- Cytology Fixative (CytoLyt) and 95% alcohol for glass slides
- 2.1.3 Glass slides as needed
- 2.1.4 Specimen Transport Bags
- 2.1.5 Proper specimen identification (i.e. **patient's full name**, **date of birth** and or another unique patient identifier) and a requisition slip

***Note:** All fluids should be collected in cytology fixative except those suspicious for hematopoietic malignancy which should be submitted fresh and cultures. Call the laboratory in these cases to obtain RPMI media or culture tube.

To schedule cytologic assistance with fine needle aspirations (performed in the Radiology Department), call the Cytology Laboratory ext. 3583

3.0 SPECIMEN COLLECTION AND PRESERVATION BY SPECIMEN TYPE:

- 3.1 **Breast Nipple Secretions**
  Nipple secretion should be collected by applying the slide directly to the nipple and then smearing the material collected. The slides may be air dried or put directly into 95% alcohol
- 3.2 **Body Cavity Fluids**
  Following collection of fluids by aseptic technique, send the specimen to the laboratory immediately. Refrigerate specimen if transport is delayed. If extended delay is expected, use 30 ml or less of the fluid and add an equal volume of the appropriate preservative which is available in the lab
- 3.3 **Bronchial Brushing**
  Immediately after the brush is withdrawn, cut the wire a short distance from the bronchoscope and insert into Cytolyt preservative solution.

3.4 **Bronchial Washings/Lavage**

After the specimen is collected, put the entire specimen into a collection cup or vial containing preservative. The mount of preservative should be equal or in excess of the specimen volume.

3.5 **Brushings from other Body Sites**

Brushings may be taken from any surface of the body. These may be submitted as direct smears or in preservative fluid with the tip of the brush.

3.6 **Cerebrospinal Fluid**

Do not use preservative fluid, send **immediately** to the lab.

3.7 **Direct Smears**

Prior to taking the specimen, slides should be labeled with the **patient's full name**, **date of birth** and **specimen source** using a pencil. The specimen is applied to the slide and smeared across the surface (usually with another slide) to produce a thin area. Fix **immediately** in 95% alcohol.

3.8 **Fine Needle Aspirations**

For monolayer preparations, the specimen is placed in Cytolyte solution and submitted to the laboratory. The specimen may also be applied to slides using the direct smear technique and fixed. Assistance is provided by the lab for aspiration performed in the Radiology Department.

3.9 **Sputum Specimens**

When a sputum examination is ordered, there are two methods that are used. Usually a series of sputum is ordered.

- **Spontaneous deep cough**
  The patient coughs deeply and expectorates into the specimen cup with appropriate preservative. The patient should secure the lid tightly and submit to the lab.
- **Induced Technique**
  If the patient is non-productive, this method is done under medical supervision and involves administering aerosols into the lungs to induce sputum. Collect the sputum into a sterile container and **immediately** deliver to the lab. The patient should be given a sterile container in case they are able to produce productive sputum within the next 24 hours.

3.10 **Urine Specimens**

- For cytology collection, **do not** collect the first morning specimen. instruct the patient to VOID the first morning urine, drink adequate water and collect the next urine specimen. Specimen should be submitted to the laboratory fresh.

4.0 GYNECOLOGIC SPECIMENS –Cervical smear (Pap smear):

Cervicovaginal cytology collection is usually performed in the physician's office by qualified personnel. With the patient in the dorsolithotomy position, using a lubricated bivalve speculum, the cervix should be adequately visualized and inspected.

The aim of collecting a cervical smear is to obtain a representative specimen from the squamo-columnar transition zone of the uterine cervix. Ideally, the smear should be obtained at mid cycle, because cell morphology is most easily interpreted during this time, however this is not essential.

4.1 COLLECTION USING THE THIN PREP TECHNIQUE

4.1.1 Obtain an adequate sampling from the cervix using a broom-like device.

4.1.2 Insert the central bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the endocervix. Push gently and rotate the broom in a clockwise direction 5 times.

4.1.3 Rinse the broom in Cytolyt preservative solution by pushing the broom into the bottom of the vial 10 times. Discard the collection device.

4.1.4 Tighten the cap.

4.1.5 Record the **patient's full name, date of birth** and or another unique patient identifier on the vial and record patient information and medical history on the cytology requisition form. Place the vial in a specimen bag for transport to the laboratory.

5.0 COLLECTION PROCEDURE FOR CONVENTIONAL SMEAR:

5.1 Properly label the frosted ends of a glass slide using a pencil with **patient's full name, date of birth** and or another unique patient identifier (is something other than a pencil is used the information will wash off, this includes using permanent markers)

5.2 Visually inspect the cervix

5.3 Using the contoured end of a plastic spatula, rotate at least 360 degrees around the circumference of the cervical with firm pressure

5.4 Take a sampling of the endocervix using a cervical brush. With gentle pressure rotate the brush 90 to 180 degrees

5.5 Transfer the material from the spatula to the slide using a single stroking motion and avoiding clumps. Transfer material from the brush along the slide by rotating the brush handle. The spatula may be spread on the left side of the slide and the brush on the right side or on two slides

5.6 Another collection instrument is a broom-like device that samples the endocervix and ectocervix simultaneously. To use the broom, the long central bristles are inserted into the cervical os until the lateral bristles bend against the ectocervix. The broom is rotated a total of three to five times in a clockwise direction. Transfer material, each side of the broom is stroked once across the slide.

5.7 Fix specimen **immediately** using 95% alcohol. Air drying and the use of hair spray as a fixative is **not recommended.**

6.0 REFERENCES:

6.1 Clinical Laboratory Standards Institute-Guidelines-NCCLS, Papanicolaou Techniques; Approved Guideline, GP15-A2, Wayne, PA: NCCLS, 2001

6.2 Hologic/Cytyc Corporation-Procedure for Collection

SECTION VIII: URINES

Urine - All urine specimens should be identified by collection type i.e. clean catch, straight catheter, indwelling foley catheter, etc. A first morning urine sample is the best for recovering pathogenic organisms, but samples collected at other times are acceptable.

Urine specimens should always be collected using a Sterile Containers. If a urine specimen is collected in using a non-sterile system such as a bedpan, urinal, non-sterile catheter tips, etc. they would **NOT** be acceptable for urine culture.

24-Hour Urine Collection - The proper collection of any 24 hour urine is crucial to the calculation and interpretation of the test(s).

24 Hour Urine Collection Procedure

- The **date** and **time** of the beginning and the end of collection must be notated on the 24 Hour Urine Container provided.
- The specimen must be collected in a 24 Hour Urine Container. If no containers are available contact the laboratory @ ext. 3217 to request one.
- At the beginning of the collection the patient should completely empty their bladder, this indicates the start of the collection and the **start time** should be recorded accordingly.
- All urine **VOIDED** in the next 24 hours should be collected in the container provided and refrigerated throughout the collection process (this helps to retard bacterial growth and the degradation of temperature labile constituents).
- At the end of the 24 hour period, the patient empties their bladder completely and this specimen is then added to the collection thus ending the 24 hour collection. The **end time** should be recorded accordingly.

Urine Culture Collection - A clean catch specimen is necessary to determine if an infecting organism is present in the urine. The specimen to be collected must be free of any contamination matter which might be present on the external areas of the genital organs.

Clean Catch Midstream Procedure

Female Cleansing Instructions

- Instruct patient to wash their hands before beginning clean catch process
- Instruct patient to unscrew the cap to the urine specimen container and place it on the counter face up and advise them **NOT** to touch the inside of the cup or cap
- Standing in a squatting position over the toilet. Separate the skin folds around the urinary opening
- Wiping front to back cleanse the area around the opening using the first castile soap towelette repeat using the second, then third clean castile soap towelette
- Patient begins urinating into the toilet keeping the skin folds apart with the fingers of one hand.
- Once a urine stream has been established instruct patient to place the sterile container into the path of the stream to catch the urine. The container should **never** touch the genital area.

- Urinate remainder of urine into the toilet
- Instruct patient to securely place the lid on the Sterile Specimen container to prevent leakage
- Return the sample to the healthcare worker

Male Cleansing Instructions

- Instruct patient to wash their hands before beginning clean catch process
- Instruct patient to unscrew the cap to the urine specimen container and place it on the counter face up and advise them **NOT** to touch the inside of the cup or cap
- Cleanse the end of the penis with the first castile soap towelette beginning at the urethral opening and working away from it (the foreskin of an uncircumcised male must be retracted), repeat using a second clean castile soap towelette
- Urinate the first portion of urine in the toilet
- Once a urine stream has been established instruct patient to place the sterile container into the path of the stream to catch the urine. The container should **never** touch the genital area.
- Urinate remainder of urine into the toilet
- Instruct patient to securely place the lid on the Sterile Specimen container to prevent leakage
- Return the sample to the healthcare worker

Indwelling Catheter

- Culture results on urine specimens collected from indwelling catheters are often misleading due to colonization of the catheters. Decontaminate the line or port and collect the specimen. **Never** collect urine from a Foley bag.

Straight Catheterization

- When collecting urine from a straight catheter, the first urine emerging from the catheter should be discarded to minimize contamination by urethral flora. **"Mini-caths"** are not acceptable devices for collecting a urine culture specimen since these catheters usually have urethral contaminants.
- Catheterization of the patient should be performed according to the Facility's procedure.

REFERENCES:

5.1 College of American Pathologists, Laboratory Accreditation Program, Accreditation Check List

5.2 Department of Health and Human Services, Centers for Medicare and Medicaid Services, CLIA 88, Final Rule

BD URINE COLLECTION PROCEDURES

1.0 Principle:

1.1 The examination of urine is one of the oldest practices in medicine. A carefully performed urinalysis provides a wealth of information about the patient. We also collect random urine specimens for many other laboratory tests. However, the quality of the specimen is critical to providing accurate results. Therefore, it is important that we communicate complete collection instructions to the patient and that we process specimens correctly in order to obtain the best quality of specimens.

1.2 Specific instructions for **Random Urine Collections** and preservation requirements are included under each individual test in the Laboratory Handbook.

1.3 Many urine specimens must be recollected due to contamination or leaking urine cups. Urinalysis or culture results may not correlate or be accurate due to improper specimen handling or delay in transport time. In order to standardize collection for **Random Urine** samples for Urinalysis, Culture and Sensitivity, urine pregnancy, urine toxicology, urine electrolytes or other chemistry tests, use the BD Urine Collection and Transport Kit to collect a **clean-catch midstream urine**.

1.4 The collection system includes a 4 oz. (120 cc) sterile cup, 8 mL Red-Yellow Urinalysis tube, 4 mL, grey-top C&S tube w/ preservative and 2 cleansing towelettes.

1.5 URINALYSIS: It is a CLSI requirement that a Urinalysis must be performed within 2 hours of collection or refrigerated for up to 8 hours, with the exception of using the BD urinalysis tube for collection vs. a sterile cup. These tubes are good for up to 72 hours at room temperature. Urine specimens must be sent to the Laboratory immediately after collection.

1.6 CULTURE: Urine must be added to the grey top tube for culture. **NOTE: The required minimum volume for the grey top tube is 3 mL.** The grey top product stabilizes the urine for up to 48 hours without refrigeration.

1.7 NOTE: The 6 mL No-Additive tube (BD366408) or 10 mL No-Additive tube (BD364979) is available separately and can be used in conjunction with the kit, when certain additional urine chemistry tests are ordered.

1.8 When collecting a sample for urinalysis or culture, always collect and transport both the UA and Grey culture tubes to the Laboratory. The culture can be added if the urinalysis suggests that culture is needed. This is especially important for our outpatient population where the physician may decide to add on a culture or other urine tests.

2.0 Specimens: Specimens include various random urine samples collected in the BD system or in a different sterile random or other container that may include preservative, depending on the test ordered.

3.0 Materials and Equipment:

3.1 Computer and Barcode label printer

3.2 BD Vacutainer Urine Kit (BD364957) which includes:

- 4.5 oz. sterile cup
- 8 mL red-yellow–top, Urinalysis tube with preservative
- 4 mL gray-top collection tube with lyophilized preservative (C&S)
- 2 cleansing towelettes

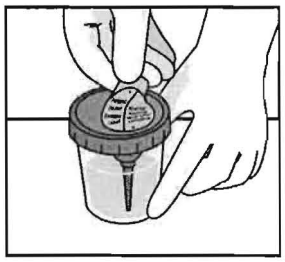
3.3 BD 13 x 100 NO-Additive 6 mL tube (BD366408) or BD 16x100 No-Additive 10mL tube (364979)
3.4 Specimen Hat
3.5 Biohazard specimen bags

4.0 Quality Control: Orders are reviewed and patient identification procedures are carefully followed before specimen collection. Procedures for proper cleansing and collecting a midstream collection are adequately explained using both words and diagrams to ensure a quality specimen. Specimen is processed and transported to the Laboratory ASAP after collection.

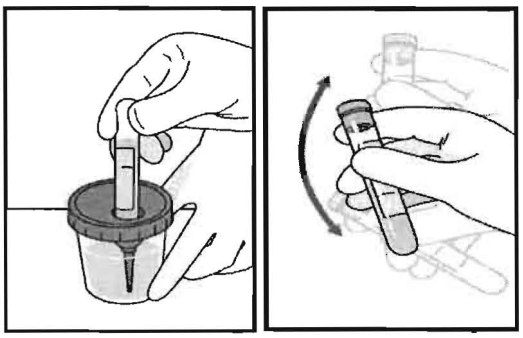
5.0 Procedure:

5.1 Most specimens will require a clean catch, midstream random urine. (This helps eliminate contamination by urethra or vaginal bacteria or other skin contaminants.)
5.2 For the majority of Random urine testing, where a urinalysis and/or urine culture is requested, use the BD urine collection system.
5.3 Open the package and remove the Vacutainer tubes. Apply a label to the urine cup (not the lid).
5.4 Give the patient the specimen bag with the labeled cup and towelettes.
5.5 Verbally instruct the patient in proper technique for cleansing and collecting a clean-catch midstream urine. In addition, instruct patient that written instructions are available in the bathroom to follow step by step. Remind the patient to wash their hands before beginning procedure.
5.6 Instruct patient to unscrew cap and place on counter or sink with the blue straw facing up. To avoid contamination, tell the patient to **NOT** touch the inside of the cup, cap or straw.
5.7 After collection, ask the patient to replace the cap on the cup and tighten securely. Remind the patient to **NOT** remove the label from the cap. Ask patient to place specimen in designated area outside of the bathroom.
5.8 To transfer the specimen into the evacuated tubes:

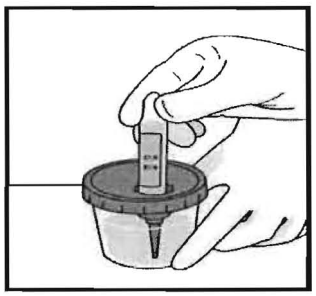
5.8.1 Place cup upright on clean, flat surface. Tip cup at an angle if specimen volume is limited.
5.8.2 Peel back label on cap to expose the integral sampling device. **Caution: This is a needle.**



5.8.3 First place the gray-tip C&S evacuated tube into cavity on cap, stopper down. Advance the tube over puncture point to pierce stopper. Hold the tube in position until filled. Remove tube and **Invert to dissolve preservative**. **Minimum volume is 3 mL.**

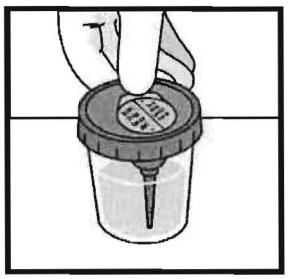


5.8.4 Continue with red- yellow-top tube(s). **Invert to dissolve preservative. Minimum volume is 4 mL.**



5.8.5 Use the 6 mL No-Additive tubes (BD366408) or 10mL No Additive tubes (BD364979) if other urine tests are ordered in addition to a urinalysis, hCG, and urine culture. Example: Both a urinalysis and random urine protein or creatinine is ordered. Use the NO- Additive tube to draw off sample for the protein and creatinine.

5.8.6 Carefully replace label over hole and reseal. **CAUTION: Sharp needle is located under the cap safety label.**



5.9 Apply appropriate labels vertically along each tube.

5.10 When only a urinalysis is ordered, place the label on the Red- Yellow tube, and the extra label on the Gray-top C&S tube. Include collection **date** and **time** on each tube (or cup). (This will enable the Laboratory to add on a urine culture when the Urinalysis is abnormal.)

5.11 Minimum volume to fill both tubes in the kit is about 20 milliliters.

- If there is 7 mL to 20 mL of urine in cup, fill the gray-top C&S tube completely (or at least to the minimum fill line of 3 mL) and shake. Then fill the red-yellow-top tube to at least the minimum 4mL .

5.12 Although urine is considered non-regulated waste (unless visibly contaminated with blood or body fluids), caution should be used when handling biological samples. Utilize appropriate personal protective equipment and practice standard precautions. Verify that the safety label has been replaced over the integral-sampling device. In order to reduce potential exposure, carefully discard urine and then place blue lid into a large hard-sided Biohazard Sharps container. (Goggles are available for dispensing urine.)

6.0 Limitations:

6.1 It is extremely important that urine collected for a possible culture, be collected via clean catch-midstream collection into a sterile container. If the patient is unable to hold the cup correctly to catch a midstream urine collection, offer the patient a sterile HAT.

- **6.1.1** Remove the HAT from the sterile packaging and lift toilet seat. Place the rounded portion as far to the front as possible. Lower seat.
- **6.1.2** Remind patient to clean properly.
- **6.1.3** Ask patient to sit back on seat so that first portion of urine goes into the toilet. Then slide forward to catch remaining urine.
- **6.1.4** Patient leaves HAT in toilet and pulls red call switch when finished.
- **6.1.5** Technician then pours specimen into sterile cup and processes.

6.2 **The following RANDOM urine collections require a minimum of 30 – 50 mL of specimen**. If no urinalysis or urine culture has been ordered, patient may urinate directly into the 4 oz. plastic container. A non-sterile specimen HAT can be given to a woman who is unable to go directly into the cup.

- **6.2.1** Catecholamine, Fractionated. (Place cup on ice/ transport on ice.)
- **6.2.2** Cytology
- **6.2.3** Drug Overdose (for Triage or Urine Toxicology)
- **6.2.4** Immunofixation Electrophoresis (Place cup on ice/ transport on ice.)
- **6.2.5** Metanephrines, Fractionated. (Place cup on ice/transport on ice.)
- **6.2.6** Microalbumin
- **6.2.7** Protein Electrophoresis (Place cup on ice/transport on ice.)
- **6.2.8** VMA (Place cup on ice/transport on ice.)

6.3 Random urine for Heavy Metals (Arsenic, Lead or Mercury), Cadmium, or Aluminum must be sent to the laboratory in urine containers for additives.

6.4 There are very specific collection instructions for random Urine from a male for Chlamydia trachomatis, PCR (CTPCR) and/or Neisseria gonorrhea, PCR (GCPCR). CAUTION: Do **NOT** collect a midstream specimen for this test.

- **6.4.1** Instruct patient **NOT** to urinate at least 1 hour prior to sampling. Patient will have to wait if he has just voided.
- **6.4.2** Add label to plastic Sterile cup. Use a marker on cup to identify the 40 – 50 mL volume line and show line to patient.
- **6.4.3** Patient voids directly into a sterile, plastic cup collecting the FIRST 10 – 50 mL of a random urine sample. Void remainder into toilet, if no other tests are ordered.
- **6.4.4** If patient also has a urinalysis and culture, patient voids first into the cup and then into the BD sterile container, following correct cleansing protocol.
- **6.4.5** Place labels on cup(s). Add **date** and **time** of collection.

6.5 Specimens collected for Porphobilinogen or Porphyrins Fractionated must be protected from light and transported to the lab on ice. Label the tube and record tech code and collection time. Wrap labeled tube in foil and place specimen in ICE.

6.6 Urine samples collected with a 20 cc syringe may be added to the vacutainer tubes via the BD Blood Transfer device. Or you can use the BD collection assembly to directly access the soft spot on the Foley so that the urine goes directly into the vacutainer tubes, eliminating the need for the syringe.

7.0 References:

7.1 Urine Products for Collection, Storage and Transport of Urine Specimens. BD Vacutainer Systems, Pre-analytical Solutions, Franklin Lakes, NJ. 07417, #8304302 June 2008.

7.2 Vacutainer Urine Products. BD Vacutainer Systems, Pre-analytical Systems, Franklin Lakes, New Jersey. 07417 # 8017238, July 2004.

7.3 Processing Urine Samples with BD Vacutainer Collection Products. BD Vacutainer Systems, Pre-analytical Systems, Franklin Lakes, New Jersey. 07417, V55991 May 2002.

7.4 Clinical and Laboratory Standards Institute (CLSI), Urinalysis; Approved Guideline – 3rd edition. GP16-A3, Vol. 29 No.4, Wayne, Pennsylvania 19087-1898. February, 2009.

7.5 Clinical and Laboratory Standards Institute (CLSI), Urine Drug testing in the Clinical Laboratory. T/DM8-A, Vol. 19 No.6, Wayne, Pennsylvania. February, 1999.

Specifics for Urinalysis, Fat, Bile, Trypsin, Occult Blood and Pregnancy Testing:

1.0 PRINCIPLE:

Routine urinalysis involves the physical, chemical, and microscopic analysis of urine in various disease states.

2.0 SPECIMENS: PRE-OP SPECIMENS:

2.1 These are obtained, when possible, in the Admission Testing Area. If the patient is unable to **VOID**, the specimen must be obtained upon admission to the floor

2.2 Bring all Pre-Op urines directly to the Laboratory. DO NOT REFERGERATE OR DELAY DELIVERY

2.3 Pregnancy test is only done when requested

3.0 ROUTINE SPECIMENS:

3.1 Other than a new admission, all specimens should be the mornings first **VOIDED** specimen

4.0 STAT URINES:

4.1 These specimens must be sent directly to the Laboratory (or given directly to a technician to deliver to Laboratory)

5.0 PREGNANCY TEST:

5.1 Should be the mornings first **VOIDED** specimen

6.0 SPECIFIC ANALYTES: PORPHOBILINOGEN, PORPHYRINS, UROBILINOGEN:

6.1 *These test must be done on the first afternoon specimen voided*

6.2 The specimen must be **immediately** sent to the Laboratory for immediate testing. The specimen MUST NOT BE ALLOWED TO STAND because the chromogens are very unstable and break down quickly. The specimen **must** be protected from light.

Note: For patients receiving any dye medication this test **cannot be performed**.

7.0 FAT, BILE, TRYPSIN, OCCULT BLOOD (STOOL):

7.1 All specimens for these tests should be brought to the Laboratory as soon as possible. Hemoccult slides for occult blood may be obtained from the storeroom of the hospital

8.0 REFERENCES:

8.1 College of American Pathologists, Laboratory Accreditation Program

8.2 Department of Health and Human Services, Centers for Medicare and Medicaid Services, CLIA 88, Final Rule

SECTION IX: OFF-SITE COLLECTION AND TRANSPORT

1.0 GENERAL REQUIREMENTS:

To ensure specimen(s) being transported reach their destination intact. In addition, variations in specimen collection and transportation add to the likelihood of increased errors in laboratory testing.

2.0 SAFETY CONSIDERATION IN BLOOD SPECIMEN TRANSPORTATION:

Proper handling throughout specimen collection and transportation is essential for maintaining specimen integrity as well as, protecting the phlebotomist and others from accidental exposure to potentially infectious agents. If a collected specimen is transported under improper conditions laboratory testing results can be altered, leading to misdiagnosis and inappropriate treatment of the patient. Some examples of this are:

2.1 Transporting in extremely cold or hot temperatures
2.2 Not placing specimens in vertical position (this promotes clotting and proper hemolysis of the specimen(s)

All specimens must be handled according to the Standards/Universal Precautions guidelines written by the Centers for Disease Control and Prevention (CDC) and enforced by the Occupational Safety and Health Administration (OSHA). Whether the blood collection occurs at a patient's home or at an ambulatory clinic, it is essential to use safety blood collection equipment that effectively reduces the risk of an exposure incident. The Federal Needlestick Safety and Prevention Act that became law on April 18, 2001, requires the use of effective safer medical devices. It also requires a new type of sharps injury log that includes detailed information on the injury, including the work area, where the exposure incident occurred, and an explanation of how the incident occurred (i.e., includes home health and other off-site blood collections).

In addition to using safer blood collection equipment, the phlebotomist and/or courier who travels off-site to collect blood from patients or from outpatient sites should:

- Carry all blood collection equipment and specimens in a lockable container to avoid an accidental spill if the vehicle is in a collision
- Have an absorbable chuck available in the courier vehicle for any potential spills
- Transport each patient's specimen in a sealed, clearly marked Bio-Hazard bag using the outside pocket for the laboratory requisitions

3.0 PREANALYTICAL CONSIDERATIONS:

3.1 Blood specimens should be transported carefully to avoid causing the blood to hemolyze
3.2 Plastic blood collection tubes and plastic micro collection containers should be maintained in a vertical position to promote complete clot formation and reduce the possibility of hemolysis
3.3 Plastic capillary tubes should be used for blood collection and may be carried horizontally if sealed completely at the ends.
3.4 When collecting blood for bilirubin determinations, amber micro collection tubes, wrapping aluminum foil around the tubes and/or carrying

the tubes in a container that closes completely should be used to avoid light exposure to the specimen.

3.5 Ammonia, Lactic Acid, and Parathyroid blood specimens must be immediately placed on ice and returned to the Laboratory within a ½ hour so results are accurate. If the specimens cannot be delivered within this time period, collecting the blood at a different time is recommended to ensure specimen quality.

4.0 RISK MANAGEMENT AND PROFESSIONAL LIABILITY:

The function of a risk management program is to identify the risk of loss, determine the most efficacious method to manage the identified risks, and evaluate the outcome measurements attached to those risks. Implementing quality management and safety programs, and developing an incidence/occurrence reporting system can reduce risks in blood collection at off-site locations and educate the involved personnel to assure safe and competent job performance. As examples of reducing risks in blood collection at home and ambulatory care clinics, the blood collector should:

4.1 Always carry a cellular phone in the vehicle and when going into a patients' home or other offsite location for blood collection. In order to avoid accidents it is strongly recommended that a hands-free cellular phone be used when operating a motor vehicle

4.2 Always wear hospital ID badge and lab jacket

BD Helping all people live healthy lives

BD Vacutainer® Venous Blood Collection

Tube Guide

For the full array of BD Vacutainer® Blood Collection Tubes, visit www.bd.com/vacutainer.
Many are available in a variety of sizes and draw volumes (for pediatric applications). Refer to our website for full descriptions.

BD Vacutainer® Tubes with BD Hemogard™ Closure	BD Vacutainer® Tubes with Conventional Stopper	Additive	Inversions at Blood Collection*	Laboratory Use	Your Lab's Draw Volume/Remarks
 Gold	 Red/ Gray	• Clot activator and gel for serum separation	5	For serum determinations in chemistry. May be used for routine blood donor screening and diagnostic testing of serum for infectious disease.** Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 30 minutes.	
 Light Green	 Green/ Gray	• Lithium heparin and gel for plasma separation	8	For plasma determinations in chemistry. Tube inversions ensure mixing of anticoagulant (heparin) with blood to prevent clotting.	
 Red	 Red	• Silicone coated (glass) • Clot activator, Silicone coated (plastic)	0 5	For serum determinations in chemistry. May be used for routine blood donor screening and diagnostic testing of serum for infectious disease.** Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 60 minutes.	
 Orange		• Thrombin-based clot activator with gel for serum separation	5 to 6	For stat serum determinations in chemistry. Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 5 minutes.	
 Orange		• Thrombin-based clot activator	8	For stat serum determinations in chemistry. Tube inversions ensure mixing of clot activator with blood. Blood clotting time: 5 minutes.	
 Royal Blue		• Clot activator (plastic serum) • K_2EDTA (plastic)	8 8	For trace-element, toxicology, and nutritional-chemistry determinations. Special stopper formulation provides low levels of trace elements (see package insert). Tube inversions ensure mixing of either clot activator or anticoagulant (EDTA) with blood.	
 Green	 Green	• Sodium heparin • Lithium heparin	8 8	For plasma determinations in chemistry. Tube inversions ensure mixing of anticoagulant (heparin) with blood to prevent clotting.	
 Gray	 Gray	• Potassium oxalate/ sodium fluoride • Sodium fluoride/Na_2 EDTA • Sodium fluoride (serum tube)	8 8 8	For glucose determinations. Oxalate and EDTA anticoagulants will give plasma samples. Sodium fluoride is the antiglycolytic agent. Tube inversions ensure proper mixing of additive with blood.	
 Tan		• K_2EDTA (plastic)	8	For lead determinations. This tube is certified to contain less than .01 µg/mL(ppm) lead. Tube inversions prevent clotting.	
	 Yellow	• Sodium polyanethol sulfonate (SPS) • Acid citrate dextrose additives (ACD): **Solution A -** 22.0 g/L trisodium citrate, 8.0 g/L citric acid, 24.5 g/L dextrose **Solution B -** 13.2 g/L trisodium citrate, 4.8 g/L citric acid, 14.7 g/L dextrose	8 8 8	SPS for blood culture specimen collections in microbiology. ACD for use in blood bank studies, HLA phenotyping, and DNA and paternity testing. Tube inversions ensure mixing of anticoagulant with blood to prevent clotting.	
 Lavender	 Lavender	• Liquid K_3EDTA (glass) • Spray-coated K_2EDTA (plastic)	8 8	K_2EDTA and K_3EDTA for whole blood hematology determinations. K_3EDTA may be used for routine immunohematology testing, and blood donor screening.*** Tube inversions ensure mixing of anticoagulant (EDTA) with blood to prevent clotting.	
 White		• K_2EDTA and gel for plasma separation	8	For use in molecular diagnostic test methods (such as, but not limited to, polymerase chain reaction [PCR] and/or branched DNA [bDNA] amplification techniques.) Tube inversions ensure mixing of anticoagulant (EDTA) with blood to prevent clotting.	
 Pink	 Pink	• Spray-coated K_2EDTA (plastic)	8	For whole blood hematology determinations. May be used for routine immunohematology testing and blood donor screening.*** Designed with special cross-match label for patient information required by the AABB. Tube inversions prevent clotting.	
 Light Blue  Clear	 Light Blue	• Buffered sodium citrate 0.105 M (=3.2%) glass 0.109 M (3.2%) plastic • Citrate, theophylline, adenosine, dipyridamole (CTAD)	3-4 3-4	For coagulation determinations. CTAD for selected platelet function assays and routine coagulation determination. Tube inversions ensure mixing of anticoagulant (citrate) to prevent clotting.	
 Clear	 New Red/ Light Gray	• None (plastic)	0	For use as a discard tube or secondary specimen tube.	

Note: BD Vacutainer® Tubes for pediatric and partial draw applications can be found on our website.

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BD Global Technical Services: 1.800.631.0174
BD Customer Service: 1.888.237.2762
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* Invert gently, do not shake
** The performance characteristics of these tubes have not been established for infectious disease testing in general; therefore, users must validate the use of these tubes for their specific assay-instrument/reagent system combinations and specimen storage conditions.
*** The performance characteristics of these tubes have not been established for immunohematology testing in general; therefore, users must validate the use of these tubes for their specific assay-instrument/reagent system combinations and specimen storage conditions.

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