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D.22 COLLECTION, HANDLING AND TRANSPORT OF PATHOLOGY AND LABORATORY MEDICINE SPECIMENS (CM 113-13, APRIL 1, 2015)

VA WESTERN NEW YORK HEALTHCARE SYSTEM

April 1, 2015 CENTER MEMORANDUM **NO. 113-13**

COLLECTION, HANDLING AND TRANSPORT OF PATHOLOGY AND LABORATORY MEDICINE SPECIMENS

1. **PURPOSE**: To establish healthcare facility policy for proper collection, labeling, handling and transport of laboratory specimens. (Applicable to both clinical and anatomic pathology)

2. **POLICY**: The proper collection, labeling, handling and transport of laboratory specimens provide the laboratory with the highest quality specimen for analysis and ultimately the most accurate laboratory results reporting. The following requirements are taken from Clinical and Laboratory Standards Institute (CLSI) guidelines, manufacturer's specifications and applicable safety standards.

3. **RESPONSIBILITIES**: Each Medical Center staff member who collects handles or transports laboratory samples is responsible for adherence to published policies and procedures. Pathology & Laboratory Medicine staff will be responsible for reviewing and updating specimen collection, handling and transport procedures. Infection Control Nurses will provide education and training where necessary under the blood borne pathogen regulations. Nursing education, in conjunction with designated lab staff will provide phlebotomy training.

4. **PROCEDURES**:

a. **Patient Identification**

b. **Providers orders**

c. **General Venipuncture Guidelines**

d. **Specimen Specific Collection**

e. **Specimen Labeling:**

f. **Specimen Handling And Transport – Guidelines**

a. **Patient Identification**: Positive patient identification must be made prior to specimen collection. At least two patient identifiers are to be used whenever collecting laboratory samples. For this facility and its outlying phlebotomy sites the required patient identifiers are the full name **plus** full social security number (SSN) or date of birth (DOB). (NOTE: DOB may be used to identify a patient but not to label a sample.) **All laboratory specimens, including both Clinical and Anatomic Pathology, must be labeled in the presence of the patient**.

(1) **Outpatient- Lab specimen** collection software (such as "Howdy") in place at many VAWNYHS phlebotomy sites requires the use of a Veteran Identification (VIC) card to ensure positive identification. If an outpatient arrives for sample collection and does not have a VIC card, alternative picture identification should be utilized (ex. driver's license, employee id card) and the veteran should be referred to the closest Veteran's Service Center to obtain one. Before beginning the procedure ask the patient to state their full name plus full social security number OR date of birth. If the patient is visually impaired or unable to comprehend, the person with them may assist in identifying the patient. Compare this verbal information to the written requisition or computer-generated labels. Upon completion of sample collection, verify that the patient's identification on the labeled samples is correct.

(2) **Inpatient**- Identify the patient by examining his/her VAWNYHS wristband for complete name plus full social security number OR date of birth, visual check of the picture on the armband and by asking the patient to state his/her complete name plus full social security number or date of birth. If the patient is visually impaired or unable to comprehend, another staff member or family member may assist in identifying the patient. Match the armband with labels and/or a written requisition. If the patient does not have an armband, and the situation is not a medical emergency requiring an abbreviated time frame (a code), one must be placed on the patient prior to specimen collection.

(a) All other facility's wrist bands must be removed. Only a VAWNYHS wrist band may be used for identification prior to specimen collection.

(3) **In-Home Collections**: contract (agency) nurses who do not have access to VA computer generated labels must hand write a label to affix to home collected samples. Two identifiers are required on the label and one of them must be the full name. Full SSN is the preferred second identifier, but DOB is allowed. If DOB is used, it is helpful to include the last 4 SSN as well. All other requirements (including date/time of collection and initials of collector) are applicable.

(4) **Blood Bank** specimens - use the applicable inpatient or outpatient identification procedures in steps 1 or 2. In addition, all inpatients and outpatients must examine their full name and full SSN on the labeled blood specimen and Transfusion Request form(s) / Type and Screen Lab Requisition Form (backup SF 518). If the patient agrees with the full name and full SSN, then he/she must sign the Lab Requisition Form (SF518) along with the phlebotomist. If the patient is visually impaired or unable to comprehend, the healthcare proxy (HCP) may be the witness. If the HCP is not available, *take another staff member with you* to witness the identification and collection process. They may sign in the patient's place provided they:

(a) Identified the patient
(b) Witnessed the phlebotomy
(c) Verified the identification information on the tube labels and paperwork. Note: that a Howdy order label (name and last 4) is NOT ACCEPTABLE FOR BLOOD BANK! Please contact the Blood Bank x5210 for further instructions

b. **Providers orders:** Laboratory testing is to be performed only at the signed request of a healthcare provider granted privileges at VAWNYHS.

(1) **In General:** Orders should be placed directly in the patient's electronic medical record (CPRS). This will generate an order number which is viewable on requisitions, collection lists and labels. Only BU or V2 tests are tested here; do not select tests for any other site. Use the order menus/quick orders to help with selecting the right tests.

(2) **Please see CM11-3 Execution of Providers orders for full details.**

(3) **Specific orders:** Please contact Laboratory Quality Assurance at 862-8688 with questions.
(a) Cultures: (specimens other than blood or CSF)

1. When requesting culture or culture and sensitivity (C&S) with gram stain- the source of the specimen and antimicrobial therapy (when appropriate) must be included in the electronic order by entering the information in the comment box of the CPRS order screen.

(b) Blood Cultures:

1. Other than bacterial endocarditis and endarteritis, all bacteremias are intermittent. Since bacteria are rapidly cleared from blood and since fever spikes follow bacteremic episodes by 30 to 90 minutes, the best opportunity for recovering pathogenic microorganisms should be as soon as possible after the onset of fever or chills. Therefore, blood cultures must be ordered as Ward Collect (WC) for the specific time desired.

2. Blood cultures should be obtained whenever the clinical impression (as measured by fever, white blood cell count, x-ray studies, etc.) indicates either a new infectious process or a worsening of a currently established infectious process.

3. Two sets of blood cultures should be obtained prior to initiation of antimicrobial therapy. These are needed to ensure sufficient volume for optimum recovery.

4. Subsequently, two more sets of blood cultures should be obtained to ensure clearance of documented bacteremia by the antimicrobial drugs chosen, particularly if the patient has not demonstrated a favorable clinical response to treatment.

5. Definition of blood culture orders

a. Blood culture x 1 equals 1 blood culture set: 2 bottles (one aerobic and one anaerobic bottle) drawn from one venipuncture site.

b. Blood Culture x 2 equals 2 blood culture sets: equals one aerobic and one anaerobic bottle collected from one venipuncture site (site # 1) **and** one aerobic and one anaerobic bottle drawn from a second (different) site (site # 2) 30 minutes later.

6. Daily blood cultures after initiation of therapy are not justified. However, cultures should be obtained when a significant change in a patient's clinical course is established.

(c) Flow Cytometry – Please contact the Flow Cytometry lab at 862-7832 with questions. The tests available under order menu #71A Pathology/Cytology/Flow are:

1. CD4/CD8

2. Leukemia/Lymphoma Profile

d. Anatomic Pathology– order under Buffalo Add Order Menu:

1. For Surgical Path, Cytology-non-gyn, # 71A Pathology/Cytology/Flow and select appropriately
2. For Cytology GYN select #67 GYN menu and #16 Anatomic Pathology
3. Fill in the requested patient information, print the order form and send it with the sample to the lab

c. **General Venipuncture Guidelines:**

(1) **Hand hygiene** and glove usage must be adhered to before collection of all specimens.
(2) **All supplies** will be used within their expiration date and stored according to manufacturer's instructions.
(3) **Tourniquet usage:**
(a) Tourniquets are to be used as a dedicated supply for an inpatient. It may be stored in the white wire basket at the head of the bed and disposed of on discharge or more often if compromised.
(b) Tourniquets are to be used as a single use item on ALL outpatients, CLC residents and patients on inpatient psychiatry or suicidal precautions. They will be disposed of after each patient use.
(c) Apply the tourniquet for no more than one minute.
(d) Patient should NOT pump hand. Extended pressure can cause localized stasis with hemoconcentration and the possible formation of a hematoma due to infiltration of blood into tissue. This may result in erroneously high values for potassium (K+), all protein-based analytes, and packed cell volume.

(4) **Avoid using vein with an IV**. If needed, nursing staff may turn off IV for approximately 2 minutes, and patient may be drawn distal to (below) the IV.

(a) If blood must be drawn during a transfusion: wait at least 15 minutes, but ideally, 1 hour after the completion of any blood or blood product transfusion. Samples should be obtained from the opposite arm from which the transfusion was given, whenever possible.

(5) **Acceptable alternatives** to the antecubital area are the back of the hand, the lateral side of the wrist, and when necessary vascular access devices (see 9 below).

(6) **In rare cases**, provider performed venipuncture to the feet and ankles may be necessary on some patients. Note that puncture to these veins can result in formation of clots in patients who are prone to thrombosis, or in tissue necrosis in diabetics and therefore **may only be performed by a provider.**

(7) **Do not perform venipuncture** (or fingerstick) on the same side as a previously performed mastectomy. This could cause inaccurate test results, infection and pain.

(8) **Butterfly or winged collection** sets are preferable for patients with poor venous access. *Note: when using a winged blood collection set for venipuncture and a coagulation tube is the first tube needed, an extra blue (coag) tube must be drawn first and discarded.* The discard tube does not have to be completely filled.

(9) **If blood must be drawn through an indwelling catheter**, possible heparin and/ or IV fluid(s) contamination and specimen dilution should be considered. If the line is in use, the infusion should first be stopped. The line should be flushed with saline (unless already infusing saline) and the first 5ml of blood (or six times the deadspace volume of catheter being used) discarded. (Note: if collecting blood cultures refer to D 1g below). Use of a syringe with safety vacutainer blood transfer device provides needle-less transfer of venous blood from the syringe into the blood tube and is preferable for preventing hemolysis. Or, an extra tube (the same as first tube to be collected) may be drawn and discarded, paying particular attention to the deadspace volume. (The deadspace volume is that volume of fluid that the line holds between where a syringe would be attached to withdraw the blood out and the aperture that opens up into the bloodstream.)

(a) Some access devices such as Central Venous Catheters (CVC, PICC, Midline, Hemodialysis catheters) may only be utilized by staff who have demonstrated competency.

(b) Arterial Line: Specimen collection from an arterial line does not require a saline flush, but it is still necessary to discard six times the dead space of the particular line. If a discard tube is utilized, it must be the same as the first tube to be collected. Be sure to follow the order of draw as described below.

(c) Saline Trap: Air leaks can cause hemolysis and incorrect draw volumes. Collecting blood samples from a saline/hep trap is only recommended when the device is first inserted. If the line has just been inserted, flushing is not necessary, but collecting a discard tube first is required.

(d) For ICU patients with poor venous access an extra peripheral-short catheter may be inserted for short term use (< 48 hours). (Note: ensure that the locks are open and rotated fully clockwise, the line is flushed and a discard tube is drawn first.)

(10) **Order of Draw:** To avoid possible test result error due to cross contamination from tube additives, the following order-of-draw is necessary. **You may not transfer blood from one type of tube to another**

(a) Blood culture bottles (aerobic (blue) first and then anaerobic (yellow))
(b) Coagulation tube (blue stopper) *

Other additive tubes:
(c) Plastic with clot activator (plain red stopper)
(d) Gel separator tube (red/gray tiger top)
(e) Heparin (green stopper)
(f) EDTA (lavender, pink, white or royal blue stoppers)
(g) Oxalate/fluoride (gray stopper)
(h) ACD-A (yellow stopper)

*Note: According to CLSI guidelines, if only a coagulation tube is to be drawn for routine coagulation testing (APTT and PT tests), the first tube drawn may be used for testing, unless drawing from a line, trap or catheter.

(11) **Adequate volume of blood:**
The amount of additive (whether liquid or dry coated) placed in a tube is intended for a certain volume of blood. If less blood than required is drawn, the excess amount of additive has the potential to adversely affect the accuracy of test results. A full tube of blood should be drawn for blue (sodium citrate), lavender, green, and gray stopper tube.

(12) **All tubes** must be adequately mixed by gentle inversion at least 8 -10 times.

(13) **Samples that have an "SI"** (special instructions) designation require special collection and/or handling. The collector needs to refer to the ward instructions from either "Test Description Information" or the ward collect requisitions prior to collecting these samples. (The SI designation can be found on all lab collect lists, ward collect requisitions, and computer generated order/collection labels and will instruct you if a special container is required and where to get it from.

d. **Specimen Specific Collection**

(1**) Detailed instructions** on how to collect specific types of specimens (including provider collected Anatomic Pathology samples) are based upon specimen requirements in the various laboratory procedures and can be accessed by staff in several places.

(a) General specimen type instructions are found in this document (below).
(b) The hospital computer system contains specific instructions under ^Test Description (F60 in Vista), at outlying phlebotomy sites under ward/lab processing instructions (^WL in Vista), and Lab Test Information (CPRS Tools).
(c) These instructions print on the lab label as well as the lab requisition (if used)
(d) Nursing Procedures

(2) **Blood Cultures**

(a) All Microbiology samples must be collected aseptically using sterile collection devices/ containers. Please contact Microbiology Lab x8720 for questions regarding collection of specimens other than blood cultures.

(b) One blood culture = 1 aerobic bottle and 1 anaerobic bottle = one set
1. Note the gradations on the sides of the bottles; be careful not to over or under fill the bottles! Volume is crucial for good recovery – it is advisable to mark a "fill" line on each bottle before collection.
2. Aerobic bottle, blue cap- add 8-10 ml of blood (draw first)
3. Anaerobic bottle, yellow cap - add 5-7 ml of blood (draw second; may be followed by other lab samples if ordered)

(c) To reduce the possibility of contamination, and to eliminate the possibility of fluid from the blood culture bottle back flowing into the patient, **a butterfly collection set with vacutainer barrel and 12" tubing is the device of choice**. In rare circumstances when a butterfly cannot be used, a 20 cc syringe with a safety vacutainer blood transfer device (which provides needle-less transfer of blood from a syringe into a blood culture bottle) may be utilized.

(d) Clean skin must be disinfected with an appropriate antiseptic before the blood culture draw. A 2% chlorhexidine gluconate and 70% isopropyl alcohol-based preparation (ChloraPrep One-Step 1.5 ml FREPP applicator) is the preferred skin disinfectant. Scrub back and forth for 30 seconds and allow the site to air dry for **at least** 30 seconds. Do not wipe, blot or re-touch the site.
1. In instances where this cannot be used, povidone iodine (Betadine) can be substituted.
2. In instances where neither one can be utilized – use 2 separate alcohol pads, allowing the alcohol to dry completely between each cleansing.

(e) Disinfect the exposed septa (the gray rubber stopper) with alcohol pad. Do not touch the gray rubber stopper after disinfecting it.

(f) Blood for cultures X 2 should be drawn from two separate venipunctures. This is a total of 4 bottles. Cultures from two separate sites help to distinguish contaminants from infection and increase the yield of recoverable pathogens.
1. Ideally the second venipuncture should be performed 30 minutes to 1 hour after the first to improve detection of intermittent or cyclic bacteremias. However in an emergency (i.e. antibiotics need to be stated right away) the 2 venipunctures can be done one right after the other, preferably from 2 different sites but at the very least must be 2 separate sticks.

(g) Percutaneous or peripheral vein (non-catheter) blood samples are the best source for contaminant free cultures. Blood cultures obtained from indwelling vascular access devices are associated with greater contamination rates than are blood cultures obtained by venipunctures therefore venipuncture remains the technique of choice.

(h) When there are absolutely no other options, blood cultures may be collected from a catheter or line, however this must be fully documented.

1. DO NOT FLUSH THE LINE BEFORE OBTAINING SAMPLES.
2. If site # 1 is from a line, site # 2 must be a peripheral draw.

(i) You must record the site where blood was obtained (i.e. peripheral or central line, left hand, etc.) directly on the blood culture bottle label, as well as your initials, date and time.

(j) After collection gently invert the bottles 2 times to prevent clotting

(3) **Blood Gas Specimens**

(a) Perform Allens Test per nursing instructions prior to collection.

(b) Samples for blood gas testing are collected in a heparinized syringe and **immediately** delivered to the core lab at room temperature within 30 minutes or tested at point of care.

(c) Blood gas samples must be bagged separately, away from others**.**

(d) Do not transfer to another syringe or container. Sample must be free of air bubbles.

(e) Indicate the source (venous or arterial) on accompanying paperwork. This must match what is ordered

(4) **Urine Specimens**

(a) The container should have a secure closure to prevent leakage of contents. Rapidly transport urine specimens to the laboratory for prompt examination.

(b) It is recommended that urinalysis be performed within two hours of collection. If delivery to the Laboratory for testing is delayed, refrigeration at 2-8 degrees Celsius for up to eight hours is acceptable. If there will be a delay in transport greater than eight hours, special tubes containing a preservative must be used. (Tubes are available from Ward Supply via the General Inventory Package (GIP)).

(c) Urine culture specimens may be refrigerated at 2 to 8 degrees Celsius for up to 24 hours and still yield valid culture information. Remember that all Microbiology samples must be collected aseptically using sterile collection devices/ containers

(5) **Cerebrospinal Fluid (CSF):**

NOTE: If CJD is suspected please refer to CM 11-42 Infection Control Guidelines Creutzfeldt-Jakob Disease [CJD][And Pertinent For Other Prion-Induced Diseases*]**.**

Thirty minutes prior to collection, a serum glucose should be ordered and drawn to establish a baseline for interpretation of the CSF glucose value. The collected spinal fluid should be aseptically transferred to three or four sterile test tubes (without anticoagulant) sequentially labeled 1, 2, 3 and 4. **Immediately** transport to laboratories designated below:

(a) Tubes #1 and #3: Automated Lab

Chemistry testing will be run on tube # 1. Routinely, this includes protein and glucose. Requests for other chemistry tests must be specified. Hematology testing such as RBC/mm^3, WBC/mm^3, and differential will be run on tube #3.

(b) Tube #2: Microbiology

Routinely, the CSF will be examined microscopically by Gram Stain and cultured for the most frequent causes of bacterial meningitis. Requests for additional cultures (T.B., fungi, viruses) or for antigen detection (Cryptococcal AG, VDRL) require consultation and justification after preliminary data (Gram stain, chemistry and hematology) have been reviewed.

(c) Tube #4: Serology and or Cytology, as needed
If Cryptococcal AG or Cytology testing is warranted, tube #4 should be used. If only 3 tubes were collected, Serology and Cytology will test tube #1 or #3, but not tube #2 to avoid contamination.

(d) If a lumbar puncture is visibly bloody, the CSF should be transferred in equal volumes to four sterile test tubes (without anticoagulant) sequentially labeled 1, 2, 3, and 4, and **immediately** transported accordingly:

Tubes #1 and #4 for Hematology

Tube #2 for Chemistry

Tube #3 for Microbiology

(6) **Influenza A& B PCR swab:**

(a) Obtain Influenza Viral Transport Kit from Microbiology Laboratory
(b) Insert inoculated nasopharyngeal swab into Influenza Viral Transport media.
(c) After collection place labeled influenza Viral Transport media on ice and transport to Microbiology Laboratory immediately.

(7) **Clostridium Difficile Assay by PCR:**

(a) Minimum of 5 cc diarrheal stool (defined as stools that take the shape of the container) collected in sterile cup.
(b) Stool specimens received that have an unacceptable consistency will be cancelled.
(c) Specimen can be stored at 2-8^{o}C for up to 5 days.
(d) Alternatively, specimen can be kept at room temperature (20-30^{o}C) for up to 24 hours.

(8) **MRSA swab:**

(a) Ask the patient to tilt his/her head back slightly. Remove swabs from outer packaging. Insert dry swabs approximately 1-2 cm into nostril.
(b) Rotate the swabs against the inside of the nostril for 3 seconds. Apply slight pressure with a finger on the outside of the nose to help assure good contact between swab and the inside of the nose.
(c) Using the same swabs, repeat for the second nostril, trying not to touch anything but the inside of the nose.
(d) Remove plastic transport tube from outer packaging. Twist off the tube cap and discard it. Place swabs into the plastic transport tube. The swabs should go all the way into the tube. Make sure the cap is on tightly. The swabs should stay attached to the cap at all times. Label specimen.
(e) If specimens will be delivered to lab in a timely fashion they may be stored at room temperature.
(f) Note: The red-top swab for MRSA surveillance by DNA is only used in the ER.

(9) **Serous fluids: (pleural, peritoneal, ascitic, pericardial or joint fluid)**
(a) Obtain the necessary containers: (tubes or cups - see table below) for any required analysis as these contain the necessary additive(s) to preserve cell morphology, prevent clotting, aid bacterial recovery etc.

****YELLOW TOP LOOK ALIKE ALERT****

SPS clear glass, used for **Cultures**

ACD-A glass with white/yellow label, used for **Flow Cytometry** (for blood samples)

SPECIMEN CONTAINERS for Pleural, Peritoneal, Pericardial or Joint FLUID ANALYSIS	
TYPE OF CONTAINER	**USE FOR**
Yellow Top tube (SPS) ***Wipe yellow stopper top with alcohol pad to disinfect. Do not touch top of yellow rubber stopper after disinfecting it.	Culture
Red Top tube (no gel)	Glucose, albumin, protein
Green Top tube (sodium heparin or lithium heparin)	pH
Lavender Top tube (K2-EDTA)	Fluid cell counts
Plain tube or cup (no fixative)	Flow Cytometry and Cytology (separate containers needed for each)

(b) Collect serious fluid specimen in a syringe. Alternately, insert the needle into the rubber top of the required tubes. (***Top of the SPS yellow top tube must first be disinfected with alcohol) Fill each tube at least half way (i.e. 5 ml for the larger tube), if possible.

(c) Immediately invert tubes **gently** *(8 – 10 times*) to mix sample with additive.

(d) Continue to fill other large containers or specimen cups if needed for additional testing.

(e) Label all specimen tubes and containers with the patient's full name, full SSN, date **and time** of collection, and the **initials of the collector**.

(f) Bring fluid specimens to the lab immediately**.**

1. During administrative hours deliver to appropriate labs as follows:

Red, Green and Lavender tubes: Core lab

Yellow top tube: Microbiology lab

Clear plastic yellow top tube: Flow

Bottles for Cytology: Histology Lab

2. During non-administrative hours, deliver all samples to the Core Lab.

(10) **Anatomic Pathology Specimens:** All tissue, foreign bodies and prosthetic hardware surgically removed from a patient at VA WNYHS will be submitted to the Pathology and Laboratory Medicine Service for documentation, examination and reporting. All Anatomic Pathology specimens must be labeled with the patient's full name, full SSN, date **and time** of collection, the **initials of the collector**, and **the source of specimen**.

(a) The only exceptions will are:

1. Phakoemulsified lens tissue.
2. Teeth with no attached soft tissue, extracted in the dental clinic

(b) Frozen section – add just enough saline to keep specimen from drying out

(c) Fresh specimen (includes lymph nodes for suspected lymphoma) - add just enough saline to keep specimen from drying out

(d) Temporal artery biopsy – place in 10% neutral buffered formalin

(e) All others not fresh or frozen – add enough formalin to properly "fix" the tissue (20 times the volume of the specimen)

(f) Muscle biopsy – contact the Pathology Lab for the instructions and 2% glutaraldehyde container

(g) Dermatology – place all derm samples in formalin. Exception - samples that need to be sent out for direct immuno fluorescence (DIF) are placed in Michel's fixative

(h) Large specimens- (i.e. Leg) should be wrapped appropriately in a large red bio-hazard bag and stored in the silver fridge located outside 203B

(11) **Flow Cytometry:** Excluding whole blood, viability must be assessed in all specimens prior to testing. Material with poor cell viability not amenable for interpretation (clotted, frozen, improperly transported, too old, etc) may be rejected or reported with limitations.

(a) Blood:

1. CBC with differential must accompany all requests for whole blood flow analysis (performed same day or within 24 hours).
2. Collect whole blood specimens in **ACD solution A** (yellow top) vacutainer tubes. (see *look alike* alert above) **NOTE: Whole blood may be collected in EDTA (purple top) tubes if ACD solution A is not available**
3. Maintain at room temperature. **Do not refrigerate**

(b) Bone Marrow:

1. Collect bone marrow aspirate specimens in **Sodium Heparin** (green top) tubes (preferably pediatric size).
2. Do not dilute bone marrow aspirate specimens with peripheral blood.
3. CBC with differential must accompany all requests for Bone Marrow flow analysis (performed same day or within 24 hours).
4. Maintain at room temperature. **Do not refrigerate**.
5. Send 1 or 2 unstained, air dried blood and/or bone marrow smears

(c) Tissue:

1. Tissue sample is placed in a sterile container on top of Telfa pad slightly moistened with sterile saline. **Do not soak or immerse in solution**. A 1 cm^3 piece of tissue is optimal. Less tissue may result in a limited analysis. If a 30 minute delay or more is anticipated in processing the lymph node, keep the specimen container refrigerated (4 to 5^oC). **Do not freeze**.
2. Tissue for next-day delivery or longer should be submitted intact suspended in 10 to 25mL or RPMI 1640. These specimens should be refrigerated immediately. Media is available upon request from the Flow Cytometry laboratory (x7832).
3. Also submit the following if available:
   a. Touch imprint slides (stained or air-dried).

(d) Fluids including CSF:

1. Fluid samples should be submitted in sterile container (no preservative)
2. Deliver to the lab immediately. Refrigerate if delay in transport.

(e) BAL/ Washing

1. Fluid samples should be submitted in sterile container (no preservative)
2. Deliver to the lab immediately. Refrigerate if delay in transport.

(12) **Cytology:** please print and deliver nursing orders with all samples

(a) Fluid

1. A fresh specimen of body fluid should be collected in either a conical tube or in a collection bottle/bag and brought immediately to the cytology lab or refrigerated until brought to the lab. The cells in the specimen are compromised if left out at room temperature for an extended period of time. Do not send more than 1 liter of fluid.

(b) Urine

1. Collection of urine should be in a conical tube that contains 50% EtOH. Pour equal amount of urine into tube with 50% EtOH. Urine for cytology should NOT be sent fresh, if at all possible. If 50% EtOH is not readily available then the urine specimen should be refrigerated until brought to the cytology lab.

(c) Bronchial-Washing

1. Bronchial washings are collected fresh and immediately brought to the cytology lab.
2. If immediate transport is not possible the specimen should be refrigerated.

(d) Bronchial Brushings

1. Bronchial brushings are prepared by rolling brush containing specimen onto two patient labeled slides. Slides and tip of brush are placed immediately into a container of 95% EtOH.

2. Use paperclip on frosted end of slides to keep slides separated.

(e) Sputum

1. Sputum samples are collected fresh and brought immediately to the cytology lab.

2. If immediate transport is not possible the specimen should be refrigerated.

(f) FNA

1. The contents of the needle are carefully expressed onto a glass slide. One to three drops of the specimen are placed on a pre-labeled slide. Using a second slide, the material is pulled between the two slides allowing an even layering of cells on both slides. The slides are fixed immediately in 95% ethanol. Or the slides may be fixed with a cytology spray fixative immediately after preparation.

2. Alternatively, the sample in the syringe can be directly aspirated into a specimen container with Saccomanno fixative (At BU: Available from the Histology Lab, Room 212B, ext. 5248).

3. A cytology technologist is available as needed to assist in the preparation of slides from such procedures. Necessary materials for slide preparation will be provided.

(g) Anal Pap

1. Rectal brushing is performed using cotton swab. Tip of swab is rinsed and placed in PresevCyt Fixative. (Green Label).

(h) CSF

1. A minimum of 1ml of CSF should be collected fresh and brought to the cytology lab immediately.

(i) Esophageal brushings (Candida)

1. Sample is prepared by rolling brush containing specimen onto patient labeled slide(s). Slide(s) and tip of brush are placed immediately into a container of 95% EtOH

(j) GYN ThinPrep

1. After obtaining a cervical/endocervical sample using a spatula and/or brush, rinse in *ThinPrep PreservCyt*. (White Cap). Discard sampling device.

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

3. Place the vial in a specimen bag for transport to the Core laboratory.

e. **Specimen labeling**:

(1) **For proper specimen identification**, **all labels must include the patient's full name, full social security number, date and time of collection, and collector's initials.** Additional label information required– type of specimen if other than blood, source of specimen for Anatomic Pathology and Microbiology specimens, site of draw for blood cultures, and time of last dose for TDM.

(a) NOTE: DOB is only acceptable as a patient identifier; full SSN is required on all specimen labels. (See exception for agency collected home samples 4 a (3))

(b) Re-collectable samples (such as blood and urine) that are not completely and properly labeled will not be accepted by the lab for testing.

(c) Labels must be affixed to the specimen. Labels "in the bag" are not acceptable.

(2) **All specimens** (including anatomic pathology tissue samples - surgical/biopsy, cytology, histology, autopsy) must be labeled in the presence of the patient. This includes the bedside of the inpatient, in surgery, the drawing station of the outpatient area, patient exam rooms, and at the patient's side in the ER. **Never walk away from the patient with unlabeled samples.**

(a) If AP orders are not going to be placed until after the specimens have been collected - affix patient ID labels with full patient name, full SSN, date/time of collection, initials of collector (printed preferred, handwritten acceptable) at the point of collection, and source of specimen.

(b) Verify the identifiers on both labels before affixing the order label.

(3) **For LC and SP bar-coded labels:** Proper barcode placement is essential to ensure accurate readability by laboratory instruments.

(a) The barcode label should be placed directly over the manufacturer's label on the specimen collection tube.

(b) Do not write over barcode.

(4) **Specimens to be collected at home** by the patient (such as fecal occult blood) should be pre-labeled by staff - preferably with an order label if available. This label includes the patient full name, full SSN and a complete order number which will satisfy the requirement for 2 unique identifiers. Instruct the patient to fill in actual date/time of collection. Protective packaging satisfies HIPPA regulations for take-home articles.

f. **Specimen Handling And Transport – Guidelines**:

(1) **STAT samples**, blood gas samples or samples requiring special handling (on ice, deliver immediately, etc) should be transported individually to the lab immediately following collection.

(2) **All other specimens** must be transported directly to the laboratory as soon as possible (within 1 hour of collection is optimal). Specimens awaiting transport to the lab should be kept in appropriate biohazard areas (e.g. soiled utility rooms). This storage area should be checked regularly so specimen transport is not delayed. Blood specimens should be **gently** handled to minimize erythrocyte (RBC) damage, which can affect test results.

(3) **Refer to Center Memorandum 113-3** Pneumatic Tube System in locations where installed and for specimen restrictions.

(4) **For transport of tests denoted with "SI"** (see section c.(13) above), refer to the "Test Description" in CPRS or ^WL option in the VISTA for detailed special handling and transportation instructions for the test being ordered.

(5) **Only medical staff** (nurses, healthcare providers, allied health care professionals, etc.) are permitted to transport specimens within the hospital. Escort staff and volunteers who have been specifically trained to do so may also transport samples. A brightly colored ID tag will identify these non-professional staff. Patients, family members or untrained non-clinical staff may NOT transport lab specimens within the medical center. Outpatients bringing in specimens for analysis should promptly drop them off in specified areas (e.g. Buffalo or Batavia Outpatient Lab).

(6) **Staff transporting specimens** should avoid crowded areas (e.g. patient elevators) and should avoid using a gloved hand(s) to push elevator buttons, open doors, etc. Standard precautions should be observed.

(7) **Small quantities of laboratory specimens** must be transported in impervious, leak proof biohazard bags.

(a) For inpatient specimens, multiple specimens from the same patient may be transported in each biohazard bag, but only one patient ID per a bag.

(8) **Large numbers of specimens** to be delivered at the same time may be carried in a tray or cooler for ease of transport. Transport trays or coolers must be cleaned when visibly soiled with a hospital-approved disinfectant.

(9) **All specimens that are transported** in to or out of our facility by taxi, VA driver, United States Postal Service (USPS), or other commercial carriers must be packaged as defined below. (The Pathology and Laboratory Medicine procedure, "Packaging and Shipping of Specimens for Analysis" further defines IATA packaging and labeling requirements.)

(a) A leak proof primary container (Vacutainer or approved pour-off tube) and a leak proof secondary container such as an impervious bag, with absorbent material placed between the primary and secondary containers are required. This should be placed in a properly labeled rigid outside container.

(b) Shipments of samples from off-site locations must also be accompanied by a shipping manifest that includes the following information:

1. Name of sending facility
2. Address and contact number of the sending site, unless kept on file at the receiving facility.
3. Specimen identification information (this is most easily fulfilled by using a computer generated label)
4. Date and time when shipment was packed
5. Initials of packer

5. **REFERENCES**:

a. Center Memorandum 113-1: STAT Laboratory Determinations

b. Center Memorandum 113-2: Blood and Blood Product Transfusions

c. Center Memorandum 113-3: Pneumatic Tube System

d. Center Memorandum 113-9: Blood Glucose Testing Policy

e. Center Memorandum 113-10: Ancillary Testing Policy

f. Center Memorandum 118-11: Use, Insertion and Maintenance of Peripherally Inserted Catheters (Midline and PIC)

g. Center Memorandum 11-6: Guidelines for the Prevention of Central Line-Associated Infections (CLA-BSI) and Complications

h. Center Memorandum 11-41: Standard Universal Precautions and Transmission-Based Precautions

i. Center Memorandum 11-42: Infection Control Guidelines Creutzfeldt-Jakob Disease [CJD][And Pertinent For Other Prion-Induced Diseases*]

j. Center Memorandum 11-47: Exposure Control Plan for Blood-Borne Pathogens

k. Office MEMORANDUM, dated September 27, 2006**,** MRSA Prevention Initiative – "Getting to Zero"

l. CLSI Document GP 16-A3 Urinalysis; Approved Guideline

m. CLSI Document H18-A4 Procedures for the Handling and Processing of Blood Specimens for Common Laboratory Tests

n. CLSI Document H3-A6 Procedure for the Collection of Diagnostic Blood Specimens by Venipuncture

o. CLSI Document H56-A Body Fluid Analysis for Cellular Composition

p. CLSI Document M 47-A Principles and Procedures for Blood Cultures; Approved Guideline

q. College of American Pathologists, Lab General Checklist, 2013

r. Laboratory SOP – Packaging and Shipping of Specimens for Analysis

s. *Applied Phlebotomy*, Dennis J. Ernst, Lippincott Williams & Wilkins, Baltimore MD, 2005

t. Cumitech 1C, *Blood Cultures IV*, ASM Press, 2005

7. **RESCISSION**: Center Memorandum 113-13 dated January 22, 2014

8. **FOLLOW-UP RESPONSIBILITY**: Pathology & Laboratory Medicine (113)

9. **AUTOMATIC REVIEW DATE**: April 1, 2018

//s//
BRIAN G. STILLER
Medical Center Director
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