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***PATHOLOGY***  
***SPECIMEN COLLECTION AND HANDLING***

**SAMPLES FOR SUBMISSION TO PATHOLOGY:**

The CMC Operating Room Nursing Practice Manual as well as Medical Staff Rules and Regulations of Catholic Medical Center policies outline the specimen types which should be submitted to the Pathologist for examination. These policies, in part, are outlined as follows:

**Note:** The following is a summary of what is found in the policies mentioned above. It should be noted that those policies should be referred to for the most up to date information regarding these policies.

- A. All specimens removed during a surgical procedure or biopsy shall be properly labeled, packaged in preservative (e.g 10% formalin, tissue culture media etc.) as designated, identified as to patient and source, and sent to the laboratory for examination.
- B. Foreign bodies and objects may be referred to the pathologist at the option of the attending physician. Specimens not requiring pathology examination include:
  - 1. circumcisions
  - 2. placenta
  - 3. teeth
  - 4. hardware
  - 5. nasal septal cartilage
  - 6. bunions
  - 7. other non diseased tissue unless specifically requested by the surgeon.
- C. Microscopic examination of specimens is generally performed on all specimens submitted. Additionally, microscopic examination will be performed whenever there is a request by the attending physician, or at the discretion of the pathologist when indicated by the clinical history or gross findings.
- D. The disposition of surgical specimens shall be recorded in the operative record.

**REFERENCES:**

Catholic Medical Center, Operating Room Nursing Practice Manual, Care of Laboratory Specimens, Effective  
Catholic Medical Center, Medical Staff Rules and Regulations of Catholic Center, Medical Executive Committee Approval

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## ***PATHOLOGY***

### **FINE NEEDLE ASPIRATION CYTOLOGY:**

Applies to all needle biopsies that produce fluid or amorphous specimen as opposed to a solid (core) tissue.

#### **Logistics:**

Pathologists are available for fine needle aspirate assistance Monday through Friday 8am – 5pm. Special arrangements must be made for times outside of these stated hours. Turn around times is 24 – 48 hours, except material submitted for rapid staining.

#### **Special Instructions:**

For smears collected in the office: place one drop of needle aspirate onto a glass slide. Place second slide over first so that long axis match. Let slides come together without exerting pressure; allow fluid to spread across slides by capillary action. Pull slides apart along the long axis smearing the specimen evenly across the slide surfaces. Label frosted slides with the patient's name.

For smears collected in the hospital or in Radiology will be further processed by the pathologist. Two or more slides will be prepared from each needle pass. Determination for adequacy of the specimen will be done by the pathologist using slide stain with Diff-Quick or similar procedure.

#### **Surgeon Instruction:**

The air dry smears should be properly labeled with patient name, MRN, specimen source and fixation method(I.E. "air dry", "alcohol fix"). Fluid or amorphous material not used for smears should be placed in Cytolyt fixative. Solid core material should be placed in 10% formalin. All containers must be properly labeled with patient name, MRN, date and specific specimen source.

#### **Specimen Fixative:**

<b>Specimen</b>	<b>Technique</b>	<b>Explanation</b>
Non Gyn Cytology Specimen	<ol style="list-style-type: none"><li>1. Place in container with Cytolyt..</li><li>2. Refrigerate</li></ol>	<ul style="list-style-type: none"><li>• Slows rate of catabolic change</li><li>• Extends availability of food-stuffs</li><li>• Retards accumulation of waste products</li><li>• Preserves cytomorphology</li><li>• Improves behavior during handling</li></ul>
Specimen collected in saline (Brush from bronchial or gastric brushing or washing procedures)	Use, in order of preference: <ul style="list-style-type: none"><li>• Abbott's Normosol Rph</li><li>• Hanks Balanced Salt Solution</li><li>• Normal Saline</li><li>• Filtered, distilled H2O</li></ul>	

**BODY FLUID CYTOLOGY:**

Synonyms: fluids, cytology  
Effusions, cytology

Applies to ascetic fluid cytology, paracentesis fluid cytology, pericardial fluid cytology, periocentesis fluid cytology, peritoneal washing cytology, synovial fluid cytology, thacentesis fluid cytology.

Discussion: Neoplasms involving serous cavities are usually secondary in type.

Rare primaries include:

Mesothelioma

Lymphoma

Sarcoma

Mesothelial surface are involved either by extension of tumor or by distant metastases.

Specimen: Fresh body fluid

**Note:** Submit fresh, unfixed fluid to provide well-preserved diagnostic material. If clotting occurs, diagnostic material may be trapped within the fibrin network and be available for cell block examination.

Volume: Not less than 5ml

Container: Sterile, capped container

Patient Prep: Move patient into several different position in order to suspend cells within fluid.

Collection: Gently agitate container as fluid is collected. Label with patient's name, age, Medical Record Number, room number, date of collection and specific specimen type(I.E. Left Pleural fluid, Right Pleural fluid, Ascites Fluid, etc.) Deliver to the laboratory immediately.

Storage: After hours place in laboratory refrigerator.

Preparation: Prepare according to procedure for non-gyn fluids. Specimens should be centrifuged and processed with cytospin.

**BREAST CYTOLOGY:**

Nipple Secretions

Equipment: Use minimum of 4 frosted end slides(DO NOT use fully frosted slides)

Procedure: Support areola and nipple

Place slide against nipple.

Allow drop to spread.

Draw slide quickly across nipple.

Fix immediately with spray fixative or immersion in 95% Alcohol.

**BRONCHIAL WASHING CYTOLOGY:**

Purpose: To establish presence of primary or metastatic neoplasms

To aid in diagnosis of respiratory infections.

Collection: Details of collection method depends on the surgeon

U-tube used for specimen as close to lesion as possible

Instill Normosol into involved portion of lung

Aspirate at least 1-2 ml fluid into U-tube.

Note: Bronchoscopy should be followed by post-bronchoscopy sputum.

Preparation: Prepare according to instructions for processing non-gyn fluids

**Note:** Special Stains will be performed when appropriate.

Reference Range: Normal to Abnormal cells consistent with malignant neoplasm.

**BRONCHIAL BRUSHINGS:**

Collection:

1. Roll brush over slide and fix immediately by spray fixative or immersion in 95% alcohol.
2. Submit brush to the laboratory in Cytolyt or Normosol or Normal saline. DO NOT SUBMIT THE SPECIMEN BRUSH DRY. BRUSH MUST BE IMMERSSED IN FLUID.
3. Place any suspected tissue found on the brush in Cytolyt fixative.
4. Label with patient's name, age, Medical Record Number, room number, date of collection and specific specimen type

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## ***PATHOLOGY***

### **GASTRIC WASHING:**

Synonyms: Gastric Lavage Cytology  
Gastric Cytology

Purpose to establish the presence of: Primary or metastatic neoplasms or reactive processes of stomach.  
Aid in detection of infection disease.

Patient prep: Patient must be fasting at least 12 hours prior to procedure.  
Cytology specimens should be collected prior to barium examination. If this is not possible, wait 24 hours after the barium exam before attempting a cytologic study.

Container: Clean sealed plastic or glass container in ice bath.

Collection: Collect resting gastric contents and discard.  
Instill 300ml to 500ml of normal saline through the gastric tube.  
Have patient: sit, lie on stomach. Lie on right side, Lie on left side.  
Aspirate as much of injected saline as possible and place in container.  
Label with patient name, MRN number, room and date of collection and specimen source.  
Deliver immediately on ice bath to cytology laboratory.

Reference Range: Normal to abnormal cells consistent with malignant neoplasm.

Limitation: Non-diagnostic if gastric epithelium not present or if specimen is contaminated with food or barium sulfate.  
Cytologic samples are not cultured. If infectious disease is a consideration, a separate specimen and appropriate requisition must be submitted to microbiology.

Cause for rejection: Improperly labeled container, poor preservation.

Contraindications: Collection of specimen at time when it cannot be immediately processed.

### **OCULAR CYTOLOGY:**

Purpose: Diagnostic Trachoma  
Chlamydia, inclusion conjunctivitis  
Adenovirus infection  
Vaccinia infection  
Herpetic Conjunctivitis

Test includes: Papinicolou stain and/or Giemsa stain (upon request)

**Note:** If microbiological studies are required, specimen must be taken before scraping for cytology.

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**PATHOLOGY**

**SPINAL AND CYST FLUID CYTOLOGY:**

Synonyms: Cerebrospinal Fluid Cytology

Applies to: Brain cyst fluid Cytology, Breast cyst fluid Cytology, Cul-de-sac fluid Cytology, Cyst fluid Cytology, hydrocele cyst fluid Cytology, lumbar tap Cytology, Ovarian cyst fluid Cytology, pancreatic cyst fluid Cytology, renal cyst Cytology, ventricular tap Cytology.

Purpose: To establish the presence of primary metastatic neoplasms.

Specimen: Fresh Fluid

Volume: Not less than 1 – 2ml

Container: Use Sterile tube lumbar puncture tray or sterile disposable container.

Collection: Label with Patient's Name, Medical Record Number, Room Number, date of collection

Preparation: Prepare according to procedure for non-gyn fluids. Use Cytospin prep Method

Storage: Store in laboratory refrigerator after hours. Do not add anticoagulant.

Reference Range: From absence of abnormal findings (negative Class Range I) to Cellular conclusive for malignancy.

Limitations: Malignant cells shed into cerebrospinal fluid only from tumors which extend to subarachnoid space into the ventricles

**ORAL SMEARS, PREPARATION AND COLLECTION:**

Preparation	If	Then
	Site is covered with thick saliva, debris or slough	Wipe clean with saline moistened gauze
	Site is covered with secretions or denture adhesive	Remove with dry gauze
	Site is covered with layers of keratinized or crusted cells	Remove with curette or rotating stone or soften lip lesions with wet gauze for fifteen minutes.

Collection Support site firmly when possible	Site	Support
	Lips and Cheeks	Roll over finger and thumb
	Tongue	Extend and apply pressure upward from outside on musculature beneath lower jaw, raising floor of mouth to make firm
	Gingiva hard palate, tonsillar areas, base of tongue, oropharynx	No Support

Procedure: Scrape lesion vigorously with moistened tongue blade or spatula.  
Spread scrapings on slide.  
Use two slide crush technique if secretions are thick or mucoid.  
Fix Immediately.

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## ***PATHOLOGY***

### **SPUTUM CYTOLOGY:**

Purpose: To establish the presence of primary or metastatic neoplasms.

To aid in the diagnosis of respiratory infections.

**Note:** Special stains performed **when** appropriate.

<b>Complete Sputum</b>	<b>Description</b>	<b>Explanation</b>
	Complete sputum series consists of: A series of 3 consecutive early morning specimens A post bronchoscopy sputum	Increase detection of primary bronchogenic carcinoma from 45% (1 specimen) to 86% (3 specimens)

Collection: Collect prior to breakfast to minimize food contamination.

Patient Prep: Rinse mouth with water

Sputum produced by deep coughing, no saliva is required.

Expectorate directly into standard sputum container labeled with: Patient's Name, Medical Record Number, Room Number, Date of Collection and Time of Collection.

<b>Technique</b>	<b>Method</b>	<b>Procedure</b>
	Natural Cough	<ul style="list-style-type: none"><li>• Inhale air to full lung capacity</li><li>• Exhale air when expulsive cough</li></ul>
	Aerosol Technique	<ul style="list-style-type: none"><li>• Inhale mixture of salt solution and glycol, or salt solution alone into brochial tree.</li><li>• Moisture in lung produces forced cough</li></ul> <p><b>Note:</b> Resulting specimen not always as good as that produced naturally.</p>

Transportation and Storage: Take to the laboratory immediately or refrigerate until delivery. Do not add fixative or anticoagulant.

Preparation:

Preparation consists of cytospin, ThinPrep slides and cell block production.

Causes of rejection: Specimen consists of:

Saliva

Nasal Aspirates

Specimen fixed in formalin

Reference Range: Normal to abnormal cells consistent with malignant neoplasm.

Limitations: Specimen will be reported as unsatisfactory for evaluation if:

Bronchial cells are not seen

Dust-pigmented macrophages are not seen

**Note:** If a culture is needed, send separate specimen and requisition to microbiology

**URINE CYTOLOGY:**

Applies to: Bladder washings, Catheterized urine Cytology, Cytology, Renal Pelvic Washings, Urethral Washings Cytology, Voided Urine Cytology.

Specimen: First Morning Specimen

Voided Urine

Catheterized Urine

Intra operative Washings of:

Urinary Bladder

Urethra

Ureters

Renal Pelvis

**Note:** Voided urine is preferable to a catheterized specimen due to atypical cell changes caused by trauma.

Volume: Entire volume of early morning specimen, entire volume collected at cytoscopic examination, not less than 10ml.

Container: Plastic Container

Patient Prep: Hydrate Patient

Have patient drink 6oz glass of water every 15 minutes for 2 – 3 hours. At the end of 2 hours have patient void or catheterize. Discard Specimen.

Collection: Technique I (Routine)

One hour after collection of discarded specimen, have patient void.

Save specimen and properly label.

Send to cytology laboratory immediately

Technique II (when residual bladder urine is present)

One half to one hour after collection of discarded specimen, catheterize bladder.

Send properly labeled specimen to cytology laboratory immediately.

Technique III (for detection of upper urinary tract lesion)

Catheterize ureter to a point just below the level of suspected lesion

Catheterize other ureter for control

Collect urine for ½ hour.

Label appropriately, right and left ureteral or pelvis specimen. Label with patient's name, age, Medical Record Number, room number, date of collection and specific specimen type

Send to cytology laboratory immediately.

Preparation: Prepare according to procedure for non-gyn fluids

Specimens should be centrifuged and processed with cytospin.

**URINE CYTOLOGY, CONTINUED:**

Storage: If collected over hours, place in laboratory refrigerator

Causes for rejection: Improper fixation  
24 hour collection  
Undue delay in transportation

Reference Range: From normal to altered cells suggestive of inflammation or repair to cellular changes conclusive for malignant neoplasm.

Limitations: Low grade papillary transitional cells or urothelial carcinoma may not be diagnosed by cytologic examination.

Atypical changes in urothelial cells simulating malignancy may be produced by:

Calculi

Recent cytology

Chemotherapy

Radiation

**Note:** Viral culture is the procedure of choice for diagnosis of CMV, however Cytology can produce faster results.

**PELVIC WASH:**

Laboratory: Cytopathology

Synonyms: Diaphragm wash, Gutter wash, Cul de sac wash

Container: Twist top leak proof plastic specimen cups, 50 -100 ml

Specimen: Fresh specimens only, do not add any fixative or heparin to bloody specimens.

Offsite Collection: Send Fluid in shatterproof container without preservative. Refrigerate. Preferred volume is 50 – 1000 ml.

Onsite Collection (CMC): Send Fluid in shatterproof container without preservative. Preferred volume is 50 – 100 ml. Indicate on specimen and requisition label each container the exact location of wash, left/right diaphragm etc. Deliver immediately, refrigerate if delivery will be delayed.

Days Set Up: Monday - Friday, 8:00am - 5:00pm

Analytic Time: 24 - 36 hours

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## ***PATHOLOGY***

### **PELVIC WASH, CONTINUED:**

Reference Range: Absence or presence of neoplastic cells or an inflammatory condition.

Test Usage: Typically used to diagnose metastatic disease or evaluate course of recurrent disease.

Test Limitations: Improper container, specimen submitted in syringe, specimen leaking or submitted with preservative, unlabeled or mislabeled specimen or requisition.

### **SURGICAL PATHOLOGY:**

Laboratory: Pathology

Container: Clean container with buffered formalin. Fresh specimens should be submitted on a gauze pad or towel moistened with saline.

Normal Volume: Entire specimen

Minimum Volume: Entire specimen

Offsite Collection: Submit fresh tissue or tissue fixed in phosphate buffered formalin. All biopsy specimens should be placed in 10% buffered neutral formalin immediately upon removal, except for samples for frozen section, examination prior to fixation, photography, or per instructions for special laboratory procedures. For additional information consult the CMC Client Services Center (663-8031) regarding appropriate handling of the specimen and fixation prior to collection of specimen. The name of the responsible staff physician must be on the request form, legibly written. Tissue fixed in formalin CANNOT be used for microbiological culture, electron microscopy, and certain types of histochemistry requiring frozen sections. Slides from outside Pathology Laboratory's or Hospitals must be accompanied by letter or pathologist's report from the outside institution. All specimens of any type must be accompanied by the appropriate requisition form containing the patient's complete name, medical record number or Date of Birth, test(s) required, requesting physician's name, and pertinent clinical history.

Days Set Up: Monday - Friday, 8:00am - 5:00pm

Analytic Time: 24 hours

Reference Range: Results interpreted by pathologist

Test Usage: Histology diagnosis