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LAB SERVICES

DIAGNOSTIC CYTOLOGY

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OFFICE MANUAL

COLLECTION PROCEDURES FOR

DIAGNOSTIC CYTOLOGY

Cytology: Anal Specimens

Specimen Collection

This page includes instructions for anal scrapes

Indications: The “anal pap” is a screening tool used in at-risk populations to identify individuals who have premalignant cytologic changes in their anal epithelium.

The incidence of anal cancer in the general population is less than one case per 100,000. However, when evaluating specific high-risk populations, such as women with cervical lesions and cervical and vulvar cancers, men who are HIV negative with high risk behaviors, and men or women who are HIV positive, the rate is as high as 70 cases per 100,000. Several biological similarities are shared between cervical and anal cancers, including an association with Human Papilloma Virus (HPV) infections.

Anal cytology is suggested as a screening test for selected patients at high-risk for anal squamous intraepithelial lesions (ASIL). There are no official guidelines regarding anal cytology screening for ASIL. The following patient group information is based on the approach used by the Palefsky group at University of California at San Francisco which is spearheading the clinical research on anal dysplasia (Palefsky 2001).

1. HIV-negative men or women with a history of receptive anal intercourse or anal warts.
2. HIV-positive men with a history of anal intercourse or anal warts. Some clinicians screen patients with CD4 counts that are less than $500/\text{mm}^3$ more frequently.
3. HIV-negative women with a history of anal warts, high-grade cervical squamous intraepithelial lesions (SIL)/carcinoma, or vulvar SIL/carcinoma.
4. HIV-positive women. Some clinicians screen patients with CD4 counts that are less than $500/\text{mm}^3$ more frequently.
5. Consider screening patients with organ transplants on chronic immunosuppressive agents.

Anal squamous intraepithelial lesions (ASIL) may be detected in the anal canal and most likely represent the precursor to anal cancer. ASILs range from low to high grade. High-grade squamous intraepithelial lesions (HSIL) most likely represent true invasive cancer precursor lesions in the cervix, and most likely in the anus. Atypical squamous cells of undetermined significance

(ASCUS) may also be found on cytologic examination in both the cervix and the anus, and these lesions are often accompanied by biopsy-proven SIL. Anoscopic and histologic assessment of anal lesions is critical to classify the lesions accurately, since the grade of anal cytology often does not correspond to that of histology, which remains the gold standard. Still, anal cytology appears to play an invaluable role in detecting and treating high-grade dysplastic lesions before they progress to anal cancer. Any cytologic abnormality should be followed up with high resolution anoscopy and any lesion should be biopsied to confirm the grade of dysplasia.

Anal cytology reports will generally follow the format for cervical cytology. The absence of columnar cells in the smear does not reflect the validity of the sample. The sensitivity, specificity, and predictive value do not hinge on the presence or absence of columnar cells. Some sources, however, recommend that both squamous and columnar cells should be present in samples for adequate interpretation of slides.

Specimen Required: The methodology for this assay is routine cytopathologic evaluation using either conventional smears or the ThinPrep® method.

Supplies: Dacron swab or cytobrush
PreservCyt™ collection fluid or spray fixative.

Collection Procedure: To obtain an anal sampling, a Dacron swab or cytobrush is inserted approximately 1.5 to 2 inches into the anal canal. It is important not to use a cotton swab, as cells tend to cling to cotton and do not release easily into cytology collection fluids. Moisten the Dacron swab with water, not lubricant. Once inserted deep enough into the anus (necessary in order to collect both rectal columnar and anal squamous cells) the swab should be pulled out, applying some pressure to the wall of the anus, rotating the swab in a spiral motion along the way. The cells collected can be placed in a cytology collection fluid (preferred) or spread on a glass slide and immediately spray-fixed. The preferred method of collection is in PreservCyt™ collection fluid. The collection device should be thoroughly rinsed and swirled in the vial. The vial or slide should be labeled with the patient's first and last name, PHN and date of birth. Place in a specimen bag and ship to the Vancouver Cancer Center Cytology Laboratory. The specimen must be accompanied by a "PHSA Laboratories Request For Diagnostic Cytology" form with the requested test marked.

Cytology: Body Cavity Fluid Collection

This page includes instructions for body cavity fluids and pelvic washings.

Body cavity fluids are serous fluids that accumulate in the body cavities due to a disease process. They are commonly evaluated for the presence of malignant cells from metastatic disease. Body cavity fluids in general are relatively easy to obtain and are relatively difficult to compromise. However, in some instances, due to a large number of inflammatory cells, specimens may degenerate rapidly. In addition, if large amounts of protein are present, the specimen may clot, trapping diagnostic cells within the clot. These fluids include pleural, peritoneal, pericardial, synovial, and pelvic washing.

Collection of Body Cavity Fluids

Indications: Detection and characterization of malignant cells in body cavity fluids.

Specimen Required: 10 mL (or more) of fluid obtained from an appropriately performed paracentesis.

Supplies: Standard paracentesis equipment. Clean collection container of appropriate size. Fixative (50% ethyl or methyl alcohol). Optional: heparin

Collection Procedure: Using standard paracentesis technique, obtain a fluid specimen from the desired body cavity. If necessary, move the patient into multiple positions to suspend cellular material in the fluid. A minimum of 10 mL of specimen is desirable for optimal cytologic evaluation. If other studies are required, withdraw a fraction of the specimen and submit it to the appropriate separately, following their guidelines for specimen collection. Heparin may be added to the specimen to reduce clotting. Place 3 units of heparin per mL capacity of the collection container. Agitate the container to coat the sides with heparin. Rinse the paracentesis instrument with a small amount of heparin to prevent clotting of specimen before it is put into the collection container. Add specimen to the heparinized container. Gently agitate to thoroughly mix the specimen and heparin. Submit the specimen to the Vancouver Cancer Center Cytology Laboratory along with the completed PHSA Request For Diagnostic Cytology test form. If transport of the specimen will be delayed more than 24 hours, add an equal volume of 50% ethyl or methyl alcohol (if sample size is too large to accommodate this volume, a well mixed aliquot of the specimen with an equal volume of fixative may be utilized). If transport time will be less than 24 hours, or fixative is not available, the specimen should be refrigerated or kept on wet ice until transport to the lab.

Collection of Pelvic Washing:

Indications: Detection and characterization of malignant cells in pelvic washing.

Specimen Required: 10 mL (or more) of fluid obtained from an appropriately performed washing.

Supplies: Standard suction equipment. Clean collection container of appropriate size. Fixative (50% ethyl or methyl alcohol).

Collection Procedure: Using appropriate sterile technique during intra-abdominal surgery, instill a physiologic solution into the pelvic cavity. Lavage the area of interest. Aspirate the solution and place in a clean container. Label the container with the patient's first and last name, PHN, date of birth, specimen type and collection date. Submit the specimen and completed PHSA Request For Diagnostic Cytology test request form to the Vancouver Cancer Center Cytology Laboratory. If transport of the specimen will be delayed more than 24 hours, add an equal volume of 50% ethyl or methyl alcohol. If transport time will be less than 24 hours, or fixative is not available, the specimen should be refrigerated or kept on wet ice until transport to the lab.

Cytology: Breast Nipple Secretion

Indications: Detection of atypical or malignant cells in nipple discharge specimens.

Specimen Required: Direct smear of nipple discharge.

Supplies: Two clean glass slides (single-end frosted).
Optional: Spray fixative or 95% ethyl or methyl alcohol

Collection Procedure: Label the two slides with the patient's first and last name, date of birth and specimen site in pencil on the frosted end. Collect a small amount of nipple secretion directly onto one of the slides. Oppose a second glass slide onto the first, allowing the collected material to provide surface tension between the two slides, and then gently and quickly pull the two slides apart in a horizontal motion to distribute the material in a thin film over both slides. The smears may be immediately fixed either by spray fixative or immersion in 95% ethyl alcohol for a minimum of 5 minutes, or allowed to air dry without fixative. Whether fixed or air dried, slides must be completely dry before packaging.

Submit the specimen and the completed PHSA Request For Diagnostic form to

the Vancouver Cancer Center Cytology Laboratory. Indicate on the form as to whether the specimen was fixed or air-dried.

Cytology: Bronchoalveolar Lavage

Specimen Collection

Indications: For the detection and characterization of microbiologic pathogens (primarily *Pneumocystis carinii*, viral, fungal, and bacterial) in immunocompromised patients ; detection and characterization of malignancy.

Specimen Required: Bronchoscopically-obtained lavage (preferably at least 20 mL) of the distal airways and alveoli.

Supplies: Standard bronchoscopy equipment. 120 mL sterile plastic specimen container, 50 % ethyl or methyl alcohol.

Collection Procedure: Using standard bronchoscopy BAL technique, lavage the lung distribution in question with sterile, normal saline (or other physiologic solution). Collect the lavage specimen in a clean specimen container. Label the container with the patient's first and last name, PHN, date of birth, and specimen type.

Note: BAL specimens sent for culture **must** be split from the main specimen prior to transport. The Cytopathology Laboratory does not have facilities for the sterile handling of BAL specimens necessary for culture procedures. The Cytology portion of the BAL should be fixed with an equal volume of 50% ethyl or methyl alcohol. Submit the Cytology specimen, along with the completed PHSA Request For Diagnostic Cytology test form, to the Vancouver Cancer Center Cytology Laboratory.

For the interpretation of BAL specimens, relevant clinical information must be provided. The primary diagnosis of *P. carinii* is made on Pap stained material. GMS stains, when performed on BAL specimens, are used as confirmatory tests only.

Cytology: Fine Needle Aspiration Collection

Fine needle aspiration of mass lesions is commonly utilized in the detection and characterization of a variety of cancerous and non-cancerous conditions. Obtaining an adequate specimen requires attention to good aspiration technique as well as processing of material obtained. It is highly desirable that direct smears be prepared (preferably fixed and air-dried) for all fine needle aspiration specimens submitted to the Vancouver Cancer Center Cytology Laboratory.

Indications: To diagnose mass lesions, and to characterize the type of malignancy or benign disease present.

Specimen Required: Adequate cellular material for cytologic evaluation obtained from an appropriately performed fine needle aspiration. This will depend on the specimen site and character of the lesion being aspirated. In general, this requires that there be enough material for the examiner to at least determine that the aspirating needle sampled a mass lesion.

Supplies: 3, 5, 10, or 20 mL syringe. Syringe pistol (optional). 22 to 25 gauge needle of appropriate length. Single-end frosted glass slides labeled with the patient's first and last name, date of birth, and specimen source (for preparation of direct smears). Spray fixative or 95% ethyl or methyl alcohol

Collection Procedure: Please note that the following collection procedure is a suggested guideline. Aspiration techniques vary widely based on personal preferences, and specific clinical circumstances must be taken into account when deciding on the method of aspiration utilized.

Identification and Localization of a Mass Lesion

Mass lesions usually come to attention either by simple identification of the development of a mass (usually superficially) or by the development of symptoms directly or indirectly caused by the mass. In order to be able to sample the identified lesion, some means of accurate localization must be available. If the mass is superficial, simple isolation of the mass between the thumb and index finger of the non-aspirating hand is usually sufficient. For deeper masses, ultrasound or radiographic techniques are usually required for accurate guidance and localization of the aspirating needle.

Patient Preparation

For superficial aspirates, clean technique suffices for cleansing of the skin surface. Local anesthetic may or may not be used. If more than three attempts are anticipated, anesthetic is recommended. However, be certain not to contaminate the lesion with a large volume of anesthetic. Also, make attempts

not to directly interfere with the ability to palpate and localize the lesion. For deep aspirates, sterile technique is required for cleansing of the skin, and local anesthetic is usually required.

Aspiration (Superficial Masses)

Assemble the aspirating equipment. If direct smears are to be made, label the slides prior to the aspiration, and have fixative ready for immediate application as soon as smears are made. With the target of aspiration fixed with the non-dominant hand between the thumb and index finger, and the syringe pistol in the dominant hand, the needle is placed against the skin. If the lesion is very superficial, the needle should approach the skin at approximately a 30-degree angle. If the mass is deep, it should approach the skin at a perpendicular angle. A quick motion should be used in passing the needle through the skin. The needle is then advanced through the subcutaneous tissue into the mass. If the mass is small, the needle should be aimed toward the center; if it is large, the needle should be aimed toward the periphery, as the center of larger masses may be necrotic. A noticeable difference in the consistency of the tissue should be noted when the needle penetrates the mass. With the needle in the mass, the needle tip should be moved in short motions, initially, to loosen cells within the mass. Negative pressure is then applied by pulling back on the plunger of the syringe. Without releasing pressure, the needle within the target is withdrawn slightly but not out of the lesion, and then reinserted at a slightly different angle. This maneuver should be repeated several times before complete withdrawal. While redirecting the needle, a corkscrew action may be used. When blood or material appears in the hub of the needle, the aspiration should be stopped. Prior to withdrawal of the needle, negative pressure must be released to prevent suction of the material into the barrel of the syringe when the needle exits the skin.

Aspiration (Deep Lesions)

While the basic aspiration procedure is similar for deep lesions, specialized equipment for imaging, specialized needles and set-ups for aspiration, and emergency equipment for handling major complications are required. Specific techniques are highly variable, according to personal preferences. While this guide will not attempt to provide methodological guidelines for aspiration of deep masses, the principles of not applying negative pressure until in the mass, stopping aspiration when blood or material appears in the hub of the needle, and not maintaining negative pressure when withdrawing the needle, should be kept in mind.

Preparation of Direct Smears

For preparation of smears, single-end frosted slides should be utilized. Slides should be labeled with patient's first and last name, date of birth, and specimen source in pencil prior to aspiration. Some author investigators recommend gently expressing a drop of aspirated fluid onto a slide, while others recommend forcefully expelling the material onto the slide. The actual method will be

determined in part by the nature of the material present. If the aspirated material is abundant and fluid, a drop may be easily expressed without force. If the material is scant or more viscous or solid, the material must often be forcefully expelled. The latter method can result in splattering of material off of the slide, and will utilize most of the specimen in the preparation of a minimal number of smears, necessitating more passes if additional material is required for additional studies. The former method allows for better control of the smear process.

Once the specimen is on the slide, it must be smeared. The simplest way to accomplish this is to oppose a second glass slide onto the first, allowing the aspirated material to provide surface tension between the two slides, and then gently and quickly pulling the two slides apart in a horizontal motion to distribute the material in a thin film over both slides. One slide should be fixed and one left to air dry as follows:

- 1) immediately spray fix, or immerse a slide in either Saccomanno fixative or 95% ethyl or methyl alcohol for Papanicolaou staining (delineate with an "F" on the frosted end of the slide) and
- 2) Air-dry a slide for Wright Giemsa staining (delineate with an "A" on the frosted end of the slide).

Whether fixed or air dried, slides must be completely dry before packaging. If material remains in the hub of the needle or syringe, the material should be rinsed into a tube containing fixative (50% ethyl or methyl alcohol, Saccomanno fixative or Cytolyt). If a cystic lesion is encountered, evacuate the cyst completely. Withdraw the needle with some vacuum in the syringe. Re-examine the patient after evaluation of the cyst and re-aspirate any residual masses that remain. Submit the fluid in an appropriately sized sterile container. If a delay in submission is expected add an equal volume of 50% ethanol.

Submit the specimen (smears and/or material rinsed into solution) to the Vancouver Cancer Center Cytopathology Laboratory along with the completed PHSA Cytology test request form. If transport of specimen in fluid will be delayed more than 24 hours, the specimen should be submitted in fixative. If transport time of fluid specimen will be less than 24 hours, or fixative is not available, the specimen should be refrigerated or kept on wet ice until transport to the lab.

Cytology: Gastrointestinal

Specimen Collection

This page includes instructions for brushings, washings and bile drainage specimens

The adequacy of a gastrointestinal specimen is determined primarily by the presence of well-preserved epithelial cells indicative of the type of epithelium present at the gastrointestinal site sampled. All GI specimens tend to deteriorate rapidly in the fresh state due to enzymatic activity which is present throughout much of the GI tract. Collection of the specimen in Cytolyt, Saccomanno fixative or 50% ethyl or methyl alcohol is recommended.

Brushings (Esophageal, GI Junction, Gastric, Duodenal, Bile Duct, Other)

Indications: For detection and characterization of endoscopically visible gastrointestinal lesions; for the identification of some microbiologic pathogens (primarily herpes, CMV, and *Candida*).

Specimen Required: Endoscopically-directed brushing sample of the identified lesion.

Supplies: Standard endoscopy equipment. One (or more if necessary) 15 ml centrifuge tube(s) with approximately 10 ml of Cytolyt fixative.

Collection Procedure: Instruct the patient to fast overnight or for a minimum of six hours prior to the procedure. Using standard endoscopy technique, identify the lesion in question and obtain a brushing sample of the lesion.

Note: It is important to brush the edges of an ulcer, as well as the floor, in order to obtain diagnostic material.

Upon withdrawing the brush, remove sheath, agitate the brush vigorously in the 15 ml centrifuge tube of Cytolyt fixative. **Do not apply the brush directly to slides.** If possible, detach the brush and leave it in the 15 ml centrifuge tube. Label with the patient's first and last name, date of birth, and specimen source. Submit the specimen along with the completed PHSA Cytology test request form to the Vancouver Cancer Center Cytopathology Laboratory.

Washings (Esophageal, Gastric, Other)

Indications: For detection and characterization of endoscopically ill-defined or invisible gastrointestinal lesions; for the identification of some microbiologic pathogens (primarily herpes, CMV, and *Candida*).

Specimen Required: Endoscopically obtained washing (preferably at least 10 mL) of the region of the suspected lesion.

Supplies: Standard endoscopy equipment. 120 mL clean plastic specimen container(s). Fixative (either Saccomanno fixative or 50% ethyl or methyl alcohol).

Collection Procedure: Instruct the patient to fast overnight or for a minimum of six hours prior to the procedure. Using standard endoscopy technique, lavage the area of interest using a physiologic solution. Aspirate the solution and place in a clean specimen container with an equal volume of fixative. Label the container with the patient's first and last name, date of birth, and specimen source. Submit the specimen and the completed PHSA Laboratories Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology Laboratory.

Bile Drainage

Indications: For the detection of malignant cells arising within the hepatobiliary system.

Specimen Required: 10 mL or more of collected bile drainage.

Supplies: Standard transcutaneous or endoscopic biliary drainage equipment. Clean plastic specimen container of an appropriate size.
Fixative: Saccomanno or 50% ethyl or methyl alcohol

Collection Procedure: Using appropriate sterile technique, collect as much bile drainage through the drainage apparatus as possible, into a clean plastic specimen container with an equal volume of fixative. Label the container with the patient's first and last name, date of birth, and specimen source. Submit the specimen and the completed PHSA Laboratories Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology Laboratory.

Note: Bile specimens will degenerate very rapidly due to enzymatic activity and bile salts. Therefore, a 24-hour bile collection is not suitable for cytologic evaluation.

Cytology: Oral Scraping or Brushing Specimen Collection

Indications: Detection and characterization of malignancy and infectious processes in the oral cavity.

Specimen Required: Direct smear of material collected from the oral mucosa.

Supplies: One (or more) clean glass slides, Spray fixative, or 95% ethyl or methyl alcohol, oral scraping spatula.

Collection Procedure: Label the slides with the patient's first and last name, date of birth, and specimen source in pencil on the frosted end. Gently scrape the area of abnormality with spatula. Quickly and evenly smear the collected material on a glass slide. Immediately spray fix or immerse the slide in fixative. Repeat the process with the second slide if necessary for better diagnostic yield. Repeat the process for additional areas if necessary. Submit the specimen and the completed PHSA Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology Laboratory.

Brushings

Indications: Detection and characterization of malignancy and infectious processes in the oral cavity.

Specimen Required: Brushing sample of the identified lesion.

Supplies: 15 ml centrifuge tube(s) with approximately 10 ml of Cytolyt fixative.

Collection Procedure: Identify the lesion in question and obtain a brushing sample of the lesion.

Note: It is important to brush the edges of an ulcer, as well as the floor, in order to obtain diagnostic material. Agitate the brush vigorously in a 15 ml centrifuge tube with approximately 10 ml of Cytolyt fixative. **Do not apply the brush directly to slides.** If possible, detach the brush and leave it in the 15 ml centrifuge tube. Label the tube with patient's first and last name, date of birth and specimen source. Submit specimen along with the completed PHSA Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology Laboratory.

Cytology: Pulmonary Specimen Collection

This page includes instructions for Sputum, Post-bronchoscopy sputum, Bronchial washing and Bronchial brushing specimens

Note:

The adequacy of a sputum specimen is determined primarily by the presence of alveolar macrophages indicating that the specimen obtained is a deep cough specimen producing material from the lower airways.

Sputum

Indications: For the detection and characterization of premalignant/malignant pulmonary lesions and for the identification of some microbiologic pathogens.

Specimen Required: 5 mL (about one teaspoon) or more if possible, of sputum obtained from a deep cough specimen.

Supplies: 120 mL clean plastic specimen container; fixative (preferably 50% ethyl or methyl alcohol, or alternatively Saccomanno fixative).

Collection Procedure: When clinically feasible, sputum specimens should be obtained as follows. The optimum time for specimen collection is within 15 to 30 minutes after waking and before eating breakfast. Brushing of teeth or rinsing of the mouth thoroughly with water will reduce contamination by saliva. Instruct the patient to inhale and exhale deeply, forcing air from the lungs using the diaphragm. Repeat until the patient coughs and is able to produce a sputum specimen. Collect the specimen in the container with an equal volume of fixative, attempting to obtain at least one teaspoon of sputum. Greater diagnostic yield may be obtained if specimens are submitted on three to five successive mornings. Label the container with the patient's first and last name, date of birth, and specimen source. Submit the specimen, along with the completed PHSA Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology Laboratory.

Note: If a good specimen is not obtainable by this method, or if the patient is unable to comply, obtain an induced sputum or tracheal aspirate.

Post-Bronchoscopy Sputum

Collect one good, deep cough specimen at any time during the 24-hour period following bronchoscopy, as outlined above. Submit the specimen to the

Vancouver Cancer Center Cytopathology Laboratory, along with the completed PHSA Request For Diagnostic Cytology form.

Bronchial Brushings

Indications: For the detection and characterization of bronchoscopically visible premalignant/malignant pulmonary lesions; for the identification of some microbiologic pathogens (primarily viral and fungal).

Specimen Required: Bronchoscopically-directed brushing of the identified lesion.

Supplies: Standard bronchoscopy equipment. One (or more if necessary) 15 ml centrifuge tube(s) with approximately 10 ml of Cytolyt fixative.

Collection Procedure: Using standard bronchoscopy technique, identify the lesion in question and obtain a brushing sample of the lesion. Upon withdrawing the brush, remove sheath, agitate the brush vigorously in 15 ml centrifuge tube(s) with approximately 10 ml of Cytolyt fixative. DO NOT APPLY THE BRUSH DIRECTLY TO SLIDES. If possible, detach the brush and leave it in the vial. Label the vial with patient's first and last name, date of birth, and specimen source. Submit the specimen along with the completed PHSA Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology Laboratory.

Bronchial Washings

Indications: For the detection and characterization of bronchoscopically ill-defined or invisible premalignant/malignant pulmonary lesions; for the identification of some microbiologic pathogens (primarily viral or *Pneumocystis carinii*).

Specimen Required: Bronchoscopically-obtained washing (at least 10 ml is preferred) of the bronchi in the region of the suspected lesion.

Supplies: Standard bronchoscopy equipment. 120 mL clean plastic specimen container(s). Fixative (preferably 50% ethyl or methyl alcohol, or alternatively Saccomanno fixative, or Cytolyt).

Collection Procedure: Using standard bronchoscopy technique, lavage the distribution of the bronchus to be sampled. Collect the wash in a clean container. Add equal volume of fixative. Label the container with patient's first and last name, date of birth, and specimen source. Submit the specimen, along with the completed PHSA Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology Laboratory.

Cytology: Urine Specimens

Specimen Collection

This page contains instructions for voided and catheterized urine as well as cystoscopic urine specimens.

Note: Urine is commonly evaluated cytologically for the presence of malignant cells in the detection of urologic malignancies. Urine may also be evaluated cytologically in the detection and characterization of some renal diseases.

Method of specimen collection as well as time of collection will affect the cytologic evaluation in many instances.

Indications: Detection and characterization of malignant cells and other urologic abnormalities in symptomatic (usually hematuria) patients; screening for malignancy in selected individuals at high risk for the development of urologic malignancy; detection and characterization of some nonneoplastic renal diseases in symptomatic (usually hematuria) patients.

Specimen Required: Preferably about 50 ml of an appropriately-collected voided or catheterized urine specimen.

Supplies: Clean collection container of appropriate size. Standard catheterization equipment (for catheterized urine). Fixative (50% ethyl or methyl alcohol).

Collection Procedure: For purposes of obtaining the greatest yield of diagnostic material, do not collect the first voided urine of the day. The second voided urine specimen should be obtained, if possible. A midstream, clean-catch specimen is recommended to avoid vaginal contamination in female patients. A midstream specimen, not necessarily clean catch, is recommended for male patients. If the patient must be catheterized to obtain the specimen, this should be noted on the test request form, as catheterization can lead to artifacts which may be otherwise misinterpreted. Add equal volume of fixative to the specimen. Ideally fixative should be added immediately. If fixative is not available, the specimen should be refrigerated or kept on wet ice until transport to the lab. Submit the specimen to the PHSA Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology

Other Urologic Specimens

Indications: Detection of suspected malignancy utilizing lavage and brushing specimens obtained cystoscopically (bladder washing, renal pelvis washing/brushing, ureteral washing/brushing or urethral washing/brushing); staging of urologic malignancies.

Specimen Required: 10 mL (or more) of an appropriately-collected, cystoscopically-derived specimen.

Supplies: Standard cystoscopy equipment. Clean collection container of appropriate size. Fixative (50% ethyl or methyl alcohol).

Collection Procedure

Washing: Using standard cystoscopy technique, obtain washing specimens, carefully denoting specific specimen sites for each specimen on the test request form. Add an equal volume of fixative to the specimen container. Submit the specimen to the Vancouver Cancer Center Cytopathology Laboratory along with the completed PHSA Laboratories Request For Diagnostic Cytology form. If fixative is not available, the specimen should be refrigerated or kept on wet ice until transport to the lab.

Brushing: Using standard cystoscopy technique, identify the lesion in question and obtain a brushing sample of the lesion.

Note: It is important to brush the edges of an ulcer, as well as the floor, in order to obtain diagnostic material. Upon withdrawing the brush, agitate the brush vigorously in a 15 ml centrifuge tube with approximately 10 ml of 50% ethyl or methyl alcohol. **Do not apply the brush directly to slides.** If possible, detach the brush and leave it in the vial. Label the vial with the patient's first and last name, date of birth and specimen source. Submit the specimen along with the completed PHSA Laboratories Request For Diagnostic Cytology form to the Vancouver Cancer Center Cytopathology Laboratory.