



## CYTOPATHOLOGY SPECIMEN COLLECTION

**For complete information on specimen preparation, transport, stability, and unacceptable conditions, refer to specific test information in the ARUP Laboratory Test Directory.**

### Basic Collection Instructions

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### General Specimen Collection Instructions

- Before collecting a specimen, determine tests to be ordered and consult the ARUP Laboratory Test Directory for individual test specimen volume and transport requirements.
- Collect the appropriate sample type in a quantity sufficient for the ordered test.
- Properly label the specimen with at least two patient identifiers.
- Label each slide submitted for stains with two patient identifiers.
- Specimen source is required and must be included with the test order.
- Package each specimen separately in a sealed transport bag.
- Minimize transport time.
- Ensure that the appropriate environment will be maintained between collection of specimens and delivery to the laboratory.
- Cytology fixatives include: PreservCyt, CytoLyt Saccomanno, and 50% alcohol. This list is not all-inclusive.
- Grossly bloody specimens may be fixed with CytoRich Red or CytoLyt.
- Spray fixative may be used for direct smears (holding the spray bottle approximately 8–12 inches from the slide) or they may be fixed in 95% alcohol for 10 minutes. Allow the slides to completely air dry before shipping.

# Cytopathology Specimen Collection

## Clinical History Requirements

Because accurate interpretation is often dependent on clinical history, ARUP requires the following information to process gynecologic and nongynecologic specimens: clinician/physician name, adequate patient identification, anatomic source and/or type of specimen, patient age or birthdate, date/time of specimen collection, and the test(s) to be performed.

For gynecologic cases, ARUP also requires the date of the patient's last menstrual period and indication of whether the patient had a previous abnormal Pap smear report, treatment, or biopsy. If patient history relating to menopause, hysterectomy, and IUD status is not provided, ARUP will contact the physician for further details if the Pap being evaluated requires that information. Other clinical history items (e.g., pregnancy, postpartum, radiation, or hormone therapy) may additionally affect interpretation.

For nongynecologic cases, clinical history, including a previous history of cancer, radiation, or chemotherapy, is also crucial to evaluation.

## ANAL CYTOLOGY SPECIMENS

Cytologic screening for anal squamous intraepithelial lesions (ASIL)

Specimen	Collection Procedure
Anal	<ul style="list-style-type: none"><li>• To obtain an anal sampling, moisten a Dacron swab with water, not lubricant.</li><li>• Insert the Dacron swab approximately 1.5–2 inches into the anal canal. It is important to use Dacron and not a cotton swab, as cells tend to cling to cotton and do not release easily into cytology collection fluids.</li><li>• Once inserted deep enough into the anus (necessary to collect both rectal columnar and anal squamous cells) pull the swab out, applying some pressure to the wall of the anus and rotating the swab in a spiral motion along the way.</li><li>• Transport <b>ambient</b>.</li></ul>
Direct smear	<ul style="list-style-type: none"><li>• The cells collected can be spread on a glass slide and immediately fixed with spray fixative or fixed in 95% alcohol for 10 minutes.</li><li>• Allow the slides to completely air dry before shipping.</li><li>• Transport <b>ambient</b>.</li></ul>
PreservCyt fixative	<ul style="list-style-type: none"><li>• The preferred method of collection is in PreservCyt, although alternative cytology fixatives may also be used.</li><li>• After collection, thoroughly rinse and swirl the Dacron swab in the vial.</li><li>• Transport <b>refrigerated</b>.</li></ul>

## Cytopathology Specimen Collection

### BODY CAVITY FLUID SPECIMENS

Body cavity fluids are commonly evaluated for the presence of malignant cells from metastatic disease. Body cavity fluids in general are relatively easy to obtain and 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.

Specimen	Collection Procedure
Body cavity fluids	<ul style="list-style-type: none"><li>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.</li><li>A minimum of 10 mL of specimen is recommended; 50–100 mL is optimal for cytologic evaluation. If other studies are required, withdraw a fraction of the specimen and submit it to the appropriate laboratory separately, following appropriate guidelines for specimen collection.</li><li>Heparin may be added to the specimen to reduce clotting. Place three 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.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add an equal volume of cytology fixative (if the sample size is too large to accommodate this volume, a well-mixed aliquot of the specimen with an equal volume of cytology fixative may be utilized).</li></ul>
Pelvic washing	<ul style="list-style-type: none"><li>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.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add an equal volume of cytology fixative (if the sample size is too large to accommodate this volume, a well-mixed aliquot of the specimen with an equal volume of cytology fixative may be utilized).</li></ul>

### BREAST NIPPLE SECRETION SPECIMENS

Detection of malignant cells in nipple discharge specimens

Specimen	Collection Procedure
Nipple discharge	<ul style="list-style-type: none"><li>Collect a small amount of nipple secretion directly onto a slide.</li><li>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.</li><li>The smears should be immediately fixed with spray fixative or fixed in 95% alcohol for 10 minutes. Allow the slides to completely air dry before shipping.</li><li>Transport <b>ambient</b>.</li></ul>

## Cytopathology Specimen Collection

### CEREBROSPINAL FLUID SPECIMENS

In cytology, cerebrospinal fluid (CSF) is most commonly evaluated to detect and characterize malignancy that may have gained access to the central nervous system. While CSF specimens are relatively easy to obtain in most individuals, in some individuals, collection may require radiographic guidance. In addition, due to lack of nutrients in this fluid, cells may rapidly degenerate, rendering morphologic evaluation less than optimal if adequate care is not taken.

**Note: ARUP Cytology will not process specimens from patients with known or suspected prion disease.**

Specimen	Collection Procedure
Cerebrospinal fluid	<ul style="list-style-type: none"><li>Using standard CSF procedure, collect 3 mL of CSF (10 mL CSF minimum required for immunologic marker studies). In general, morphology of cells within the CSF can be adequately maintained with prompt refrigeration for 24 hours.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add an equal volume of cytology fixative.</li></ul>

### CONJUNCTIVAL SCRAPING SPECIMENS

Detection and characterization of inflammatory/infectious processes of the conjunctiva

Specimen	Collection Procedure
Direct smear	<ul style="list-style-type: none"><li>Place the labeled slides in a container filled with 95% alcohol so that the slides are completely covered.</li><li>Gently scrape the area of abnormality.</li><li>Remove one of the slides from the fixative. Quickly and evenly smear the collected material on one of the glass slides.</li><li>Immediately resubmerge the slide in fixative.</li><li>Repeat the process with the second slide, if necessary, for better diagnostic yield.</li><li>Leave the slides in the alcohol for 10 minutes. Allow the slides to completely air dry before shipping.</li><li>Transport <b>ambient</b>.</li></ul>

### CYTOPATHOLOGY CONSULTATION

Consultation for difficult gynecologic, nongynecologic, and fine needle aspiration biopsy specimens is available from ARUP's board-certified cytopathologists.

For all consultations, please order ARUP test code: 2013263 – Consultation, Surgical Pathology.

Submit Pap slides, nongynecological slide preparations, special slides, and/or paraffin-embedded block, as applicable; a copy of relevant cytopathology/surgical pathology report(s); a complete clinical history; and a brief explanatory note. If special studies, such as cytogenetics, flow cytometry, PCR, FISH, EM, IHC, or IF, are required, submit additional tissue in appropriate fixative.

For additional information, contact your ARUP business development manager or ARUP Client Services.

### FINE NEEDLE ASPIRATION SPECIMENS

Mass lesions are usually recognized 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. Fine needle aspiration of mass lesions is commonly utilized in the detection and characterization of a variety of malignant diseases. 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 nonaspirating hand is usually sufficient. For deeper masses, ultrasound or radiographic techniques are usually required for accurate guidance and localization of the aspirating needle.

## Cytopathology Specimen Collection

Obtaining an adequate specimen requires attention to good aspiration technique, as well as processing of material obtained. It is highly desirable that several direct smears be prepared for all fine needle aspiration specimens submitted to Cytopathology.

Specimen	Collection Procedure
Fine needle aspiration	<ul style="list-style-type: none"> <li>• Adequate cellular material for cytologic evaluation obtained from an appropriately performed fine needle aspiration is required. 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.</li> <li>• Please note that this 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.</li> <li>• For superficial aspirates, clean technique suffices for cleansing of the skin surface. For deep aspirates, sterile technique is required for cleansing of the skin, and local anesthetic is usually required.</li> <li>• Transport <b>refrigerated</b>. If transport of specimen in fluid will be delayed more than 24 hours, the specimen should be submitted in cytology fixative.</li> </ul>
Direct smears	<ul style="list-style-type: none"> <li>• Utilize single-end frosted slides for the preparation of smears. The actual method used for making the slide 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 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.</li> <li>• 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 pull the two slides apart in a horizontal motion to distribute the material in a thin film over both slides.</li> <li>• The smears should be immediately fixed with spray fixative or fixed in 95% alcohol for 10 minutes. Allow the slides to completely air dry before shipping (indicate with an "F" on the frosted end of the slide). The smears may also be air dried for Diff-Quick staining (indicate with an "A" on the frosted end of the slide).</li> <li>• Transport <b>refrigerated</b>. If transport of specimen in fluid will be delayed more than 24 hours, the specimen should be submitted in cytology fixative.</li> </ul>
Needle rinse specimen	<ul style="list-style-type: none"> <li>• If material remains in the hub of the needle, additional smears may be prepared, or the material may be rinsed into a tube containing cytology fixative or a physiologic solution such as normal saline or RPMI. If smears are not prepared, all of the aspirated material should be flushed into cytology fixative or a physiologic solution.</li> <li>• Transport <b>refrigerated</b>. If transport of specimen in fluid will be delayed more than 24 hours, the specimen should be submitted in cytology fixative.</li> </ul>
Fine-needle aspirate with reflex to BRAF V600E mutation detection by allele-specific PCR	<ul style="list-style-type: none"> <li>• Follow the procedure listed above for a fine needle aspiration (direct smears and needle rinse specimen). <b>Air-dried smears or air-dried and Diff-Quick stained smears are required for this test.</b> The smears should be delineated with an "A" on the frosted end of the slide.</li> <li>• Transport <b>refrigerated</b>. If transport of specimen in fluid will be delayed more than 24 hours, the specimen should be submitted in cytology fixative.</li> </ul>

## Cytopathology Specimen Collection

### GASTROINTESTINAL 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.

Specimen	Collection Procedure
Brushings (esophageal, GI junction, gastric, duodenal, bile duct, other)	<ul style="list-style-type: none"><li>• Endoscopically directed brushing sample of the identified lesion: 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.</li><li>• It is important to brush the edges of an ulcer, as well as the floor, to obtain diagnostic material.</li><li>• Upon withdrawing the brush, agitate the brush vigorously in a 5–10 mL vial of saline or cytologic fixative. <b>DO NOT APPLY THE BRUSH DIRECTLY TO SLIDES.</b> If possible, detach the brush and leave it in the vial.</li><li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, add 50 mL of cytology fixative.</li></ul>
Washings (esophageal, gastric, other)	<ul style="list-style-type: none"><li>• Endoscopically obtained washing (preferably at least 10 mL) of the region of the suspected lesion: 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.</li><li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, add 50 mL of cytology fixative.</li></ul>
Bile drainage	<ul style="list-style-type: none"><li>• Using appropriate sterile technique, collect as much bile drainage through the drainage apparatus as possible into a clean plastic specimen container.</li><li>• 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.</li><li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, add 50 mL of cytology fixative.</li></ul>

# Cytopathology Specimen Collection

## ORAL SPECIMENS

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

Specimen	Collection Procedure
Scrapings (direct smears)	<ul style="list-style-type: none"><li>Cellular material collected from the oral mucosa is required.</li><li>Place the slides in a container filled with 95% alcohol so that the slides are completely covered. Gently scrape the area of abnormality. Remove one of the slides from the fixative. Quickly and evenly smear the collected material on one of the glass slides. Immediately resubmerge the slide in fixative. Repeat the process with the second slide if necessary for better diagnostic yield.</li><li>Repeat the process for additional areas if necessary.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, the specimen should be submitted in cytology fixative.</li></ul>
Scrapings (normal saline or cytology fixative)	<ul style="list-style-type: none"><li>Gently scrape the area of abnormality. Thoroughly rinse the spatula in the saline or fixative. Repeat the process with a second spatula if necessary for better diagnostic yield. Repeat the process for additional areas if necessary.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, the specimen should be submitted in cytology fixative.</li></ul>
Brushings	<ul style="list-style-type: none"><li>Brushing sample of the identified lesion: Brush the edges of an ulcer, as well as the floor, to obtain diagnostic material. Agitate the brush vigorously in a 5–10 mL vial of saline or cytology fixative. DO NOT APPLY THE BRUSH DIRECTLY TO SLIDES. If possible, detach the brush and leave it in the vial.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, the specimen should be submitted in cytology fixative.</li></ul>

## PAP TESTS

A Pap test is used as a screening test for evaluation of the lower female genital tract to detect the presence of inflammatory/infectious or benign proliferative conditions; detect unsuspected or confirm suspected atypical, premalignant, or malignant changes; or to follow up with patients who have known and/or treated premalignant or malignant lesions.

To review the current cervical cancer screening recommendations, refer to <https://arupconsult.com/content/human-papillomavirus>

Please note that the Pap test is a screening test for cervical cancer and its precursors with an inherent false-negative rate.

- In premenopausal patients, obtain specimens during the second half of the menstrual period to avoid contamination by obscuring blood.
- Instruct the patient not to douche or engage in sexual intercourse within 24 hours of the procedure.
- Obtain all specimens prior to bimanual examination.
- Place the patient in the lithotomy position. Using an unlubricated vaginal speculum (saline may be used as a lubricant) visualize the cervix as fully as possible.
- Vaginal discharge or secretion, when present in large amounts, should be removed before obtaining the cervical sample so as not to disturb the epithelium (i.e., cellulose swab). Small amounts of blood will not interfere with the cytologic evaluation; however, large amounts of blood as present during menses may interfere with cytologic evaluation because cells may be obscured by blood. Use of liquid-based specimen collection minimizes the interference from these factors. If testing for sexually transmitted disease is indicated, the cervical cytology sample should be taken first.

## Cytopathology Specimen Collection

- Vaginal specimens can be used in conjunction with routine cervical/endocervical smears in individuals with a uterus, or alone in hysterectomized patients. If a vaginal specimen will be obtained in conjunction with a cervical and endocervical component, make sure that the slides or vials are also appropriately labeled according to site. If specimens from separate vaginal areas are also obtained, label the sites accordingly with specific site (e.g., left lateral vaginal wall, posterior vaginal wall).
- Vaginal specimens may be submitted for evaluation of potential changes associated with in utero DES exposure. After visualization of the upper one-third of the vagina is accomplished, use the spatula to scrape the upper one-third of either lateral vaginal wall (LVW). Withdraw the spatula and spread the material quickly and evenly onto a slide or submit the specimen in liquid-based Pap test preservative fluid clearly marked "LVW."
- Follow the instructions for the specific collection kit used.

Specimen	Collection Procedure
Conventional Pap smear cervical/endocervical	<ul style="list-style-type: none"> <li>• After visualization of the cervix is accomplished, insert the cytobrush into the endocervical canal and rotate half a turn. Withdraw the cytobrush and spread the collected material quickly and evenly onto the half of the slide opposite the frosted end. The endocervical mucus will prevent air-drying during collection of the subsequent cervical component.</li> <li>• Using the extended-tip spatula, scrape material with the spatula from the whole circumference of the cervix. Withdraw the spatula and spread the collected material quickly and evenly onto the half of the slide adjacent to the frosted end.</li> <li>• The smear(s) should be immediately fixed with spray fixative or fixed in 95% alcohol for 10 minutes. Allow the slides to completely air dry before shipping.</li> <li>• Transport <b>ambient</b>.</li> </ul>
Vaginal	<ul style="list-style-type: none"> <li>• Scrape the desired region of the vaginal mucosa with the spatula. Withdraw the spatula and spread the material quickly and evenly onto the glass slide. The smear(s) should be immediately fixed with spray fixative or fixed in 95% alcohol for 10 minutes. Allow the slides to completely air dry before shipping.</li> <li>• Scrape additional areas of the vagina that appear abnormal and spread and fix as noted above.</li> <li>• Transport <b>ambient</b>.</li> </ul>
Vaginal, DES exposure	<ul style="list-style-type: none"> <li>• For evaluation of potential changes associated with in utero DES exposure.</li> <li>• After visualization of the upper one-third of the vagina is accomplished, use the spatula to scrape the upper one-third of either lateral vaginal wall. Withdraw the spatula and spread the material quickly and evenly onto a slide clearly marked "LVW."</li> <li>• The smear(s) should be immediately fixed with spray fixative or fixed in 95% alcohol for 10 minutes. Allow the slides to completely air dry before shipping.</li> <li>• Scrape additional areas of the vagina that appear abnormal. Label the slides accordingly and spread and fix as noted above.</li> <li>• Transport <b>ambient</b>.</li> </ul>
ThinPrep Pap test broom (kit #12587)	<ul style="list-style-type: none"> <li>• Insert the central bristles of the broom into the endocervical canal deep enough to allow the shorter bristles to fully contact the ectocervix. Push gently and rotate the broom in a clockwise direction five times. Rinse the broom-type collection device as quickly as possible into the PreservCyt solution vial by pushing the broom into the bottom of the vial 10 times, forcing the bristles apart.</li> <li>• As a final step, swirl the collection device vigorously to further release material. Discard the collection device. Tighten the cap so the torque line on the cap passes the torque line on the vial.</li> <li>• Transport <b>ambient</b>.</li> </ul>

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Specimen	Collection Procedure
ThinPrep Pap test brush/spatula (kit #40624)	<ul style="list-style-type: none"><li>• Obtain an adequate sampling from the ectocervix using a plastic spatula. Rinse the spatula as quickly as possible into the PreservCyt solution vial by swirling the spatula vigorously in the vial 10 times. Discard the spatula. Insert the brush into the cervix until only the bottommost fibers are exposed. Slowly rotate or turn one-half turn in one direction. <b>DO NOT OVERROTATE.</b></li><li>• Rinse the brush as quickly as possible in the PreservCyt solution by rotating the device in the solution while pushing against the vial wall. Swirl the brush vigorously to further release material. Discard the brush. Tighten the cap so the torque line on the cap passes the torque line on the vial.</li><li>• Transport <b>ambient</b>.</li></ul>

## Cytopathology Specimen Collection

### PULMONARY SPECIMENS

The adequacy of a sputum specimen is determined primarily by the presence of alveolar macrophages, which indicate that the specimen obtained is a deep cough specimen producing material from the lower airways. In addition, the specimen should not be obscured by oral or upper airway contaminants. Adequate bronchial brushing and washing specimens should contain large numbers of well-preserved bronchial lining cells, with as little contaminating oral and upper airway material as possible.

Specimen	Collection Procedure
Bronchial brushings	<ul style="list-style-type: none"> <li>• Bronchoscopically directed brushing of the identified lesion: Using standard bronchoscopy technique, identify the lesion in question and obtain a brushing sample of the lesion. Upon withdrawing the brush, agitate the brush vigorously in a 5–10 mL vial of sterile saline or cytology fixative. <b>DO NOT APPLY THE BRUSH DIRECTLY TO SLIDES.</b> If possible, detach the brush and leave it in the vial.</li> <li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add 50 mL of cytology fixative.</li> </ul>
Bronchial washings	<ul style="list-style-type: none"> <li>• Bronchoscopically obtained washing (10 mL is preferred) of the bronchi in the region of the suspected lesion. Using standard bronchoscopy technique, lavage the area of the bronchus to be sampled. Collect the wash in a clean container.</li> <li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add 50 mL of cytology fixative.</li> </ul>
Bronchoalveolar lavage	<ul style="list-style-type: none"> <li>• Using standard bronchoscopy BAL technique, lavage the lung area in question with sterile, normal saline (or other physiologic solution). Collect the lavage specimen in a clean specimen container.</li> <li>• BAL specimens sent for culture <b>MUST</b> 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.</li> <li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add 50 mL of cytology fixative.</li> </ul>
Sputum	<ul style="list-style-type: none"> <li>• When clinically feasible, obtain 5 mL of sputum (about one teaspoon) or more, if possible, from a deep cough specimen. The optimum time for specimen collection is within 15–30 minutes of 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.</li> <li>• Collect the specimen in the container, attempting to obtain at least one teaspoon of sputum. Specimen should be a deep cough specimen and not saliva. Saliva is of no diagnostic value. Greater diagnostic yield may be obtained if specimens are submitted on three to five successive mornings.</li> <li>• 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.</li> <li>• The Cytopathology Laboratory will not accept induced or any other sputum samples for the cytologic detection of <i>Pneumocystis jirovecii</i>, fungi, or acid-fast bacilli.</li> <li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add 50 mL of cytology fixative.</li> </ul>
Post-bronchoscopy sputum	<ul style="list-style-type: none"> <li>• Collect one good, deep cough specimen at any time during the 24-hour period following bronchoscopy, as outlined above.</li> <li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add 50 mL of cytology fixative.</li> </ul>

## Cytopathology Specimen Collection

### SKIN SCRAPING SPECIMENS

Detection and characterization of inflammatory/infectious processes of the skin, especially herpetic infections (Tzanck smear).

Specimen	Collection Procedure
Skin lesion, usually a vesicle	<ul style="list-style-type: none"><li>Place the labeled slide in a container filled with 95% alcohol so the slides are completely covered. Gently scrape the area of abnormality. If the abnormality is a vesicle, remove the covering and scrape both at the base of the vesicle and around the rim. Remove one of the slides from the fixative. Quickly and evenly smear the collected material on one of the glass slides. Immediately resubmerge the slide in fixative.</li><li>Repeat the process with the second slide, if necessary, for better diagnostic yield. Repeat the process for additional areas if necessary. After collection, leave the slides in the alcohol for 10 minutes. Allow the slides to completely air dry before shipping.</li><li>Transport <b>ambient</b>.</li></ul>

### UROLOGIC SPECIMENS

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.

Specimen	Collection Procedure
Voided/ catheterized urine	<ul style="list-style-type: none"><li>For purposes of obtaining the greatest yield of diagnostic material, a second-morning 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.</li><li>If the patient must be catheterized to obtain the specimen, note this on the submission, as catheterization can lead to artifacts that may be misinterpreted if it is not known that the specimen was catheterized.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, the specimen should be submitted in cytology fixative.</li></ul>

Other urologic specimens obtained cystoscopically (i.e., bladder washing, renal pelvis washing/brushing, ureteral washing/brushing, or urethral washing)

Washing	<ul style="list-style-type: none"><li>Using standard cystoscopy technique, obtain washing specimens carefully, denoting specific specimen sites for each specimen.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, the specimen should be submitted in cytology fixative.</li></ul>
Brushing	<ul style="list-style-type: none"><li>Using standard cystoscopy technique, identify the lesion in question and obtain a brushing sample of the lesion.</li><li>Brush the edges of an ulcer, as well as the floor, to obtain diagnostic material. Upon withdrawing the brush, agitate the brush vigorously in a 5–10 mL vial of saline or cytology fixative. <b>DO NOT APPLY THE BRUSH DIRECTLY TO SLIDES</b>. If possible, detach the brush and leave it in the vial.</li><li>Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than four hours, the specimen should be submitted in cytology fixative.</li></ul>

## Cytopathology Specimen Collection

### BLADDER CANCER FISH SPECIMENS

The UroVysion Bladder Cancer Kit (UroVysion kit) is designed to detect aneuploidy for chromosomes 3, 7, and 17, as well as loss of the 9p21 locus, via fluorescence in situ hybridization (FISH) in urine specimens from persons with hematuria suspected of having bladder cancer. Results from the UroVysion kit are intended for use—in conjunction with and not in lieu of current standard diagnostic procedures—as an aid for initial diagnosis of bladder carcinoma in patients with hematuria and subsequent monitoring for tumor recurrence in patients previously diagnosed with bladder cancer.

Specimen	Collection Procedure
Collection kit	<ul style="list-style-type: none"><li>• ThinPrep UroCyt Urine Collection Kit (UroVysion FISH Collection Kit #41440), PreservCyt, Saccomanno fixative</li><li>• Transport <b>refrigerated</b>.</li></ul>
Voided urine	<ul style="list-style-type: none"><li>• Collect minimum of 35 mL voided urine. For purposes of obtaining the greatest yield of diagnostic material, a second-morning, clean-catch voided urine specimen should be collected if possible.</li><li>• Collect the urine in the blue-capped specimen collection cup. If urine exceeds 60 mL, pour off the excess into a second specimen collection cup. Carefully pour the entire contents of the PreservCyt solution into the specimen collection cup(s) containing urine. Tightly secure the blue cap on the specimen collection cup. Keep turning until you hear the audible click. Alternatively, if you do not have a collection kit, urine can be collected and mixed two parts urine to one part PreservCyt or Saccomanno fixative.</li><li>• Transport <b>refrigerated</b>.</li></ul>

### VITREOUS FLUID SPECIMENS

In cytology, vitreous fluid is most commonly evaluated to detect and characterize malignancy that may have gained access to the eye. Vitreous fluid specimens require special collection procedures under the direction of an ophthalmologist. In addition, due to lack of nutrients in this fluid, cells may rapidly degenerate, rendering morphologic evaluation less than optimal if adequate care is not taken.

Specimen	Collection Procedure
Vitreous fluid	<ul style="list-style-type: none"><li>• Using standard vitreous collection procedures, collect an appropriate amount of vitreous fluid. There is no minimum amount, but collect as much as possible.</li><li>• Transport <b>refrigerated</b>. If transport of the specimen will be delayed more than 24 hours, add an equal volume of cytology fixative.</li><li>• Specimens submitted for immunocytochemical testing must be submitted fresh.</li></ul>