Cytology Specimen Collection

Pocono Medical Center's Cytology / Pathology laboratory is dedicated in processing all cytology specimen with accurate, reliable results. In order to have an adequate sample, it is important to collect the cytology (non gynecological or non Pap smears) specimen correctly. This will guarantee and provide an adequate number of diagnostic cells in the specimen.

The Cytology / Pathology laboratory recommends that specimen(s) being prepared in the clinician's office (FNAB or Gastrointestinal Tract) should have the presence of a Cytotechnologist or Pathologist for rapid assessment. This will ensure that the specimen is adequate for evaluation and the patient will not have to redo the procedure again.

Cytology Specimen Requisition is required to accompany all specimens when delivering to the laboratory. There is required information needed when completing a requisition form. This information can be found on the *Cytology Specimen Requisition* page.

There are specific guidelines that are recommended by the, *American Society of Cytopathology, American Society of Clinical Pathologist (ASCP)* and *American Society of Cytotechnologist* in collecting cytology specimen for the following specimens:

- Respiratory
  - Sputum
  - Bronchoalveolar Lavage
  - Bronchial Brushings / Washings
- Fluids
  - Serous (Pleural, Peritoneal, Pericardial)
  - Body Cavity Washings
  - Nipple Discharge
- Urine
- Cerebral Spinal Fluid
- Gastrointestinal Tract
  - Oral / Anal
  - Esophagus, Stomach, Small Bowel, Colon, Common Bile Duct
- Skin
- Fine Needle Aspiration Biopsy
  - Lymph Node, Thyroid, Liver, Breast, Soft Tissue, Bone, Kidney, ect…
    - Palpable (superficial sites) and deep localized organs (CT & ultrasound guided)

Each will have specific instructions to follow when collecting the specimen. Any questions should be directed to the Pocono Medical Center's Cytology / Pathology laboratory. A Pathologist is always available to answer any questions

Cytology Reports are guaranteed in 2 business days. The reports are generally sent out 1 business day after receiving the specimen. However, if any special staining or technique is required, the report may take longer than 2 business days. Clinicians will be notified of any delays by a phone call and/or letter.

Respiratory

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Sputum

To obtain cells from an upper respiratory tract lesion, this technique is recommended. Sputum is also useful in the diagnosis of fungal, viral, and parasitic infections. Unsatisfactory sputum will be reported out if no alveolar macrophages are present or no diagnostic cells are present. To increase adequacy, sputum specimens should be obtained by an early morning, deep cough for 3 – 5 consecutive days.

DIRECTIONS

Place the sputum specimen directly in a clean container. Do not add any preservatives. Bring to the laboratory immediately. If unable to bring to laboratory immediately, place in refrigerator until it can be brought to the laboratory.

Bronchoalveolar Lavage (BAL)

To obtain cells from lower respiratory tract lesion, this technique is recommended. BAL specimens are obtained by wedging a subsegmental bronchus with a bronchoscope and lavaging the area with saline or balance salt solution.

This technique is most useful in diagnosing opportunistic infections in immunocompromised patients. This can also be useful in diagnosing interstitial lung disease, granulomatous disease, including sarcoidosis, hypersensitivity pneumonia, drug induced pulmonary toxicity, asbestosis, pulmonary hemorrhage, and neoplasm (benign and malignant). BAL can also evaluate transplant rejection.

DIRECTIONS

Place the specimen in a clean container. Do not add any additional preservatives. Bring specimen to the laboratory immediately. If unable to bring immediately, place in refrigerator until it is brought to the laboratory.

Bronchial Brushings / Washings

This is most warranted when abnormal sputum has recently been reported or a lesion is suspicious.

DIRECTIONS

Brushings – Place specimens onto two slides, immediately submerge one in 95% alcohol and air-dry the other slide. Obtaining more slides is recommended. Put equal amount of slides in 95% alcohol immediately and air-dry the others. Any viable tissue fragments should be placed in 10% formalin to be processed as tissue.

Washings – Place the specimen in a clean container and following the BAL directions for additional information. Send specimen to laboratory immediately. If unable to bring immediately, place in refrigerator until it is brought to the laboratory.

Fluids

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Serous (Pleural, Peritoneal {ascites}, Pericardial)

Fluid specimens are recommended for cytology when metastasis is suspected or when there is an increase fluid accumulation of unknown origin. Direct drainage is most favorable specimen. Addition of saline or preservatives to the fluid is discouraged.

NOTE: If clinically suspicious for lymphoproliferative disorder (leukemia/lymphoma), it is recommended that 2 – 5 cc of fluid be placed in RPMI. Contact laboratory for vial of RPMI and any additional information.

DIRECTIONS

Place fluid in a clean container and bring specimen to the laboratory immediately. If unable to bring immediately, place in refrigerator until it is brought to the laboratory.

Body Cavity Washings

When washing out a body cavity, saline or a balance salt solution is recommended. Follow the Serous directions.

Nipple Discharge

Certain clinical information is essential when sending this particular specimen. Please note if the discharge is from left or right breast, or if it is bilateral or unilateral, the consistency and color of the discharge (bloody, serous, thick, etc).

DIRECTIONS

"Pull Apart" technique is recommended for nipple discharge. The following diagram (F 1a) shows how "pull apart" is preformed.

- Place specimen in the center of one slide, with label up. Label should include last name, first name, DOB. Always need to markers of ID.
- Invert another slide over the specimen
- As the specimen spreads gently, pull the two slides apart horizontally
- Submerge both slides in 95% alcohol immediately, before air-drying occurs
- Any additional slides made should follow the same directions
- Send the specimen in the 95% alcohol to laboratory immediately

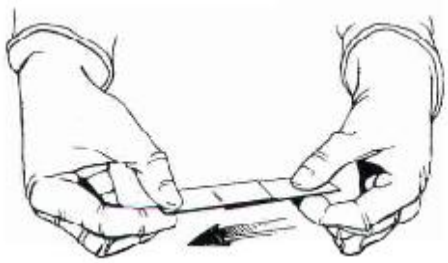

Figure 1a

NOTE: If additional specimen is made from a different breast site or other breast, a new *Cytology Specimen Requisition* must be submitted separately. ***All slides must be labeled with patient's full name and body site or the specimen will be rejected.***

Urine Collection for Cytology

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Urine cytology is useful in diagnosing diseases that involve the mucosal surface. Knowing the type of exfoliated urinary tract specimen is essential. Therefore, clinical information should include whether the specimen is voided, catheterization or a bladder washing. The "clean catch" voided urine is recommended for screening purposes. But if suspecting bladder malignancy, bladder washing is preferred. It is important that no alcohol or any other preservatives are added to the specimen. Fresh is the most desirable specimen.

Voided Urine

Voided urine should be obtained 3-4 hours after the patient has last urinated. Early morning urines specimens are to be avoided, because stagnant cells in the low pH and hypertonic environment undergo degenerative changes, making cytologic assessment difficult. The minimum amount of urine necessary to ensure adequate cellularity is unknown, but it may be as high as 25-100ml.

In women, voided urine may be contaminated by vaginal cells, but in most instances this does not compromise a diagnosis. Still, to help ensure the adequacy of the sample, a mid-stream (clean catch) specimen is recommended.

VOIDED URINE COLLECTION:

- Thoroughly wash hands with soap and water and dry them on a clean towel.
- Open container and towelettes. DO NOT COLLECT FROM BEDPAN.
- Clean urethral area carefully before collecting sample, following the guidelines below for male or female patients:

Female Patients:

- With the forefingers of one hand, spread the outer folds of the labia and keep them apart until the urine has been collected.
- With the other hand, firmly wipe the first towelette with one stroke from front to back on one side of the fold and discard.
- With the second towelette, wipe the other side from front to back with one stroke and discard.
- With the third towelette, wipe the center area from front to back with one stroke and discard.
- Collect midstream urine in a container.
- Place the lid on the container securely.
- Label the sample with the patient name. Refrigerate if the sample will not be delivered within one hour.

Male Patients:

- Clean the urethral opening of the penis, retracting the foreskin if uncircumcised; carefully wipe from front to back with the cleaning materials provided. Use a cleaning pad only once and discard.
- Allow some of the first part of the urine to pass directly into toilet or bedpan.
- Pass urine into the sterile container until it is no more than half full.
- Place the lid on the container securely.
- Label the sample with the patient name. Refrigerate if the sample will not be delivered to the laboratory within one hour.

Catheterized Urine

Specimens obtained by catheterization have disadvantages for both the patient and the cytologist. First, catheterization carries a risk of urinary tract infection. Second, urine collected from an indwelling catheter is often a pooled specimen that has been at room temperature for many hours and cellular degeneration can be pronounced. Third, the tip of the catheter often scrapes off benign urothelial cell clusters, which mimic the appearance of a papillary neoplasm.

CATHETERIZED SAMPLES: IN/OUT CATHETERIZATION

Male Patients:

- Clean the urethral area carefully.
- Clean the urethral opening of the penis, retracting the foreskin if uncircumcised, carefully from front to back.

Female Patients:

- Clean the urethral area carefully
- Spread open the labial folds. Clean the vaginal area from front to back
- Pass the catheter into the bladder using a sterile technique.
- Discard the first 15-20 ml of urine that passes through the mouth of the catheter.
- Collect the urine in a sterile sample cup.
- Place the lid on the container securely.
- Label the sample with the patient name. Refrigerate if the sample will not be delivered to the lab within one hour.

CATHETERIZED SAMPLES: INDWELLING CATHETERS

Do not use urine from the bedside catheter bag.

- Do not disconnect the catheter from the bag to collect.
- Clean the sample port carefully with a 70% alcohol wipe.
- Insert a sterile 21 gauge needle with a syringe into the sample port to aspirate sample.
- Transfer the urine into a sterile cup without touching the rim or inside surfaces of the container.
- Place the lid on the container securely.
- Label the sample with the patient name. Refrigerate the sample if will not be delivered to the lab within one hour.

Bladder Washings

Bladder washings are obtained through a catheter by irrigating the bladder with five to ten pulses of 50ml of sterile normal saline, which produce a cellular suspension of freshly exfoliated epithelial cells. This specimen is collected before any biopsy sampling. The chief advantages of bladder washings over voided urine are better cellular preservation, greater cellularity and less chance of contamination by background debris. Place specimen in clean container and bring to laboratory immediately. If unable to bring immediately, place in refrigerator until it is brought to the laboratory.

Upper Tract Washings and Brushings

When an upper urinary tract malignancy is suspected directed washings or brushings of a ureter or renal pelvis can be performed. Although brushings obtained by direct visualization using endoscope were introduced in 1973, these are rarely obtained. Nevertheless, the sensitivity and specificity of this method compares favorably with exfoliative (voided, catheterized, irrigation) cytology.

Cerebral Spinal Fluid

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Obtaining Cerebral Spinal Fluid (CSF) is invasive and painful. Therefore, obtaining the specimen correctly and submitting the correct information is imperative. Submitting accurate information is vital in reaching a valid diagnosis. The following information should be included when CSF is submitted to the laboratory:

- Source of CSF *(most important)*
  - Lumbar space, ventricular shunt, cisterna, parenchymal cyst
- Clinical impression
- Symptoms and physical findings
- Recent results of tests that involve CNS
- Previous therapy including intrathecal medication and irradiation to brain or cord
- Surgical history
  - Presence of insertion of shunts, FNA, brain biopsy, cyst drainage
- Previous tap, invasive procedures, surgical interventions – all in which will provoke reactive cellular responses

DIRECTIONS

CSF should be submitted to the laboratory within 30 minutes after the procedure for optimal processing of the specimen. However, place in refrigerator if unable to bring specimen to laboratory within 30 minutes, but bring ASAP. **Do not add any preservative fluid to the specimen!**

NOTE: If clinically suspicious for lymphoproliferative disorder (leukemia/lymphoma), it is recommended that 2 – 5 cc of fluid be placed in RPMI. Contact the laboratory for a vial of RPMI and for any additional information.

Gastrointestinal Tract

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Gastrointestinal tract specimens range from oral all the way down to anal. There are useful techniques provided to obtain an optimal specimen collection. The use of endoscopic retrograde cholangiopancreatography (ERCP) guided is useful in retrieving samples from the biliary tract or pancreatic head.

Oral / Anal Lesion

DIRECTIONS

Direct sampling using a wooden or plastic spatula, tongue blade or brush is recommended. Smear the sample onto a slide and drop slides in 95% alcohol. The sampling tool can also be swished into saline or 95% alcohol. Suction is also acceptable. Place the specimen in saline or 95% alcohol containers. **Do not allow the slides to air dry.**

All other GI by endoscopy (esophagus, stomach, intestines, colon)

DIRECTIONS

It is recommended that a Cytotechnologist is present to assist in properly collecting and preparing the specimen. However, if unable to have Cytotechnologist present, the specimen should be placed on a slide and the "Pull Apart" technique (F 1b) be preformed following these directions:

- Place specimen in the center of one slide, with label up. Label should include last name, first name and DOB. Two markers of ID must be on the slide.
- Invert another slide over the specimen
- As the specimen spreads gently, pull the two slides apart horizontally
- Place both slides in 95% alcohol immediately, before air-drying occurs
- Any additional slides made should follow the same directions
- Send the specimen in the 95% alcohol to laboratory immediately

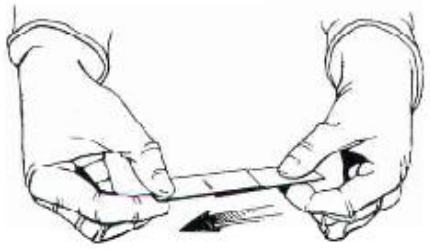

Figure 1b

ESOPHAGEAL BRUSHINGS recommends the "Touch Prep" technique.

DIRECTION

Take the brush and gently touch the upper portion of the slide three times. Then roll the brush 360° at the lower portion of the slide. Make as many slides as possible and drop half of the number of slides in 95% alcohol and air-dry the other half.

Also placing the entire specimen in saline or 95% alcohol containers are acceptable. Send the specimen to the laboratory immediately or refrigerate until able to bring specimen to laboratory.

NOTE: All slides must be labeled with patient's full name or the specimen will be rejected

Skin

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Making slides from a skin lesion is relatively simple and painless.

DIRECTIONS

Scrape the lesion with a wooden or a plastic spatula. Smear the specimen onto the slides. Make sure the specimen is not too thick (unable to screen thick smears) or not too thin (may air-dry the specimen). Drop the slides into 95% alcohol as soon as possible. Obtain as much sample from the specimen and make as many slides possible. **Do not allow the slides to air dry.** If a different lesion is scraped, a separate requisition form is required. Please refer to the *Cytology Specimen Requisition* for directions when more than two sites are sampled.

Placing the entire specimen in a container of saline or 95% alcohol is a also acceptable. Forward the specimen to the laboratory immediately or refrigerate until able to transport the specimen to the laboratory.

Fine Needle Aspiration Biopsy

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Fine Needle Aspiration Biopsy (FNAB) can be defined as the removal of a sample of cells for diagnostic purposes. FNAB are preformed on palpable organs (breast, thyroid, lymph nodes, soft tissue) or deep-seeded organs (liver, kidney, ect) using a fine needle. Deep-seeded FNAB is obtained through CT Scan or Ultrasound.

There are different techniques in aspirating cells from a mass. Any questions about how to aspirate a mass should be directed to the Pathologist for assistance.

DIRECTIONS

To ensure optimal number of adequate cells on palpable organ or deep-seeded organ, the presence of a Cytopathologist/Cytotechnologist is recommended for assistance.

However, if neither Cytopathologist or Cytotechnologist is assisting, follow the fluids section for breast mass or rinse the needle in 95% alcohol containers. Rinsing the needle in 95% alcohol is a good practice in recovering of cells left in the needle. If additional passes are made in the same location, rinsing the needle in the same 95% alcohol container is acceptable. If another site is needled, then a new container and separate *Cytology Specimen Requisition* form is REQUIRED. Bring the specimen to the laboratory immediately. If unable to bring immediately, place specimen in refrigerator until it is brought to laboratory.

NOTE: For needling lymph nodes and clinically suspicious for lymphoproliferative disorder (leukemia/lymphoma), it is recommended that 2 – 5 cc of fluid be placed in RPMI. Contact the laboratory for a vial of RPMI and for any additional information.