On completion of this section, the learner will be able to:
1. Identify how Pap test results are interpreted and the reasons for normal and abnormal results.
2. Describe the appropriate follow-up for each Pap result using the CervixCheck Screening Guidelines.

The Bethesda System

The terminology for reporting cervical cytology is based on The Bethesda System which is the internationally recognized reporting standard.

Specimen Adequacy

The two categories of specimen adequacy are:
- Unsatisfactory for Evaluation
- Satisfactory for Evaluation

Unsatisfactory for Evaluation

Unsatisfactory for Evaluation indicates that:
- The specimen was processed and examined but was unsatisfactory for evaluation because of obscuring factors (excessive RBCs, WBCs or mucous) or insufficient epithelial cells or cytolysis.

The reason the Pap test was considered Unsatisfactory for Evaluation will be indicated in the report.

Unsatisfactory Pap tests are mostly due to:
- cervical sampling errors, or
- specimen collection issues (refer to chapter 9 to review Pap test sampling techniques).
The following table identifies and describes each reason for Unsatisfactory Pap test results:

<table>
<thead>
<tr>
<th>Unsatisfactory due to:</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainly endocervical cells only</td>
<td>Only cells from the endocervix are visible.</td>
</tr>
<tr>
<td>Excessively thick cell preparation for adequate cytological evaluation</td>
<td>The sample was likely not spread uniformly across the slide (where conventional cytology is in use), such that the sample appears lumped together or “thick.”</td>
</tr>
<tr>
<td>Acellularity</td>
<td>Not enough cells were collected to interpret the sample.</td>
</tr>
<tr>
<td>Insufficient epithelial cells</td>
<td>Not enough cells were collected to interpret the sample.</td>
</tr>
<tr>
<td>Obscuring inflammation</td>
<td>There is a presence of infection and/or necrosis (dying cells, usually due to disease) in the sample.</td>
</tr>
<tr>
<td>Obscuring blood</td>
<td>The presence of blood in the sample makes it inadequate for interpretation.</td>
</tr>
<tr>
<td>Lubricant or other foreign material</td>
<td>Other foreign material, i.e. lubricant exists on the sample making it difficult to interpret.</td>
</tr>
<tr>
<td>Mechanical distortion</td>
<td>The sample is inadequate for interpretation due to broken down cells (i.e. from too much pressure applying the sample to the slide). This reason is typically only seen where conventional cytology has been used.</td>
</tr>
</tbody>
</table>

Factors associated with the client may also produce Unsatisfactory Pap tests results. These include:
- Intercourse within 24 hours of Pap test
- Douching or vaginal medication used 24 hours before Pap test
- Menses
- Infection
Satisfactory for Evaluation
The diagnostic categories are:
- Negative for Intraepithelial Lesion or Malignancy
- Epithelial Cell Abnormality
- Other

Negative for Intraepithelial Lesion or Malignancy
Where there is no cellular evidence of neoplasia, Pap tests are interpreted as Negative for Intraepithelial Lesion or Malignancy. Clients with negative results can typically continue with routine screening.

Epithelial Cell Abnormality
Pap tests interpreted as Epithelial Cell Abnormality include both those that:
- represent cervical carcinoma, and
- have changes considered to indicate increased risk of cervical carcinoma.

Changes indicative of increased risk for cervical carcinoma are reported as:

**Squamous Cell**
- Atypical squamous cells (ASC)
  - of undetermined significance (ASC-US)
  - cannot exclude HSIL (ASC-H)
- Low-Grade Squamous Intraepithelial Lesion (LSIL)
- High-Grade Squamous Intraepithelial Lesion (HSIL)
- Squamous cell carcinoma

**Glandular Cell**
- Atypical
  - glandular cells (AGC)
  - endocervical cells
  - endometrial cells
- Endocervical adenocarcinoma in Situ (AIS)
- Adenocarcinoma
  - Endocervical
  - Endometrial
  - Extrauterine
  - Not otherwise specified (NOS)
Management of Cytology Results
The following table shows CervixCheck recommendations for follow-up of all Pap test results:

<table>
<thead>
<tr>
<th>CYTOMETRY RESULTS</th>
<th>MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative</td>
<td>Routine screening every 3 years</td>
</tr>
<tr>
<td></td>
<td>The absence of transformation zone is not a reason to repeat a Pap test earlier than the recommended interval</td>
</tr>
<tr>
<td>Unsatisfactory</td>
<td>Repeat Pap test in 3 months</td>
</tr>
<tr>
<td></td>
<td>If persistent (2 consecutive, or 2 within 12 months) unsatisfactory due to “obscuring blood” or “obscuring inflammation,” refer for colposcopy</td>
</tr>
<tr>
<td>ASC-US Atypical squamous cells of undetermined significance</td>
<td>Repeat Pap test in 6 months</td>
</tr>
<tr>
<td></td>
<td>Negative – Repeat Pap test in 6 months</td>
</tr>
<tr>
<td></td>
<td>Abnormal – Colposcopy</td>
</tr>
<tr>
<td>LSIL Low-grade squamous intraepithelial lesion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Negative – Routine screening</td>
</tr>
<tr>
<td>ASC-H Atypical squamous cells, cannot rule out high-grade</td>
<td>Refer for colposcopy</td>
</tr>
<tr>
<td>HSIL High-grade squamous intraepithelial lesion</td>
<td>Refer for colposcopy</td>
</tr>
<tr>
<td>AGC Atypical glandular cells</td>
<td>Refer for colposcopy and endocervical curettage</td>
</tr>
<tr>
<td></td>
<td>• If woman is ≥ 35 years of age or has abnormal bleeding, refer for endometrial biopsy</td>
</tr>
<tr>
<td>Atypical endocervical cells</td>
<td>Refer for colposcopy</td>
</tr>
<tr>
<td>Atypical endometrial cells</td>
<td>Refer for endometrial biopsy</td>
</tr>
<tr>
<td>Benign endometrial cells</td>
<td>&lt; 45 years of age: In the absence of abnormal bleeding, woman can continue routine screening</td>
</tr>
<tr>
<td></td>
<td>≥ 45 years of age: If woman is postmenopausal and/or has abnormal bleeding, refer for endometrial biopsy</td>
</tr>
<tr>
<td>AIS (Adenocarcinoma in situ)</td>
<td>Refer for colposcopy and endocervical curettage</td>
</tr>
<tr>
<td>Squamous carcinoma, adenocarcinoma, other malignant neoplasms</td>
<td>Refer for colposcopy and oncology</td>
</tr>
<tr>
<td>Absence of transformation zone cells</td>
<td>Screen according to cytology result. The absence of transformation zone is not a reason to repeat a Pap test earlier than the recommended interval</td>
</tr>
<tr>
<td>Rejected specimen</td>
<td>Repeat Pap test in 3 months</td>
</tr>
<tr>
<td></td>
<td>Inform woman repeat is not due to abnormal cytology</td>
</tr>
</tbody>
</table>
Other Results

Absence of Transformation Zone Cells

The decision to repeat a Pap test should be based on the cytology diagnosis and not the presence or absence of transformation zone cells. Screen according to the cytology result.

Important Information

Sufficient sampling of the transformation zone (TZ) include an adequate number of squamous and endocervical cells (EC) or metaplastic cells or dysplastic cells.

Lack of TZ/EC on a Pap test is often seen in postmenopausal and pregnant clients. In the absence of these clinical scenarios, the lack of TZ/EC may indicate improper screening technique.

Studies show that dysplastic/SIL cells are more likely to be present on Pap tests where TZ/EC are present. However, retrospective cohort studies have shown that women with Pap tests lacking TZ/EC are not more likely to have squamous lesions on follow-up than are women with EC. Finally, retrospective case-control studies have failed to show an association between false negative interpretations of Pap tests and lack of TZ/EC. Cross-sectional studies have consistently demonstrated a higher percentage of cytological abnormalities in conventional Pap tests with evidence of TZ sampling than those without. Longitudinal studies have not shown an increased risk of high-grade lesions or cancer in women with Pap tests lacking TZ sampling.

Clients with Pap test results that are “Negative for Intraepithelial Lesion or Malignancy”, and report an “absence of transformation zone cells,” do not need a repeat Pap test - the client may remain in routine screening unless:

- They have had a previous Pap test result that is ≥High-Grade and does not have three subsequent negative Pap tests, with at least one that has TZ/EC,
- They have ever had a previous Pap test result that is AGC,
- They have had a positive HPV test within 12 months,
- The HCP cannot see the entire cervix upon visual inspection,
- They are immunocompromised, and/or
They have an insufficient screening history (lack of routine screening every 3 years).

A Pap test that lacks TZ/EC in clients who have persistent postcoital bleeding (PCB) or intermenstrual bleeding (IMB) should be referred to colposcopy or gynecology.

**Rejected Specimen**

A specimen may be rejected for one of the following reasons:

- The specimen is improperly labeled
- The specimen is not labeled with sufficient personal identification
- Discrepancy of information between the specimen and the requisition
- Where conventional cytology is used, the slide is broken beyond repair
- The specimen is received without accompanying requisition

**Limitations of Pap Test Results**

A false negative result occurs when the Pap test fails to detect an abnormality that is present on the cervix. False negatives occur because either:

- abnormal cells are not present on the slide due to limitations of cervical sampling and Pap test preparation, or
- the laboratory did not identify abnormal cells in the Pap test.

Repeat screening at regular intervals is necessary to provide adequate lifetime protection from cervical cancer. Most sexually active clients should be screened every three years.
Talking to Clients about Abnormal Pap Test Results

Abnormal Pap test results are common. One in four women will have an abnormal Pap test result in her lifetime. The psychological impact of having an abnormal result varies between clients. How a HCP communicates an abnormal result can impact the client’s perspective and subsequent psychological response. Below are some suggestions for how to communicate abnormal Pap test results:

• Inform the client that their Pap test result is abnormal, meaning that the Pap test has detected abnormal cell changes on the cervix. Abnormal cell changes are caused by the HPV virus.

• In rare circumstances, and often over a long period of time, abnormal changes caused by HPV can become cancerous.

• Reassure the client that their abnormal result is most likely not cancer.

• Normalize HPV. Reassure the client that HPV is very common. Three out of four people will have at least one HPV infection in their lifetime. Most infections will disappear on their own.

• Use “Pap tests, the HPV vaccine and your results” booklet (available at getcheckedmanitoba.ca/resources) to help explain the meaning of the result and the recommended follow-up.

• Ensure the client understands the information you have provided her and clarify any misunderstanding.

• Remind the client that most clients who have abnormal Pap test results and who have follow-up tests and/or treatment will never get cancer of the cancer.

• Address any fears/barriers that may prevent them from following up on the recommended course of action.

• Clients can contact CervixCheck, CancerCare Manitoba for more information.
**Colposcopy**

Clients with high-grade and persistent low grade/unsatisfactory Pap tests results are referred to colposcopy. Colposcopy is a technology that has been used for several decades to identify sub-clinical abnormalities of the cervix. The cervix is magnified through a binocular scope with a high intensity light. This allows for the identification of abnormalities based upon:

- Epithelial density (white epithelium)
- Vascular patterns (punctuation, etc.)

Using these parameters, an area of abnormality can be identified in order to direct a tissue biopsy by one of the following methods:

- Laser surgery (uses an intense, narrow beam of light to remove abnormal cells)
- LEEP (loop electro surgical excision procedure; an electrical wire loop is inserted into the vagina where abnormal tissue is removed)
- Cone biopsy (the removal of a cone-shaped piece of tissue)

To see colposcopy images, as well as carcinoma and other abnormalities of the cervix, please see the Pap Test Learning Module video presentation on “At your cervix: What’s normal anyways?”

Terminology for cervical histopathology specimens has changed over time. Squamous abnormalities have generally been reported using terms including “dysplasia”, “cervical intraepithelial neoplasia” (CIN) and “squamous intraepithelial lesions”. In 2014, the Pan-Canadian Cervical Screening Network (Canadian Partnership Against Cancer) reported on and published Canadian consensus statements for reporting histopathology specimens from the cervix and vagina. Manitoba cytology labs have adopted these consensus statements. The following table provides the current cervical histopathology nomenclature with comparison to previous reporting terminology.
### Cervical histopathology nomenclature correlations

<table>
<thead>
<tr>
<th>Dysplasia terminology</th>
<th>CIN terminology</th>
<th>2014 Consensus Statements (current)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Normal</td>
<td>Negative</td>
</tr>
<tr>
<td>Mild dysplasia</td>
<td>CIN 1</td>
<td>Low-grade squamous intraepithelial lesion (LSIL)</td>
</tr>
<tr>
<td>Moderate dysplasia</td>
<td>CIN 2</td>
<td>High-grade squamous intraepithelial lesion (HSIL)</td>
</tr>
<tr>
<td>Severe dysplasia</td>
<td>CIN 3</td>
<td></td>
</tr>
<tr>
<td>Carcinoma in-situ</td>
<td>CIN 3</td>
<td></td>
</tr>
<tr>
<td>Dysplasia NOS</td>
<td>CIN NOS</td>
<td>Squamous intraepithelial lesion (SIL), Ungraded</td>
</tr>
<tr>
<td>Adenocarcinoma in-situ (AIS)</td>
<td></td>
<td>High-grade adenocarcinoma intraepithelial lesion</td>
</tr>
<tr>
<td>Invasive carcinoma</td>
<td>Invasive carcinoma</td>
<td>Superficially Invasive Squamous Cell Carcinoma (SISCCA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Invasion</td>
</tr>
</tbody>
</table>

**Remember:** colposcopic impression refers to the colposcopist’s visual estimate and is not the biopsy result. The **biopsy** result will provide the diagnosis upon which to base follow-up management.
EXAMPLE 1:

**Colposcopy:**

- **Impression:** HSIL CIN 2
- **HSIL CIN 3**
- **Biopsy:** Low-Grade Squamous Intraepithelial Lesion (LSIL)
- **ECC:** Endocervical Curettage
- **Biopsy Definitely Not Done**
- **Repeat Colp:** Follow-up in 6 months

**INTERPRETATION:**

While the **impression** is high-grade; the **biopsy** reveals a low-grade histopathology result that does not require a more frequent screening interval than every 3 years (routine screening).

EXAMPLE 2:

**Colposcopy:**

- **Impression:** Low-Grade Squamous Intraepithelial Lesion (LSIL)
- **Biopsy:** HSIL CIN 2
- **Treatment:** LEEP Excision

**INTERPRETATION:**

While the **impression** is low grade; the **biopsy** reveals a high-grade result. It is recommended that an annual screening interval is adhered to following a high-grade result.

EXAMPLE 3:

**Screening & Colposcopy History (reverse chronology)**

<table>
<thead>
<tr>
<th>Spec/Service Date</th>
<th>Name</th>
<th>Health Number</th>
<th>Date of Birth</th>
<th>Service Provider</th>
<th>Cytology/Colposcopy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017-Ju-01</td>
<td>DUCK, Daisy</td>
<td>967654321</td>
<td>1972-03-17</td>
<td>LOTOCKI, Robert, 1997</td>
<td>17-006288</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Associated Cytology:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Impression HSIL CIN 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Biopsy Low-Grade Squamous Intraepithelial Lesion (LSIL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ECC Endocervical Curettage Biopsy Definitely Not Done</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Repeat Colp. Follow-up in 6 months</td>
</tr>
<tr>
<td>2017-Ju-01</td>
<td>DUCK, Daisy</td>
<td>967654321</td>
<td>1972-03-17</td>
<td>Health Sciences Centre-Cytology, HSC20179701</td>
<td>ACF WOMENS HEALTH</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Cytology: Atypical Squamous Cells Cannot Exclude a High Grade Squamous Intraepithelial Lesion ASC-H</td>
</tr>
</tbody>
</table>

**INTERPRETATION:**

Although the cytology result from July 1, 2017 is ASC-H (a high-grade result) and the colposcopy **impression** is HSIL CIN 2 (high-grade), the **biopsy** is an LSIL. The biopsy confirms this is a
low-grade histopathology result that does not require a more frequent screening interval than every 3 years (routine screening).

CervixCheck Resources
Screening Guidelines
Abnormal Results/Colposcopy (pamphlet)


Contemporary Clinical Questions on HPV-Related Diseases and Vaccination: 2nd Edition

1. How are Pap test results interpreted?
2. What are reasons for Unsatisfactory Pap tests?
3. What is the recommended management for all abnormal cytology results?
4. Why does a false negative Pap test result occur?

References


