Cervical Cancer Screening for the Primary Care Physician
Clinical Practice Guideline
MedStar Health

“These guidelines are provided to assist physicians and other clinicians in making decisions regarding the care of their patients. They are not a substitute for individual judgment brought to each clinical situation by the patient’s primary care provider-in collaboration with the patient. As with all clinical reference resources, they reflect the best understanding of the science of medicine at the time of publication, but should be used with the clear understanding that continued research may result in new knowledge and recommendations”.

General Principles: Since its introduction in 1943, the Papanicolaou (Pap) smear is widely credited with reducing mortality from cervical cancer, and remains the single best method for the early detection of cervical intraepithelial neoplasia. Recently, increasing understanding of the role of high risk strains of the Human Papilloma Virus in the development of invasive cervical cancer, and the ability to test for these strains, has begun to affect the screening guidelines for cervical cancer. In particular, the ability to screen specifically for HPV 16/18 has changed the guidelines drastically. It must be remembered though, that despite these improvements, the majority of invasive cervical cancers in the US are in women who have never been screened or have not been screened in the last five years, and these women are often in underserved patient populations. Technological advances in screening techniques will only offer a significant improvement in overall cancer incidence if they reach all women in the US.

These clinical practice guidelines for Pap Smear Screening assist primary care clinicians by providing an evidence-based analytical framework for the evaluation and treatment of patients. They are not intended to replace a clinician’s judgment or to establish a protocol for all patients with a particular condition. This guideline does not address the follow up testing intervals and triage of results of testing after colposcopy.

ACOG stresses that the revised cervical screening guidelines do not mean the end of the annual gynecological visit, as the visit is an opportunity to discuss other health problems and preventive measures. The American College of Obstetrics and Gynecology supports annual pelvic exams for women over the age of 21, while the USPSTF states that there is insufficient evidence to recommend screening pelvic exams in asymptomatic women. The ultimate decision in the case of an asymptomatic woman is left to the patient and physician. Asymptomatic individuals that are younger than 21 or have undergone a total hysterectomy and bilateral oophorectomy in the absence of other indications, may undergo an external genital exam only.
1. Recommendations

Cervical Cancer Screening in Average-Risk Women

- **Method**: Screening should be done using either of the following cytological techniques as they have been found to have similar sensitivity and specificity for CIN2 or higher lesions
  - **Conventional Pap test**: using a broom-type (brush) device or plastic spatula and endocervical brush combination, smearing the cytological sample directly onto a microscope slide,
  - **Liquid based cytology**: The sample is collected as in the conventional Pap but then the brush suspends the sample cells in a fixative solution, disperses them, and then selectively collects cells on a filter.
  - In both cases, when two devices are used to collect the specimen, the ectocervical device should be used first.

- **Screening Initiation and Periodicity**:
  - All average-risk women should begin cervical cancer screening at age 21, regardless of history of sexual activity or other risk factors. Cervical cytology screening prior to age 21 should be avoided. However, if women less than 21 years old are inadvertently screened, the guidelines for follow up and management of abnormalities for women aged 21-24 should be employed.
  - Cytology more often than every 3 years and the use of cytology/high risk HPV co-testing more often than every 5 years should be avoided.
  - Testing for non-high risk strains of HPV has no utility in cervical cancer screening and should not be employed.
  - 21—29 years of age: Cervical cytology screening is recommended every 3 years. HPV testing—alone or with cytology— is not recommended in this age group.
  - 30-65 years of age: The preferred method is Cytology with high risk HPV co-testing every 5 years or HPV testing alone; Cytology alone every 3 years is acceptable.
  - >65 years of age: Cervical cytology screening may stop for those women with adequate screening history (Either 3 consecutive negative pap smear results, or two consecutive negative co-tests within the last ten years, with the last occurring within at least 5 years and no history of CIN2 in the last 20 years). Screening should not recommence for any reason, including having a new sexual partner. Following spontaneous regression or adequate treatment of CIN2, CIN3, or adenocarcinoma in situ, screening should continue for at least 20 years.
  - Post-total hysterectomy (removal of uterus and cervix): Cervical cytology screening may stop for those women without history of CIN2 or higher grade lesion, even if there is no history of adequate screening. Again, screening should not resume for any reason. For those women with a history of CIN, AIS or cancer, Pap smear screening via cervical cytology only should continue for 20 years regardless of whether the cervix is present or absent.
  - Women immunized against HPV: Continue to screen according to the age-specific recommendations for the general population.
## Guidelines for Ordering Pap Smears and Concomitant HPV Testing

<table>
<thead>
<tr>
<th>Age</th>
<th>Pap and reflex high-risk HPV when ASCUS</th>
<th>Pap with high risk HPV co-testing or HPV alone</th>
<th>Frequency</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;21</td>
<td>+</td>
<td>+</td>
<td>Avoid Screening</td>
<td>+ until adequate screening has been completed or in cases of cancer or CIN history</td>
</tr>
<tr>
<td>21-29</td>
<td>+</td>
<td>+</td>
<td>Every 3 years</td>
<td>+ until adequate screening has been completed or in cases of cancer or CIN history</td>
</tr>
<tr>
<td>30-64</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>&gt;65</td>
<td>+</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### Cervical Cancer Screening in High Risk Patients

HIV infected women, immunosuppressed women and women exposed to Diethylstilbestrol (DES) in utero are considered high risk. The ACOG and experts in cervical cancer research and care provide recommendations for screening in these populations.

HIV infected women and those who are immunosuppressed are less likely to clear HPV that is acquired (meaning it is more likely to persist) and pre-malignant cervical changes may progress more quickly to cervical cancer. Women considered immunosuppressed include:

- Recipients of solid organ transplants
- Recipients of allogeneic hematopoietic stem cell transplants
- Women with inflammatory bowel disease on immunosuppressant treatment
- Women with SLE
- Women with RA on immunosuppressant treatment

### Comments

Add CT/NG as necessary to above testing recommendations.

### Next Scheduled Review Date:

June 2021 Ambulatory Best Practice
Cervical cancer in DES “daughters” is a non-HPV mediated condition. Consequently, screening relies on cytology rather than HPV testing. In addition to cervical cancer, DES daughters are at increased risk for cervical and vaginal clear cell adenocarcinoma.

<table>
<thead>
<tr>
<th>Condition</th>
<th>Screening onset</th>
<th>Modality</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV and immunosuppressed</td>
<td>Within 1 yr. of sexual activity</td>
<td>Cytology</td>
<td>Cytology—annually→q 3 yrs after three negative annual screens</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Or</td>
<td>Co-testing—q 3 yrs after first negative co-test</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cytology with HPV co-testing</td>
<td>Continue screening throughout lifetime, stopping based on a shared discussion regarding quality of life and remaining life expectancy rather than age</td>
</tr>
<tr>
<td></td>
<td></td>
<td>beginning age 30</td>
<td></td>
</tr>
<tr>
<td>DES exposed</td>
<td></td>
<td>Cervical and vaginal cytology</td>
<td>Annually until a woman is no longer a candidate for intervention</td>
</tr>
</tbody>
</table>

**Results Classification System: Bethesda System**
The Bethesda System was the creation of a standardized framework for laboratory reports that included a descriptive diagnosis and an evaluation of specimen adequacy.

<table>
<thead>
<tr>
<th>Specimen Adequacy</th>
<th>Interpretation/Result</th>
</tr>
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<tbody>
<tr>
<td>• Satisfactory</td>
<td></td>
</tr>
<tr>
<td>• Unsatisfactory</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>General Categorization</th>
<th>Interpretation/Result</th>
</tr>
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</tbody>
</table>
## A. Negative for intraepithelial lesion or malignancy

- Includes:
  - “Within normal limits"
  - "benign cellular changes”

## Organisms may be present including:

- *Trichomonas vaginalis*
- Fungal organisms morphologically consistent with *candida* species
- Shift in flora suggestive of bacterial vaginosis
- Bacteria morphologically consistent with
  - *Actinomyces* species
- Cellular changes consistent with herpes simplex virus

Other non-neoplastic findings *(optional to report; list not comprehensive)*

Reactive cellular changes associated with Inflammation (includes typical repair)

### Radiation

## B. Epithelial cell abnormality

### Squamous cell

- Atypical Squamous Cells of Undetermined Significance (ASCUS)
- Low-grade squamous intraepithelial lesion
  - (LSIL)
- Cannot exclude HSIL (ASC-H)
- High-grade squamous intraepithelial lesion
  - (HSIL)
- Squamous cell carcinoma

## C. Glandular cells present

- Endometrial cells (may be benign or require further evaluation if post-menopausal)
- Atypical glandular cells (AGC) may be atypical endometrial or endocervical cells
- Atypical glandular cells, favor neoplastic
- Adenocarcinoma in situ (AIS)
- Endocervical adenocarcinoma in situ
- Adenocarcinoma
D. Others

- Cases in which there are no morphological abnormalities in the cells per se; however, the findings may indicate some increased risk: for example, benign-appearing "Endometrial cells in a woman 40 years of age"
- Other neoplasms identified, like small cell carcinoma

- Follow up of Unsatisfactory Pap Smears:
  - In cases where HPV is unknown or in a patient >= 30 years old where HPV is negative, the cytology should be repeated in 2-4 months and the cytology results interpreted appropriately.
  - In those women 30 years or older where HPV is positive, cytology can be repeated in 2-4 months and the results interpreted in light of the positive HPV test, or the patient may be referred directly to colposcopy
  - In all cases, if the cytology remains unsatisfactory on the repeat exam, the patient should be referred for colposcopy.

- Follow up of Cytology Negative but Endocervical or Transformation Zone Lacking Pap Smears:
  - Ages 21-29, cytology should be repeated at the routine interval (3 years)
  - Ages 30-65, it is preferred that HPV testing be performed.
    - If the HPV is negative, the woman should undergo routine screening (the preferred co-testing in 5 years or the acceptable option of cytology alone in 3 years).
    - If the HPV testing is positive, a co-test should be done in 12 months, or 16/18 reflex testing can be performed and, if positive, indicates the need for colposcopy.
    - If HPV testing cannot be performed on the initial sample, cytology should be repeated in 3 years.

- Follow up of abnormal Pap Smears:
  - Women 21 or older: ASC-H (atypical squamous cells cannot exclude high grade lesion), HGSIL, and Atypical Glandular Cells (including atypical endometrial cells) should be referred to gynecology for colposcopy, regardless of age or preceding results
  - All pregnant women should be referred to obstetrics-gynecology for any abnormalities
Women age 21-24 with ASCUS: the recommended course of action is repeat cytology at one year (see below for further details); however, if HR HPV is performed and is negative: continue routine screening (cytology in 3 years)

Women 25-64, ASCUS, HR HPV negative: co-testing is recommended in 3 years

Women 65 or older, ASCUS, HR HPV negative: should be managed as general population except when considering exit from screening, in that case, she should be retested in one year, and co-testing is preferred but cytology alone is acceptable

Women ages 21-24 with ASCUS without any HPV result (preferred), ASCUS, HR HPV + or LGSIL of any kind: repeat cytology in 12 months; if ASCUS or LGSIL again or negative, cytology should again be repeated in 12 more months but if it is ASC-H, AGC, HGSIL at any time, she should have colposcopy; if at 24 months still ASCUS or higher (including AGC), she should be referred to colposcopy, if it has regressed to negative at 24 months, she should initiate routine screening (cytology in 3 years)

Women 25 and above with ASCUS cytology for whom no HPV testing was performed reflexively and cannot be added on: repeat cytology in one year and if the repeat cytology is ASCUS or worse, they should be referred for colposcopy

Women age 25 or older with ASCUS, HR HPV positive, LGSIL w/o known HPV result, or LGSIL, HR HPV positive should be referred for colposcopy

Women ages 25 or older with LGSIL, HR HPV negative have two options: referral to colposcopy or the preferred method of repeat co-testing at one year; if this is not Negative, HR HPV negative, the patient is referred to colposcopy; if it is normal, she is co-tested again in 3 years

In post-menopausal women, LGSIL w/o HPV results can either have HPV added on and triaged appropriately, be referred to colposcopy or undergo repeat cytology at 6 AND 12 months; if the HPV test is negative she can have have cytology at 12 months; if either the HPV is positive, or either of the 6 or 12 mo cytology tests is positive, she should be referred to colposcopy; if two consecutive repeat cytology tests are negative, she can resume routine screening

Women ages 30-65 who co-test with cytology negative but HPV positive results can be followed with either 1) co-testing in 12 months (acceptable); if either the HPV or cytology is positive at the follow up exam, the women should undergo colposcopy; if the results are cytology negative, HPV negative, she should repeat co-testing in 3 years; or 2) immediate (reflex) HPV 16 or 16/18 co-testing; if this is positive, the woman should undergo colposcopy; if this is negative, the woman should repeat co-testing in 12 months and either HPV or cytology positivity would result in colposcopy

These recommendations are presented in algorithmic form and in table form below: in Massad, L et al. “2012 Updated Consensus Guidelines for the Management of Abnormal Cervical Cancer Screening Tests and Cancer Precursors” 2013, American Society for Colposcopy and Cervical Pathology, Journal of Lower Genital Tract Disease, Volume 17, Number 5, 2013, S1-S27 and
<table>
<thead>
<tr>
<th>Result</th>
<th>Age</th>
<th>Follow up Step 1</th>
<th>Follow up Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unsatisfactory Cytology, HPV unknown</td>
<td>All</td>
<td>Repeat cytology 2-4 months</td>
<td>Abnormal ➔ fu per guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Negative ➔ routine screening per age guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Still unsatisfactory ➔ colposcopy</td>
</tr>
<tr>
<td>Unsatisfactory Cytology, HPV Negative</td>
<td>&gt;= 30</td>
<td>Repeat cytology 2-4 months</td>
<td>Abnormal ➔ fu per guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Negative ➔ routine screening per age guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Still unsatisfactory ➔ colposcopy</td>
</tr>
<tr>
<td>Unsatisfactory Cytology, HPV Positive</td>
<td>&gt;=30</td>
<td>Either A) cytology 2-4 months</td>
<td>Abnormal ➔ fu per guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Or</td>
<td>Negative ➔ routine screening per age guidelines</td>
</tr>
<tr>
<td></td>
<td></td>
<td>B) referral to colposcopy</td>
<td>Still unsatisfactory ➔ colposcopy</td>
</tr>
<tr>
<td>Cytology Negative but Endocervical Component or Transformation Zone Absent</td>
<td>21-29</td>
<td>Routine screening (cytology 3 yr)</td>
<td>Add on HPV testing (preferred) and triage as below or repeat cytology 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(acceptable)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Routine screening (co-testing 5 yrs preferred, cytology 3 yrs acceptable)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Co-testing in one year or 16/18 Genotype (colposcopy if positive)</td>
</tr>
<tr>
<td></td>
<td>&gt;=30 HPV unknown</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;=30 HPV negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;=30 HPV positive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ASC-H (atypical cells cannot exclude high grade lesion)</td>
<td>All</td>
<td>Colposcopy</td>
<td></td>
</tr>
<tr>
<td>HGSIL</td>
<td>All</td>
<td>Colposcopy</td>
<td></td>
</tr>
<tr>
<td>Atypical Glandular Cells (including endometrial)</td>
<td>All</td>
<td>Referral to gynecology; endometrial biopsy/colposcopy</td>
<td></td>
</tr>
<tr>
<td>ASCUS, HPV Negative</td>
<td>21-24</td>
<td>Routine screening (cytology 3 yrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25-older 65 and older</td>
<td></td>
<td>Co-testing 3 years</td>
</tr>
</tbody>
</table>

**Follow Up of Abnormal Pap Smear Results- 2012 Guidelines ASCCP**

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**Initial Approval Date and Reviews:**
June 2013, June 2015, June 2017, June 2019
(replaced Management of Abnormal Pap smear, created 1997)

**Most Recent Revision and Approval Date:**
June 2019

**Next Scheduled Review Date:**
June 2021 Ambulatory Best Practice
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<th>Result</th>
<th>Age</th>
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<th>Follow up Step 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASCUS, unknown HPV</td>
<td>21-24</td>
<td>Co-testing 1 year in attempting to exit screening</td>
<td>If at 12 mo, ASC-H, AGC, HSIL→ colpo</td>
</tr>
<tr>
<td></td>
<td>25 or above</td>
<td>Cytology one year (preferred) or add on HPV and triage as appropriate (acceptable)</td>
<td>If at 12 mo ASCUS, LSIL, or neg → cytology again in 12 mo</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Add on HPV and triage as appropriate, (preferred) or cytology one year (acceptable)</td>
<td>If cytology neg (at 24 mo) return to routine screening</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If ASCUS or higher (at 24 mo)→ colposcopy</td>
</tr>
<tr>
<td>ASCUS, HPV Positive</td>
<td>21-24</td>
<td>Cytology 12 months</td>
<td>If ASC-H, AGC, HSIL→ colpo</td>
</tr>
<tr>
<td></td>
<td>25 and older</td>
<td>Colposcopy</td>
<td>If ASCUS, LSIL, negative→cytology another 12 mo</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If cytology neg (at 24 mo) return to routine screening</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If ASCUS or higher (at 24 mo)→ colposcopy</td>
</tr>
<tr>
<td>LSIL</td>
<td>21-24</td>
<td>Cytology 12 months</td>
<td>If ASC-H, AGC, HSIL→ colpo</td>
</tr>
<tr>
<td></td>
<td>25-menopause</td>
<td>HPV unknown/ positive→ colpo</td>
<td>If ASCUS, LSIL, negative→cytology in another 12 mo</td>
</tr>
<tr>
<td></td>
<td>Menopause-older</td>
<td>HPV neg→ preferred to repeat co-testing one year, acceptable to refer to colpo immediately</td>
<td>If cytology neg (at 24 mo) return to routine screening</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If ASCUS or higher (at 24 mo)→ colposcopy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If repeat co-testing is negative w/neg HPV, co-test in 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>If ASCUS or greater or positive HPV→ colposcopy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Either cytology at 6 &amp; 12 months, if either is ASCUS or above→ colpo</td>
</tr>
<tr>
<td>Result</td>
<td>Age</td>
<td>Follow up Step 1</td>
<td>Follow up Step 2</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----</td>
<td>------------------------------------------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Cytology negative, HPV Positive</td>
<td>&gt;=30</td>
<td>Either a) Repeat co-testing 1 yr</td>
<td>Cytoology neg/HPV neg → co-testing 3 yrs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Or b) Genotyping for HPV 16/18</td>
<td>Ascus or higher or HPV pos → colposcopy</td>
</tr>
<tr>
<td>HPV testing alone-- positive</td>
<td>&gt;=30</td>
<td>Test for HPV 16/18— colposcopy if positive</td>
<td>Positive → colposcopy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Otherwise, reflex to cytology with colposcopy if ASCUS or higher</td>
<td>Negative → cotesting one year and follow guideline above</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Otherwise follow up 1 yr</td>
<td></td>
</tr>
</tbody>
</table>

**ASCUS in Women 25 yrs and older**

- **Repeat Cytology at 1 yr Acceptable**
  - Negative: Routine Screening
  - ≥ ASCUS: Positive: risk of CIN ≥2 =15-27%

- **High Risk HPV Testing Preferred**
  - Negative: risk of CIN ≥2 < 2%

- **Colposcopy**
- Repeat co-testing in 3 yrs

American Society for Colposcopy and Cervical Pathology 2013

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**Next Scheduled Review Date:**
- June 2021 Ambulatory Best Practice
ASCUS or LGSIL Women 21-24 years old

Repeat Cytology at 12 months Preferred Strategy

HPV positive

Reflex HPV Testing for ASCUS only

Neg, ASCUS, LSIL

Repeat cytology at 12 mos

≥ ASCUS

Colposcopy

ASC-H, AGC, HSIL

HPV negative

Routine Screening

American Society for Colposcopy and Cervical Pathology 2013

HPV positive, cytology negative?

Repeat cytology & HPV testing in 1 yr or HPV DNA typing

HPV + OR ASCUS or higher cytology

Colposcopy

HPV – AND neg cytology

Repeat co-testing in 3 yrs

HPV 16 or 18 positive

Colpo

Repeat co-testing in 1 yr

HPV 16 or 18 negative

ACOG Practice Bulletin December 2013
Patient Education/Counseling:

Suggested literature:
https://www.acog.org/Patients/FAQs/Cervical-Cancer-Screening

Pamphlets (American College of Obstetricians and Gynecologists Online Bookstore):
https://sales.acog.org/Cervical-Cancer-Screening-P464.aspx

https://jamanetwork.com/journals/jama/fullarticle/2697698

References