Pap Smears, HPV & Prevention of Cervical Cancer

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Background
- Pap smears are a simple and highly effective office screening method for preventing cervical cancer
  - Before pap smears became part of women’s routine health screening, cervical cancer was a leading cause of cancer death
- Cervical cancer is essentially a sexually transmitted disease
  - Caused by infection with HPV (Human Papilloma Virus)
- Pap smears involve brushing cells off of the cervix
  - Evaluated in the lab for presence of abnormal cells (dysplasia) that might one day progress to cancer
  - May also test for presence of HPV infection

The Cervix
- The lower part of the uterus- looks much like the neck of a balloon
- Extends into the upper part of the vagina
- The cervix has a narrow canal that connects the vagina and the uterine cavity- allows sperm to enter the uterus and menstrual flow to exit
  - The part that must dilate to 10 cm during childbirth
- The face of the cervix is the part of the cervix seen by your doctor when doing a pap smear
  - This is the area most commonly affected by HPV.
  - Pap smears involve brushing both this area and the outer part of the cervical canal.
  - Looking for dysplasia (abnormal cell growth, not cancer)- if cancer is found then screening has failed

HPV & Dysplasia
- There are over 100 types(strains) of HPV
  - Most sexually active people will be infected at some time by one of these
  - Only a few strains are known to cause cancer
    - Classified as high risk strains
    - These same strains may also cause throat, penile and vaginal cancers
Like the common cold, most immune systems will clear most low risk strains of HPV over a one to three year period.
- May cause temporary, low grade dysplasia (LGSIL) before they are cleared- typically does not require treatment
  - dysplasia means abnormal cell growth- not cancer
  - 2 out of every 3 cases of LGSIL will be cleared by the body without treatment
  - However, essential that anyone with LGSIL continue yearly pap smears since 2% will one day develop cancer
- Those with weak immune systems (such as those with HIV) have difficulty clearing all strains making them more likely to develop cervical cancer (even from low risk strains)
- High risk strains are not so easily cleared
  - Often cause lifelong infection
  - Can cause high grade dysplasia (HGSIL)
    - Left untreated, HGSIL will progress to cervical cancer in up to 70% of women over a 5 – 20 year period
    - Progression to cancer is more likely and more rapid in those infected with HIV

Colposcopy
- An office procedure to evaluate abnormal pap smears
- Required since a pap smear is only a screening & not a diagnostic tool
  - Pap smear results are often wrong meaning that an abnormal pap smear does not always mean dysplasia is present
  - Also, sometimes even those with mildly abnormal pap smears are found to have serious disease
- Done much like the pap smear itself but a little more involved
  - A speculum is placed in the vagina to see the cervix
  - Acetic acid (vinegar) is applied to the cervix
    - May cause a mild burning sensation
    - Causes abnormal cells to turn white
    - Abnormal areas are then biopsied
    - The canal is also biopsied
  - Bleeding typically occurs at the biopsy sites and is controlled with a topical substance- may later be seen as a slight black or brown discharge
Possible Pap Smear Results

- Normal
  - continue yearly pap smears
- **ASCUS (atypical squamous cells of undetermined significance)**
  - Requires colposcopy if high risk HPV is also present
  - Colposcopy is often normal
- **LGSIL (low grade squamous intraepithelial lesion)**
  - Requires colposcopy
  - If confirmed, does not require treatment in most
- **HGSIL (high grade squamous intraepithelial lesion)**
  - Requires colposcopy
  - If HGSIL confirmed, treated in offices with LEEP (see below)
  - If colposcopy is normal, requires a *cold knife cone biopsy*
    - 50% will found to have serious disease in the canal
- **CIS (carcinoma in-situ)- cancer that has not yet invaded**
  - Requires colposcopy
  - If confirmed, treated in office with LEEP
  - If colposcopy is normal, requires a cold knife cone biopsy
- **AGUS (atypical glandular cells of undetermined significance)**
  - Requires colposcopy
  - Much more serious than ASCUS
    - Disease found in 50%
  - If colposcopy is normal, requires cold knife cone biopsy, biopsy of the uterine cavity and even, depending on age, possible hysterectomy with removal of ovaries & fallopian tubes

Cold Knife Cone Biopsy (CKC)

- Required for large difference between pap smear and colposcopy
- Done in the operating room
- Involves removal of an up to a one inch deep cone shaped section of the cervix
  - Removes part of the canal- may contain disease that cannot be sampled by colposcopy

LEEP

- Loop Electrosurgical Excision Procedure
- Office procedure used to treat HGSIL & CIS
- The cervix is first numbed with lidocaine
- A thin, low-voltage electrified wire is then used to remove the abnormal tissue
When to Start Pap Smears then How Often should they be repeated?

- In adolescents, begin three years after becoming sexually active
- Begin at age 21 even if never sexually active
- Do not start routine HPV screening until age 30 years
- If pap smear is normal, continue yearly pap smears until 30 years old
- At age 30, if in stable relationship, may drop to every 3 years if
  - Pap smear is normal &
  - HPV is negative

Gardasil

- A commercial vaccine given to both adolescent boys and girls to prevent infection with both the most common types of high risk HPV and HPV strains that cause genital warts
- Since not 100%, even those vaccinated with Gardasil should still have regular Pap Smears

When can A Woman Safety Discontinue Pap Smears?

- After hysterectomy if
  - Cervix removed during hysterectomy &
  - All previous pap smears were normal &
  - In stable relationship
- After age 65 – 70 years if in stable, long term relationship
  - Resume pap smears for any new sexual encounter

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