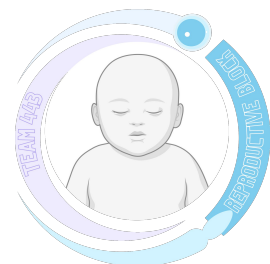
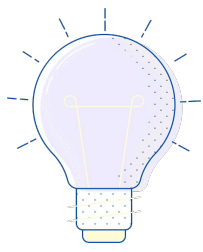




# Pathology Of Cervix





# Objectives

Some common benign conditions and infections.

Understand the concepts of dysplasia and intraepithelial neoplasia in the female genital tract and the role of a cervical screening program.

Know the incidence, risk factors, clinical presentation, pathological features and prognosis of cervical squamous cell carcinoma.

THIS LECTURE WAS PRESENTED BY DR.MARIA ARAFAH & DR.HAMADA AL JAEDI



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## Editing File

### Color index :

Main text ( black)

Female Slides (Pink)

Male Slides (Blue)

Important ( Red)

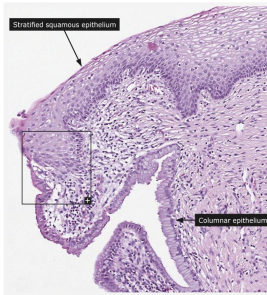
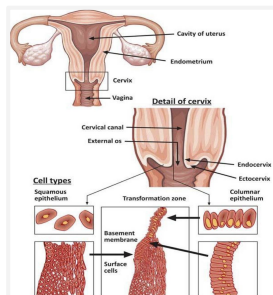
Dr's note (Green)

Extra Info ( Grey)

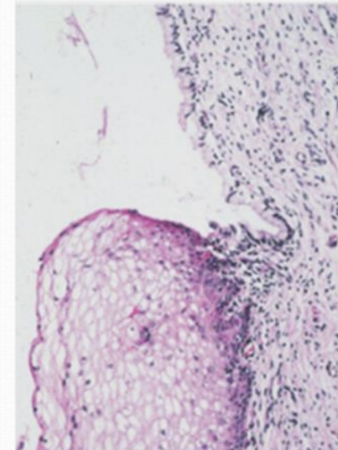
# Pathology of uterine cervix

## Introduction

- **Endocervix:** lined by columnar epithelium.
- **Ectocervix:** lined by Stratified squamous epithelium.
- **Transformation zone:** the area in between , Most common place of cervical pathology.



SQUAMO-COLUMNAR JUNCTION



## Cervical Ectropion (Erosions)

Females Slides

It occurs when the squamous epithelium is replaced by columnar epithelium, grossly resulting in an erythematous area.

It is a typical response to a variety of stimuli including hormones, chronic irritation and inflammation (chronic cervicitis).

It is benign and has no malignant potential.



## Deep Focus Question



Which system of the body is the most common target of Chlamydia trachomatis?

- Respiratory system
- Genitourinary system
- Cardiovascular system
- Integumentary system
- Gastrointestinal system

Answer: B

# Pathology of uterine cervix

## Squamous Metaplasia

In this condition, the columnar cells are replaced by squamous cells.

It is seen in the cervix at the squamocolumnar junction.

Squamous metaplastic epithelium is the area most affected by HPV infection and the area where dysplasia and malignant transformation starts, however, the squamous metaplastic epithelium is benign and by itself not considered premalignant.

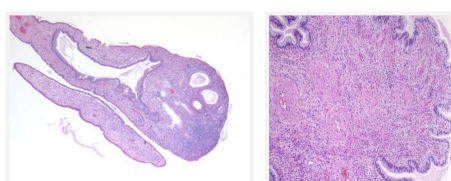
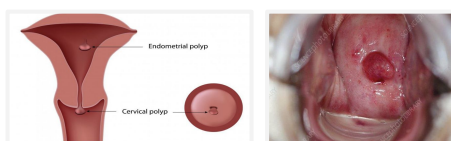
## Cervical polyps

This is a small pedunculated mass, They are not true neoplasms.

Most polyps originate from the endocervix (**endocervical polyps**) and few from the ectocervix (**ectocervical polyps**).

The lesion is characterized by an overgrowth of benign cervical **stroma** covered by cervical **epithelium**:

- The epithelium covering the polyp can be columnar or stratified squamous or sometimes **partly** both.
- The stroma is made up of fibrous tissue with thick-walled blood vessels and inflammatory cells.



# Cervicitis

## Definition

males Slides

Inflammation of the cervix, can be : non-infectious or infectious

## Non Infectious Non Specific Cervicitis

Is inflammation (acute or chronic) of the cervix

### caused by

**chemical**  
(e.g. douche)

**mechanical**  
(e.g. tampon,  
diaphragm)  
irritation.

### Can be

**Acute**

**Chronic**

### Clinically

- it is often asymptomatic
- but the cervix appears red and swollen.

### Histology

- inflammatory cells are seen (neutrophils, plasma cells and lymphocytes).
- Squamous metaplasia is also common in chronic cervicitis.

## Infectious Cervicitis

It can be caused by various organisms e.g. Staphylococci, Enterococci, Gardnerella Vaginalis, Trichomonas Vaginalis, Candida Albicans and Chlamydia Trachomatis and HPV.

They most often involves the endocervix.

They may be asymptomatic or manifest as vaginal discharge or itching.



# Cervicitis

	1-Candidiasis (Moniliasis)	2-Trichomoniasis	3-Chlamydia Trachomatis
Organism	<p>It is a common infection caused by <u>Candida Albicans</u>, a normal component of the vaginal flora.</p>	<p>It is caused by a unicellular flagellated protozoan called <u>Trichomonas Vaginalis</u>.</p>	<p>-Chlamydia Trachomatis is an obligate -gram negative intracellular pathogen. -It may coexist with Neisseria Gonorrhoeae infection.</p>
Association / Transmission	<p>It is associated with diabetes mellitus, pregnancy, antibiotic therapy, oral contraceptive use and immunosuppression.</p>	<p>It is a sexually transmitted disease that involves the vagina and cervix.</p>	<p><b>Chlamydial cervicitis is the most common sexually transmitted disease in developed countries.</b></p>
Clinical features	<p>-It involves the cervix and vagina. -It is <b>characterized by white patchy mucosal lesions with thick curdy white discharge</b> and vulvovaginal pruritus. -Ulcers may develop.</p>	<p>-a <b>greenish-yellow frothy and foul smelling vaginal discharge</b> is seen with painful urination, vulvovaginal itching or irritation and dyspareunia.</p>	<p>-It is a frequent cause of pelvic inflammatory disease and a condition known as <b>lymphogranuloma venereum</b>. -it is often asymptomatic. -In symptomatic cases there is a mucopurulent cervical discharge with a reddened, congested and edematous cervix. -It may be associated with urethritis.</p>
Pap smear (cytology)	<p>-Cytology smears show fungal colonies in the form of spores and branching <b>pseudohyphae</b> on the cervical epithelium. -Chronic inflammatory cells are present.</p> <div data-bbox="438 1848 774 2072"> <p>Candida albicans Hyphae Spores</p> </div>	<p>-The organism can be identified in Pap smear slides in a background of inflammatory cells. -They can also be visualized by examination of a <b>saline wet preparation</b> in which the motile trophozoites are seen.</p> <div data-bbox="829 1915 1157 2049"> </div> <div data-bbox="917 2060 1061 2184"> <p><b>Trichomoniasis</b> 10%</p> <ul style="list-style-type: none"> <li>F Itchy</li> <li>F Foul Discharge</li> <li>F Pink color (strawberry)</li> <li>F Painless (STD)</li> <li>F Flagellated (motile)</li> </ul> </div>	



# Cervicitis

## Herpes Simplex Virus (HSV)

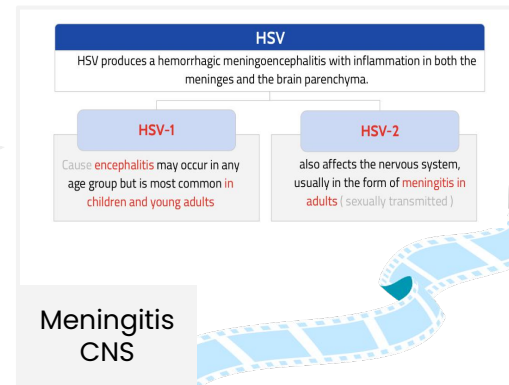
### Definition

HSV type 2 infection accounts for the majority of genital herpes cases.

- It is spread by a sexual contact.
- It produces vesicles and ulcers that can involve the cervix, vagina, vulva, urethra and perianal skin.



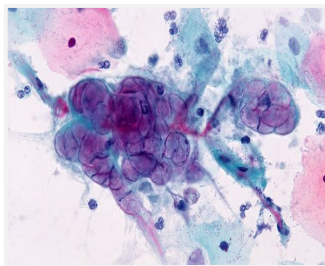
### FLASHBACK



### Pap smears (cytology)

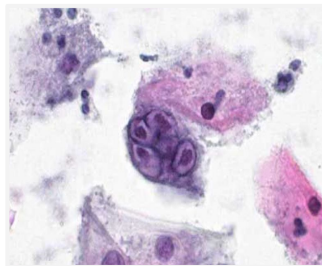
1

3 M's: Multinucleation, molding of nuclei and margination of chromatin (characteristic feature).



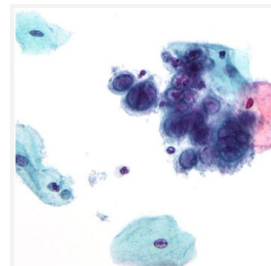
2

Intranuclear "Cowdry type" viral inclusions.



3

Pale Nucleic Ground glass appearance due to accumulation of viral particles



### Clinical Note

Genital herpes infections are common sexually transmitted infections caused by herpes simplex virus (HSV) type 1 or 2. Herpes simplex virus type 1 is more commonly associated with non-genital herpes, while HSV-2 is more commonly associated with genital herpes. Primary infection often presents with systemic, prodromal symptoms followed by clusters of painful, fluid-filled vesicles on an erythematous base, dysuria, and painful lymphadenopathy. Primary infection can also be asymptomatic. Herpes infections are unique in that the virus is able to remain dormant in the neuronal ganglia, which allows for recurrent infections. Recurrent outbreaks are usually less severe than the initial infection. Treatment is with antiviral therapy, primarily acyclovir.

# Cervicitis

## Human papillomavirus infection (HPV)

### Definition

HPV infection is common with over 20 serotypes that infect the female genital areas and cause a variety of different lesions depending on the serotypes. Double strand DNA virus, transmitted sexually, (can affect cervix, vagina, vulva, oral canal, skin, and penis).

### Clinical behavior

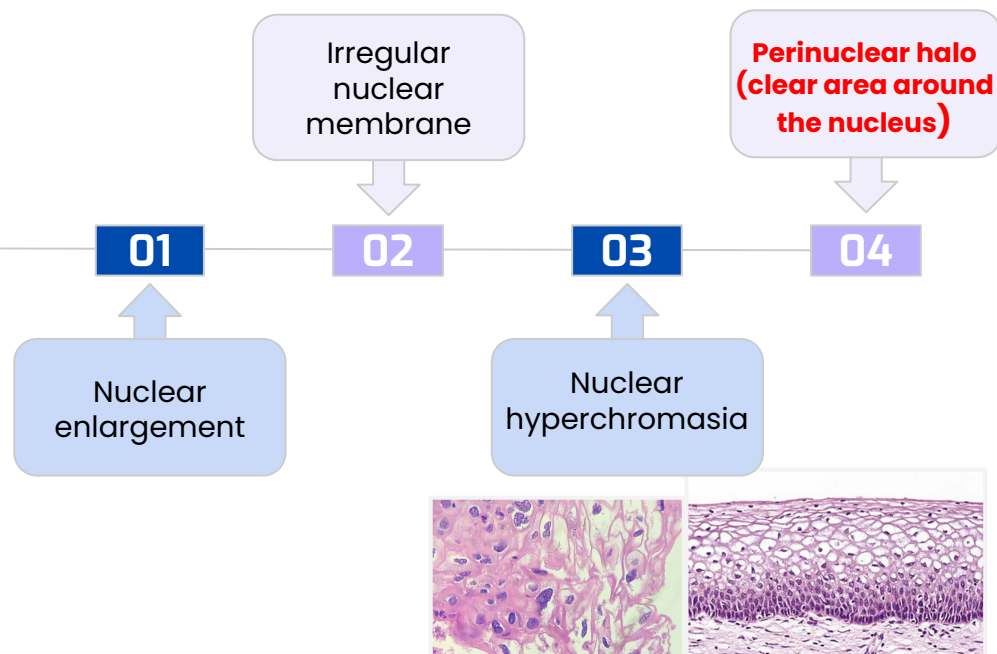
- HPV infection causes koilocytic atypia in the cervical squamous epithelium.
- HPV infection is associated with increased risk of subsequent cervical cancer.

HPV infection may cause any of the following depending on the HPV serotype:

Condyloma الثآليل	Low grade dysplasia	High grade dysplasia
<ul style="list-style-type: none"> <li>• It is usually caused by HPV serotypes 6 and 11.</li> <li>• It develops in the squamous epithelium of the ectocervix.</li> <li>• The lesions may be flat or exophytic (called exophytic condyloma acuminatum).</li> </ul>	<p>It is usually caused by "low risk" HPV serotypes, 6 and 11.</p>	<p>It is caused by "high risk" HPV (types 16 and 18) and "moderate risk" HPV (types 31, 33 and 35).</p>

are squamous epithelial cells that have undergone structural changes due to an infection by HPV. They show koilocytosis or koilocytic atypia which is the following cellular changes:

### Koilocytes





# Neoplasia of The Cervix (Cervical cancer)

The most common cervical cancer is **squamous cell carcinoma**. Other types are **adenocarcinoma**, neuroendocrine carcinoma, etc.

Cervical carcinoma used to be a major cause of cancer-related death in women.

Nowadays there is a dramatic improvement in the management of this disease because of the early diagnosis and therefore early treatment. As a result, deaths due to cervical cancer are decreasing. The early diagnosis is due to the use of a screening method/program called the PAP screening test.

The wide use of PAP screening program has lowered the incidence of invasive cancer and deaths.

All invasive squamous cell carcinomas arise from non invasive pre- cancerous cervical squamous epithelium called **cervical intraepithelial neoplasia (CIN)** or **squamous intraepithelial lesions (SIL)**.

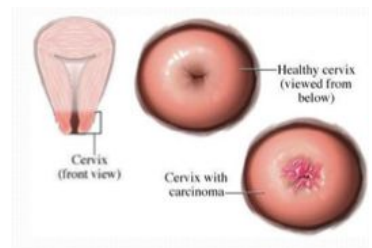
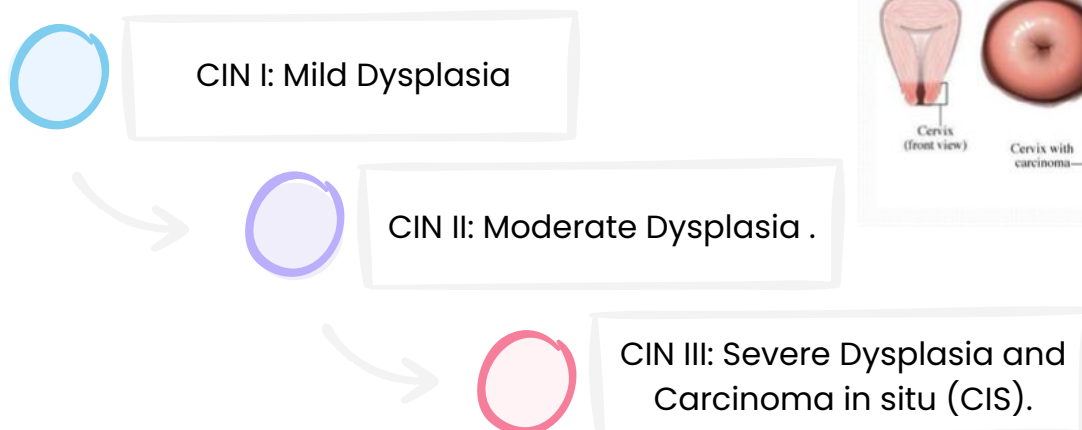
Not all cases of CIN/SIL progress to invasive cancer and some cases of CIN/SIL may spontaneously regress.

Timely detection and diagnosis of CIN/SIL is essential in preventing the development of invasive carcinoma.

## CIN Histological Reporting

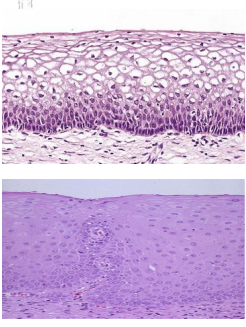
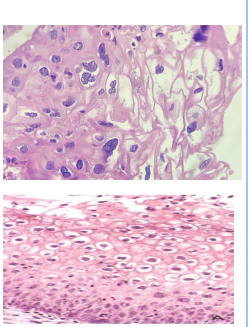
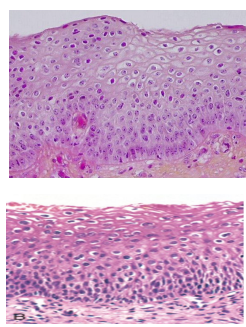
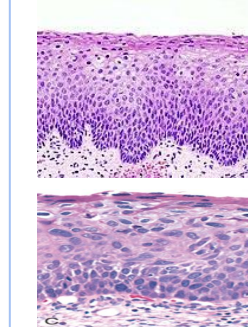
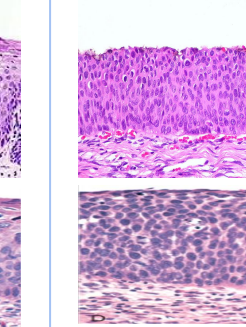
- CIN lesions may begin as Low Grade CIN and progress to High Grade Or they might begin straight away as High Grade CIN.
- On the basis of histology, pre-cancer lesions are graded as:

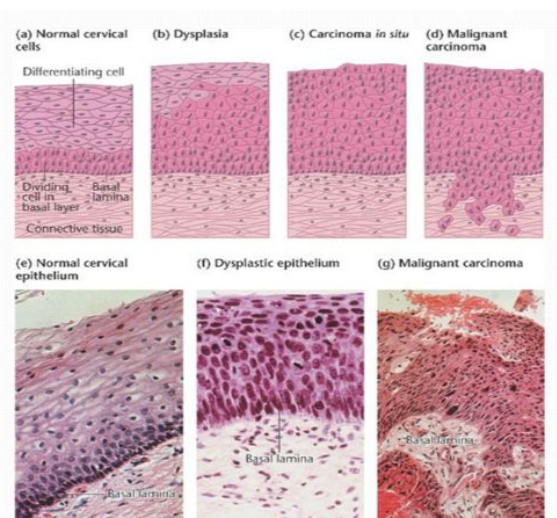
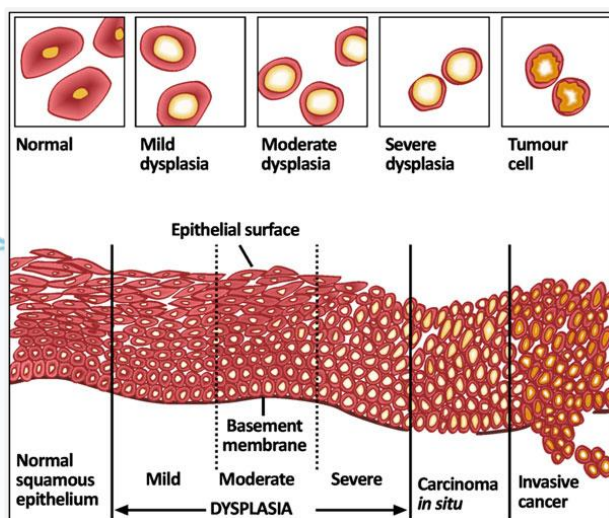
**Low grade dysplasia** : caused by either by HPV 6 , 11 or 16, 18 serotype / **High grade dysplasia** : cased by 16, 18 serotype



# Neoplasia of The Cervix (Cervical cancer)

Cases of high grade CIN/SIL have a higher risk of progression to cancer. High grade CIN/SIL are associated with high-risk HPV serotypes.

Normal	Koilocytes of HPV	CIN I	CIN II	CIN III (CIS)
				
	To differentiate.	<ul style="list-style-type: none"> <li>● Mild dysplasia = CIN I = Low grade SIL</li> <li>● Koilocytes in the upper part.</li> <li>● In the lower 1/3 of epithelium the maturation is lost and the cells are replaced by pleomorphic cells.</li> </ul>	<ul style="list-style-type: none"> <li>● Moderate dysplasia = CIN II = High grade SIL</li> <li>● Progressive koilocytic atypia in the upper layers.</li> <li>● In the lower 2/3 of the epithelium the maturation is lost and the cells are replaced by pleomorphic cells.</li> <li>● No invasion to the underlying Basement membrane.</li> </ul>	<ul style="list-style-type: none"> <li>● Severe dysplasia = CIN III (Carcinoma in Situ) = High grade SIL</li> <li>● There is diffuse koilocytic atypia.</li> <li>● All of the epithelium lost its maturation and the cells are replaced by pleomorphic cells, (full thickness).</li> <li>● No invasion, "severe dysplasia" may be used as synonyms for in situ adenocarcinoma and in situ carcinoma.</li> </ul>



# Pap Smear

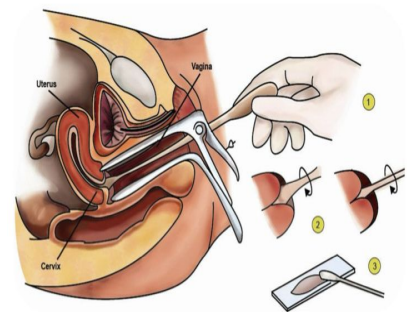
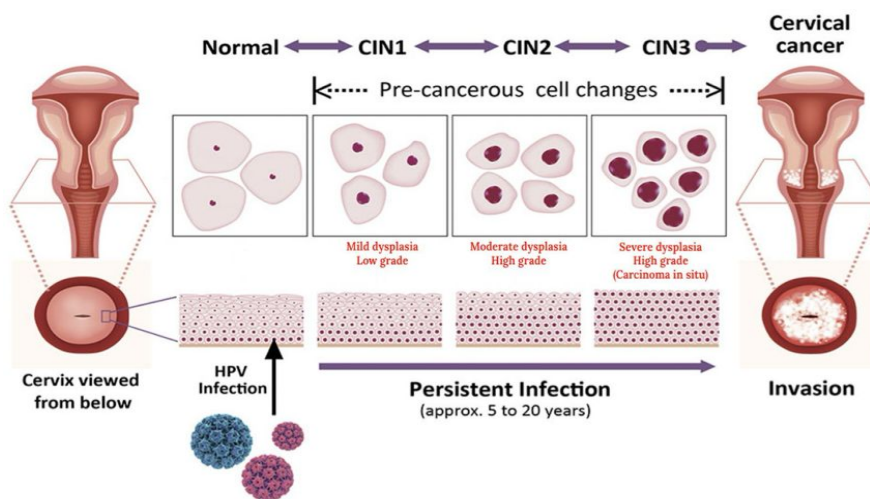
## Definition

- Cytological examination can detect SIL long before any abnormality can be seen grossly using the PAP screening test.
- PAP test is the cytological examination of the cells of cervix.
- This screening for pre-cancer should be done on all women usually from age of 21 years and onwards.

The cells lining the cervical wall at the transformation zone are scrapped off (sampled) with spatula.

then transferred onto a slide, processed, stained (Papanicolaou stain)

Then examined under a light microscope to look for squamous intraepithelial lesion (SIL) and a diagnosis is made.



## Deep Focus Question

Which of the following is NOT a part of the cervical cancer screening for HIV affected women?

- Screening with PAP smear should begin within one year of onset of sexual activity
- Screening should begin no later than 21 years of age
- If the patient is already sexually active within the first year after HIV diagnosis
- Screening with PAP smear must be throughout life
- Stopping the PAP screening after 65 years of age

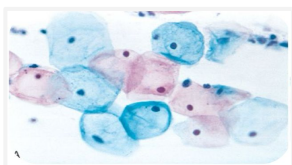
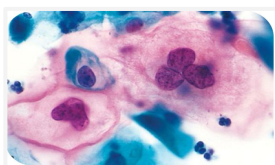
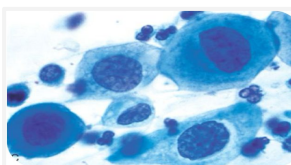
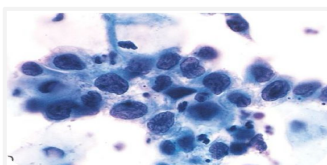
Answer: E

# Neoplasia of The Cervix (Cervical cancer)

## Cytology Pap smear

Terminology used in Pap smears is squamous Intraepithelial lesions (SIL).

- SILs are divided into low grade and high grade SIL.
- In cytology smear report these are few of the possible diagnoses:
  - **Normal cells:** Negative for squamous intraepithelial lesion.
  - **Low Grade SIL (LSIL):** CIN 1 (mild dysplasia on histology).
  - **High Grade SIL (HSIL):** CIN 2 and CIN 3 (moderate to severe dysplasia on histology).
    - About 1 to 5% of low Grade SIL become invasive squamous cell carcinomas.
    - About 6 to 74% of high Grade SIL become invasive squamous cell carcinomas.

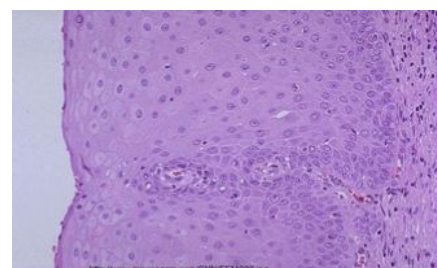
Normal exfoliated superficial squamous epithelial cells	CIN I = Low grade SIL	CIN II = High grade SIL	CIN III = High grade SIL
			

The cytology of cervical intraepithelial neoplasia as seen on the Papanicolaou smear.

**Cytoplasmic staining in superficial cells may be either red or blue.**

**In higher grade lesion:** there is reduction cytoplasm and increase in the nucleus to cytoplasm ratio

This reflects the progressive **loss of cellular differentiation** on the surface of the lesions from which the cells are exfoliated.



# Neoplasia of The Cervix (Cervical cancer)

## Rules for PAP TEST

Women may not show visible signs or symptoms so it is difficult to diagnose SIL/CIN without a Pap smear.

Therefore regular Pap exams should be done on all women to detect HPV infection early.

An HPV DNA in-situ hybridization (ISH) test, called the Digene Hybrid Capture test, is done to identify the serotype of the HPV. This test will determine whether a patient carries high or low risk strains of the virus. HPV DNA screening test should not be used before the age of 30 if the Pap test is normal.

- It is a common testing procedure for HPV infection. The Pap smear detects HPV infection early.

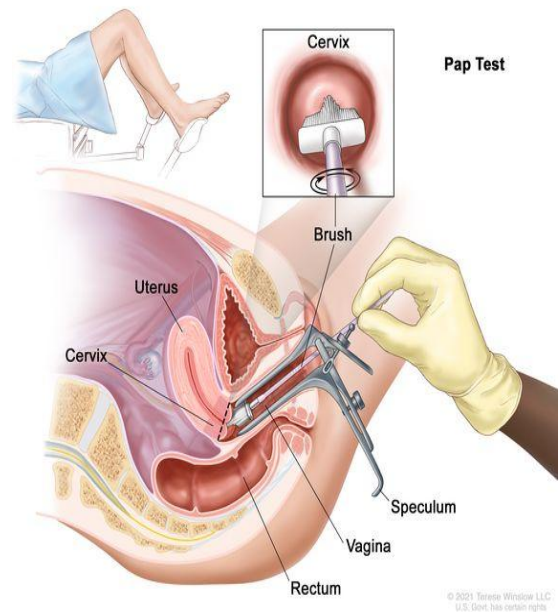
## General rules of pap smear test are

Should start pap test by the age of 21.

For women between age 21 to 29: pap test should be done every 3 years.

For women between age 30-64 there are 2 possibilities:

Either do only pap test once every 3 years Or do two tests (co-testing) at the same time the pap test + DNA in-situ hybridization (ISH) HPV testing, every 5 years.



## Deep Focus Question

The integrity of what structure differentiates between high-grade intraepithelial lesion (carcinoma in situ) and invasive epithelial carcinoma?

- Fascia between the epithelium and the muscle layer
- Basement membrane of the epithelium
- Squamocolumnar junction
- Endothelium of the closest blood vessel

Answer: B

# Neoplasia of The Cervix (Cervical cancer)

## Risk factors

mainly related  
to sexual habits

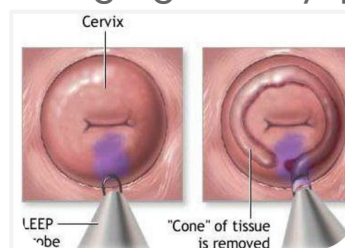
- Smoking
- Early age at first intercourse.
- Multiple sexual partners
- Male partner with multiple previous sexual partners.
- Persistent infections by high risk HPV
- Low socioeconomic groups
- Rare among virgins and multiple pregnancies
- **E6, E7 oncoproteins**

## Causes

- The HPV is the number one.
- HPV is a skin virus , which result in warts , flat warts , genital warts ( condylomata), planter warts , and precancerous lesion.
- HPV can be detected in 85 -90 % of pre-cancer lesions.
- High risk types HPV: **16, 18**, 31, 33, 35, 39, 45, 52, 56, 58, and 59.
- Low risk types HPV: **6, 11**, 42, 44 . These types result in condylomas

## Treatment

- Laser or cone biopsy: is the most effective method of managing patients with High grade SIL in cancer prevention.
- We only treat high grade dysplasia



## Deep Focus Question

Which of the following is the MOST probable organism responsible for a painful, red, vesicular eruption in the vulvovaginal region?

- A. HSV 2
- B. Treponema pallidum
- C. HPV 6
- D. Chlamydia trachomatis
- E. HPV 16

Answer: A

# Neoplasia of The Cervix (Cervical cancer)

## Invasive Cervical Carcinoma:

About 75–90% of invasive cancers are **squamous cell carcinomas (ectocervix)**

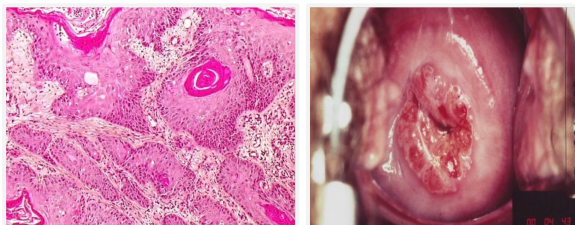
The remainder are **adenocarcinoma**, mixed adenosquamous carcinomas (20%) and small cell neuroendocrine carcinomas.

It is the 8th most common cause of cancer death in women in US now (was #1 in 1940's); still #1 in other countries

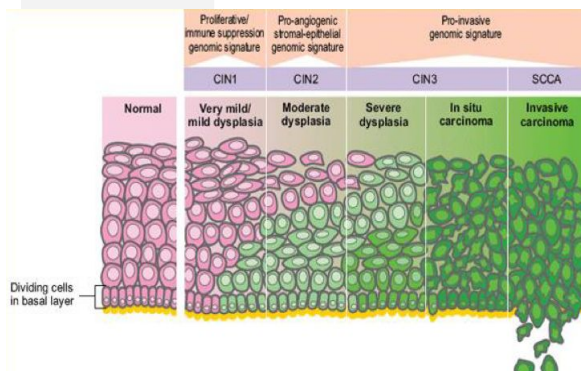
Reduction in the West is due to PAP smear test which detects premalignant lesions.

## Morphology

The tumors may be invisible or present as an exophytic mass



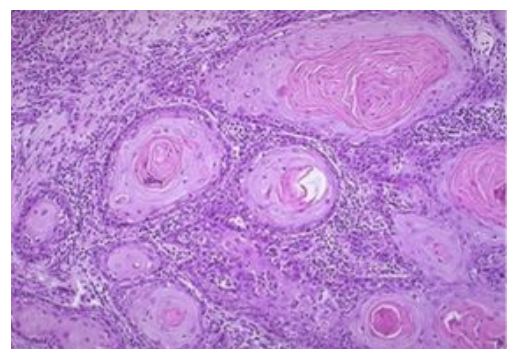
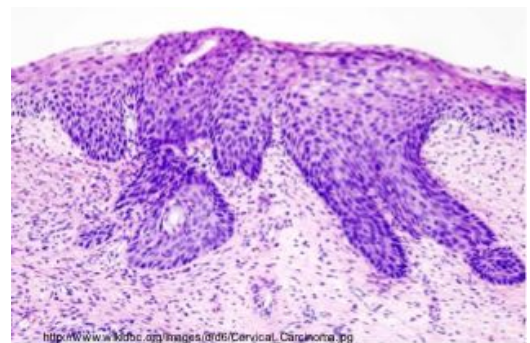
Well differentiated



Cervical carcinomas are:

**Graded from 1 to 3** (i.e. well, moderately and poorly differentiated) based on cellular differentiation.

**Staged From 1 to 4** depending on clinical spread.



# Invasive squamous cell carcinoma

1

**Squamous cell carcinomas** typically arise from pre-cancer CIN/SIL lesions at the transformation zone.

Peak incidence at the age of about 45 years, some 10 to 15 years after detection of precursor SIL. Mean age: 51 years, uncommon before age 30 years but most are ages 45 - 55 years.

2

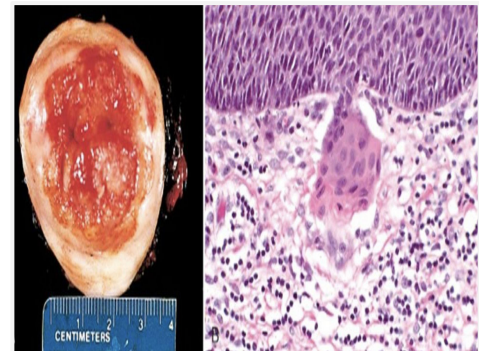
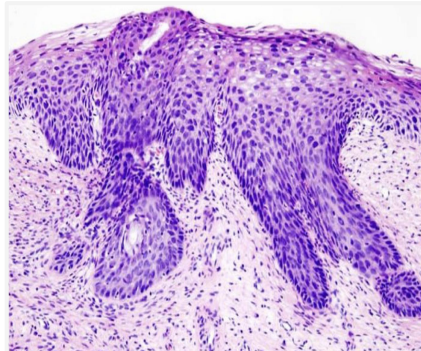
3

Nowadays, due to the pap screening test, many of cervical cancers are diagnosed in early stages, and majority are diagnosed in the pre-invasive CIN/SIL phase.

4

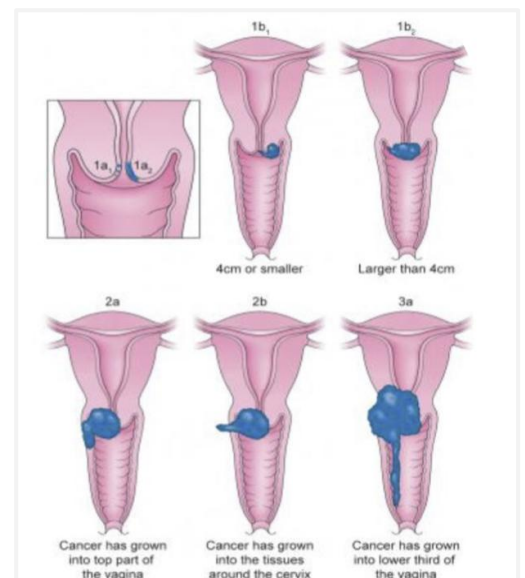
Advanced cases of Squamous cell carcinoma are seen in:

- Women who either have never had a PAP smear.
- Have waited many years since the last PAP smear.



## Cervical Carcinoma Staging:

- 0 Carcinoma in Situ.
- 1 Confined to the cervix.
- 2 Extension beyond the cervix without extension to the lower third of Vagina or Pelvic Wall.
- 3 Extension to the pelvic wall and/or lower third of the vagina.
- 4 Extends to adjacent organs.





# Invasive squamous cell carcinoma

## Clinical features

- 1 The early stages may be completely **asymptomatic** (invisible lesions).
- 2 On **colposcopy**: cervix shows a **mosaic vascular pattern** and the lesions appear as **white patches** after application of acetic acid to cervix.
- 3 Vaginal bleeding, contact bleeding, or cervical mass , dyspareunia
- 4 In **advanced disease**, **metastases** may be present in the abdomen, lungs or elsewhere.
- 5 **Symptoms** of advanced cervical cancer may include:
  - Loss of appetite, weight loss. -Fatigue. -Pelvic pain, back pain, leg pain, swollen legs.
  - Heavy bleeding from the vagina. -Bone fractures, and/or (rarely) leakage of urine or feces from the vagina **Due to metastasis**

## Treatment

Depending on the stage there are different treatment options:

If patient wants to have children, the cancer is removed with a **cone biopsy** (cervical conization), and then followed up regularly.

Simple hysterectomy (removal of the whole uterus including part of the vagina).

**Radical hysterectomy** (removal of the whole uterus including part of the vagina along with the removal of lymph nodes in the pelvis)

**Chemotherapy and radiotherapy** maybe needed in advanced cases.

The primary treatment is hysterectomy and lymph node dissection; small microinvasive carcinomas may be treated with cone biopsy.

Radiation and chemotherapy are also of benefit in instances where surgery alone is not curative.

# Keywords

<b>Cervical Ectropion</b>	<ul style="list-style-type: none"> <li>• Squamous Epithelium is replaced by columnar epithelium.</li> <li>• erythematous area &amp; Benign</li> </ul>	
<b>Squamous Metaplasia</b>	<ul style="list-style-type: none"> <li>• columnar cells are replaced by squamous cell in squamocolumnar junction</li> <li>• HPV infection.</li> </ul>	
<b>Cervical Polyp</b>	<ul style="list-style-type: none"> <li>• small, pedunculated mass (<b>not a true neoplasm</b>)</li> <li>• <b>Endocervical polyps is the most common</b></li> </ul>	
<b>Cervicitis</b>	Non infectious	<ul style="list-style-type: none"> <li>• Chemical irritation e.g. douche</li> <li>• Mechanical irritation (e.g. tampon, diaphragm).</li> <li>• cervix appears red and swollen.</li> <li>• Inflammatory cells: neutrophils in acute</li> <li>• plasma cells and lymphocytes in chronic.</li> </ul>
	Candidiasis	<ul style="list-style-type: none"> <li>• <b>Immunosuppression , DM , pregnancy , contraceptives</b></li> <li>• <b>White patchy mucosal lesion.</b></li> <li>• <b>Thick curdy white discharge.</b></li> <li>• Appear as spores &amp; Branching pseudohyphae</li> </ul>
	Trichomoniasis	<ul style="list-style-type: none"> <li>• Sexually transmitted</li> <li>• <b>Greenish-yellow frothy and foul smelling vaginal discharge</b></li> <li>• Painful urination</li> <li>• Saline wet preparation: motile trophozoites</li> </ul>
	Chlamydia	<ul style="list-style-type: none"> <li>• <b>sexually transmitted disease , most common</b></li> <li>• <b>Mucopurulent cervical discharge.</b></li> <li>• Maybe associated with urethritis.</li> <li>• <b>Can cause lymphogranuloma venereum</b></li> <li>• Reddened, congested and edematous cervix.</li> </ul>
	Herpes Simplex Virus (HSV)	<ul style="list-style-type: none"> <li>• HSV Type 2 infection</li> <li>• <b>Sexual transmission.</b></li> <li>• It produces vesicles and ulcers</li> <li>• Multinucleation, molding of nuclei and margination of chromatin.</li> <li>• <b>Intranuclear " Cowdry type A" viral inclusions</b></li> <li>• <b>Nucleic Ground glass appearance</b></li> </ul>
	Human papillomavirus infection (HPV)	<ul style="list-style-type: none"> <li>• <b>Associated with increased risk of cervical cancer.</b></li> <li>• Condyloma : flat or exophytic lesions , caused by 6 and 11 serotypes</li> <li>• <b>Low grade dysplasia : caused by 6 and 11 serotypes</b></li> <li>• <b>High grade dysplasia : High risk HPV (types 16 and 18).</b></li> <li>• Moderate risk HPV (types 31, 33 and 35).</li> <li>• <b>koilocytic atypia</b> : nuclear changes : enlargement , Irregular membrane , hyperchromasia , Perinuclear halo.</li> </ul>

# Keywords

## Cervical Neoplasia

- most common cervical cancer is squamous cell carcinoma.
- CIN ( cervical intraepithelial neoplasia ) are precancerous lesions of the cervix.
- SIN = squamous intraepithelial lesions
- High risk types HPV: 16, 18
- Low risk types HPV: 6, 11
- Risk Factors : Early age at first intercourse , Multiple sexual partners , Male partner with multiple previous sexual partners , Persistent infections by high risk HPV , smoking
- Regress of incident due to pap smear screening

CIN I

- Mild Dysplasia
- In the lower  $\frac{1}{3}$  of epithelium the maturation is lost
- Koilocytes in the upper part.

CIN II

- Moderate Dysplasia
- Progressive koilocytic atypia in the upper layers.
- In the lower  $\frac{2}{3}$  of the epithelium the maturation is lost

CIN III

- Severe Dysplasia and Carcinoma in situ (CIS).
- There is diffuse koilocytic atypia
- All of the epithelium lost its maturation

Pap Test rules

- Should start pap test by the age of 21.
- For women between age 21 to 29: pap test should be done every 3 years.
- For women between age 30-64 : there are 2 possibilities :
- A. only pap test once every 3 years.
- do two tests (co-testing) at the same time the pap test + DNA in-situ hybridization (ISH) HPV testing, every 5 years.



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# YOU VS MCQs



## Question 1

Squamous metaplasia in the cervix is most affected by which infection?

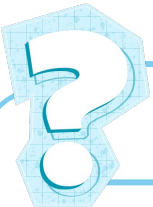
- Herpes simplex virus (HSV)
- Trichomoniasis
- Chlamydia trachomatis
- Human papillomavirus (HPV)



## Question 2

Which cellular changes are characteristic of koilocytic atypia caused by HPV infection?

- Nuclear atrophy and irregular nuclear membrane
- Dark bluish nuclei and perinuclear halo
- Multinucleation and margination of chromatin
- Accumulation of viral particles and pale nucleic ground glass appearance



## Question 3

Which HPV serotypes are associated with low-grade dysplasia?

- 6 and 11
- 31, 33, and 35
- 16 and 18
- 11 and 18



## Question 4

Which of the following is a characteristic feature of herpes simplex virus (HSV) infection?

- White patchy mucosal lesion
- Greenish-yellow frothy discharge
- Thick curdy white discharge
- Pale Nucleic Ground glass appearance

# YOU VS MCQs



## Question 5

A patient came to the ER with White patchy mucosal lesion and Thick curdy white discharge , his cytological smear shows pseudohyphae fungal colonies

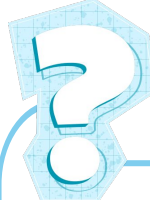
- moniliasis
- Trichomoniasis
- Chlamydia trachomatis
- Invasive cervical carcinoma



## Question 7

Which of the following Oncoproteins is a risk factor for cancer of the cervix?

- E93 , E92
- E6 , E16
- E5 , E7
- E6 , E7



## Question 6

36 years old female came to the clinic complaining of vaginal bleeding, weight loss with loss of appetite. She also complains of back and leg pain.

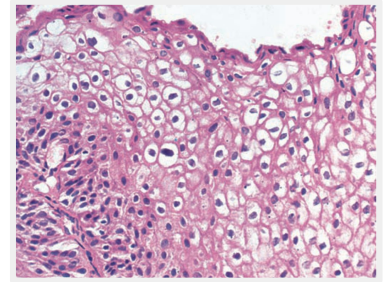
Colposcopy was preformed and cervix shows a mosaic vascular pattern and the lesions appear as white patches after application of acetic acid to cervix. She has been also hospitalised before 5 months for hip fracture. What is the possible diagnosis?

- carcinoma in situ
- leiomyosarcoma
- Adenocarcinoma
- Invasive cervical carcinoma



# Cases

1. A 29-year-old woman is evaluated for an abnormal cervical Pap smear. Colposcopy reveals condyloma acuminatum of the exocervix. A biopsy of the cervix is shown in the image. PCR amplification of this biopsy specimen will most likely demonstrate evidence of which of the following infectious agents?



- |                         |                         |                          |                       |
|-------------------------|-------------------------|--------------------------|-----------------------|
| A. Herpes simplex virus | B. Human papillomavirus | C. Molluscum contagiosum | D. Treponema pallidum |
|-------------------------|-------------------------|--------------------------|-----------------------|

2. A 31-year-old Haitian woman is evaluated for infertility. Pelvic examination shows a markedly enlarged vulva, inguinal lymph node enlargement, and rectal stricture. Biopsy of an inguinal lymph node reveals necrotizing granulomas, neutrophilic infiltrates, and inclusion bodies within macrophages. Which of the following is the most likely etiology of infertility in this patient?

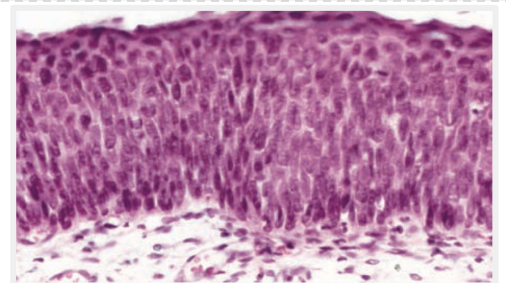
- |                          |                          |                          |                               |
|--------------------------|--------------------------|--------------------------|-------------------------------|
| A. Chlamydia trachomatis | B. Gardnerella vaginalis | C. Molluscum contagiosum | D. Mycobacterium tuberculosis |
|--------------------------|--------------------------|--------------------------|-------------------------------|

3. A routine cervical Pap smear taken during a gynecologic examination of a 31-year-old woman shows numerous, loosely arranged cells with high nuclear-to cytoplasmic ratio. Colposcopy shows white epithelium, punctuation, and a mosaic pattern in the transformation zone (shown in the image). Which of the following is the most likely diagnosis?



- |                                 |                       |                              |                            |
|---------------------------------|-----------------------|------------------------------|----------------------------|
| A. Adenocarcinoma of endocervix | B. Chronic cervicitis | C. Clear cell adenocarcinoma | D. Dysplasia of the cervix |
|---------------------------------|-----------------------|------------------------------|----------------------------|

4. A 36-year-old woman is evaluated for an abnormal Pap smear. A cervical biopsy shows atypical squamous cells throughout the entire thickness of the epithelium, with no evidence of epithelial maturation (shown in the image). The basal membrane appears intact. What is the appropriate diagnosis?



- |                              |                                     |  |                             |
|------------------------------|-------------------------------------|--|-----------------------------|
| A. Clear cell adenocarcinoma | B. Invasive squamous cell carcinoma | C. Mild dysplasia (cervical intraepithelial neoplasia [CIN]-1) | D. Severe dysplasia (CIN-3) |
|------------------------------|-------------------------------------|--|-----------------------------|



1-B / 2-A / 3-D / 4-D



NEED EXPLANATION ? [CLICK HERE](#)

# Cases

5. A 35-year-old woman presents with a 6-week history of vaginal discharge, which is occasionally blood tinged. Pelvic examination reveals a 2-cm pedunculated, lobulated, and smooth cervical growth; it is excised. Histologic examination of the specimen would most likely reveal which of the following?

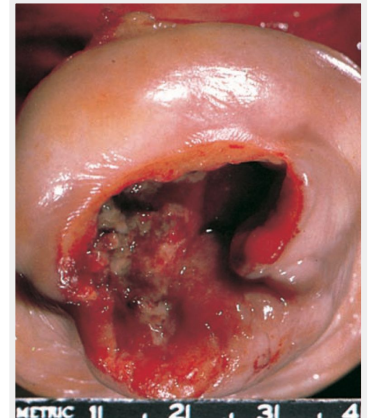
A. Condyloma acuminatum

B. Embryonal rhabdomyosarcoma

C. Endocervical polyp

D. Leiomyosarcoma

6. A 28-year-old woman, who is 28 weeks pregnant, presents with vaginal bleeding. She does not have a history of uterine contractions. Pelvic examination reveals bright red blood in the endocervical canal. An ulcerated exophytic mass is identified on the left side of the cervix. There is no evidence of direct tumor extension into the parametrium. The pelvic lymph nodes are slightly enlarged, raising the possibility of nodal involvement by the tumor. A Caesarian section is performed, followed by a radical hysterectomy. The cervix is shown in the image. Which of the following is the best prognostic indicator of survival in this patient?



A. Degree of keratinization

B. Nodal involvement

C. Presence of carcinoembryonic antigen (CEA) in serum

D. Small cell rather than large cell carcinoma

7. Imaging studies establish a diagnosis of stage IV cervical cancer. If untreated, which of the following will be the most likely cause of death in the patient described in Question 6?

A. Adrenocortical failure

B. Brain metastases

C. Lung metastases

D. Renal failure



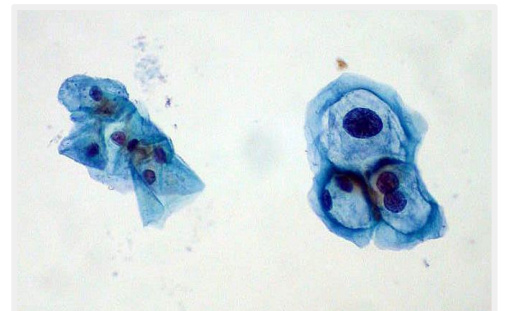
# Cases

## EXTRA CASES MAY REQUIRE EXTRA INFO

1. A 30-year-old woman comes to her primary care physician for an annual examination. The patient feels well and has no complaints. Over the past year, she has been sexually active with three male partners and does not use barrier contraception. A speculum exam is performed, and a specimen is collected using a cytobrush. Pap smear testing reveals cells with enlarged nuclei and perinuclear halos. Which of the following best describes the normal histology of the region of the cervix from where this sample was obtained?

- |                              |  |  |                              |
|------------------------------|--|--|------------------------------|
| A. Columnar epithelial cells | B. Transition from squamous to columnar epithelial cells | C. Transition from squamous to cuboidal epithelial cells | D. Squamous epithelial cells |
|------------------------------|--|--|------------------------------|

2. A 28-year-old woman comes to her outpatient provider's office for a wellness exam. She has no chronic medical conditions. The patient reports smoking half-a-pack of cigarettes daily, and she has been sexually active with multiple male partners in the last year. A speculum exam is performed, and a sample from the cervix transformation zone is collected. Subsequent visualization of the sample under microscopy is notable for the following findings:



- |                                 |                                 |                            |                         |
|---------------------------------|---------------------------------|----------------------------|-------------------------|
| A. <i>Neisseria gonorrhoeae</i> | B. <i>Trichomonas vaginalis</i> | C. <i>Candida albicans</i> | D. Human papillomavirus |
|---------------------------------|---------------------------------|----------------------------|-------------------------|

3. A 35-year-old woman comes to the office because of back pain. For the past four months, she has felt progressive colicky pain in the left lumbar region, which does not alleviate with medication. She endorses pain during sexual intercourse with her husband. She has no urinary symptoms. Her last menstrual period was three weeks ago. She has a history of essential hypertension and migraines. She currently takes propranolol for both conditions. Her mother died of breast cancer at 60-years-old. Vital signs are within normal limits. Physical examination shows a soft abdomen that is tender to deep palpation in the left lower quadrant. Lumbar percussion shows mild tenderness. Pelvic examination shows tenderness in the posterior vaginal fornix. Pap smear shows high grade squamous intraepithelial lesions. Urinalysis shows no abnormalities. Renal ultrasound is obtained and results are as follows: Which of the following best explains the patient's overall clinical presentation?



- |                        |                            |                                    |                           |
|------------------------|----------------------------|------------------------------------|---------------------------|
| A. Ectopic endometrium | B. Multiple cystic changes | C. Parametrial neoplastic invasion | D. Chronic pyelonephritis |
|------------------------|----------------------------|------------------------------------|---------------------------|



# Cases

## EXTRA CASES MAY REQUIRE EXTRA INFO

4. A researcher is studying the molecular mechanism through which HPV infection leads to cervical cancer. He has developed an in vitro model that involves transfecting cervical epithelial cells grown in culture flasks with a lentivirus carrying the HPV E6 and E7 genes. The expression of protein E6 and E7 in infected cells is subsequently confirmed using fluorescence microscopy. Which of the following best describes the role these proteins play in the pathogenesis of cervical cancer?

A. Inhibition of cell cycle regulatory proteins

B. Overactivation of tyrosine kinase

C. Inhibition of DNA repair proteins

D. Overproduction of transcription factors

5. A 45-year-old woman comes to her physician seeking evaluation for postcoital vaginal bleeding. The patient reports that the symptoms started two months ago and have been progressively worsening, prompting her to seek medical care. Past medical history is notable for hypertension, for which she is currently taking propranolol. The patient consumes half-a-pack of cigarettes per day. Speculum exam reveals the following finding: Biopsy of the lesion and subsequent histology results confirm the presence of a tumor with a width of 5.0 mm and stromal invasion depth of 1.5 mm. The patient's history will most likely be notable for which of the additional symptoms?



A. Reduced urine output

B. Vaginal canal pruritus

C. Foul-smelling vaginal discharge

D. Swelling of the lower extremities

6. A 12-year-old girl is brought to the pediatrician by her parents for a routine health maintenance visit. The patient reports feeling well, and she has been meeting all developmental milestones. She has no chronic medical conditions. Her temperature is 37.0°C (98.6°F), pulse is 71/min, and blood pressure is 112/71 mmHg. She is at the 75th percentile for height and 80th percentile for weight. A vaccine that is protective against genital warts and cervical cancer is recommended by the pediatrician and administered during the visit. Which of the following best describes the characteristics of this vaccine and the pathogen that it protects against?

A.

Vaccine Type	Pathogen Characteristics
Subunit	DNA Virus

B.

Vaccine Type	Pathogen Characteristics
Inactivated	RNA Virus

C.

Vaccine Type	Pathogen Characteristics
Inactivated	DNA Virus

D.

Vaccine Type	Pathogen Characteristics
Subunit	RNA Virus

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Leader

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دانه المحيسن



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الدانه عبدالله



هدى الجدعان



ساره الشهراني



ليان الرويلي



أفنان الأحمري



ساره العجاي



هيا الزير



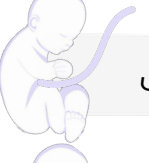
رغد الحامد



محمد معشي



مشعل الدخيل



يزيد المطيري



سلمى السعدون



ريما القرني

Leader

زياد العتيبي



رغد المطلح



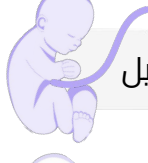
ألين الكلية



مريم الغنام



محمد العرفج



رند ابا الخيل



وجد المطيري



ريوف الأحمري



سلطان البقمي



شوق الخليفة



عروب المحمود



هياء العجمي



ريماس المحمود



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فيصل الشويعر



محمد السلامة



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