

Gynecology for 3rd Year Midwifery Student

Unit: III, IV & V

By Zenebe Tefera (BSc, MSc)

Topics included in this Handout

1. Pelvic organ prolapse (POP)
2. Sexually Transmitted Infections (STI)
3. Pelvic Inflammatory disease (PID)
4. HIV/AIDS
5. Infection Prevention (IP)
6. Infertility
7. Amenorrhea and Menopause
8. Anatomy and Physiology of breast
9. Breast Self Examination (BSE)
10. Benign and malignant condition of breast

Sexually Transmitted Infections

By Zenebe T(MSc in CMW)

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Learning Objectives

- ☞ Describe the Classification of STIs syndromic approach
- ☞ Explain advantages and limitations of syndromic approach
- ☞ Treat STI based on syndromic approach

Introduction #1

- ➡ Reproductive tract infections (RTIs) are infections of the genital tract of women and men
- ➡ There are 3 types of RTIs:
 1. Sexually transmitted infections (STIs)
 2. Endogenous infections
 3. Iatrogenic infections

1/ Sexually transmitted infections (STIs)

- ✓ Infections caused by organisms that are passed through sexual activity with an infected partner.
- ✓ including Chlamydia, gonorrhea, hepatitis B and C, herpes, HPV, syphilis, trichomoniasis, and HIV.

2/ Endogenous infections

- ✓ Infections that result from an overgrowth of organisms normally present in the vagina.
- ✓ These infections are not usually sexually transmitted, and include bacterial vaginosis and candidiasis.

3. Iatrogenic infections

- ✓ Infections introduced into the reproductive tract by a medical procedure such as induced abortion, IUD insertion, or childbirth.
- ✓ This can happen if surgical instruments used in the procedure are not properly sterilized, or if an infection already present in the lower reproductive tract is pushed through the cervix into the upper reproductive tract.

❖ *The three diagnostic approaches of STI*

1. *Etiologic*
2. *Clinical*
3. *Syndromic*

Cont...

1. **Etiologic diagnosis** – using lab to identify the causative agent and giving treatment targeted to the pathogen identified.

❖ **Advantages:-**

- ☞ Avoids over treatment
- ☞ Conforms to traditional clinical training
- ☞ Satisfies patients who feel not properly attended to
- ☞ Can be extended as screening for the asymptomatics

❖ *Disadvantage con...*

- ☞ Requires **skilled personnel** and consistent supplies
- ☞ Treatment does not begin until results are available
- ☞ It is time consuming and expensive
- ☞ Testing facilities are not available at primary level
- ☞ Some bacteria fastidious and difficult to culture (H.ducrey, C.trachomatis)
- ☞ Lab. results often not reliable
- ☞ Mixed infections often overlooked
- ☞ Miss-treated/untreated infections can lead to complications and continued transmission

2. Clinical diagnosis

- Clinical diagnosis –using clinical experience to identify symptoms which are typical for specific STI and giving treatment targeted to the suspected pathogens
- Advantages:-
 - ☞ Saves time for patients
 - ☞ Reduces laboratory expenses

Clinical Management con...

- **Disadvantages:-**

- ✓ Requires high clinical acumen(clinically experienced personnel)
- ✓ Most STIs cause similar symptoms
- ✓ Mixed infections are common and failure to treat may lead to serious complications
- ✓ Doesn't identify asymptomatic STIs

3. Syndromic approach

- Syndromic approach;-identification of clinical syndrome and giving treatment targeting all the locally known pathogens which can cause the syndrome

Advantages :

- Immediate treatment: Clients receive diagnosis and treatment within a single visit.
- Effectiveness: Clients are treated for a potential mixed infection.
- The use of flowcharts with appropriate treatment recommendations reduces the chance of ineffective treatment.
- This approach helps to prevent incorrect diagnoses in settings where clinical diagnosis is common.

Advantage cont.....

➤ **Ease of use:**

☞ It is easy to teach and learn. So, all levels of health care providers and facilities can use it.

☞ It requires good training, but not specialized knowledge about STIs/RTIs.

➤ **Low costs:** There are cost savings since expensive lab tests are not used.

Limitations and concerns cont...

➤ **Potential for over treatment:**

☞ Clients are treated for multiple infections, although some will have no infection or only one.

☞ This is costly in terms of unnecessary drug use, waste of drugs that could be used to treat other clients, and the potential for microorganisms to develop resistance to antimicrobial drugs.

➤ **Ineffectiveness against asymptomatic infections:**

☞ This approach cannot be used with clients who are infected, but show no signs and symptoms.

The main STI syndromes are:

1. Urethral discharge
2. Genital ulcer
3. Inguinal bubo
4. Scrotal swelling
5. Vaginal discharge
6. Lower abdominal pain
7. Neonatal conjunctivitis

1. Urethral Discharge

Causative agents

- *N. Gonorrhea* & *C. trachomatis* are common causes

- Rarely other causes like *M. genitalium* *T. vaginalis*

■ Clinical presentations

- **Burning sensation** on urination & **urethral discharge** are common symptoms of urethritis in men



Urethral Discharge Cont....

Gonorrhea		Chlamydia
Incubation	6 days	2-3 weeks
Dysuria	70-80%	40%
Discharge	90% Profuse	<80% Scanty

Rx for urethral discharge

☞ ***Ceftriaxone 250mg IM stat/Spectinomycin 2 grams 1M stat***

PLUS

☞ ***Azithromycin 1gm po stat/Doxycycline 100 mg po bid for 7 days/Tetracycline 500 mg qid for 7 days/Erythromycin 500mg qid for 7 days***

☞ **Remark:** The preferred regimen in Ethiopia

Ceftriaxone 250mg IM stat plus Azithromycin 1gm po stat
--

2. Genital ulcer

Vesicular

HSV2: Genital Herpes



Non-Vesicular

T. Pallidum: Syphilis

H. Ducreyi: Chancroid

C. Trachomatis

K. Granulomatis



C/F of ulcers

- ✓ Constitutional symptoms such as fever, headache, malaise and muscular pain
- ✓ Recurrent painful vesicles and irritations
- ✓ Shallow and non-indurated tender ulcers
- ✓ Painless indurated ulcer(Chancre)
- ✓ Regional lymphadenopathy
- ✓ Common sites in **male** are glans penis, prepuce and penile shaft
- ✓ Common sites in **women** are vulva, perineum, vagina and cervix

❖ Rx for non vesicular genital ulcer

Benzathine penicillin 2.4 million units 1M stat/**Doxycycline** (in penicillin allergy) 100 mg bid for 14 days

Plus

Ciprofloxacin 500mg bid orally for 3 days/ **Erythromycin** tablets 500 mg qid for 7 days

Plus

Acyclovir 400mg tid orally for 10 days (or 200mg five times per day of 10 day)

❖ Rx for vesicular genital ulcer

Acyclovir 400 mg tid for 10 days.

Or

Acyclovir 200mg five times per day for 10 days

3. Vaginal discharge

❖ Common causes for Vx discharge

- ✓ *Neisseria gonorrhoea*
- ✓ *Chlamydia trachomatis*
- ✓ *Trichomoniasis vaginalis*
- ✓ *Gardnerella vaginalis*
- ✓ • *Candida albicans*



Risk factors for vaginal discharge

- ☞ Age less than 25 years
- ☞ Having multiple sexual partner in the last three months
- ☞ Having new partner in the last three months
- ☞ Having ever traded for sex

Recommended treatment for vaginal discharge

RISK ASSESMENT POSITIVE	RISK ASSESMENT NEGATIVE
<p>Ceftriaxone 250mg IM stat/Spectinomycin 2 gm IM stat</p> <p>Plus</p> <p>Azithromycin 1gm po stat/Doxycycline 100 mg po bid for 7 days</p> <p>Plus</p> <p>Metronidazole 500 mg bid for 7 days</p> <p>If discharge is white or curd-like add Clotrimazole vaginal pessary 200 mg at bed time for 3 days</p> <p>The preferred regimen is Ceftriaxone 250mg IM stat plus Azithromycin 1gm po stat plus Metronidazole 500 mg bid for 7 days</p>	<p>Metronidazole 500 mg bid for 7 days</p> <p>If discharge is white or curd-like add Clotrimazole vaginal pessary 200 mg at bed time for 3 days</p>

Recommended regimens for pregnant women

- ☞ Metronidazole is not recommended for use in the
- ☞ first trimester of pregnancy
- ☞ Metronidazole, 200 or 250 mg orally, 3 times daily
- ☞ for 7 days, after first trimester
- ☞ Metronidazole 2g orally, as a single dose, if
- ☞ treatment is imperative during the first trimester
- ☞ of pregnancy

4. Lower Abdominal Pain (PID)

- **PID** - Ascending infection of the uterus, fallopian tubes, ovaries, & peritoneum

- ✓ Sexually transmitted
- ✓ Causes include N.gonorrhea, C.trachomatis &
- ✓ Anaerobes i.e (poly microbial)
- ✓ Bilateral lower abdominal pain & vaginal discharge support diagnosis

Recommended treatment for PID

Out patient	In patient
<p>Ceftriaxone 250 mg IM stat/ Spectinomycin 2 gm IM stat</p> <p><i>Plus</i></p> <p>Azithromycin 1gm po stat/Doxycycline tablet 100 mg po bid for 14 days</p> <p><i>Plus</i></p> <p>Metronidazole 500 mg bid for 7 days</p> <p>Admit if there is no improvement within 72 hours</p> <p>The preferred regimen is Ceftriaxone 250mg IM stat plus <i>Azithromycin 1gm po stat plus</i> Metronidazole 500 mg bid for 7 days</p>	<p>Ceftriaxone 250 mg IV/IM daily /Spectinomycin 2 gm im bid</p> <p>Plus</p> <p>Azithromycin 1gm po daily /Doxycycline tablet 100 mg po bid for 14 days</p> <p>Plus</p> <p>Metronidazole 500 mg bid for 14 days or chloramphenicol 500 mg IV qid.</p>

5. Scrotal swelling

- Causes depend on the age of patients
- < 35 yr caused by *C.trachomatis* & *N.gonorrhea*
- >35 years is commonly caused by gram negative bacteria & TB
- Other infectious causes: brucellosis, mumps, onchocerciasis or infection with *W. bancrofti*



Scrotal swelling cont...

- ❖ In pre-pubertal children the usual etiology is coliform, pseudomonas or mumps virus
- ❖ Other causes of scrotal swelling
 - ✓ testicular torsion
 - ✓ Trauma
 - ✓ Tumor
 - ✓ incarcerated inguinal hernia

Recommended Rx of scrotal swelling

- Ceftriaxone 250 mg Im stat/Spectinomycin 2 gm im stat

Plus

- Azithromycin 1gm po stat/Doxycycline 100 mg PO bid for 7 days/Tetracycline 500 mg PO bid for 7 days

- The preferred regimen is Ceftriaxone 250mg IM stat plus *Azithromycin 1gm po stat*

6. Inguinal Bubo

Common causes of inguinal bubo include

1. *C. trachomatis* (serovar L1, L2, and L3),
 2. *H. ducreyi* and
 3. *C. granulomatis*
- Sometimes *T pallidum* can be a cause of inguinal lymphadenopathy
 - Surgical incisions are contraindicated and the pus should only be aspirated using a hypodermic needle.



Recommended Rx for Inguinal bubo

- Ciprofloxacin 500 mg bid orally for 3 days
Plus
- Doxycycline 100mg bid orally for 14 days/Erythromycin 500 mg po qid for 14 days

7. Neonatal Conjunctivitis

- Neonatal conjunctivitis (ophthalmia neonatorum) is defined as purulent conjunctivitis occurring in a baby less than one month of age.
- The most important causes are *gonorrhoea* and *chlamydia*
- Common presentation are **redness**, **swelling** of the eye lid & discharge from the eye (**sticky eye**)



Prevention of neonatal conjunctivitis

- As soon as the baby is born, carefully wipe both eyes with dry, clean cotton wool;
- Then apply 1 % tetracycline eye ointment into the infant's eyes

Recommended Rx for neonatal conjunctivitis

SYNDROME	TREATMENT
Neonatal conjunctivitis	Ceftriaxone 50mg/kg IM stat- maximum dose 125 mg/Spectinomycin 25 mg/kg IM stat- maximum dose 75mg Plus Erythromycin 50 mg/kg PO in four divided doses for 14days

Prevention and Control of STIs Involves

- Early diagnosis and treatment
- Promotion of safer sexual behavior
- Promotion of health care-seeking behavior,
- Targeting vulnerable groups

Complications of STI

❖ Complications in women include

- ✓ cervical cancer, PID ,
- ✓ infertility, chronic abdominal pain,
- ✓ ectopic pregnancy, preterm labor

❖ Complications in newborns include

- ✓ congenital syphilis,
- ✓ gonococcal infection of the conjunctiva - **blinding**
- ✓ chlamydial pneumonia and perinatal hepatitis B
- ✓ premature deliveries, low birth weight,

❖ Complications in men:

- ✓ Urethral stricture
- ✓ infertility

Pelvic Inflammatory Disease(PID)

By **Zenebe Tefera** (MSc in CMW)

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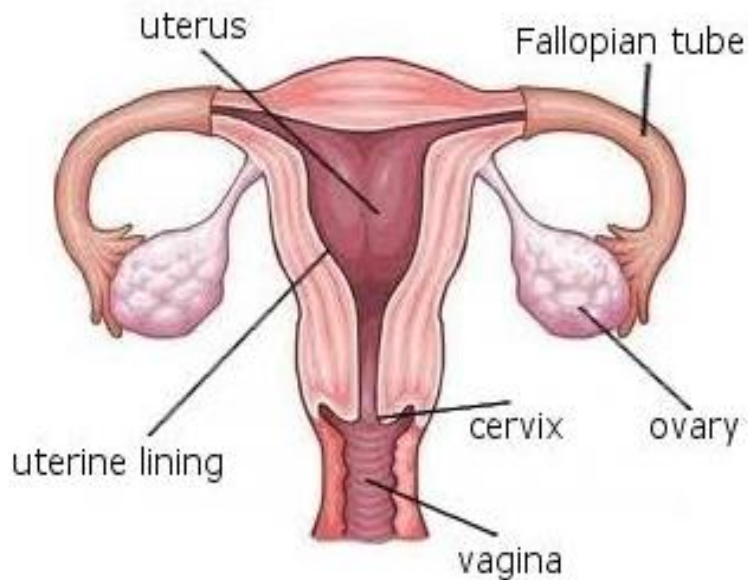
Learning Objectives:

At the end of this session we will be able to:

- ✓ Define PID
- ✓ Discuss epidemiology & Etiology of PID
- ✓ Discuss Pathogenesis & Risk factor of PID
- ✓ Classification, C/F & DDx
- ✓ Complication PID
- ✓ Management & prevention of PID

Introduction

Definition: PID is an infection of the upper genital tract of women (**uterus ,fallopian tube, ovaries & the adjacent tissues**)



Introduction cont...

- PID can involve infection of the
 - ❖ Endometrium (endometritis),
 - ❖ Oviducts (salpingitis),
 - ❖ Ovaries (oophoritis),
 - ❖ Tubo-ovarian abscess and
 - ❖ Pelvic peritonitis.

Epidemiology

- ❖ The exact prevalence of PID is unknown as it is under diagnosed and it is also often asymptomatic.
- ❖ Acute PID occurs in **1% to 2%** of **all young, sexually active women**.
- ❖ It is the most common serious infection of women aged **16 to 25**.

Epidemiology cont...

- ❖ Approximately **85%** of infections are spontaneous in sexually active females.
- ❖ The other **15%** of infections develop following procedures that break the cervical mucus barrier, allowing the vaginal flora the opportunity to colonize the upper genital tract.

Etiology

- ❖ Most cases of PID are polymicrobial.
- ❖ Most common pathogens
 - **N. gonorrhoeae**: recovered from cervix in **30%–80%** of women with PID
 - **C. trachomatis**: recovered from cervix in **20%–40%** of women with PID.
 - **N. gonorrhoeae and C. trachomatis** are present in combination in approximately **25%–75%** of patients with PID

Etiology cont..

➤ Other microbes include

- ❖ **Enteric Gram-negative rods** (e.g., *E. coli*)
- ❖ *Mycoplasma genitalium* have been isolated from the endometrium and fallopian tubes of women with PID.
- ❖ **Gram-positive organisms** (*Streptococcus* spp.)

Pathogenesis:-

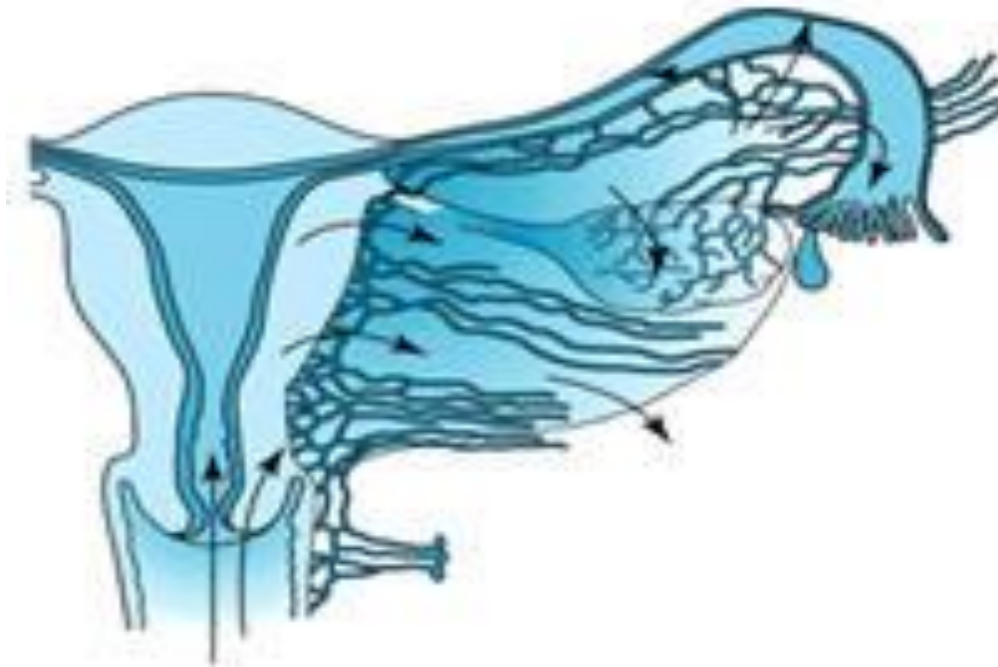
- ❖ Microorganisms causing PID are not sufficiently mobile to reach the upper female genital tract;
- ❖ However conditions that causes a break the physiological barriers like childbirth, abortion, IUCD, surgery & others....

The 3 ways of dissemination

- ✓ Lymphatic
- ✓ Ascending (direct)
- ✓ Haematogenous

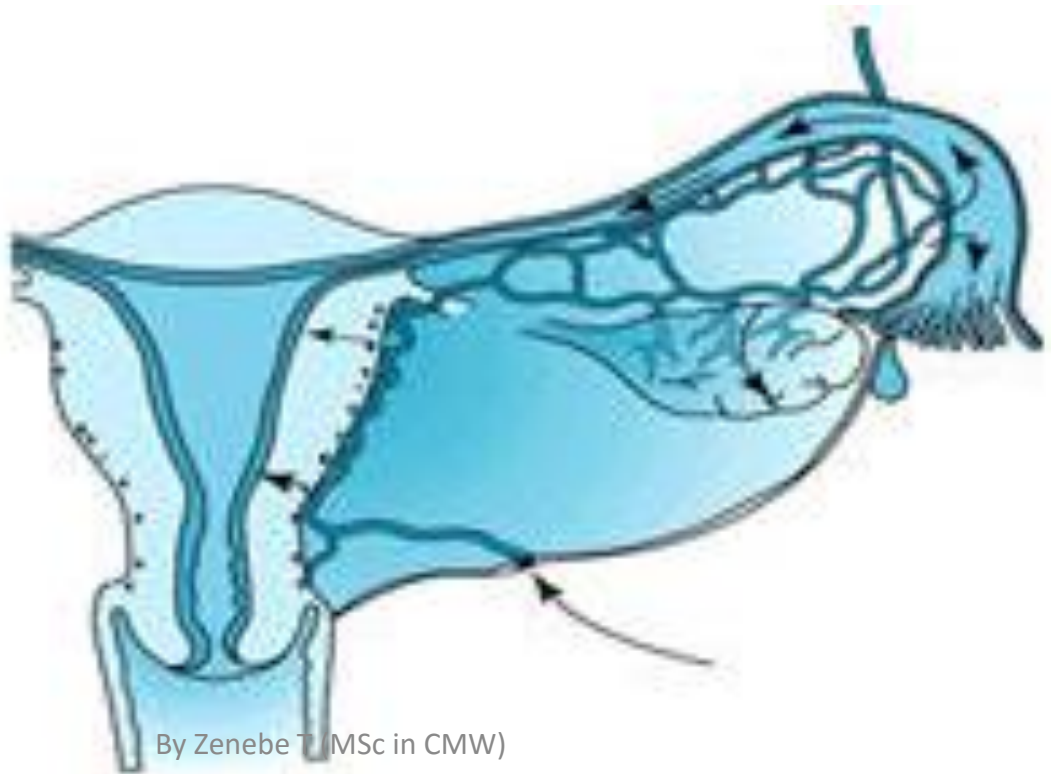
Lymphatic spread of bacterial infection

Typified by postpartum, postabortal, and some IUD-related infections, results in extraperitoneal parametrial cellulitis.



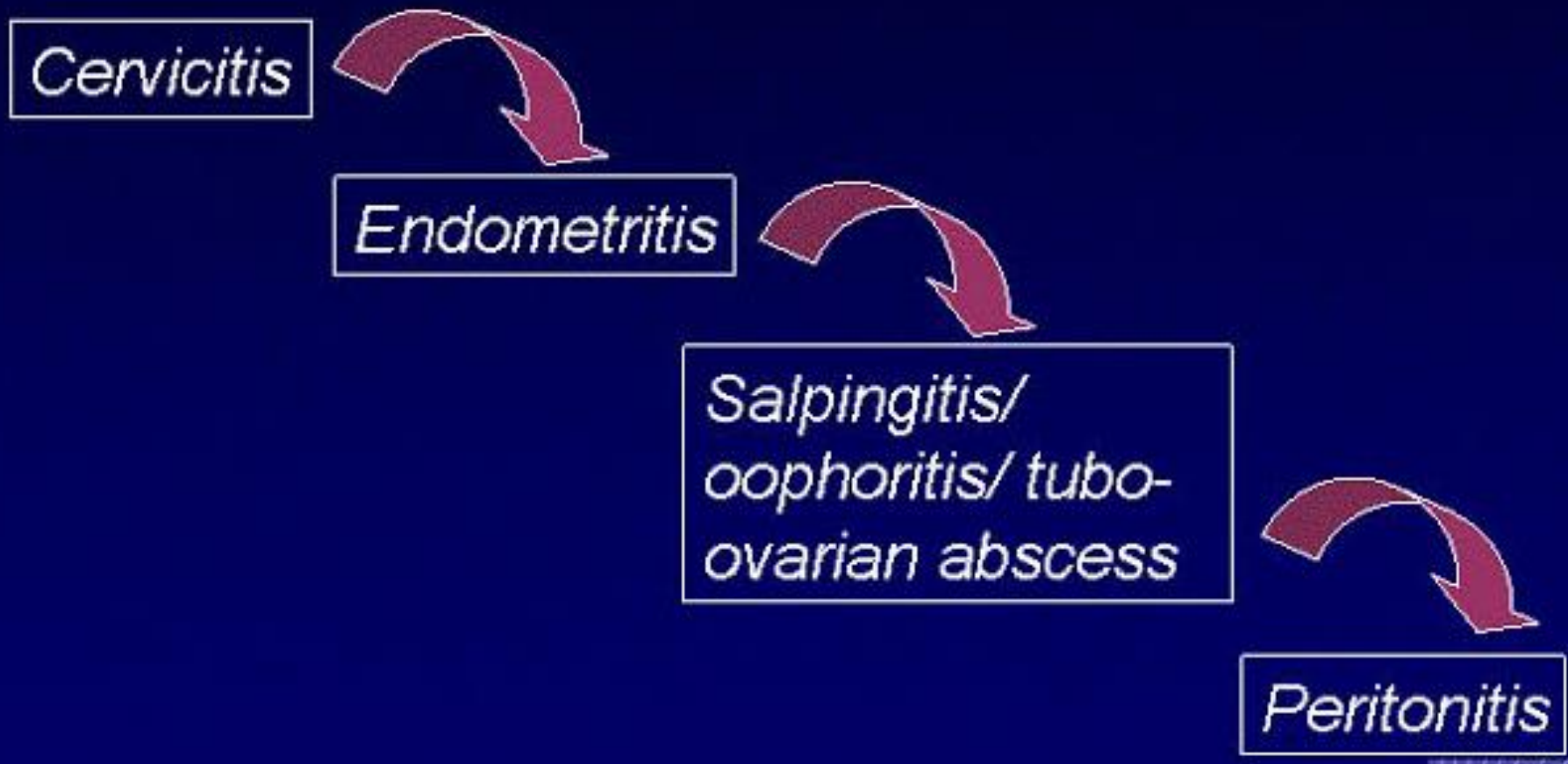
Hematogenous spread of bacterial infection

In rare instances, certain diseases (eg, tuberculosis) may gain access to pelvic structures by hematogenous routes



- Pathway of Ascending Infection(direct)

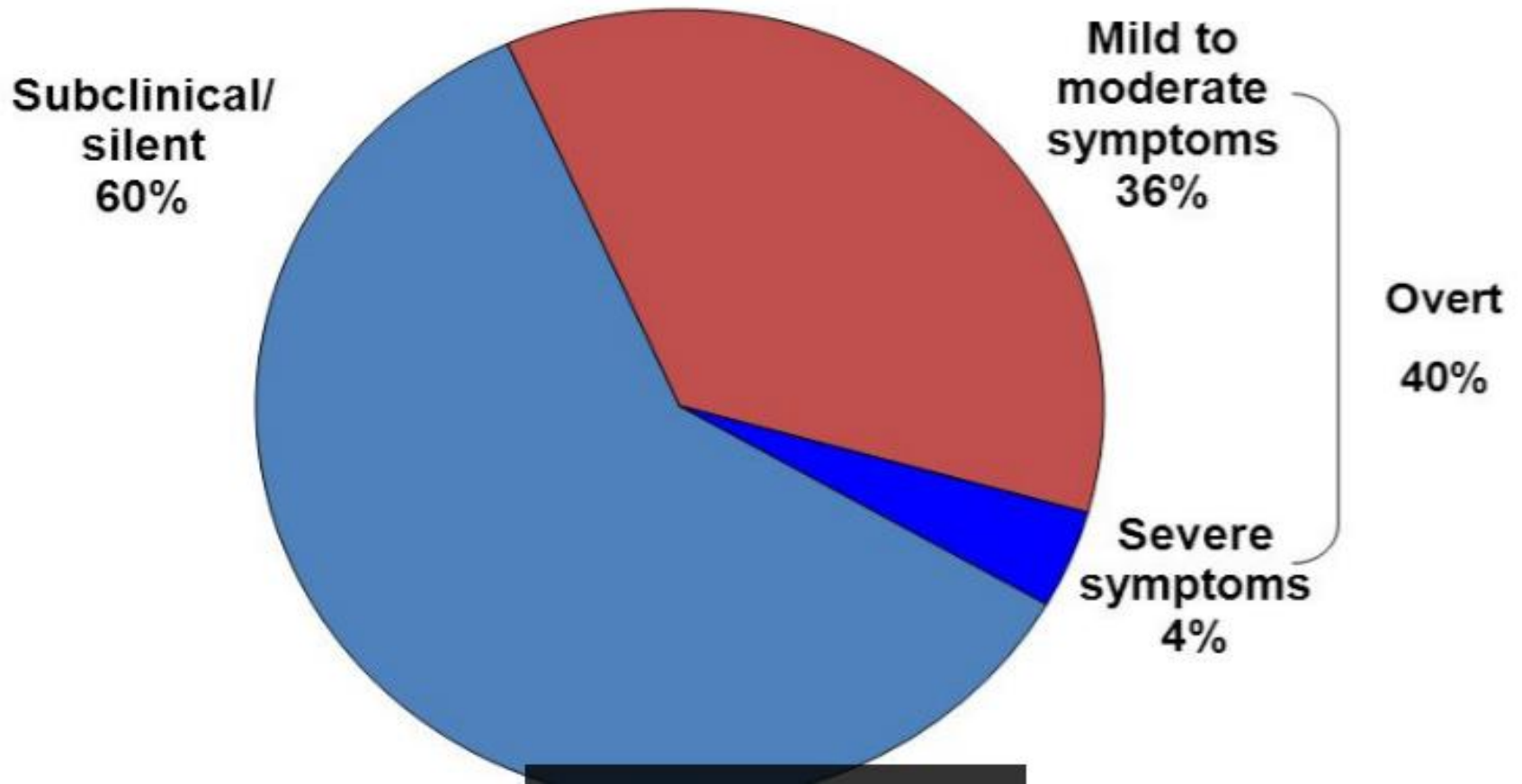
Pathway of Ascendant Infection



Risk Factors

- ❖ History of PID
- ❖ Infected with or a history of gonorrhea or chlamydia
- ❖ Male partners with gonorrhea or chlamydia
- ❖ Multiple sex partners
- ❖ Current douching
- ❖ Insertion of IUD
- ❖ Bacterial vaginosis
- ❖ Socioeconomic status

PID Classification



PID Classification cont...

1. Subclinical/asymptomatic, or “silent” PID

- Occurs approximately 60% of the time;
- Makes Dx and Rx problematic; women may not seek care, or variations in clinical presentation may lead to **misdiagnosis**.
- Atypical presentation may include **dyspareunia, irregular bleeding**.

2. Symptomatic or overt PID with moderate symptom

Occurs approximately 36% of the time; include

- ❖ Lower abdominal pain,
- ❖ Cramping,
- ❖ Dysuria,
- ❖ Intermittent or post-coital bleeding
- ❖ Vaginal discharge, fever
- ❖ Uterine tenderness
- ❖ Cervical motion tenderness
- ❖ Adnexal tenderness.

3. Symptomatic or overt PID with severe symptom

- ❖ Occurs approximately 4% of the time;
- ❖ Patients appear very ill with fever, chills, purulent vaginal discharge, nausea, vomiting.
- ❖ laboratory indicators such as WBC and ESR will be elevated.

Stages of PID severity (WHO)

- ❖ **Stage 1-** simple PID treatable at OPD level
- ❖ **Stage 2.** PID with pelvic peritonitis
- ❖ **Stage 3.** TOA
- ❖ **Stage 4.** generalized peritonitis , sepsis, septic shock
, pelvic abscess

TOA- Tubo-ovarian Abscess, **OPD-** Out patient Department

C/F and DX:-

- Clinical dx of acute PID is often difficult because presentation varies widely and symptoms are vague and non specific.
- Therefore there is no **single golden standard** method of diagnosis of PID

Dx cont....

➤ From Hx:-

- Bilateral lower abdominal pain
- Fever ,Malaise, headache, nausea & vomiting.

➤ The typical physical findings are:-

- Pyrexia
- Tachycardia
- Rebound tenderness
- Cervical excitation tenderness
- Bilateral adenexal tenderness

➤ Laboratory investigations:-

- Reveal leukocytosis of more than 10,000/mm³
- An elevated ESR
- WBC increase
- Positive gram stain/culture in culdocentesis.

❑ Minimum Criteria in the Diagnosis of PID

- CDC recommends empiric treatment of PID in sexually-active young women, or other women at risk for STDs, to have the following:
 - Lower abdominal pain
 - Adnexal tenderness (bilateral or unilateral)
 - Cervical motion tenderness

❑ Additional Criteria to Increase Specificity of PID Diagnosis

- ❖ Oral temperature $>38.3^{\circ}\text{C}$ (101°F)
- ❖ Abnormal cervical or vaginal mucopurulent discharge
- ❖ Presence of abundant numbers of WBCs on saline microscopy of vaginal secretions
- ❖ Elevated ESR
- ❖ Elevated C-reactive protein
- ❖ Cervical infection with gonorrhea or Chlamydia

➤ **More Specific Criteria Used in Diagnosing PID**

- ❖ Endometrial biopsy which shows histopathologic evidence of endometritis
- ❖ Transvaginal sonography or MRI may demonstrate tubo-ovarian abscess or thickened tubes with or without free pelvic fluid
- ❖ Laparoscopy showing abnormalities consistent with PID, E.g Gross salpingitis
- ❖ Isolation of pathogenic bacteria from a clean specimen from the upper genital tract
- ❖ Inflammatory/purulent pelvic peritoneal fluid without another source

❖Laparoscopy is indicated

- ❖ For severe peritonitis, to exclude ruptured tubal abscess or ruptured appendix,
- ❖ For patients with mild signs in whom the diagnosis is unclear,
- ❖ For patients who fail to respond to antibiotic therapy, and
- ❖ For drainage of an abscess.

DDx of PID

- Ectopic pregnancy
- Ruptured ovarian cyst
- Appendicitis
- Endometriosis
- Diverticulitis
- Inflammatory bowel disease
- Degenerating fibroids
- Spontaneous abortion

Complications of PID

- If patients with PID syndrome are not treated appropriately and adequately the following life threatening complications may occur.
 - ❖ Peritonitis and intra-abdominal abscess
 - ❖ Adhesions and intestinal obstruction
 - ❖ Ectopic pregnancy
 - ❖ Infertility
 - ❖ Chronic pelvic pain
 - ❖ Recurrent PID

Treatment of PID

- To reduce the occurrence of complications early identification and Rx should be instituted.
- The Rx regimen should cover all possible causative agents.
- The vast majority of PID with or without pelvic abscess improves with antibiotics alone and the fever usually subsides in less than 72 hours.
- However, failure to improve within 72 hours after antibiotic Rx indicates failure of medical treatment and Pt needs surgical evaluation and treatment.

Indication for inpatient Rx

- ❖ The diagnosis is uncertain
- ❖ Surgical emergencies such as appendicitis and ectopic pregnancy cannot be exclude
- ❖ Pelvic abscess is suspected
- ❖ Severe illness precludes management on an outpatient basis
- ❖ The patient is pregnant
- ❖ The patient is unable to follow or tolerate an outpatient regimen
- ❖ Patient has failed to respond to outpatient therapy.
- ❖ PID in HIV patients

For outpatient

Ceftriaxone 250 mg IM stat /Spectinomycin 2gm i.m stat

Plus

Azithromycin 1gm po stat/Doxycycline 100 mg po b.i.d for 14 days

Plus

Metronidazole 500 mg po b.i.d for 14 days

Admit if there is no improvement within 72 hours

Note : *The preferred regimen is Ceftriaxone 250mg IM stat
plus*

Azithromycin 1gm po stat

plus

Metronidazole 500 mg bid for 14 days

For inpatient

Ceftriaxone 250 mg i.m/i.v /Spectinomycin 2 gm i.m bid

Plus

Azithromycin 1gm po daily /Doxycycline 100 mg po b.i.d for 14 days

Plus

Metronidazole 500 mg po b.i.d for 14 days

When should treatment be stopped ?

- ❖ Parenteral changed to oral therapy after 72 hrs, if substantial clinical improvement
- ❖ Continue Oral therapy until clinical & biological signs (leukocytosis, ESR, CRP) disappear or for at least 14 days
- ❖ If no improvement, additional diagnostic tests/ surgical intervention for pelvic mass/ abscess rupture

Surgery in PID

Indications

Acute PID

- ✓ Ruptured abscess
- ✓ Failed response to medical treatment
- ✓ Uncertain diagnosis

Chronic PID

- ✓ Severe, progressive pelvic pain
- ✓ Repeated exacerbations of PID
- ✓ Bilateral abscesses / > 8 cm. diameter
- ✓ Bilateral uretral obstruction

Surgery in PID cont..

Timing of Surgery

- No improvement within 24-72 hours
- 2-3 months after acute stage

Type of Surgery

- Colpotomy
- Percutaneous drainage/ aspiration
- Exploratory Laparotomy

Extent of Surgery

- Conservation if fertility desired
- U/L or B/L S.Ophrectomy, subtotal/ TAH
- Drainage of abscess at laporortomy

Prevention of PID

- ✓ Sexual counseling:
 - Practice safe sex,
 - Limit the number of partners,
 - Avoid contact with high-risk partners,
 - Delay the onset of sexual activity until ≥ 16 years.
- ✓ Barrier and Oral contraceptives reduce the risk for developing PID.
- ✓ Screening for infections in high- risk.

Prevention of PID cont..

- ✓ Rapid diagnosis and effective treatment of STD and lower urinary tract infections.
- ✓ Early intervention & complete treatment.

HIV/AIDS

By **Zenebe Tefera** (MSc in CMW)

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Objectives

- By the end of this session you will be able to:
 - Explain the basics of HIV/AIDS
 - Describe the clinical stages of HIV
 - Describe the basics of PMTCT
 - Describe the different classes of ARVs
 - Introduction to ART and prophylaxis

Brain storming

1. *What is **HIV**,?*
2. *What does it stand for?*
3. *What types exist?*
4. *What makes differ from other virus?*

Introduction

- **Definition:** HIV is a virus with simple structure, and that it belongs to a special family of viruses known as retroviruses.
- HIV like other viruses cannot replicate by itself alone and thus require the components of other cells, called host cells, to replicate.
- It therefore must enter into other cells if it is to replicate and survive

Types of HIV

There are two groups of HIV:

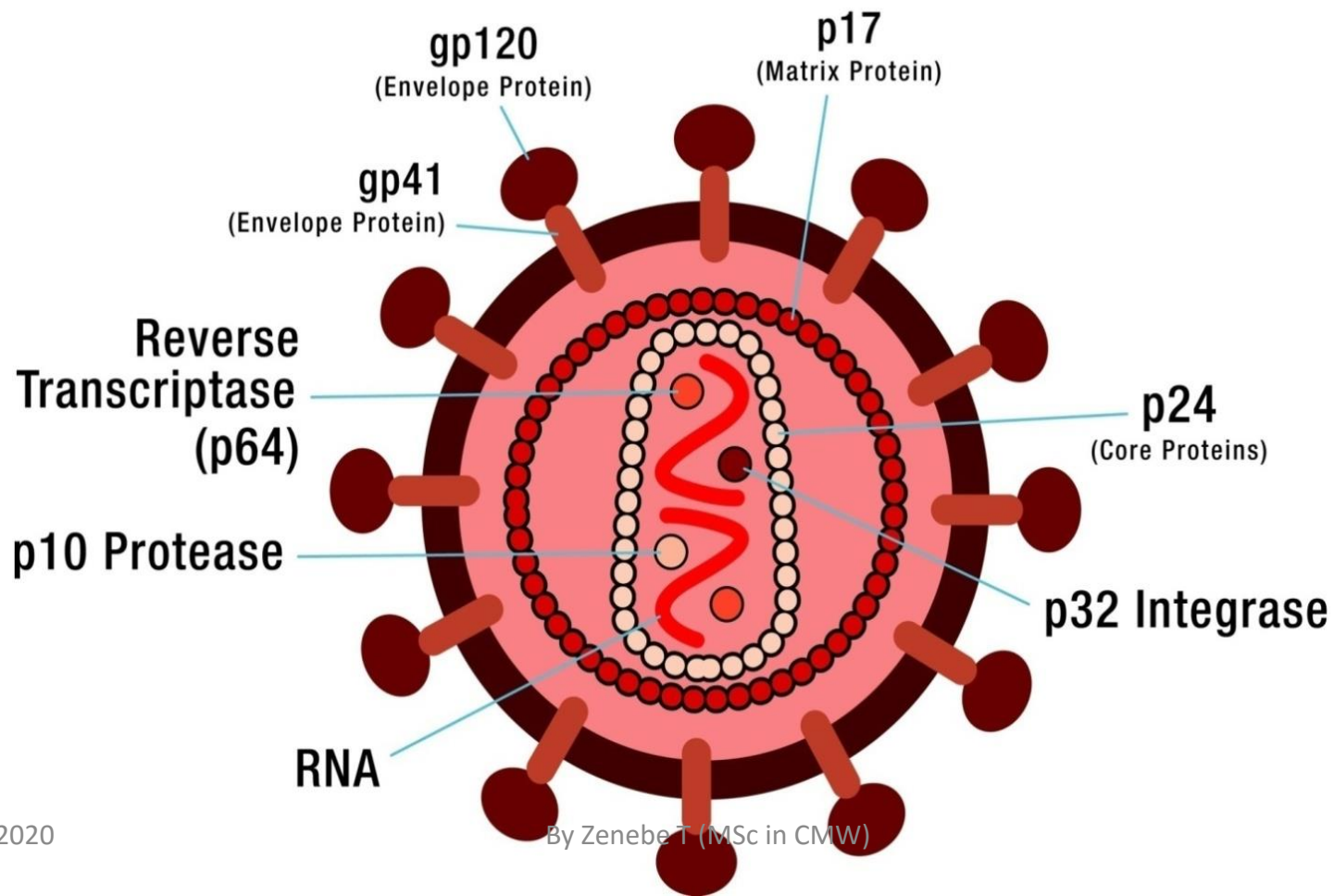
1. **HIV 1** (accounts to nearly all cases except a minority of strain that originate in west Africa)
2. **HIV 2** - isolated in West Africa

➤ HIV type (distinguished genetically)

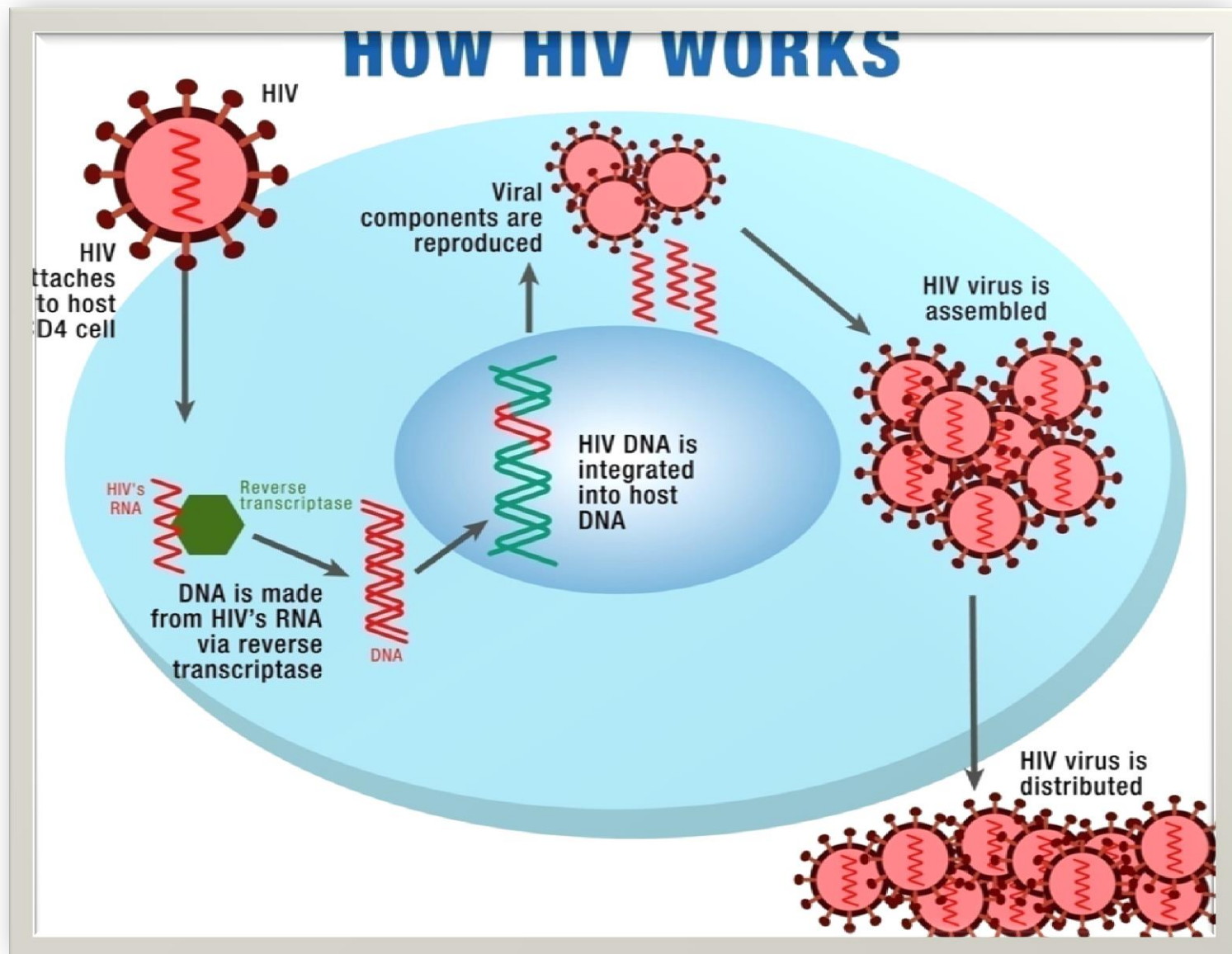
- HIV-1 - worldwide pandemic.
- HIV-2 - isolated in West Africa; causes AIDS much more slowly than HIV-1 but otherwise clinically similar

Phenotypic appearance of HIV

STRUCTURE OF HIV CELL



Life Cycle Of Hiv



Steps in HIV replication

- 1. Binding of gp120 to CD4 and co-receptor on the cell surface*
- 2. Fusion of the viral envelope with the cell membrane*
- 3. Release and disassembly of the viral core in the cytoplasm*
- 4. Reverse transcription (Reverse transcriptase enzyme translates HIV's single stranded RNA into a provirus made of double stranded DNA)*
- 5. Viral DNA moves into cell nucleus*
- 6. Viral DNA is integrated (by Integrase enzyme) into host genome to form HIV provirus*
- 7. HIV provirus DNA is transcribed back to both viral genomic RNA and viral mRNA , the latter which is translated to HIV polyproteins.*
- 8. The RNA virus and polyproteins are assembled beneath the cell membrane*
- 9. The assembled package becomes enveloped in the host cell membrane as it buds off to form an HIV virion.*
- 10. Further assembly and maturation occurs outside the cell by the protease enzyme, rendering the HIV virion infectious.*

❖ HIV can be transmitted

- ☞ Sexual (anal, vaginal, oral) with infected partner
- ☞ Blood transfusion
- ☞ Use of syringes and needles which are contaminated
- ☞ Mother to child during pregnancy, Labor and delivery and breastfeeding

❖ HIV can not be transmitted

- ☞ Other body fluids: tears, saliva, Urine
- ☞ Personal contact, social kisses
- ☞ Social contact: eating from same plate
- ☞ Inset bites: mosquitoes
- ☞ Air or water.

HIV/AIDS Staging

- 👉 Combining the **clinical manifestations** and **immunologic deterioration** WHO suggested 4 stages of conditions **1-4**
- 👉 Help in decision making regarding initiation of treatment or delaying treatment and many other prevention and care intervention

WHO Staging System for HIV/AIDS

- ✓ Tool used to guide management of HIV patient in resource limited settings with limited laboratory access
- ✓ Clinically based; CD4 count not required
- ✓ Simple, flexible and widely used
- ✓ Utilizes 5 clinical stages based on the degree of immunocompromise and prognosis

WHO Staging continued...

- Utilizes 5 clinical stages based on the degree of immunocompromise and prognosis
 1. Primary HIV Infection
 2. Stage I - asymptomatic
 3. Stage II - mild disease
 4. Stage III - moderate disease
 5. Stage IV - advanced immunocompromise

1. Primary HIV Infection (Acute HIV: A “Flu-like” Illness

➤ Sudden onset, lasting from **3-14** days

➤ Clinical features:

- ◆ Fever/sweats
- ◆ Headaches, malaise, anorexia, sore throat
- ◆ Lethargy, myalgia / arthralgia
- ◆ Generalized lymph adenopaathy

2. WHO Stage I

- ✓ *Asymptomatic or*
- ✓ *Persistent generalized lymphadenopathy (PGL)*



Persistent generalized lymphadenopathy (PGL)

3. WHO Stage II

- ✓ Moderate unexplained weight loss (<10% of presumed or measured body weight)
- ✓ Recurrent respiratory tract infections (RTIs, sinusitis, bronchitis, otitis media, pharyngitis)
- ✓ Herpes zoster
- ✓ Angular cheilitis
- ✓ Recurrent oral ulcerations
- ✓ Papular pruritic eruptions (PPE)
- ✓ *Fungal nail infections of fingers*



Pruritic Papular Eruption



Angular cheilitis



HIV Web Study (www.HIVwebstudy.org)

Supported by HRSA

Molluscum Contagiosum

3. *WHO Stage II*



Herpes Zoster

4. *WHO Stage III*

- ❖ Conditions where a presumptive diagnosis can be made on the basis of clinical signs or simple investigations
 - ☞ Severe weight loss ($>10\%$ of presumed or measured body weight)
 - ☞ Unexplained chronic diarrhea for $>$ one month
 - ☞ Unexplained persistent fever (intermittent or constant for $>$ one month)
 - ☞ Oral candidiasis
 - ☞ Oral hairy leukoplakia
 - ☞ Pulmonary tuberculosis (TB) diagnosed in last two years

WHO stage III cont....

- ☞ Severe presumed bacterial infections (e.g. pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteremia)
- ☞ Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis
- ☞ pyomyositis:-a kind of swelling around muscle b/c of accumulation of pus in muscle.

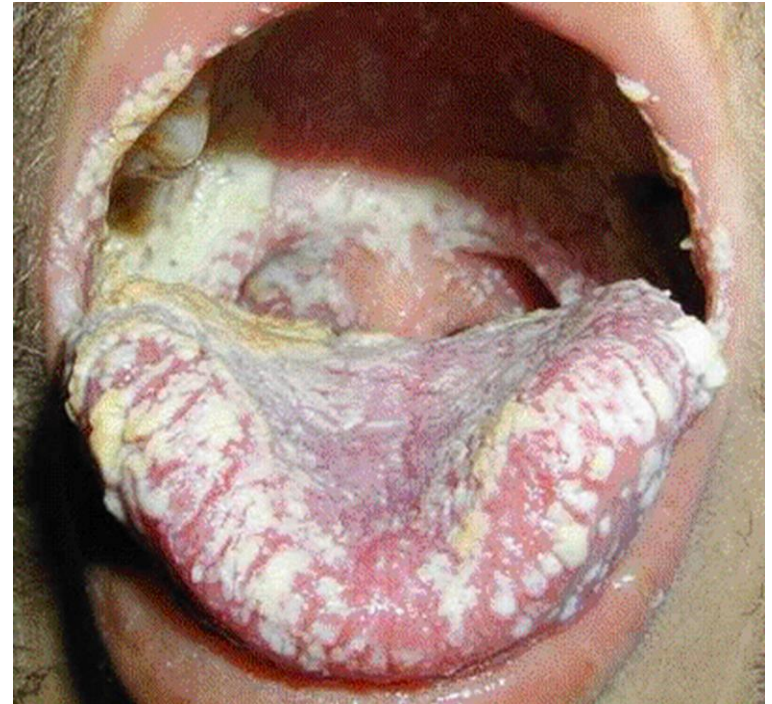
4. *WHO Stage III*



HIV Web Study (www.HIVwebstudy.org)

Supported by HRSA

Oral Hairy leukoplakia



Oral Candidiasis

5. WHO Stage IV

- Conditions where a presumptive diagnosis can be made on the basis of clinical signs or simple investigations
 - HIV wasting syndrome
 - Pneumocystis pneumonia
 - Recurrent severe or radiological bacterial pneumonia
 - Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month's duration)
 - Oesophageal candidiasis
 - Extrapulmonary TB
 - Kaposi's sarcoma
 - Central nervous system (CNS) toxoplasmosis
 - HIV encephalopathy

WHO Stage IV continued

➤ Conditions where confirmatory diagnostic testing is necessary:

- Extrapulmonary cryptococcosis including meningitis
- Disseminated non-tuberculous mycobacteria infection
- Progressive multifocal leukoencephalopathy (PML)
- Candida of trachea, bronchi or lungs
- Cryptosporidiosis
- Isosporiasis
- Visceral herpes simplex infection

WHO Stage IV continued

- Conditions where confirmatory diagnostic testing is necessary:
 - Cytomegalovirus (CMV) infection (retinitis or of an organ other than liver, spleen or lymph nodes)
 - Any disseminated **mycosis** (e.g. histoplasmosis(lung disease), coccidiomycosis, Recurrent non-typhoidal salmonella septicemia)
 - Lymphoma(cancer of white blood cell)
 - Invasive cervical carcinoma
 - Visceral leishmaniasis

WHO Stage IV

*Disseminated Cutaneous
Cryptococcosis*



4/22/2020

By Zenebe T (MSc in CMW)

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Severe Chronic Herpes Simplex Ulcers



Kaposi's sarcoma

HIV wasting syndrome

- *Weight loss $>10\%$ body weight*
plus
- *Unexplained chronic diarrhea (>1 month)* ***or***
- *Unexplained fever (>1 mo)*
plus
- *chronic weakness*

Preventing HIV transmission

➡ Prevention from non sexual route of transmission

Screening of blood and blood products

Standard Precaution for health care providers and other care givers

➡ Prevention from sexual route of transmission

No contact with semen or vaginal secretions.

➡ Prevention of Mother to child transmission of HIV

CD4 count

- ✓ They are measure of progress of HIV which are specific type of white blood cells, the immune system key infection fighters, there for the effect of HIV are measured by the decline in the number of CD4 cells
- ✓ Normally they account from 600-1200c/mm³ when CD4 is <200 cells/mm³, the risk of opportunistic and serious infection will be high.

Viral load

- ✓ it is the amount of virus (HIV) in the blood
- ✓ The number increase during viremia stage and during the progress of disease increase .

PMTCT(vertical transmission)

- 👉 Mother-to-child transmission (MTCT) is the transmission of HIV from an infected pregnant woman to her offspring.
- 👉 Majority of the children infected with HIV got it through MTCT
- 👉 Transmission of HIV occurs during pregnancy, Labor and delivery and breast feeding
- 👉 Comprehensive approach: need to be used in order to reduce MTC([Four Prongs PMTCT](#))

Four prongs of PMTCT

1. **Prong 1:** Primary prevention of HIV
2. **Prong 2:** Prevention of unintended pregnancy on infected women
3. **Prong 3:** Prevention of HIV from infected women to their infants
4. **Prong 4:** Treatment care and support of infected women, infants and families

Prong 1: Primary prevention of HIV

- **This approach has come to be known as the “ABC” approach:**
 - ✓ **A = Abstinence**
 - ✓ **B = Be faithful—Be faithful to one HIV-uninfected sexual partner (known sero status)**
 - ✓ **C = Condom use—Use condoms correctly and consistently**
 - ✓ **Provide access to condoms**
 - ✓ **Provide early diagnosis and treatment of sexually transmitted infections**
 - ✓ **Make HIV testing widely available**
 - ✓ **Provide suitable counseling for HIV-negative women**

- **Prong 2: Prevention of Unintended Pregnancies among HIV-Infected Women**
- ✓ Emphasize that family planning can reduce unintended pregnancy.
- ✓ **Reproductive rights of women with HIV**

- **Prong 3: Preventing Women to their Infants HIV Transmission from HIV-Infected**
- Specific interventions to reduce HIV transmission from an infected woman to her child include
 - ✓ initiation and maintenance of ART (specific combination to be taken once daily),
 - ✓ safer childbirth practices,
 - ✓ Provision of ARV prophylaxis for the newborn/ baby and
 - ✓ safer infant feeding practices.

Prong 4: Provision of Care and Support to Women Infected with HIV, their Infants, and their Families

- ✓ The comprehensive care of all people living with HIV/AIDS, including HIV-positive women and their exposed or HIV-positive infants and children with her spouse is the fourth prong of PMTCT
- ✓ The provision of care and support to HIV-infected and affected families paves the way for decreasing the stigma and discrimination associated with the HIV/AIDS.

Introduction to the Basics of ARVs

- Prevention of HIV infection is the corner stone In the mitigation of HIV spread and Death due to HIV and AIDS.
- But together with such intervention the identification of cases and treatment also play a huge role in controlling the pandemic.

➤ What are:

- **ARVs ?**
- **ART?**
- **HAART?**

➤ What is the goal of ART

ARVs cont...

- **ARV** stands for Ante Retro Viral Drugs
- **ART** the use of ARV drugs with adherence as necessary is called ARV Therapy in Short ART
- **HAART**: The use of Combination of at least **three** effective ARV drugs is known as HAART:
Highly Active Ante Retroviral Therapy

Goals of ART

- ✓ The goal of ART is to **reduce the number of virus in the blood** and increase the number of CD4 as much as possible.
- ✓ The virus can never be eradicated completely from the body, so the person should take the drugs forever, even if symptoms have disappeared.

Goals of HAART

- Reduce HIV RNA (viral load) to undetectable levels within 4-6 months of ART initiation with durable suppression
- Increase CD4 cell count, allowing preservation or improvement of immune function
- Reduce HIV related morbidity thereby improving quality of life of the patient
- Reduce HIV related mortality

Groups of ART

There are three big groups of antiretroviral drugs available:

1. Nucleotide Reverse Transcriptase Inhibitors (NRTI)

examples

- | | |
|-----------------------|--------------------------------|
| – zidovudine (AZT) | stavudine (d4T) |
| – lamivudine (3TC) | didanosine (ddI) |
| – abacavir (ABC) | zalcitabine (ddC) |
| – emtricitabine (FTC) | tenofovir (TDF)-nucleotide RTI |

2. Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI) Eg. Efaviraze (EFZ), Nevirapine (NVP)

3. Protease Inhibitors (PI) Eg. Nelfinavir (NFV), indinavir (IDV)

Family planning for HIV positive women

Family Planning Counselling and Methods

- ✓ In providing family planning counselling, providers should:
- ✓ Respect the right of all women, regardless of HIV status, to decide the number and timing of children
- ✓ Encourage dual protection (using two forms of contraception; one should be a condom).

family planning for HIV positive women

- ✓ Provide integrated FP/HIV and STI services at all levels of care
- ✓ Provide full information about the possibility of transmitting HIV to a child
- ✓ Offer information about prevention and referral for HIV counselling and testing
- ✓ Counsel men and women who know they are positive, assisting them to make well-informed

Contraceptive method among HIV-positive women and on HAART.

<i>Method</i>	<i>Use in HIV-positive women</i>	<i>Use in HIV-positive women on HAART</i>	<i>Remarks</i>
Male condom	Highly recommended. Spermicide use(nonoxynol-9) is not recommended for clients at high risk of HIV or who are HIV positive	Highly Recommended	Requires partner cooperation correct technique Protects against transmission of STI and HIV
Female condom	Highly recommended Spermicide use(nonoxynol-9) is not recommended for clients at high risk of HIV or who are HIV positive	Highly Recommended	Limited available and lack of knowledge on consistent and correct use. Protect STI and HIV

<i>Method</i>	<i>Use in HIV-positive women</i>	<i>Use in HIV-positive women on HAART</i>	<i>Remarks</i>
Copper (CU) IUD	May use, Follow-up recommended	May use and follow-up recommended May be associated with increased risk of bleeding, risk of uterine infection	Not recommended for women with PID, active STI Therefore provide with condom
Progesterone only injectable	No restriction for use	May use with follow-up Drug interaction with same ARV likely	Offers no STI protection so provide with condom
COCs	No restriction for use	May use with follow-up Drug interaction with same ARV likely Dual protection recommended	Offers no SIT/HIV protection, therefore provide condom
Dual protection	Recommended	Recommended	It should be recommended regardless of HIV status

<i>Method</i>	<i>Use in HIV-positive women</i>	<i>Use in HIV-positive women on HAART</i>	<i>Remarks</i>
Surgical sterilization	No restriction for use	No restriction for use	Offers no STI/HIV protection, therefore provide condom
Lactational Amenorrhea method	No restriction for use	No restriction for use	Offers no STI/HIV protection, therefore provide condom
Emergency contraceptive	No restriction	No restriction	Offers no STI/HIV protection, therefore provide condom

- ✓ **Dual protection should be recommended for men and women on ART.**
- ✓ some ARVs influence serum levels of COCs.
- ✓ To ensure effective and appropriate contraception is available, specifically for women on ART with nevirapine (NVP), lopinavir/ritonavir (LPV/r), nelfinavir (NLF) and ritonavir (RTV), **dual protection is recommended.**
- ✓ HIV-positive women on ART with any of the above ARVs who are also using COCs need to be monitored closely.

- ✓ **Considerations for HIV-positive women on Rifampicin and COC.**
 - ✓ **Rifampicin** often used to treat tuberculosis in HIV-positive clients, also decreases effectiveness of COCs by reducing circulating oestrogen.
 - ✓ Any woman on Rifampicin and COCs should use **dual protection.**

Infection control measure

By Zenebe T(MSc in CMW)

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Infection control measure

- ☞ As health professionals, we cannot provide health care services without conducting procedures that put clients and staff at some risk of exposure to potentially infectious materials but we can prevent transmission in many cases.
- ☞ The only way to prevent infection is to stop the **transmission of microorganisms.**

- The best way to prevent infections at a health facility is by following **standard precautions**.
 - ✓ These are a set of recommendations designed to help minimize the risk of exposure to infectious materials by both clients and staff.

Summary of standard precautions

- ☞ Wash your hands
- ☞ Wear gloves
- ☞ Wear eye protection or face shields
- ☞ Wear gowns
- ☞ Prevent injuries with sharps
- ☞ Correctly process instruments and client-care equipment
- ☞ Maintain correct environmental cleanness and waste-disposal practices
- ☞ Handle, transport, and process used/soiled linens correctly

Standard Precautions: Key Components

Handwashing (or using an antiseptic handrub)

- After touching blood, body fluids, secretions, excretions and contaminated items
- Immediately after removing gloves
- Between patient contact

Gloves

- For contact with blood, body fluids, secretions and contaminated items
- For contact with mucous membranes and nonintact skin

Masks, goggles, face masks

- Protect mucous membranes of eyes, nose and mouth when contact with blood and body fluids is likely

Gowns

- ✓ Protect skin from blood or body fluid contact
- ✓ Prevent soiling of clothing during procedures that may involve contact with blood or body fluids

Linen

- ✓ Handle soiled linen to prevent touching skin or mucous membranes
- ✓ Do not pre-rinse soiled linens in patient care areas

Patient care equipment

- ✓ Handle soiled equipment in a manner to prevent contact with skin or mucous
- ✓ membranes and to prevent contamination of clothing or the environment
- ✓ Clean reusable equipment prior to reuse

Environmental cleaning

- ✓ Routinely care, clean and disinfect equipment and furnishings in patient care areas

Sharps

- ✓ Avoid recapping used needles
- ✓ Avoid removing used needles from disposable syringes
- ✓ Avoid bending, breaking or manipulating used needles by hand
- ✓ Place used sharps in puncture-resistant containers

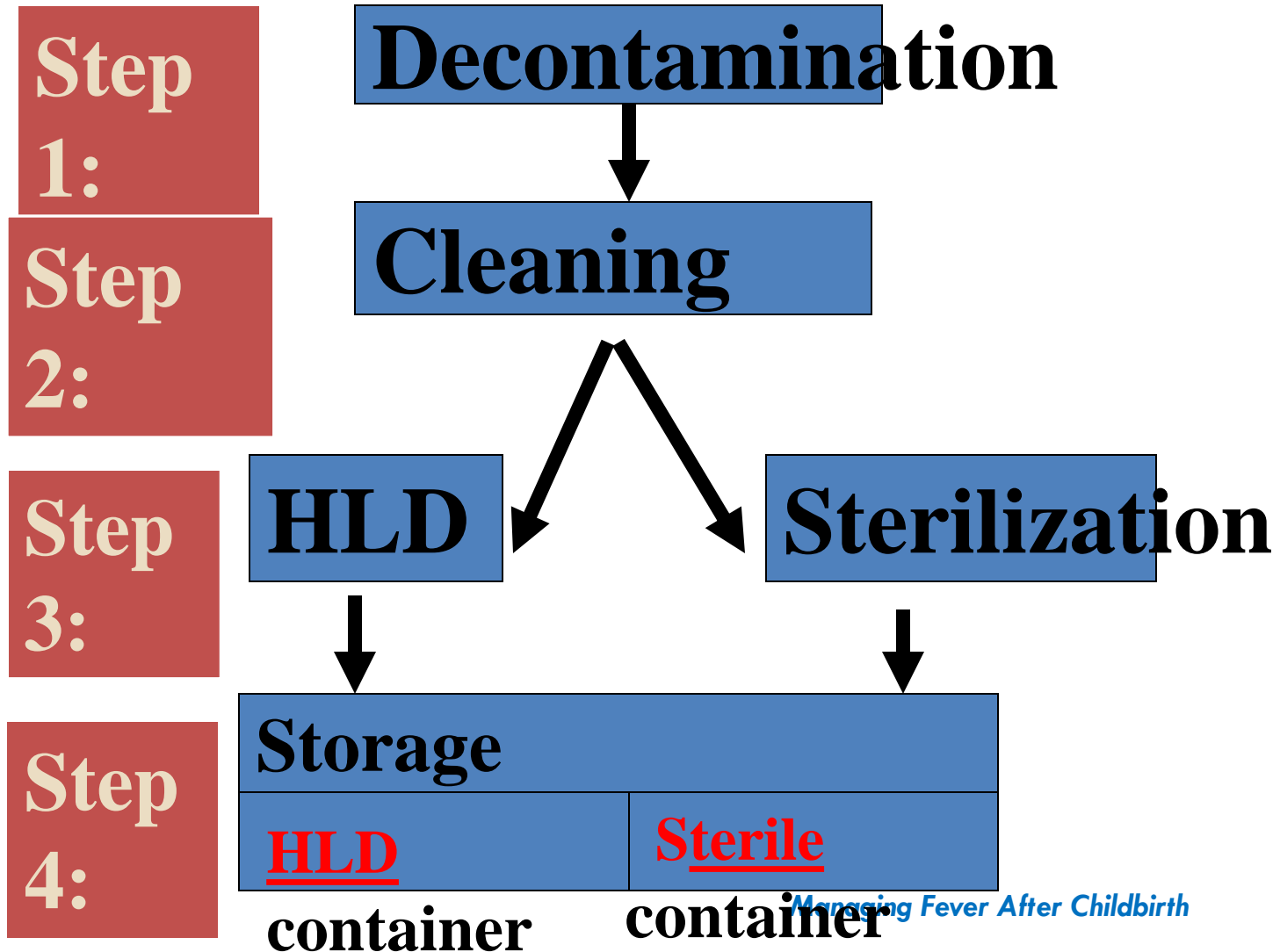
Patient resuscitation

- ✓ Use mouthpieces, resuscitation bags or other ventilation devices to avoid mouth-to-mouth resuscitation

Patient placement

- ✓ Place patients who contaminate the environment or cannot maintain appropriate
- ✓ hygiene in private rooms

Instrument Processing Steps



Instructions for Preparing Dilute Chlorine Solutions

I. Instructions for Preparing Dilute Chlorine Solutions from Concentrated Chlorine solution

$$\text{Total parts (TP) (H}_2\text{O)} = \left[\frac{\% \text{ Concentrate}}{\% \text{ Dilute}} - 1 \right]$$



Example:

$$\text{Total parts (TP) (H}_2\text{O)} = \left[\frac{5\% \text{ Concentrate}}{.5\% \text{ Dilute}} - 1 \right] = 9 \text{ Total parts (TP) (H}_2\text{O)}$$

To make a 0.5% chlorine solution from 5% bleach, mix 1 part bleach to 9 parts water.

Instructions for Preparing Dilute Chlorine Solutions

II. Instructions for Preparing Dilute Chlorine Solution from a Powder

$$\text{Gram/Liter} = \left[\frac{\% \text{ Dilute}}{\% \text{ Concentrat e}} \right] \times 1000$$



Example:

$$\text{Gram/Liter} = \left[\frac{.5\% \text{ Dilute}}{35\% \text{ Concentrate}} \right] \times 1000 = 14.2 \text{ Gram/Liter}$$

**To make a 0.5% chlorine solution from
a 35% chlorine powder,
mix 14.2 grams of powder to 1 liter of water**

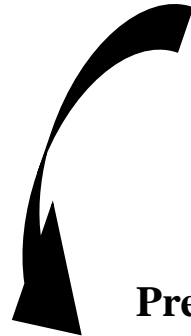
DECONTAMINATION

Soak in 0.5%
Chlorine solution for 10
minutes



THOROUGHLY WASH AND RINSE

Wear glove and other
protective barriers(glasses,
visors or goggles)



**Preferred
method**

STERILIZATION

Autoclave

106 k Pa
pressure
(15 lbs./in²)
121₀C (250⁰F)
20 min.
unwrapped
30 min. wrapped

Chemical
Soak
10-24
hours

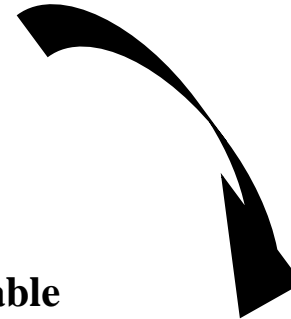
Dry Heat
170⁰C
60
minutes



COOL

(Use immediately
or store)

**Acceptable
methods**



HIGH-LEVEL DISINFECTION (HLD)

Boil or
Steam
Lid on
20 minutes

Chemical
Soak
20 minutes



Pelvic organ prolapse(POP)

By Zenebe T (MSc in CMW)

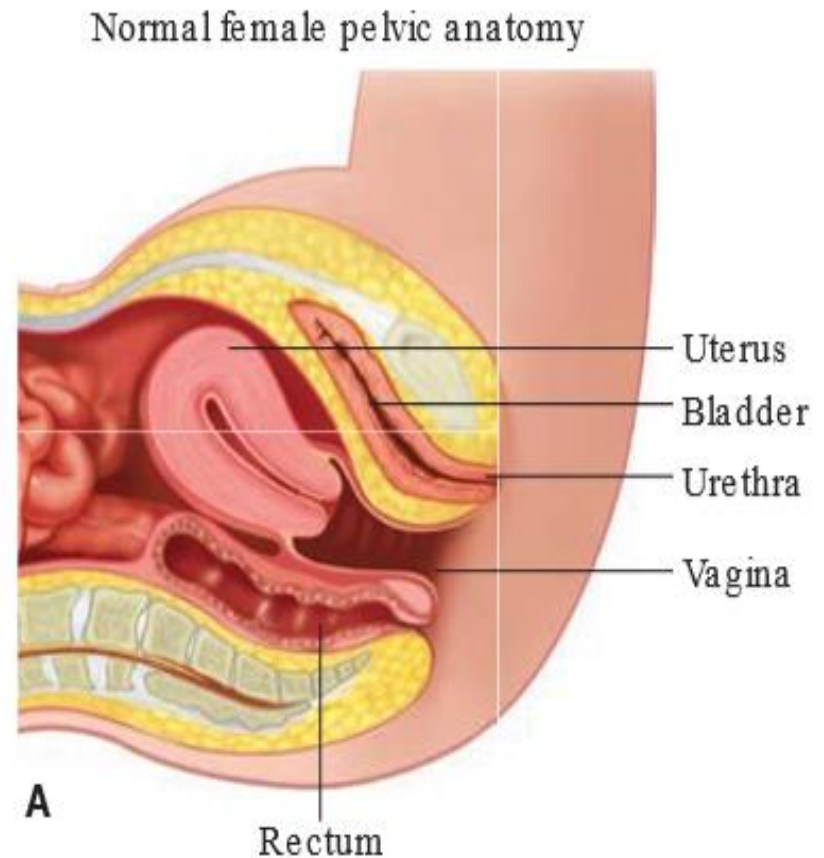
Email: zenebe7834@gmail.com

Learning objectives

- ❖ At the end of this session you will be able to
 - ✓ Define POP
 - ✓ Discuss the types of POP
 - ✓ Describe the risk factors of POP
 - ✓ Discuss the DX and RX modality of POP

Pop

- ❖ Pelvic organ prolapse is a common condition that can lead to genital tract dysfunction and diminished quality of life.
- ❖ It is descent of one or more of the following: the anterior vaginal wall, posterior vaginal wall, uterus and cervix, vaginal apex, or the perineum from their normal position.

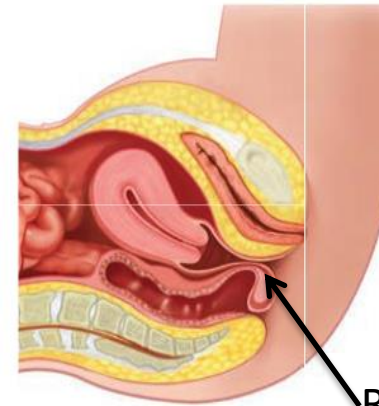


POP main types:

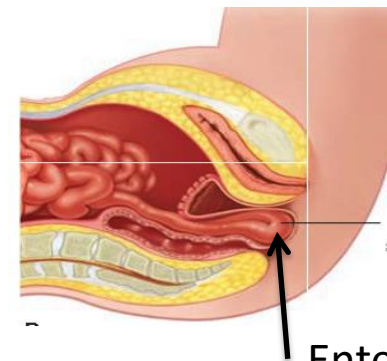
1. When the protrusion involves the front (anterior wall) of the vagina and bladder, the condition is called a **cystocele** or "**dropped ladder**."
2. When the back (posterior wall) of the vagina and rectum are involved, the condition is called a **rectocele**.
3. When the upper portion of the vaginal wall and small bowel are involved the condition is called an **enterocele**.



Cystocele



Rectocele



Enterocele

Cont--

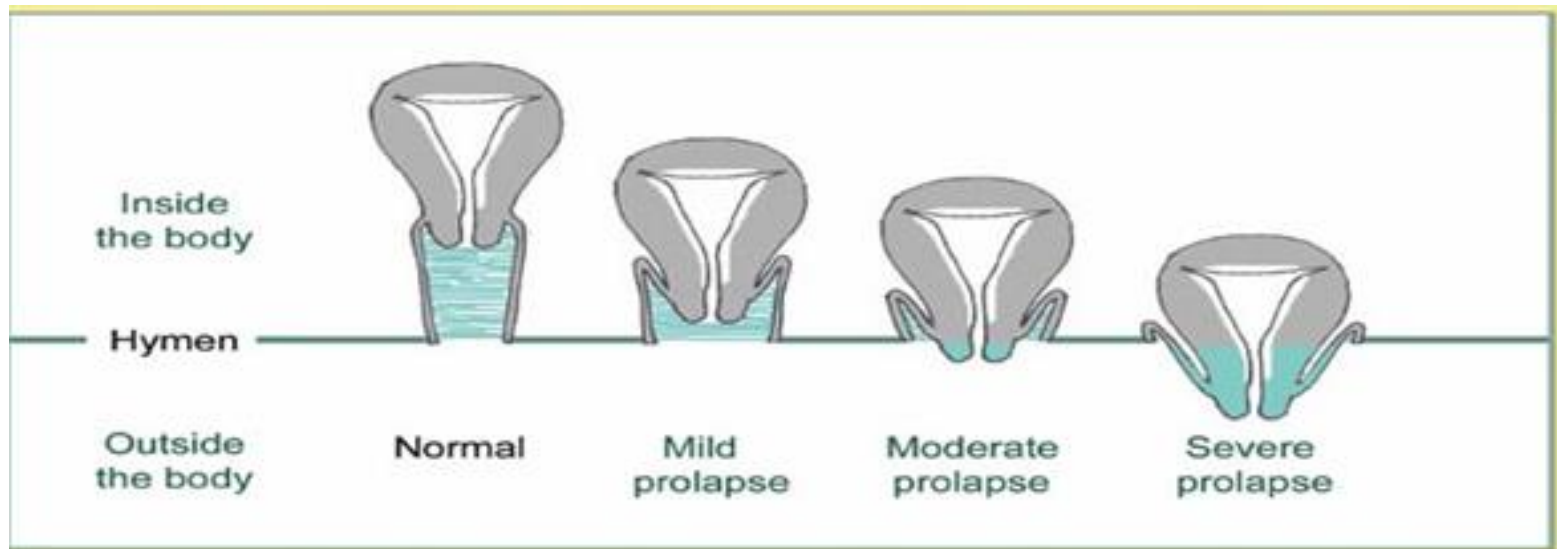
4. When the uterus descends downward, the presentation is called uterine prolapsed
5. **Vault prolapsed:-** refers to a herniation of a peritoneal sac at the vaginal vault after abdominal or vaginal hysterectomy.



Uterine prolapse

❖ Classification of Uterovaginal prolapsed

- The uterine component of the Uterovaginal prolapsed is measured in relation to the degree of prolapsed of the cervix below the level of the **ischial spines** (the normal station of the cervix in the pelvis)



Cont--

- ☞ **First degree prolapsed:-** Descent of the cervix below the ischial spines as far as, but not beyond, the introitus.
- ☞ **Second degree prolapsed:-** descent of the cervix beyond the introitus (but not the entire uterus).
- ☞ **Third degree prolapsed** (procidentia) is herniation of the entire cervix & uterus beyond the introitus.



Third degree UVP

What causes uterine prolapse?

- The uterus is held in place within the pelvis by a group of muscles and ligaments.
- As these structures weaken, they become unable to hold the uterus in position, and it begins to sag.
- There are several factors that may contribute to the weakening of the pelvic muscles, including:
 - ✓ Loss of muscle tone as the result of aging
 - ✓ Injury during childbirth, especially if the woman has had many babies or large babies

Cont--

- ✓ Other factors (Obesity, chronic coughing or straining and chronic constipation)
 - ✓ All place added tension on the pelvic muscles, and may contribute to the development of uterine prolapse.
- ✓ Congenital weakness of the pelvic supports
- ✓ Neurologic problems affecting the pelvic musculature and its innervations.

What are the symptoms of uterine prolapsed?

- ❖ Women with mild cases of uterine prolapsed may have no obvious symptoms.
- ❖ However, as the uterus slips further out of position, it can place pressure on other pelvic organs – such as the bladder or bowel – causing a variety of symptoms, including:
 - ✓ A feeling of heaviness or pressure in the pelvis
 - ✓ Pain in the pelvis, abdomen or lower back
 - ✓ Pain during intercourse
 - ✓ A protrusion of tissue from the opening of the vagina

Symptoms....

- ✓ Recurrent bladder infections
- ✓ Unusual or excessive discharge from the vagina
- ✓ Constipation
- ✓ Difficulty with urination, including involuntary loss of urine (incontinence), or urinary frequency or urgency
- ✓ Symptoms may be worsened by **prolonged standing** or **walking**.
- ✓ This is due to the added pressure placed on the pelvic muscles by gravity.

Physical findings:-

- ✓ **For anterior vaginal** well prolapsed: soft, reducible mass bulging into the anterior vagina and distending the vaginal introitus.
- ✓ **For rectocele:** soft, thin walled mass projecting into the posterior vaginal wall.
- ✓ **For enterocele:** reducible thickness or bulging of the upper recto vaginal septum.
- ✓ **For uterine prolapsed:-** Almost always there is an associated anterior & posterior vaginal wall prolapsed, in addition, visualization or palpation of cervix with or without the patient standing.

Management

- ✓ There are **surgical** and **non-surgical** options for treating uterine prolapsed.
- ✓ The treatment chosen will depend on the severity of the condition, as well as the **woman's general health, age and desire to have children.**

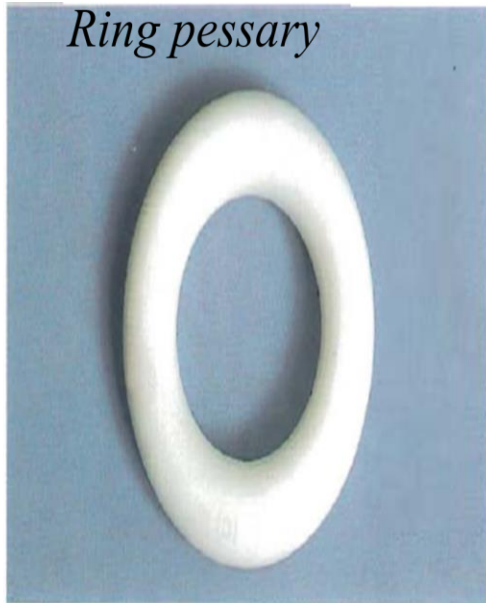
Cont--

Non-surgical options

- ✚ **Exercise** – Special exercises, called **Kegel exercises**, can help strengthen the pelvic floor muscles.
- ☞ To do Kegel exercises, tighten your pelvic muscles as if you are trying to hold back urine.
- ☞ For small *sized cystocele* and *rectocele* and for *first degree UVP*



Vaginal pessary – A pessary is a rubber or plastic **doughnut-shaped** device that fits around or under the lower part of the uterus (cervix), helping to proper up the uterus and hold it in place.



Cont--

- ✚ **Estrogen replacement therapy (ERT)** – Taking estrogen may help to limit further weakness of the muscles and other connective tissues that support the uterus.

Surgical options

1. For **cystocele**:- anterior **colporrhaphy**
2. For **rectocele**:- **posteriorcolpoperineorrhaphy**
3. **Hysterectomy** – Uterine prolapsed may be treated by removing the uterus in a surgical procedure called hysterectomy

- **Uterine suspension** – This procedure involves putting the uterus back into its normal position. This may be done by reattaching the pelvic ligaments to the lower part of the uterus to hold it in place.
- ***Manchester operation:-*** combines anterior colperinorrhaphy, cervical amputation, posterior colpoperineorrhaphy and suturing of cardinal ligaments in front of the cervix.

Can uterine prolapse be prevented?

- It may not be possible to prevent all cases of uterine prolapsed, but there are steps that can be taken to help reduce the risk:
 - ✓ Maintain a healthy body weight.
 - ✓ Exercise regularly (for 20 to 30 minutes, three to five times per week), including Kegel exercises,
 - ✓ Proper suturing of laceration or tear.
 - ✓ Avoidance of excessive fundal pressure during delivery.
 - ✓ Treatment of chronic cough and constipation.
 - ✓ Use of family planning.
 - ✓ Consider estrogen replacement therapy after menopause.

Reproductive Endocrinology and Infertility

By Zenebe T (MSc in CMW)

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Infertility

Session objectives:-

By the end of this lesson you will be able to:-

- ✓ Define infertility
- ✓ List risk factors for female infertility
- ✓ List and explain common cause of female infertility
- ✓ List causes of male infertility
- ✓ Mention the management options of infertility

Brainstorming

❖ *What is infertility?*

Definition:-Infertility is inability of couples to conceive after 1 year of unprotected and adequate intercourse.

Types of infertility

- ➡ **Primary infertility-** If conception has never occurred.
- ➡ **Secondary infertility-** If there was history of pregnancy before the current problem, irrespective of its site and outcome.

❖ *Etiology:-*

- ✓ 10-15% the cause is unexplained
- ✓ **Male** cause accounts for 8-22%
- ✓ **female** for **25-37%**
- ✓ Both responsible for 21-38%

Globally the most common causes are:-

- ➔ **Tubal factor:-** accounts 20-30%, arise from congenital or acquired obstruction of the fallopian tubes.
 - **PID** is the commonest causes of tubal obstruction.
- ➔ **Male factors:-** accounts 15-25%, arise either from: failure of spermatogenesis (testicular failure) or more commonly from **obstruction of the vas deferens** mostly by gonococcal infection.
- ➔ **Ovulatory factors:-** accounts 10-15%, arise from any condition that cause **anovulation**.
 - By disease conditions affecting the **hypothalamus, pituitary** and the **ovaries**.

- ➔ **Pelvic factor:-** account 10% is mainly results of endometritis.
- ➔ **Cervical factor:-** account 15%, arise from structural abnormality of the cervix (cervical atresia & stenosis) and functional abnormality of cervical mucus (cervicitis, hormone deficiency or colonization by mycoplasma)
- ➔ **Immunologic factors:-** occurs as the result of development of antisperm antibodies by the women

➤ **Generally Common Causes of female Infertility**

- ✓ Severe endometritis
- ✓ Pelvic Inflammatory Disease (PID)
- ✓ Ovulation disorders
- ✓ Elevated prolactin
- ✓ Polycystic ovary syndrome (PCOS)
- ✓ Early menopause
- ✓ Benign uterine fibroids
- ✓ Pelvic adhesion

➤ Frequency of Etiologies for male infertility:-

- ☞ Varicocele-----37.4%
- ☞ Idiopathic-----25.4%
- ☞ Testicular failure-----9.4%
- ☞ Obstruction-----6.1%
- ☞ Cryptorchidism-----6.1%
- ☞ Low semen volume -----4.7%
- ☞ Semen viscosity-----1.9%

I. Evaluation of male partner:-

- ❖ **History:-** previous paternity,
 - ✓ **Sexual history** (technical difficulty, STI, malformation..)
 - ✓ **Medical history** (trauma, mumps, chronic medical illness)
 - ✓ **Drug** (alcohol and smoking)
 - ✓ Occupation (toxins, prolonged heat...
- ❖ **Physical examination:-**
 - ✓ general appearance
 - ✓ Breast enlargement, voice, external genitalia, rectal examination (prostate)

II. Evaluation of female partner:-

History:-

- ✓ age,
- ✓ Menstrual history ovulatory symptoms
- ✓ Contraceptive history (duration, type, date of last used
- ✓ Obstetric history (abortion, ectopic pregnancy, PPH
- ✓ sexual history (frequency, regularity, timing, STI, PID

Physical examination:-

- ✓ General appearance, thyroid, secondary sexual characteristics, adenexal mass...

III. Investigation

A) Investigation for male

- ✓ **Seminal analysis:-** this is important fertility evaluation for male.
 - Abnormal result may be repeated after 3 months.
 - The test is done after 3-7 days of abstinence.
 - specimen should be examined within 60 minutes of collection.

Semen Analysis

Semen parameters

Normal range

Sperm volume -----1.5-5ml

Sperm motility-----20 million/ml or >60%

Sperm morphology-----15% normal form

Leukocyte density-----< 1 million/ml

PH-----7.2

Viscosity-----normal

 Need at least 2 times testing

- S/A is not a measure of fertility but fertility potential
- The most important parameters are the **sperm count** and **motility**

- Normal ejaculate → Sperm concentration $< 20 \times 10^6$ /ml
- Asthenozoospermia → $< 50\%$ spermatozoa with forward progression
- Teratozoospermia → $< 30\%$ spermatozoa with normal morphology
- Azoospermia → No spermatozoa in the ejaculate
- Aspermia → No ejaculate

B) Investigation for female:-

❖ Documentation of ovulation:-

- ✓ History suggestive of ovulation is mid cycle pain.
- ✓ Indirect tests of ovulation determine the presence of sufficient amount of progesterone in the body.

❖ Hysterosalpingography: This is an X-ray of the uterus and Fallopian tubes.

❖ **Post coital test (sims Hunner test):-**

- ✓ This assesses the cervical factor
- ✓ It is done by aspirating cervical mucus from the cervical canal at the level of the internal Os 2-4 hours after sexual intercourse.
- ✓ A satisfactory result is finding of > 10 motile spermatozoa with good forward movement under high power field in the presence of adequate cervical mucus.

❖ **Laparoscopy/laparotomy:** A minor surgery to see inside the abdomen for pelvic factors

❖ **Other tests:-** Endocrine assay for anovulatory women (TSH, T₃/T₄, FSH, LH, estradiol, prolactin levels, determination of sperm antibodies and others

Management of Infertility

➤ Management depends on the specific cause:-

Male factor infertility:-

☞ It is directed against the cause

☞ If it is primary Azoospermia there is no treatment

- ✓ For **Azoospermia** secondary to testicular failure is treated by hormone replacement (GnRH)
- ✓ Azoospermia from obstruction of vas deferens can be treated by microsurgical vasotomy or by aspiration of the sperm followed by in vitro fertilization.
- ✓ If it is **oligospermia** or **asthenospermia** drugs to improve the quality of sperm can be prescribed like clomiphene citrate.
- ✓ Surgery for varicocele, change in occupation, abstinence from alcohol and smoking & avoidance of hot baths
- ✓ Surgical correction of hypospadias and epispadias

Management for female factors

- ✓ **Anovulation:-** Ovulation induction by **clomiphene citrate**. the underlying medical causes like hyperprolactinemia and hypothyroidism have to be treated.
- ✓ **Tubal factors** surgical correction by tuboplasty
- ✓ **Cervical factors:** antibiotics like **erythromycin and tetracycline** for cervical infection and colonization by mycoplasma, hormonal treatment for inadequate cervical mucus.

.

What medicines are used to treat infertility in women

❖ Clomiphene citrate (Clomid):

- ✓ This medicine causes ovulation by acting on the pituitary gland.
- ✓ It is often used in women who have polycystic ovarian syndrome (PCOS) or other problems with ovulation.
- ✓ starting dose 50mg/day PO for five days starting from the 5th day of the menstrual cycle, and if no ovulation increase the dosage by 50mg/day up to 200mg/day over three to four treatment cycles

Cont--

❖ **Human menopausal gonadotropin or HMG (Repronex, Pergonal):**

- ✓ This medicine is often used for women who don't ovulate due to problems with their pituitary gland.
- ✓ HMG acts directly on the ovaries to stimulate ovulation. It is an injected medicine.

❖ **Follicle-stimulating hormone or FSH (Gonal-F, Follistim):**

- ✓ FSH works much like HMG.
- ✓ It causes the ovaries to begin the process of ovulation.
- ✓ These medicines are usually injected

❖ **Bromocriptine (Parlodel):**

- ✓ This medicine is used for women with ovulation problems due to high levels of prolactin.
- ✓ Prolactin is a hormone that causes milk production.

Cont--

- ❖ **Gonadotropin-releasing hormone (Gn-RH) analog:**
 - ✓ These medicines are often used for women who don't ovulate regularly each month.
 - ✓ Women who ovulate before the egg is ready can also use these medicines.
 - ✓ Gn-RH analogs act on the pituitary gland to change when the body ovulates.
 - ✓ These medicines are usually injected or given with a nasal spray

Other treatment option include

➤ Adoption

Assisted reproductive technology like:-

❖ **In vitro fertilization (I.V.F) with Embryo transfer:-**

- 1 Egg and sperm are retrieved from couple, donors of both.
2. Combined in a petridish, incubated for 2-3 days
- 3.If fertilizations and cleavage occurs, embryo will be transferred through a catheter to the uterus.

Other Rx option cont...

❖ **Gamete Intrafallopian Transfer (GIFT):-**

- ✓ Oocytes retrieved via laparoscopy
- ✓ Oocytes and sperm placed in same catheter
- ✓ Injected directly into the fallopian tube via laparoscopy
- ✓ Embryo travels through the fallopian tube to the uterus
- ✓ For implantation

➤ **Zygote Intra fallopian transfer(ZIFT):-**

- ✓ A combined techniques used in I.V.F and GIFT
- ✓ Ova are placed in a petridish with sperm
- ✓ If fertility occurs, the zygote is injected into fallopian tube travels through tube to uterus and implants in the uterus.

❖ **Cryopreservation:-**

- ✓ Sperm or embryos are preserved by freezing for replacement in subsequent cycles.

❖ **Intra cytoplasmic sperm injection (ICSI):-**

- ✓ A single sperm is injected directly into the cytoplasm of oocyte.
- ✓ Increase probability of fertilization

Amenorrhea

By Zenebe T(MSc in CMW)

Email: zenebe7834@gmail.com

Learning objectives

❖ **At the end of this session you will be able to**

- ✓ Define amenorrhea
- ✓ Identify types of amenorrhea
- ✓ Describe the cause of amenorrhea
- ✓ Describe the treatment option for amenorrhea

Brainstorming

❖ *What is amenorrhea?*

❖ *What is the cause of amenorrhea?*

❖ **Definition:** Amenorrhea is defined as the absence of menstruation at any time between the usual ages of puberty and menopause.

Classification

- ❖ **Primary amenorrhea** is the absence of spontaneous menses by age 16 regardless of the presence of secondary sexual characteristics or absence of both by age 14.
- ❖ **Secondary amenorrhea:-** is the absence of menses for more than or equal to 6 months in a woman with regular cycles or for a period of more than 3 cycle length in women with irregular cycle

Causes of amenorrhea

1. Physiological amenorrhea:

- ✓ Result from **pregnancy, lactation**, prior or directly after **menopause**. (90-95%).

2. Pathological amenorrhea:

- ✓ Result from pathologic conditions affecting the **hypothalamus, pituitary, ovaries, uterus** and the **outflow tract**. (5-10%).

2. Pathological amenorrhea is divided into three:-

- 1. Hypogonadotropic,**
- 2. Hypergonadotropic and**
- 3. Eugonadotropic.**

Cont--

1. Hypogonadotropic:

- ✓ **Hypothalamic causes** like **stress, acute weight loss, anorexia nervosa and strenuous exercise.**
- ✓ Drugs like psychotropic drug, drug addiction & post pill and absence of GnRH.
- ✓ **Pituitary_causes:-** include **hyperprolactinemia, damage to the pituitary.**

2. Hypergonadotrophic :

- ✓ This results from **congenital (primary)** or **acquired (secondary)** ovarian failure.

3. Eutrophonic:

- ✓ **Uterovaginal** causes include congenital absence of the endometrium.
- ✓ Conditions that are associated with obstruction of menstrual blood flow like
 - Cervical and vaginal atresia,
 - Transverse vaginal septum and
 - Imperforate hymen

Importance:-

Amenorrhea is important for several reasons:-

- ✓ Failure to ovulate causes infertility
 - ✓ Prolonged estrogen deficiency result in health hazards
 - ✓ Amenorrhea with some estrogen production can predispose to endometrial cancer.
-
- ❖ **Primary amenorrhea** in a girl who has not already developed secondary sexual characteristics may give rise to major social and psycho sexual problems.
 - ❖ It may be a sign of other pathologies.

Diagnosis:-

- ✓ In the majority of the cases, diagnosis is reached by history physical examination and simple laboratory investigation.
- ✓ Few need sophisticated and expensive investigation.

Investigation:

- ✓ Initially *pregnancy must be ruled out*, then depending on the type of amenorrhea and the clinical findings the following can be done

- ✓ **Hormone assays**:- prolactin, LH,FSH, thyroid hormones
- ✓ **Ultrasound**, skull X-ray and other imaging techniques
- ✓ sex chromosomal analysis

Work up of secondary amenorrhea

- I. **Rule out pregnancy** by history, physical examination and urine HCG.
- II. **Perform progestin challenge test** let **medroxy progesterone** acetate 10mg for 5 days
 - Presence of withdrawal bleeding (positive test) after **2-7** days signifies
 - ✓ Normal estrogen primed endometrium,
 - ✓ Normal outflow tract and
 - ✓ Absence of endogenous progesterone (anovulation)

- ✓ Absence of withdrawal bleeding (negative test) signifies absence of estrogen primed endometrium which may result from either faults in the *hypothalamus/pituitary/ovary/or endometrium/outflow tract*.
- ✓ Further test is needed to differentiate

III. Perform combined estrogen-progesterone challenge test by giving drugs like combined oral contraceptives.

- ✓ Presence of withdrawal bleeding (positive test) indicates absence of endogenous estrogen and progesterone arising either from ovarian failure or hypothalamus pituitary failure.

- ✓ To determine LH/FSH levels.
- ✓ Low fsh/lh levels diagnose **hypothalamus pituitary failure,**
- ✓ High levels diagnose **ovarian failure.**
- ✓ Absence of withdrawal bleeding (negative test) indicates either obliteration of the endometrium (**ashermans syndrome**) or destruction/atrophy of endometrium.
- ✓ To differentiat these hysterosalpingography is needed.

Work of primary amenorrhea

1. Check for secondary sexual characteristics

- ✓ If secondary sexual characteristics of feminizing type are present, check the **vagina and for pelvic mass**.
- ✓ If there is bluish membrane which bulges with straining & associated pelvic mass **imperforate hymen**
- ✓ If there is a **blind ending vagina** with pelvic mass-
transverse vaginal septum
- ✓ If vaginal canal does not exist and there is pelvic mass-
isolated vaginal agenesis
- ✓ Normal vagina with absent cervical Os and associated pelvic mass- **cervical atresia**

- ✓ If there is a blind ending vagina without pelvic mass, two possibilities exist which can be differentiated by *barr body determination*.
- ✓ These are androgen insensitivity syndrome (**barr body negative and presence of inguinal mass**) and mullerian agenesis (**barr body positive**)
- ✓ If secondary sexual characteristic of virilization type are present:-
 - Consider mild form of congenital adrenal hyperplasia, post pubertal adrenal hyperplasia and virilizing adrenal/ovarian tumors.

5. Climacteric and Related Problems

Definitions:

- ❖ **Climacteric** is the phase of life for women that marks transition being able to reproduce to being non-reproductive.

Menopause

By Zenebe T(MSc in CMW)

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Brain storming

- What is menopause?

❖ **Definition:** Menopause is cessation of physiological uterine bleeding

- ✓ It is the most visible event marking climacteric.
- ✓ The average age is 51 years
- ✓ It is not affected by race, number of pregnancy contraceptive use, age at menarche and physical characteristics

❖ **Pre-menopause:-** is the period before menopause during which the menstrual cycle is irregular.

❖ **Post menopause:-** is the period after menopause.

Pathophysiology of menopause

- ✓ As menopause nears, ovarian follicles get depleted and become resistant to gonadotrophic hormones.
- ✓ Estradiol production ↓ which in turn ↑ FSH and later ↑ level of LH

- ✓ Anovulation or oligoovulatory result menses irregularity
- ✓ Later, there will not be any follicles to be stimulated by high level of gonadotrophins result in significant drop in estrogen to a level that is not capable of stimulating the endometrium causing menopause.

Change in menopause

I. Hormonal changes

II. Change in reproductive organs:-

- ✓ Atrophy of the vagina thinning of the epithelium and flattening of rugae.
- ✓ Atrophy of cervix reduce in size, vaginal dryness
- ✓ Uterus decreased in size
- ✓ The ovaries decreased in size and unpalpable
- ✓ Supporting strictures lose their tons
- ✓ The labia lose fat and flatten

III. Change in the menstrual cycle

IV. Change in other organs

Problems of Menopause

These is mainly related to estrogen deficiency.

➤ **Hot flush:-** vasomotor disturbance consisting of sudden flushing i.e feeling of heat or burning in the face, neck and chest, followed by outbreak of sweating to whole body.

- ✓ These women suffer from insomnia.
- ✓ As a treatment for sever cases conjugated estrogen or progestin is recommended.

Osteoporosis:- is the most important health hazard of menopause.

- ✓ It affects the trabecular bone.
- ✓ It may end up in pathologic fracture of the spines and the other bones.
- ✓ Diagnosis needs special imaging investigation.
- ✓ Treatment is estrogen replacement.
- ✓ The prevention is estrogen replacement, exercise and adequate calcium intake.

Dyspareunia:- arises from vaginal dryness and atrophic vaginitis.

- ✓ Local treatment with estrogen cream relieves the problem.

Atherosclerotic disease of the heart

Psychological problems:- May arise from estrogen deficiency or from the effects of other menopausal problems (hot flush and dyspareunia).

- ✓ Symptoms include anxiety, insomnia, irritability, depression and mood changes.

Postmenopausal bleeding

- ✓ It is defined as vaginal bleeding after 6 months of menopause.
- ✓ It is an abnormal condition that always needs proper investigation.
- ✓ It could arise from benign or malignant conditions.

-Postmenopausal bleeding should be considered as a manifestation of malignant condition unless proved otherwise.

■The causes are:-

- ✓ Atrophic vagina
- ✓ Atrophic endometritis
- ✓ Cervical cancer
- ✓ Endometrial hyperplasia and polyps
- ✓ Endometrial cancer
- ✓ Sarcoma of the uterus
- ✓ Vulvar or vaginal cancer
- ✓ Estrogen producing tumors

N.B All postmenopausal bleeding should be referred.

Cont--

- ✓ Uncertain nature of the tumor and severe pain from torsion.
- ✓ The surgery ranges from conservative abdominal or vaginal myomectomy to total abdominal hysterectomy. Hysterectomy is the definitive management.

Anatomy and Physiology of the Breast

By Zenebe T(MSC in CMW)

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Anatomy and Physiology of the Breast

- *The breast is made up of several structures. This including*

- ☞ Breast tissue and fat.

- ☞ Blood vessels,

- ☞ Lymphatic vessels,

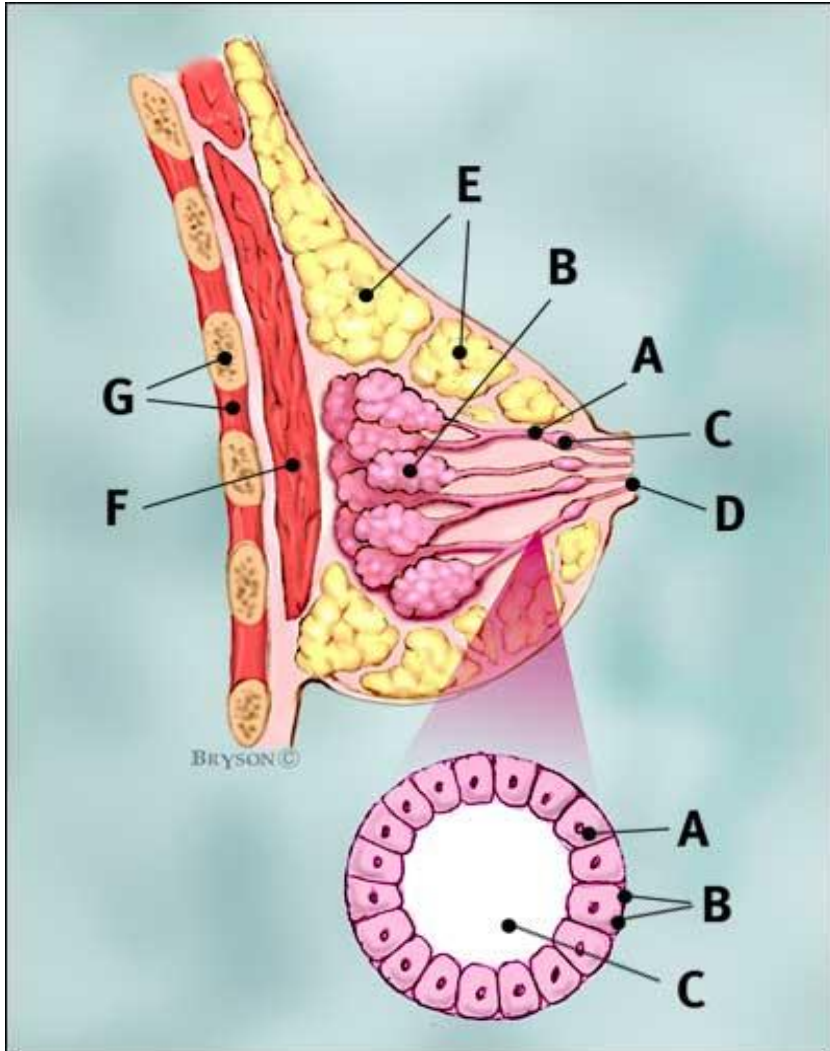
- ☞ Nerves and

- ☞ Connective tissue

Breast Tissue

- ✓ The breast tissue is composed of **15 to 20** breast **lobes** of which are further divided into smaller **lobules**.
- ✓ The **lobules** produce milk during pregnancy and lactation.
- ✓ The breast tissue also includes the **mammary ducts**.
- ✓ These are small **conduits** that carry the milk from the **lobules** to the **nipple** during lactation

Normal Breast



Breast profile

A	ducts
B	lobules
C	dilated section of duct to hold milk
D	nipple
E	fat
F	pectoralis major muscle
G	chest wall/rib cage

Enlargement

A	normal duct cells
B	basement membrane (duct wall)
C	lumen (center of duct)

Breast Tissue con...

❖ There are between **5 to 10 ductal** systems in each breast opening at the nipple.

➤ **Connective Tissue**

☞ The connective tissue is also called the **stroma**.

☞ This tissue supports the breast elements including the **ducts** and **lobules**.

☞ There are ligaments that stretch from the chest wall muscle to the skin which hold the breast in place (**Cooper's ligaments**).

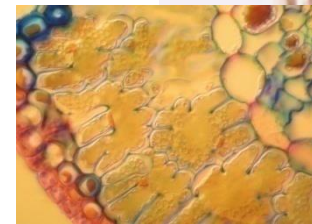
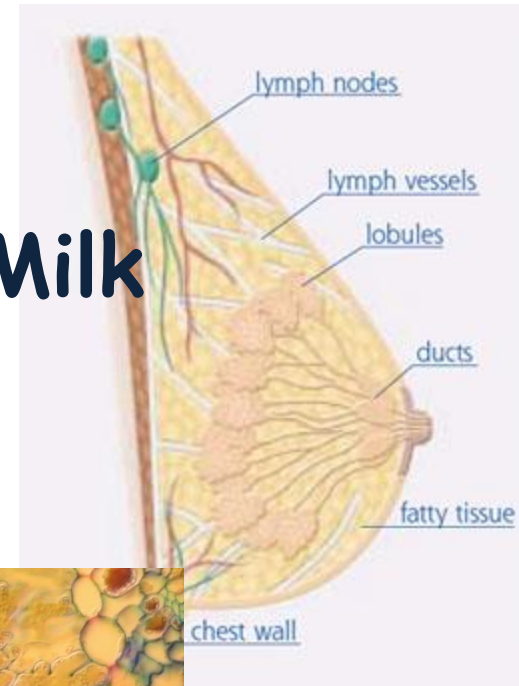
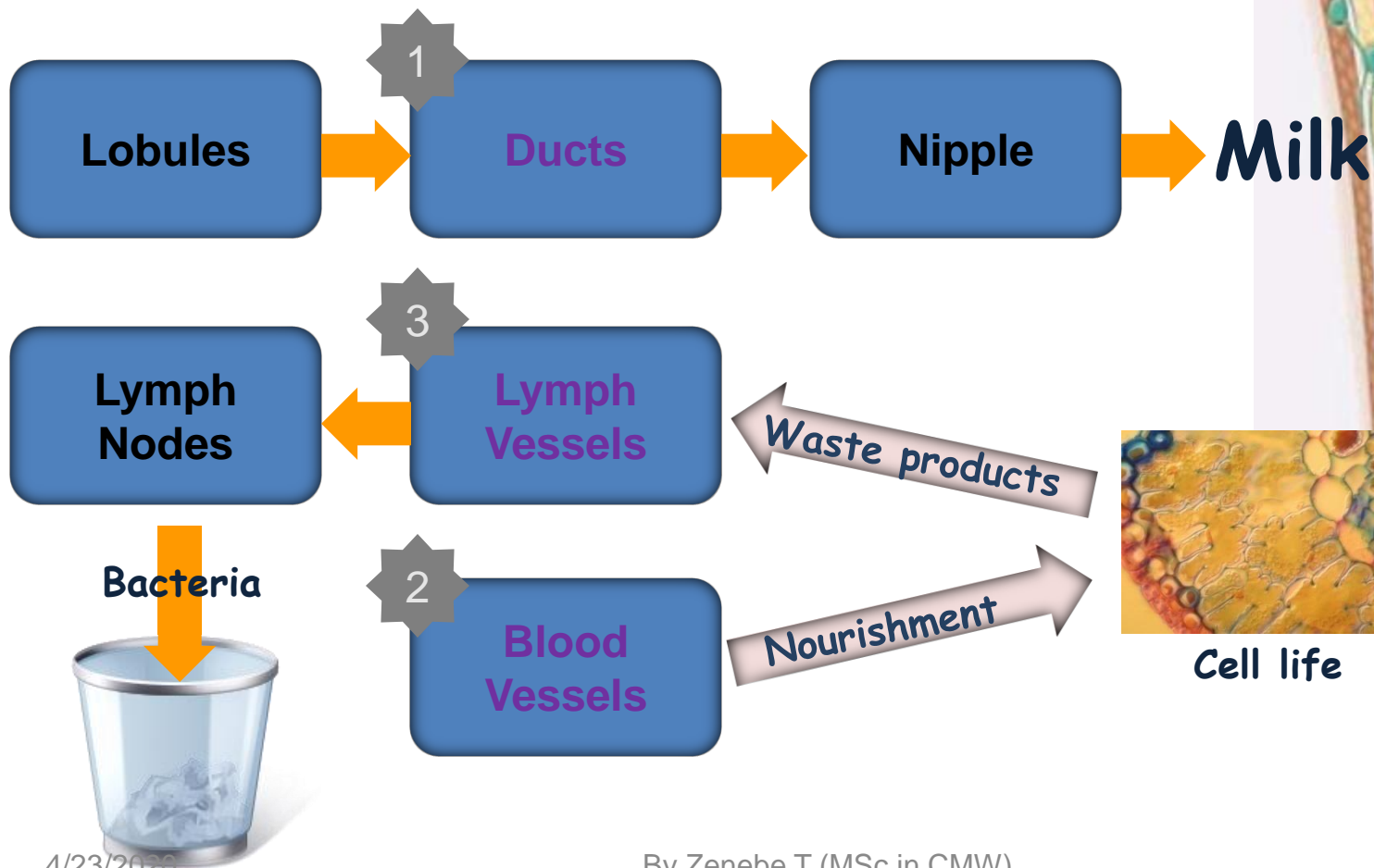
Cooper's ligaments

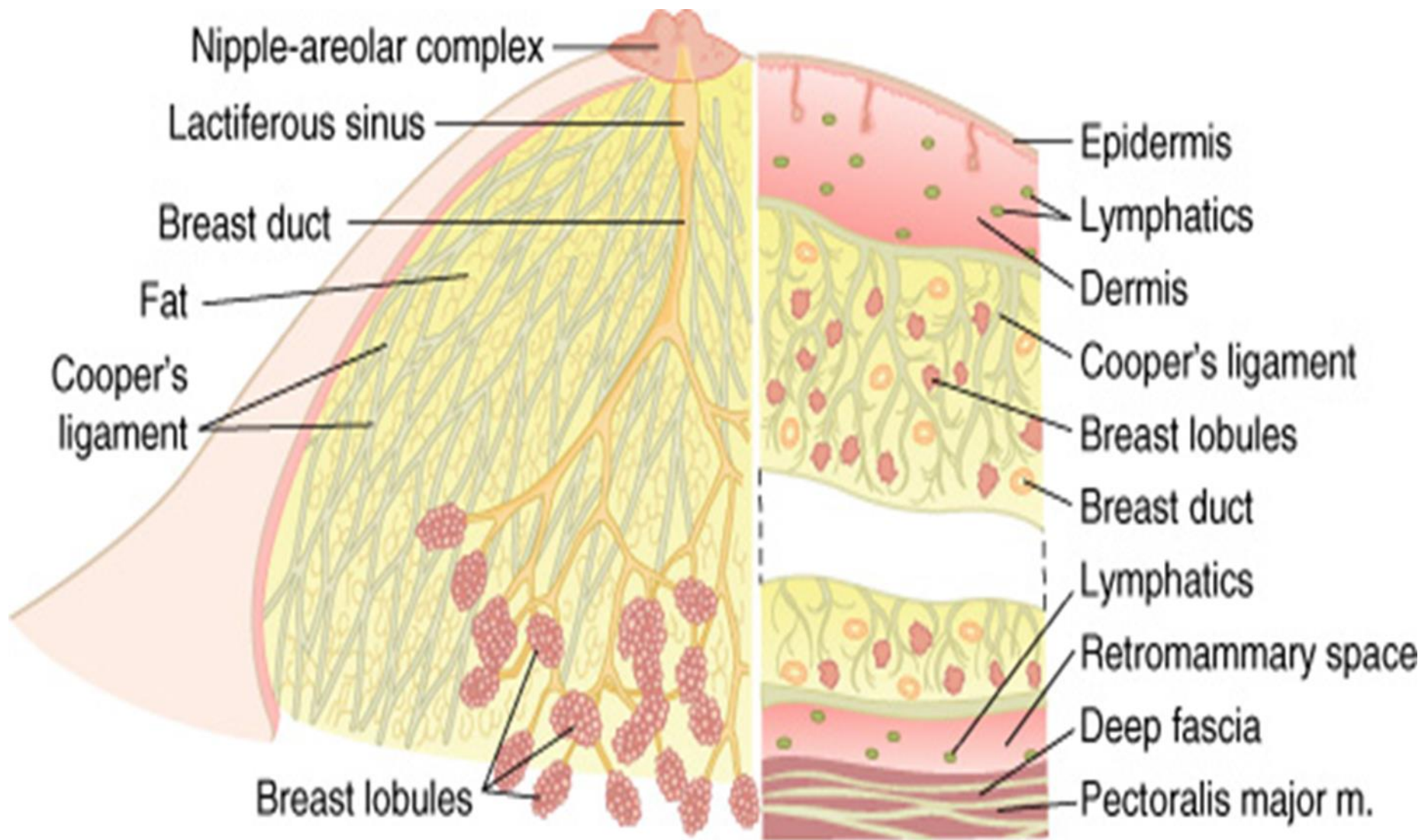
- ☞ These ligaments become looser with **age** or with **excessive strain**, as occurs in **long-term jogging**
- ☞ Wearing a supportive **bra** can slow this process and help maintain the integrity of the **suspensory ligaments**.

Connective Tissue con...

- ☞ Each breast has one pigmented projection, the **nipple**, which has a series of closely spaced openings of ducts called **lactiferous ducts**, where milk emerges..
- ☞ The circular pigmented area of skin surrounding the nipple is called the **areola**
- ☞ it appears rough because it contains modified sebaceous (oil) glands.
- ☞ Near the nipple, the **mammary ducts** expand to form sinuses called **lactiferous sinuses** where some milk may be stored before draining into a lactiferous duct

Three Types of Vessels





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Blood Vessels

- ☞ The breasts also have blood vessels.
- ☞ There are different types of blood vessels including veins, arteries, and capillaries.
- ☞ The arteries bring blood with oxygen to the breast tissue.
- ☞ The arterial and venous system connects through the capillaries.
- ☞ The veins carry blood back to the heart and lungs to get oxygen.

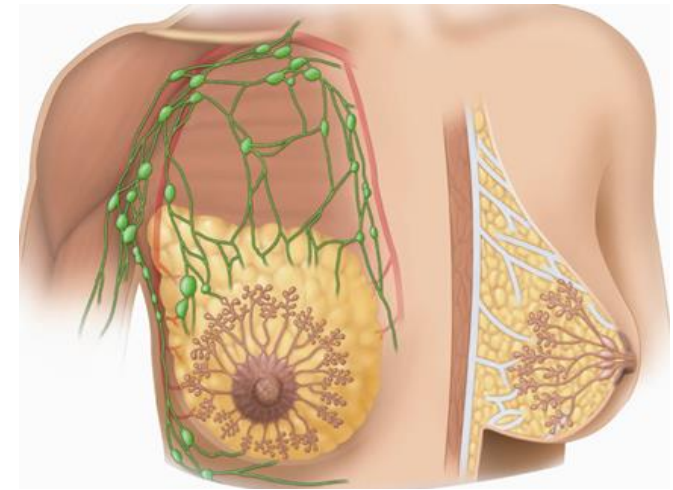
Lymphatic System

- ☞ The **lymphatic system** is an essential component of the **immune system**.
- ☞ It blocks the spread of **infections, diseases**, and **cancer**.
- ☞ The lymphatic vessels are distributed throughout every square inch of the body including the breasts.
- ☞ They drain **lymph**, which is a **clear fluid** produced in the **tissue**.
- ☞ The **lymphatic** and **blood vessels** are located within the **stroma**.

Lymphatic System con...

- ☞ This fluid carries **damaged cells**, **dead cells**, **foreign bodies**, **bacteria** and **all substances** your body does not need and want out.
- ☞ It can also carry **cancer cells**.
- ☞ This fluid is brought into the **lymph nodes** where it concentrates all these materials and they are essentially **eaten up** and **destroyed** by **immune cells**.

- **Lymph ducts:** *Drain fluid that carries white blood cells (that fight disease) from the breast tissues into lymph nodes under the armpit and behind the breastbone*
- **Lymph nodes:** *Filter harmful bacteria and play a key role in fighting off infection*

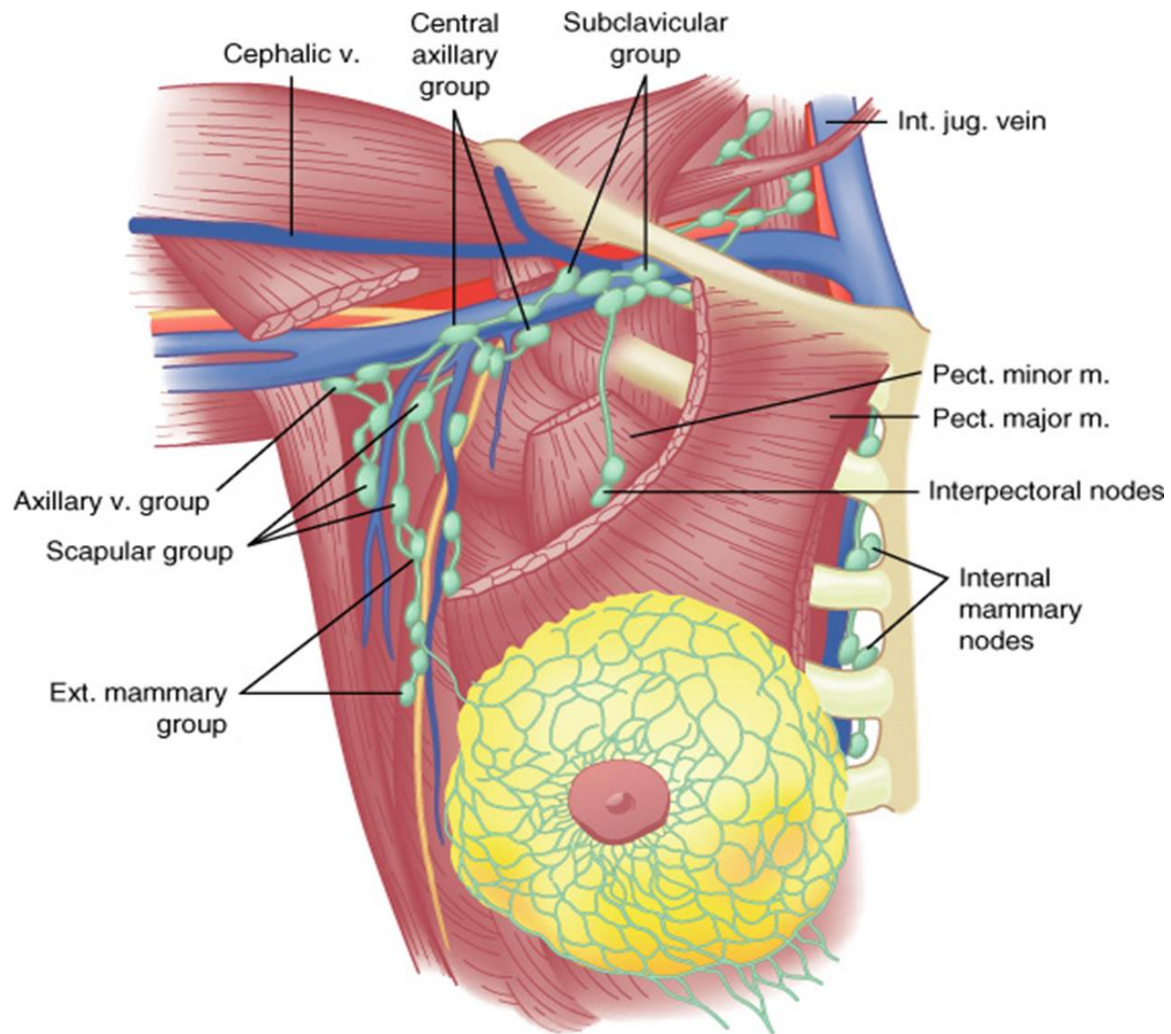


Lymphatic System con...

- ☞ *The lymph nodes draining the breast are located in the **axilla, behind the chest bone and above the collarbone.***
- ☞ *Once in the lymph nodes the fluid gets filtered and cleansed before joining the circulatory system in the **neck area.***

Lymphatic drainage

- ☞ 75% drains to the **axilla**.
- ☞ Five groups of lymphnodes.
 1. Subclavicular nodes
 2. Supraclavicular nodes
 3. Internal mammary nodes
 4. Interpectoral nodes
 5. External mammary nodes



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Fatty Tissue

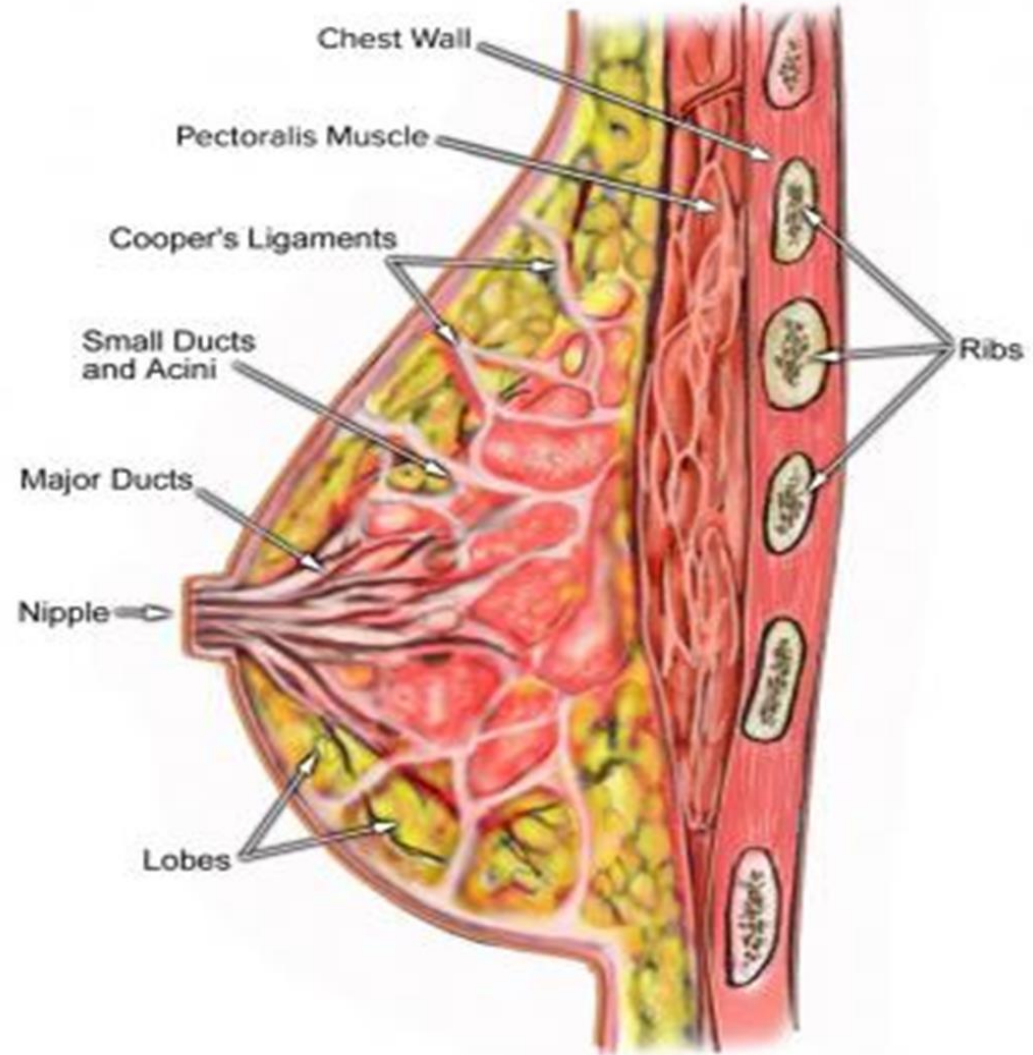
- ☞ The breasts are also composed of **fatty tissue**.
- ☞ The fatty tissue content increases as women age.
- ☞ After menopause most of the breast **glandular tissue atrophy** and get replaced with fat.

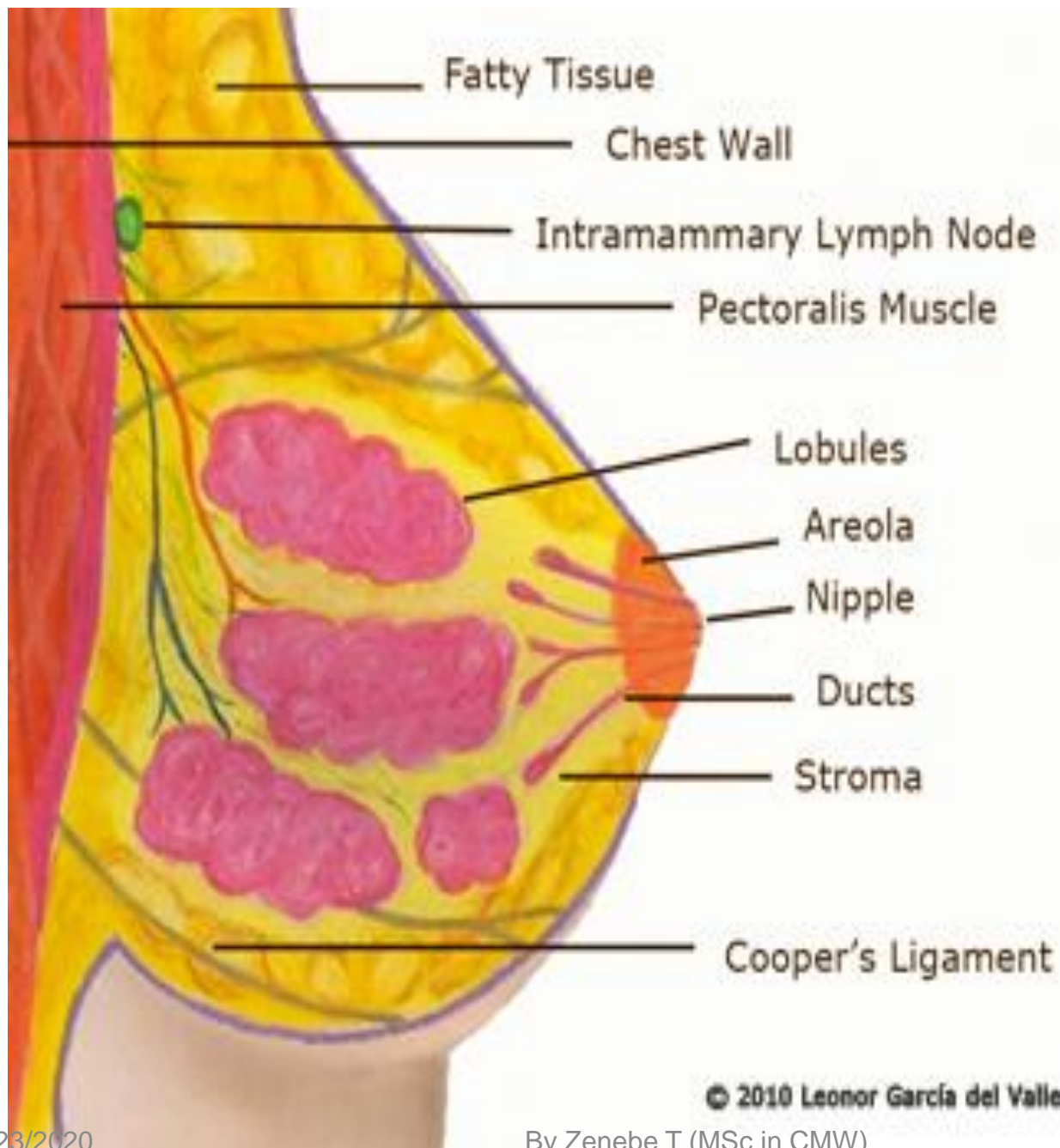
Muscle

- ☞ There is muscle tissue surrounding the lobules that help to **squeeze** milk into the ducts.
- ☞ There is also muscle tissue around the nipple.
- ☞ The chest muscle underneath the breast is called the **pectoralis major**.
- ☞ This muscle is surrounded by an envelope of thin tissue.
- ☞ This tissue separates the muscle from the breast. It is called the **fascia**.

Muscle con...

☞ Each breast is a hemispheric projection of variable size anterior to the **pectoralis major** and **serratus anterior muscles** and attached to them by a layer of **fascia** composed of dense irregular connective tissue





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Breast self examination(BSM)

By Zenebe T(MSc in CMW)

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Breast Self-Exam

❖ *Inspection in the Shower*

- ✓ It is easier to examine breast when hands are soapy.
- ✓ With your right hand behind your head, examine your right breast with your left hand using a grid or circular motion
- ✓ Reverse the procedure to examine the other breast.

Breast Self-Exam

2. In front of the mirror

A. With arms at sides looks for:

⇒ *Changes in size and shape of breasts*

⇒ *Changes in **skin dimpling**, **puckering**, **redness**, **swelling***

⇒ *Changes in nipple **inversion**, **discharge** from nipples pointing in different directions.*

Breast Self-Exam cont...

B. Holding arms over the head look for:

➡ *Masses,*

➡ *Breast symmetry,*

➡ *Puckering.*

C. Press hands firmly on hips, bend slightly forward.

Inspect

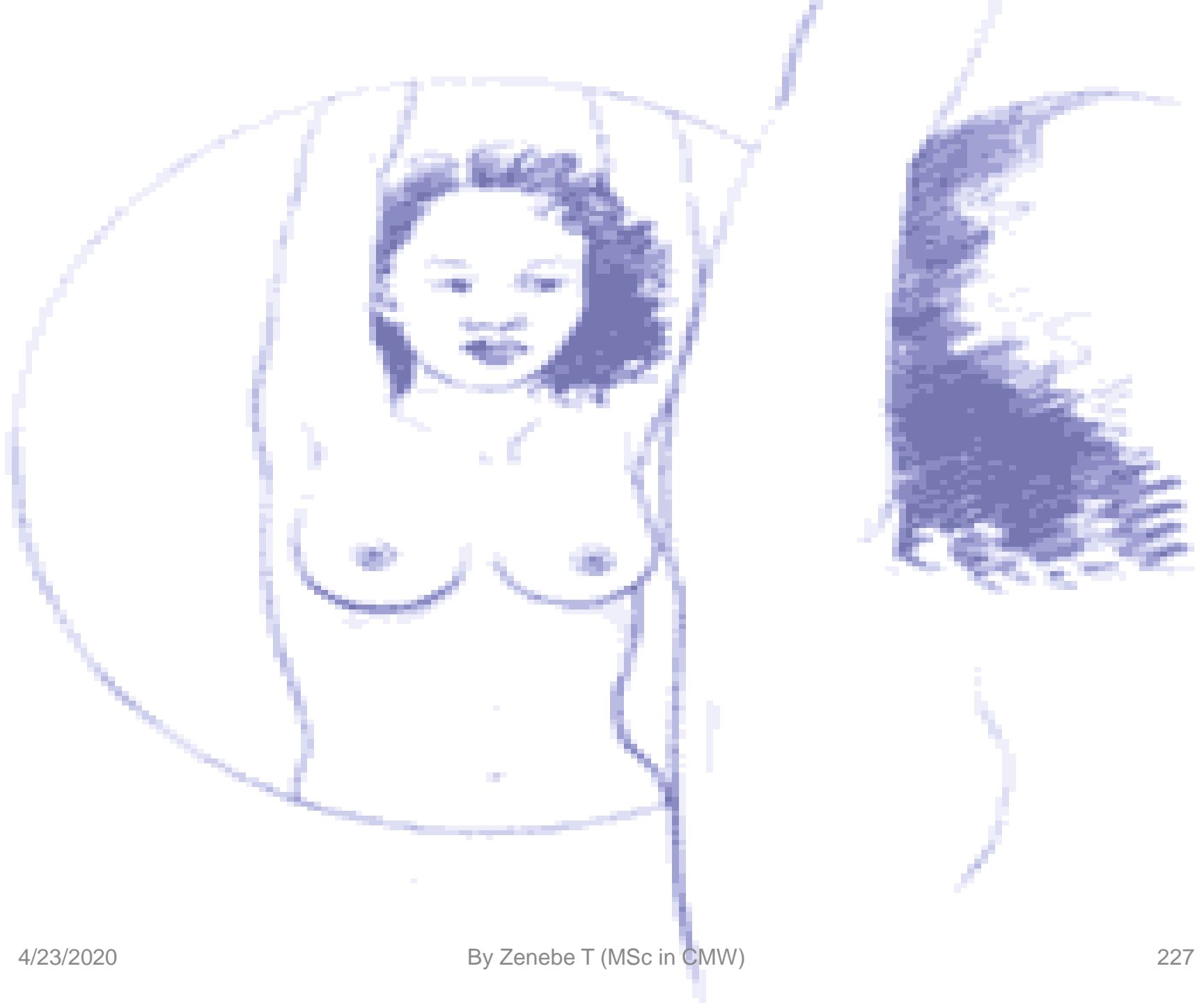
➡ *Lumps or pulling of the skin.*

Breast Self-Exam cont...

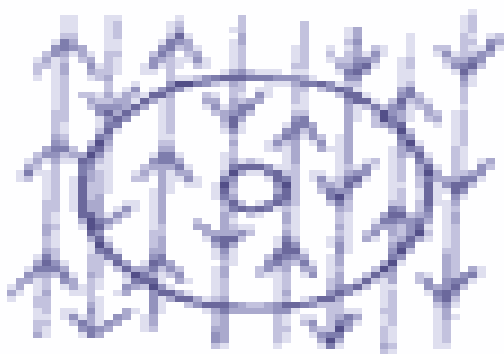
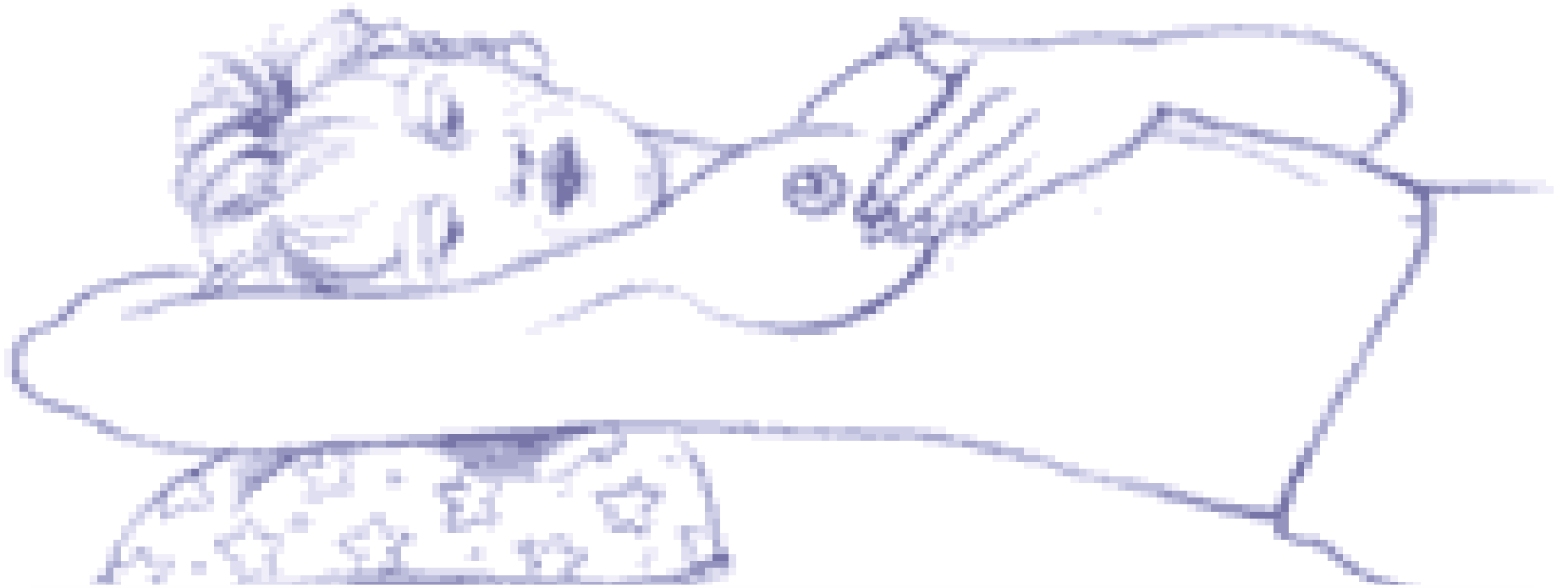
D. Each breast should be a mirror image of the other.

- ➡ If you think you detect a lump in breast, check the other side to see if it feels the same.
- ➡ If so this is undoubtedly normal tissue.
- ➡ Examine using the circular or grid motion as in the shower.

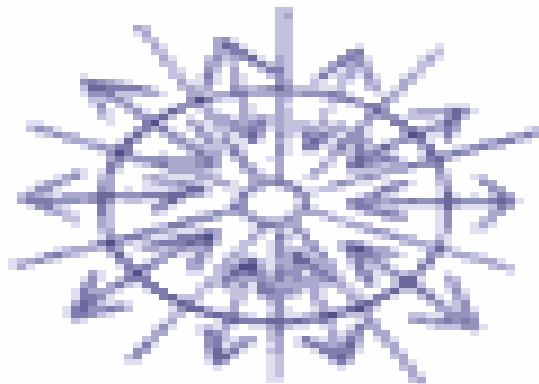
E. Gently squeeze the nipple of each breast b/n your thumb & index finger to check for signs of discharge or bleeding



Breast Self-Exam cont...



Lines



Wedges



Circles



In Front Of A Mirror



In The Shower



On The Bed

In Front Of A Mirror

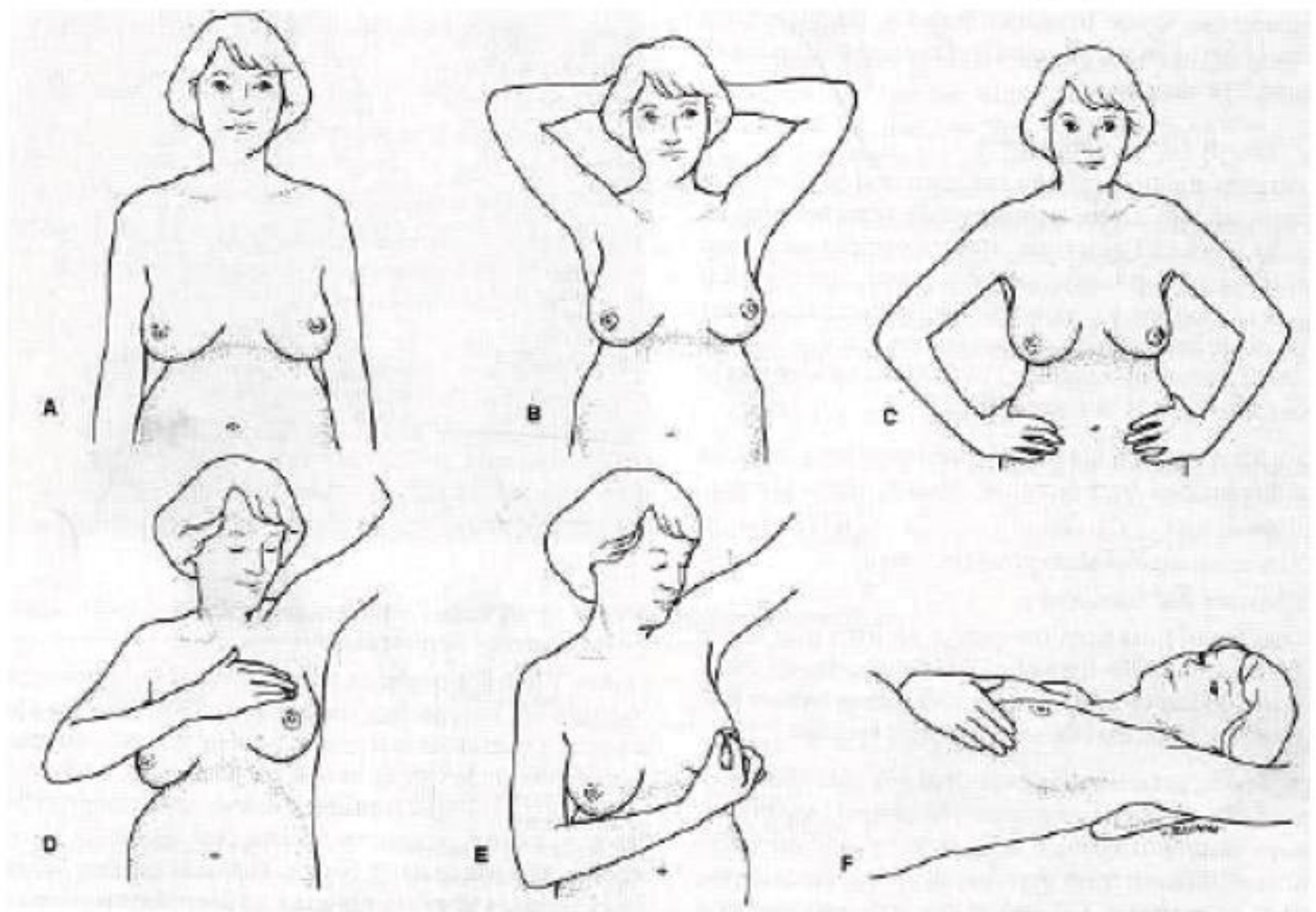
- 1.** Inspect both breasts with your arms at your sides.
- 2.** Raise your arms slowly, paying close attention to any swelling, or change in your breast or nipples.
- 3.** Place hands on your hips, flex your chest muscles and again visually compare both breasts.

In The Shower

- 4.** Extend right arm upward and examine right breast.
- 5.** Extend left arm upward and examine left breast.

On The Bed

- 6.** Lie down on a bed or floor on your back.
- 7.** Insert your pillow under your right shoulder so that your right breast is flat.
- 8.** Examine your right breast with right arm under head.
- 9.** Insert your pillow under your left shoulder so that your left breast is flat.
- 10.** Examine your left breast with left arm under head.



Benign & Malignant Disorder of the Breast

By Zenebe T(MSc in CMW)

Email: zenebe7834@gmail.com

Benign Clinical Conditions

- 1. Mastalgia*
- 2. Nipple Discharge*
- 3. Breast abscess/mastitis*
- 4. Simple breast Cysts*
- 5. Fibro adenoma*

1. Mastalgia

- ➡ Cyclic pain is the most common type of breast pain.
- ➡ It may be caused by the normal monthly changes in hormones.
- ➡ This pain usually occurs in both breasts.
- ➡ It is generally described as a **heaviness** or **soreness** that radiates to the armpit and **arm**.
- ➡ The pain is usually most severe before a **menstrual period** and is often relieved when a **period ends**.

Mastalgia con....

- ➡ Cyclic breast pain occurs more often in **younger women.**
- ➡ Most cyclic pain goes away without treatment and usually disappears at menopause.

❖ **Diagnosis**

- ✓ Detail H&P/E, location, relation with menstrual period, duration, association masses or skin changes.

❖ **Treatment**

- ✓ NSAIDs (Aspirin, Ibuprofen, Diclofenac).

2. Nipple Discharge

❖ **Cause :** 95% has a benign cause

❖ Determine if **physiologic or pathologic**

❖ **Physiologic**

- ➡ Non spontaneous, bilateral and multiple ducts.
- ➡ Color white, yellow, green, brown or black-bluish.
- ➡ Most common benign causes of **bloody discharge** are intraductal papiloma, periductal mastitis

⇒ Pathological discharge

- ✓ Spontaneous
- ✓ Unilateral
- ✓ Single duct

⇒ If associated with a mass, excision or biopsy is indicated.

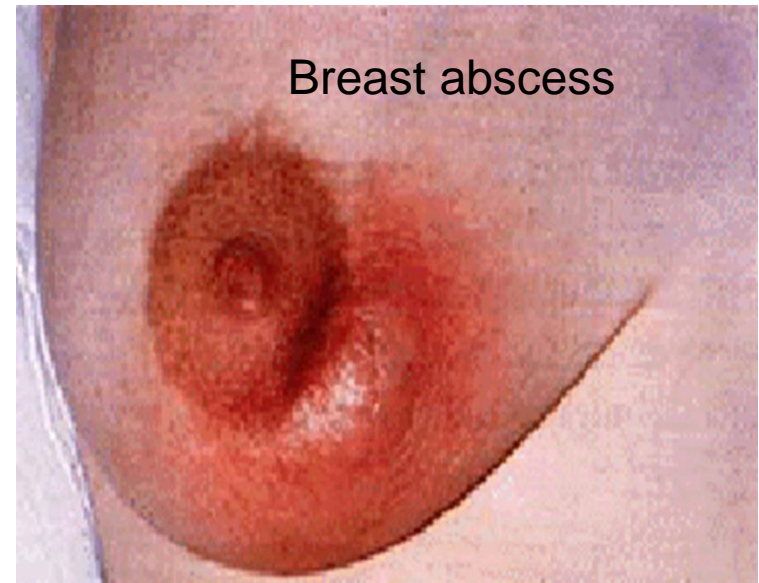
⇒ If not rule out infection



Multi-duct Discharge:

3. Breast abscess and mastitis

- Mastitis is **cellulitis** of the breast, commonly during lactation.
- causative agents
 - ✓ Staph Aurous
 - ✓ Streptococcus



Clinical presentation of mastitis

- ➔ **Tender hot swollen wedge** shaped area of breast
- ➔ Temperature of 38.5°C or over
- ➔ Chills
- ➔ Headache
- ➔ Flu-like symptoms.

Predisposing factors

- ➡ Nipple damage
- ➡ Missed feedings and milk stasis
- ➡ Previous mastitis history with other babies
- Use of a manual breast pump

Management

- ➡ Encourage effective and frequent milk removal.
- ➡ Advise to begin feeding on the unaffected breast if pain is inhibiting let-down of milk.
- ➡ Advise to switch to the affected breast after milk let-down.
- ➡ Advise gentle breast massage of the affected area during expression or breastfeeding.
- ➡ Advise continuation of breastfeeding.
- ➡ Advise rest.

Analgesia

- ➡ An anti-inflammatory such as ibuprofen is safe for breastfeeding

Antibiotics

- ➡ If symptoms of mastitis have not improved within 24 hours or if the woman is feeling ill, antibiotic treatment should be started.
- ➡ Staphylococcus Aureus and coagulase-negative staphylococci are the most common pathogens and *flucloxacillin 500 mg QID 10-14 days*.
- ➡ If abscess is present *incise and drainage*

4. Simple breast Cysts

- **Breast cysts** are fluid-filled sacs inside the **breast**, which are usually not cancerous (benign



⇒ Epithelial-lined cavities that contain fluid

⇒ 7% of women Can have cyclic fluctuation

⇒ Firm and mobile and well demarcated

Managment ;Aspiration

☞ *If bloody*

☞ *Recurrence*

☞ *Persistence*

Excisional biopsy is warranted

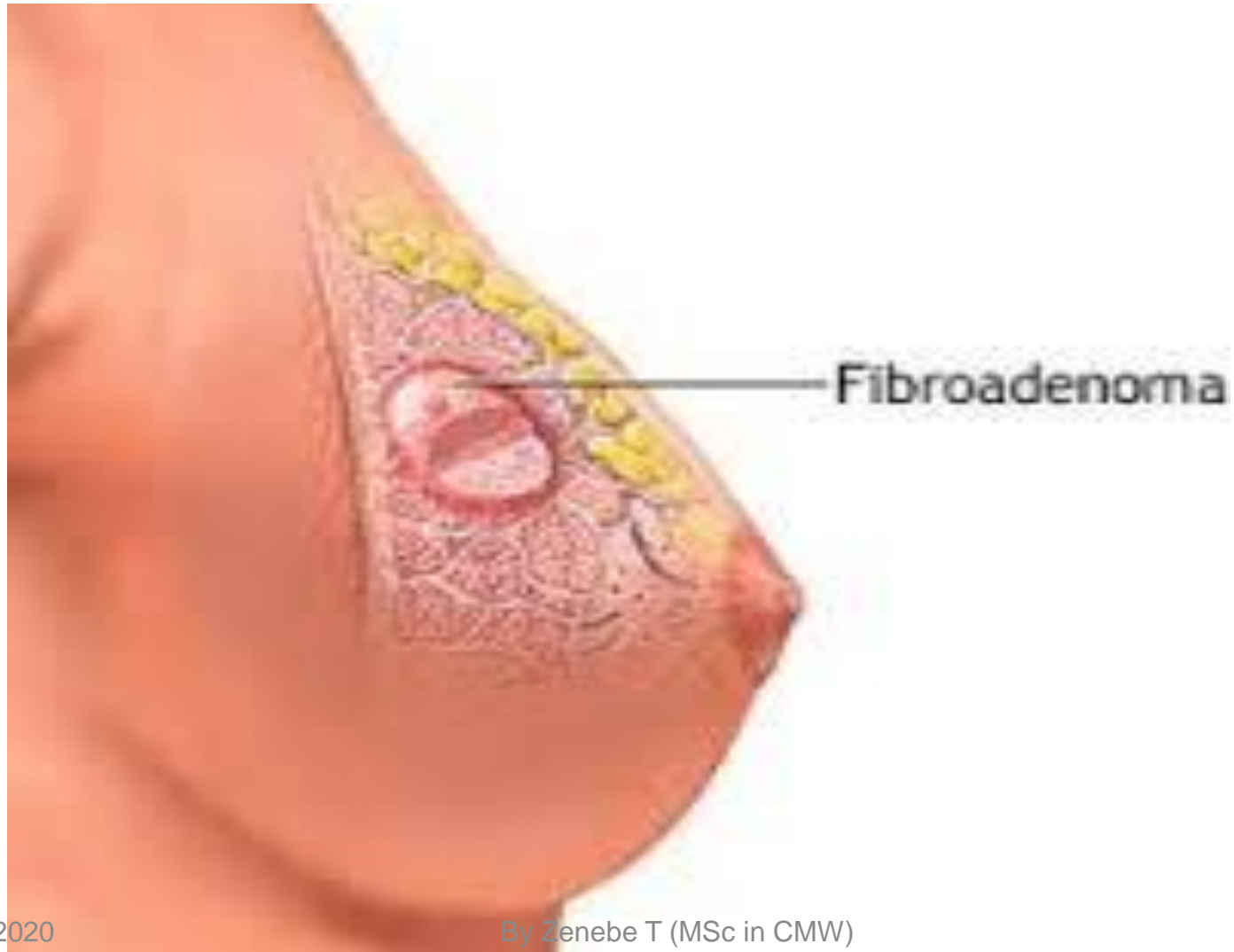
5. Fibro adenoma

- ➡ A fibro adenoma is a non-cancerous tumor in the breast that is commonly found in women under the age of 30
- ➡ Pseudo encapsulated and mobile, smooth or slightly lobulated.

Causes

- ➡ The exact cause of fibroadenomas is not known.
- ➡ Hormones such as estrogen may play a part in the growth and development of the tumors.
- ➡ Taking oral contraceptives before the age of 20 has been associated with a higher risk of developing fibroadenomas.

Fibroadenomas



Types of fibroadenomas

⇒ There are two types of fibroadenomas:

1. simple fibroadenomas and
2. complex fibroadenomas.

⇒ **The simple tumors** do not increase breast cancer risk and look the same all over when viewed under a microscope.

⇒ **The complex tumors** contain other components such as **macrocyts** (fluid-filled sacs large enough to feel and to see without a microscope) and **calcifications** (calcium deposits).

Diagnosed

- * A physical examination will be conducted and your breasts will be **palpated**.
- * A breast **ultrasound** or **mammogram** imaging test may also be ordered.
- * A **mammogram** is an X-ray of the breast taken while the breast is compressed between two flat surfaces.
- * A **fine needle aspiration** or **biopsy** may be performed to remove tissue for testing.

Treating a Fibroadenomas

- ➡ It does not necessarily have to be removed.
- ➡ Fibroadenomas that do not grow and are definitely not cancerous can be closely monitored with clinical breast exams and imaging tests, such as mammograms and ultrasounds.

Breast Cancer

By Zenebe T(MSc in CMW)

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Definition :-

- This is a **malignant growth** that begins in the **tissue** of the breast in which abnormal cells grow in an **uncontrolled way**.

Causes/Risk factors

- Early onset menarche
- Late menopause
- Delayed first pregnancy (after 30 years of age)
Family history (maternal or paternal) Excessive alcohol consumption
- Use of Hormonal therapy for more than 4 years
- Smoking

Invasive and Non-invasive breast cancer

1. Invasive breast cancer

- the cancer cells break out from inside the **lobules** or ducts and **invade nearby tissue**.
- With this type of cancer, the **abnormal cells** can reach the **lymph nodes**, and eventually make their way to **other organs (metastasis)**, such as the **bones, liver or lungs**.

2. Non-invasive breast cancer

- *This is when the cancer is **still inside its place of origin** and has **not broken out**.*
- ***Lobular carcinoma in situ** is when the cancer is still inside the lobules*
- ***Ductal carcinoma in situ** is when they are still inside the milk ducts.*
- ***In situ"** means "in its original place". Sometimes, this type of breast cancer is called "pre-cancerous"; this means that although the abnormal cells have not spread outside their place of origin, they can eventually develop into invasive breast cancer.*

Signs and Symptoms of breast cancer

- A **symptom** is only felt by the patient, such as a
 - ❖ [headache](#) or
 - ❖ pain.
- A **sign** is something the patient and others can detect, for example,
 - ❖ a rash or
 - ❖ swelling.
- The first symptoms of breast cancer are usually an area **of thickened tissue** in the woman's breast, or a lump.
- The majority of lumps are not cancerous; however, women should get them checked by a health care professional

❖ According to the National Health Service, UK, women who detect any of the following signs or symptoms should tell their doctor:

- ✓ A lump in a breast
- ✓ A pain in the **armpits** or breast that does not seem to be related to the woman's **menstrual period**
- ✓ Pitting/scar or redness of the skin of the breast; like the skin of an **orange**
- ✓ A rash around (or on) one of the nipples
- ✓ A swelling (lump) in one of the armpits
- ✓ An area of thickened tissue in a breast

- ✓ **One of the nipples has a discharge**; sometimes it may contain blood
- ✓ The nipple **changes in appearance**; it may become **sunken or inverted**
- ✓ The size or the shape of the breast changes
- ✓ The nipple-skin or breast-skin may have started to peel, scale/flake

Diagnosing breast cancer

❖ **Breast exam**

- the physician will check both the patient's breasts, looking out for lumps and other possible abnormalities, such as inverted nipples, nipple discharge, or change in breast shape.

❖ **X-ray (mammogram)**

- commonly used for breast cancer screening.
- If anything unusual is found, the doctor may order a diagnostic mammogram

❖ Breast ultrasound

- this type of scan may help doctors decide whether a lump or abnormality is a **solid mass or a fluid-filled cyst**.

❖ Biopsy

- a sample of tissue from an apparent abnormality, such as a lump, is surgically removed and sent to the lab for analysis.
- If the cells are found to be cancerous, the lab will also determine **what type of breast cancer** it is, and the **grade of cancer** (aggressiveness).

Stages of breast cancer

❖ *Staging describes the extent of the cancer in the patient's body and is based on whether*

- it is invasive or non-invasive,
- how large the tumor is,
- whether lymph nodes are involved and how many, and
- whether it has metastasized (spread to other parts of the body).

❖ *A cancer's stage is a crucial factor in*

- *deciding what treatment options to recommend, and*
- *determining the patient's prognosis.*

- ❖ *Staging is done after **cancer** is diagnosed.*
- ❖ *The American Joint Committee on Cancer (AJCC) has designated staging by TNM*

***T** = tumor size*

***N** = lymph node involvement*

***M** = metastasis*

Stage 1

- ☞ Tumor ≤ 2.0 cm in greatest dimension
- ☞ No nodal involvement (N0)
- ☞ No metastases (M0)



Stage II

- ☞ Tumor $> 2.0 \leq 5$ cm or
- ☞ Ipsilateral(same side) axillary lymph node (N1)
- ☞ No Metastasis (M0)



between 2 and 5 cm

Stage III

- ☞ *Tumor > 5 cm (T3)*
- ☞ *or ipsilateral axillary lymph nodes fixed to each other or other structures (N2)*
- ☞ *involvement of ipsilateral internal mammary nodes (N3)*
- ☞ *Inflammatory carcinoma*

Stage IV (Metastatic breast cancer)

- ☞ Any T(tumor)
- ☞ Any N(node)
- ☞ Metastasis (M1)
- ☞ Stage 4 means **any metastatic breast cancer** no **matter what size the tumor** or if there is **nodal involvement or not**.
- ☞ If it is metastatic, it is **stage 4**.
- ☞ In general, stage 4 **is not considered curable**.
- ☞ The goals are to increase the quality of life and extend survival time.

Treatment options for breast cancer

- ❖ The main breast cancer treatment options may include:
 - ✓ Radiation therapy (radiotherapy)
 - ✓ Surgery(Lumpectomy, Mastectomy)
 - ✓ Biological therapy (targeted drug therapy)
 - ✓ Hormone therapy
 - ✓ Chemotherapy(antibiotics)

Chemotherapy

- ☞ Medications are used to kill the cancer cells - these are called **cytotoxic** drugs.
- ☞ The oncologist may recommend **chemotherapy** if there is
 - ✓ a high **risk of cancer recurrence**, or the cancer **spreading** elsewhere in the body.
- ☞ If the tumors are large,
 - ✓ chemotherapy may be administered before surgery.
 - ✓ The aim is to shrink the tumor, making its removal easier.

❖ **Chemotherapy** may also

- ☞ be administered if the cancer has **metastasized** - spread to other parts of the body.
- ☞ Be useful in **reducing some of the symptoms** caused by cancer.
- ☞ help stop **estrogen production**. Estrogen can encourage the growth of some breast cancers.

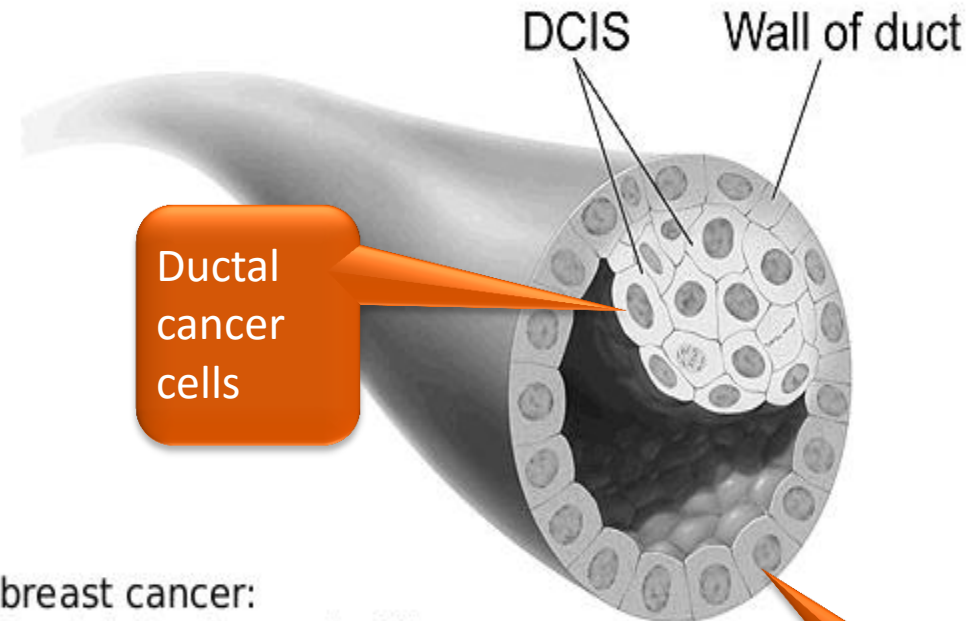
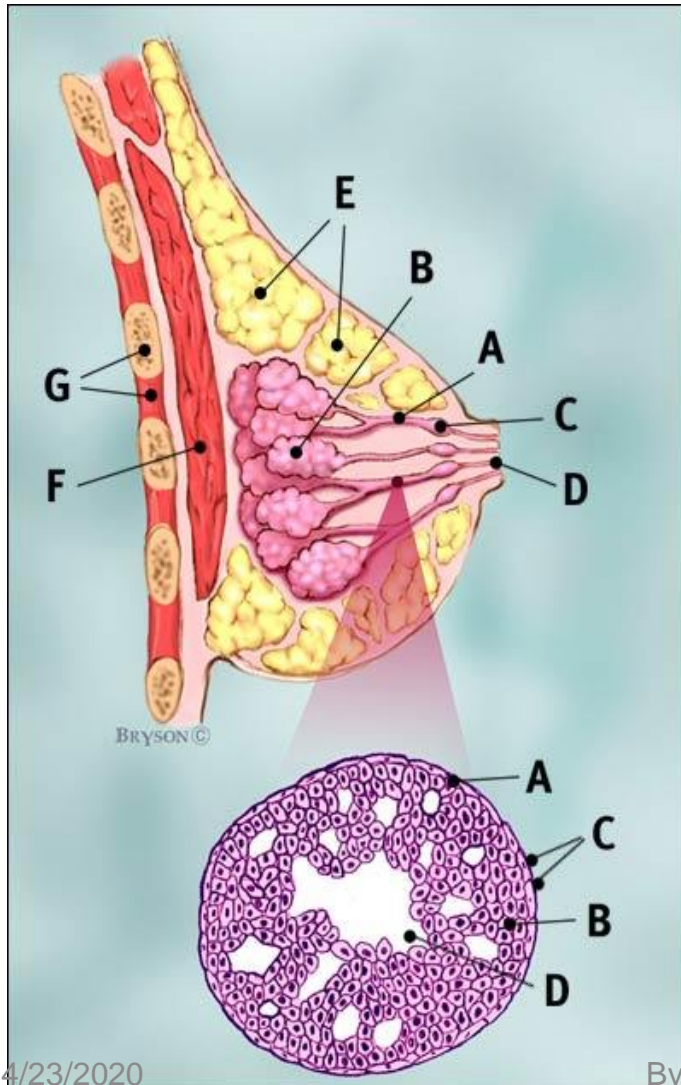
❖ Common drug used in cancer treatment

- ✓ **Tamoxifen (estrogen antagonist)** - prevents estrogen from binding to ER(estrogen receptor)-positive cancer cells.

❖ Usual Adult Dose for Breast Cancer

- ✓ *For the treatment of metastatic breast cancer in women and men: 20 to 40 mg orally Dosages greater than 20 mg should be given in divided doses (morning and evening).*
- ✓ *For the treatment of women with Ductal Carcinoma in Situ, following breast surgery and radiation:
20 mg orally daily for 5 years.*
- ✓ *To reduce the incidence of breast cancer in women at high risk for breast cancer:
20 mg orally daily for 5 years*

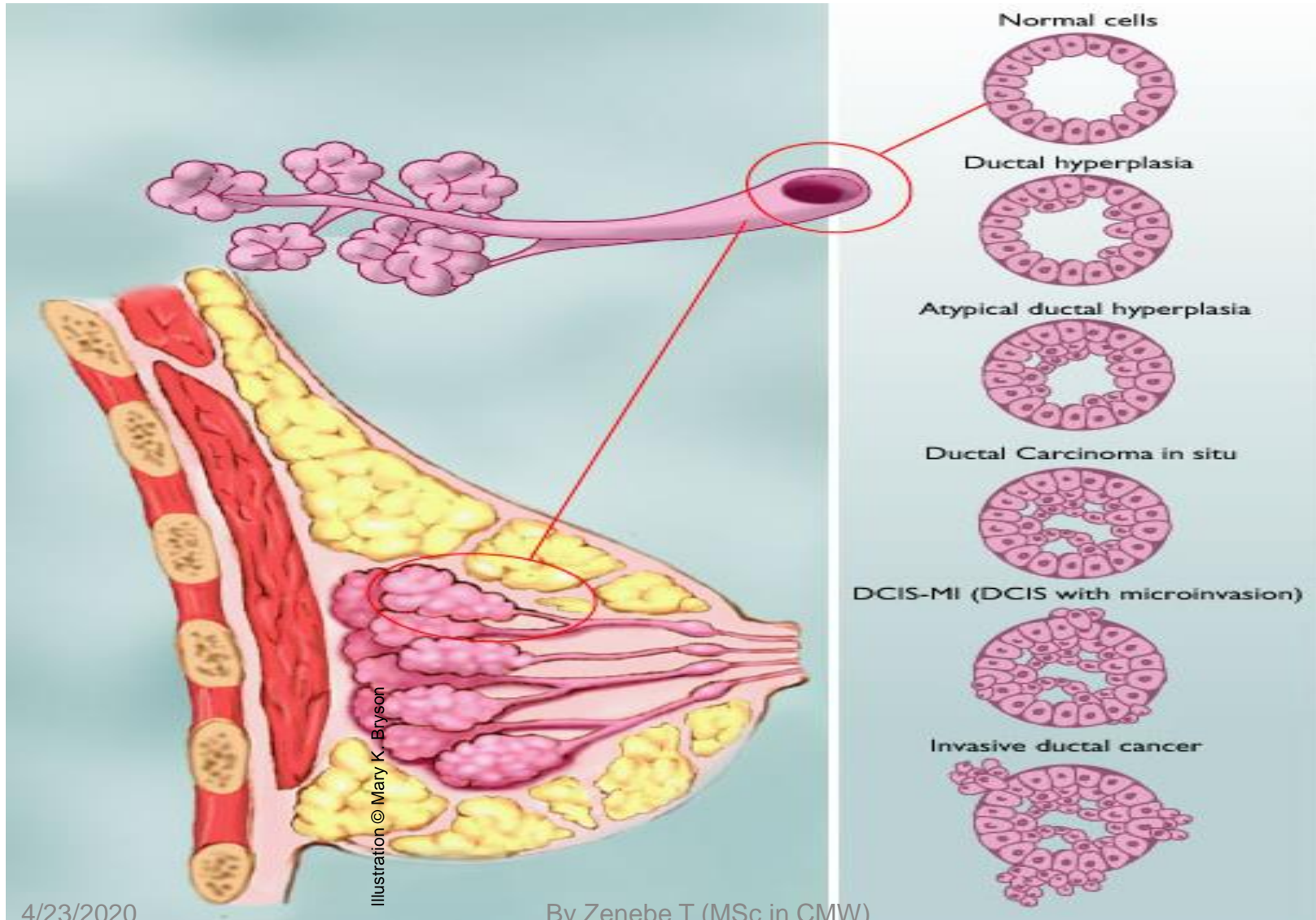
Ductal Carcinoma in situ (DCIS)



breast cancer:
Ductal Carcinoma in Situ

Carcinoma refers to any cancer that begins in the skin or other tissues that cover internal organs

Range of Ductal Carcinoma in situ

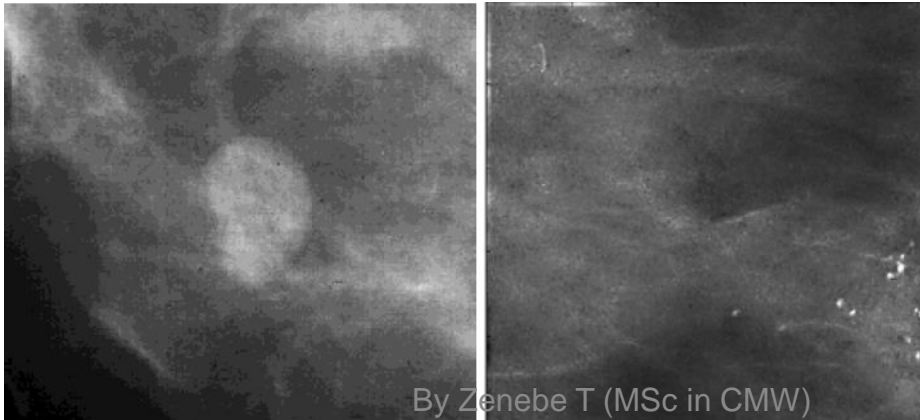


What Mammograms Show

Two of the most important mammographic indicators of breast cancers

- ✓ **Masses**

- ✓ **Microcalcifications:** Tiny flecks of calcium – like grains of salt – in the soft tissue of the breast that can sometimes indicate an early cancer.



Reference

1. William gynecology 3rd edition
2. Ethiopian National guidelines for the management of sexually transmitted infections using syndromic approach 2015
3. Obstetric and Gynecology lecture note
4. Food, Medicine and Healthcare Administration and Control Authority of Ethiopia Standard treatment guidelines for general hospitals Third edition, 2014