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Sexually Transmitted Diseases

Presented By;-

Mr. Samarpan Mishra (Assistant Professor)

Specialization:- Pharmaceutical Chemistry

Sexually transmitted diseases

1. AIDS
2. Syphilis
3. Gonorrhea

- ❑ Sexually transmitted infections (STIs), also known as sexually transmitted diseases (STDs), are infections passed from person to person primarily through sexual contact (vaginal, anal, or oral sex).
- ❑ They are caused by bacteria, viruses, or parasites and are a significant global health concern

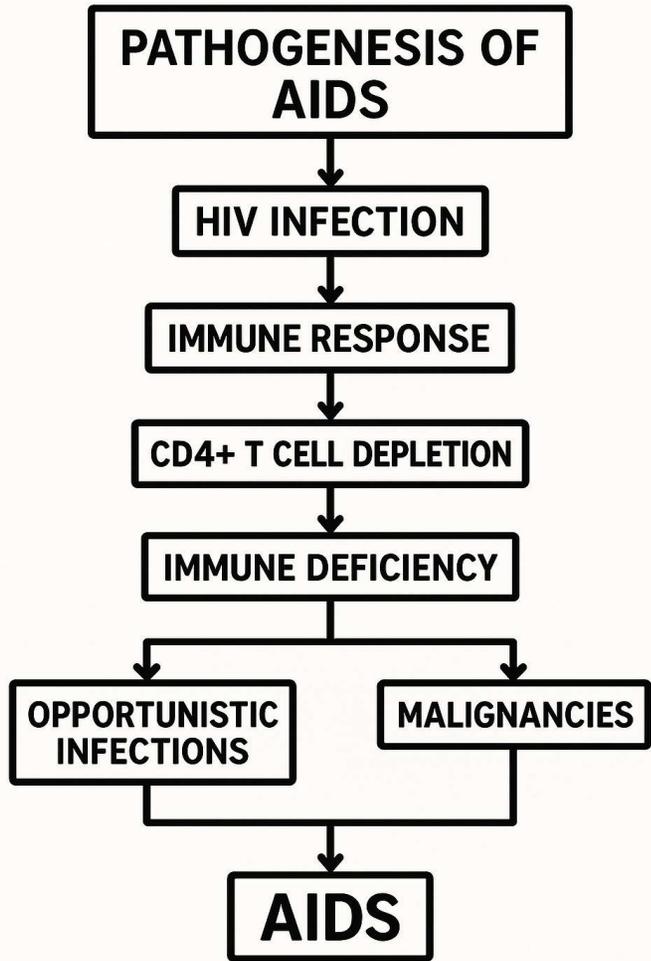
1. AIDS

S.No	Heading	Details
1	Full Form	AIDS – Acquired Immunodeficiency Syndrome
2	Definition	A chronic, life-threatening condition caused by Human Immunodeficiency Virus (HIV), which destroys the body's immune system, especially CD4+ T-cells.
3	Causative Agent	HIV-1 (most common, worldwide) and HIV-2 (mainly in West Africa).
4	Mode of Transmission	Unprotected sexual contact, contaminated needles, blood transfusion, mother-to-child (pregnancy, delivery, breastfeeding).
5	Key Pathology	Progressive destruction of CD4 cells → weakened immunity → increased risk of opportunistic infections and cancers.
6	Stages	Acute infection → Clinical latency → AIDS (advanced stage).

I. Etiology of AIDS

S.No	Category	Details
1	Causative Agent	HIV-1/HIV-2 (retrovirus).
2	Mode of Spread	Sexual contact, blood exposure, shared needles, vertical transmission (pregnancy, birth, breastfeeding).
3	High-Risk Groups	IV drug users, sex workers, MSM, infants of HIV+ mothers, unprotected sexual partners.
4	Risk Factors	Multiple partners, untreated STDs, needle sharing, lack of testing/screening, unsafe blood transfusion.

II. Pathogenesis of AIDS



III. Diagnostic Tests of AIDS

S.No	Test / Method	Purpose / Findings
1	ELISA (Screening)	Detects HIV antibodies; first-line test.
2	Rapid Antibody Tests	Quick diagnosis for screening.
3	Western Blot (Confirmatory)	Confirms presence of HIV antibodies.
4	HIV RNA PCR / NAT	Detects viral load; used for early/acute HIV and newborns.
5	CD4 Count	Measures immune status; AIDS if <200 cells/mm ³ .
6	p24 Antigen Test	Detects early infection before antibodies appear.
7	Tests for Opportunistic Infections	TB test, fungal cultures, chest X-ray, etc.

IV. Treatment of AIDS

S.No	Category	Treatment / Management
1	Antiretroviral Therapy (ART)	Combination therapy (at least 3 drugs). First-line includes: – Tenofovir – Lamivudine/Emtricitabine – Efavirenz / Dolutegravir
2	Goals of ART	Reduce viral load, increase CD4 count, prevent AIDS, reduce transmission.
3	Opportunistic Infection Treatment	TB: anti-TB drugs; PCP: cotrimoxazole; CMV: ganciclovir; fungal infections: fluconazole.
4	Preventive Therapy (Prophylaxis)	Cotrimoxazole for PCP; isoniazid for TB prevention.
5	Supportive Care	Nutrition, hydration, psychological counseling.
6	Prevention	Safe sex, needle safety, screening blood, ART in pregnancy, PrEP/PEP.

2. Syphilis

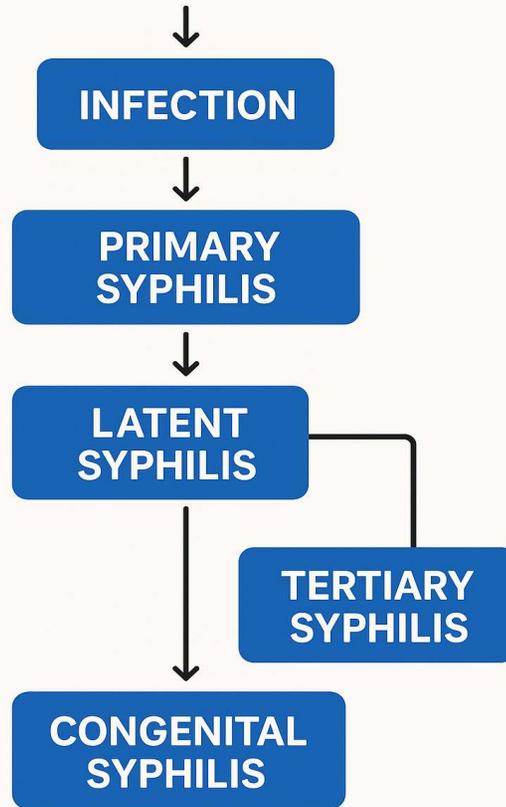
S.No	Heading	Details
1	Definition	A chronic sexually transmitted infection caused by <i>Treponema pallidum</i> , progressing through multiple clinical stages.
2	Mode of Transmission	Sexual contact, blood transfusion (rare), and vertical transmission (mother to fetus → congenital syphilis).
3	Stages	Primary, Secondary, Latent, and Tertiary syphilis.
4	Characteristics	Painless genital ulcer (chancre), systemic rash, neurological & cardiovascular complications if untreated.
5	Incubation Period	10–90 days (average 21 days).

I. Etiology of Syphilis

S.No	Category	Details
1	Causative Agent	<i>Treponema pallidum</i> (a motile spirochete bacterium).
2	Mode of Spread	Sexual intercourse (vaginal, anal, oral), kissing if lesions present, direct skin-to-skin contact with syphilitic sore.
3	Risk Factors	Unprotected sex, multiple partners, MSM population, HIV infection, untreated maternal syphilis (congenital).
4	Pathogenesis	Bacteria penetrate mucous membranes → spread via blood & lymph → multi-organ involvement.

II. Pathogenesis of Syphilis

PATHOGENESIS OF SYPHILIS



III. Diagnostic Tests for Syphilis

S.No	Test	Purpose / Findings
1	Dark-Field Microscopy	Direct visualization of T. pallidum from chancre (primary syphilis).
2	Non-Treponemal Tests	VDRL, RPR – used for screening; detect antibodies to cardiolipin; titers fall after treatment.
3	Treponemal Tests	FTA-ABS, TPHA, TPPA – confirmatory tests; specific for T. pallidum.
4	PCR	Detects bacterial DNA (useful in congenital syphilis).
5	CSF Examination	For neurosyphilis; VDRL positive in CSF.
6	Ultrasound (Pregnancy)	Detects signs of congenital syphilis (hepatosplenomegaly, hydrops).

IV. Treatment of Syphilis

S.No	Stage	Treatment
1	Primary, Secondary, Early Latent	Benzathine Penicillin G (single IM dose)
2	Late Latent & Tertiary (non-neuro)	Benzathine Penicillin G weekly for 3 weeks
3	Neurosyphilis	Aqueous Penicillin G IV for 10–14 days
4	Congenital Syphilis	Penicillin G IV/IM based on severity.
5	Penicillin Allergy	Doxycycline or tetracycline (except in pregnancy → desensitize & give penicillin).
6	Partner Management	Treat sexual partners; abstain until therapy completed.

3. Gonorrhoea

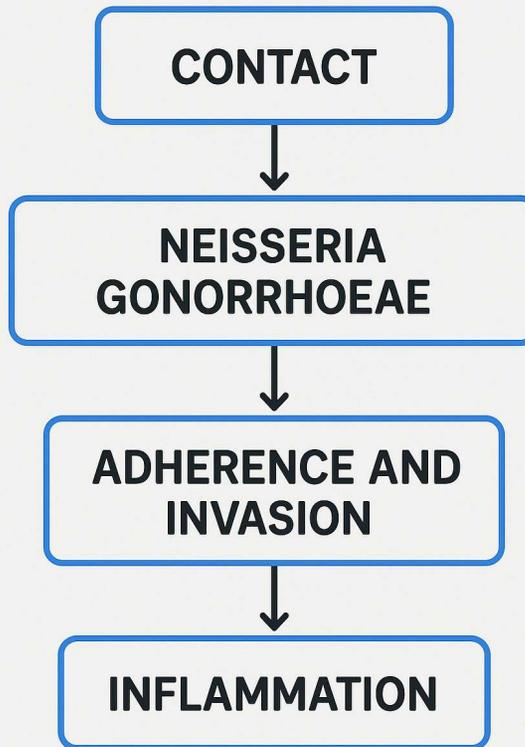
S.No	Heading	Details
1	Definition	Gonorrhoea is a sexually transmitted disease caused by <i>Neisseria gonorrhoeae</i> , affecting the urethra, cervix, rectum, throat, and eyes.
2	Mode of Transmission	Sexual contact (vaginal, oral, anal), perinatal transmission from mother to newborn.
3	Affected Sites	Urogenital tract, rectum, pharynx, conjunctiva.
4	Key Symptoms	Urethral discharge, painful urination, pelvic pain, vaginal discharge.
5	Complications	PID, infertility, ectopic pregnancy, neonatal conjunctivitis.

I. Etiology of Gonorrhoea

S.No	Category	Details
1	Causative Agent	<i>Neisseria gonorrhoeae</i> (Gram-negative diplococcus).
2	Risk Factors	Unprotected sex, multiple partners, previous STDs, adolescence/young adulthood, poor hygiene.
3	Mode of Spread	Direct mucosal contact, sexual activity, perinatal infection (ophthalmia neonatorum).
4	Predisposing Conditions	Immunosuppression, co-infection with chlamydia or HIV.

II. Pathogenesis of Gonorrhea

Pathogenesis of Gonorrhea

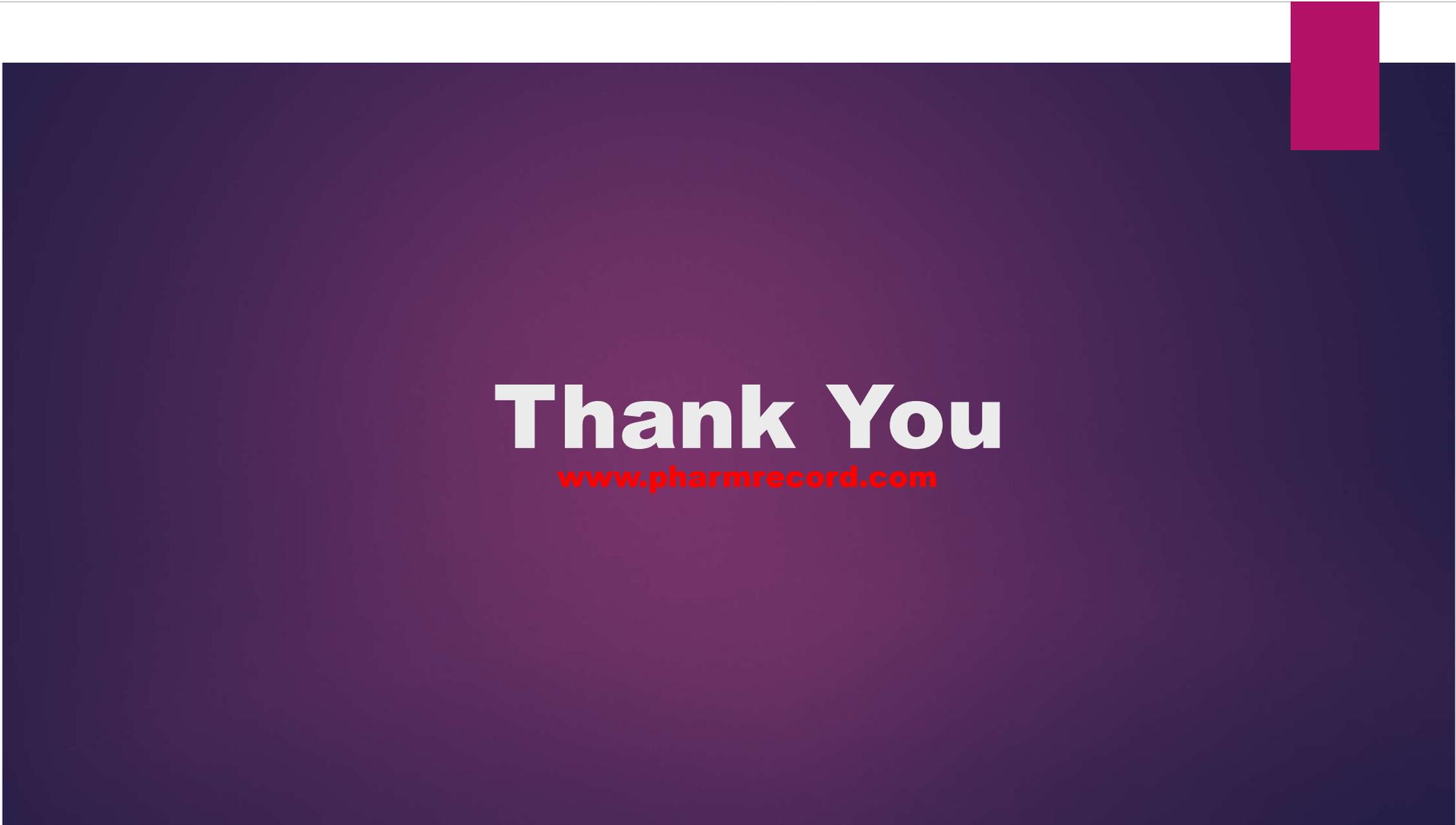


III. Diagnostic Tests for Gonorrhea

S.No	Test	Purpose / Findings
1	NAAT (Nucleic Acid Amplification Test)	Most sensitive; detects bacterial DNA in urine or swabs.
2	Gram Stain	Shows Gram-negative intracellular diplococci (especially in males).
3	Culture on Thayer–Martin Medium	Confirms diagnosis & antibiotic sensitivity.
4	Urine Test	First-catch urine sample for NAAT.
5	Swab Tests	Urethral, cervical, rectal, or pharyngeal swabs for testing.
6	PCR	Identifies co-infections like chlamydia.

IV. Treatment of Gonorrhea

S.No	Type	Drugs / Management
1	First-line Treatment	Ceftriaxone 500 mg IM single dose + Azithromycin 1 g orally (to cover possible Chlamydia co-infection).
2	Alternative Regimens	Cefixime, Gentamicin + Azithromycin (if allergy to ceftriaxone).
3	Treatment of Complications	PID: Ceftriaxone + Doxycycline + Metronidazole.
4	Neonatal Gonorrhea	Erythromycin eye ointment at birth.
5	Partner Treatment	Sexual partners must be treated to prevent reinfection.
6	Prevention	Safe sex, condom use, screening in high-risk groups.



Thank You

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