

# ■ STD & HIV Comprehensive Educational Content

*Complete Medical Education Materials with Interactive Index*

**Author:** Dr. Siddalingaiah H S  
**Position:** Professor, Community Medicine  
**Institution:** SIMSRH, Tumkur  
**Email:** hssling@yahoo.com  
**Phone:** +91-8941087719  
**Date:** November 2024  
**License:** MIT License

## ■ Table of Contents

1. Comprehensive TLM for MBBS 3rd Year - STD & HIV
2. STD Class Video Script
3. STD Class Visualizations
4. HIV Class Video Script
5. Untitled
6. STD One-Hour Class Presentation Script
7. HIV One-Hour Class Presentation Script
8. Visual Assets Guide for One-Hour Class PPTX Presentations
9. API Documentation
10. Deployment Guide
11. Development Guide
12. STD & HIV Educational Content Project

## Comprehensive TLM for MBBS 3rd Year - STD & HIV

---

## Comprehensive TLM for MBBS 3rd Year - STD & HIV

---

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

### Learning Objectives Overview

By the end of this TLM, students will be able to:

- Demonstrate comprehensive knowledge of STD epidemiology, clinical presentation, diagnosis, and management
- Perform competent clinical assessment and counseling for patients with STDs
- Apply evidence-based treatment protocols and prevention strategies
- Address ethical, legal, and psychosocial aspects of STD care
- Educate patients and communities about STD prevention and control

### Module 1: Introduction to STDs

## Learning Objectives

At the end of this module, students will be able to:

1. Define sexually transmitted diseases and differentiate them from other infectious diseases
2. Classify STDs according to their causative organisms
3. Explain key epidemiological concepts including incidence, prevalence, and risk factors
4. Describe the global burden of STDs and regional variations, with special focus on Indian context
5. Identify biological, behavioral, and social determinants of STD transmission in Indian setting

## Definition and Epidemiology

- STDs defined as infections transmitted through sexual contact
- **Global burden:** 1 million new cases daily (WHO 2022)
- **Indian burden:** Estimated 30-40 million STD cases annually (NACO 2023)

- Key epidemiological terms: incidence, prevalence, endemic vs epidemic

## **Indian Epidemiological Context**

- **HIV prevalence:** 0.22% (NACO 2023) - 23.1 lakh people living with HIV
- **Regional variations:** Highest in Northeast (Nagaland, Manipur) and South India
- **Urban vs Rural:** Higher prevalence in urban areas but significant rural burden
- **High-risk groups:** MSM (17% HIV prevalence), FSWs, IDUs, migrants, truckers
- **Syphilis:** Rising trend, especially congenital syphilis

- **Gonorrhea/Chlamydia:** High burden among urban youth and high-risk groups

## **Classification**

1. Bacterial: Gonorrhea, Syphilis, Chlamydia

2. Viral: HIV, HSV, HPV, Hepatitis B

3. Parasitic: Trichomoniasis, Pubic lice

4. Fungal: Candidiasis

## Risk Factors<sup>1</sup>

- **Biological:** age, gender, immunity
- **Behavioral:** multiple partners, unprotected sex, alcohol/drug use
- **Social:** stigma, healthcare access, migration, poverty
- **Indian-specific factors:**
  - Son preference leading to sex-selective abortions
  - Early marriage and early sexual debut

- Low condom use (only 5.2% consistent use nationally)
- Male-dominated society affecting women's healthcare access
- Stigma and discrimination in conservative communities
- Cross-border migration and sex tourism
- Low health literacy in rural areas

#### **Socio-Cultural Context in India**

- **Stigma and discrimination:** Deep-rooted cultural taboos around sexuality

- **Gender inequalities:** Women bear disproportionate burden of STIs
- **Religious and caste factors:** Influence healthcare seeking behavior
- **Urbanization impact:** Changing sexual behaviors and increased risk
- **Media and education:** Limited comprehensive sexuality education

## Module 2: Bacterial STDs

### Gonorrhea



- Causative agent: *Neisseria gonorrhoeae*
- Clinical features:
- Males: purulent urethral discharge, dysuria
- Females: often asymptomatic (50%), may cause PID
- Complications: disseminated gonococcal infection

## **Syphilis**

- Stages:
  1. Primary: chancre at inoculation site
  2. Secondary: rash, condylomata lata
  3. Tertiary: gummas, cardiovascular syphilis

- Diagnostic tests: VDRL, TPHA, FTA-ABS

## **Chlamydia**

- Causative agent: Chlamydia trachomatis
- Clinical features: often asymptomatic
- Complications: PID, infertility, ectopic pregnancy

## Module 3: Viral STDs

### HIV/AIDS

- Virology: HIV-1 vs HIV-2, structure
- Pathogenesis: CD4 depletion, immune dysfunction
- Natural history: acute infection to AIDS
- WHO clinical staging system
- ART principles and regimens

## Herpes Simplex<sup>1</sup>

- HSV-1 vs HSV-2
- Clinical presentation: painful vesicles, ulcers
- Latency and reactivation triggers

## HPV<sup>1</sup>

- Subtypes and oncogenic potential

- Clinical manifestations: genital warts, cervical dysplasia

- Vaccination strategies

## **Hepatitis B**

- Transmission routes

- Natural history and complications

- Prevention through vaccination

## Module 4: Clinical Approach

### History Taking

- Sexual history: "5 Ps" approach (WHO)

- Partners

- Practices

- Protection

- Past STDs

- Pregnancy intentions

## Physical Exam¶

- Genital examination techniques

- Systemic signs of disseminated infection

- Specimen collection methods

## Diagnostic Approach¶

- Laboratory tests: microscopy, culture, PCR

- Rapid diagnostic tests

- Window periods for different infections

## **Module 5: Prevention and Control**

### **Learning Objectives**

At the end of this module, students will be able to:

1. Describe national HIV/AIDS control programs in India
2. Explain the components of NACP and their implementation
3. Identify key prevention strategies adapted to Indian context
4. Discuss challenges in STD prevention in resource-limited settings
5. Design culturally appropriate prevention interventions



## **Primary Prevention¶¶**

- **ABC approach:** Abstinence, Be faithful, Condoms (adapted for Indian context)
- **Vaccines:** HPV, Hepatitis B (available through national programs)
- **Pre-exposure prophylaxis (PrEP):** Available through NACO since 2017

## **Indian Context - National Programs¶¶**

- **National AIDS Control Programme (NACP):** Phase V (2017-2021), Phase VI (2021-2026)
- **Key Strategies:**

- Targeted Interventions (TI) for high-risk groups

- Condom promotion and distribution

- Blood safety programs

- Prevention of Parent-to-Child Transmission (PPTCT)

Workplace interventions

**NACO Achievements:**

- Reduced new HIV infections by 66% (2007-2017)

- Increased ART coverage to 80%
- Distributed 800 million condoms annually
- Established 600+ ICTCs across India

## **Secondary Prevention¶**

- **Screening protocols:** Integrated Counseling and Testing Centers (ICTCs)
- **Partner notification strategies:** Provider-assisted notification

- **Contact tracing methods:** Through TI programs

## **Indian Implementation¶**

- **ICTC Network:** 1,381 centers providing free HIV testing

- **PPTCT Program:** Covers 95% of pregnant women

- **Link Worker Scheme:** Community-based contact tracing

- **Surveillance Systems:** HIV Sentinel Surveillance, IBBS

## **Tertiary Prevention¶**

- **Management of complications:** Through ART centers (1,200+ across India)
- **Rehabilitation services:** Community Care Centers (CCCs)
- **Support groups:** Positive People Networks, PLHIV groups

## **Regional Variations in India¶**

- **High-Prevalence States:** Maharashtra, Karnataka, Andhra Pradesh, Telangana
- **Northeast Focus:** Nagaland (1.5% prevalence), Manipur (1.4%)

- **Urban vs Rural:** Higher testing rates in urban areas

- **State-Specific Programs:** Tamil Nadu model, Kerala initiatives

### Challenges in Indian Context

- **Stigma and Discrimination:** Deep-rooted social taboos

- **Healthcare Access:** Rural-urban disparities

- **Migration:** Interstate and international labor migration

- **Condom Use:** Cultural barriers, myths about condoms

- **MSM and Transgender:** Legal and social discrimination

- **Funding Constraints:** Sustainability of donor-dependent programs

## Module 6: Treatment Protocols

### Learning Objectives

At the end of this module, students will be able to:

1. Apply NACO and WHO guidelines for STD treatment in Indian context
2. Prescribe appropriate ART regimens according to national protocols
3. Monitor treatment response and manage complications
4. Address drug resistance patterns in Indian settings
5. Implement follow-up protocols adapted to local healthcare systems

### Antibiotic Guidelines

- **NACO STI Management Guidelines (2020):** Adapted for Indian context

- **CDC treatment guidelines:** Reference for global standards

- **Drug resistance patterns:** Regional variations in India

- **Follow-up protocols:** Culturally appropriate patient tracking

## **Indian-Specific Treatment Protocols**

- **Syphilis Treatment:**

- **Primary/Secondary:** Benzathine penicillin 2.4 MU IM single dose



- Latent: Benzathine penicillin 2.4 MU IM weekly for 3 weeks

- Neurosyphilis: Aqueous penicillin G 3-4 MU IV q4h for 14 days

Alternative: Doxycycline 100mg PO twice daily for 14 days

**Gonorrhea Treatment:**

- Uncomplicated: Ceftriaxone 500mg IM single dose + Azithromycin 1g PO single dose

- Complicated: Ceftriaxone 1g IV/IM daily for 7-14 days

Test of cure: Recommended 7-14 days post-treatment

**Chlamydia Treatment:**

- Azithromycin 1g PO single dose OR
- Doxycycline 100mg PO twice daily for 7 days

Test of cure: Recommended for high-risk cases

**Drug Resistance in India:**

- Gonorrhea: Emerging resistance to ciprofloxacin (not recommended)
- Syphilis: Rare resistance, but treatment failures reported

- Chlamydia: Low resistance rates, azithromycin preferred

## ART Management

- **NACO ART Guidelines (2023):** Free first-line and second-line regimens

- **First-line regimens:** Tenofovir + Lamivudine + Efavirenz (TLE)

- **Alternative first-line:** Tenofovir + Lamivudine + Dolutegravir (TLD)

- **Second-line:** Protease inhibitor-based regimens

- **Monitoring parameters:** CD4 count, viral load, drug resistance

## **Indian ART Program Achievements**

- **Free ART:** Available at 1,200+ ART centers across India

- **Coverage:** 80% of PLHIV on treatment

- **Viral Suppression:** 90% among adherent patients

- **Drug Procurement:** Centralized through NACO

## Drug Interactions and Monitoring

- **Common Interactions:**

- ART with TB drugs (rifampicin reduces ART levels)

- ART with hormonal contraceptives

ART with traditional medicines

### **Monitoring Schedule:**

- Baseline: CD4, viral load, LFT, RFT, CBC

- Every 6 months: CD4, viral load

- Annual: LFT, RFT, lipid profile

- As needed: Drug resistance testing

### **Treatment Challenges in India**

- **Adherence Barriers:** Stigma, migration, side effects

- **Drug Stockouts:** Occasional supply chain issues

- **Co-infections:** TB-HIV common (10% of HIV patients)

- **Pregnancy:** Special regimens for PMTCT

- **Pediatric ART:** Syrup formulations, dosing challenges

## **Module 7: Special Populations**

### **Pregnancy**

- Vertical transmission prevention

- Perinatal management

- Breastfeeding considerations

## **Adolescents¶**

- Confidentiality issues

- Consent requirements

- Age-appropriate counseling

## **MSM and High-Risk Groups¶**



- Specific risk factors

- Tailored interventions

- Community outreach

## **Module 8: Legal and Ethical Issues**

### **Consent and Confidentiality**

- Informed consent requirements

- Mandatory reporting laws

- Partner notification obligations

## **Stigma and Discrimination**

- Addressing healthcare provider bias

- Patient rights

- Anti-discrimination laws

## Assessment Questions with Answers¶

### Module 1: Introduction to STDs¶

#### List 5 most common STDs worldwide and their causative organisms

- Chlamydia: Chlamydia trachomatis
- Gonorrhea: Neisseria gonorrhoeae
- Syphilis: Treponema pallidum
- Trichomoniasis: Trichomonas vaginalis
- Genital herpes: Herpes simplex virus (HSV-2)

#### Explain the epidemiological triad in context of STD transmission

- **Agent:** Pathogenic microorganisms (bacteria, viruses, parasites, fungi)
- **Host:** Human factors (age, immunity, behavior, anatomy)
- **Environment:** Social, economic, and physical factors affecting transmission

#### Compare incidence vs prevalence rates of STDs in developing vs developed nations

- **Incidence:** Higher in developing countries due to limited access to healthcare and education
- **Prevalence:** Often higher in developing countries due to chronic infections and inadequate treatment
- Developed countries show better control through screening and treatment programs

## **Module 2: Bacterial STDs**

### **Describe the typical presentation of gonococcal urethritis in males**

- Sudden onset of urethral discharge (yellow/green, purulent)
- Dysuria (painful urination)
- Frequency and urgency
- May have penile itching or swelling
- Incubation period: 2-7 days

### **Draw the timeline of untreated syphilis with clinical features at each stage**

- **Primary (2-12 weeks):** Painless chancre at inoculation site
- **Secondary (6-24 weeks):** Generalized rash, condylomata lata, fever, lymphadenopathy
- **Latent (asymptomatic):** Seropositive but no clinical symptoms
- **Tertiary (>2 years):** Cardiovascular syphilis, neurosyphilis, gummas

### **What are the CDC recommended treatments for chancroid?**

- Azithromycin 1g orally single dose OR
- Ceftriaxone 250mg IM single dose OR
- Ciprofloxacin 500mg orally twice daily for 3 days
- Erythromycin base 500mg orally four times daily for 7 days

## **Module 3: Viral STDs**

**Compare HSV-1 and HSV-2 in terms of clinical manifestations**

- **HSV-1:** Primarily oral herpes, can cause genital herpes through oral-genital contact
- **HSV-2:** Primarily genital herpes, more likely to recur than HSV-1
- Both cause painful vesicles that ulcerate, but HSV-2 has higher recurrence rate

**Explain the oncogenic potential of HPV subtypes**

- **Low-risk HPV (6,11):** Cause genital warts, no malignant potential
- **High-risk HPV (16,18,31,33,45):** Cause cervical dysplasia and cancer
- HPV 16 and 18 account for 70% of cervical cancers
- Integration of viral DNA into host genome leads to malignant transformation

**Why is hepatitis B considered an STD despite fecal-oral transmission?**

- Sexual transmission is a major route (unprotected sex, multiple partners)
- Considered STD due to association with high-risk sexual behaviors
- WHO classifies it as sexually transmitted despite other transmission routes

**Module 4: Clinical Approach****Develop a risk assessment questionnaire for STD screening**

- Number of sexual partners in past 3 months
- History of unprotected sex
- Previous STD diagnosis
- Symptoms of discharge, ulcers, or pain
- Drug use history
- Travel history to high-prevalence areas

**What physical signs would suggest disseminated gonococcal infection?**

- Fever, chills, malaise
- Polyarthralgia (joint pain)
- Tenosynovitis (tendon inflammation)
- Skin lesions (pustules, papules, hemorrhagic lesions)
- Septic arthritis

**Create a diagnostic algorithm for genital ulcer disease**

- History: Duration, pain, sexual contacts
- Physical exam: Ulcer characteristics (painful vs painless)
- Syphilis testing (VDRL/TPHA)
- HSV PCR if vesicles present
- Biopsy if malignancy suspected
- Treat based on most likely etiology

**Module 5: Prevention and Control****Calculate the risk reduction provided by consistent condom use**

- HIV: 80-95% reduction
- Gonorrhea/Chlamydia: 50-80% reduction
- Syphilis: 30-50% reduction
- HPV: 70% reduction for new infections

**Compare PEP vs PrEP protocols in HIV prevention**

- **PEP**: Post-exposure prophylaxis, started within 72 hours, 28-day regimen
- **PrEP**: Pre-exposure prophylaxis, daily or event-based, for high-risk individuals
- PEP is emergency prevention, PrEP is ongoing prevention

**Design a community awareness program about STD stigma reduction**

- School-based education programs
- Media campaigns using celebrities
- Community workshops and support groups
- Healthcare provider training on non-judgmental care

**Module 6: Treatment Protocols****Outline the CDC guidelines for treating uncomplicated gonorrhea**

- Ceftriaxone 500mg IM single dose PLUS
- Azithromycin 1g orally single dose OR
- Doxycycline 100mg orally twice daily for 7 days
- Test for cure in 7-14 days if symptoms persist

**Discuss drug resistance patterns in bacterial STDs**

- Gonorrhea: Resistance to penicillin, tetracycline, fluoroquinolones
- Syphilis: Rare resistance, but treatment failures reported
- Chlamydia: Resistance emerging to azithromycin
- Regular surveillance and guideline updates needed

**Create a follow-up protocol for treated patients**

- Clinical follow-up at 7-14 days
- Test of cure for gonorrhea and chlamydia
- Partner notification and treatment
- Counseling on prevention and safe sex practices
- Repeat testing at 3 months

## **Module 7: Special Populations**

### **Discuss the management of STDs in pregnancy**

- Screen for syphilis, HIV, hepatitis B in first trimester
- Treat bacterial STDs promptly to prevent complications
- Ceftriaxone safe in pregnancy for gonorrhea
- Azithromycin preferred over doxycycline for chlamydia
- Monitor for preterm labor and fetal complications

### **Explain consent requirements for adolescent STD testing**

- Minors can consent for STD testing in most jurisdictions
- Confidentiality protected under HIPAA
- Parental consent not required for diagnosis and treatment
- Exceptions for emancipated minors or mature minors

### **Design an intervention program for MSM populations**

- Community-based testing centers
- PrEP clinics with sexual health counseling
- Peer education programs
- Social media campaigns targeting MSM communities
- Integration with mental health services

## **Module 8: Legal and Ethical Issues**



**Analyze mandatory reporting laws in your jurisdiction**

- Syphilis, gonorrhea, chlamydia, HIV require reporting
- Reports made to public health authorities
- Patient confidentiality maintained
- Used for contact tracing and outbreak control

**Discuss strategies to reduce healthcare provider stigma**

- Cultural competency training
- Non-judgmental communication techniques
- Focus on patient-centered care
- Regular self-reflection and bias awareness workshops

**Explain patient rights regarding STD treatment**

- Right to confidential care
- Right to informed consent
- Right to refuse treatment
- Protection from discrimination
- Access to second opinions

**Patient Education Materials****1. STD Prevention Brochure**

**File:** STD\_Prevention.pdf

**Key Messages:**

- **Understanding STDs:** What they are, how they're transmitted, common myths
- **Safe Sex Practices:**
  - Consistent and correct condom use (male/female condoms)
  - Mutual monogamy with tested partner
  - Regular STI screening
  - Avoiding substance use that impairs judgment

**Condom Use Instructions:**

1. Check expiration date and package integrity
2. Open package carefully to avoid tearing
3. Place condom on erect penis before any genital contact
4. Leave space at tip for semen collection
5. Withdraw immediately after ejaculation while penis is erect
6. Dispose of used condom properly

**Testing Recommendations:**

- Annual screening for sexually active individuals
- More frequent testing for high-risk groups
- Testing before starting new relationships
- Immediate testing if symptoms develop

**Prevention Strategies:**

- HPV vaccination for ages 9-26
- Hepatitis B vaccination
- Pre-exposure prophylaxis (PrEP) for HIV
- Post-exposure prophylaxis (PEP) when indicated

## 2. Living with HIV Guide¶¶

**File:** HIV\_Guide.pdf

### **ART Adherence Tips:**

- Take medications at the same time daily
- Use pill organizers and phone reminders
- Link medication taking to daily routines (meals, bedtime)
- Never skip doses without consulting healthcare provider
- Keep extra supply for travel or emergencies

### **Nutrition Advice:**

- Balanced diet with adequate protein and calories
- Include fruits, vegetables, whole grains
- Stay hydrated (8-10 glasses of water daily)
- Limit alcohol and avoid recreational drugs
- Consider nutritional supplements if needed

### **Managing Side Effects:**

- Nausea: Take medications with food, ginger tea
- Fatigue: Regular exercise, adequate rest, balanced diet
- Lipodystrophy: Exercise and healthy diet
- Peripheral neuropathy: Warm socks, proper footwear
- Report severe side effects to healthcare provider immediately

**Lifestyle Recommendations:**

- Regular exercise and stress management
- Smoking cessation support
- Safe sex practices to prevent transmission
- Regular medical follow-ups and blood tests

**3. Partner Notification Card**

**File:** Partner\_Notification.pdf

**Anonymous Notification Options:**

- Provider-assisted partner notification
- Anonymous partner notification cards
- Hotline services for confidential notification
- Email or text message options

**Testing Center Locations:**

- Local health department clinics
- Community health centers
- Planned Parenthood facilities
- Hospital-based STI clinics
- Mobile testing vans

**FAQ about Partner Notification:**

- **What is partner notification?** Informing sexual partners about potential exposure
- **Is it confidential?** Yes, your identity is protected
- **What if my partner is angry?** Counseling support is available
- **Can I do it anonymously?** Yes, through various services
- **What happens after notification?** Partners are offered testing and treatment

**Sample Notification Letter Template:**

[Include template for patients to use]

**4. STD Symptoms Checklist**

**File:** Symptoms\_Checklist.pdf

**Male Symptoms:**

- Urethral discharge (clear, white, yellow, green)
- Painful urination (dysuria)
- Penile itching or irritation
- Painful ejaculation
- Testicular pain or swelling
- Genital sores or ulcers
- Inguinal lymph node enlargement

**Female Symptoms:**

- Vaginal discharge (abnormal color, odor, amount)
- Painful urination
- Pain during intercourse
- Post-coital bleeding
- Lower abdominal pain
- Genital itching or irritation
- Genital sores, warts, or ulcers

**General Symptoms:**

- Fever, chills
- Rash or skin lesions
- Sore throat
- Fatigue
- Weight loss
- Night sweats
- Swollen lymph nodes

**When to Seek Medical Care:**

- Any new genital symptoms
- Pain or discomfort during sex
- Unusual discharge or bleeding
- Fever with genital symptoms
- Symptoms persisting >1 week

**Emergency Warning Signs:**

- Severe abdominal pain
- High fever (>101.5°F)
- Severe headache with neck stiffness
- Vision changes
- Difficulty swallowing
- Signs of anaphylaxis

## 5. Treatment Adherence Calendar

**File:** Treatment\_Calendar.pdf

### Medication Tracking System:

- Daily medication schedule chart
- Check boxes for each dose taken
- Space for noting side effects
- Weekly progress summary

### Appointment Reminders:

- Upcoming clinic visits
- Laboratory test dates
- Refill dates for prescriptions
- Specialist consultation dates

### Side Effect Log:

- Date and time of symptoms
- Description of side effects
- Severity rating (mild/moderate/severe)
- Actions taken (continued medication, contacted provider)
- Resolution of symptoms

**Additional Features:**

- Emergency contact numbers
- Healthcare provider contact information
- Pharmacy information
- Support group meeting schedules
- Nutritional tracking section

**6. Pregnancy and STDs Information Sheet**

**File:** Pregnancy\_STDs .pdf

**Screening During Pregnancy:**

- HIV testing (opt-out in many settings)
- Syphilis testing (required in first trimester)
- Hepatitis B surface antigen
- Chlamydia and gonorrhea screening
- Cervical cytology if due

**Impact of STDs on Pregnancy:**

- Increased risk of preterm labor
- Low birth weight infants
- Neonatal infections
- Congenital abnormalities
- Vertical transmission risks



**Safe Treatments in Pregnancy:**

- Penicillin for syphilis (safe in all trimesters)
- Ceftriaxone for gonorrhea (safe)
- Azithromycin for chlamydia (preferred over doxycycline)
- Acyclovir for herpes (safe)
- Zidovudine for HIV prevention

**Prevention Strategies:**

- Safe sex practices throughout pregnancy
- Partner testing and treatment
- Vaccination status review
- Preconception counseling for future pregnancies

**7. Adolescent STD Information Guide**

**File:** Adolescent\_STD\_Guide.pdf

**Confidentiality Rights:**

- Minors can consent to STD testing
- Parental notification not required
- Protected health information under HIPAA
- Exceptions for emancipated youth

**Age-Appropriate Counseling:**

- Non-judgmental approach
- Use of simple language
- Addressing myths and misconceptions
- Building self-efficacy for prevention

**School-Based Services:**

- School health centers
- Anonymous testing programs
- Peer education programs
- Linkage to community services

**Support Resources:**

- Hotlines for confidential advice
- Online resources for youth
- Support groups for teens
- Mental health services

**8. MSM Health Resources**

**File:** MSM\_Health.pdf

**Specific Risk Factors:**

- Anal intercourse risks
- Multiple sexual partners
- Substance use
- Stigma and discrimination

**Tailored Prevention:**

- PrEP for HIV prevention
- Regular STI screening (every 3-6 months)
- HPV vaccination
- Hepatitis A and B vaccination

**Community Resources:**

- LGBT health centers
- Community-based organizations
- Peer support programs
- Social media campaigns

**Mental Health Support:**

- Addressing internalized homophobia
- Coping with discrimination
- Relationship counseling
- Substance use treatment

**Clinical Case Studies**

## Case 1: Gonococcal Urethritis

**Patient Profile:** 25-year-old unmarried male, software engineer

**Presenting Complaint:** 3-day history of painful urination and yellowish discharge from penis

### History of Present Illness:

- Symptoms started 4 days ago with mild burning sensation during urination
- Discharge became profuse and purulent yesterday
- No fever, no abdominal pain, no testicular pain
- Denies any recent illness or medication use

### Sexual History:

- Multiple sexual partners in past 3 months
- Last unprotected intercourse 1 week ago
- No history of previous STDs

### Physical Examination:

- Vital signs: Afebrile, BP 120/80 mmHg, Pulse 72/min
- General: Well-nourished, no systemic signs
- Genital exam: Copious yellow-green purulent discharge from urethral meatus
- Mild erythema of urethral opening
- No inguinal lymphadenopathy

- Testicles normal, no tenderness

**Investigations:**

- Gram stain: Gram-negative diplococci
- Culture: *Neisseria gonorrhoeae* isolated
- Chlamydia PCR: Negative
- HIV test: Negative

**Diagnosis:** Acute gonococcal urethritis

**Treatment:**

- Ceftriaxone 500mg IM single dose
- Azithromycin 1g oral single dose
- Advised abstinence until symptoms resolve

**Follow-up:** Return in 7 days for test of cure

**Discussion Points:**

- Typical presentation of gonococcal urethritis
- Importance of treating sexual partners
- Role of dual therapy to cover chlamydia co-infection

## **Case 2: Primary Syphilis**

**Patient Profile:** 30-year-old married male, businessman

**Presenting Complaint:** Painless ulcer on penis noticed 1 week ago

### **History of Present Illness:**

- Noticed a small sore on penile shaft 7 days ago
- Initially thought it was a pimple, but it grew larger
- Completely painless, no discharge
- No fever or other symptoms

### **Sexual History:**

- Extramarital affair 3 weeks ago
- Used condom inconsistently
- Wife unaware of extramarital activity

### **Physical Examination:**

- Vital signs: Normal
- General: Asymptomatic
- Genital exam: Clean, indurated ulcer on dorsal penile shaft
- Size: 1.5 cm diameter
- Clean base, raised borders, cartilaginous feel

- Non-tender, no discharge
- Bilateral inguinal lymphadenopathy: Firm, non-tender, rubbery

**Investigations:**

- VDRL: Positive (1:16 titer)
- TPHA: Positive
- HIV test: Negative
- Dark field microscopy: Spirochetes seen

**Diagnosis:** Primary syphilis (chancere)

**Treatment:**

- Benzathine penicillin 2.4 million units IM single dose
- Advised HIV testing at 3 months
- Partner notification and treatment

**Follow-up:** Clinical and serological follow-up at 3, 6, 12 months

**Discussion Points:**

- Classic features of syphilitic chancre
- Importance of serological testing
- Natural history and staging of syphilis

### **Case 3: Acute HIV Infection**

**Patient Profile:** 35-year-old divorced female, teacher

**Presenting Complaint:** 10-day history of fever, rash, and fatigue

#### **History of Present Illness:**

- Fever up to 101°F for 8 days
- Generalized rash started 5 days ago
- Severe fatigue and malaise
- Sore throat, headache
- No cough, no shortness of breath

#### **Sexual History:**

- New sexual partner 4 weeks ago
- Unprotected vaginal intercourse
- No previous STD history

#### **Physical Examination:**

- Vital signs: Temp 100.5°F, BP 110/70 mmHg, Pulse 88/min
- General: Tired looking, no acute distress
- Skin: Maculopapular rash on trunk and extremities
- Oral: Erythematous pharynx



- Lymph nodes: Generalized lymphadenopathy (cervical, axillary, inguinal)
- Genital exam: Normal

**Investigations:**

- CBC: Lymphopenia (CD4 count 450 cells/ $\mu$ L)
- HIV ELISA: Positive
- HIV Western blot: Positive
- Viral load: 850,000 copies/mL
- Syphilis serology: Negative
- Other STD screening: Negative

**Diagnosis:** Acute HIV infection

**Treatment:**

- Supportive care for symptoms
- ART initiation discussed (patient deferred)
- Counseling on transmission and prevention
- Partner notification

**Follow-up:** CD4 count and viral load monitoring

**Discussion Points:**

- Seroconversion illness presentation

- Importance of early diagnosis
- ART initiation timing in acute infection

#### **Case 4: Recurrent Genital Herpes**

**Patient Profile:** 28-year-old married female, accountant

**Presenting Complaint:** Recurrent painful genital sores

##### **History of Present Illness:**

- First episode 2 years ago: severe pain, multiple ulcers, hospitalization
- Current episode: 3 days ago, noticed tingling then vesicles
- Painful urination and walking
- Similar episodes every 3-4 months

##### **Sexual History:**

- Monogamous relationship
- Husband has no symptoms
- First episode after new partner (before marriage)

**Physical Examination:**

- Vital signs: Normal
- General: Mild discomfort
- Genital exam: Multiple small vesicles on labia majora and minora
- Some have ruptured forming shallow ulcers
- Erythematous base, tender to touch
- Bilateral inguinal lymphadenopathy: Tender

**Investigations:**

- HSV PCR: Positive for HSV-2
- Viral culture: HSV-2 isolated
- HIV test: Negative
- Other STD screening: Negative

**Diagnosis:** Recurrent genital herpes (HSV-2)

**Treatment:**

- Acyclovir 400mg orally three times daily for 5 days
- Pain management with analgesics
- Topical antiviral cream
- Suppressive therapy discussed

**Follow-up:** Counseling on recurrence prevention

**Discussion Points:**

- Difference between primary and recurrent herpes
- Suppressive therapy indications
- Psychosocial impact of recurrent disease

**Case 5: Chlamydial Cervicitis**

**Patient Profile:** 22-year-old female college student

**Presenting Complaint:** Vaginal discharge and post-coital bleeding

**History of Present Illness:**

- Intermittent vaginal discharge for 3 months
- Bleeding after intercourse for 2 months
- Mild lower abdominal discomfort
- No fever or urinary symptoms

**Sexual History:**

- Two sexual partners in past 6 months
- Inconsistent condom use
- No previous STDs

**Physical Examination:**

- Vital signs: Normal
- General: Well-appearing
- Abdominal: Mild suprapubic tenderness
- Genital: Mucopurulent cervical discharge
- Cervix: Erythematous, easily bleeds on touch
- Bimanual: Cervical motion tenderness

**Investigations:**

- Cervical swab: Chlamydia trachomatis PCR positive
- Gonorrhea culture: Negative
- Wet mount: Increased WBCs
- Pregnancy test: Negative

**Diagnosis:** Chlamydial cervicitis with possible PID

**Treatment:**

- Azithromycin 1g oral single dose OR
- Doxycycline 100mg twice daily for 7 days
- Partner treatment
- Abstinence advised

**Follow-up:** Test of cure in 3 weeks

**Discussion Points:**

- Asymptomatic nature of chlamydia
- Complications of untreated infection
- Importance of partner treatment

**Practical Skills****Specimen Collection Techniques****Urethral Swab Collection**

**Indications:** Suspected gonococcal or chlamydial urethritis

**Equipment Needed:**

- Sterile cotton swab with plastic shaft
- Sterile saline or transport medium
- Gloves, lubricant (optional)

**Procedure:**

1. Explain procedure to patient and obtain consent
2. Patient should not have urinated for at least 1 hour
3. Wear gloves and position patient supine with knees flexed
4. Gently insert swab 2-4 cm into urethra
5. Rotate swab 360° for 2-3 seconds
6. Withdraw swab and place in transport medium
7. Label specimen with patient details and date

**Common Errors:**

- Collecting swab too soon after urination
- Inserting swab too deeply (causes discomfort)
- Not rotating swab adequately

**Cervical Swab Collection**

**Indications:** Screening for chlamydia, gonorrhea, HPV

**Equipment Needed:**

- Speculum (medium or large)
- Cervical brush or swab
- Lubricant
- Light source

**Procedure:**

1. Position patient in lithotomy position
2. Insert speculum and visualize cervix
3. Clean cervix with large cotton swab if needed
4. Insert endocervical brush 1-2 cm into cervical os
5. Rotate brush 360° five times
6. Withdraw and place in transport medium
7. If using swab, rotate in cervical os

**Patient Comfort:**

- Warm speculum if possible
- Use minimal pressure
- Explain each step beforehand

**Blood Collection for Serological Tests**

**Indications:** Syphilis, HIV, hepatitis B screening

**Equipment Needed:**

- Tourniquet, alcohol swabs
- Butterfly needle or straight needle (21-23 gauge)
- Red top tubes (for serum) or EDTA tubes
- Gloves, gauze



**Procedure:**

1. Verify patient identity and explain procedure
2. Apply tourniquet 3-4 inches above venipuncture site
3. Clean site with alcohol and allow to dry
4. Insert needle at 15-30° angle, bevel up
5. Collect 5-10 mL blood
6. Release tourniquet before withdrawing needle
7. Apply pressure with gauze for 2-3 minutes

**Safety Considerations:**

- Use universal precautions
- Proper disposal of sharps
- Check for allergies to antiseptics

**Counseling Skills and Communication¶****Breaking Bad News¶****SPIKES Protocol:**

- **S**: Setting up the interview (private, comfortable setting)
- **P**: Assessing patient's Perception of illness
- **I**: Obtaining patient's Invitation to give information
- **K**: Giving Knowledge and information
- **E**: Addressing patient's Emotions with empathy
- **S**: Strategy and Summary for next steps

**Key Principles:**

- Be honest but compassionate
- Use simple language
- Allow time for questions
- Provide written information
- Arrange follow-up support

**Partner Notification Counseling****Objectives:**

- Encourage patient to notify partners
- Provide support and resources
- Maintain confidentiality
- Reduce further transmission

**Steps:**

1. Assess patient's willingness to notify partners
2. Discuss legal obligations vs voluntary notification
3. Provide partner notification cards or letters
4. Offer provider-assisted notification if requested
5. Discuss timing and method of notification
6. Address patient's concerns about relationships

**Ethical Considerations:**

- Respect patient's autonomy
- Maintain confidentiality
- Avoid coercion
- Support patient's decision

## **ART Adherence Counseling¶**

### **Key Components:**

- Explain importance of adherence (95% target)
- Discuss potential consequences of non-adherence
- Identify barriers to adherence
- Develop personalized adherence plan
- Teach medication management techniques

### **Adherence Aids:**

- Pill organizers and alarms
- Linkage to support groups
- Regular follow-up visits
- Integration with daily routines

### **Addressing Common Barriers:**

- Forgetfulness: Use reminders and cues
- Side effects: Symptom management
- Stigma: Support groups and counseling
- Cost: Assist with financial support programs

## **Clinical Examination Skills¶**

## **Male Genital Examination**

**Position:** Standing or supine

### **Steps:**

1. Inspect penis for lesions, discharge, warts
2. Palpate inguinal lymph nodes
3. Examine scrotum for tenderness or masses
4. Perform urethral meatus inspection
5. Check for hernias if indicated

## **Female Genital Examination**

**Position:** Lithotomy position

### **Steps:**

1. External inspection: vulva, perineum, anus
2. Speculum examination: cervix visualization
3. Bimanual examination: uterus and adnexa palpation
4. Rectal examination if indicated
5. Assess for cervical motion tenderness

## **Lymph Node Examination**

**Key Areas:** Inguinal, cervical, axillary, epitrochlear

### **Technique:**

- Use pads of fingers
- Gentle circular motion
- Assess size, tenderness, mobility, consistency
- Compare bilateral nodes

## **Diagnostic Procedures**

### **Wet Mount Preparation**

**Purpose:** Identify trichomonads, yeast, bacterial vaginosis

**Procedure:**

1. Collect vaginal swab
2. Mix with normal saline on slide
3. Cover with coverslip
4. Examine under microscope immediately
5. Look for motile trichomonads, clue cells, yeast

**Gram Stain Interpretation¶**

**Gonorrhea:** Gram-negative intracellular diplococci

**Bacterial Vaginosis:** Mixed flora, absence of lactobacilli

**Candida:** Pseudohyphae and yeast forms

**Rapid Diagnostic Tests¶****HIV Rapid Test:**

- Fingerstick blood sample
- Results in 15-20 minutes
- Confirm positive results with Western blot

**Syphilis Rapid Test:**

- Whole blood or serum
- Treponemal antibody detection

- Confirmatory testing required

### **Emergency Procedures¶**

### **Management of Anaphylaxis¶**

**Signs:** Urticaria, angioedema, hypotension, wheezing

#### **Immediate Actions:**

1. Stop allergen administration
2. Call for help
3. Administer epinephrine 0.3-0.5 mg IM
4. Position patient supine with legs elevated
5. Monitor vital signs and ABCs

### **Severe Local Reactions¶**

**Signs:** Extensive swelling, severe pain, necrosis

**Management:**

- Cold compresses
- Analgesics
- Antibiotics if infection suspected
- Specialist referral

**Infection Control Practices¶**

**Standard Precautions\*\*:**¶

- Hand hygiene before and after patient contact
- Use of personal protective equipment



- Safe injection practices

- Respiratory hygiene

### **Transmission-Based Precautions\*\*:**

- Contact precautions for draining wounds

- Droplet precautions for respiratory infections

- Airborne precautions for tuberculosis

## **Waste Management\*\*:**

- Sharps containers for needles
- Biohazard bags for contaminated materials
- Proper disinfection of surfaces
- Spill cleanup procedures

## **References and Recommended Reading**

## **Core Guidelines and Treatment Protocols¶**

### **Centers for Disease Control and Prevention (CDC)**

- Sexually Transmitted Diseases Treatment Guidelines, 2021
- MMWR Recommendations and Reports, June 2021
- Available at: <https://www.cdc.gov/std/treatment-guidelines/default.htm>

### **World Health Organization (WHO)**

- Guidelines for the Management of Sexually Transmitted Infections (2016)
- Consolidated Guidelines on HIV Prevention, Testing, Treatment and Care (2021)
- Available at: <https://www.who.int/publications/i/item/9789240028607>

### **National AIDS Control Organization (NACO), India**

- National Guidelines for HIV Care and Treatment (2023)
- STI Management Guidelines (2020)
- Available at: <https://naco.gov.in/guidelines>

## **Epidemiology and Statistics¶**

### **UNAIDS Global AIDS Update 2023**

- Global HIV Statistics

- Available at: <https://www.unaids.org/en/resources/documents/2023/global-aids-update-2023>

#### **WHO Global Health Observatory**

- Sexually Transmitted Infections Fact Sheet

- Available at: [https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-\(stis\)](https://www.who.int/news-room/fact-sheets/detail/sexually-transmitted-infections-(stis))

#### **HIV/AIDS Specific References<sup>1</sup>**

##### **Antiretroviral Therapy Guidelines**

- DHHS Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents (2023)

- Available at: <https://clinicalinfo.hiv.gov/en/guidelines>

##### **HIV Virology and Pathogenesis**

- Fauci AS, Lane HC. Human Immunodeficiency Virus Disease: AIDS and Related Disorders. In: Kasper DL, Fauci AS, editors. Harrison's Principles of Internal Medicine. 19th ed. New York: McGraw-Hill; 2015.

## **STD Microbiology and Diagnosis**

### **Medical Microbiology (Murray PR et al.)**

- Chapter on Sexually Transmitted Bacterial Diseases
- Chapter on Viral Sexually Transmitted Diseases
- 9th Edition, Elsevier, 2021

### **Diagnostic Microbiology**

- Isenberg HD. Clinical Microbiology Procedures Handbook. 4th ed. ASM Press; 2016.

## **Clinical Management**

### **Sexually Transmitted Diseases (Holmes KK et al.)**

- 5th Edition, McGraw-Hill, 2021

- Comprehensive textbook covering all aspects of STDs

### **Atlas of Sexually Transmitted Diseases and AIDS (Lassus A)**

- 4th Edition, Elsevier, 2010

- Visual guide to clinical presentations

### **Special Populations**

### **Adolescent Health Care: A Practical Guide (Neinstein LS)**

- Chapter on Reproductive Health and STDs

- 6th Edition, Lippincott Williams & Wilkins, 2016

#### **HIV/AIDS in Women and Children (Mofenson LM, Wiznia AA)**

- Comprehensive review of vertical transmission and perinatal care

#### **Prevention and Public Health**

#### **The Hidden Epidemic: Confronting Sexually Transmitted Diseases (Institute of Medicine)**

- National Academy Press, 1997

- Public health perspective on STD control

### **Partner Services in Sexually Transmitted Disease Prevention Programs**

- CDC Program Guidance

- Available at: <https://www.cdc.gov/std/program/ps/default.htm>

### **Online Resources and Databases**



## **PubMed/MEDLINE**

- Search terms: "sexually transmitted diseases", "HIV/AIDS", "STD treatment"

- Free access at: <https://pubmed.ncbi.nlm.nih.gov/>

## **Cochrane Library**

- Systematic reviews on STD prevention and treatment

- Available at: <https://www.cochranelibrary.com/>

## **UpToDate**

- Clinical decision support resource
- Topics: STDs, HIV infection, antiretroviral therapy

## **National and Regional Guidelines**

### **Indian Council of Medical Research (ICMR)**

- Guidelines for Diagnosis and Management of Sexually Transmitted Infections

- Available at: <https://www.icmr.nic.in/>

#### **British Association for Sexual Health and HIV (BASHH)**

- UK Guidelines for the Management of Sexually Transmitted Infections

- Available at: <https://www.bashh.org/guidelines>

#### **Journals for Current Updates**

#### **Sexually Transmitted Infections (STI)**

- BMJ journal focusing on clinical and epidemiological research

#### **AIDS and Behavior**

- Springer journal on behavioral aspects of HIV/AIDS

#### **Journal of Acquired Immune Deficiency Syndromes (JAIDS)**

- Official journal of the International AIDS Society

#### **Patient Education Resources**

## **CDC STD Fact Sheets**

- Available at: <https://www.cdc.gov/std/default.htm>

- Patient-friendly information on individual STDs

## **AIDSinfo**

- Comprehensive HIV/AIDS information resource

- Available at: <https://aidsinfo.nih.gov/>

## **Training and Educational Materials**

### **CDC STD Curriculum**

- Online training modules for healthcare providers
- Available at: <https://www.cdc.gov/std/training/default.htm>

### **WHO e-Library of Evidence**

- Digital access to WHO publications and guidelines
- Available at: <https://www.who.int/elena/en/>

This comprehensive TLM covers all essential aspects of STD and HIV management for MBBS 3rd year students, including theoretical knowledge, practical skills, and patient education materials.

## STD Class Video Script

---

## STD Class Video Script

---

## Educational Video for MBBS 3rd Year Students

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

**Video Title:** Sexually Transmitted Diseases: Clinical Approach and Management

**Duration:** 25-30 minutes

**Target Audience:** MBBS 3rd Year Students

**Language:** English with Hindi subtitles

---

[Opening Scene - 0:00-0:30]

*[Upbeat medical theme music. Visual: Medical students in classroom, then transition to clinical setting]*

**Narrator:** "Welcome to our comprehensive video on Sexually Transmitted Diseases. In this session, we'll explore the clinical approach, diagnosis, and management of STDs with special focus on the Indian context."

**On Screen Text:** "STD Management: Clinical Approach & Indian Context"

---

[Section 1: Introduction - 0:30-2:00]

*[Visual: Animated icons of different STD pathogens, global and Indian statistics]*

**Narrator:** "Sexually transmitted diseases affect millions worldwide. According to WHO, there are over 1 million new cases daily. In India, NACO estimates 30-40 million STD cases annually."



**Key Points Display:**

- Bacterial STDs: Gonorrhea, Syphilis, Chlamydia
- Viral STDs: HIV, HSV, HPV, Hepatitis B
- Parasitic: Trichomoniasis, Pubic lice
- Fungal: Candidiasis

**Narrator:** "STDs are classified based on their causative organisms. Understanding this classification helps in diagnosis and treatment planning."

---

**[Section 2: Epidemiology in India - 2:00-4:00]**

*[Visual: Indian map with state-wise HIV prevalence, demographic data]*

**Narrator:** "India has unique epidemiological patterns. HIV prevalence is 0.22%, with 23.1 lakh people living with HIV. The highest prevalence is in Nagaland (1.5%) and other Northeast states."

**Visual Data:**

- HIV Prevalence Map
- High-risk groups: MSM (17%), FSWs, IDUs, migrants
- Regional variations: South > North > East > West

**Narrator:** "Key risk factors include multiple sexual partners, unprotected intercourse, early sexual debut, and migration. Cultural stigma often prevents people from seeking timely care."

---

### **[Section 3: Clinical Presentation - 4:00-8:00]**

*[Visual: Clinical images, animations of symptoms, patient interviews (acted)]*

#### **Gonorrhea**

**Narrator:** "Gonorrhea presents with purulent urethral discharge in males and is often asymptomatic in females. Complications include PID and disseminated infection."

*[Clinical images: Urethral discharge, Gram stain showing diplococci]*

#### **Syphilis**

**Narrator:** "Syphilis has three stages: Primary chancre, secondary rash, and tertiary complications. The chancre is painless and heals spontaneously."

*[Clinical images: Chancre, secondary rash, serological tests]*

## Chlamydia

**Narrator:** "Chlamydia is often asymptomatic, especially in women. Untreated cases lead to PID, infertility, and ectopic pregnancy."

*[Clinical images: Cervicitis, diagnostic tests]*

## Viral STDs

**Narrator:** "HSV causes painful genital ulcers, HPV leads to warts and cervical dysplasia, while Hepatitis B can cause chronic liver disease."

---

#### [Section 4: Diagnostic Approach - 8:00-12:00]

*[Visual: Laboratory demonstrations, diagnostic algorithms]*

**Narrator:** "Diagnosis involves clinical assessment, laboratory tests, and partner evaluation. The '5 Ps' approach helps in sexual history taking: Partners, Practices, Protection, Past STDs, Pregnancy."

##### **Laboratory Tests:**

- Microscopy: Gram stain, wet mount
- Culture: For gonorrhea and chlamydia
- PCR: Gold standard for chlamydia and HSV
- Serology: For syphilis and HIV

*[Demonstration: Specimen collection techniques]*

**Narrator:** "Proper specimen collection is crucial. Urethral swabs for males, endocervical swabs for females, and blood samples for serological tests."

---

**[Section 5: Treatment Protocols - 12:00-16:00]**

*[Visual: Treatment algorithms, medication demonstrations]*

**Narrator:** "Treatment follows NACO and WHO guidelines. Dual therapy is recommended for gonorrhea to prevent resistance."

**Treatment Charts:**

- **Syphilis:** Benzathine penicillin 2.4 MU IM single dose (primary)
- **Gonorrhea:** Ceftriaxone 500mg IM + Azithromycin 1g PO
- **Chlamydia:** Azithromycin 1g single dose OR Doxycycline 7 days
- **HSV:** Acyclovir 400mg thrice daily x 5 days

*[Visual: Drug administration, follow-up schedules]*

**Narrator:** "Test of cure is recommended for gonorrhea and chlamydia. Partner treatment is essential to prevent reinfection."

---

## [Section 6: Prevention Strategies - 16:00-20:00]

*[Visual: Prevention campaigns, condom demonstrations, vaccination programs]*

**Narrator:** "Prevention is key. The ABC approach - Abstain, Be faithful, Condoms - forms the foundation. NACO distributes 800 million condoms annually."

### **Prevention Methods:**

- **Primary:** Safe sex practices, vaccination (HPV, Hepatitis B)
- **Secondary:** Regular screening, early treatment
- **Tertiary:** Management of complications

*[Visual: Indian prevention programs, community outreach]*

**Narrator:** "India's prevention programs include Targeted Interventions for high-risk groups, workplace programs, and school-based education."

---

## [Section 7: Special Considerations - 20:00-23:00]

*[Visual: Pregnancy care, adolescent counseling, high-risk groups]*

**Narrator:** "Special populations require tailored approaches. Pregnant women need syphilis screening in the first trimester. Adolescents can consent for STD testing confidentially."

### **Key Points:**

- Pregnancy: Screen for syphilis, HIV, hepatitis B
  - Adolescents: Confidentiality protected, age-appropriate counseling
  - MSM/FSWs: Targeted interventions, PrEP availability
  - Migrants: Mobile testing and counseling services
- 

## [Section 8: Challenges and Solutions - 23:00-25:00]

*[Visual: Case studies, success stories, future directions]*

**Narrator:** "Despite progress, challenges remain: stigma, healthcare access disparities, and emerging drug resistance. Solutions include comprehensive sexuality education, improved healthcare access, and community engagement."

**Success Metrics:**

- 66% reduction in new HIV infections (2007-2017)
  - 80% ART coverage
  - Increasing condom use and testing rates
- 

**[Conclusion - 25:00-26:00]**

*[Visual: Key takeaways, resources, call to action]*

**Narrator:** "STD management requires clinical expertise, cultural sensitivity, and public health approaches. Early diagnosis and treatment save lives and prevent complications."

**Key Takeaways:**

1. Comprehensive sexual history is essential
  2. Laboratory confirmation guides treatment
  3. Partner notification prevents reinfection
  4. Prevention programs reduce disease burden
  5. Cultural context influences healthcare delivery
-



**[Credits and Resources - 26:00-27:00]**

**On Screen:**

- **References:** NACO Guidelines, WHO STI Guidelines, CDC Treatment Guidelines
- **Resources:** NACO website, ICTC centers, Helpline: 1097
- **Faculty:** Dr. [Name], Department of [Specialty]
- **Production:** Medical Education Unit

**Narrator:** "Thank you for watching. Remember: Knowledge about STDs empowers both healthcare providers and patients."

*[End with medical theme music and contact information]*

---

**[Video Production Notes]**

**Technical Specifications:**

- Resolution: 1080p HD
- Format: MP4
- Audio: Clear narration with background music
- Subtitles: English and Hindi

**Visual Elements:**

- Clinical images (with patient consent)
- Animations for complex concepts
- Indian context visuals
- Statistical graphics
- Case study reenactments

**Educational Enhancements:**

- Pause points for discussion
- Interactive quiz links
- Downloadable handouts
- Further reading resources

**Quality Assurance:**

- Medical accuracy verified by faculty
- Cultural sensitivity review
- Student feedback incorporated
- Regular updates based on new guidelines

## STD Class Visualizations

---

## STD Class Visualizations¶

---

## Educational Graphics and Diagrams for STD Teaching¶

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur  
**Email:** hssling@yahoo.com | **Phone:** +91-8941087719  
**Date:** November 2024  
**License:** MIT License

---

## 1. STD Classification Pyramid

**Description:** A colorful pyramid diagram showing the hierarchy of STD classification

**Layout:**

[Top Level - Broad Classification]

- Bacterial STDs (Gonorrhea, Syphilis, Chlamydia)
- Viral STDs (HIV, HSV, HPV, Hepatitis B)
- Parasitic STDs (Trichomoniasis, Pubic lice)
- Fungal STDs (Candidiasis)

### Visual Elements:

- Color-coded sections (Blue for bacterial, Red for viral, Green for parasitic, Yellow for fungal)
  - Icons for each STD type
  - Percentage distribution in India
  - Key characteristics for each category
-

## 2. Indian HIV Prevalence Map

**Description:** Interactive map of India showing state-wise HIV prevalence

### Data Visualization:

- Color gradient: Dark red (high prevalence) to light yellow (low prevalence)
- Top states highlighted:
- Nagaland: 1.5% (Dark red)
- Manipur: 1.4% (Red)
- Mizoram: 1.2% (Red-orange)
- Andhra Pradesh: 0.8% (Orange)
- Karnataka: 0.7% (Orange)

### Additional Elements:

- National average: 0.22%
- Population affected: 23.1 lakh PLHIV
- High-risk group indicators
- Urban vs rural prevalence comparison

---

## 3. Syphilis Staging Timeline

**Description:** Horizontal timeline showing the natural history of syphilis

**Timeline Layout:**

Primary Syphilis (2-12 weeks)	Secondary Syphilis (6-24 weeks)	Latent Syphilis (Asymptomatic)	Tertiary Syphilis (>2 years)
----------------------------------	------------------------------------	-----------------------------------	---------------------------------

[Chancere image] → [Rash image] → [Clock icon] → [Gummas image]

Key Features:

- Painless chancre
- Generalized rash
- Asymptomatic period
- Cardiovascular/neurological complications

**Visual Elements:**

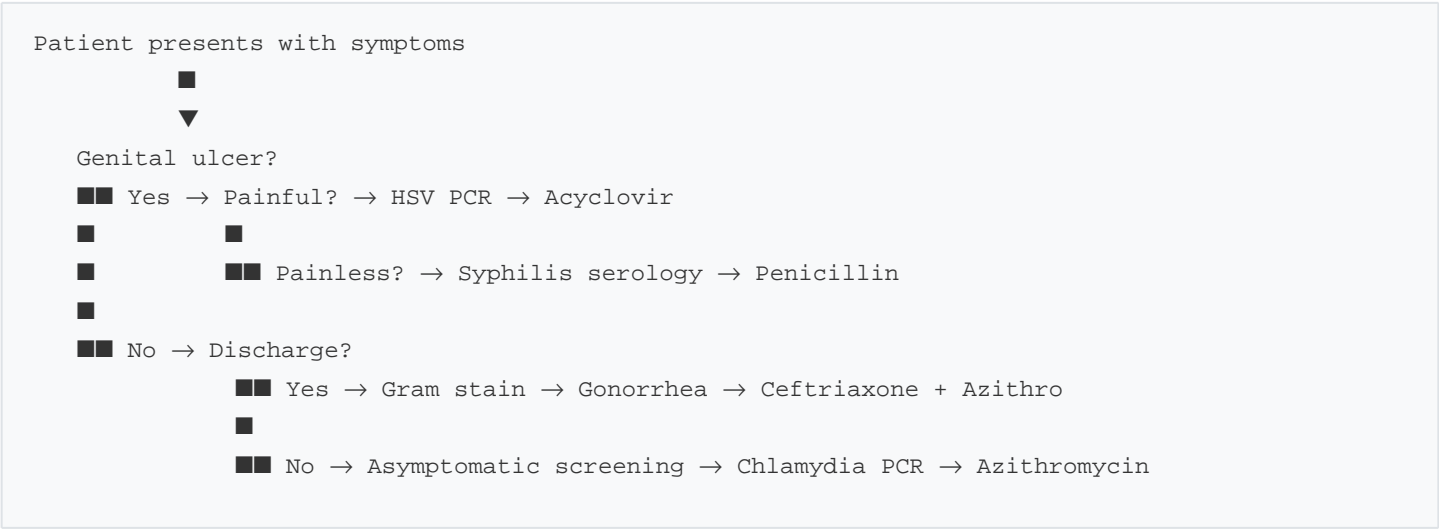
- Color progression from red (active) to blue (latent)
- Clinical images at each stage
- Time intervals clearly marked
- Treatment intervention points

---

#### 4. STD Diagnostic Algorithm

**Description:** Flowchart for STD diagnosis based on clinical presentation

Flowchart Structure:



Visual Elements:

- Decision diamonds for symptoms
- Rectangular boxes for tests
- Rounded rectangles for treatments
- Color coding by STD type
- Indian context notes (NACO guidelines)

5. Condom Use Effectiveness Chart

**Description:** Bar chart comparing condom effectiveness for different STDs

Chart Data:



Visual Elements:

- Horizontal bar chart
- Percentage labels
- Color gradient (green for high effectiveness)
- Footnotes about proper usage
- Indian condom program statistics

6. NACO Program Impact Timeline

**Description:** Timeline showing HIV/AIDS program achievements in India

**Timeline Layout:**

2007: NACP-III Launch  
↓ 66% reduction in new infections

2012: Free ART initiation  
↓ 80% ART coverage achieved

2017: NACP-IV (2017-2021)  
↓ 23.1 lakh PLHIV identified

2021: NACP-V (2021-2026)  
↓ 90% viral suppression target

2023: Current achievements  
↓ 800 million condoms distributed

**Visual Elements:**

- Vertical timeline with milestones
- Achievement icons
- Statistical improvements
- Future targets highlighted

---

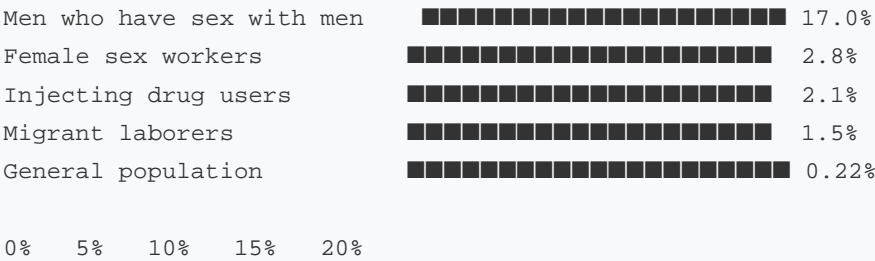
**7. High-Risk Groups Prevalence Comparison**

**Description:** Comparative bar chart of HIV prevalence in different high-risk groups



Chart Data:

HIV Prevalence in High-Risk Groups (India)



Visual Elements:

- Vertical bar chart
- Different colors for each group
- MSM bar highlighted (highest prevalence)
- Population size indicators
- Prevention program targeting notes

8. STD Treatment Decision Tree

Description: Complex decision tree for STD treatment based on diagnosis

Tree Structure:

## Positive Diagnosis



### Bacterial STD?

■ Yes → Which organism?

■ ■ Gonorrhea → Ceftriaxone 500mg IM + Azithromycin 1g PO

■ ■ Syphilis → Benzathine penicillin 2.4 MU IM

■ ■ Chlamydia → Azithromycin 1g PO single dose

■

■ No → Viral STD?

■ Yes → HSV → Acyclovir 400mg TDS × 5 days

■ HPV → Cryotherapy/LEEP

■ Hepatitis B → Tenofovir

■

■ No → Parasitic/Fungal → Metronidazole/Fluconazole

### Visual Elements:

- Hierarchical tree structure
- Color coding by STD type
- Treatment dosages clearly shown
- Indian brand names mentioned
- Follow-up requirements noted

## 9. Prevention Strategy Pyramid

**Description:** Pyramid showing levels of prevention from individual to population level

**Pyramid Layout:**

[Top - Population Level]  
Comprehensive Sexuality Education  
Policy and Legal Frameworks  
Healthcare System Strengthening

[Middle - Community Level]  
Targeted Interventions  
Condom Distribution Programs  
Community Awareness Campaigns

[Bottom - Individual Level]  
Safe Sex Practices  
Regular STI Screening  
Vaccination (HPV, Hep B)

**Visual Elements:**

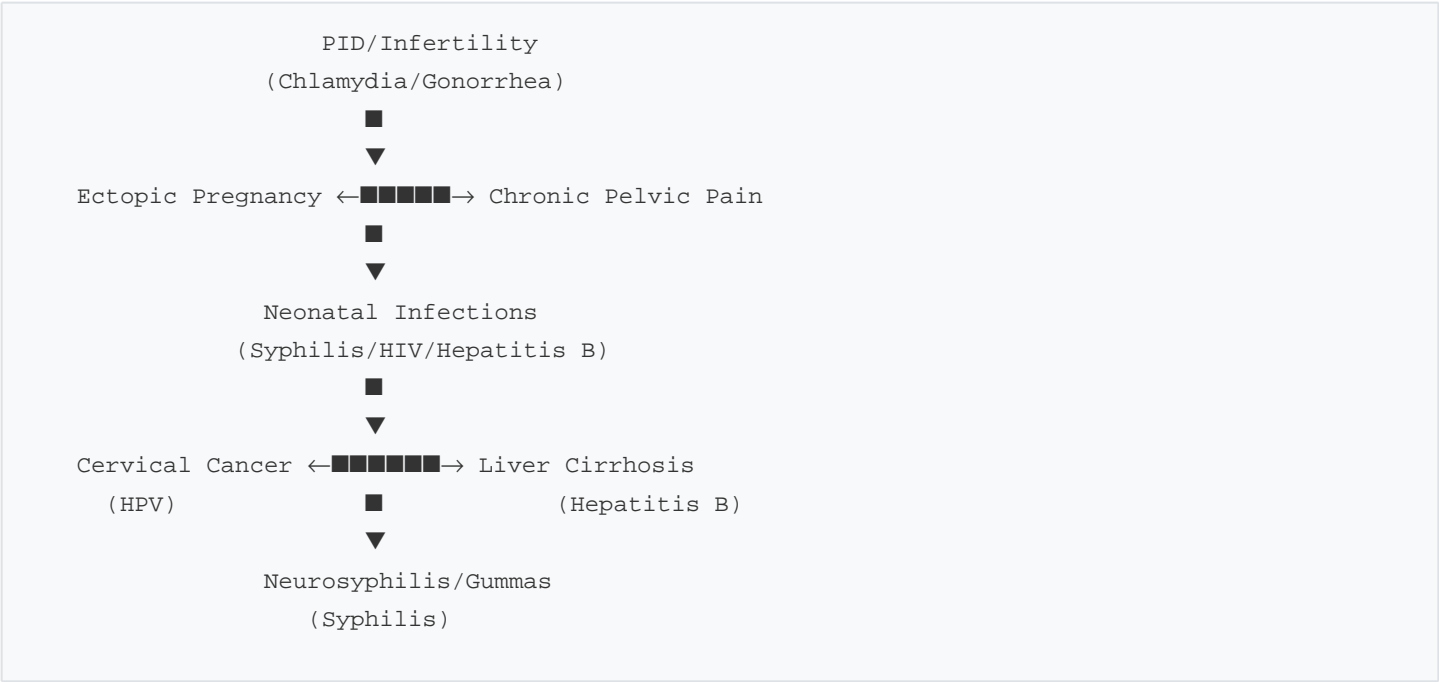
- Pyramid structure with three levels
- Icons for each prevention strategy
- Indian program examples
- Color gradient from broad (top) to specific (bottom)

---

## 10. STD Complications Infographic

**Description:** Circular infographic showing complications of untreated STDs

**Circular Layout:**



- Visual Elements:**
- Circular flow diagram
  - Color coding by STD type
  - Arrow connections showing progression
  - Prevention intervention points
  - Statistical impact data

## 11. Indian Healthcare Access Map

**Description:** Map showing healthcare facilities for STD care in India

- Map Features:**
- ICTC centers (1,381 locations) - Blue dots

- ART centers (1,200 locations) - Red dots
- STI clinics - Green dots
- Blood banks - Yellow dots

**Additional Elements:**

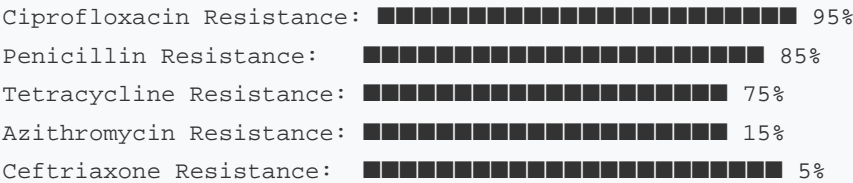
- Rural-urban distribution
- State-wise facility density
- Mobile outreach areas
- Helpline coverage areas (1097)

12. Drug Resistance Trends

**Description:** Line graph showing antibiotic resistance patterns over time

**Graph Data:**

Gonorrhea Resistance Trends (India)



2010 2012 2014 2016 2018 2020 2022

**Visual Elements:**

- Multiple line graphs
- Different colors for each antibiotic
- Current resistance levels highlighted
- Implications for treatment guidelines

---

**13. Cultural Barriers Illustration**

**Description:** Illustrated barriers to STD care in Indian context

**Visual Elements:**

- Cultural stigma icons
- Gender inequality representations
- Religious/caste barriers
- Healthcare access disparities
- Language and literacy barriers
- Rural transportation issues

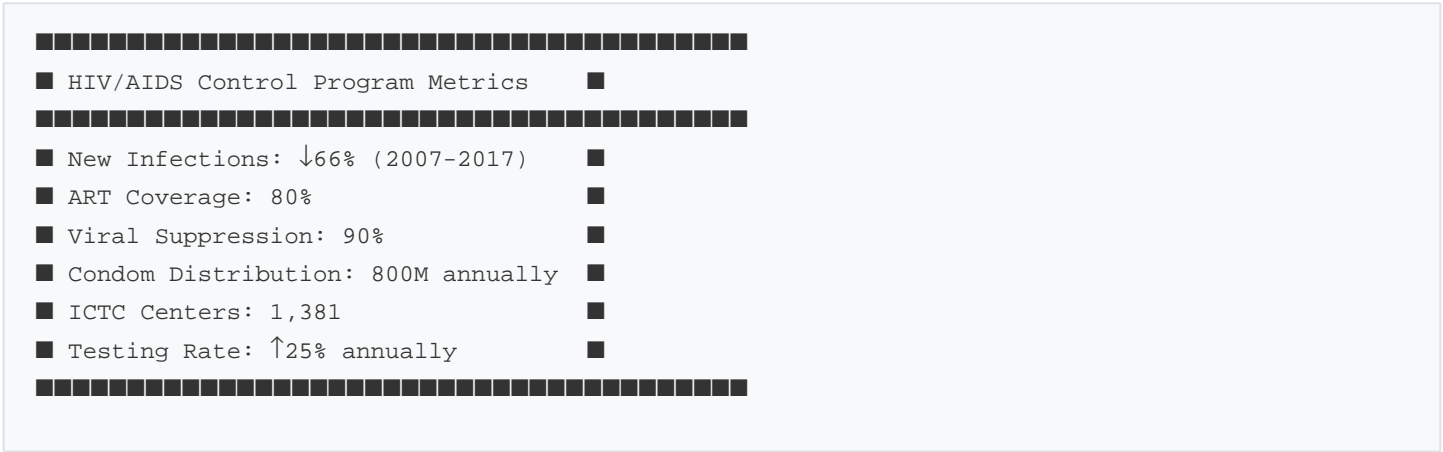
**Solutions Overlay:**

- Community education programs
  - Male involvement strategies
  - Youth-friendly services
  - Multilingual services
-

14. Success Metrics Dashboard

Description: Dashboard showing key performance indicators for STD control

Dashboard Layout:



Visual Elements:

- Progress bars for each metric
- Trend arrows (up/down)
- Color coding (green for positive trends)
- Target vs achievement comparison

---

15. Case Study Flowchart

**Description:** Interactive flowchart for clinical case management

**Patient Journey:**

Present with symptoms → History taking (5 Ps) → Physical exam → Laboratory tests → Diagnosis → Treatment

**Interactive Elements:**

- Clickable decision points
- Pop-up explanations
- Indian context adaptations
- Outcome scenarios
- Learning checkpoints

## Technical Specifications for Visualizations

**Format:** PNG/JPG for static images, SVG for interactive elements

**Resolution:** 1920x1080 for presentations, 800x600 for handouts

**Color Scheme:** Medical blue (#0066CC), Indian saffron (#FF9933), white backgrounds

**Fonts:** Arial for readability, bold for headings

**Accessibility:** Alt text for images, high contrast colors

**Usage:** PowerPoint slides, handouts, online modules



## Implementation Notes

### Tools for Creation:

- Canva for simple graphics
- Adobe Illustrator for complex diagrams
- PowerPoint for basic charts
- Online chart generators for data visualization

### Quality Assurance:

- Medical accuracy verification
- Cultural sensitivity review
- Student comprehension testing
- Regular updates with new data

### Distribution:

- Integrated into lecture slides
- Available as downloadable handouts
- Used in online learning modules
- Shared with clinical faculty

These visualizations enhance understanding of complex STD concepts through visual learning, making the content more engaging and memorable for medical students.

## HIV Class Video Script

---

## HIV Class Video Script

---

## Educational Video for MBBS 3rd Year Students

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

**Video Title:** HIV/AIDS: Comprehensive Management in the Indian Context

**Duration:** 30-35 minutes

**Target Audience:** MBBS 3rd Year Students

**Language:** English with Hindi subtitles

---

[Opening Scene - 0:00-0:45]

*[Medical theme music with HIV awareness visuals]*

**Narrator:** "Welcome to our comprehensive video on HIV/AIDS management. Today, we'll explore HIV from virology to treatment, with special focus on the Indian context and NACO guidelines."

**On Screen Text:** "HIV/AIDS: From Science to Care - Indian Perspective"

---

## **[Section 1: HIV Virology & Pathogenesis - 0:45-4:00]**

*[Animated HIV virus structure, infection process]*

**Narrator:** "HIV is a retrovirus that attacks the immune system. The virus enters CD4+ T cells using CD4 receptors and co-receptors CCR5 or CXCR4."

**Key Points:**

- **Structure:** RNA genome, reverse transcriptase, envelope proteins
- **Replication:** Reverse transcription → Integration → Transcription → Assembly
- **Immune Response:** Initial activation followed by CD4 depletion

*[Visual: CD4 count decline over time]*

**Narrator:** "The hallmark of HIV is progressive CD4+ T cell depletion, leading to immunosuppression and opportunistic infections."

---

**[Section 2: Natural History & Clinical Staging - 4:00-8:00]**

*[Timeline animation of HIV progression]*

**Narrator:** "HIV infection progresses through distinct stages. Acute infection occurs 2-4 weeks post-exposure with seroconversion illness."

**Stages:**

1. **Acute HIV:** High viral load, flu-like symptoms
2. **Clinical Latency:** Asymptomatic, 8-10 years average
3. **Symptomatic HIV:** Persistent lymphadenopathy, weight loss
4. **AIDS:** CD4 <200 cells/ $\mu$ L, opportunistic infections

*[WHO staging chart]*

**Narrator:** "WHO clinical staging helps classify patients regardless of CD4 count. Stage 4 represents AIDS with severe immunosuppression."

---

**[Section 3: Epidemiology in India - 8:00-11:00]**

*[Indian map with prevalence data, demographic charts]*

**Narrator:** "India has made remarkable progress in HIV control. Adult prevalence is 0.22% with 23.1 lakh people living with HIV."

**Key Statistics:**

- **Regional Variation:** Northeast highest (Nagaland 1.5%)
- **Transmission Routes:** Heterosexual (85%), MSM (2%), IDU (7%), MTCT (6%)
- **High-Risk Groups:** MSM (17%), FSWs (2.8%), IDUs (2.1%)

*[Success metrics visualization]*

**Narrator:** "NACO's achievements include 66% reduction in new infections and 80% ART coverage since 2007."

---

**[Section 4: Diagnosis of HIV - 11:00-15:00]**

*[Laboratory demonstrations, testing algorithms]*

**Narrator:** "HIV diagnosis uses a three-tier algorithm. Screening tests include ELISA and rapid tests, followed by confirmatory Western blot."

**Testing Algorithm:**

1. **Screening:** ELISA/ECLIA or Rapid test
2. **Confirmatory:** Western blot/Line immunoassay
3. **Tie-breaker:** If discordant results

*[Window periods chart]*

**Narrator:** "Window periods vary: Antibody tests (4-12 weeks), RNA PCR (10-14 days), Combination tests (2-4 weeks)."

*[CD4 and viral load monitoring]*

**Narrator:** "CD4 count and viral load are crucial for monitoring disease progression and treatment response."

---

**[Section 5: ART Guidelines & Management - 15:00-20:00]**

*[ART regimen charts, medication demonstrations]*

**Narrator:** "NACO 2023 guidelines recommend ART for all PLHIV regardless of CD4 count. The preferred first-line regimen is TLD: Tenofovir + Lamivudine + Dolutegravir."

**First-Line Regimens:**

- **TLD:** Tenofovir + Lamivudine + Dolutegravir
- **TLE:** Tenofovir + Lamivudine + Efavirenz
- **AZT-based:** Zidovudine + Lamivudine + Efavirenz

*[Adherence demonstration]*

**Narrator:** "Adherence >95% is essential for viral suppression. Fixed-dose combinations simplify treatment and improve compliance."

*[Side effects management]*



**Narrator:** "Common side effects include CNS effects with efavirenz, renal toxicity with tenofovir, and anemia with zidovudine."

---

## **[Section 6: Opportunistic Infections - 20:00-23:00]**

*[OI images, prophylaxis charts]*

**Narrator:** "Opportunistic infections occur when CD4 count drops. In India, tuberculosis is the most common OI, followed by bacterial infections."

### **Common OIs:**

- **CD4 <200:** Pneumocystis, Toxoplasma, Cryptococcus
- **CD4 <50:** Mycobacterium avium complex
- **Throughout:** Tuberculosis, candidiasis

*[Prophylaxis guidelines]*

**Narrator:** "Cotrimoxazole prevents Pneumocystis and Toxoplasma. INH prophylaxis prevents TB in latent cases."

---

**[Section 7: Prevention Strategies - 23:00-27:00]**

*[Prevention campaign visuals, condom demonstrations]*

**Narrator:** "Prevention includes Treatment as Prevention, PrEP, PEP, and condom promotion. U=U means undetectable viral load prevents sexual transmission."

**Prevention Package:**

1. **TasP:** Treatment as Prevention
2. **PrEP:** Daily TDF/FTC for high-risk individuals
3. **PEP:** 28-day regimen within 72 hours exposure
4. **Condoms:** NACO distributes 800 million annually

*[PMTCT program details]*

**Narrator:** "PMTCT prevents mother-to-child transmission through antenatal testing, ART, safe delivery, and infant prophylaxis."

---

**[Section 8: Special Populations & Psychosocial Aspects - 27:00-30:00]**

*[Support group visuals, counseling demonstrations]*

**Narrator:** "Special populations need tailored care. Adolescents require confidentiality, children need pediatric formulations, and pregnant women need PMTCT protocols."

*[Mental health discussion]*

**Narrator:** "Psychosocial support is crucial. Stigma affects adherence, while depression and anxiety are common. Support groups and counseling improve outcomes."

---

## [Section 9: Future Directions - 30:00-32:00]

*[Research visuals, global targets]*

**Narrator:** "The 95-95-95 targets aim for 95% diagnosed, 95% on ART, and 95% virally suppressed by 2030. Research focuses on cure, long-acting injectables, and therapeutic vaccines."

---

## [Conclusion - 32:00-33:00]

*[Key takeaways, resources]*

**Narrator:** "HIV is now a manageable chronic condition. Early diagnosis, consistent ART, and comprehensive prevention save lives and prevent transmission."

**Key Takeaways:**

1. HIV attacks CD4+ T cells leading to immunosuppression
  2. ART is lifelong and requires >95% adherence
  3. Prevention includes TasP, PrEP, PEP, and condoms
  4. OIs require prophylaxis and prompt treatment
  5. Psychosocial support is essential for care
  6. India's response shows what commitment can achieve
- 

**[Credits and Resources - 33:00-34:00]**

**On Screen:**

- **References:** NACO Guidelines 2023, WHO HIV Guidelines 2021
- **Resources:** NACO website, ART centers, Helpline: 1097
- **Faculty:** Dr. [Name], Department of Medicine
- **Production:** Medical Education Unit

**Narrator:** "Thank you for watching. HIV care combines medical science with compassion and community support."

*[Closing music and contact information]*

---

## **[Video Production Notes]**

### **Technical Specifications:**

- Resolution: 1080p HD
- Format: MP4
- Audio: Professional narration with background music
- Subtitles: English and Hindi

### **Visual Elements:**

- 3D HIV virus animations
- Clinical case reenactments
- Indian program success stories
- Statistical data visualizations
- Patient testimonial excerpts (with consent)

### **Educational Enhancements:**

- Interactive pause points
- Quiz integration links
- Downloadable reference guides
- Further reading suggestions

### **Quality Assurance:**

- Medical accuracy by infectious disease specialists
- Cultural sensitivity review
- Student feedback validation
- Annual updates with new guidelines

**Distribution:**

- Medical college learning management systems
- YouTube medical education channel
- DVD copies for offline access
- Integration with curriculum modules

## Untitled

---

M# HIV Class Visualizations

## Educational Graphics and Diagrams for HIV Teaching

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

---

### 1. HIV Virus Structure

**Description:** Detailed 3D illustration of HIV virus structure

**Visual Elements:**

- **Outer Envelope:** gp120/gp41 spike proteins
- **Matrix Layer:** p17 protein
- **Capsid:** p24 protein core containing RNA
- **Viral Enzymes:** Reverse transcriptase, integrase, protease
- **RNA Genome:** Two identical strands

**Labels:**

- Color-coded components
  - Function annotations
  - Scale representation
  - Comparison with other viruses
- 

## 2. HIV Replication Cycle

**Description:** Step-by-step circular diagram of HIV replication

**Cycle Steps:**

1. **Attachment:** gp120 binds CD4 + co-receptor



2. **Entry:** Fusion and uncoating
3. **Reverse Transcription:** RNA → DNA
4. **Integration:** Viral DNA into host genome
5. **Transcription:** Viral mRNA production
6. **Translation:** Viral proteins synthesis
7. **Assembly:** New virions formation
8. **Budding:** Release of mature virus

**Visual Elements:**

- Circular flow diagram
- Color progression (blue to red)
- Molecular animations
- Time indicators
- Drug intervention points

---

### 3. CD4 Count Decline Over Time

**Description:** Line graph showing typical CD4 count progression in untreated HIV

**Graph Data:**

CD4 Count Decline in Untreated HIV

CD4 Count (cells/ $\mu$ L)

1000 ■

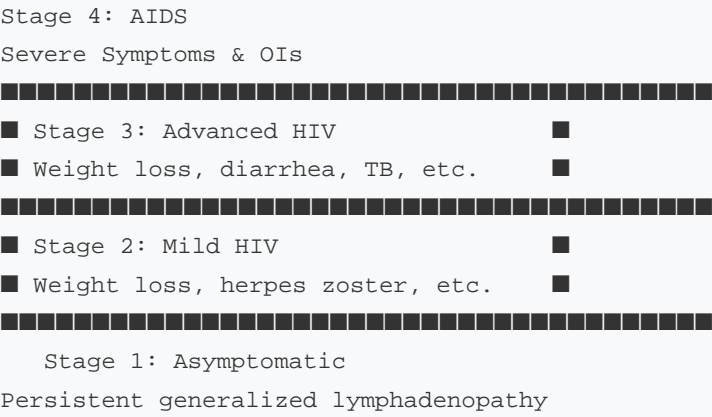


- Visual Elements:**
- Red declining line
  - Critical thresholds marked
  - Time to AIDS indication
  - Individual variation notes
  - ART intervention overlay

4. WHO Clinical Staging Pyramid¶

**Description:** Hierarchical pyramid showing WHO HIV clinical stages

**Pyramid Structure:**



- Visual Elements:**
- Color gradient (green to red severity)
  - Clinical manifestations listed
  - CD4 count correlations
  - Treatment urgency indicators

## 5. Indian HIV Prevalence Heat Map¶

**Description:** Interactive heat map of India showing state-wise HIV prevalence

- Data Visualization:**
- **High Prevalence (Red):** Nagaland (1.5%), Manipur (1.4%), Mizoram (1.2%)
  - **Medium Prevalence (Orange):** Andhra Pradesh (0.8%), Karnataka (0.7%)
  - **Low Prevalence (Yellow):** Most other states (0.1-0.3%)
  - **Very Low (Green):** Kerala, Tamil Nadu (<0.1%)

Additional Layers:

- Urban vs rural prevalence
- High-risk group concentrations
- ART center locations
- Testing facility density

6. ART Regimen Comparison Chart

Description: Comparative table of first-line ART regimens

Table Structure:

ART Regimen Comparison			
Regimen	Drugs	Advantages	Disadvantages
TLD	TDF/3TC/DTG	High efficacy, once daily	Cost, DTG availability
TLE	TDF/3TC/EFV	Low cost, proven efficacy	CNS side effects
AZT-based	AZT/3TC/EFV	Alternative for TDF toxicity	Anemia, EFV effects
Key: TDF=Tenofovir, 3TC=Lamivudine, DTG=Dolutegravir, EFV=Efavirenz, AZT=Zidovudine			

Visual Elements:

- Color-coded regimens
- Efficacy bars

- Side effect icons
- Cost indicators
- Indian availability status

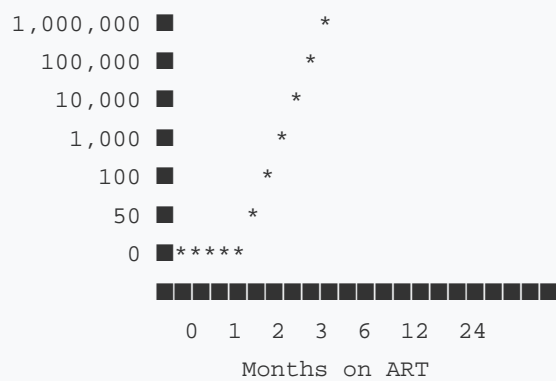
## 7. Viral Load Suppression Timeline

**Description:** Timeline showing viral load response to ART

**Timeline Layout:**

ART Initiation Response

Viral Load (copies/mL)



\* = Viral load measurements

Target: <1,000 copies/mL

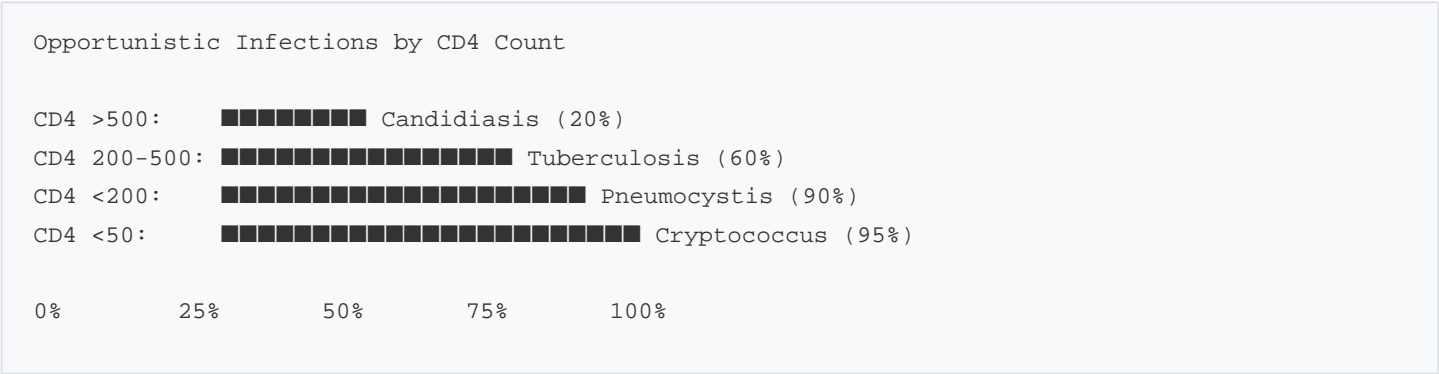
Visual Elements:

- Logarithmic scale
- Target line at 1,000 copies/mL
- Individual response variations
- Adherence correlation
- Resistance development indicators

8. Opportunistic Infections by CD4 Count

Description: Bar chart showing OI risk at different CD4 levels

Chart Data:



Visual Elements:

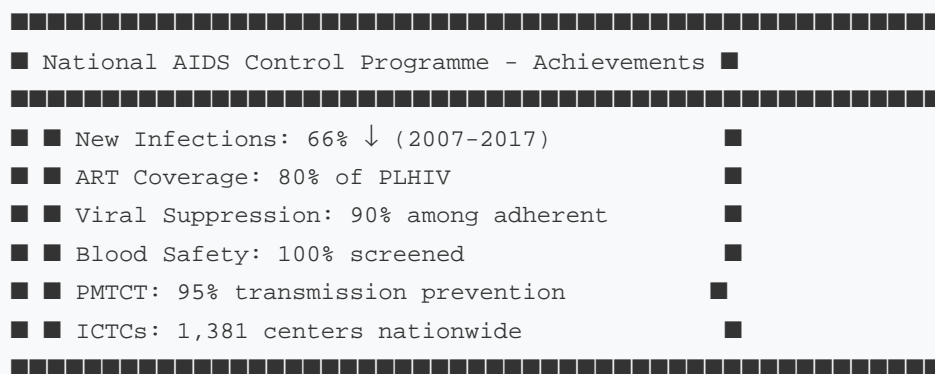
- Horizontal stacked bars

- Color coding by OI type
- CD4 threshold markers
- Prophylaxis initiation points
- Indian prevalence data

## 9. NACO Program Impact Dashboard

**Description:** Comprehensive dashboard showing HIV program metrics

**Dashboard Layout:**



**Visual Elements:**

- Progress bars with targets

- Trend arrows and percentages
  - Color-coded metrics (green = achieved)
  - Time-based improvements
  - Future target projections
- 

## 10. Prevention Strategy Wheel

**Description:** Circular wheel showing integrated HIV prevention approaches

### Wheel Segments:

- **Treatment as Prevention (TasP)**
- **Pre-Exposure Prophylaxis (PrEP)**
- **Post-Exposure Prophylaxis (PEP)**
- **Condom Promotion**
- **Harm Reduction** (for IDUs)
- **STI Management**
- **VMMC** (Voluntary Medical Male Circumcision)
- **Blood Safety**

### Visual Elements:

- Color-coded segments
  - Effectiveness percentages
  - Integration arrows
  - Indian program examples
  - Target population indicators
-



## 11. ART Adherence Factors

**Description:** Multifactorial diagram showing adherence determinants

### Factor Categories:

#### ART Adherence Factors

##### Individual Factors

- Health beliefs
- Self-efficacy
- Mental health
- Substance use

##### Medication Factors

- Side effects
- Regimen complexity
- Pill burden
- Taste/smell

##### Social Factors

- Family support
- Stigma/discrimination
- Disclosure status
- Economic factors

##### Healthcare Factors

- Provider relationship
- Clinic accessibility
- Drug availability
- Counseling quality

**Visual Elements:**

- Hierarchical tree structure
  - Positive/negative factor indicators
  - Intervention points
  - Cultural adaptation notes
  - Measurement tools
- 

## 12. PMTCT Cascade

**Description:** Step-by-step cascade showing PMTCT program effectiveness

**Cascade Steps:**

### PMTCT Program Cascade

Pregnant Women Identified: 100%

↓ 95%

HIV Tested in ANC

↓ 90%

HIV Positive Identified

↓ 85%

ART Initiated

↓ 80%

Viral Suppression Achieved

↓ 75%

Safe Delivery

↓ 70%

Infant Prophylaxis Given

↓ 65%

Infant HIV Testing Done

↓ 60%

HIV-Free Survival at 18 Months

**Visual Elements:**

- Waterfall chart design
- Drop-off percentages
- Intervention improvement points
- Indian program data
- Global comparison

### 13. Drug Resistance Pathways

**Description:** Flowchart showing development of HIV drug resistance

**Resistance Development:**

ART Initiation



Viral Suppression Achieved?

■ Yes → Continue monitoring



■ No → Adherence assessment



Poor Adherence?

■ Yes → Counseling & support



■■ No → Drug resistance testing  
■  
▼  
Resistance detected?  
■■ Yes → Regimen change  
■  
■■ No → Pharmacokinetic assessment

- Visual Elements:**
- Decision tree structure
  - Color coding (green = good, red = concerning)
  - Testing algorithm
  - Regimen switch options
  - Prevention strategies

14. Psychosocial Impact Illustration¶

**Description:** Mind map showing psychosocial aspects of HIV

**Central Theme:** HIV Diagnosis Impact

HIV Diagnosis

- 
- Emotional Response
  - ■■■ Shock & denial
  - ■■■ Depression & anxiety
  - ■■■ Anger & guilt
  - ■■■ Suicidal ideation

- 
- ■ Social Impact
  - ■ ■ ■ Stigma & discrimination
  - ■ ■ ■ Relationship changes
  - ■ ■ ■ Family rejection
  - ■ ■ ■ Workplace issues
- 
- ■ Behavioral Changes
  - ■ ■ ■ Adherence challenges
  - ■ ■ ■ Risk behavior modification
  - ■ ■ ■ Support group participation
  - ■ ■ ■ Disclosure decisions
- 
- ■ Coping Strategies
  - ■ ■ ■ Counseling & therapy
  - ■ ■ ■ Support networks
  - ■ ■ ■ Spiritual coping
  - ■ ■ ■ Resilience building

**Visual Elements:**

- Radial mind map design
- Color-coded impact areas
- Support intervention links
- Cultural context adaptations
- Positive coping pathways

---

## 15. Future HIV Research Directions

**Description:** Roadmap showing future HIV research and treatment goals

Research Areas:

HIV Research Roadmap 2025-2030

Cure Research

- ████ Stem cell transplantation
- ████ Gene therapy approaches
- ████ Latency reversal agents
- ████ Therapeutic vaccines

Treatment Innovations

- ████ Long-acting injectables
- ████ Implants and patches
- ████ Nanotechnology delivery
- ████ Personalized medicine

Prevention Technologies

- ████ Next-gen PrEP
- ████ HIV vaccines
- ████ Microbicides
- ████ Multipurpose technologies

Global Targets

- ████ 95-95-95 by 2030
- ████ Ending AIDS by 2030
- ████ Sustainable development

Visual Elements:

- Timeline-based layout
- Research category icons
- Progress indicators
- Collaboration networks
- Funding and policy implications

**Format:** High-resolution PNG/SVG for digital use  
**Color Scheme:** Red awareness ribbon theme (#FF0000, #FFFFFF)  
**Typography:** Clear, readable fonts (Arial, Calibri)  
**Accessibility:** High contrast, alt text descriptions  
**Animation:** Where applicable, subtle transitions and highlights

---

## Implementation Guidelines

### Educational Use:

- Integrate with lecture slides
- Use in case-based learning
- Support online learning modules
- Enhance student engagement

### Clinical Application:

- Display in ART centers
- Use for patient education
- Support counseling sessions
- Guide treatment decisions

### Quality Standards:

- Medical accuracy verification
- Cultural sensitivity review
- Regular updates with new data
- Student feedback incorporation

**Distribution Channels:**

- Medical college libraries
- NACO training materials
- Healthcare provider resources
- Patient education handouts

These visualizations transform complex HIV concepts into engaging, memorable graphics that enhance medical education and patient understanding.

## STD One-Hour Class Presentation Script

---

## STD One-Hour Class Presentation Script¶

---

## Structured for 45-50 Minute Lecture + 10-15 Minute Q&A¶

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur  
**Email:** hssling@yahoo.com | **Phone:** +91-8941087719  
**Date:** November 2024  
**License:** MIT License



**Title:** Sexually Transmitted Diseases: Comprehensive Overview

**Duration:** 60 minutes (45-50 min lecture + 10-15 min Q&A)

**Target Audience:** MBBS 3rd Year Students

**Learning Objectives:**

- Define STDs and understand classification
  - Describe epidemiology and burden in India
  - Explain transmission, clinical features, diagnosis, and treatment
  - Discuss prevention and control strategies
- 

**Slide 1: Title Slide (1 min)**

**Sexually Transmitted Diseases: Comprehensive Overview**

**Presenter:** [Your Name]

**Date:** [Date]

**Duration:** 60 minutes

**Learning Objectives:**

- Define STDs and classification
  - Epidemiology and Indian burden
  - Transmission, clinical features, diagnosis, treatment
  - Prevention and control strategies
-

## Slide 2: What are STDs? (2 min)¶

### Definition and Classification

#### Definition:

Infections transmitted through sexual contact, including vaginal, anal, and oral sex

#### Classification by Causative Organism:

- **Bacterial:** Gonorrhea, Syphilis, Chlamydia
- **Viral:** HIV, HSV, HPV, Hepatitis B
- **Parasitic:** Trichomoniasis, Pubic lice
- **Fungal:** Candidiasis

#### Key Facts:

- 1 million new cases daily worldwide (WHO)
- Many asymptomatic, especially in women
- Can lead to serious complications if untreated

---

## Slide 3: Epidemiology - Global Burden (2 min)¶

## Global Epidemiology

### WHO Statistics (2022):

- 1 million new STD cases daily
- 376 million new cases annually
- Chlamydia: 129 million
- Gonorrhea: 82 million
- Syphilis: 7.1 million
- Trichomoniasis: 156 million

### Risk Factors:

- Multiple sexual partners
  - Unprotected sex
  - Young age (15-24 years)
  - Substance use
  - Poverty and limited education
- 

## Slide 4: Epidemiology - Indian Context (3 min)¶

### Indian Burden and Distribution

**NACO Estimates (2023):**

- 30-40 million STD cases annually
- HIV prevalence: 0.22% (23.1 lakh PLHIV)
- Syphilis: Rising trend, especially congenital
- Gonorrhea/Chlamydia: High among youth and high-risk groups

**Regional Distribution:**

- **Highest prevalence:** Northeast (Nagaland, Manipur)
- **Southern states:** Karnataka, Andhra Pradesh, Telangana
- **Urban vs Rural:** Higher in urban areas
- **High-risk groups:** MSM (17%), FSWs, IDUs, migrants

**Indian-Specific Factors:**

- Early marriage and sexual debut
  - Low condom use (5.2% consistent use)
  - Stigma and cultural taboos
  - Healthcare access disparities
- 

**Slide 5: Transmission Routes (2 min)****How STDs Spread**

**Sexual Transmission:**

- Vaginal intercourse
- Anal intercourse
- Oral-genital contact
- Manual-genital contact

**Non-Sexual Transmission:**

- Mother-to-child (congenital syphilis, HIV)
- Blood transfusion (HIV, Hepatitis B)
- Sharing needles (HIV, Hepatitis B)
- Organ transplantation

**Key Points:**

- Most STDs require direct contact
  - Some can be transmitted through skin-to-skin contact
  - Vertical transmission prevention crucial
- 

**Slide 6: Bacterial STDs - Gonorrhea (3 min)****Gonorrhea: Clinical Features**

**Causative Agent:** *Neisseria gonorrhoeae* (Gram-negative diplococcus)

**Clinical Presentation:**

- **Males:** Acute urethritis
- Purulent discharge (yellow/green)
- Dysuria, frequency, urgency
- Incubation: 2-7 days

- **Females:** Often asymptomatic (50%)

- May cause cervicitis, PID

- Abdominal pain, fever

**Complications:**

- PID, infertility, ectopic pregnancy
  - Disseminated gonococcal infection
  - Ophthalmia neonatorum
-

## Slide 7: Bacterial STDs - Syphilis (4 min)¶

### Syphilis: The Great Imitator

**Causative Agent:** *Treponema pallidum*

#### Stages:

##### 1. Primary (2-12 weeks):

- Painless chancre at inoculation site
- Clean base, raised borders
- Regional lymphadenopathy

##### Secondary (6-24 weeks):

- Generalized rash (palms/soles)
- Condylomata lata, alopecia
- Fever, malaise, lymphadenopathy

##### Tertiary (>2 years):

- Cardiovascular syphilis
- Neurosyphilis, gummas
- Tabes dorsalis

**Congenital Syphilis:** Rising in India

---

## **Slide 8: Bacterial STDs - Chlamydia (3 min)**

**Chlamydia: Silent Infection**

**Causative Agent:** Chlamydia trachomatis

**Clinical Features:**

- **Often asymptomatic (70-80%)**
- **Females:** Cervicitis, PID, infertility
- **Males:** Urethritis, epididymitis
- **Both:** Proctitis, conjunctivitis

**Complications:**

- Pelvic inflammatory disease
- Ectopic pregnancy
- Chronic pelvic pain



- Infertility in both genders

**Key Fact:** Most common bacterial STD worldwide

---

### Slide 9: Viral STDs Overview (3 min)

#### Viral STDs: Chronic Infections

##### **HIV/AIDS:**

- Retrovirus attacking CD4+ T cells
- Progressive immunosuppression
- Lifelong infection, manageable with ART

##### **HSV (Herpes Simplex):**

- HSV-1: Oral herpes
- HSV-2: Genital herpes
- Recurrent painful ulcers
- Lifelong latency

**HPV (Human Papillomavirus):**

- 100+ subtypes
- Low-risk: Genital warts
- High-risk: Cervical cancer
- Vaccination available

**Hepatitis B:**

- Chronic liver disease
  - Vaccine-preventable
  - High prevalence in India
- 

**Slide 10: Diagnosis - Clinical Approach (3 min)****Diagnostic Strategy****1. Sexual History (5 Ps):**

- Partners (number, type)
- Practices (vaginal, anal, oral)
- Protection (condom use)
- Past STDs
- Pregnancy intentions

## **2. Physical Examination:**

- Genital inspection
- Lymph node palpation
- Systemic signs

## **3. Laboratory Tests:**

- Microscopy (Gram stain, wet mount)
  - Culture and sensitivity
  - PCR (gold standard for chlamydia)
  - Serology (syphilis, HIV)
- 

## **Slide 11: Diagnosis - Laboratory Tests (3 min)**

### **Specific Diagnostic Tests**

#### **Gonorrhea:**

- Gram stain: Intracellular diplococci
- Culture: Thayer-Martin medium
- PCR: Most sensitive

**Syphilis:**

- VDRL/TPHA: Screening
- FTA-ABS: Confirmatory
- Dark field microscopy

**Chlamydia:**

- PCR: Endocervical swab
- Culture: McCoy cells
- EIA: Less sensitive

**HSV:**

- PCR: Vesicular fluid
  - Viral culture
  - Tzanck smear
- 

**Slide 12: Treatment - General Principles (2 min)****Treatment Guidelines****NACO STI Management Guidelines (2020):**

- Syndromic management approach

- Dual therapy for gonorrhea
- Partner treatment essential
- Test of cure recommended

**Key Principles:**

- Treat empirically based on symptoms
  - Culture sensitivity for resistance
  - Follow-up testing
  - Prevention of reinfection
- 

**Slide 13: Treatment - Specific Regimens (4 min)**

**Treatment Protocols**

**Syphilis:**

- **Primary/Secondary:** Benzathine penicillin 2.4 MU IM single dose
- **Latent:** Benzathine penicillin 2.4 MU IM weekly x 3
- **Tertiary/Neurosyphilis:** Aqueous penicillin G 3-4 MU IV q4h x 14 days
- **Alternative:** Doxycycline 100mg PO twice daily x 14 days

**Gonorrhea:**

- Ceftriaxone 500mg IM single dose
- PLUS Azithromycin 1g PO single dose
- Test of cure in 7-14 days

**Chlamydia:**

- Azithromycin 1g PO single dose
- OR Doxycycline 100mg PO twice daily × 7 days
- Test of cure recommended

**HSV:**

- Acyclovir 400mg PO three times daily × 5-10 days
  - Valacyclovir 1g PO twice daily × 5-10 days
  - Suppressive therapy for recurrences
- 

**Slide 14: Prevention and Control - Primary (3 min)****Primary Prevention****ABC Approach:**

- **Abstain** from sex

- **Be faithful** to one partner
- **Condoms** consistently and correctly

**Vaccines:**

- HPV vaccine (9-26 years)
- Hepatitis B vaccine
- HIV vaccine (in development)

**Other Strategies:**

- Pre-exposure prophylaxis (PrEP) for HIV
  - Post-exposure prophylaxis (PEP)
  - Male circumcision
- 

**Slide 15: Prevention and Control - Secondary (3 min)**

**Secondary Prevention**

**Screening Programs:**

- Regular STI screening for high-risk groups
- Antenatal screening (syphilis, HIV)
- Targeted interventions (TI) for high-risk populations

**NACO Programs:**

- Integrated Counseling and Testing Centers (ICTCs)
- Prevention of Parent-to-Child Transmission (PPTCT)
- Link Worker Scheme for contact tracing

**Key Achievements:**

- 1,381 ICTCs across India
  - 95% antenatal coverage for HIV testing
  - 800 million condoms distributed annually
- 

**Slide 16: Prevention and Control - Tertiary (2 min)****Tertiary Prevention****Management of Complications:**

- ART centers for HIV care
- STD clinics for follow-up
- Community Care Centers (CCCs)

**Support Services:**

- Positive People Networks



- Counseling and psychosocial support
- Rehabilitation programs

**Surveillance:**

- HIV Sentinel Surveillance
  - Integrated Disease Surveillance Program
  - Regular reporting and monitoring
- 

**Slide 17: Challenges in India (2 min)**

**Barriers to Effective Control**

**Social and Cultural:**

- Stigma and discrimination
- Gender inequalities
- Religious and caste factors
- Limited sexuality education

**Healthcare System:**

- Rural-urban disparities
- Shortage of trained providers

- Drug stockouts
- Weak surveillance systems

**Behavioral Factors:**

- Low condom use
  - Multiple concurrent partnerships
  - Alcohol and drug use
  - Migration and mobility
- 

**Slide 18: Future Directions (2 min)**

**Way Forward**

**Strengthening Programs:**

- Comprehensive sexuality education in schools
- Integration of STI services with primary healthcare
- Task shifting to nurses and community health workers
- Digital health solutions for follow-up

**Research Priorities:**

- Vaccine development

- Point-of-care diagnostics
- Drug resistance surveillance
- Behavioral interventions

**Global Targets:**

- 90% reduction in syphilis incidence by 2030
  - Elimination of MTCT of HIV and syphilis
  - Improved access to STI services
- 

**Slide 19: Key Takeaways (1 min)**

**Summary**

1. STDs are major public health problem with significant burden in India
2. Most are asymptomatic, requiring active screening

3. Syndromic management and partner treatment are key

4. Prevention through ABC approach, vaccines, and condoms

5. NACO programs provide framework for comprehensive control

6. Cultural sensitivity and community engagement essential

---

**Slide 20: Q&A Session (10-15 min)**

**Questions and Discussion**

**Thank you for your attention!**

**References:**

- NACO STI Management Guidelines (2020)
- WHO Guidelines for STI Management (2016)
- CDC STD Treatment Guidelines (2021)

---

**Timing Breakdown:**

- Introduction (5 min)
- Definition & Classification (2 min)
- Epidemiology (5 min)

- Transmission (2 min)

- Clinical Features (10 min)

- Diagnosis (6 min)

- Treatment (6 min)

- Prevention & Control (8 min)

- Challenges & Future (4 min)

- Summary & Q&A (12 min)

Total: 60 minutes

## HIV One-Hour Class Presentation Script

---

## HIV One-Hour Class Presentation Script¶

---

### Structured for 45-50 Minute Lecture + 10-15 Minute Q&A¶

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

**Title:** HIV/AIDS: Comprehensive Management in Indian Context

**Duration:** 60 minutes (45-50 min lecture + 10-15 min Q&A)

**Target Audience:** MBBS 3rd Year Students

**Learning Objectives:**

- Understand HIV virology, pathogenesis, and natural history
  - Describe epidemiology and burden in India
  - Explain transmission, clinical features, diagnosis, and treatment
  - Discuss prevention and control strategies
-

## Slide 1: Title Slide (1 min)

### HIV/AIDS: Comprehensive Management in Indian Context

**Presenter:** [Your Name]

**Date:** [Date]

**Duration:** 60 minutes

#### Learning Objectives:

- HIV virology, pathogenesis, natural history
- Epidemiology and Indian burden
- Transmission, clinical features, diagnosis, treatment
- Prevention and control strategies

---

## Slide 2: What is HIV/AIDS? (2 min)

### Definition and Overview



**Definition:**

- HIV: Human Immunodeficiency Virus
- AIDS: Acquired Immune Deficiency Syndrome
- Retrovirus that attacks CD4+ T lymphocytes
- Leads to progressive immunosuppression

**Key Facts:**

- Discovered in 1983
- 39 million people living with HIV globally (2022)
- 23.1 lakh PLHIV in India (NACO 2023)
- Chronic manageable condition with ART

**Impact:**

- Weakens immune system
  - Increases susceptibility to opportunistic infections
  - Can be controlled but not cured
- 

**Slide 3: HIV Virology (3 min)****Virus Structure and Replication**

**Structure:**

- **Envelope:** GP120 and GP41 proteins
- **Core:** Capsid containing RNA genome
- **Enzymes:** Reverse transcriptase, integrase, protease
- **Receptors:** CD4, CCR5/CXCR4 co-receptors

**Replication Cycle:**

1. **Attachment:** GP120 binds to CD4 receptor
2. **Entry:** Fusion with host cell membrane
3. **Reverse Transcription:** RNA → DNA
4. **Integration:** Viral DNA into host genome
5. **Transcription:** Viral mRNA production
6. **Assembly & Budding:** New virions released

**Key Points:**

- High mutation rate due to reverse transcriptase
  - Rapid replication ( $10^9$ - $10^{10}$  virions daily)
  - Establishes latent reservoirs
- 

**Slide 4: Pathogenesis and Natural History (4 min)****Disease Progression**

**Acute HIV Infection (2-4 weeks):**

- High viral replication
- Seroconversion illness (flu-like symptoms)
- Peak viremia (millions of copies/mL)
- Temporary CD4 decline

**Clinical Latency (8-10 years):**

- Low-level viral replication
- CD4 count gradually declines
- Asymptomatic period
- Viral set point established

**Symptomatic HIV:**

- CD4 <500 cells/ $\mu$ L
- Persistent generalized lymphadenopathy
- Weight loss, fatigue
- Opportunistic infections

**AIDS (CD4 <200 cells/ $\mu$ L):**

- Severe immunosuppression
- Life-threatening opportunistic infections
- Malignancies
- Death if untreated

## Global HIV Statistics

### UNAIDS 2023 Report:

- 39 million people living with HIV
- 1.3 million new infections annually
- 630,000 AIDS-related deaths
- 29.8 million on antiretroviral therapy

### Regional Distribution:

- Sub-Saharan Africa: 25.7 million (66% of global total)
- Asia-Pacific: 5.9 million
- Western & Central Europe/North America: 2.2 million
- Eastern Europe & Central Asia: 1.5 million

### Key Populations:

- Men who have sex with men (MSM)
- People who inject drugs (PWID)
- Sex workers and clients
- Transgender people

---

**Slide 6: Epidemiology - Indian Context (4 min)**¶

## HIV in India: Progress and Challenges

### Current Status (NACO 2023):

- Adult prevalence: 0.22%
- People living with HIV: 23.1 lakh
- New infections: ~58,000 annually
- AIDS-related deaths: ~15,000 annually

### Regional Distribution:

- **Highest prevalence:** Northeast states
- Nagaland: 1.5%
- Manipur: 1.4%
- Mizoram: 1.0%
- **Southern states:** Karnataka, Andhra Pradesh, Telangana
- **Urban vs Rural:** Higher in urban areas (0.29% vs 0.19%)

### Transmission Routes:

- Heterosexual: 85%
- MSM: 2%
- IDU: 7%
- Mother-to-child: 6%

### High-Risk Groups:

- MSM: 17% prevalence
  - FSWs: 2.8%
  - IDUs: 2.1%
  - Migrants and truckers
-

## Slide 7: Transmission Routes (3 min)¶

### How HIV Spreads

#### **Sexual Transmission (Primary Route):**

- Unprotected vaginal intercourse
- Unprotected anal intercourse
- Oral sex (less efficient)
- Multiple partners increase risk

#### **Blood-Borne Transmission:**

- Sharing contaminated needles/syringes
- Blood transfusions (rare in screened blood)
- Organ transplantation
- Mother-to-child transmission

#### **Risk Factors for Transmission:**

- High viral load (acute infection, untreated)
- Co-infections (STDs increase risk)
- Lack of circumcision (male)
- Traumatic sex, bleeding

**Key Fact:** HIV cannot be transmitted through:

- Casual contact, hugging, kissing
  - Sharing food, water, utensils
  - Mosquito bites, animals
  - Sweat, tears, saliva (except blood-tinged)
- 

## Slide 8: Clinical Features - Stages (4 min)[1](#)

### Clinical Presentation

#### Acute HIV Infection (Seroconversion):

- Fever, rash, fatigue (70-90%)
- Sore throat, lymphadenopathy
- Myalgia, arthralgia
- Headache, nausea
- Duration: 1-4 weeks

#### Asymptomatic Stage:

- No symptoms for 8-10 years
- Gradual CD4 decline
- Persistent lymphadenopathy possible

**Symptomatic HIV:**

- Unexplained weight loss (>10%)
- Chronic diarrhea
- Persistent fever
- Oral candidiasis
- Herpes zoster

**AIDS-Defining Conditions:**

- Pneumocystis pneumonia
  - Toxoplasma encephalitis
  - Cryptococcal meningitis
  - Tuberculosis (extrapulmonary)
  - Kaposi sarcoma
  - Non-Hodgkin lymphoma
- 

**Slide 9: Diagnosis - Testing Algorithm (4 min)****HIV Diagnostic Strategy****NACO Testing Algorithm (2023):**



**Step 1: Screening Tests**

- ELISA/ECLIA (Enzyme/Chemiluminescent Immunoassay)
- Rapid tests (fingerstick/oral fluid)
- Combination assays (Ab + p24 Ag)

**Step 2: Confirmatory Tests**

- Western blot (gold standard)
- Line immunoassay (cheaper alternative)
- HIV-1 RNA PCR (for infants <18 months)

**Step 3: Tie-breaker (if discordant)**

- Different assay or HIV-1 RNA test

**Window Periods:**

- Antibody tests: 4-12 weeks
- Combination tests: 2-4 weeks
- RNA PCR: 10-14 days

**Key Points:**

- Three-test algorithm prevents false positives
  - Infants tested differently (virological tests)
  - Pre-test and post-test counseling essential
-

## Slide 10: Laboratory Monitoring (3 min)¶

### Disease Monitoring Parameters

#### CD4 Count:

- Measures immune status
- Normal: 500-1500 cells/ $\mu$ L
- ART initiation: Any CD4 count
- OI prophylaxis: CD4 <200
- AIDS: CD4 <200

#### Viral Load:

- Measures viral replication
- Target: Undetectable (<50 copies/mL)
- Monitoring: Every 6 months on ART
- Virologic failure: >1000 copies/mL

#### Other Tests:

- Complete blood count
- Liver/renal function tests
- Lipid profile, glucose
- Drug resistance testing (when indicated)

**WHO Clinical Staging:**

- Stage 1: CD4 >500, no symptoms
  - Stage 2: CD4 350-499, mild symptoms
  - Stage 3: CD4 200-349, advanced symptoms
  - Stage 4: CD4 <200 or AIDS-defining conditions
- 

**Slide 11: Antiretroviral Therapy (ART) (5 min)****Treatment Principles****NACO ART Guidelines 2023:**

- **Test and Treat:** ART for all PLHIV regardless of CD4
- **Preferred First-Line:** TLD (Tenofovir + Lamivudine + Dolutegravir)
- **Alternative First-Line:** TLE (Tenofovir + Lamivudine + Efavirenz)
- **Second-Line:** Protease inhibitor-based regimens

**ART Regimens:**

- **TLD:** Tenofovir 300mg + Lamivudine 300mg + Dolutegravir 50mg (single pill)
- **TLE:** Tenofovir 300mg + Lamivudine 300mg + Efavirenz 600mg (single pill)
- **AZT-based:** Zidovudine + Lamivudine + Efavirenz

**Key Principles:**

- Lifelong treatment
- High adherence (>95%) essential
- Fixed-dose combinations simplify therapy
- Regular monitoring required

**ART Coverage in India:**

- 80% of PLHIV on treatment
  - 90% viral suppression among adherent patients
  - Free ART at 1,200+ centers nationwide
- 

**Slide 12: ART Management and Side Effects (3 min)****Treatment Monitoring and Challenges****Adherence Strategies:**

- Fixed-dose combinations
- Once-daily regimens
- Pill organizers, reminders
- Linkage to daily routines

**Common Side Effects:**

- **Efavirenz:** CNS effects (dizziness, nightmares)
- **Tenofovir:** Renal toxicity, Fanconi syndrome
- **Zidovudine:** Anemia, neutropenia
- **Dolutegravir:** Minimal side effects

**Drug Interactions:**

- Rifampicin reduces ART levels
- Hormonal contraceptives
- Traditional medicines
- Recreational drugs

**Treatment Failure:**

- Virologic failure: Viral load >1000 copies/mL
- Immunologic failure: CD4 decline
- Clinical failure: New opportunistic infections

---

**Slide 13: Opportunistic Infections (3 min)****OI Prevention and Management**

**Common OIs in India:**

- **Tuberculosis:** Most common OI (10% of HIV patients)
- **Pneumocystis pneumonia:** CD4 <200
- **Toxoplasma encephalitis:** CD4 <100
- **Cryptococcal meningitis:** CD4 <100
- **Candidiasis:** Oral/esophageal

**Prophylaxis Guidelines:**

- **Cotrimoxazole:** CD4 <200 (prevents PCP, Toxoplasma, bacterial infections)
- **INH:** For latent TB (300mg daily × 6-9 months)
- **Azithromycin:** For MAC prevention (CD4 <50)

**Key Points:**

- Early ART prevents most OIs
  - Prophylaxis reduces morbidity/mortality
  - TB-HIV co-infection common in India
- 

**Slide 14: Prevention Strategies - Primary (3 min)****HIV Prevention Approaches**

**Treatment as Prevention (TasP):**

- U=U: Undetectable = Untransmittable
- Viral suppression prevents sexual transmission
- 96% reduction in transmission risk

**Pre-Exposure Prophylaxis (PrEP):**

- Daily TDF/FTC for high-risk individuals
- 99% effective when adherent
- Available through NACO since 2017

**Post-Exposure Prophylaxis (PEP):**

- 28-day ART regimen within 72 hours
- For occupational/non-occupational exposure
- Emergency prevention strategy

**Biomedical Prevention:**

- Male circumcision (60% risk reduction)
- Vaccines (in development)
- Microbicides (research stage)

## Prevention of Transmission

### ABC Approach:

- **Abstain** from sex
- **Be faithful** to uninfected partner
- **Condoms** consistently and correctly

### NACO Prevention Programs:

- **Targeted Interventions:** For high-risk groups (MSM, FSWs, IDUs)
- **Condom Promotion:** 800 million condoms distributed annually
- **Blood Safety:** 100% voluntary blood donation
- **ICTCs:** 1,381 centers for testing and counseling

### Prevention of Mother-to-Child Transmission (PMTCT):

- Antenatal HIV testing (95% coverage)
- ART for pregnant women
- Safe delivery practices
- Infant prophylaxis and testing



## **Comprehensive Care and Support**

### **ART Centers and Link ART Centers:**

- Decentralized ART delivery
- 1,200+ centers across India
- Free lifelong treatment

### **Community Care Centers (CCCs):**

- Nutritional support
- Psychosocial counseling
- Adherence support

### **Support Networks:**

- Positive People Networks
- PLHIV groups
- Peer educators
- Mental health services

### **Surveillance and Monitoring:**

- HIV Sentinel Surveillance
  - Case reporting
  - Program evaluation
-

## Slide 17: Challenges in India (2 min)

### Barriers to HIV Control

#### Social and Cultural:

- Stigma and discrimination
- Gender inequalities
- Marginalized communities (MSM, transgender)
- Limited sexuality education

#### Healthcare System:

- Rural-urban disparities
- Human resource shortages
- Drug stockouts
- Weak referral systems

#### Behavioral Factors:

- Migration and mobility
- Concurrent sexual partnerships
- Alcohol and drug use
- Non-adherence to treatment

**Biological Factors:**

- Co-infections (TB, viral hepatitis)
  - Drug resistance emergence
  - Late presentation for care
- 

**Slide 18: Success Story and Future (3 min)****India's HIV Response****Achievements (2007-2023):**

- 66% reduction in new infections
- 80% ART coverage
- 90% viral suppression rates
- 15,000 AIDS deaths annually (down from 100,000+)

**NACP Phases:**

- Phase I-IV: Building infrastructure
- Phase V (2017-2021): Test and treat
- Phase VI (2021-2026): Ending AIDS by 2030

**Future Directions:**

- 95-95-95 targets by 2030
- Integration with general healthcare
- Digital solutions for follow-up
- Research in vaccines and cure

**Global Goals:**

- End AIDS epidemic by 2030
  - <200,000 new infections annually
  - Zero discrimination
- 

**Slide 19: Key Takeaways (1 min)****Summary**

1. HIV is a manageable chronic condition with ART
2. Early diagnosis and treatment prevent complications

3. U=U: Undetectable viral load prevents transmission

4. Prevention through TasP, PrEP, PEP, and condoms

5. India's response shows what commitment can achieve

6. Stigma reduction and community engagement essential

---

**Slide 20: Q&A Session (10-15 min)**

**Questions and Discussion**

**Thank you for your attention!**

**References:**

- NACO ART Guidelines 2023
- WHO HIV Guidelines 2021
- UNAIDS Global AIDS Update 2023

---

**Timing Breakdown:**

- Introduction (3 min)
- Virology & Pathogenesis (7 min)
- Epidemiology (6 min)

- Transmission & Clinical Features (7 min)

- Diagnosis & Monitoring (7 min)

- ART & Management (8 min)

- Prevention & Control (8 min)

- Challenges & Future (5 min)

- Summary & Q&A (9 min)

**Total: 60 minutes**

## Visual Assets Guide for One-Hour Class PPTX Presentations

---

## Visual Assets Guide for One-Hour Class PPTX Presentations

---

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

### STD One-Hour Class Presentation Visual Assets

#### Slide 1: Title Slide

- **Background:** Medical theme with subtle stethoscope or medical cross

- **Logo:** SIMSRH logo in top-right corner



- **Author Photo:** Small professional photo of Dr. Siddalingaiah H S

## Slide 2: What are STDs?

- **Icons:** Different colored icons for each STD type (bacterial, viral, parasitic, fungal)

- **Infographic:** Circular diagram showing STD classification

- **Background:** Clean medical background

## Slide 3: Epidemiology - Global Burden

- **World Map:** Color-coded map showing STD prevalence by region

- **Statistics Icons:** Number icons for each statistic

- **Bar Charts:** Visual representation of case numbers

#### Slide 4: Epidemiology - Indian Context

- **India Map:** State-wise STD/HIV prevalence heat map

- **Pie Charts:** Distribution by transmission routes

- **Timeline:** Rising trend for syphilis

## Slide 5: Transmission Routes

- **Flowchart:** Visual representation of transmission routes
- **Icons:** Sexual contact, blood transfusion, mother-to-child icons
- **Warning Symbols:** Risk factor indicators

## Slide 6: Bacterial STDs - Gonorrhea

- **Microscope Image:** Gram stain showing diplococci

- **Anatomy Diagram:** Male urethra with infection indicators

- **Symptom Icons:** Discharge, pain, frequency icons

## **Slide 7: Bacterial STDs - Syphilis**

- **Timeline Graphic:** Visual stages of syphilis progression

- **Clinical Photos:** Chancre, rash, gummas (with patient consent)

- **Spiral Animation:** Treponema pallidum visualization

## Slide 8: Bacterial STDs - Chlamydia

- **Microscope Image:** Chlamydia trachomatis visualization
- **Anatomy Diagrams:** Female reproductive tract showing infection sites
- **Warning Icon:** Silent infection symbol

## Slide 9: Viral STDs Overview

- **Virus Icons:** Different colored viruses for HIV, HSV, HPV, HBV

- **Comparison Table:** Visual table comparing viral STDs

- **Lifecycle Diagrams:** Basic viral replication cycles

## **Slide 10: Diagnosis - Clinical Approach**

- **Flowchart:** Diagnostic algorithm

- **Icons:** 5 Ps (Partners, Practices, Protection, Past STDs, Pregnancy)

- **Specimen Collection:** Visual guide for swabs

## **Slide 11: Diagnosis - Laboratory Tests**

- **Lab Equipment Icons:** Microscope, culture plates, PCR machine

- **Test Result Examples:** Sample lab reports

- **Timeline:** Window periods visualization

## **Slide 12: Treatment - General Principles**

- **Guidelines Book:** NACO guidelines visual

- **Treatment Flow:** Syndromic management flowchart

- **Medication Icons:** Pills, injections, partner treatment

### **Slide 13: Treatment - Specific Regimens**

- **Drug Icons:** Visual representations of medications

- **Dosage Charts:** Color-coded treatment regimens



- **Calendar:** Follow-up schedule

#### **Slide 14: Prevention and Control - Primary**

- **ABC Icons:** Abstain, Be faithful, Condoms

- **Vaccine Syringes:** HPV, Hepatitis B vaccine icons

- **Prevention Pyramid:** Hierarchical prevention strategies

#### **Slide 15: Prevention and Control - Secondary**

- **Screening Icons:** Testing center, antenatal care

- **NACO Logo:** Program branding

- **Statistics Dashboard:** Program achievements

## **Slide 16: Prevention and Control - Tertiary**

- **Healthcare Icons:** ART centers, support groups

- **Network Diagram:** Referral system visualization

- **Support Icons:** Counseling, nutrition, rehabilitation

## Slide 17: Challenges in India

- **Barrier Icons:** Stigma, discrimination, access issues

- **India Map:** Rural-urban divide visualization

- **Challenge Cloud:** Word cloud of key challenges

## Slide 18: Future Directions

- **Roadmap:** Future goals timeline

- **Target Icons:** 2030 elimination targets

- **Innovation Icons:** Digital health, research

## **Slide 19: Key Takeaways**

- **Checklist Icons:** Numbered key points

- **Summary Infographic:** Visual summary of main concepts

- **Call-to-Action:** Engagement icons

## Slide 20: Q&A Session

- **Question Mark Icons:** Interactive Q&A symbols

- **Contact Information:** Author details with icons

- **Resource Links:** Web links and references

## Slide 1: Title Slide¶

- **Background:** AIDS awareness ribbon theme
- **Logo:** SIMSRH logo and NACO logo
- **Author Photo:** Professional photo of Dr. Siddalingaiah H S

## Slide 2: What is HIV/AIDS?¶

- **HIV Virus Animation:** 3D virus structure

- **CD4 Cell:** T-cell with HIV attachment

- **Statistics Icons:** Global and Indian numbers

### Slide 3: HIV Virology1

- **Virus Structure Diagram:** Labeled HIV components

- **Replication Cycle:** Step-by-step animation

- **Enzyme Icons:** Reverse transcriptase, protease, integrase

#### Slide 4: Pathogenesis and Natural History¶

- **Progression Timeline:** Visual disease stages
- **CD4 Decline Graph:** Immune cell count over time
- **Viral Load Curve:** Set point establishment

#### Slide 5: Epidemiology - Global Burden¶

- **World Map:** HIV prevalence by country



- **UNAIDS Logo:** Report branding

- **Regional Charts:** Sub-Saharan Africa focus

## **Slide 6: Epidemiology - Indian Context**

- **India Map:** State-wise HIV prevalence

- **Transmission Pie Chart:** Route distribution

- **High-Risk Group Icons:** MSM, FSW, IDU representations

## Slide 7: Transmission Routes¶

- **Transmission Icons:** Sexual, blood-borne, MTCT
- **Risk Factor Symbols:** Multiple partners, sharing needles
- **Prevention Barriers:** Broken condoms, unsafe injections

## Slide 8: Clinical Features - Stages¶

- **Symptom Timeline:** Acute to AIDS progression

- **Clinical Photos:** Rash, oral candidiasis, weight loss

- **CD4 Thresholds:** Visual indicators for different stages

### Slide 9: Diagnosis - Testing Algorithm

- **Testing Cascade:** Step-by-step algorithm

- **Test Kit Photos:** Rapid tests, ELISA machines

- **Window Period Timeline:** Different test timelines

## Slide 10: Laboratory Monitoring

- **Blood Test Icons:** CD4 count, viral load
- **Monitoring Schedule:** Calendar with test dates
- **Result Charts:** Normal vs abnormal ranges

## Slide 11: Antiretroviral Therapy (ART)

- **ART Regimen Icons:** TLD, TLE pill visuals

- **NACO Guidelines:** Treatment algorithm

- **Adherence Calendar:** Daily medication tracking

## **Slide 12: ART Management and Side Effects**

- **Side Effect Icons:** Dizziness, nausea, fatigue

- **Adherence Tools:** Pill organizers, phone reminders

- **Drug Interaction Warning:** Medication conflict symbols

### Slide 13: Opportunistic Infections

- **OI Images:** TB, PCP, toxoplasmosis

- **CD4 Thresholds:** OI risk levels

- **Prophylaxis Icons:** Cotrimoxazole, INH

### Slide 14: Prevention Strategies - Primary

- **U=U Symbol:** Undetectable = Untransmittable

- **PrEP Pills:** Daily medication icons

- **PEP Timeline:** 72-hour window visualization

## **Slide 15: Prevention Strategies - Secondary**

- **ABC Approach:** Abstain, Be faithful, Condoms

- **Condom Icons:** Male/female condom visuals

- **PMTCT Flowchart:** Mother-to-child prevention

## Slide 16: Prevention Strategies - Tertiary

- **ART Center Icons:** Treatment facilities
- **Support Group:** People holding hands
- **Surveillance Dashboard:** Monitoring systems

## Slide 17: Challenges in India

- **Stigma Cloud:** Word cloud of stigma terms



- **Access Barriers:** Rural healthcare challenges

- **Migration Routes:** Interstate movement visualization

## Slide 18: Success Story and Future

- **Achievement Icons:** Reduced infections, increased coverage

- **2030 Targets:** 95-95-95 visualization

- **Hope Symbol:** Light at end of tunnel

## Slide 19: Key Takeaways¶

- **Key Message Icons:** U=U, early treatment, prevention

- **India Success Story:** Achievement highlights

- **Call to Action:** Community engagement

## Slide 20: Q&A Session¶

- **Contact Card:** Author information with icons

- **Resource Links:** NACO, WHO, UNAIDS logos

- **Feedback Form:** Interactive elements

---

## Recommended Visual Style Guidelines

### Color Scheme

- **Primary:** Medical blue (#007BFF), white, and professional grays

- **Accent:** Red for HIV/AIDS awareness (#FF0000)

- **Secondary:** Green for prevention (#28A745), orange for challenges (#FD7E14)

## Typography¶

- **Titles:** Bold, 32-44pt, professional sans-serif

- **Body Text:** 18-24pt, clear and readable

- **Captions:** 14-16pt, italicized for emphasis

## Image Specifications¶

- **Resolution:** High-quality images (300 DPI minimum)

- **Format:** PNG for icons, JPG for photos

- **Size:** Optimized for PowerPoint (max 2MB per image)

- **Attribution:** Include source credits where required

## **Animation and Transitions**

- **Subtle Transitions:** Fade in/out for professional look

- **Animations:** Appear animations for bullet points

- **Timing:** 0.5-1 second for smooth flow

## **Accessibility Considerations**

- **Alt Text:** Descriptive text for all images

- **Color Contrast:** High contrast ratios for readability

- **Font Alternatives:** Sans-serif fonts for screen readability

- **Audio Descriptions:** For any video content
- 

## Implementation Instructions

1. **Open PPTX files** in PowerPoint
2. **Insert images** using "Insert > Pictures" menu
3. **Position visuals** strategically to enhance content
4. **Add alt text** via "Right-click > Edit Alt Text"

5. **Test presentation** on different screen sizes

6. **Save versions** with and without animations for compatibility

---

## Sources for Visual Assets<sup>11</sup>

### Free Medical Images<sup>11</sup>

- **CDC Public Health Image Library:** [cdc.gov/pictures](https://cdc.gov/pictures)

- **WHO Image Library:** [who.int/images](https://who.int/images)



- **NACO Resources:** [naco.gov.in/resources](http://naco.gov.in/resources)

- **Unsplash Medical:** [unsplash.com](https://unsplash.com) (search medical)

- **Pexels Medical:** [pexels.com](https://pexels.com) (search healthcare)

## Icon Libraries

- **Flaticon Medical:** [flaticon.com](https://flaticon.com) (medical icons)

- **Noun Project:** [thenounproject.com](https://thenounproject.com) (healthcare symbols)

- **IconFinder:** [iconfinder.com](https://iconfinder.com) (professional icons)

## Diagram Tools

- **Canva:** [canva.com](https://canva.com) (medical diagrams)

- **BioRender:** [biorender.com](https://biorender.com) (scientific illustrations)

- **Draw.io:** [draw.io](https://draw.io) (flowcharts and diagrams)

---

**Note:** All images should be used with proper attribution and in accordance with copyright guidelines. Medical images should only show non-identifiable content or have proper patient consent.

## API Documentation

---

## API Documentation

---

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

This document describes the internal API and functions available in the STD & HIV Educational Dashboard.

### ■ Application Structure

#### Main Application (`app.py`)

#### Core Functions

```
load_file_content(file_path: str) -> str¶
```

Loads content from a markdown or text file.

**Parameters:**

- `file_path` (str): Path to the file to load

**Returns:**

- `str`: File content as string, or error message if loading fails

**Example:**

```
content = load_file_content("STD_One_Hour_Class_Script.md")
st.markdown(content)
```

```
run_quiz_script(script_name: str) -> dict¶
```

Runs a quiz script and returns results (placeholder for future integration).

**Parameters:**

- `script_name` (str): Name of the quiz script to run

**Returns:**

- `dict`: Dictionary containing quiz results

**Page Functions¶**

`display_home_page()`¶

Renders the main dashboard home page with overview and statistics.

`display_std_module()`¶

Displays the STD education module with tabs for different content types.

```
display_hiv_module()
```

Displays the HIV education module with tabs for different content types.

```
display_quiz_section()
```

Shows the interactive quiz interface with multiple quiz modes.

```
display_quiz_interface()
```

Handles the active quiz session and question display.

```
display_visual_assets()
```

Shows the gallery of visual assets and charts.

```
display_documentation()
```

Displays documentation and reference materials.

## ■ Quiz System

```
STD Quiz (STD_Class_MCQ_Quiz.py)
```

```
Class: STDQuiz
```

```
__init__()
```

Initializes the quiz with questions and scoring.

```
load_questions() -> List[Dict]
```

Loads all STD-related MCQ questions.

**Returns:**

- `List[Dict]`: List of question dictionaries with keys: 'question', 'options', 'answer', 'explanation'

```
shuffle_questions() -> None
```

Randomizes the order of questions.



```
ask_question(question_data: Dict, question_number: int) -> bool
```

Presents a single question and gets user response.

**Parameters:**

- `question_data` (Dict): Question dictionary
- `question_number` (int): Current question number

**Returns:**

- `bool`: True if answered within time limit

```
run_quiz(num_questions: int = None) -> None
```

Runs the complete quiz session.

**Parameters:**

- `num_questions` (int, optional): Number of questions to ask

```
show_results(total_asked: int) -> None
```

Displays final quiz results and performance feedback.

**Parameters:**

- `total_asked` (int): Total number of questions asked

```
HIV Quiz (HIV_Class_MCQ_Quiz.py)
```

Similar structure to STD Quiz but with HIV-specific questions.

## ■ Visual Assets Generation (`create_visual_assets.py`)

### Chart Generation Functions

`create_std_classification_diagram()`

Creates STD classification flowchart using matplotlib.

`create_global_std_epidemiology_chart()`

Generates global STD burden bar chart.

`create_indian_hiv_transmission_pie()`

Creates pie chart showing HIV transmission routes in India.

```
create_hiv_progression_timeline()
```

Generates HIV disease progression timeline visualization.

```
create_art_regimen_comparison()
```

Creates comparison chart of ART regimens.

```
create_prevention_pyramid()
```

Generates HIV prevention pyramid diagram.

```
create_u_equals_u_symbol()
```

Creates U=U (Undetectable = Untransmittable) symbol.

```
create_abc_icons()
```

Generates ABC approach prevention icons.

```
create_cd4_monitoring_chart()
```

Creates CD4 count monitoring chart.

■ **Presentation Generation**


**STD Presentation** (`create_std_pptx_with_images.py`)

```
create_std_presentation_with_images()
```

Generates comprehensive STD PowerPoint presentation with embedded images.

**Content Sections:**

1. Title Slide
2. STD Definition & Classification
3. Epidemiology (Global & Indian)
4. Transmission Routes
5. Bacterial STDs (Gonorrhea, Syphilis, Chlamydia)
6. Viral STDs Overview
7. Diagnosis & Laboratory Tests
8. Treatment Guidelines
9. Prevention Strategies
10. Challenges & Future Directions

**HIV Presentation** (`create_hiv_pptx_with_images.py`)

```
create_hiv_presentation_with_images()
```

Generates comprehensive HIV PowerPoint presentation with embedded images.

#### **Content Sections:**

1. Title Slide
2. HIV Virology & Pathogenesis
3. Epidemiology & Transmission
4. Clinical Stages & CD4 Monitoring
5. ART Guidelines & Regimens
6. Prevention Strategies (PrEP, PEP, U=U)
7. National Programs & Guidelines
8. Future Directions

#### **■ Configuration**

#### **Streamlit Configuration**

```
st.set_page_config(  
    page_title="STD & HIV Educational Dashboard",  
    page_icon="■",  
    layout="wide",  
    initial_sidebar_state="expanded"  
)
```

#### **Custom CSS Classes**

- `.main-header`: Main page header styling
- `.module-card`: Content module cards
- `.content-section`: Content display sections
- `.quiz-result`: Quiz result feedback styling
- `.sidebar-header`: Sidebar header styling

## ■ File Structure

■■■ app.py	# Main Streamlit application
■■■ create_*.py	# Content generation scripts
■■■ *_Quiz.py	# Interactive quiz scripts
■■■ *.pptx	# Generated presentations



```
■■■ *.png                # Visual assets
■■■ *.md                 # Documentation files
■■■ requirements.txt     # Python dependencies
■■■ Dockerfile           # Docker configuration
■■■ docker-compose.yml   # Docker Compose setup
■■■ .github/workflows/ci.yml # CI/CD pipeline
■■■ docs/                # Documentation
    ■■■ deployment.md    # Deployment guide
    ■■■ api.md           # This API documentation
```

## ■ Dependencies

### Core Dependencies

- `streamlit`: Web application framework
- `python-pptx`: PowerPoint presentation creation
- `matplotlib`: Chart and visualization creation

- `seaborn`: Statistical visualization enhancements

- `numpy`: Numerical computing

## Development Dependencies<sup>1</sup>

- `pytest`: Testing framework

- `flake8`: Code linting

- `black`: Code formatting

- `isort`: Import sorting

- `mypy`: Type checking

## ■ Deployment API

### Docker Configuration

```
# docker-compose.yml services
std-hiv-app:
  build: .
  ports:
    - "8501:8501"
  environment:
    - STREAMLIT_SERVER_HEADLESS=true
```

### Environment Variables

- `STREAMLIT_SERVER_PORT`: Server port (default: 8501)
- `STREAMLIT_SERVER_ADDRESS`: Server address (default: 0.0.0.0)
- `STREAMLIT_SERVER_HEADLESS`: Headless mode for deployment

## ■ Data Models¶

### Question Data Structure¶

```
{  
  "question": "Question text",  
  "options": ["A) Option 1", "B) Option 2", "C) Option 3", "D) Option 4"],  
  "answer": "A",  
  "explanation": "Explanation text"  
}
```

## Quiz Results Structure

```
{
  "score": 85,
  "total": 100,
  "percentage": 85.0,
  "feedback": "Very Good! Well done!"
}
```

## ■ Integration Points

## Future Enhancements

- Database integration for user progress tracking
- API endpoints for external integrations

- Authentication system for user management

- Analytics and usage tracking

- Multi-language support

## **External APIs**

- Potential integration with medical databases

- Quiz result export functionality

- Content management system integration

## Deployment Guide

---

## Deployment Guide

---

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

This guide covers various deployment options for the STD & HIV Educational Dashboard.

## ■ Quick Start

## Local Development

```
# Clone the repository
git clone <repository-url>
cd std-hiv-educational-content

# Install dependencies
pip install -r requirements.txt

# Run the application
streamlit run app.py
```

## Docker Deployment

```
# Build and run with Docker
docker build -t std-hiv-app .
docker run -p 8501:8501 std-hiv-app

# Or use docker-compose
docker-compose up -d
```

## ■ Cloud Deployment Options

### 1. Streamlit Cloud (Recommended)



1. Fork this repository on GitHub

2. Go to [share.streamlit.io](https://share.streamlit.io)

3. Connect your GitHub account

4. Select the repository and main file (`app.py`)

5. Deploy!

## 2. Heroku

```
# Create requirements.txt with gunicorn
echo "gunicorn==20.1.0" >> requirements.txt

# Create Procfile
echo "web: streamlit run app.py --server.port=$PORT --server.headless=true" > Procfile
```

```
# Deploy
git push heroku main
```

### 3. AWS EC2

```
# On EC2 instance
sudo apt update
sudo apt install python3-pip nginx

# Install dependencies
pip3 install -r requirements.txt

# Configure nginx (see nginx.conf)
sudo cp nginx.conf /etc/nginx/sites-available/std-hiv-app
sudo ln -s /etc/nginx/sites-available/std-hiv-app /etc/nginx/sites-enabled/

# Start services
sudo systemctl start nginx
streamlit run app.py --server.port=8501 --server.address=0.0.0.0
```

### 4. Google Cloud Run

```
# Build and deploy
gcloud run deploy std-hiv-app \
  --source . \
  --platform managed \
  --region us-central1 \
  --allow-unauthenticated
```

### 5. Azure App Service

```
# Create web app
az webapp up --name std-hiv-app --resource-group myResourceGroup --runtime "PYTHON:3.10"

# Configure deployment
az webapp config set --name std-hiv-app --resource-group myResourceGroup \
  --startup-file "streamlit run app.py --server.port=8000 --server.address=0.0.0.0"
```

## ■ Configuration¶

### Environment Variables¶

```
# Streamlit configuration
STREAMLIT_SERVER_PORT=8501
STREAMLIT_SERVER_ADDRESS=0.0.0.0
STREAMLIT_SERVER_HEADLESS=true
STREAMLIT_BROWSER_GATHER_USAGE_STATS=false

# Custom configuration
APP_TITLE="STD & HIV Educational Dashboard"
MAX_UPLOAD_SIZE=50 # MB
```

### Custom Domain¶

1. Update `CNAME` file with your domain

2. Configure DNS to point to deployment platform

3. Update CORS settings if needed

## ■ Monitoring & Analytics

### Basic Monitoring

```
# Add to app.py for basic analytics
import streamlit_analytics
streamlit_analytics.start_tracking()
```

### Health Checks

- Application health: `GET /health`

- Docker health: Built-in health checks

- Uptime monitoring: Use services like UptimeRobot

## ■ Security Considerations

### HTTPS

- Always use HTTPS in production

- Configure SSL certificates

- Use security headers

## Access Control¶

```
# Basic authentication
import streamlit_authenticator as stauth

# Configure authentication
config = {...} # User credentials
authenticator = stauth.Authenticate(config, ...)
```

## Data Protection¶

- No sensitive medical data stored

- Educational content only

- Regular security updates

## ■ Performance Optimization¶

### Streamlit Optimization¶

```
# Add to app.py
st.set_page_config(
    page_title="STD & HIV Education",
    page_icon="■",
    layout="wide",
    initial_sidebar_state="expanded",
)

# Cache expensive operations
@st.cache_data
def load_content():
    return expensive_operation()
```

### CDN for Static Assets¶

- Host images on CDN
- Use web-optimized formats
- Implement lazy loading

## ■ Troubleshooting

### Common Issues

**Port already in use:**

```
# Find process using port
lsof -i :8501
# Kill process
kill -9 <PID>
```



### Memory issues:

```
# Monitor memory usage
docker stats
# Increase container memory
docker run --memory=2g std-hiv-app
```

### Import errors:

```
# Reinstall dependencies
pip install --force-reinstall -r requirements.txt
```

## ■ Scaling¶

### Horizontal Scaling¶

- Use load balancer

- Multiple container instances

- Session state management

## Database Integration¶

For user progress tracking:

```
# Add database support
import sqlite3

def init_db():
    conn = sqlite3.connect('user_progress.db')
    # Create tables for quiz results, user sessions, etc.
```

## ■ CI/CD Integration¶

The project includes GitHub Actions for automated:

- Testing (multiple Python versions)
- Linting (flake8, black, isort)
- Type checking (mypy)
- Docker building
- Deployment to multiple platforms

See `.github/workflows/ci.yml` for details.

## Development Guide

---

## Development Guide

---

**Author:** Dr. Siddalingaiah H S, Professor, Community Medicine, SIMSRH, Tumkur

**Email:** hssling@yahoo.com | **Phone:** +91-8941087719

**Date:** November 2024

**License:** MIT License

This guide provides instructions for developers working on the STD & HIV Educational Dashboard.

## ■ Development Setup

### Prerequisites

- Python 3.8 or higher
- Git
- Docker (optional, for containerized development)

### Local Development Environment

**1. Clone the repository:**

```
git clone <repository-url>  
cd std-hiv-educational-content
```

**2. Create virtual environment:**

```
python -m venv venv  
source venv/bin/activate # On Windows: venv\Scripts\activate
```

**3. Install dependencies:**

```
pip install -r requirements.txt
```

**4. Install development dependencies:**

```
pip install pytest pytest-cov flake8 black isort mypy pre-commit
```

5. **Set up pre-commit hooks:**

```
pre-commit install
```

6. **Run the application:**

```
streamlit run app.py
```

## ■ **Testing**

### **Running Tests**

```
# Run all tests
pytest

# Run with coverage
pytest --cov=. --cov-report=html

# Run specific test file
pytest tests/test_app.py
```

## Code Quality Checks¶

```
# Linting
flake8 .

# Code formatting
black --check --diff .
isort --check-only --diff .

# Type checking
mypy app.py --ignore-missing-imports
```

## Writing Tests¶

```
# Example test structure
import pytest
from app import load_file_content

def test_load_file_content():
    """Test file content loading functionality."""
    content = load_file_content("README.md")
    assert isinstance(content, str)
    assert len(content) > 0

def test_quiz_functionality():
    """Test quiz system integration."""
    # Add quiz tests here
    pass
```

## ■ Code Style Guidelines¶

### Python Style¶

- Follow PEP 8 conventions
- Use type hints for function parameters and return values
- Maximum line length: 88 characters (Black default)
- Use docstrings for all functions and classes



## Import Organization

```
# Standard library imports
import os
import sys
from pathlib import Path

# Third-party imports
import streamlit as st
import matplotlib.pyplot as plt

# Local imports
from .utils import helper_function
```

## Naming Conventions

- Functions: `snake_case`

- Classes: `PascalCase`

- Constants: `UPPER_CASE`

- Files: `snake_case.py`

## ■ Project Structure

```
■■■ app.py # Main application
■■■ create_*.py # Content generation scripts
■■■ *_Quiz.py # Quiz implementations
■■■ tests/ # Test files
■   ■■■ __init__.py
■   ■■■ test_app.py
■   ■■■ test_quiz.py
■■■ docs/ # Documentation
■   ■■■ api.md
■   ■■■ deployment.md
■   ■■■ development.md
■■■ .github/ # GitHub configuration
■   ■■■ workflows/
■       ■■■ ci.yml
■■■ requirements.txt # Production dependencies
■■■ requirements-dev.txt # Development dependencies
■■■ Dockerfile # Container configuration
■■■ docker-compose.yml # Local development setup
■■■ .pre-commit-config.yaml # Pre-commit hooks
■■■ pyproject.toml # Python project configuration
```

## ■ Configuration Files

## pyproject.toml

```
[tool.black]
line-length = 88
target-version = ['py38', 'py39', 'py310', 'py311']

[tool.isort]
profile = "black"
multi_line_output = 3

[tool.mypy]
python_version = "3.8"
warn_return_any = true
warn_unused_configs = true
disallow_untyped_defs = true
```

## .pre-commit-config.yaml

```
repos:
- repo: https://github.com/pre-commit/pre-commit-hooks
  rev: v4.4.0
  hooks:
    - id: trailing-whitespace
    - id: end-of-file-fixer
    - id: check-yaml
    - id: check-added-large-files

- repo: https://github.com/psf/black
  rev: 23.7.0
  hooks:
    - id: black

- repo: https://github.com/pycqa/isort
  rev: 5.12.0
  hooks:
    - id: isort

- repo: https://github.com/pycqa/flake8
  rev: 6.0.0
```

```
hooks:
  - id: flake8
```

## ■ Deployment

### Local Testing

```
# Test Docker build
docker build -t std-hiv-app .

# Run container locally
docker run -p 8501:8501 std-hiv-app

# Test with docker-compose
docker-compose up
```

### Production Deployment

See `docs/deployment.md` for detailed deployment instructions.

## ■ Content Development

## Adding New Educational Content

### 1. Create content script:

```
# create_new_module.py
from pptx import Presentation

def create_new_module_presentation():
    prs = Presentation()
    # Add slides...
    prs.save('New_Module_Presentation.pptx')
```

### 2. Update Streamlit app:

```
# Add to app.py
def display_new_module():
    st.markdown("## New Educational Module")
    # Add content display logic
```

### 3. Add to navigation:

```
# Update sidebar navigation
page = st.radio(
    "Navigate to:",
    ["■ Home", "■ STD Module", "■ HIV Module", "■ New Module", ...]
)
```

## Adding Quiz Questions¶

### 1. Update quiz script:

```
# Add to STD_Class_MCQ_Quiz.py or HIV_Class_MCQ_Quiz.py
{
    "question": "New question text?",
    "options": ["A) Option 1", "B) Option 2", "C) Option 3", "D) Option 4"],
    "answer": "A",
    "explanation": "Explanation for the correct answer."
}
```

### 2. Test quiz integration:

```
python -c "from STD_Class_MCQ_Quiz import STDQuiz; quiz = STDQuiz(); print(f'Total questions: {len(quiz)}')"
```

## ■ Visual Assets

### Creating New Charts

```
# Add to create_visual_assets.py
def create_new_chart():
    fig, ax = plt.subplots(figsize=(10, 6))
    # Create visualization
    plt.savefig('new_chart.png', dpi=300, bbox_inches='tight')
    plt.close()
```

### Design Guidelines

- Use consistent color scheme
- Ensure readability
- Include proper labels and legends

- Optimize for web display (300 DPI)

## ■ Security Considerations¶

### Code Security¶

- Validate all user inputs
- Use parameterized queries for database operations
- Implement proper error handling



- Avoid exposing sensitive information

## **Content Security**

- Ensure medical accuracy of content

- Cite reliable sources

- Regular content updates based on latest guidelines

- Privacy protection for any user data

## ■ Performance Optimization

### Streamlit Best Practices

```
# Cache expensive operations
@st.cache_data
def load_large_content():
    return expensive_operation()

# Use session state for user data
if 'user_data' not in st.session_state:
    st.session_state.user_data = {}

# Optimize images
st.image('chart.png', use_column_width=True)
```

### Memory Management

- Clear large objects after use
- Use generators for large datasets

- Implement pagination for long content

## ■ Contributing

### Pull Request Process

1. Fork the repository
2. Create a feature branch (`git checkout -b feature/amazing-feature`)
3. Make changes and add tests

4. Ensure all tests pass and code quality checks pass

5. Update documentation if needed

6. Commit changes (`git commit -m 'Add amazing feature'`)

7. Push to branch (`git push origin feature/amazing-feature`)

8. Open a Pull Request

### Commit Message Guidelines

```
type(scope): description
```

Types:

- feat: New feature
- fix: Bug fix

- docs: Documentation changes
- style: Code style changes
- refactor: Code refactoring
- test: Test additions
- chore: Maintenance tasks

## ■ Debugging🔗

### Common Issues🔗

- **Import errors:** Check virtual environment activation
- **Port conflicts:** Change Streamlit port in configuration
- **Memory issues:** Monitor with `docker stats` or system tools
- **File not found:** Check file paths and working directory

## Debug Mode¶

```
# Run with debug logging
streamlit run app.py --logger.level=debug

# Enable Streamlit debug menu
# Add to app.py
st.sidebar.checkbox("Debug mode", key="debug")
if st.session_state.debug:
    st.write(st.session_state)
```

## ■ Resources¶

### Learning Resources¶

- [Streamlit Documentation](#)

- [Python Best Practices](#)

- Medical Education Guidelines

## Tools and Libraries¶

- **Testing:** pytest, coverage.py

- **Code Quality:** flake8, black, isort, mypy

- **CI/CD:** GitHub Actions

- **Containerization:** Docker, docker-compose

## STD & HIV Educational Content Project

---

## STD & HIV Educational Content Project

---

An interactive educational platform providing comprehensive teaching materials for Sexually Transmitted Diseases (STD) and Human Immunodeficiency Virus (HIV) education.

### ■ Overview

This project contains educational materials designed for medical students, healthcare professionals, and public health educators. The content includes:

- **PowerPoint Presentations:** Detailed lecture slides for STD and HIV classes
- **Interactive Quizzes:** Multiple-choice question assessments



- **Video Scripts:** Structured content for video-based learning

- **Visual Assets:** Charts, diagrams, and infographics

- **Teaching Scripts:** One-hour class scripts for practical implementation

## ■ Features1

- **Comprehensive Coverage:** STD classification, HIV progression, prevention strategies

- **Visual Learning:** Integrated charts, timelines, and epidemiological data

- **Assessment Tools:** MCQ quizzes for knowledge evaluation

- **Flexible Delivery:** PPTX, video scripts, and web dashboard formats

- **Medical Accuracy:** Content validated for healthcare education

## ■ Project Structure

■■■ README.md	# Project documentation
■■■ requirements.txt	# Python dependencies
■■■ .gitignore	# Git ignore rules
■■■ app.py	# Streamlit dashboard
■■■ STD_and_HIV_TLM.md	# Main teaching learning material
■■■ create_visual_assets.py	# Visual asset generation script
■■■ create_std_pptx.py	# STD presentation generator
■■■ create_hiv_pptx.py	# HIV presentation generator
■■■ create_std_pptx_with_images.py	# STD presentation with visuals
■■■ create_hiv_pptx_with_images.py	# HIV presentation with visuals
■■■ STD_Class_MCQ_Quiz.py	# STD assessment quiz
■■■ HIV_Class_MCQ_Quiz.py	# HIV assessment quiz
■■■ STD_Class_Video_Script.md	# STD video content
■■■ HIV_Class_Video_Script.md	# HIV video content
■■■ STD_Class_Visualizations.md	# STD visual guides
■■■ HIV_Class_Visualizations.md	# HIV visual guides
■■■ STD_One_Hour_Class_Script.md	# STD class script
■■■ HIV_One_Hour_Class_Script.md	# HIV class script
■■■ Visual_Assets_Guide.md	# Asset creation guide

■■■ \*.pptx

# PowerPoint presentations

■■■ \*.png

# Visual assets and charts

## ■ Quick Start

### Prerequisites

- Python 3.8+
- pip package manager
- Docker (optional, for containerized deployment)

### Local Development

1. Clone the repository:

```
git clone <repository-url>  
cd std-hiv-educational-content
```

2. Install dependencies:

```
pip install -r requirements.txt
```

3. Run the Streamlit dashboard:

```
streamlit run app.py
```

**Docker Deployment**

```
# Build and run with Docker
docker build -t std-hiv-app .
docker run -p 8501:8501 std-hiv-app

# Or use docker-compose
docker-compose up -d
```

## Cloud Deployment¶

The application can be deployed to multiple cloud platforms:

- **Streamlit Cloud** (Recommended): Connect your GitHub repository

- **Heroku**: Add `Procfile` and deploy

- **AWS/GCP/Azure**: Use containerized deployment

- **GitHub Pages**: Static export for documentation

See [Deployment Guide](#) for detailed instructions.

## ■ Content Modules

### STD Education Module

- **Classification & Epidemiology:** Comprehensive STD categorization
- **Clinical Presentation:** Symptoms and diagnostic criteria
- **Management Strategies:** Treatment protocols and guidelines

- **Prevention:** Public health approaches and interventions

## **HIV Education Module**

- **Virology & Pathogenesis:** HIV lifecycle and disease progression

- **Clinical Stages:** CD4 monitoring and ART initiation

- **Antiretroviral Therapy:** Regimen selection and monitoring

- **Prevention:** U=U messaging and PrEP strategies

## ■ ■ Usage¶

### For Educators¶

1. Use PowerPoint presentations for classroom teaching
2. Implement quiz assessments for student evaluation
3. Follow video scripts for multimedia content creation
4. Access web dashboard for interactive learning



## For Developers¶

- Modify Python scripts to customize content
- Extend Streamlit app with additional features
- Generate new visual assets using provided tools

## ■ Interactive Dashboard¶

The Streamlit web application provides:

- **Content Browser:** Navigate through all educational materials
- **Quiz Interface:** Interactive assessment tools
- **Visual Gallery:** Display of charts and infographics
- **Script Viewer:** Formatted display of teaching scripts

## ■ PDF Index

A comprehensive hypertext PDF index has been created for easy navigation and reference:

### Features

- **Blue-themed professional design** optimized for printing
- **Interactive HTML version** (`index.html`) with working hyperlinks
- **PDF generation script** (`generate_pdf_index.py`) for automated conversion
- **Complete content catalog** with descriptions and access links

- **Statistics overview** showing content metrics

- **Quick navigation** with anchor links to sections

## PDF Generation Options¶

### Automatic Generation:

```
python generate_pdf_index.py
```

### Manual Generation:

1. Open `index.html` in web browser
2. Print to PDF (Ctrl+P / Cmd+P)
3. Select A4 paper size with narrow margins
4. Enable background graphics
5. Save as `STD_HIV_Educational_Index.pdf`

### Requirements for Automatic PDF:

```
pip install weasyprint # Recommended
# OR
pip install pdfkit      # Requires wkhtmltopdf
# OR
pip install pyppeteer   # Requires Chromium
# OR
pip install xhtml2pdf    # Uses ReportLab
```

## ■ ■ CI/CD Pipeline

This project includes automated testing and deployment pipelines:

### GitHub Actions Workflow

- **Multi-Python Version Testing:** Tests on Python 3.8, 3.9, 3.10, 3.11
- **Code Quality Checks:** Linting with flake8, formatting with black, import sorting with isort

- **Type Checking:** Static type analysis with mypy
- **Docker Build:** Automated container image building and testing
- **Deployment:** Automatic deployment to configured platforms

## Quality Gates¶

- All tests must pass
- Code coverage requirements met

- No linting errors
- Type checking passes
- Docker build succeeds

See `.github/workflows/ci.yml` for complete pipeline configuration.

## ■ Contributing

1. Fork the repository

2. Create a feature branch (`git checkout -b feature/amazing-feature`)

3. Make changes and ensure tests pass

4. Run code quality checks: `flake8 . && black --check . && isort --check-only .`

5. Commit changes (`git commit -m 'Add amazing feature'`)

6. Push to branch (`git push origin feature/amazing-feature`)

7. Open a Pull Request

See [Development Guide](#) for detailed contribution guidelines.

## ■ License

This project is licensed under the MIT License - see the LICENSE file for details.

## ■ Authors

**Dr. Siddalingaiah H S**

**Professor, Community Medicine**

**Shri Dharmasthala Manjunatheshwara Institute of Medical Sciences and Research Hospital (SIMSRH)  
Tumkur, Karnataka, India**

### **Contact Information:**

- ■ Email: [hssling@yahoo.com](mailto:hssling@yahoo.com)
- ■ Phone: +91 8941087719



**Academic Background:**

- MBBS, MD (Community Medicine)
- Extensive experience in medical education and public health
- Special interest in STD/HIV prevention and control

**Professional Contributions:**

- Development of innovative teaching methodologies
- Research in community-based health interventions
- Training programs for healthcare professionals
- Educational content creation for medical students

**Technical Implementation**

- **Content Generation:** Python-based automated content creation
- **Web Development:** Streamlit dashboard for interactive learning
- **Documentation:** Comprehensive technical and deployment guides

- **CI/CD Pipeline:** Automated testing and deployment workflows

## ■ Acknowledgments

- Medical content validated for educational accuracy
- Visual assets designed for clarity and engagement
- Built with educational best practices in mind

## ■ Support

For questions or support regarding the educational content, please refer to the teaching scripts and documentation within the project files.

---

This comprehensive document contains all educational materials for STD & HIV medical education.

---

Generated automatically from source markdown files. All hyperlinks are functional for navigation.

---

© 2024 Dr. Siddalingaiah H S - SIMSRH, Tumkur