Sexually Transmitted Infections
Definition

The Sexually transmitted infections are a group of communicable diseases that are transmitted by sexual contact and caused by a wide range of bacterial, Viral, protozoal, fungal agents and ectoparasites.
Transformation in STIs

- List of pathogens which are sexually transmitted has expanded from ‘5 classical’ venereal diseases to include more than 20 agents including viral infections.
- Shift to clinical syndromes associated with STIs.
Classification of STI agents

1. Bacterial Agents
   - *Treponema pallidum* - Syphilis
   - *Haemophilus ducreyi* - Chancroid
   - *Calymmatobacterium granulomatis* - Donovanosis
   - Bacterial Vaginosis - caused by various microbial agents
   - *Neisseria gonorrhoea* - Gonococcal Urethritis and other manifestations
   - *Chlamydia trachomatis* - Non Gonococcal Urethritis (NGU)
   - *Mycoplasma hominis* - NGU
   - *Ureaplasma urealyticum* - NGU
Classification of STI agents

2. Viral Agents

- *Herpes simplex virus* 1 or 2 - Herpes genitalis
- *Hepatitis B virus*
- *Human Papilloma Virus* - Warts
- *Molluscum Contagiosum Virus* - Molluscum Contagiosum
- *Human Immunodeficiency Virus (HIV)* - AIDS
Classification of STI agents

3. Protozoal agents

- *Entamoeba histolytica* – Amoebiasis
- *Giardia lamblia* – Giardiasis
- *Trichomonas vaginalis* – Vaginitis
Classification of STI agents

4. Fungal agents
   - *Candida albicans* - Vaginitis

5. Ecto parasites
   - Phthirus pubis - Pediculosis
   - Sarcoptes scabiei - Scabies
History

- General history (Demography)
- Contact of a STD
- Onset, character, periodicity, duration and relation to sexual intercourse and urination
- Anogenital discharge and/or dysuria /burning in micturation
- Anogenital discharge and/or dysuria /burning in micturation
- Dyspareunia and/or pelvic pain
- Ulcers, lumps, rashes or itching
History

- Type of discharge
- Past medical and STD history
- Medications, allergies (emphasise antibiotics) and contraception
- Past history of similar problems
- Any STD in sexual partner(s)
- Last menstrual period
- Vaccination history
- Obstetric history (h/o abortions)
- Any history of injecting drug abuse, what drug, how often
- Any history of tattooing or blood product exposure
Sexual History

- Number of exposure (Single, multiple)
- Number of sexual partner(s)
- Date of last sexual exposure
- Sex of partner(s) and history of male to male contact
- Type of intercourse – oral, vaginal, anal
- Protected/ unprotected exposure
History for HIV

- H/o Recurrent diarrhoea
- H/o Fever
- H/o Loss of weight
- H/o Genital ulcer disease
- H/o Blood transfusion
- H/o Herpes zoster
- H/o Opportunistic infections
Examination

- Exposure of abdomen, genitals and thighs is required

Inspect for:

- Rashes
- Lumps
- Ulcers
- Discharge
- Smell
Examination

Inspect for:

- Pubic hair for lice and nits
- Skin of the face, trunk, forearms, palms and the oral mucosa
- Palpate: Lymph Nodes
Examination - Men

Inspection:

- Penis
- External meatus
- Retracted foreskin
- Perianal area
- Lymph nodes examination
- Per rectal examination
- Palpation of scrotum and expression of any discharge from the urethra.
- Proctoscopy
Examination - Women

Inspection:
- External genitalia
- Perineum
- Perianal area
- Oral cavity
- Lymph nodes examination
- Speculum examination of vagina and cervix
- Bimanual pelvic examination
Systemic Examination

- Cardiovascular
- Respiratory
- Gastrointestinal (Liver, spleen)
- Central Nervous
- Musculoskeletal
Syphilis

- Caused by *Treponema Pallidum*
- *T. pallidum* is a fine, motile, spiral organism measuring 6-20 millimicrons in length and 0.1 to 0.18 millimicrons in thickness with characteristic motility
- It has regular spirals which helps in differentiating from other non-pathogenic treponemes
Transmission

Moderate to high probability of transmission:

- Sexual contact
- Infected blood
- Trans-placental route
- Accidental to medical personnel (Syphilis insontium)
Pathogenesis

Infection
↓
Attachment to host cells
↓
Corkscrew movement and travel to Lymph nodes
↓
In perivascular lymphatics cause endarteritis obliterans
↓
Loss of blood supply
↓
Genital ulcer
Primary syphilis

- Stage from infection to the healing of the chancre

- Incubation period- 9-90 days

After this time there is ulcer formation
Primary syphilis

- Single, painless, well defined ulcer with clean looking granulation tissue on floor

- Indurated

- Hard chancre - heals with scar even without treatment
Primary syphilis

Sites of ulcer

- Genital (90-95%)
  Coronal sulcus/ glans/ frenulum/ prepuce/ shaft of penis in male and cervix, labia, vulva, urethral orifice in females

- Extra-genital (5-10%):
  Commonest site is the lips
Diagnosis

Combination of clinical and Laboratory investigation

- DGI-serum from ulcer/aspirate from lymph node
- DFA-TP
- VDRL- Negative till one week after appearance of ulcer.

Positive by 4 weeks
Secondary Syphilis

- 6-8 weeks after appearance of primary chancre
- Systemic disease
- Constitutional features like sore throat, malaise, fever and joint pain may accompany the lesions
Secondary Syphilis

• **Common signs are:**
  - Skin rash (75-100%)
  - Lymphadenopathy (50-86%)
  - Mucosal lesions (6-30%)
Secondary Syphilis

Cutaneous:

- Non-itchy lesions generally
- Macular, papular, nodular, pustular, annular lesions may occur
- Condyloma lata
- Split papules at angles of mouth
- Corona veneris
- Moth eaten alopecia
- Mucosal lesions - mucous patches (snail track ulcers)
Diagnosis

- VDRL - Almost always positive
  - False negative (in some cases)
  - False positive (in some cases)
- Specific tests: TPHA may remain reactive throughout the life
Latent syphilis

- Persistent seropositivity with clinical latency
- Following resolution of primary or secondary stage latency occurs and continues as such in 60-70% of patients
- Less than 2 years: Early
- More than 2 years: Late
Tertiary Syphilis

Cutaneous

Characteristic lesion is the Gumma

- A deep granulomatous process involving the epidermis secondarily
- Causes punched out ulcerative lesions with white necrotic slough on the floor
- On lower leg, scalp, face, sternal area
Tertiary Syphilis

Cardio-vascular:
Develops 20-30 years after infection - so in middle age; more in men
- Aortitis
- Aortic aneurysm
- Coronary ostial stenosis
Tertiary Syphilis

Neuro-syphilis:

- In any patient with syphilis, CSF lymphocytosis, an elevated CSF protein level or a reactive VDRL test would suggest neuro-syphilis and should be treated
Syphilis - Treponema pallidum
Syphilis - *Treponema pallidum* on darkfield
Primary syphilis-chancre
Primary syphilis - chancre
Primary syphilis - chancre
Primary syphilis - chancre of anus
Primary syphilis - chancre
Secondary syphilis - papulosquamous rash
Secondary syphilis - papulo-pustular rash
Secondary syphilis
Secondary syphilis
Secondary syphilis
Secondary syphilis - alopecia
Late syphilis - serpiginous gummata of forearm
Late syphilis - ulcerating gumma
Cardiovascular syphilis - narrowing of coronary ostia in aortus
Neurosyphilis - spirochetes in neural tissue
Congenital syphilis - mucous patches
Congenital syphilis - - Hutchinson’s teeth
Congenital syphilis - perforation of palate
Diagnosis

- Clinical
- Laboratory
  - Cell count - Normal = 0-4 cells/mm$^3$
    Abnormal = >5 cells/mm$^3$
  - Proteins - Normal = up to 40 mg/100 ml
    Abnormal = > 40 mg/100 ml
  - VDRL - Normal = Non reactive
    Abnormal = Reactive
Syphilis treatment

Primary, Secondary, Early Latent (WHO/ CDC/ NACO)

- Recommended regimen (CDC)
  Inj. Benzathine Penicillin G,
  2.4 million units IM stat after test dose
Treatment
Late Latent Syphilis (WHO/ CDC/ NACO)

• Recommended regimen
Benzathine penicillin G 2.4 million units IM at one week intervals x 3 doses
Neurosyphilis (NACO)

- Recommended regimen
  Aqueous crystalline/benzyl penicillin G, 18-24 million units daily administered as 3-4 million units IV every 4 hours for 14 days
Alternative regimen for penicillin allergic patients

- Doxycycline (100 mg) BD
- Erythromycin (500mg) QDS
- Tetracycline (500mg) QDS

Duration of treatment

- Early syphilis : 15 days
- Late syphilis : 30 days
Chancroid

- Acute, autoinoculable, STD caused by *Hemophilus ducreyi*

- Age group: 20-30 years

- Males affected more commonly
Etiology

*Hemophilus ducreyi*

- Pleomorphic gram negative facultative, anaerobic bacillus
- “School of fish” or “rail road track” appearance
- Growth is best in Mueller Hinton agar supplemented with chocolate horse blood
Clinical features

- Incubation period- 3-7 days
- Sites: Frenum, prepuce, coronal sulcus in male and vulva, vestibule in females
- Painful genital ulcers
- Non-indurated, bleeding on touch
- Yellow ragged edges
- Edema of prepuce
- Tender sometimes suppurative inguinal lymphadenopathy (unilateral in majority)
Chancroid
Chancroid ulcers
Chancroid Male - regional adenopathy
Chancroid - ruptured node
Chancroid - gram stain of *H. ducreyi*
Investigations

- Microscopy:
  Gram stain, Fluorescent labelled monoclonal antibody detection

- Serology: ELISA, Immuno dot technique

- Molecular techniques: PCR

- Histopathology
Chancroid (NACO)

- Azithromycin 1 gm orally single dose
  or
- Ceftriaxone 250 mg IM in a single dose
  or
- Ciprofloxacin 500 mg twice daily x 3 days
Lymphogranuloma Venereum (LGV)

Etiopathogenesis

- Chlamydia enters minute skin disruptions during intercourse
- Lymphotropic causing lymphangitis
- Lymph node necrosis and abscess formation
- Fistulae and sinus tracts
Clinical features

Primary

- Incubation Period: 3-12 days
- Superficial ulceration, which looks like herpes and is temporary and heals without scars
- It may not be noticed
Clinical features

Inguinal syndrome

- Most common manifestation
- Bubo
- Incubation period = 10-30 days
- More common in males
- Swelling in groin; unilateral in majority
- Groove sign of Greenblatt
- Constitutional features
- Rarely suppurate
- Multiple sinuses
Clinical features

Genital syndrome

- Penile and scrotal elephantiasis
- Penile or scrotal ulcerations
- Ram-rod penis
- Doughy tender swellings along dorsal lymphatics of penis: bubonuli
- Females-elephantiasis of the vulva and clitoris
Clinical features

Anorectal syndrome

- Rectal strictures
- Anal fissures
- Edematous rectal mucosa
- On proctoscopy- friable and bleeding rectal mucosa
Lymphogranuloma venereum
LGV
LGV primary lesion
Chronic lymphogranuloma venereum in female. Genital elephantiasis
LGV lymphadenopathy
Investigations

- **Microscopy:**
  - Giemsa stain for inclusion bodies
  - Direct immunofluorescence staining
  - ELISA rapid assays

- **Serology:**
  - Complement fixation test
  - Immunofluorescent antibody test
LGV (NACO)

- **Recommended regimen:**
  Doxycycline 100 mg twice daily for 15 days

- **Alternative regimen:**
  Erythromycin base 500 mg four times daily for 15 days
Donovanosis

- **Etiology**
  A chronic, destructive mildly contagious, granulomatous STD caused by *Calymmatobacterium granulomatis*

- Also called Granuloma inguinale

- Incubation period: 8 – 80 days.

- The organism occurs inside large vacuolated histiocytes in the form of “closed safety pin”
Donovanosis

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Clinical Variants of Donovanosis

- Classical or Fleshy exuberant type
- Sclerotic or Cicatricial type
- Destructive or Necrotic type
- Hypertrophic type
Granuloma inguinale, male
Granuloma inguinale, female
Granuloma inguinale, chronic destructive lesion
Granuloma inguinale with both active and healed lesions
Granuloma inguinale, Donovan bodies
Investigations

Microscopy:
- Giemsa or Leishman’s stain (crush smear) for Donovan bodies
- Histopathology
- Wright-Giemsa stain - demonstrates clusters of blue-to-black organisms that resemble safety pins within the vacuoles of enlarged macrophages
Granuloma Inguinale (NACO)

- Doxycycline 100 mg twice daily
  
or
- Erythromycin base/stearate 500 mg QDS for 14 days
  
or
- Azithromycin 500 mg BD for 14 days
Herpes genitalis

- Organism- Herpes simplex virus (HSV1, HSV-2)
- Incubation period: 2-20 days
- 50% of neonates exposed to maternal HSV develop primary herpes infection in 4-7 days of births
- Risk of neonatal transmission in women with recurrent HSV-2 is <1%
Clinical features

- Initial infections produce systemic symptoms such as fever, malaise, headache and myalgia

- Pain, itching, dysuria, vaginal and urethral discharge are predominant local symptoms
Primary herpes, male
Recurrent herpes, male
Herpes, female
Primary herpes, female
Same patient, four days later
Herpes cervicitis
Investigations

- Microscopy:
  - Tzanck smear

- Serology:
  - Monoclonal antibodies to HSV 1 and 2
  - DNA hybridization

- Molecular techniques- PCR

- Histopathology

- Culture
Genital Herpes (NACO)

- **First Clinical Episode**
  
  Acyclovir 400 mg TDS
  or
  Acyclovir 200 mg 5 times a day
  Duration: 7-10 days

- **Recurrence**
  
  Acyclovir 400 mg TDS x 5 days
  or
  Acyclovir 800 mg BD x 5 days
Condylomata acuminata

- Very common STD
- Incidence in India 3.2 - 21% but under reporting common
- *Human Papilloma virus*
- Incubation period- 4 months to 6 months
Condylomata acuminata

- Risk factors:
  - Multiple partners
  - Frequency of sexual contact
  - Failure to use condom in male
  - Pregnancy
  - HIV infection
Condyloma acuminata, penile
Condyloma acuminata, anal
Condyloma acuminata, meatal
Condyloma acuminata, vulva
Condyloma acuminata, vaginal wall
Diagnosis

- Histopathology
- Aceto-whitening: not recommended; predictive value not established (Holmes)
- Pap smear: sensitivity poor; specificity very high
- HPV DNA detection studies
Treatment

- Self application by patient:
  - Podofilox 0.5% solution or gel
  - or
  - Imiquimod 5% cream
Treatment

- Physician administered
  - Cryotherapy
    - or
  - Podophyllin resin 10-25%
    - (Not recommended for pregnant women)
    - or
  - Trichloroacetic acid 80-90%
    - or
  - Surgical removal
Urethritis

- Characterized by findings of PMN in urethral smear or sediment in the first void urine
  - Gonococcal
  - Nongonococcal
Gonococci

Etiology

- Amongst the first documented bacterial STD
- Word gonorrhea means “Flow of seed”
- Albert Neisser identified the organism in 1879
- Caused by *N. Gonorrhea* which is gram negative encapsulated diplococcus bearing pili
Clinical features

- Incubation period = 2-5 days
- Males:
  - Anterior urethritis-stinging sensation
  - Posterior urethritis- frequency, urgency
  - Greenish, yellow, thick purulent discharge
Gonococcal urethritis
Gonococcal cervicitis
Gonorrhea - gram stain of urethral discharge
Bartholin’s abscess
Bartholin’s abscess
Gonococcal ophthalmia
Disseminated gonorrhea - skin lesion
Disseminated gonorrhea - skin lesion
Diagnosis of Gonorrhea

- Two glass urine test
- Smear examination
- Culture
- Fluorescent antibody test
- Serological tests
- Non-amplified DNA probe test
Nongonococcal Urethritis

Causative organisms:

- *Chlamydia trachomatis*
- *Mycoplasma genitalium*
- *Ureaplasma urealyticum*
- *Adeno virus*
- Others
Neisseria gonorrhoeae (NACO)

- Cefixime 400 mg oral stat dose
  or
- Ceftriaxone 250 mg i.m
  or
- Azithromycin 2g stat

PLUS Chlamydial therapy if infection not ruled out.
Disseminated Gonococcal Infection

- **Recommended regimen**
  - Ceftriaxone 1 gm IM or IV Od for 7 days
  - or
  - Cefixime 400 mg BD for 7 days
Non gonococcal urethritis (NACO)

Azithromycin 1 gm in a single dose
or
Doxycycline 100 mg bid x 7 days
or
Erythromycin stearate 500 mg QDS for 7 days
Vaginitis

Etiology

- *Candida albicans* and other species of candida
- *Trichomonas vaginalis*
- Bacterial vaginosis
- Senile
Clinical features

Candidal:

- Pruritus
  - Frequency of micturition
  - Thick curdy white discharge
  - Pre-menstrual flare
  - Examination reveals thick cheesy plaques
Trichomonal vaginitis

- Caused by *Trichomonas vaginalis*
- Green foamy vaginal discharge
- Severe pruritus
- Friable and punctate hemorrhages over the cervix - Strawberry cervix
Bacterial vaginosis

- Caused by a mixed flora - Gardnerella vaginalis, M.Hominis and anaerobes
- Causes grey, homogenous and odoriferous discharge
- Characteristic fishy odour
- Pruritus not prominent
Diagnosis

- Clue cells - vaginal epithelial cells coated with *Gardnerella vaginalis* (at least 20%)

- Whiff test: fishy odour on adding KOH
Vulvovaginitis

Clotrimazole or Miconazole 100 mg od - 6 days
Intravaginal

or

Fluconazole 150 mg in a single dose

or

Clotrimazole 500 mg vaginal pessary once
Trichomoniasis (NACO)

Recommended regimen
Metronidazole 2 gm orally single dose

or

Metronidazole 400 mg Bd for 7 days

or

Tinidazole 2 gm stat
Bacterial Vaginosis (NACO)

Metronidazole 400 mg BD for 7 days

or

Metronidazole 2 gm orally as a single dose

or

Tinidazole 2 gm as a single dose
Pelvic Inflammatory Disease - Etiology

Etiology

- STD - Gonorrhea, Chlamydia, Bacterial vaginosis
- IUCD
- Douching
- Dilatation and curettage
- HIV infection
Pelvic Inflammatory Disease

Clinical features

- **Primary:**
  - Due to exogenous STD organisms
  - Endogenous

- **Secondary:**
  - Leading from primary cause
  - IUCD, MTP
Pelvic Inflammatory Disease

Clinical features

- Silent STD
- Mild and moderate symptoms:
  - Most sexually active
  - Lower abdominal pain/cervical motion tenderness
  - Fever
  - Tubo-ovarian mass
Clinical features

- Severe PID: 10% of all cases
  - Severely ill
  - Peritonitis
  - Purulent vaginal discharge
  - Fever/vomiting/chills
  - Perihepatitis
Minimum Diagnostic Criteria

- Uterine/adnexal tenderness or cervical motion tenderness

Additional Diagnostic Criteria

- Oral temperature >38.3°C
- Elevated ESR
- Cervical CT or GC
- Elevated CRP
- WBCs/ saline microscopy
- Cervical discharge
Definitive Diagnostic Criteria

- Endometrial biopsy with histopathologic evidence of endometritis
- Transvaginal sonography or MRI showing thick fluid-filled tubes
- Laparoscopic abnormalities consistent with PID
Syndromic Management

- Use of clinical algorithms based on an STD syndrome, the constellation of patient symptoms and clinical signs, to determine therapy

- Antimicrobial agents are chosen to cover the major pathogens responsible for the syndromes in a geographic area
Essential Components

- Syndromic Diagnosis and Treatment
- Education on Risk reduction
- Condom Promotion
- Partner Notification
- Counselling
- Follow-up

(Each component is important for control. Any of the missed components is a threat)
Advantages

- Simple, inexpensive, rapid and implemented on large scale
- Requires minimum training and used by broad range of health providers
- Allows for diagnosis and treatment in one visit
Disadvantages

- Algorithm for vaginal discharge has limitations particularly in cases of cervicitis (chlamydia/gonococci)
- Over diagnosis and over Rx (multiple antimicrobials for single infection)
- Selection of resistant pathogens
- Does not address subclinical STI
Urethral Discharge

Examine for Urethral Discharge: Milking of Urethra

Discharge seen
- Rx for Gonorrhea and Chlamydia
- F/u after 7 days
- Cured

No Discharge seen
- Any other STI
- Use appropriate chart

Discharge persists
- T/t regimen followed
  - Refer to higher care
- regimen not followed
  - Repeat treatment & Re-evaluate > 7 days
Genital Ulcer

Only vesicles present

- No: GUD
- Yes: Educate and counsel

Treat for Herpes
Treat for Syphilis if VDRL+

Ulcers healed

- No: Educate and counsel
- Yes: Continue for 7 more days

Ulcers improving

- No: Refer
- Yes: Continue for 7 more days

Treat for Chancroid and Syphilis
Treat for herpes if prevalence more than 30%
Inguinal Bubo

Enlarged or painful inguinal lymph nodes

History & examine

Ulcer(s) present

No

Rx for LGV + Chancroid

14 Days

Responding to treatment

Yes

Presume cured

No

Refer to higher care centre

Yes
Scrotal Swelling

- **Painful scrotal swelling**
  - **Injury to scrotum**
    - No
    - Swelling of scrotum?
      - Yes
      - Testis rotated or retracted
        - Yes
        - Refer immediately to Higher care centre
        - No
      - No
        - Reassure
    - No
      - Refer to higher care centre
- Yes
  - Swelling of scrotum?
    - Yes
      - Refer to higher care centre
    - No
      - Reassure

- **Swelling of scrotum?**
  - No
    - Treat for gonorrhoea and chlamydia
      - After 14 days
        - Cured
          - No
            - Tenderness & Swelling persisting
              - Yes
                - Refer to higher care centre
              - No
                - Cured
Vaginal Discharge/ Itch/ Burning

**History**
- Vulvul erythema
  - Yes
  - Lower abdominal pain
    - No
    - High GC/CT prevalence
      - No
      - Treat for bacterial Vaginosis and Trichomonas
    - Yes
    - Appropriate chart
      - Yes
      - Treat for Gonococci/Chlamydia/bacterial Vaginosis/Trichomonas
      - No
      - Educate
  - No
  - Any other STI
    - Yes
    - Educate
    - No
    - Educate
Lower Abdominal Pain

History & examine

- Missed period
- Recent delivery
- Guarding
- Vaginal bleed
- Abdominal mass

Yes
Surgical referral

No
Cervical motion tenderness
Lower abdominal tenderness

Yes
Manage for PID. Review in 3 days

No
Patient improved

Yes
Educate

No
Refer
**Ophthalmia Neonatorum**

1. **Neonate with discharging eyes**
   - **History & examine**
   - **Conjunctivitis present**
     - **Yes**
       - **Treat baby for gonorrhoea and chlamydia. Treat parents for the same**
       - **Review baby in 2 days**
         - **Yes**
           - **Improved**
             - **Presume cured**
         - **No**
           - **Refer to higher care centre**
     - **No**
       - **Reassure mother**
       - **Review if symptoms persist**
Thank you