

- Eight pathogens are linked to the greatest incidence of STIs.
- Of these, 4 are currently curable:
 - Syphilis, Gonorrhoea, Chlamydia and Trichomoniasis.
- The other 4 are incurable viral infections:
 - Hepatitis B, Herpes simplex virus (HSV), HIV and Human papillomavirus (HPV).

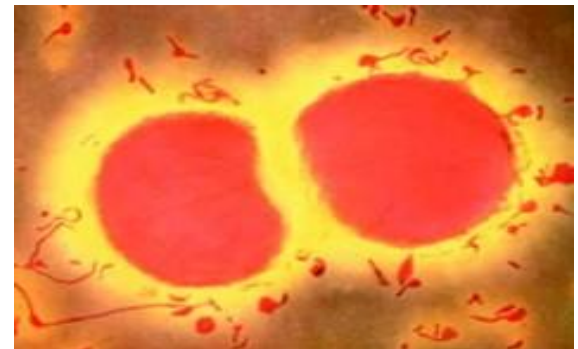
GONORRHEA

Gonorrhea

- STI
- *Neisseria gonorrhoeae*.
- 2nd most common STIs
- Chlamydial is the most common STIs
 - Similar risk factors
 - Multiple sexual partner
 - Unprotected sex
- Highest rate in Female 15-19 and male 20-24
- 50% of infected women are asymptomatic
- 95% of infected men have symptoms

Properties

- Neisseriae are gram-negative diplococci (Bean or kidney shaped).
- Non motile, non spor forming
- Incubation period 1-14 days
- Humans are only reservoir, not part of normal flora
- It attaches via pili and penetrates within 1-2 days
- There is a neutrophilic response which creates a purulent discharge



- Gonorrhea is spread through contact with the penis, vagina, mouth, or anus.
- Ejaculation does not have to occur for infection to occur.
- An infected mother may transmit gonorrhea to her newborn during childbirth, a condition known as ophthalmia neonatorum

This may cause blindness, joint infection, or a life-threatening blood infection in the baby.



- Gonococci are very sensitive to heating or drying. Cultures must be plated rapidly.
- Causes disease only in humans.
- Killed by drying that's why transmitted sexually.
- Non-sexual transmission is extremely rare

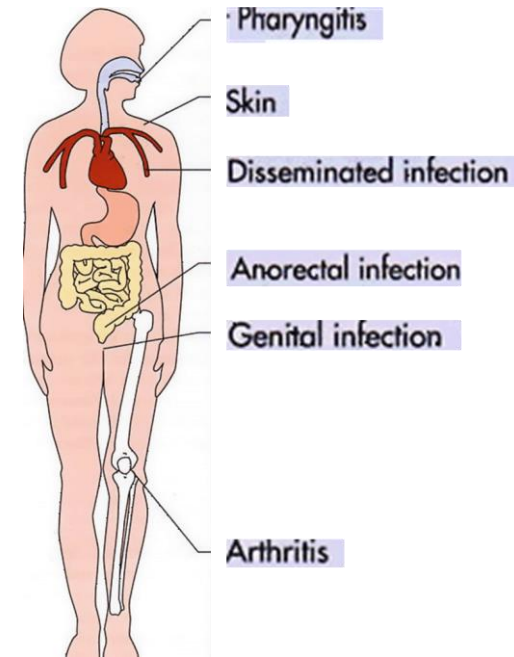
Gonorrhea

- It tends to infect warm, moist areas of the body, including the:
 - Urethra
 - Eyes
 - Throat
 - Vagina
 - Anus
 - Female reproductive tract (the fallopian tubes, cervix, and uterus)

Clinical Findings:

N. gonorrhoea causes following infections.

1. Genitourinary tract infections.
2. Rectal infections.
3. Pharyngitis
4. Ophthalmia neonatorum
5. Disseminated infection via spread through blood



Genitourinary tract infections :

- Gonorrhoea in men has features of urethritis accompanied by dysuria and a purulent discharge. Epididymitis can occur.
- In women, infection is initially in the endocervix (cervicitis), causing a purulent vaginal discharge and intermenstrual bleeding.



Symptoms in men

- The first noticeable symptom in men is often a burning or painful sensation during urination. Other symptoms may include:
 - Frequency or urgency of urination
 - a pus-like discharge (or drip) from the penis (white, yellow, beige, or greenish)
 - swelling or redness at the opening of the penis
 - swelling or pain in the testicles
- Symptom begins 2-7 day
- Many men experience acute symptoms (95%)



Complications of gonococcal infection in males

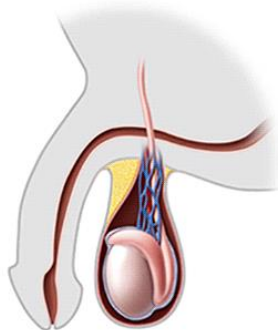
Chronic complications:

1. Urethral stricture.
2. Infertility (scarring and block sperm passage).

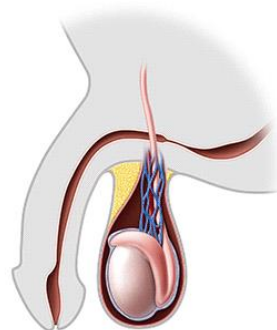
Acute complications:

1. Ascending infection (prostatitis, cystitis, epididymitis).
2. Infection of adjoining structures (periurethral abscess and infection of median raphe).

Normal Groin



Urethral Stricture



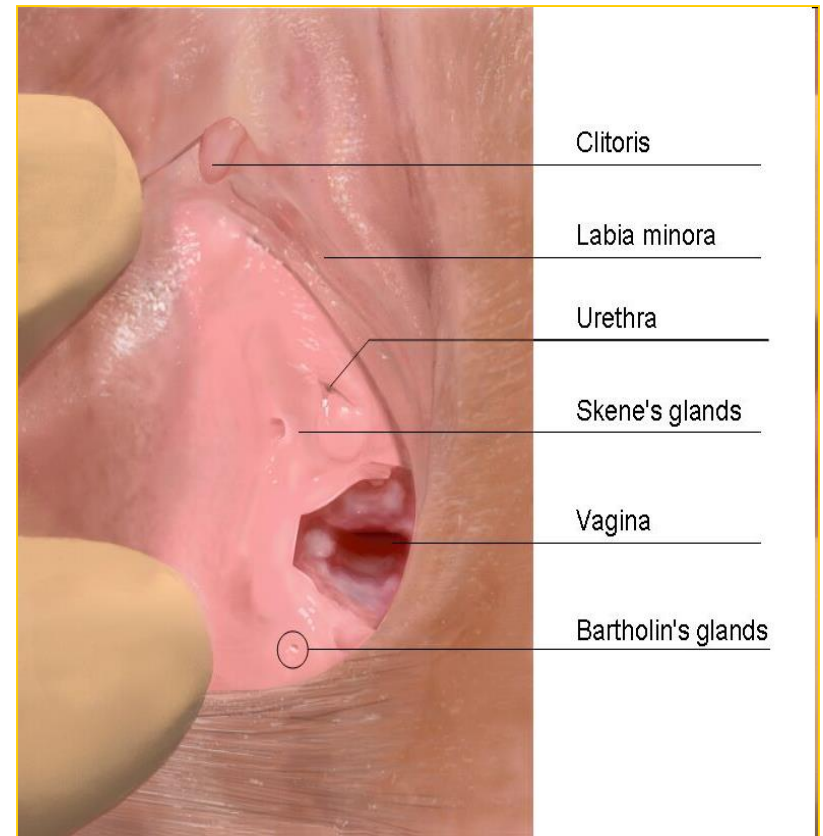
Symptoms in Women

- Discharge from the vagina
- Dysuria, frequency and urgency
- Pain upon engaging in sexual intercourse
- Sharp pain in the lower abdomen
- Symptoms are often mild, 50% have no symptoms
 - Even when symptoms do occur, they are often mistaken for a bladder or vaginal infection
- The most frequent complication is ascending infection to the uterine tubes (**salpingitis**) which can lead to **sterility** or ectopic pregnancy



Complications in Women

- **Accessory gland infection**
 - Bartholin's glands
 - Skene's glands
- **Pelvic Inflammatory Disease (PID)**
- **Fitz-Hugh-Curtis Syndrome**
 - Perihepatitis



PELVIC INFLAMMATORY DISEASE

- Present in 10%-20% of gonococcal infections in women
- Symptoms range from:
 - Minimal (lower abdominal tenderness) to
 - Severe abdominal pain, fever
 - irregular menstrual bleeding
 - Adenxal tendenrenss
 - Leukocytosis
 - Pelvic peritonitis and abscess
 - Complication:
 - Infertility and ectopic pregnancy

Gonococcal Complications in Pregnancy

- Gestational bleeding
- Preterm labor and delivery
- Premature rupture of membranes
- Postpartum endometritis



2.Rectal infections:

- Rectal intercourse or in women with contamination with infected vaginal secretion
- Prevalent in male homosexuals
- Symptoms include:
 - Generally asymptomatic
 - Anal pain and pruritus
 - Tenesmus and constipation
 - Purulent discharge
 - Rectal bleeding

3.Pharyngitis

- Contracted by oral-genital contact.
- The condition may mimic a mild viral or a streptococcal sore throat.
- Typically asymptomatic
- May resolve spontaneously

4.Ophthalmia neonatorum

- An infection of the conjunctiva acquired by a newborn during passage through the birth canal of an infected mother .
- If untreated, acute conjunctivitis may lead to blindness.

Gonococcal Ophthalmia Neonatorum



- Lid edema, erythema and marked purulent discharge
- Preventable with ophthalmic ointment (erythromycin)



6. Disseminated gonococcal infection(DGI):

- Bacteremia
- Fever, polyarthralgia
- Commonly manifest as arthritis, synovitis, or skin pustules (dermatitis) or petechial rash.
- Complication: endocarditis, meningitis, septic arthritis.
- Disseminated infection is the most common cause of septic arthritis in sexually active adults.

LABORATORY DIAGNOSIS

Specimens collected:

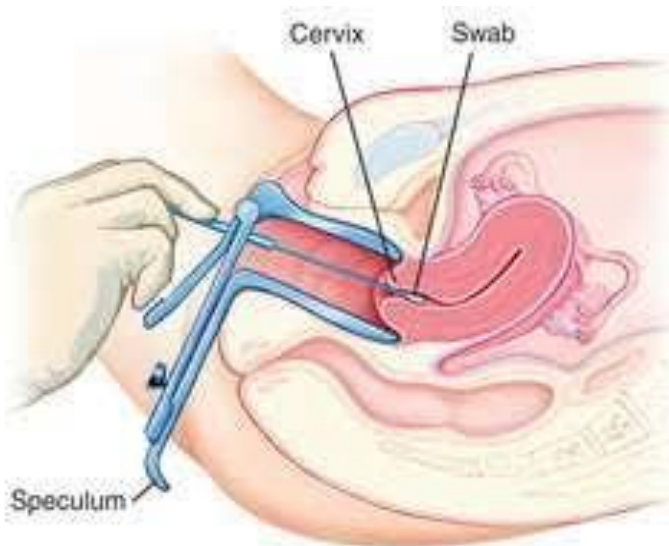
A) In men:

- Urethral exudate
- Urethral scraping(loop r special swab)

B) In women:

- Cervical swabs

Using your other hand with the swab, roll the swab clockwise just at the tip or outside the opening.



Milking of Urethra



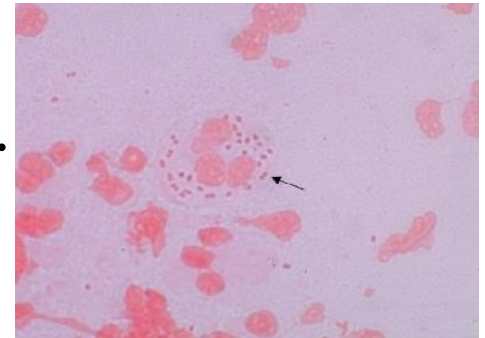
From the base of the penis to the glans

by grasping the penis firmly between the thumb and forefinger

Thumb pressing on the ventral surface and then moving the hand distally, compressing the urethra

Lab diagnosis:

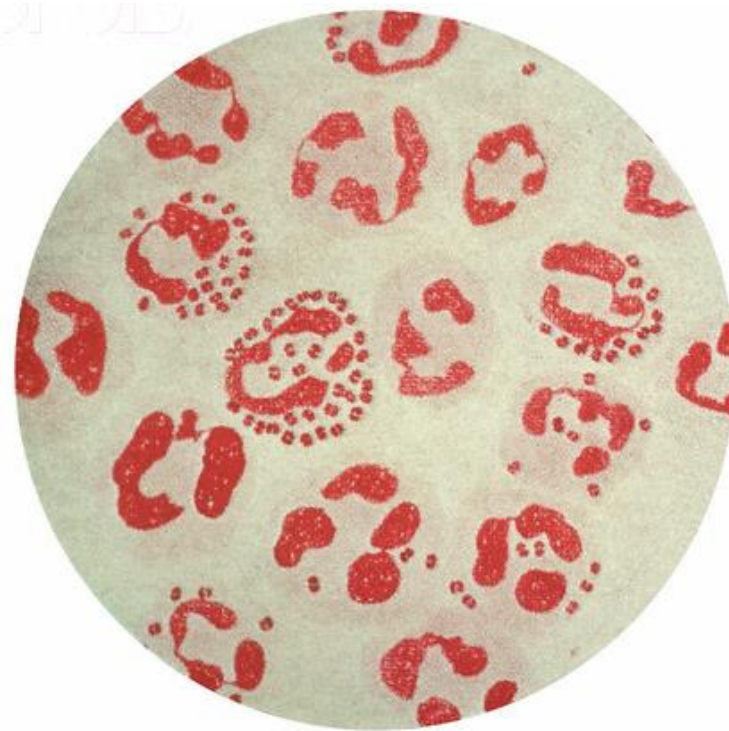
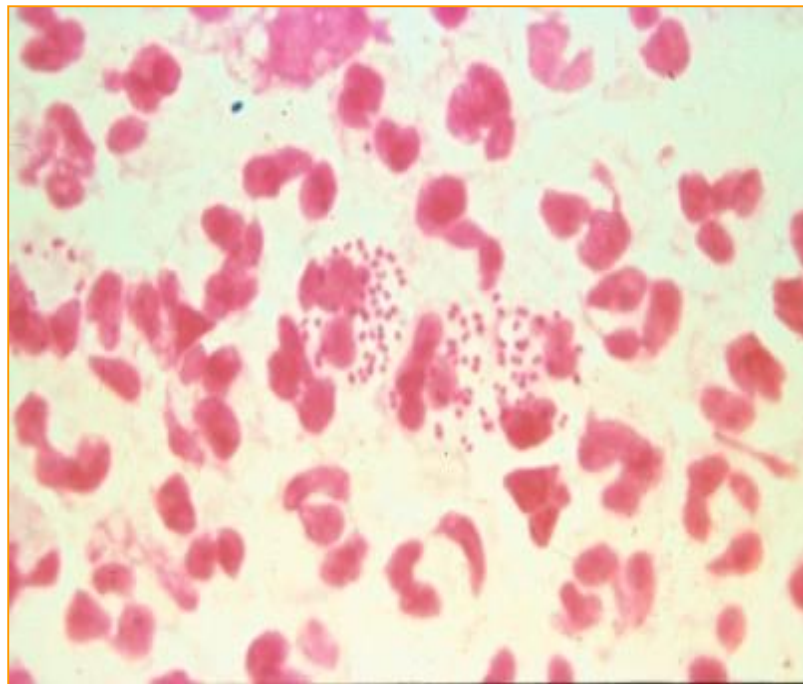
- In the male, the finding of numerous neutrophils containing gram negative diplococci in a smear of urethral exudate provides a diagnosis of gonococcal infection.
- Diagnostic if gram negative diplococci are seen within polymorphonuclear leukocytes (95% sensitivity)
- In the female a positive culture is also needed.



3.Culture:

- *N. gonorrhoeae* grows best under aerobic conditions, and most strains require CO₂ also.

Gonorrhoea: Gram Stain of Urethral Discharge



On Gram stained slides, in gonococcal infection, the following are seen:

Polymorphs.

Gram-negative kidney-shaped extracellular and intracellular diplococci (ICDC).



Gram stain of urethral discharge showing gram negative, intracellular diplococci.

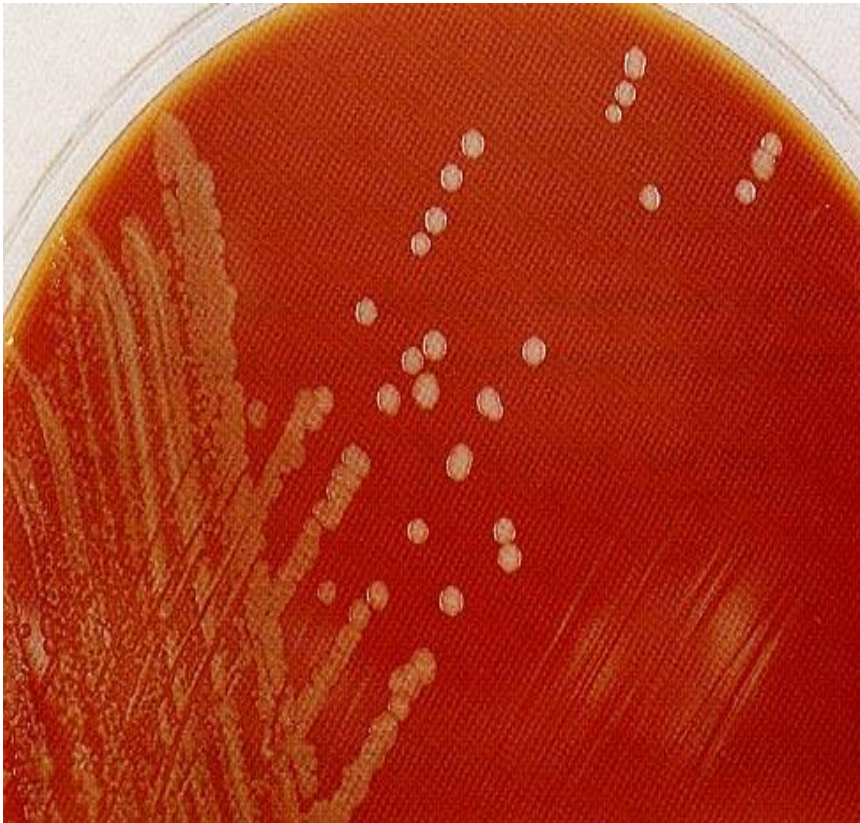
Media used:

- a) Non selective media: Chocolate agar,
Mueller-Hinton agar.

- b) Selective media: Thayer Martin medium (e.g. Martin
Lewis agar) with antibiotics (Vancomycin, Colistin &
Nystatin).

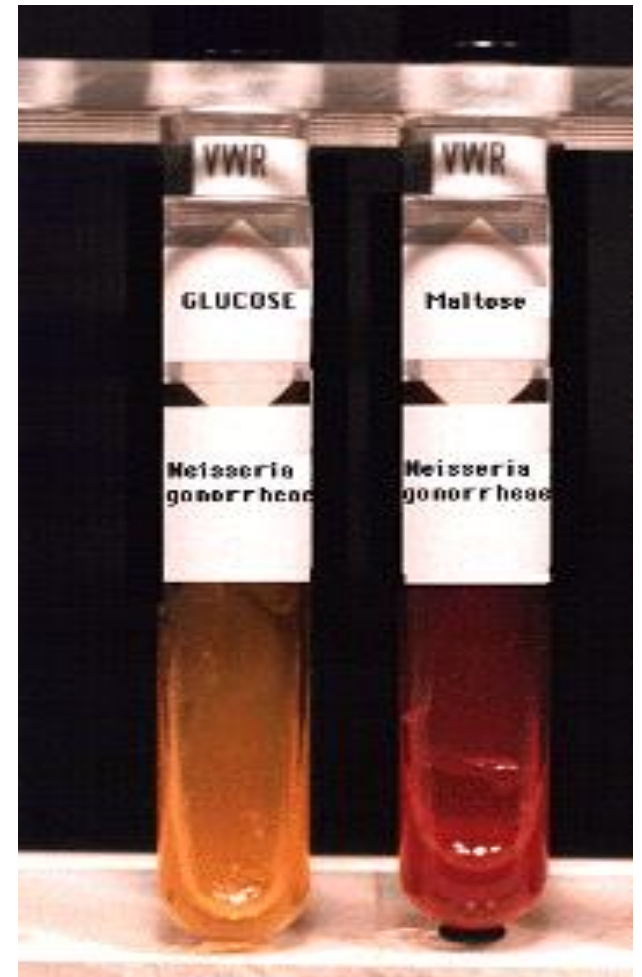
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Colony morphology: Colonies are small, round, translucent, convex or slightly umbonate with finely granular surface & lobate margins.



Biochemical reactions:

- 1) Oxidase test: Positive
- 2) Ferments only glucose but not maltose.



DIAGNOSIS

- **DNA probes**

- High sensitivity and specificity
- Concurrently test for *N. gonorrhoea* and *C. trachomatis* with a single specimen
- More widely used than cultures... and cost is similar

TREATMENT

- All recommended therapies are given as a single dose
- Should be given to symptomatic patients at the time of testing

Recommended treatment regimens for gonococcal infections: cervicitis, urethritis, proctitis

- **Single dose + chlamydia coverages (Azithromycin or Doxycycline)**
 - Cefixime (suprax)400mg or ofloxacin 400mg or Cipro 500mg
 - Single large dose IM ceftriaxone 125mg
- Chlamydia coverage: Azithromycin (Zithromax), 1 g PO in a single dose or Doxycycline, 100 mg PO bid x 7 days

Prevention

- The prevention of gonorrhoea involves the use of safety measures and the immediate treatment of symptomatic patients and their contacts.
 - Condom provide high degree of protection
 - Spermicide, vaginal foam: not reliable protection

