

# Vaginal discharge & Infections of the female lower genital tract

## LEARNING OUTCOMES

- Understand the features of normal vaginal discharge.
  - Describe the testing, diagnosis, and treatment of common STIs.
  - Appreciate the management of vaginal discharge in children and post-menopause.
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In young females, the vagina is lined with a simple cuboidal epithelium. The PH is neutral and it is colonized by organisms similar to skin.

Under the influence of estrogen at puberty, stratified squamous epithelium develops and lactobacilli become the predominant organisms. A drop in the PH accompanies this change to a level of approximately 3.5-4.5.

. Following menopause, atrophic changes occur with a return to bacterial flora similar to that of the skin. The PH again rises to 7.0.

**Normal vaginal discharge** is white, becoming yellowish on contact with air, due to oxidation. It consists of:

1. Desquamated epithelial cells from the vagina and cervix,
2. Mucous originating mainly from the cervical glands,
3. Bacteria and fluid which is formed as a transudate from the vaginal wall.

White or clear

Thick or thin

Mostly odorless/ slight odor

Normal vaginal discharge in reproductive-aged women

## NON-INFECTIOUS VAGINAL DISCHARGE

Physiological	Other
<ul style="list-style-type: none"><li>• Menstrual cycle variations- Mid-cycle discharge</li><li>• Sexual arousal</li><li>• Pregnancy</li></ul>	<ul style="list-style-type: none"><li>• Cervical polyps</li><li>• Foreign bodies - e.g., retained tampon, conception</li><li>• Vulval dermatitis</li><li>• Chemical irritation</li><li>• IUCD use</li><li>• Oral contraceptive use</li></ul>

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## INFECTIOUS VAGINAL DISCHARGE

Sexually transmitted infections	Non-sexually transmitted infections
<ul style="list-style-type: none"><li>• Chlamydia</li><li>• Gonorrhoea</li><li>• Herpes simplex</li><li>• Trichomoniasis</li><li>• Vulvo-vaginal candidiasis</li></ul>	Bacterial vaginosis

### Pathological vaginal discharge:

**Infection:** This is the commonest cause of the vaginal discharge. Infections mainly involve the lower genital tract but may also extend to the upper genital tract and urinary tract.

### Vulvovaginal candidiasis

Over 75% of women have at least one episode of vaginal candidiasis

- Oval budding fungus
- Pathogen – 80-92% *Candida albicans*
- Non albicans species: • *C. glabrata* • *C. tropicalis* • Yeast

#### CLINICAL FEATURES

- Thick white (curd-like) non-offensive vaginal discharge having the appearance of “cottage cheese”. Sometimes it may be thin and mucopurulent
- Vulval and vaginal itching may be intense and usually worse at night and with warmth and moisture.
- Vulval soreness
- Superficial Dyspareunia (due to vulval irritation)
- Signs: Erythema, Fissuring, Vulval edema

Factors predisposing to vaginal candidiasis:

- Immunosuppression. (HIV & immunosuppressive therapy like steroids).
- Diabetes mellitus.
- Trauma, vaginal douching, bubble bath, shower gel, tight clothing.
- Increased estrogen. (Pregnancy, high dose combined oral contraceptive pills).
- Underlying dermatitis like eczema.

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- Broad-spectrum antibiotic therapy.

### Investigations:

- **SAMPLES:** Vaginal swabs from lateral fornix
- **Microscopic examination** of the vaginal discharge. Using saline or potassium hydroxide (Koh) or Gram-stained preparation.

Hyphae and spores

- **Culture** of the high vaginal swab (Sabouraud agar medium).
- Vaginal PH within the normal range (3.5-4.5).

### Treatment:

- Good hygiene
- Remove predisposing factors
- Oral Triazoles drugs- Fluconazole 150mg once  
Or Itraconazole 200mg twice a day (avoided in pregnancy)
- Topical applications- Clotrimazole, Miconazole, Nystatin Peccaries, and clotrimazole cream intra-vaginally daily for 7-14 days
- In chronic recurrent candidiasis: fluconazole 150mg, days 1,4,7 then weekly for 6 months
- Longer courses of oral treatment such as ketoconazole or itraconazole may also be used in highly resistant cases but require monitoring of liver function because they are hepatotoxic.
- No epidemiological treatment for partner

## Gonorrhoea:

### Clinical features:

- Endocervical and/or urethral mucopurulent discharge
- *When complicated with PID:* Dysuria, Lower abdominal pain
- Post-coital and inter-menstrual bleeding.
- 50% of females are asymptomatic
- ❖ **Pathogen** – Neisseria gonorrhoea
- Intracellular Gram-negative diplococci

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- Mainly affect endocervix
- Incubation period: 2-7 days
- The common age of onset is 15 - 24

### COMPLICATIONS

- Bartholin abscess
- Pelvic inflammatory disease, Due to ascending infection
- Disseminated gonococcal infections: Fever, Septic arthritis, Blisters near small joints
- Perihepatitis
- infertility, ectopic preg
- Mother-to-child transmission
- Ophthalmia neonatorum

### Investigations

- **SAMPLES**• Endocervical swab•Vulvo-vaginal swab (*For NAAT and abused children*)
- Detection of Gram-negative intracellular diplococci by **microscopy** of a Gram-stained preparation.
- Culture(Thayer Martin medium)- gray colonies
- ELISA (enzyme-linked immunoabsorbent assay).

### ○ Treatment:

- With penicillin, ampicillin, amoxicillin 2-3 gr. and 1gr probenecid, or ciprofloxacin 250-500mg 1 x 2. Cefexime 400mg stat, IM Ceftriaxone 250mg
- Partner tracing and Epidemiological treatment to the partner
- Avoid sexual relationships until both partners complete treatments

## Chlamydia:

Gram-negative obligatory intracellular bacteria

### Clinical features:

- 70%May be asymptomatic.
- vaginal discharge (mucopurulent)

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- PID: lower abdominal pain, dysuria, or urinary frequency.
- ectopic pregnancy and infertility
- Perihepatitis
- Sexually acquired reactive arthritis
- In pregnancy: Pre-term births, Post-partum infections, Ophthalmia neonatorum

### INVESTIGATIONS

- **SAMPLES•Endocervical swab•Vulvo-vaginal swab**
- **Microscopy (Not diagnostic nor confirmatory) Polymorphonuclear leukocytes > 30, under high power In absence of intracellular diplococci diagnosed as nongonococcal cervicitis**
- **Nuclear amplification test (NAAT) (Diagnostic)**
- **Enzyme – immunoassay (EIA)**
- **Direct immunofluorescence.**
- **Polymerase chain reaction (PCR).**
- **Ligase chain reaction (LCR).**

### Treatment:

- **Tetracyclines → doxycycline 100mg 1 x 2 for 7-10 days**
- **Macrolides → erythromycin 500 mg 1 x 2 for 7 days or azithromycin in a single dose of 1 gr orally. during pregnancy**
- **Partner tracing and Epidemiological treatment to the partner**
- **Avoid sexual relationships until both partners complete treatments**

### Trichomonas vaginalis:

- The most common STI worldwide is caused by Flagellated protozoa
- Mainly affects the vagina, urethra, and para-urethral glands.

### Clinical features:

- 10-50% of infected women will be asymptomatic.
- Yellowish or greenish vaginal discharge (frothy), thin homogenous, foul odor.
- Rare – strawberry cervix (multiple hemorrhagic areas in the cervix )

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- Itching and irritation.
- Vulvar and vaginal Erythema.
- in pregnancy: preterm birth, low birth weight

### Investigations:

- **SAMPLES** from the posterior fornix
- Microscopy (wet mount).
- Culture (Modified diamond TYM medium).
- PH (4.5-7.0) usually 6.0.
- Cervical cytology (pap smear).

### Treatment:

- Oral metronidazole, either 2 gr as a single dose or 400mg-500mg 1 x 2 for 7 days
- Treatment of the male partner.
- Avoid sexual relationships until both partners complete treatments

## Bacterial Vaginosis:

- Anaerobic or facultative aerobic bacteria
- Normal vaginal flora of lactobacilli are replaced by the overgrowth of
  - *Gardenerella vaginalis*
  - *Prevotella spp*
  - *Mycoplasma hominis*
  - *Mobiluncus spp*

### Clinical features:

- Sometimes asymptomatic.
- Whitish-grey, thin, homogeneous vaginal discharge which is adherent to the vaginal walls with a **fishy** odor.
- No vaginal inflammation
- Pruritus.

**Diagnosis:** by finding three of the following four signs

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- Homogeneous vaginal discharge.
- An elevated vaginal PH (>4.5).
- The “whiff” test, on the addition of a solution of 10% KOH to a sample of vaginal secretion which produces a characteristic fishy odor.
- The presence of “clue cells”, on microscopic examination of a wet preparation of vaginal secretion (vaginal epithelial cells coated with bacteria).

### PREDISPOSING FACTORS

- Oral sex
- Smoking
- Antibiotic use
- A recent change in sex partner
- IUCD

### ○ Treatment:

- metronidazole either orally 400-500mg 1 x 2 for 7 days or 2 gr as a single dose.
- Clindamycin cream 2% 5 gr once daily for 7 days.

## Herpes simplex virus:

This infection is usually caused by HSV type 2, however HSV type 1 may also cause it (if a woman has had oral-genital contact). It infects the cervix, vulva, and peri-anal areas.

### Clinical features:

- Profuse mucopurulent vaginal discharge, dysuria, irritation, ulceration.

**Investigation:** Culture.

**Treatment:** Acyclovir.

## Streptococcus agalactiae (group B streptococcus):

Causing purulent vaginal discharge,

Diagnosed by a high vaginal swab.

Treatment: penicillin or erythromycin.

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## Tumors:

Although the commonest presenting complaint of both carcinomas of the cervix and endometrium is abnormal bleeding, they may also present with vaginal discharge which may be foul-smelling as a result of the sloughing of necrotic tissue.

## Vaginal discharge in children:

Either due to:

- Foreign body.
- Pinworms (*Enterobius vermicularis*).
- Sexual abuse.

## Atrophic vaginitis (senile vaginitis):

- It is common in postmenopausal women due to the atrophy of vaginal epithelium. After the cessation of menstruation slow atrophy occurs in the vulva and vagina. There is thinning of the vulval and vaginal epithelium, loss of glycogen in the vaginal epithelial cells, and a fall in acidity. Local resistance to infection is further diminished by the reduced blood supply.

### Clinical features:

- Profuse purulent sometimes blood-stained vaginal discharge.
- Superficial dyspareunia.
- Vaginal soreness.

### Treatment:

- Exclude malignant diseases.
- Estrogen replacement therapy with either topical dienestrol cream or systemic therapy.

Best wishes

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