Candida infection
Tricpmonas vaginalis
Bacterial vaginosis

Type of infection

- **Females**
  - Cervicitis
  - Vulvovaginitis
  - Urethritis
  - Bacterial vaginosis (BV)
  - Salpingitis (pelvic inflammatory disease [PID])
  - Endometritis
  - Genital ulcers
- **Pregnant females**
  - Disease in the neonate.
- **Children and postmenopausal women**

- **Males**
  - Urethritis
  - Epididymitis
  - Prostatitis
  - Genital ulcers

Abnormal vaginal secretion

- Normal physiological vaginal secretion
- Vaginal infection
  - Trichimoniasis
  - Vulvovaginitis candiasis
  - Bacterial vaginnosis
- Desquamative inflammatory vaginitis
- Cervicitis
  - Infectious
  - Noninfectious
- Esterogen deficiency

History & symptoms of valvovaginitis

- General gyneclogical history(age Neonatal ,pregnancy,prepubescent,atrophic post menop)
- Onset,,Esterogen depletion)
  - Menstrual history
  - Pregnancy
  - Sexual Hx
  - Contraception
  - Sexual relationship
  - Prior infection

- General medical Hx
  - Allergies
  - DM
  - Malignancies
  - Immunodeficiecy
- Medication OCP<steroids,duches
- Symptoms
  - Discharge(quality scanty)physiological OCP
  - Oder(BV,FB,EV fistula)
  - Valvular disconfort(HSV)
  - Dyspareunia
  - Abdominal pain (tricho) PID

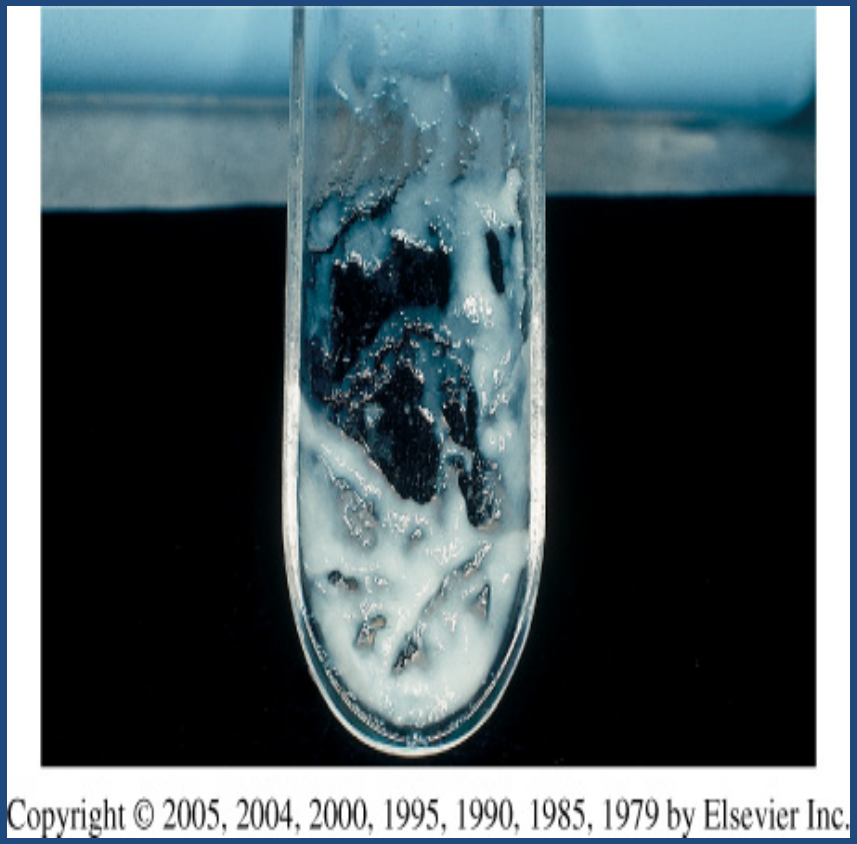
Examination

- Breast
- Adequate illumination
- Magnification if possible
- Give a patient mirror
- Inspect external genetalia
  - Lesions
  - Erythema
- Vaginal mucosa
  - Erythema
  - Lesion
  - Secretion

- Examination of cervix
  - Ectropion
  - Lesions
  - Erythema
  - Endocervical secretion
- Collect cervical and vaginal specimen
- Bimanual examination

Characteristic of normal vaginal secretion

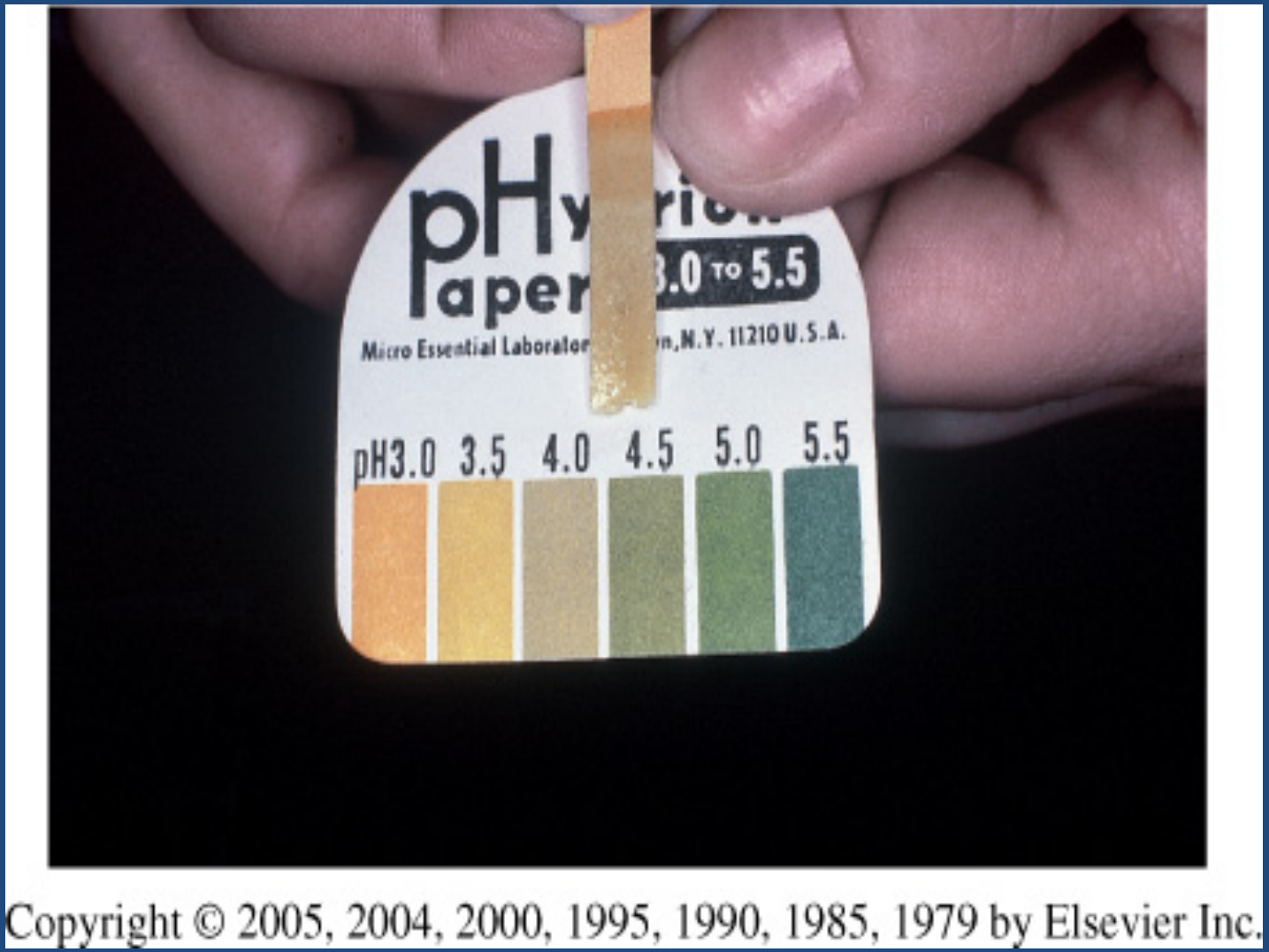
- Desquamated vaginal epithelial cell
- Lactobacilli dominate
- PH 3.5 to 4.6
- Oderless
- No itching or irritation
- Deonot soil underclothing1



The human vagina

- Lined with 25 layers of epithelium cells.
- Separation of microbial pathogens from the normal genital microbiota.

- Lactobacilli
- *Corynebacterium* spp.
- *Gardnerella vaginalis*
- coagulase-negative staphylococci, *Staphylococcus aureus*
- *Streptococcus agalactiae*
- *Enterococcus* spp.
- *Escherichia coli*
- Anaerobes
- Yeasts



Vaginal PH examination

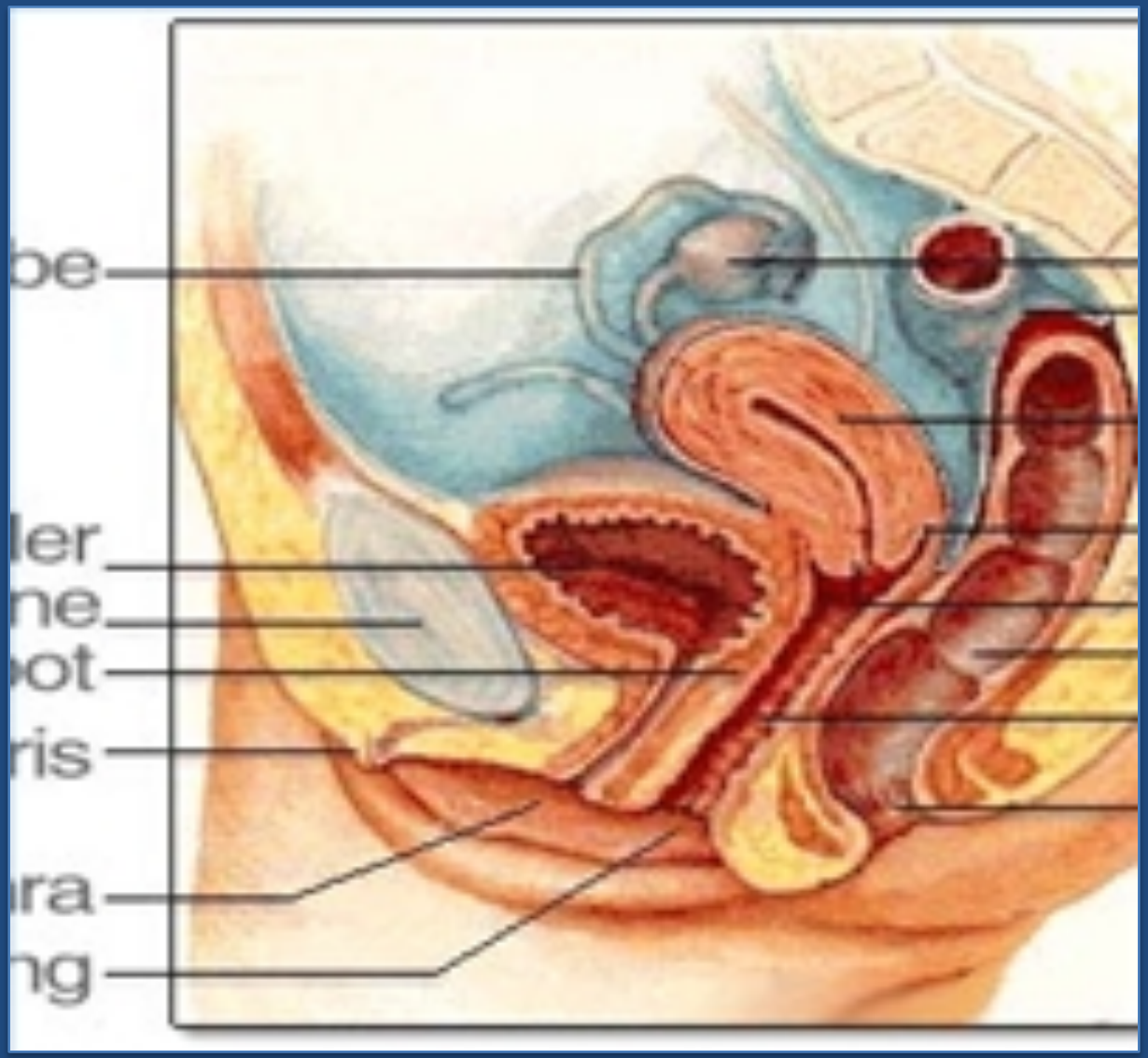
Cassification of vulvovaginitis

- Uncomplicated
  - Sporadic
  - No underlying disease
  - By *Candida albican*
  - Not pregnanat
  - Mild to moderate severity
- Any available topical agent
- Fluconazole 150mg as a single oral dose

- Complicated
  - Underlying illness
    - HIV
    - DM
  - Recurrent infection 4 or more per year
  - Non albican candida
  - Pregnancy
  - Sever infection
- Culture confirmation mandatory
- Antifungal suscep. Testing
- Treat for 10-14 days with vaginal or oral agent
- Other topical
  - Boric acid
  - 5 fluorocytocine
- Consider treatment of the partners
- Long term suppressive treatment for frequently recurrent diseases

Candida infections
yeast infection
moniliasis

- **Candidiasis** or **thrush** is a fungal infection (mycosis) of any of the *Candida* species (yeasts) of which *Candida albicans* is the most common.
- Common superficial infections of skin and mucosal membranes by *Candida* causing local inflammation and discomfort.


be
ler
ne
ot
ris
ra
ng

Candidal vulvovaginitis vaginal thrush

- Infection of the vagina's mucous membranes by *Candida albicans.*
- 75% of adult women
- Found naturally in the vagina
- Hormonal changes
- Change in vaginal acidity.
- Broad-spectrum antibiotics.
- Use of corticosteroid medications
- Pregnancy.
- *20-30* years
- Poorly controlled diabetes mellitus.

Risk factors

- Antibiotics
- Pregnancy
- Diabetes (poorly controlled)
- Immunodeficiency
- Contraceptives
- Sexual behaviour
- Tight-fitting clothing
- Female hygiene

Symptoms

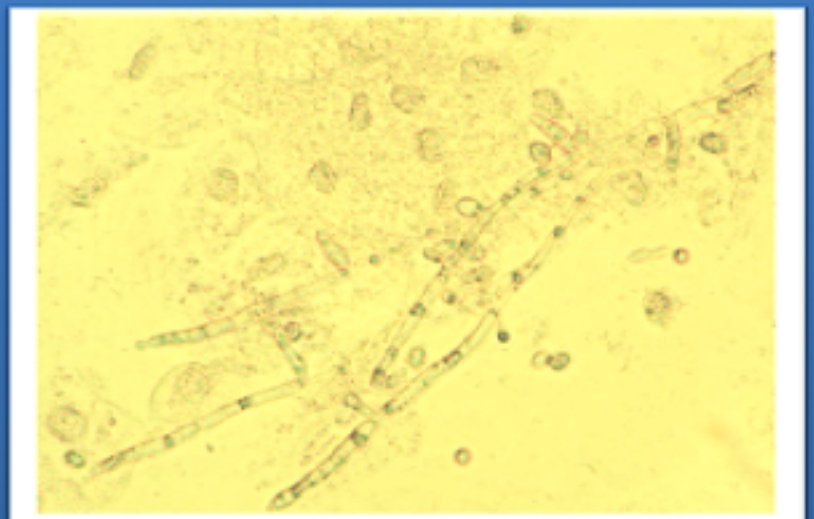
- Vulval itching
- Vulval soreness and irritation
- Superficial dyspareunia.
- Dysuria
- Odourless vaginal discharge
  - thin and watery or thick and white (cheese-like)
- Erythema (redness)
- Fissuring
- satellite lesions.

Types of candidal vulvovaginitis

- **Uncomplicated thrush**
  - single episode/less than four episodes in a year.
  - mild or moderate symptoms
  - caused by the Candida albicans .
- **Complicated thrush**
  - four or more episodes in a year.
  - severe symptoms.
  - Pregnancy
  - poorly controlled diabetes/immune deficiency.
  - not caused by the Candida albicans

Diagnosis

- History & symptoms
- physical and pelvic exam
- Candidiasis can be similar to other diseases:
  - Sexually transmitted diseases
  - Chlamydia
  - Trichomoniasis
  - Bcterial vaginosis
  - Gonorrhea



Candida albicans

Treatment

- Butoconazole cream
- Clotrimazole
  - 1% cream
  - vaginal tablet
- Miconazole
  - 2% cream
  - vagina suppository
- Nystatin
  - vaginal tablet
- Oral Agent:
  - Fluconazole- oral one tablet in single dose

Treatment

- Short-course topical formulations
  - single dose and regimens of 1–3 days
  - effectively treat uncomplicated candidal vulvovaginitis
  - Topical azole drugs are more effective than nystatin
  - Azole drugs relief of symptoms in 80%–90% of cases.
- Treatment failure
  - In up to 20% of cases
  - If the symptoms do not clear within 7–14 days

Trichomoniasis (sexually-transmitted infection)

- Symptoms
  - Purulent vaginal discharge
  - yellow or greenish in color
  - Vulvar irritation (strawberry)
  - Dysurea
  - Dyspareunia
  - Abnormal vaginal odor

The wet mount's fast results

Culture is considered the gold standard for the diagnosis of trichomoniasis. Its disadvantages include cost and prolonged time before diagnosis

Management

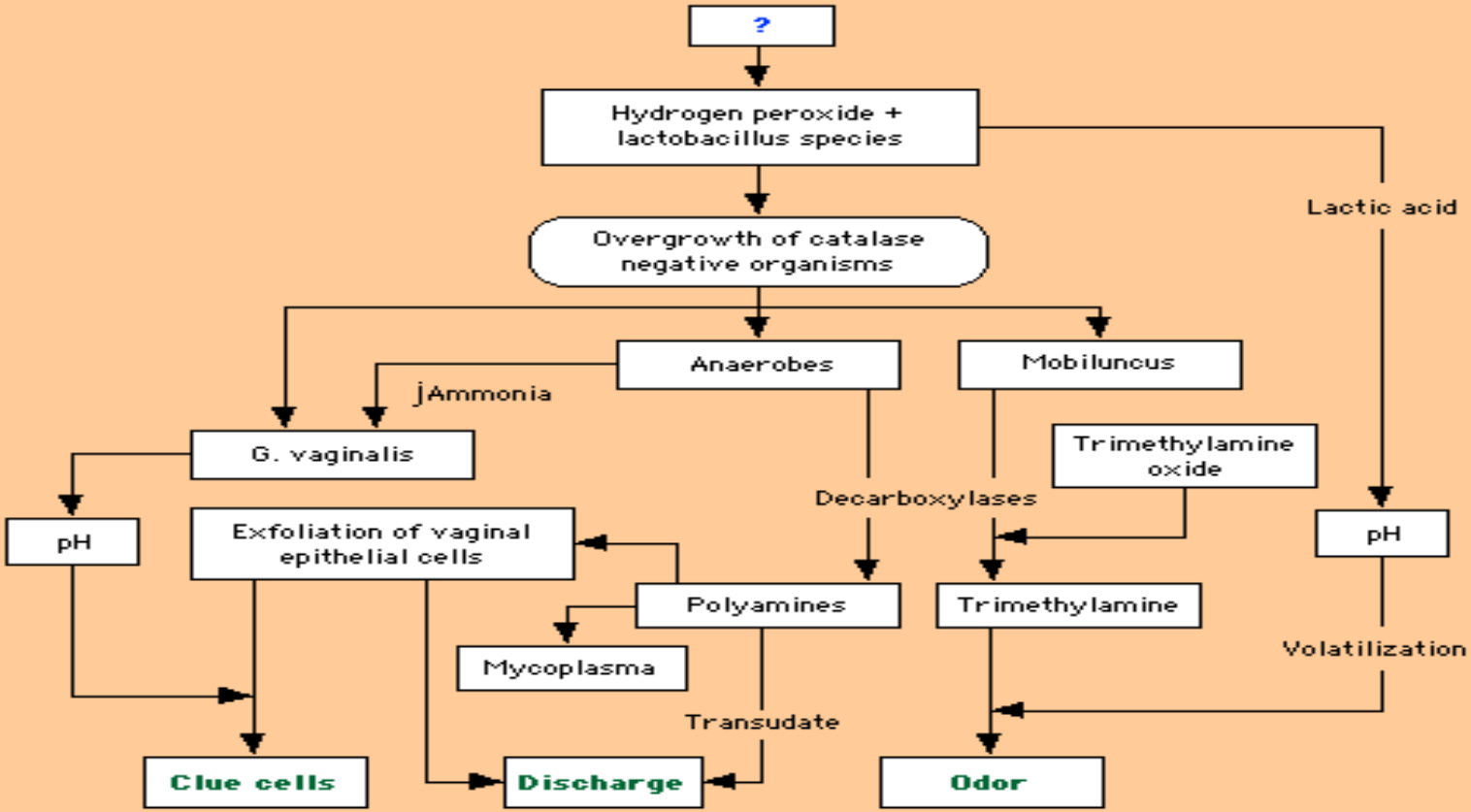
- Confirm the diagnosis
  - Wet preparation (miss 30%)
  - Culture
  - Gram Stain
- Confirm all current sexual partners treated
- Oral metronidazole
    - 500 mg bid for 7 days
    - 2 g daily for 3-5 days
- If Rx failure -Consultation with experts
  - Susceptibility testing
  - Higher dose of metronidazole
  - Alternative Tinidazole

Bacterial Vaginosis

Floral imbalance

- Lactobacillus acidophilus
- Gardnerella vaginalis
- Mycoplasma hominis
- Mobiluncus species
- Anaerobes
  - Bacteroides (Porphyromonas)
  - Peptostreptococcus
  - Fusobacterium
  - Prevotella

- Lactobacilli
  - Compete with other microorganisms for adherence to epithelial cells
  - Produce antimicrobial compounds such as organic acids (which lower the vaginal pH) hydrogen peroxide, and bacteriocin-like substances



Pathogenesis of bacterial vaginosis. The overgrowth of anaerobic microorganisms is accompanied by the production of proteolytic enzymes that act on vaginal peptides to release several biologic products, including polyamines, which volatize in the accompanying alkaline environment to elaborate foul-smelling trimethylamine. Polyamines facilitate the transudation of vaginal fluid and exfoliation of epithelial cells, creating a copious discharge. Clue cells are formed when Gardnerella vaginalis, present in high numbers, adhere to exfoliated epithelial cells in the presence of an elevated pH. (Redrawn by permission from Sobel, JD, N Engl J Med 1997; 337:1896-1903.)

Pathogenesis

- **Marked reduction in lactobacillus**
  - **Decreased hydrogen peroxide production**
- **Polymicrobial superficial infection: overgrowth of G. vaginalis and anaerobic bacteria**
  - **Lactobacilli predominate after metronidazole treatment**

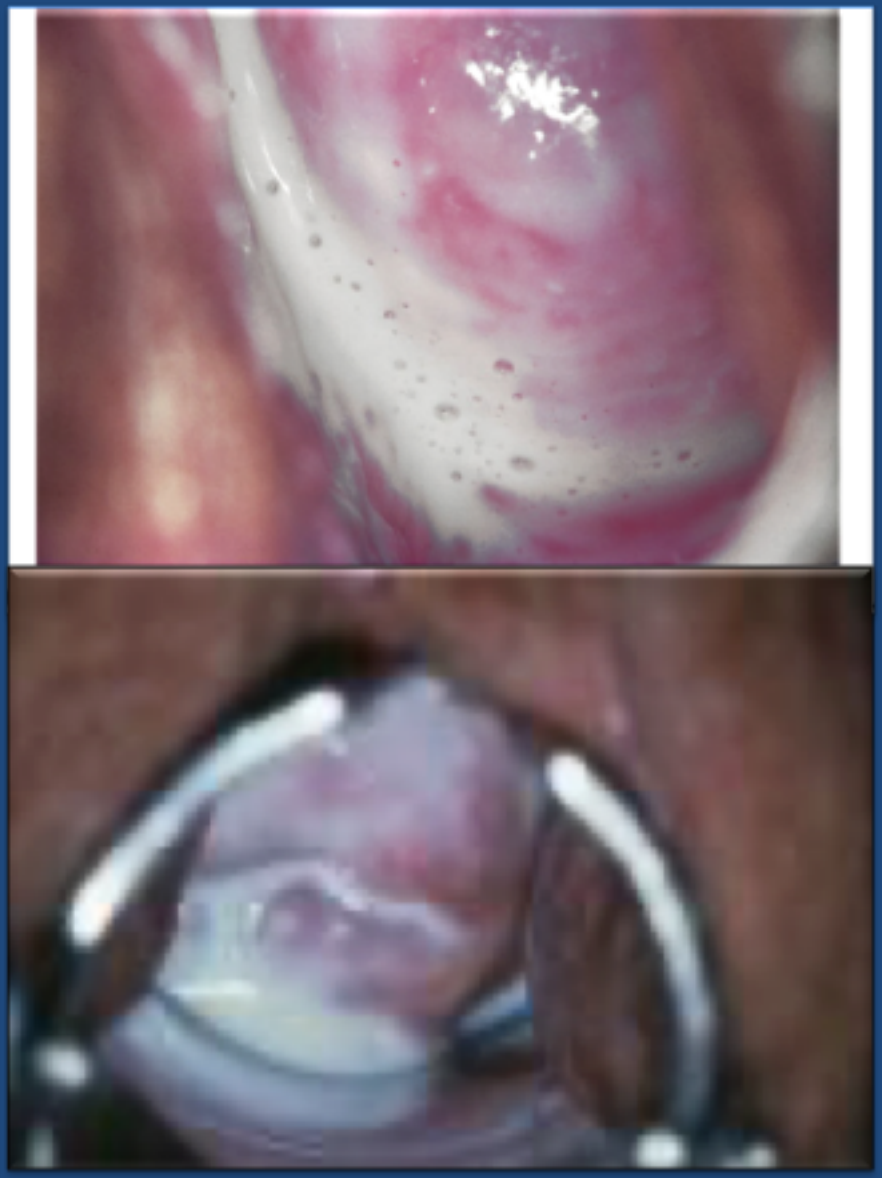
Epidemiology

- The most common vaginal infection in women of childbearing age-29%
- **Risk factors**
  - **Multiple or new sexual partners**
  - **(sexual activity alteration of vaginal pH)**
  - **Early age of first sexual intercourse**
  - **Douching**
  - **Cigarette smoking**
  - **Use of IUD**

***Although sexual activity is a risk factor for the infection, bacterial vaginosis can occur in women who have never had vaginal intercourse**

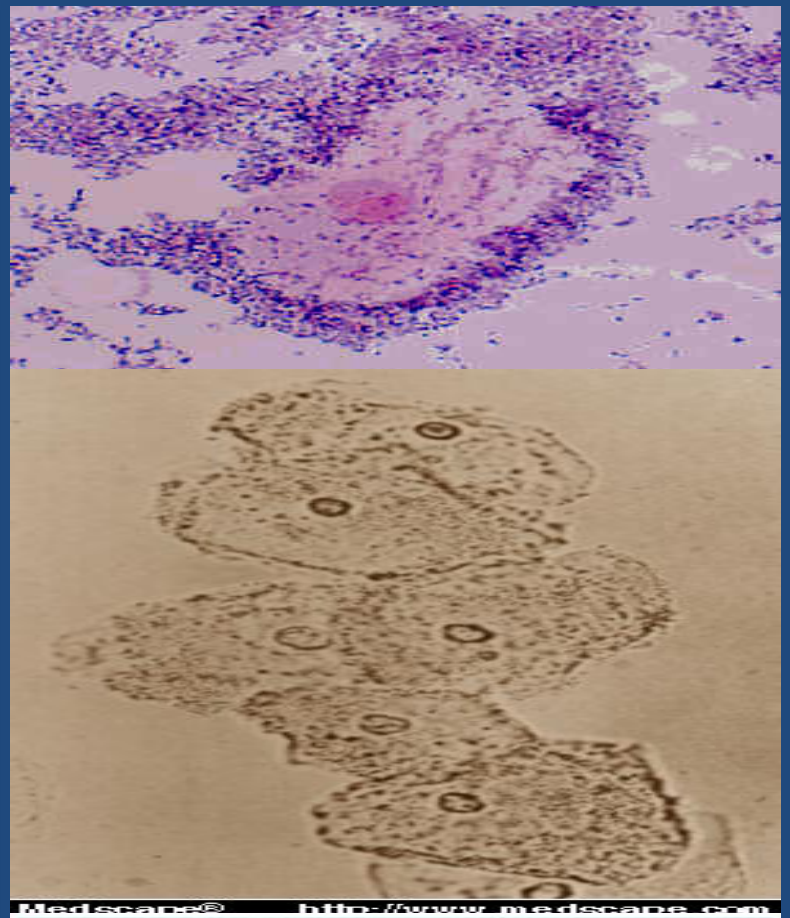
Clinical Features

- Most cases (50-75%) Homogenous grey vaginal discharge
- Dysuria and dyspareunia rare
- Pruritus and inflammation are absent
- Fishy vaginal discharge
  - During menstruation
  - After intercourse
- Minimal itching or irritation
- Absence of inflammation is the basis of the term "vaginosis" rather than vaginitis



Diagnostic Methods

- *Clinical/Microscopic Criteria*
- *Gram Stain ("Gold Standard")*
  Clue cells on saline wet mount of vaginal discharge (on >20% cells)
    Bacteria adhered to epithelial cells; most reliable single indicator
  Vaginal pH > 4.5
- *Elevated pH and increased amine*
  - *Sensitivity 87%; Specificity 92%*
- **Culture- poor predictive value for G. vaginalis as prevalent in healthy asymptomatic women*
- **DNA probes- expensive, poor predictive value alone*



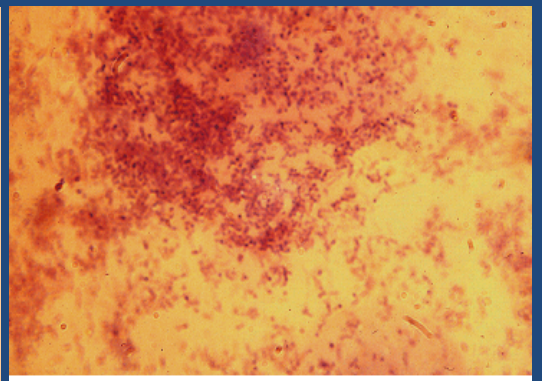
Diagnosis by Gram Stain

Gram Stain Scoring System for Diagnosis of Bacterial Vaginosis†

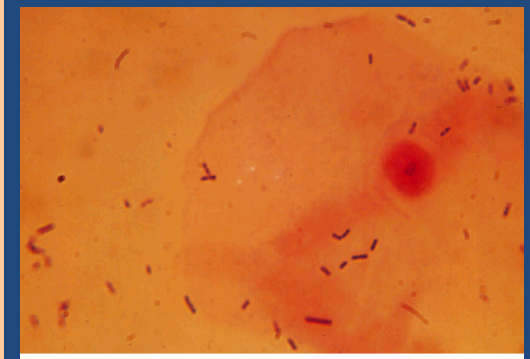
Score	Lactobacillus morphotypes	Gardnerella and Bacteroides morphotypes	Curved gram-variable rods
0	4+	0	0
1	3+	1+	1+ or 2+
2	2+	2+	3+ or 4+
3	1+	3+	
4	0	4+	

The score is determined by the average number of each morphotype seen per oil-immersion field, but varies with the type of bacteria. Excluding lactobacillus morphotypes, a score of 0 means no morphotypes are present; 1, 0 to 1 morphotype present per high power field; 2, 1 to 4 morphotypes present; 3, 5 to 30 morphotypes present; 4, 30 or more morphotypes present. A total score of 7 to 10 is indicative of bacterial vaginosis infection, 4 to 6 is indeterminate, and 0 to 3 is normal. (Total score = lactobacilli score and Gardnerella vaginalis score and Bacteroides species score and curved gram variable rod score).

†Adapted from data in Nugent, RP. J Clin Microbiol 1991; 29:291.



Bacterial vaginosis Gram stain of vaginal discharge (x1000) from a patient with bacterial vaginosis shows the borders of an epithelial cell obscured by small, Gram variable coccobacilli. Courtesy of Harriet Provine.



Normal vaginal flora Gram stain of vaginal contents (x1000) shows an epithelial cell with well-visualized borders and Gram positive rods similar to lactobacilli. The smear suggests normal vaginal flora, not bacterial vaginosis. Courtesy of Harriet Provine.

Treatment Recommendations

- **Oral metronidazole 500 mg bid x 7 days *($5)***
  - **84-96% cure rate**
  - **Single dose therapy (2g) may be less effective**
- **Oral Clindamycin 300 mg bid x 7 days *($28)***
  - **Less effective**
- **Topical treatments (higher recurrence rates)**
  - **Metronidazole gel (0.75%) 5 g PV qhs x 5 days *($30)***
    - **70-80% cure rate**
  - **Clindamycin cream (2%) 5 g PV qhs x 7 days *($31)***
    - **Less effective**
    - **May lead to Clindamycin resistant anaerobic bacteria**

Specimen Obtained during gynecological examination

- Vaginal secretion
  - PH
  - Saline wet preparation
  - KOH wet preparation
- Cervical cultural and non cultural
  - GC
  - C.trachomatis
- Vaginal culture
  - Candida
  - Trichomonas vaginalis
- Cervical cytological examination if not documented within previous 12 months

Routine bacterial cultures not helpful

- Routine NOThelpful
- Wet mount- 60% sensitive (Trichomoniasis ,BV)
- Abnormal or foul odor using a (KOH) "whiff test,"
- The Gram stain is useful to diagnose BV
  - Using the Nugent scoring system
- A wet mount+ a yeast culture and *Trichomonas* culture
  - Recommended tests to diagnose vaginitis.
- Performing only a wet mount, without yeast or *Trichomonas* culture,
  - 50% of either of these agents of vaginitis will be missed
- A sensitive DNA probe assay is available
  - Combines the detection of yeasts, *Trichomonas,* and G. *vaginalis* as a marker for BV