

Vaginitis

Bacterial Vaginosis

Trichomonas

Candidiasis

Only one is an STD – but these conditions are commonly seen in STD Clinics and Reproductive Health and/or Primary Care

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Common Symptoms and Causes

- Usually characterized by
 - Vaginal discharge
 - Vulvar itching
 - Irritation
 - Odor
- Common types
 - Trichomoniasis (15%-20%)
 - Bacterial vaginosis (40%-45%) – **not inflammatory**, but due to Sx & frequency of the problem – it is included here
 - Vulvovaginal candidiasis (20%-25%)

Due to worry & Sx – women will often use all manner of OTC “vaginal products” as well as some other “treatments” (such as H₂O₂ or alcohol!)

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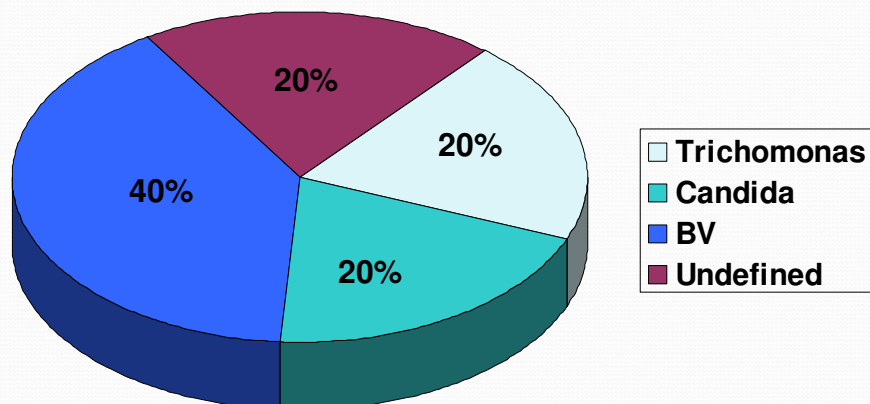
Vaginal Environment

- The vagina is a dynamic ecosystem that contains approximately 10^9 bacterial colony-forming units
- Normal vaginal discharge is clear to white, odorless, & of high viscosity
- Normal bacterial flora is dominated by lactobacilli – other potential pathogens present
- Acidic environment (**pH 3.8-4.5**) inhibits the overgrowth of bacteria
- Some lactobacilli also produce H_2O_2 – a potential microbicide

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Vaginitis – Etiologies



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Bacterial Vaginitis Not An STD

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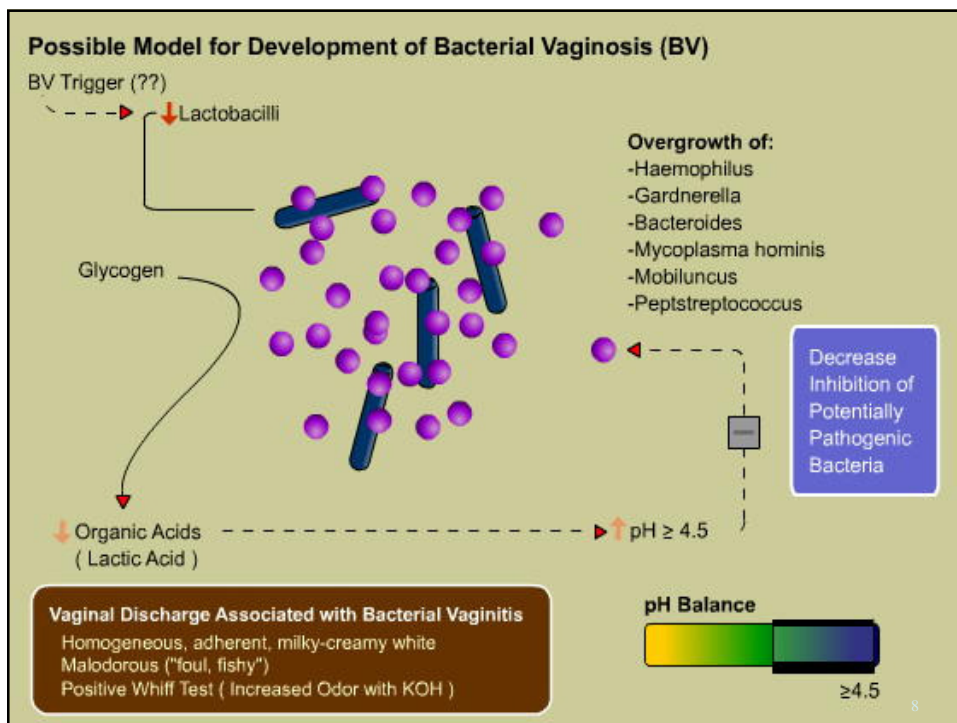
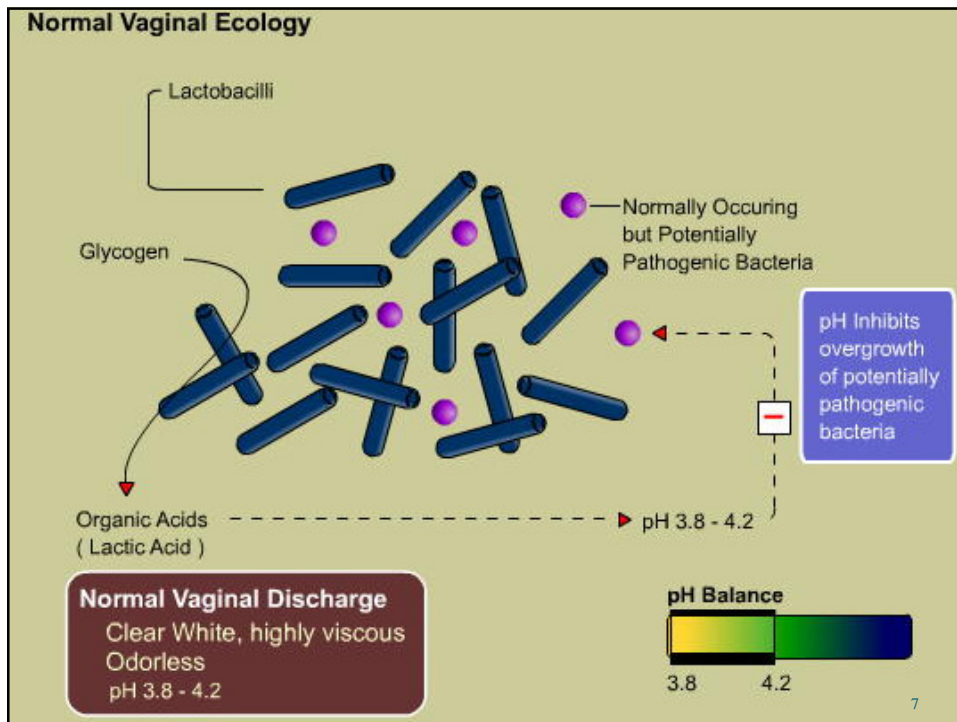
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Bacterial Vaginosis

- What is it?
 - Replacement of the lactobacilli of the vagina by characteristic groups of bacteria accompanied by changed properties of the vaginal fluid
- It is troublesome & frustrating for patients
 - It can cause relationship problems for women also, due to the complexity of the condition (& incomplete understanding with inconsistent research finding)
- It is challenging for providers

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Risk Factors for Development of BV

- Recent douching ↑
- New male sex partner ↑
- ? Sex with another woman ↑
- Condom use – trend towards ↓ but no consistent definitive protective effect
 - Study results are inconsistent re use of condoms for reducing BV
- Others

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Vaginal Douching

- Douching within prior 2-3 months associated with
 - 2-3 times increased risk of PID; mechanism largely due to eradication of normal lactobacilli
 - Ectopic pregnancy
- **No douche is a good douche**, but some are harsher than others (such as psyllium, antihistamines, corn starch, betadine)
- Douching is not reliably effective for any infection, either as treatment or prophylaxis
- **Advise women not to douche**

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circa 1943

No douche is a good douche!



ECONOMICAL: 1 capsule per quart water.
CONTAINS: Oxyquinoline Sulfate,
Oil of Peppermint, Alum, and Boric Acid.

www.mum.org

NICE capsules may be bought as follows:
One bottle 12 capsules \$.50
One bottle 30 capsules 1.00
Large bottle 100 capsules 3.00
Economy size 500 capsules 14.00

Feminine hygiene is now taught in many colleges and universities. The subject includes the importance of proper vaginal baths.

NICE capsules are a PRE-MEASURED douche powder compressed into capsules to make them convenient for home and travel and easy to use. Nice powder dissolves easily and is 100% soluble in water. They are cooling, cleansing, refreshing, astringent, impart a pleasant odor, and help protect delicate tissues against infection.

When Nice capsules are used as directed on the label, they give the water bacteriostatic properties which help to destroy and guard against the reproduction of bacteria which may cause harmful infection. They thereby help to maintain a normal healthy condition of the vaginal tract.

NICE capsules contain not just one but several active ingredients, each designed for a special purpose. It is the particular manner and proportion in which these ingredients are used in Nice capsules which make them distinctive and a favorite with so many discriminating women.

NICE capsules are prescribed by many doctors, and are purchased by many nurses and other careful women who desire the best for feminine hygiene.

NICE capsules are manufactured by a pharmaceutical laboratory specializing in fine products. These capsules are made of the purest ingredients and are non-drying and harmless to vaginal tissue.

(Over)



FITS IN PURSE
Easy to use, carry, and put away. Long-lasting rubber.
Feminine Hygiene and Enemas



Water stretches the rubber and builds up pressure in syringe.



HOLDS 2 QUARTS . . . water is forced out by its own pressure. — no hangers needed.



**IDEAL FOR HOME OR TRAVEL
ATTRACTIVE CARRYING CASE**

DIRECTIONS: Expand syringe to about the size of a muskmelon or cantaloupe to hold 1 to 2 quarts of water. Five inches diameter for 1 quart; 6 inches diameter for 2 quarts. Do not over-expand.

(Over)



MUSEUM OF MENSTRUATION AND WOMEN'S HEALTH

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Normal Vaginal pH is Important!

- *Lactobacillus Sp* are the predominant organisms in vaginal flora – maintains vaginal pH
- Normal pH < 4.7 favors growth of acidophilic organisms, inhibits growth of other organisms (residents & invaders)
- H₂O₂ producing strains found in 96% of women with normal flora vs 6% of women with BV

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Possible Adverse Outcomes of BV

- Data support association with
 - Post-Procedure Infections (including post-abortion [therapeutic] & post hysterectomy)
 - Increased susceptibility to other STDs (GC, PID, HIV)
 - Cervicitis (unclear)
 - Obstetric complications (see next slide)

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Possible Adverse Outcomes of BV in Pregnancy

- Data support association with
 - Preterm labor & delivery *
 - Premature rupture of membranes
 - Intra-amniotic infection
 - Histological chorioamnionitis
 - Postpartum endometritis
 - Spontaneous abortion in first trimester (IVF)

* BV estimated to be implicated in up to 10% of cases

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Bacterial Vaginosis

- Symptoms

- Often none
- Increased watery discharge
- “Fishy” odor, especially after sex
- Vaginal soreness after sex
- May be accompanied by dysuria

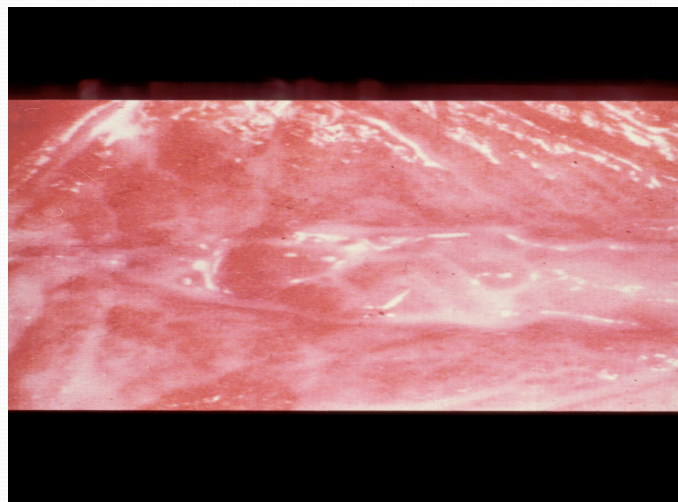
- Clinical Signs

- Thin, homogenous, white discharge adhering to vulva, vaginal walls
- Discharge may be profuse
- Fishy odor (sniff test)

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BV Signs – Mucosal Appearance

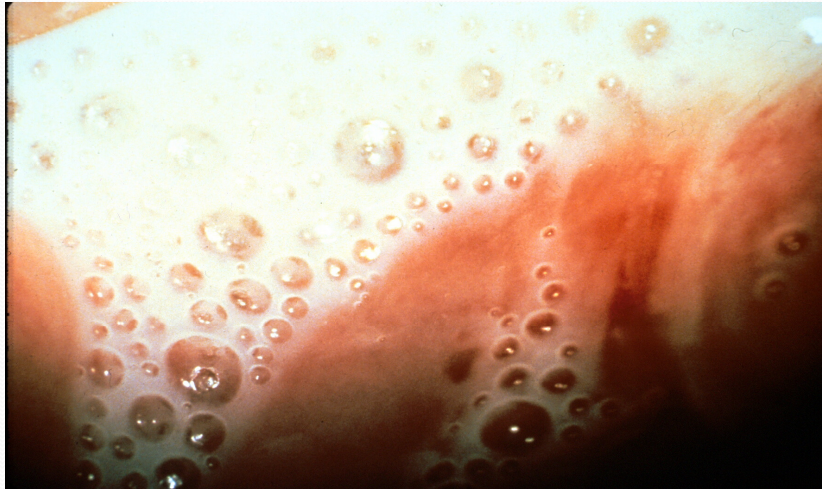


No erythema – BV is not inflammatory

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BV Signs – Mucosal Appearance



No erythema – BV is not inflammatory

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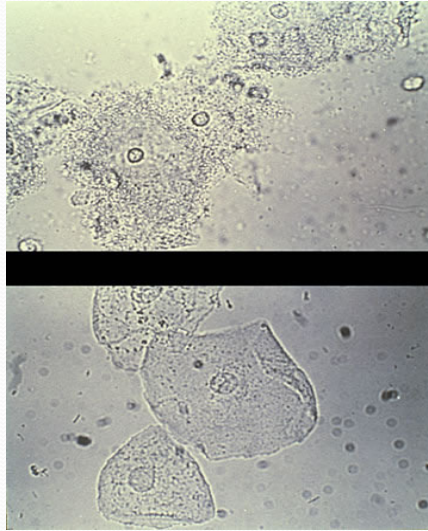
BV – Adherent Grayish Discharge



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Normal Epithelial & Clue Cells Wet Smear



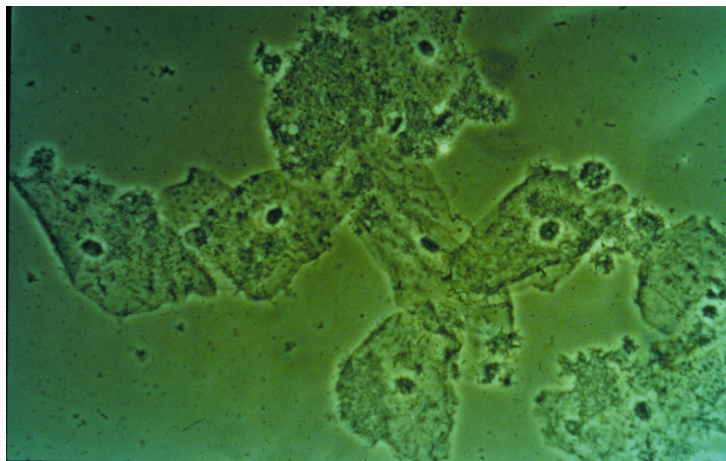
Clue Cells

Normal
Epithelial Cells

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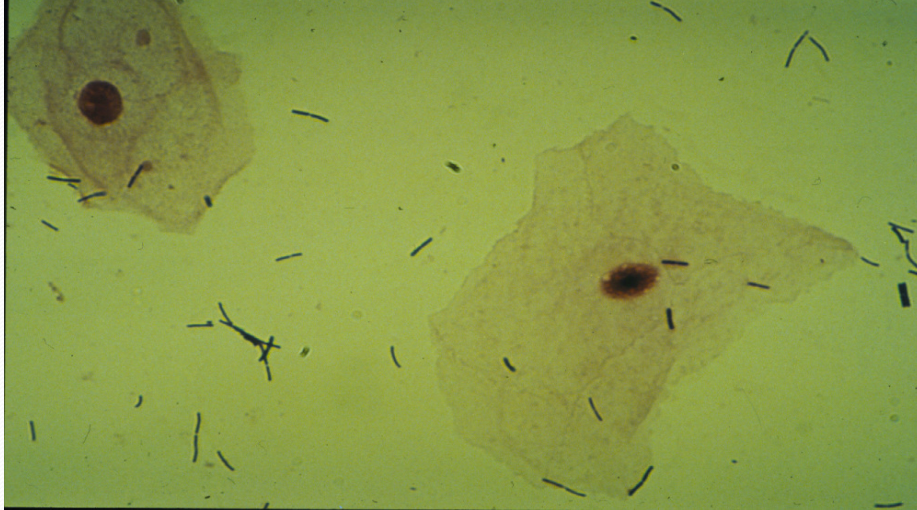
Clue Cells Wet Smear



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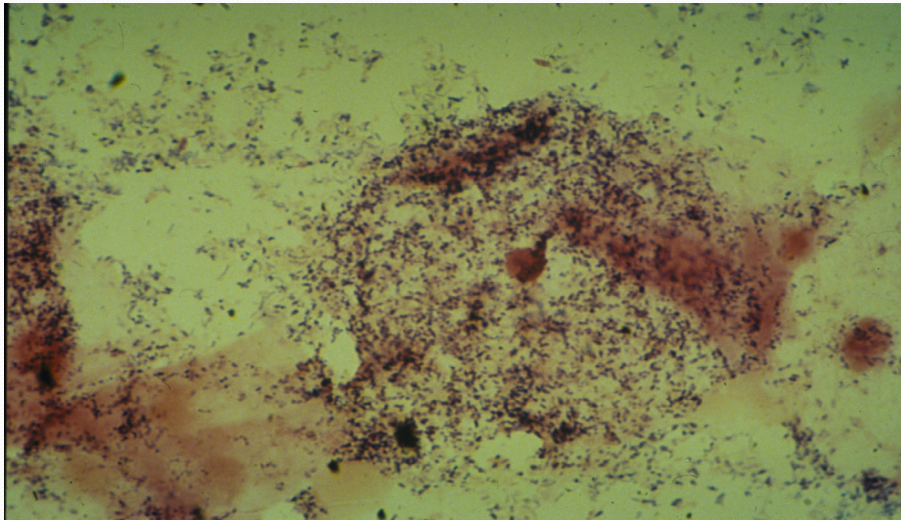
Vaginal Gram Stain – Normal Epithelial Cells



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Vaginal Gram Stain – Clue Cells



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Diagnosis of BV

- Clinical findings (Amsel's Criteria) – 3 of the following must be present
 - Homogeneous discharge
 - pH > 4.5
 - Clue cells (> 20%) on wet prep (0.9% NaCl)
 - Amine odor on addition of 10% KOH (+ whiff test)
- Gram stain findings (Nugent scale) – based on number of lactobacilli & other bacterial morphotypes
- Newer card tests – quantitative *Gardnerella*; combined pH/amine; PIP assays

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BV – Who to Treat?

- Rx is recommended for women with **symptoms**
 - Established benefits of Rx – relieve vaginal symptoms & signs of infection (pregnant & non-pregnant)
 - Other **potential** benefits to Rx – reduced risk for acquiring *C trachomatis* or *N gonorrhoeae*, HIV, & other viral STDs
 - Very mixed results from studies evaluating Rx of asymptomatic pregnant women
 - Rx of asymptomatic women is **not** recommended at this time (pregnant or non-pregnant)

2010 CDC STD Rx Guidelines

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BV Treatment

- Recommended Regimens

Metronidazole 500 mg orally BID x 7 days

~ or ~

Metronidazole gel 0.75% 1 full applicator (5 gm)
intravaginally, QD x 5 days

~ or ~

Clindamycin Cream 2% 1 full applicator (5 gm)
intravaginally HS x 7 days

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BV – Alternative Treatment Regimens Non-pregnant Women

Tinidazole 2 gm PO QD x 2 days

~ or ~

Tinidazole 1 gm PO QD x 5 days

~ or ~

Clindamycin 300 mg PO BID x 7 days

~ or ~

Clindamycin Ovules 100 mg intravaginally HS x 3 days

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BV in Pregnancy Treatment Recommendation Evolution

- 2006 – CDC Guidelines
 - Even if “asymptomatic” in 1st or 2nd trimester – some authorities recommend screening & Rx
 - Screening high risk pregnant women with benefit – seen in 3 out of 4 studies
 - 2010 – USPTF & CDC Guidelines
 - No screening of low risk pregnant women – there is insufficient evidence for high risk pregnant women
- **No** topical Rx for any pregnant women

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BV – Treatment During Pregnancy

- BV – **2011** CDC Treatment Regimens for Pregnant Women
 - Metronidazole 500 mg PO BID x 7 days
 - ~ or ~
 - Metronidazole 250 mg PO TID x 7 days
 - ~ or ~
 - Clindamycin 300 mg PO BID x 7 days

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Use of Metronidazole in Pregnancy

- Metronidazole is a mutagen in bacteria & carcinogenic in some animals
- No teratogenicity in human infants reported, though used extensively
- Meta-analysis of data suggests no risk
 - **Recommended at all stages of pregnancy**



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BV Recurrence

- Recurrence is common – up to 80% within 7- 9 months
- Why?
 - Failure of lactobacilli to recolonize
 - Persistence of untreated “pathogens”
 - Re-exposure to some inciting factor (? sexual)
 - Persistence of unidentified host factor
- Suppressive MTZ regimens studied
 - 14 days intravaginal metronidazole, then biweekly (maintenance therapy with same for 6 months) – results encouraging while treatment continued

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Commercially Available *Lactobacillus*

- Generally include dairy products (yogurt, acidophilus milk), powders, tablets
- Often contaminated with *Enterococcus*
- Few may actually contain *L acidophilus* (not the key *Lactobacillus* anyway) – common species were *Delbrueckii casei* (yogurt)
- Few (~ 10%) contain H₂O₂ lactobacilli
- Yogurt strains did not adhere well to human epithelial cells

Hughes & Hillier. (1990)

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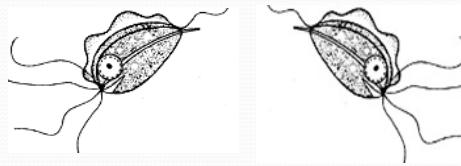
Counseling and Partner Management

- It is important to assure the patients that BV is not an STD, but that it is normal flora gone awry
 - **Assure that they understand this fact, but also help them feel confident about how to explain it to partners**
 - **Also – at this time – it is not considered transmissible, but that there are factors that might contribute to BV (including partners)**
- BV – Treatment of male partner
 - **Not recommended at this time**
- Repeated episodes – might be beneficial for partners to be evaluated (male or female)
 - **Data are inconclusive, however**

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Trichomoniasis An STD



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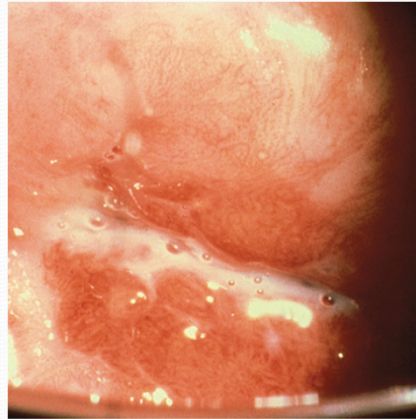
Clinical Signs of Vaginal Trichomoniasis

Clinical Signs	Percent Seen
None	15%
Diffuse vulvar erythema	10-20%
Profuse yellow-green discharge	50-75%
Vaginal inflammation	40-75%
"Strawberry Cervix"	2%

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Trichomonas Discharge on Cervix



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“Strawberry Cervix”



Seen in < 3% of all Trich Cases

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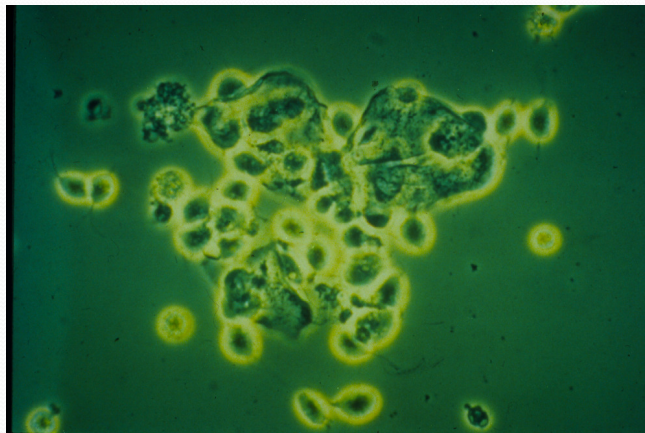
Trichomoniasis – Diagnosis

Diagnostic Test	Specificity
Wet Prep/Smear	60-70%
Culture (not widely available)	85%
NAAT – not yet approved	74-98%
Antigen detection	Little data

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Trichomonas on Wet Prep



Fluoresced

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Trichomoniasis Treatment – 2011 (CDC)

- Recommended
 - Metronidazole 2000 mg PO x 1
 - ~ or ~
 - Tinidazole 2000 mg PO x 1
- Alternative Treatment
 - Metronidazole 500 mg PO BID x 7 days

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Trichomonas – Partner Management

- Be sure that the female patient knows to tell her male partner(s) that there is no easy or easily available method to detect Trich in males
 - So “got tested for everything” is not sufficient for males
- The males rarely have Sx
 - This makes it difficult to explain the need for Rx to males
- Give the patient something in print/writing that indicates the Trichomonas Dx – so she can assure proper Rx by the male’s provider
 - Indicate “Contact to Trich” – with a pamphlet if available

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Trichomoniasis – Rx Failure/Reinfection 2011

- Treatment Failure *

Retreat with Metronidazole 500mg PO BID x 7 days

~ or ~

Tinidazole 2000 mg PO x one

- Recurrent Infection

Metronidazole 2g PO QD x 5 days

* See CDC Rx Guidelines for further information if true resistance is considered

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Complications of Trichomoniasis

- Increased HIV Susceptibility
- Adverse Outcomes of Pregnancy
 - 3-fold increase in post-hysterectomy infection (Soper, 1990)
 - Increased risk of preterm delivery

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Mechanisms of MTZ Failure in Vaginal Trichomoniasis

- Re-infection from untreated partner
- Noncompliance with MTZ therapy
- Insufficient MTZ absorption or transport to infected site
- Inactivation of MTZ by vaginal flora
- Infection with MTZ-resistant strain
 - Uncommon ~ 5%

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Management of Rx Failures

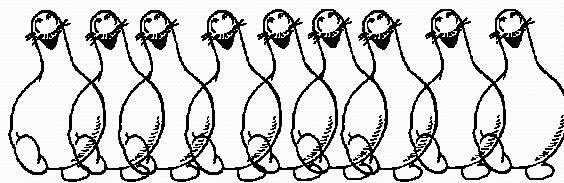
- Increase amount & duration of MTZ (as noted)
- Use Tinidazole instead (as noted)
- Susceptibility testing
 - CDC (# 770-488-4115) – if sensitive, may advise IV MTZ
- Alternative medications *
 - Paromomycin Cream (can cause ulcers) 250 mg QD x 14 d
 - Furazolidone
 - Tinidazole 500 mg PO QID x 14 days **plus** 500 mg tablet intravaginal BID x 7 days

* Obtain from compounding pharmacy – for directory of International Academy for Compounding Pharmacies, call 800-927-4227

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Yeast Vaginitis Not An STD

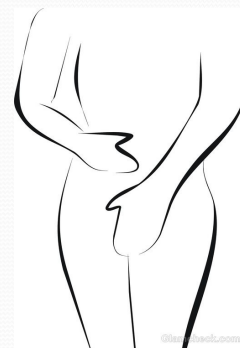


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Candida Vaginitis

- Traditional
 - *Candida albicans*
- Newly recognized Non-albican species
 - *Candida tropicalis*, *Torulopsis glabrata*



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Candida Vaginitis

- Organism infects squamous epithelium
- Squamous epithelium – pink, smooth, layered, non-keratinized
- Squamous epithelium lines vulva, vagina, & **exocervix** (not the endocervix)

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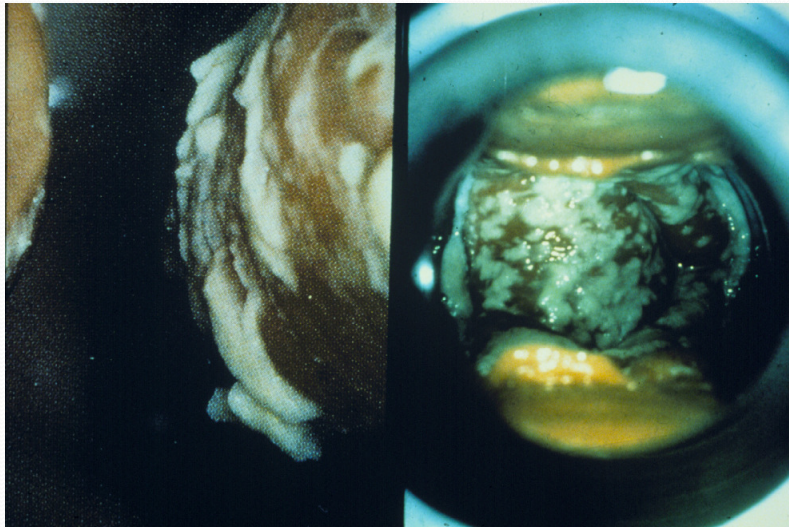
Candida Vaginitis – Signs and Symptoms

- | | |
|--|--|
| <ul style="list-style-type: none">• Signs<ul style="list-style-type: none">• Erythema• Edema• Thick, white exudate• Fissures, excoriation | <ul style="list-style-type: none">• Symptoms<ul style="list-style-type: none">• Itching• Vaginal/vulvar irritation• External dysuria• Vaginal dryness• Dyspareunia |
|--|--|

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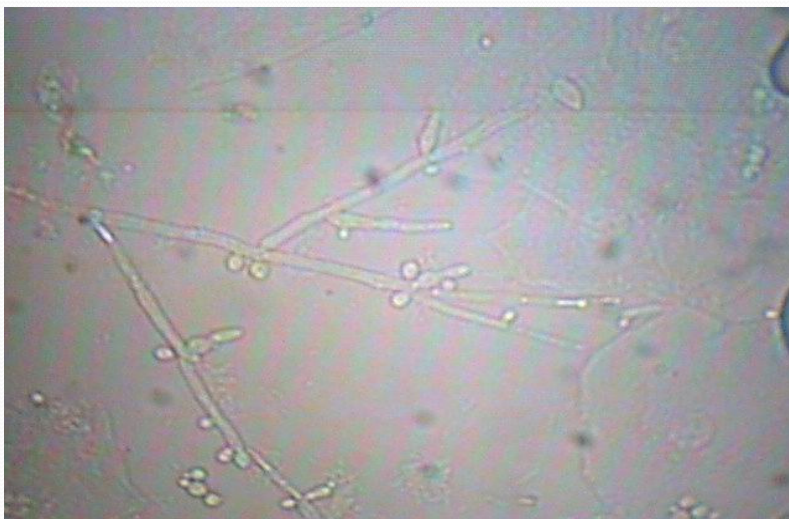
Thick white “curdy” discharge



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Yeast Cells & Hyphae



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Candida Vaginitis – Diagnosis

- Wet smear (KOH) showing budding yeast cells/pseudohyphae
- Gram stain showing same as above, gram stains positive (purple)
- Culture (Nickersons, Sabrouds media) of limited value

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Candida Vaginitis – Treatment

- CDC Recommended – here a just a few of the intravaginal Rx listed *

Miconazole suppository 100mg

~ or ~

2% cream 5Gm q HS x 7d

~ or ~

Clotrimazole suppository 100 mg

~ or ~

1% cream 5Gm q HS x 7 d

~ or ~

Terconazole 0.4% cream 5 Gm q HS x 7 d

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* See CDC Rx Guidelines for others

Candida Vaginitis – Treatment

- CDC Recommended – a few more intravaginal Rx *
Butoconazole 2% cream 5Gm q HS x 3 d
~ or ~
Nystatin 100,000 unit vaginal tablet q HS x 14 d
- Only one **oral** Rx
Fluconazole 150 mg PO x 1

* See CDC Guidelines for other medications

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Counseling and Partner Management

- This is not generally necessary – with few exceptions
 - Uncircumcised male partners might have posthitis (inflamed foreskin) or balanitis (inflamed glans)* when a female partner has yeast vaginitis
 - If the male is having Sx – it might be useful to get evaluated (& consider an STD screen too)
- It is important to assure the patient that yeast is not an STD, but that it is normal flora gone awry (like with BV), & that it's not something she “caught” or “gave”

* Balanoposthitis is inflammation of both

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A Bit More Thing About Yeast

- Topical Rx often is prescribed with the frequency as “HS”
 - **Some patients might misinterpret this to mean “at night” – be sure they understand that, in this case, HS simply means once daily & that the time of the day does not matter (but just to dose at ~ same time each day)**
- Many women will self-Rx before seeking medical care – be sure to get full Hx of those used; also this will often be the Rx women will use for any urinary or vaginal Sx
- Frequent yeast vaginitis might indicate an underlying problem, including HIV, diabetes, or some other immune compromise