This module provides an overview of normal vaginal flora, common causes of vaginitis, and general information on the diagnosis and evaluation of vaginitis. The module covers trichomoniasis, candidiasis, and bacterial vaginosis in detail.

**Vaginal Environment**
The vagina is a dynamic ecosystem that normally contains approximately $10^9$ bacterial colony-forming units per gram of vaginal fluid.

The normal vaginal discharge is clear to white, odorless, and of high viscosity.

The normal bacterial flora is dominated by lactobacilli, but a variety of other organisms, including some potential pathogens, are also present at lower levels.

Lactobacilli convert glucose to lactic acid.

Lactic acid maintains an acid vaginal pH of 3.8 to 4.2.

The acidic environment inhibits the overgrowth of bacteria and other organisms with pathogenic potential.

Some lactobacilli also produce hydrogen peroxide ($H_2O_2$), a potential microbicide that kills bacteria and viruses.

**Vaginitis**
Vaginitis can be characterized by any of the following: vaginal discharge, vulvar itching, vulvar irritation, vaginal odor, dyspareunia, and dysuria.

The three most common types of vaginitis are: trichomoniasis (15%-20%), bacterial vaginosis (40%-45%), and vulvovaginal candidiasis (20%-25%). In some cases the etiology may be mixed, and there may be more than one disease present.

Other causes of vaginal discharge or irritation may include:
- Mucopurulent cervicitis—may be related to *Chlamydia trachomatis* or *Neisseria gonorrhoeae* infection
- Herpes Simplex Virus (HSV)
- Atrophic vaginitis
- Allergic reactions
- Vulvar vestibulitis
- Foreign bodies
Diagnosis of Vaginitis

- Patient history
- Visual inspection of internal/external genitalia
- Appearance of discharge
- Collection of specimen
- Preparation and examination of specimen slide

Diagnosis of vaginitis

- Patient history
- Visual inspection of the external genitalia, vagina, and cervix
- Appearance of vaginal discharge: color, viscosity, adherence to vaginal walls, odor

Collection of specimen: collect discharge from the lateral wall of the vagina; prepare specimen slide (wet mount) with a drop of .9% warm saline and a drop of discharge; place cover slip on slide and examine microscopically at low and high power.

The following diagnostic criteria can be helpful in the differential diagnosis of vaginitis:
- Vaginal pH: determine vaginal pH with narrow-range pH paper
- Whiff test: assessment of a fishy odor after application of 10% KOH to wet mount
- KOH (wet mount): wet mount of discharge with 10% KOH
- NaCl (wet mount): wet mount of discharge with 0.9% normal saline

Other available diagnostics for vaginitis evaluation

- DNA probe for 3 organisms (*Trichomonas vaginalis*, *Candida albicans*, and *Gardnerella vaginalis*) is available. Sensitivity, specificity, and clinical utility are under investigation.

Cultures: not used routinely, but are available for both *T. vaginalis* and *Candida* spp. Culture may be useful in the management of persistent or recurrent vulvovaginal candidiasis.

New commercially available diagnostic tests for BV:
- Fem Exam Test Card™: pH and amines
- Fem Exam vaginalis PIP Activity Test Card™: detects enzyme breakdown from *G. vaginalis*

Image: Wet Prep: Common characteristics

Note squamous epithelial cell, polymorphonuclear (PMN) leukocyte, red blood cells (RBCs).

Image: Wet Prep: Lactobacilli and epithelial cells

Note lactobacilli and squamous epithelial cells.
Vaginitis Differentiation

<table>
<thead>
<tr>
<th>Normal</th>
<th>Trichomoniasis</th>
<th>Candida</th>
<th>Yeast-like Fungus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal discharge</td>
<td>Clear, yellowish, thin</td>
<td>Thick, greenish, foul-smelling</td>
<td>Thick, greenish, frothy</td>
</tr>
<tr>
<td>Odor</td>
<td>None</td>
<td>Foul-smelling</td>
<td>Foul-smelling</td>
</tr>
<tr>
<td>pH</td>
<td>4.5 - 4.7</td>
<td>5.5 - 6.5</td>
<td>5.5 - 6.5</td>
</tr>
<tr>
<td>Vaginal pH</td>
<td>Negative</td>
<td>Negative</td>
<td>Positive</td>
</tr>
<tr>
<td>KOH wet mount</td>
<td>Positive, few WBCs</td>
<td>Positive, many WBCs</td>
<td>Positive, many WBCs</td>
</tr>
<tr>
<td>Clue cells</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>Motile flagellated protozoa</td>
<td>Absent</td>
<td>Present</td>
<td>Absent</td>
</tr>
<tr>
<td>Lactobacilli</td>
<td>Present</td>
<td>Absent</td>
<td>Absent</td>
</tr>
<tr>
<td>NaCl wet mount</td>
<td>Positive</td>
<td>Negative</td>
<td>Negative</td>
</tr>
<tr>
<td>KOH &quot;whiff&quot; test</td>
<td>&gt; 4.5</td>
<td>Usually &lt; 4.5</td>
<td>3.8 - 4.2</td>
</tr>
</tbody>
</table>

Clinical findings:
- Inflammation and erythema
- Cervical petechiae
  - "Strawberry cervix"

Vaginal discharge:
- Odor, discharge, itch
- Itch, discomfort, dysuria, thick discharge
- Itch, discharge, 50% asymptomatic

Symptom presentation:
- Bacterial Vaginosis
- Candidiasis
- Trichomoniasis
- Normal

Learning Objectives

Upon completion of this content, the learner will be able to:
1. Describe the epidemiology of trichomoniasis in the U.S.
2. Describe the pathogenesis of T. vaginalis.
3. Describe the clinical manifestations of trichomoniasis.
4. Identify common methods used in the diagnosis of trichomoniasis.
5. List CDC-recommended treatment regimens for trichomoniasis.
6. Describe patient follow-up and partner management for trichomoniasis.
7. Describe appropriate prevention counseling messages for patients with trichomoniasis.

Lessons

I. Epidemiology: Disease in the U.S.
II. Pathogenesis
III. Clinical manifestations
IV. Diagnosis
V. Patient management
VI. Prevention

Lesson I: Epidemiology: Disease in the U.S.
Incidence and prevalence
Most common treatable STD.
Estimated 7.4 million cases annually in the U.S. at a medical cost of $375 million.
Approximately 2%-3% prevalence in the general female population.
50%-60% prevalence in female prison inmates and commercial sex workers.
18%-50% prevalence in females with vaginal complaints.
Not routinely diagnosed in men. A 17% prevalence rate was seen in males attending an STD clinic in an urban city.

Risk factors
Multiple sex partners
Low socioeconomic status
History of STDs
Some studies have found higher prevalence in African Americans, multiparous women, women married at an early age, and during pregnancy.

Transmission
Almost always sexually transmitted; fomite transmission is rare.
*T. vaginalis* may persist from months to years in epithelial crypts and periglandular areas. Distinguishing persistent, subclinical infection from remote sexual acquisition is not always possible.
Males are less likely to be infected by *T. vaginalis*, but this pathogen, in the absence of treatment, can persist in the male urethra.
Transmission between female sex partners has been documented.
*T. vaginalis* can survive extragenitally, but fomite transmission is rare.
Survival: wet sponge (90 minutes), urine (up to 3 hours), wet cloth (up to 24 hours)
Contamination after use by infected women: bathtub (1%), toilet seat (13%)
Microbiology

Etiologic agent: *Trichomonas vaginalis* - flagellated anaerobic protozoa

The only protozoan that infects the genital tract

*T. vaginalis* has four free flagellae and one flagella embedded in an undulating membrane. The flagellae are responsible for the jerky motility of *T. vaginalis*.

Possible association with:

- Pre-term rupture of membranes and pre-term delivery
- Increased risk of HIV acquisition

Clinical presentation and symptoms in women

Vaginitis

- Frothy gray or yellow-green vaginal discharge

Pruritus

- Cervical petechiae ("strawberry cervix") - classic presentation, occurs in minority of cases

May also infect Skene's glands and urethra, where the organisms may not be susceptible to topical therapy.

May be asymptomatic in women. Up to 50% of infected women are asymptomatic, although 30% of those who are asymptomatic will become symptomatic within 6 months.
"Strawberry cervix" due to *T. vaginalis*

Source: Claire E. Stevens/Seattle STD/HIV Prevention Training Center at the University of Washington

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**Slide 24**

*T. vaginalis* in Men

- May cause up to 11%-13% of nongonococcal urethritis (NGU) in males, but urethral infection is frequently asymptomatic.
- Urethral trichomoniasis has been associated with increased shedding of HIV in HIV-infected men.
- Frequently asymptomatic

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Lesson IV: Diagnosis

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**Slide 26**

Diagnosis

- Motile trichomonads seen on saline wet mount
- Vaginal pH >4.5 often present
- Positive amine test
- Culture is the "gold standard"

In the clinical setting, the diagnosis of trichomoniasis is made using the following diagnostic methods:

**Motile** trichomonads seen in saline wet mount (usual mode of diagnosis). Sensitivity varies from 42%-70% depending upon the experience of the microscopist and specimen collection technique. White blood cells are frequently seen. Microscopy should be performed as soon as possible after obtaining the specimen. Trichomonads, especially if the specimen is old, may closely resemble white blood cells. White blood cells can also be confused with trichomonads, so motility is a critical observation.

Vaginal pH >4.5 is often present.

Positive amine (KOH) test ("whiff" test) in many cases.

Culture (Diamond's media or InPouch TV) is the “gold standard.”

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Diagnosis (continued)

- Pap smear has limited sensitivity and low specificity; therefore, it cannot be used to reliably diagnose trichomonal vaginitis.
- DNA probes (now available) may be more sensitive than wet prep, but are also more expensive and not widely available.

Trichomoniasis in men is diagnosed by obtaining first void urine concentrated 10x and examining for motile trichomonads; a urethral swab or 10 cc of first-void urine may also be obtained for culture.
Wet Prep: Trichomoniasis

Saline: 40X objective

*Trichomonas shown for size reference only: must be motile for identification

PMN
Trichomonas
Squamous epithelial cells
Yeast buds

Source: Seattle STD/HIV Prevention Training Center at the University of Washington

Lesson V: Patient Management

Treatment
- CDC-recommended regimen
  - Metronidazole 2 g orally in a single dose
- CDC-recommended alternative regimen
  - Metronidazole 500 mg twice a day for 7 days
- No follow-up necessary

Pregnancy
- CDC-recommended regimen
  - Metronidazole 2 g orally in a single dose
- No evidence of teratogenicity
- No follow-up necessary

Treatment Failure
- If treatment failure occurs after 1 treatment attempt with both regimens, the patient should be retreated with metronidazole 2 g once a day for 3-5 days.
- Assure treatment of sex partners
- If repeated treatment failures occur, contact the Division of STD Prevention, CDC, for metronidazole-susceptibility testing (404-639-8363).

Pregnancy: CDC-recommended regimen
Metronidazole 2 g orally in a single dose
No evidence of teratogenicity; treatment may be administered throughout pregnancy
No follow-up necessary

Treatment failure
If treatment failure occurs after 1 treatment attempt with both regimens, the patient should be retreated with metronidazole 2 g once a day for 3-5 days.
If repeated treatment failures occur on higher dose regimen, contact Division of STD Prevention at CDC for metronidazole-susceptibility testing (404-639-8363).
Assure treatment of sex partners.
Metronidazole has a 90%-95% cure rate. Metronidazole gel (intravaginal) is not efficacious for trichomoniasis and is not recommended for treatment.
Consider testing for other STDs.
Partner management
All sex partners should be treated.
All patients with trichomoniasis should be treated (whether symptomatic or asymptomatic).
Patients should be instructed to avoid sex until they and their sex partners are cured. In the absence of a microbiologic test of cure, this means when therapy has been completed and patient and partner(s) are asymptomatic.

Patient counseling and education
Nature of the infection
Education regarding normal vs. abnormal discharge
*T. vaginalis* may persist for months or years in epithelial crypts and periglandular areas.
Both men and women can be asymptomatic.
*T. vaginalis* has been associated with adverse outcomes of pregnancy and PID.
Douching may worsen vaginal discharge.

Transmission issues
Trichomoniasis is almost always sexually transmitted.
Fomite transmission is rare.
Sex partners should be treated.
Patients should abstain from intercourse until they and their sex partners are cured.

Risk Reduction
The clinician should:
• Assess patient’s potential for behavior change
• Discuss individualized risk-reduction plans with the patient
• Discuss prevention strategies such as abstinence, monogamy, use of condoms, and limiting the number of sex partners
• Latex condoms, when used consistently and correctly, can reduce the risk of transmission of *T. vaginalis*
Learning Objectives

Upon completion of this content, the learner will be able to:
1. Describe the epidemiology of candidiasis in the U.S.
2. Describe the pathogenesis of candidiasis.
3. Describe the clinical manifestations of candidiasis.
4. Identify common methods used in the diagnosis of candidiasis.
5. List CDC-recommended treatment regimens for candidiasis.
6. Describe patient follow-up and partner management for candidiasis.
7. Summarize appropriate prevention counseling messages for patients with candidiasis.

Lessons

I. Epidemiology: Disease in the U.S.
II. Pathogenesis
III. Clinical manifestations
IV. Diagnosis
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VI. Prevention

Lesson I: Epidemiology: Disease in the U.S.

Commonly called “yeast infection.” Affects most females at least once during lifetime. Second most common cause of vaginal infection after bacterial vaginosis.

Most cases of candidiasis are caused by *C. albicans* (85%-90%). *C. glabrata* and *C. parapsilosis* are responsible for 5%-10% of cases.

Diagnosis and therapy costs estimated at $1 billion per year. Frequent infections may be linked to diabetes, corticosteroids, repeated courses of antibiotics, pregnancy, or HIV disease, although most patients have no risk factors.

Transmission: Candida species are normal flora of skin and vagina and are not considered to be sexually transmitted pathogens.
Lesson II: Pathogenesis

Microbiology
- Candida species are normal flora of the skin and vagina
- VVC is caused by overgrowth of C. albicans and other non-albicans species
- Yeast grows as oval budding yeast cells or as a chain of cells (pseudohyphae)
- Symptomatic clinical infection occurs with excessive growth of yeast
- Disruption of normal vaginal ecology or host immunity can predispose to vaginal yeast infections

Lesson III: Clinical Manifestations

Clinical Presentation and Symptoms
- Vulvar pruritis is most common symptom
- Thick, white, curdy vaginal discharge ("cottage cheese-like")
- Erythema, irritation, occasional erythematous "satellite" lesion
- External dysuria and dyspareunia

Vulvovaginal Candidiasis
Lesson IV: Candidiasis Diagnosis

Diagnosis

- History, signs and symptoms
- Visualization of pseudohyphae (mycelia) and/or budding yeast (conidia) on KOH or saline wet prep
- pH normal (4.0 to 4.5)
  - If pH > 4.5, consider concurrent BV or trichomoniasis infection
- Cultures not useful for routine diagnosis
Lesson V: Patient Management

Classification of VVC

**Uncomplicated VVC**
- Sporadic or infrequent vulvovaginal candidiasis
- Mild to moderate vulvovaginal candidiasis
- Likely to be C. albicans
- Non-immunocompromised women

**Complicated VVC**
- Recurrent vulvovaginal candidiasis (RVVC)
- Severe vulvovaginal candidiasis
- Non-albicans candidiasis
- Women with uncontrolled diabetes, debilitation, or immunosuppression or those who are pregnant

Uncomplicated VVC
- Mild to moderate signs and symptoms
- Non-recurrent
- 75% of women have at least one episode
- Responds to short course regimen

CDC-Recommended Treatment Regimens

**Intravaginal agents**
- Butoconazole 2% cream, 5 g intravaginally for 3 days†
- Butoconazole 2% sustained release cream, 5 g single intravaginal application
- Clotrimazole 1% cream 5 g intravaginally for 7-14 days†
- Clotrimazole 100 mg vaginal tablet for 7 days
- Clotrimazole 100 mg vaginal tablet, 2 tablets for 3 days
- Clotrimazole 500 mg vaginal tablet, 1 tablet in a single application
- Miconazole 2% cream 5 g intravaginally for 7 days†
- Miconazole 100 mg vaginal suppository, 1 suppository for 3 days†
- Nystatin 100,000-unit vaginal tablet, 1 tablet for 14 days
- Tioconazole 6.5% ointment 5 g intravaginally in a single application†
- Terconazole 0.4% cream 5 g intravaginally for 7 days
- Terconazole 0.8% cream 5 g intravaginally for 3 days
- Terconazole 80 mg vaginal suppository, 1 suppository for 3 days

**Oral agent:**
- Fluconazole 150 mg oral tablet, 1 tablet in a single dose

Note: The creams and suppositories in this regimen are oil-based and may weaken latex condoms and diaphragms. Refer to condom product labeling for further information.

† Over-the-counter (OTC) preparations.

Complicated VVC
- Recurrent (RVVC)
  - Four or more episodes in one year
- Severe
  - Edema
  - Excoriation/fissure formation
- Non-albicans candidiasis
- Compromised host
- Pregnancy
Complicated VVC Treatment

- Recurrent VVC (RVVC)
  - 7-14 days of topical therapy, or
  - 150 mg oral dose of fluconazole repeated 3 days later
  - Maintenance regimens (see CDC STD treatment guidelines)

- Severe VVC
  - 7-14 days of topical therapy, or
  - 150 mg oral dose of fluconazole repeated in 72 hours

- Maintenance regimens (see CDC STD treatment guidelines)

Complicated VVC Treatment (continued)

- Non-albicans
  - Optimal treatment unknown
  - 7-14 days non-fluconazole therapy
  - 600 mg boric acid in gelatin capsule vaginally once a day for 14 days

- Compromised host
  - 7-14 days of topical therapy

Lesson VI: Prevention

Partner Management

- VVC is not usually acquired through sexual intercourse.
- Treatment of sex partners is not recommended but may be considered in women who have recurrent infection.
- A minority of male sex partners may have balanitis and may benefit from treatment with topical antifungal agents to relieve symptoms.

Patient Counseling and Education

- Nature of the disease
  - Normal vs. abnormal vaginal discharge, signs and symptoms of candidiasis, maintain normal vaginal flora
- Transmission issues
  - Not sexually transmitted
- Risk reduction
  - Avoid douching, avoid unnecessary antibiotic use, complete course of treatment
Learning Objectives
Upon completion of this content, the learner will be able to:
1. Describe the epidemiology of bacterial vaginosis in the U.S.
2. Describe the pathogenesis of bacterial vaginosis.
3. Describe the clinical manifestations of bacterial vaginosis.
4. Identify common methods used in the diagnosis of bacterial vaginosis.
5. List CDC-recommended treatment regimens for bacterial vaginosis.
6. Describe patient follow-up and partner management for patients with bacterial vaginosis.
7. Summarize appropriate prevention counseling messages for patients with bacterial vaginosis.

Lessons
I. Epidemiology: Disease in the U.S.
II. Pathogenesis
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Epidemiology
- Most common cause of vaginitis
- Prevalence varies by population:
  - 5%-25% among college students
  - 12%-61% among STD patients
- Widely distributed
Epidemiology (continued)

- Linked to premature rupture of membranes, premature delivery and low birth-weight delivery, acquisition of HIV, development of PID, and post-operative infections after gynecological procedures
- Organisms do not persist in the male urethra

Risk Factors

- African American
- Two or more sex partners in previous six months/new sex partner
- Douching
- Absence of or decrease in lactobacilli
- Lack of $\text{H}_2\text{O}_2$-producing lactobacilli

Transmission

- Currently not considered a sexually transmitted disease, but acquisition appears to be related to sexual activity

Lesson II: Pathogenesis

Microbiology

- Overgrowth of bacteria species normally present in vagina with anaerobic bacteria
- BV correlates with a decrease or loss of protective lactobacilli:
  - Vaginal acid pH normally maintained by lactobacilli through metabolism of glucose/glycogen
  - Hydrogen peroxide ($\text{H}_2\text{O}_2$) is produced by some Lactobacilli spp.
  - $\text{H}_2\text{O}_2$ helps maintain a low pH, which inhibits bacteria overgrowth
  - Loss of protective lactobacilli may lead to BV
**H₂O₂ -Producing Lactobacilli**

- All lactobacilli produce lactic acid
- Some species also produce H₂O₂
- H₂O₂ is a potent natural microbicide
- Present in 42%-74% of females
- Thought to be toxic to viruses like HIV

**Lesson III: Clinical Manifestations**

- 50% asymptomatic
- Signs/symptoms when present:
  - 50% report malodorous (fishy smelling) vaginal discharge
  - Reported more commonly after vaginal intercourse and after completion of menses

**Lesson VI: Diagnosis**

**Wet Prep: Bacterial Vaginosis**

Source: Seattle STD/HIV Prevention Training Center at the University of Washington
BV Diagnosis: Amsel Criteria

- Vaginal pH >4.5
- Presence of >20% per HPF of "clue cells" on wet mount examination
- Positive amine or "whiff" test
- Homogeneous, non-viscous, milky-white discharge adherent to the vaginal walls

Must have at least three of the following findings:

Other Diagnostic Tools

- Vaginal Gram stain (Nugent criteria)
- Culture
- DNA probe
- Newer diagnostic modalities include:
  - FemExam™
  - PIP Activity TestCard™

Lesson V: Patient Management

Treatment

CDC-recommended regimens:
- Metronidazole 500 mg orally twice a day for 7 days, OR
- Metronidazole gel 0.75%, one full applicator (5 grams) intravaginally once a day for 5 days, OR
- Clindamycin cream 2%, one full applicator (5 grams) intravaginally at bedtime for 7 days

Alternative regimens:
- Metronidazole 2 g orally in a single dose, OR
- Clindamycin 300 mg orally twice a day for 7 days, OR
- Clindamycin ovules 100 mg intravaginally once at bedtime for 3 days

Treatment in Pregnancy

- Pregnant women with symptomatic disease should be treated with:
  - Metronidazole 250 mg orally 3 times a day for 7 days, OR
  - Clindamycin 300 mg orally twice a day for 7 days
- Asymptomatic high-risk women (those who have previously delivered a premature infant):
  - May be screened at first prenatal visit
  - Follow up 1 month after completion of therapy
Screening and Treatment in Asymptomatic Patients

• Asymptomatic screening of low-risk pregnant women is not recommended.
• Therapy is not recommended for male partners of women with BV.
• Female partners of women with BV should be examined and treated if BV is present.
• Screen and treat women prior to surgical abortion or hysterectomy.

Recurrence

• 20% recurrence rate after 1 month
• Recurrence may be a result of persistence of BV-associated organisms and failure of lactobacillus flora to recolonize.
• Data do not support yogurt therapy or exogenous oral lactobacillus treatment.
• Under study: vaginal suppositories containing human lactobacillus strains

Lesson VI: Prevention

Partner Management

• After multiple occurrences, some consider empiric treatment of male sex partners to see if recurrence rate diminishes, but this approach has not been validated.

Patient Counseling and Education

• Nature of the Disease
  – Normal vs. abnormal discharge, malodor, BV signs and symptoms, sexually associated
• Transmission Issues
  – Not sexually transmitted between heterosexuals, high association in female same-sex partnerships
• Risk Reduction
  – Avoid douching
  – Limit number of sex partners
Case Study

Tanya Walters
- 24-year-old single female
- Presents with complaints of a smelly, yellow vaginal discharge and slight dysuria for 1 week
- Denies vulvar itching, pelvic pain, or fever
- 2 sex partners during the past year—did not use condoms with these partners—on oral contraceptives for birth control
- No history of sexually transmitted diseases, except for trichomoniasis 1 year ago
- Last check up 1 year ago

Physical Exam
- Vital signs: blood pressure 112/78, pulse 72, respiration 15, temperature 37.3 °C
- Cooperative, good historian
- Chest, heart, breast, musculoskeletal, and abdominal exams within normal limits
- No flank pain on percussion
- Normal external genitalia with a few excoriations near the introitus, but no other lesions
- Speculum exam reveals a moderate amount of frothy, yellowish, malodorous discharge, without visible cervical mucopus or easily induced cervical bleeding
- Bimanual examination was normal without uterine or adnexal tenderness

Questions
1. What is your differential diagnosis based on history and physical examination?
2. Based on the differential diagnosis of vaginitis, what is the etiology?
3. Which laboratory tests should be offered or performed?

Laboratory Results
- Vaginal pH < 5.5
- Saline wet mount of vaginal secretions – numerous motile trichomonads and no clue cells
- KOH wet mount – negative for budding yeast and hyphae

4. What may one reasonably conclude about Tanya’s diagnosis?
5. What is the appropriate CDC-recommended treatment for this patient?
Partner Management

Jamie
- Last sexual contact: 2 days ago
- First sexual contact: 2 months ago
- Twice a week, vaginal sex

Calvin
- Last sexual contact: 6 months ago
- First sexual contact: 7 months ago
- 3 times a week, vaginal and oral sex

6. How should Jamie and Calvin be managed?

Follow-Up
- Tanya was prescribed metronidazole 2 g orally, and was instructed to abstain from sexual intercourse until her partner was treated.
- She returned two weeks later. She reported taking her medication, but had persistent vaginal discharge that had not subsided with treatment. She reported abstinence since her clinic visit, and her partner had moved out of the area. Her tests for chlamydia and gonorrhea were negative.
- The vaginal wet mount again revealed motile trichomonads.

7. What is the appropriate therapy for Tanya now?
8. What are appropriate prevention recommendations for Tanya?