## SANE Module 4: Post-Exposure Prophylaxis for STIs and HIV

### A Special Note to Participants

This course is the fourth module in the Sexual Assault Nurse Examiner (SANE) Online Course. The SANE Online Course represents twenty hours of a 40-hour New York State Department of Health (NYSDOH) certified Sexual Assault Forensic Examiner (SAFE) Training Program.

The online course is a collaborative effort between the New York State Nurses Association and four certified NYSDOH Sexual Assault Nurse Examiners who provided the curriculum for the online course. The requirements to complete the comprehensive NYSDOH-certified SAFE Training Program are:

- SANE Online Course (20 hours)
- Live clinical course with a certified SANE educator (20 hours)
- Clinical preceptorship (arranged with a SANE educator)

Additional information concerning the SANE Online Course and requirements for completing the SAFE Training Program can be found in Module 1.

The development of the five online modules was funded in part through a grant from the New State Division of Criminal Justice Services (DCJS).

### NYSNA Continuing Education

*The New York State Nurses Association is accredited as a provider of continuing nursing education by the American Nurses Credentialing Center's Commission on Accreditation.*

This module has been awarded 4 contact hours and contains two components: online didactic content and an online discussion forum. **Participants must read the online material, contribute to the discussion forum, pass an online exam with at least 80%, and complete an evaluation in order to receive a certificate of completion.**

**How to Take This Module**

Please take a look at the steps below these will help you to progress through the module.

1. **REVIEW THE OBJECTIVES**

   The objectives provide an overview of the entire module and identify what information will be the focus of the module. Objectives are stated in terms of what you, the participant, will know or be able to do upon successful completion of the module.

2. **STUDY EACH SECTION OF THE MODULE IN ORDER**

   Keep your learning "programmed" by reviewing the content in order. This will help you understand the sections that follow.

   You will need to enter the online discussion forum as directed throughout the module. When you see the rotating stop sign, you are expected to enter the online forum to answer questions or engage in discussion with your SANE educator and other participants in the online course. **Participation in the online forum is required and will be monitored by your SANE educator.**

3. **COMPLETE THE MODULE EXAM**

   After studying the module and completing the requested activities in the forum, click on the "Course Exam" option located on the module navigation toolbar. Answer each question by clicking on the button corresponding to the correct answer. All questions must be answered before the exam can be graded; there is only one correct answer per question. You may refer back to the module material by minimizing the exam window.

4. **GRADE THE MODULE EXAM**

   Next, click on "Submit Test." You will know immediately whether you passed or failed. If you do not successfully complete the exam on the first attempt, you may take the exam again. It is highly recommended to review the material for the questions missed **BEFORE** attempting the exam again. If you are unsuccessful on your second attempt, you will need to contact your SANE educator.

5. **COMPLETE THE EVALUATION FORM**

   Upon passing the course exam you will be prompted to complete a course evaluation. You will have access to the certificate of completion **after you have passed the discussion forum, passed the exam, and completed the evaluation**. At this point, you should print the certificate and keep it for your records. You will need to provide a copy of all five certificates to your SANE educator as proof of completion of the 20 hours of online content.

**SANE Module 4: Objectives**

Upon completion of this module, the participant will be able to:

- Interpret the statistical significance of sexually transmitted diseases (STDs) in the U.S.
- Identify the risks for development of a sexually transmitted infection after a sexual assault.
- Identify the types of sexually transmitted infections spread through sexual activity.
- Identify post-exposure treatment of sexually transmitted infections (STIs).
- Contrast the clinical differences among the types of sexually transmitted infections.
- Identify the various treatment regimes recommended for different sexually transmitted infections.
- Discuss the differences in the guidelines for treatment of hepatitis A, B, and C.
- Recall the use of emergency contraception (EC) following a sexual assault.
- Distinguish among the treatment recommendations for post exposure prophylaxis (PEP) for HIV.
- Identify the follow-up care including prophylactic treatment for patients following sexual assault.

**SANE Module 4: Introduction**

Victims of sexual assault are frequently concerned about contracting a sexually transmitted infection (STI), also known as a sexually transmitted disease (STD). Throughout this module we will use sexually transmitted infections (STI) or sexually transmitted diseases (STD) interchangeably. The concern of victims of sexual assault is justified in view of the statistics of the STD incidence in the United States. The patient's concerns should be addressed by the SANE during the initial medical forensic exam. The examiner should be knowledgeable about sexually transmitted diseases, their treatment and especially the role of medicines in the management of the infections, and the follow-up care that is necessary. Patients should be monitored closely to ensure compliance with the medication regime and any untoward effects. Care for both the physical and psychological consequences of STDs should be provided (Centers for Disease Control and Prevention [CDC], 2006c).

*A Word about the Activities of this Module*

A private, online discussion forum has been set-up for your region of New York State. Throughout this online module you will be asked to read case studies, interpret graphs, and provide feedback on presented questions. You should complete the discussion board postings **in sequence** as you come across them in the module content. It may be helpful to keep the course window and discussion forum window open at the same time so you can move more quickly between the module and the forum. When you enter the discussion forum, the first topic provides instructions on how to post your responses.

When you see the rotating stop sign you will have access to a link that directs you to the discussion forum entrance page, where you will be prompted for a username and password. Enter the username and password assigned to you. Next, click on your region-specific forum and enter the appropriate password. As a reminder, your SANE educator e-mailed username and password information at the time of your course enrollment.

We encourage you to read each other's postings and respond. **Reminder!** Your participation in the discussion forum will be monitored by your educator.

**SANE Module 4: About the Author**

**Dolores (Dee) Krebs, MS, ANP, FNP, SANE-A, NYS SAFE**

Ms. Krebs is the Director the Sexual Assault Program in the Department of Emergency Medicine at Strong Memorial Hospital in Rochester, New York. In that role she is responsible for the direction of 15 employees and provides supervision of sexual assault examinations for two hospitals in the Rochester area. She is also a Family Nurse Practitioner in the Strong Memorial Emergency Department and an Assistant Professor of clinical nursing at the University of Rochester. She has been SANE trained since 2000 and SANE-A certified through the International Association of Forensic Nursing (IAFN), where she is a past president of the New York State IAFN. She received her bachelor's from the State University of New York in Brockport and received her master of science from the University of Rochester and is certified to practice in New York State as an adult nurse practitioner and a family nurse practitioner.

**Sexual Assault Treatment: Post Exposure Prophylaxis for STIs & HIV**

Frequently Used Abbreviations

Throughout this module you will come across commonly used medical abbreviations, which you may or may not already be familiar with. The following alphabetical list of abbreviations may be a helpful reference as you progress through this material.

BHCG (Beta human chorionic gonadotropin)
BUN (Blood urea nitrogen)
BV (Bacterial Vaginosis)
CAD (coronary artery disease)
CBC (complete blood count)
CDC (Centers for Disease Control)
CMT (Cervical Motion Tenderness)
CMV (Cytomegalovirus)
Cr (Creatinine)
CSF (cerebral spinal fluid)
CVA (cerebral vascular accident)
DFA (Direct Fluorescent Antibody)
DNA (Deoxyribonucleic acid)
DOH (Department of Health)
DT (Diphtheria tetanus)
DVT (deep vein thrombosis)
EC (emergency contraception)
ED (emergency department)
EIA (Enzyme Immunoassay)
ELISA (Enzyme-linked immunosorbent assay)
FDA (Federal Drug Administration)
g (gram)
GC (Gonorrhea)
HBIG (Hepatitis B Immunoglobulin)
HBV (Hepatitis B Virus)
HCV (Hepatitis C Virus)
HIV (Human Immunodeficiency Virus)
HIV Ab (HIV antibody)
HPV (Human Papillomavirus)
HSV (Herpes Simplex Virus)
HTN (hypertension)
ID (Infectious disease)
IM (intramuscularly)
IUD (intrauterine device)
LFTs (liver function tests)
mg (milligram)
MMWR (Morbidity & Mortality Weekly Review)
NA Probe (Nucleic Acid Hybridization)
NAATs (Nucleic Acid Amplification Tests)
NGU (Non-gonoccocal urethritis)
n-PEP (non-occupational post exposure prophylaxis)
OBGYN (obstetrician & gynecologist)
OTC (over the counter)
PCR (Polymerase chain reaction)
PE (pulmonary embolus)
PEP (post exposure prophylaxis)
PID (Pelvic Inflammatory Disease)
qhs (nightly)
RNA (Ribonucleic acid)
RPR (Rapid plasma reagent)
SDA (Strand displacement amplification)
SMA 7 (basic metabolic profile)
STD (Sexually Transmitted Disease)
STI (Sexually Transmitted Infection)
TMA (Transcription-mediated amplification)
URI (Upper Respiratory Illness)
VDRL (Venereal disease research laboratory)

Statistics of STDs after Sexual Assault

The annual incidence of common STIs is approximately 19 million new infections each year. The medical consequences of STDs in the United States are up to 14.7 billion dollars in 2006, and that does not figure in the physical and psychological consequences of having a STI. The Centers for Disease Control (CDC) STD surveillance, in a 2006 report, identifies trends (e.g., age, race, sex) of chlamydia, gonorrhea, and syphilis. Although there are over 25 to 30 infectious organisms that are spread through sexual activity,

some are highly prevalent and are under diagnosed, such as human papillomavirus (HPV) and genital herpes. These viruses are not required to be reported at all.

In New York State, gonorrhea (GC), chlamydia, and HIV are required to be reported to the Department of Health (DOH) with any positive test reports. The laboratory that performs the test and the clinician who orders the test is required to report the finding to the DOH. Chlamydia is the most common STI. In 2007, 1,108,374 cases of sexually transmitted *Chlamydia trachomatis* infection were reported nationally to CDC (CDC, 2008). This represents the largest number of cases ever reported to CDC for any condition.

Risks for Developing a STI in Sexual Assault

The risk of contracting a STI has been difficult to quantify, although several studies have tried to estimate it. At a sexual assault infections clinic, Gibb (2003) studied 25 women who were victims of sexual assault, and found the following rates of infection:

- Bacterial vaginosis (BV) represented 32%
- Chlamydia 8%
- Gonorrhea 0%

In 2000, Reynolds, Peipert, and Collins completed a literature review to identify the prevalence of STI in sexual assault cases. They found the prevalence rates to be:

- Gonorrhea 0-26%
- Chlamydia 4-17%
- Syphilis 0-6%
- Trichomonas infection 0-19%
- HPV 0.6-2%

An older study by Jenny et al. (1990) identified STI at a patient's initial visit following sexual assault as:

- Chlamydia (10%)
- Trichomoniasis (15%)
- Herpes simplex virus (HSV) (2%)
- Syphilis (1%)
- HIV (1%)
- Bacterial vaginosis (BV) (53%)

In the same study but during follow up care, several infections that were not detected during the initial visit included:

- Gonorrhea (3%)
- Cytomegalovirus (CMV) (4%)
- Chlamydia (1%)
- Trichomonas (9%)
- HSV (0%)
- Syphilis (0%)
- HIV (0%)
- BV (14%)

BV is not considered to be a true STD, because it is not fully understood. BV represents an imbalance of the bacteria that is normally found in the vagina. Using statistical analysis, Jenny et al. (1990) estimated the **risk** of acquiring an STI as:

- GC - 4.2%
- Chlamydia - 1.5%
- Trichomoniasis - 12.3%
- BV (not a true STD) - 19.5%

,

Other data was limited regarding HSV, syphilis, and HIV. Hepatitis was not included in their study. Studies have not determined the frequency of hepatitis transmission following sexual assault. In blood, serum, and wound exudates, hepatitis B (HBV) was found in high and moderate concentrations in:

- Semen
- Vaginal fluid
- Saliva

Hepatitis B and Hepatitis C Transmission and Post Exposure Prophylaxis

The risks of contracting HBV in heterosexual/bi-sexual transmission include:

- Multiple partners (i.e., greater than one partner in 6 months)
- Men who have sex with men including unprotected anal-receptive intercourse
- Recent history of STI

(CDC, n.d., FAQs…)

The role of sexual activity in the transmission of hepatitis C (HCV) remains controversial including the exposure to the infected partner, the presence of multiple partners, unprotected sexual exposure, the history of STI, and the sexual activities involving trauma.

Post-exposure Goals for the Prophylactic Treatment of STIs

Patients should be counseled during the initial exam about prophylaxis against STIs. If they accept the recommendations, the CDC guidelines, as well as state and facility guidelines and policies, should also be followed. If the patient declines prophylaxis, then the SANE should, at the very least, obtain cultures and arrange continuing care following the examination and testing. The patient consent (discussed in Module 2) must be obtained prior to any treatment (U.S. Department of Justice, 2004).

The goal of post exposure prophylaxis is to treat infections that are easily transmitted and easily treated, such as gonorrhea, *Chlamydia trichomatis*, and BV (again, this is **not** a true STI). Infections which are easily acquired should be treated in order to reduce morbidity. The selection of a treatment method should be determined by the relative ease of medication regimen, tolerability by the patient, and should be determined so they will ultimately decrease anxiety and fear for the victim.

**Key Point to Remember**

- ✓ BV is not considered to be a true STD, because it is not fully understood.

Now let's take a closer look at the STIs.

**Chlamydia**

What is Chlamydia?

Chlamydia is a bacterial infection (called *Chlamydia trichomatis*) that is easily treated with antibiotics, but often occurs without symptoms and is therefore frequently undiagnosed. It can infect the genitals (e.g., penis or vagina) and it can also infect the mouth or anus following oral or anal sexual contact (New York State Department of Health [NYSDOH], 2006a).

Chlamydia can spread through unprotected intercourse with someone already infected. A pregnant mother can also infect her child during birth as the child passes through the birth canal. If left untreated, chlamydia can cause severe health problems in women, such as:

- Pelvic inflammatory disease (up to 40%)
- Ectopic pregnancy and infertility (up to 20%)

(CDC, 2008)

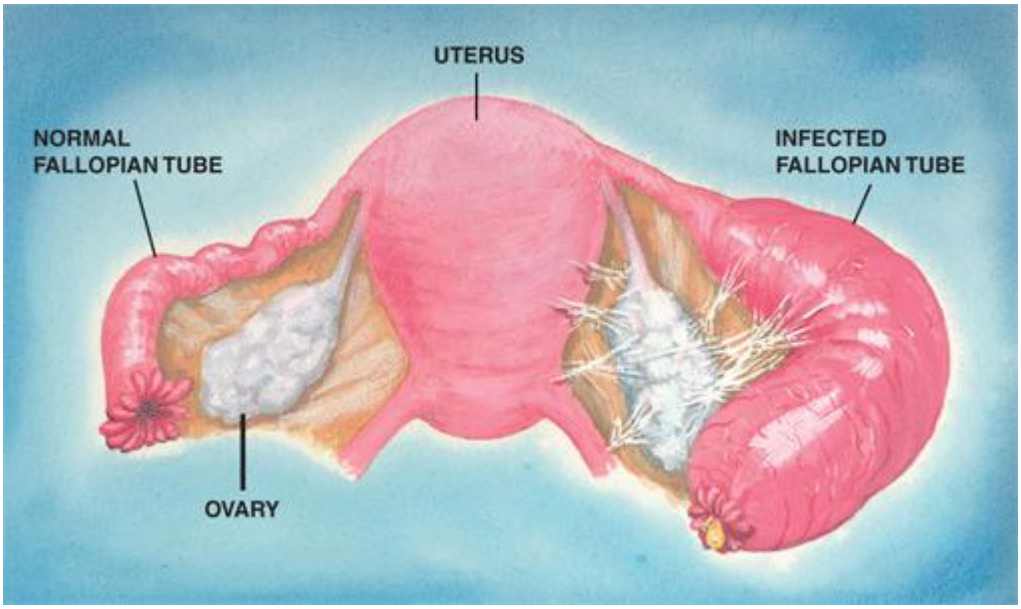


Figure 1. *Acute Salpingitis and Pelvic Inflammatory Disease*. From CDC, n.d., Acute salpingitis (PID). Downloaded from http://www.cdc.gov/std/training/picturecards/Acute-Salpingitis-PID.pdf

For men, it is rare to have complications from chlamydia, but they may suffer from:

- Epididymitis and urethritis, rarely causing sterility.

Females are greatly impacted by chlamydial infections (see Figure 2), especially teenagers, age 15 through 19 years old, and followed closely behind by the 20 to 24 year old age group. Female cases are three times higher than for men. This may be due to the fact that females are screened much more frequently than males.

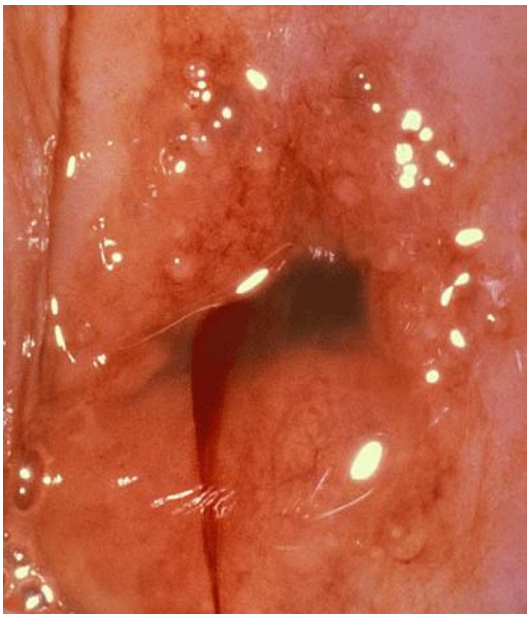

Figure 2. *Chlamydial cervicitis with ectopy, discharge, bleeding.*
Courtesy of: Seattle STD/HIV Prevention Training Center, Connie Celum, & Walter Stamm

Although chlamydia affects all races, ages, and ethnic groups, in 2006 it was reported to be highest among African American women (1,760.9 per 100,000) which represents more than seven times that of white females (237 per 100,000), and twice that of Hispanic females (761.3 per 100,000). The total U.S. rate of chlamydia including Guam, Puerto Rico, and the Virgin Islands was 345 per 100,000 of the population.

Chlamydia is highly transferable sexually or vertically (from mother to baby). The incubation period is from seven to 21 days, and reinfection is common. Perinatal transmission to babies results in neonatal conjunctivitis in 30 to 50% of the cases (CDC, n.d., Ready…chlamydia). Chlamydia is an obligatory intracellular bacteria which infects columnar epithelial cells. The bacteria must live within the cytoplasm of other cells; chlamydia cannot survive on its own. The bacteria survive by replications that result in the death of the cell. It takes on two forms in the life cycle of chlamydia (see Figure 3): the elementary body and reticulate body (i.e., stage of the chlamydial developmental cycle responsible for intracellular replication).

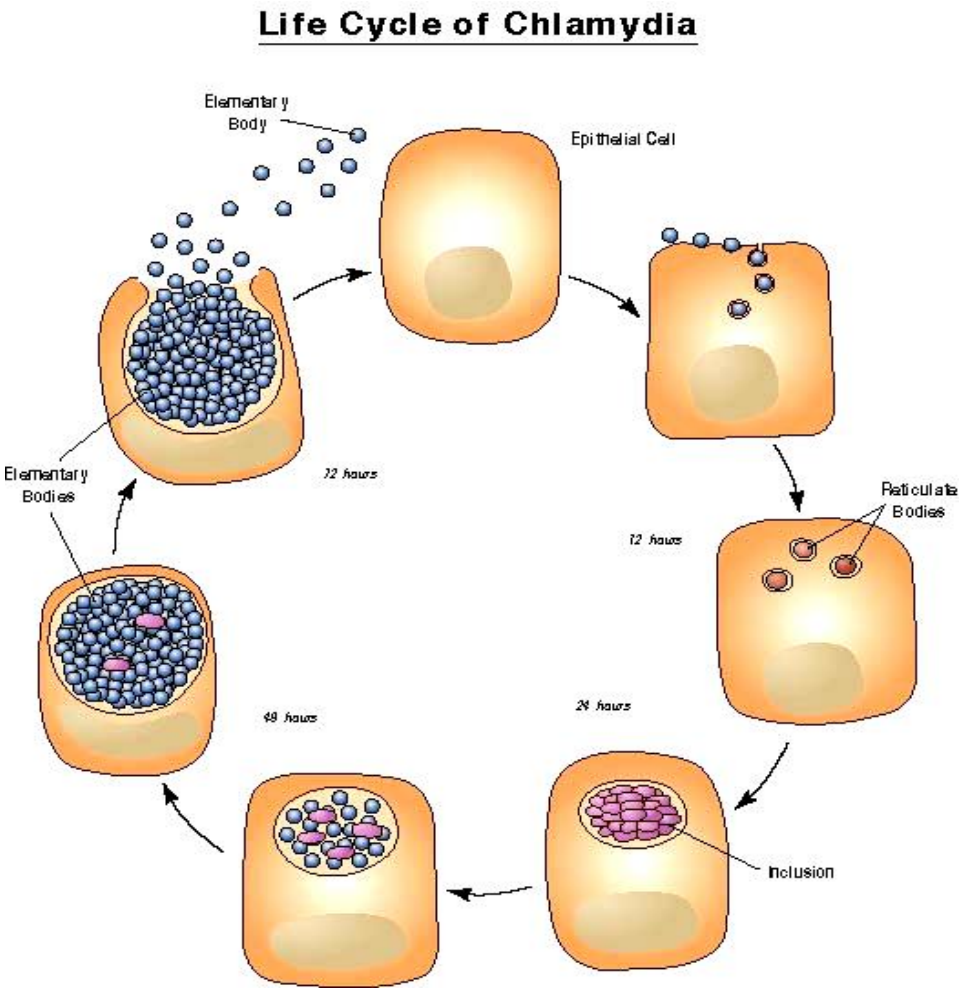


Figure 3. *Life Cycle of Chlamydia*. CDC, 2008

The National Statistics

First, let's look at some figures recently compiled by the CDC.

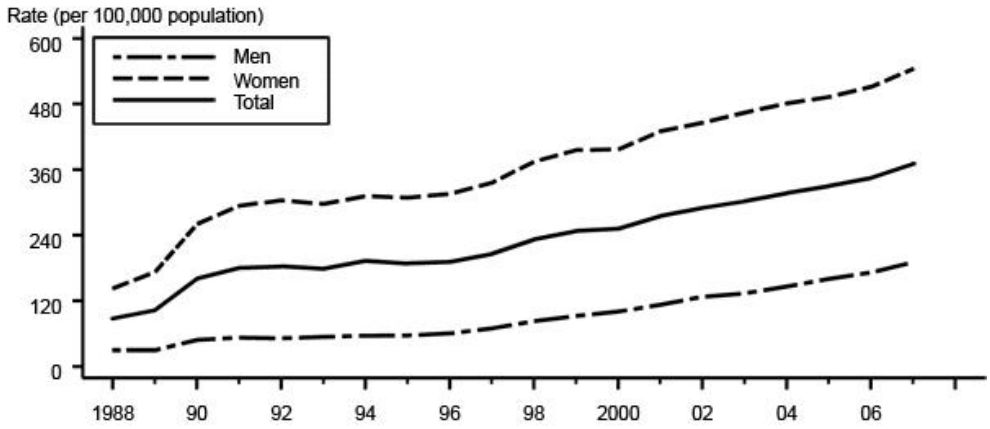


Figure 4. *Chlamydia — Rates: Total and by Sex: United States, 1988–2007.* CDC, 2008

As of January 2000, all 50 states and the District of Columbia had regulations requiring the reporting of chlamydia cases. Chlamydia rates have been increasing. In 2007, there were 1,108,374 reported cases of chlamydia. This is an increase of 7.5% from 2006 (CDC, 2008).

When you look at Figure 4 it is clear that women have a much higher incidence of chlamydia than men. Women are also screened for chlamydia much more frequently than men. Women are screened at an annual gynecological examination, when they become pregnant, and if they have abdominal pain. In New York State, chlamydia is reported to the DOH and the DOH follows up with the patient to ensure that he or she received treatment.

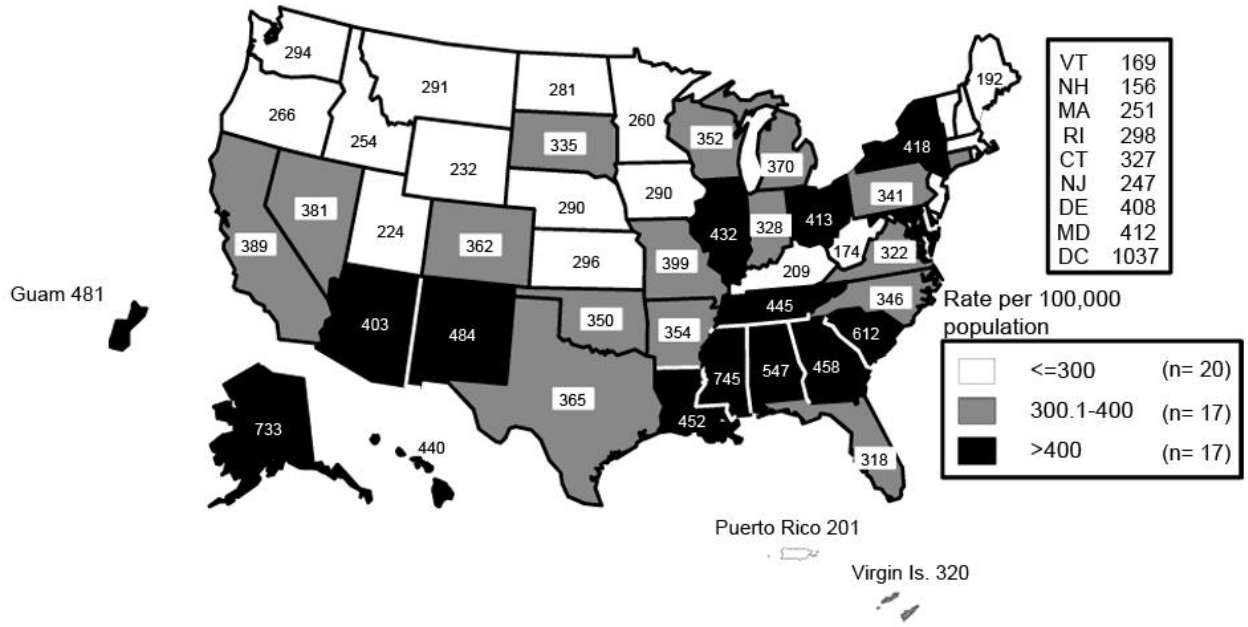


Figure 5. *Chlamydia Rates by State: United States and Outlying Areas, 2007.* CDC, 2008

When compared to the rest of the country, New York falls within those states having a higher rate of chlamydia as shown in Figure 5. It could be that other states do not test for chlamydia as often as New York does. Not all sexual assault examiner programs test for sexually transmitted infections. Please refer to your program's specific policy for further guidance.

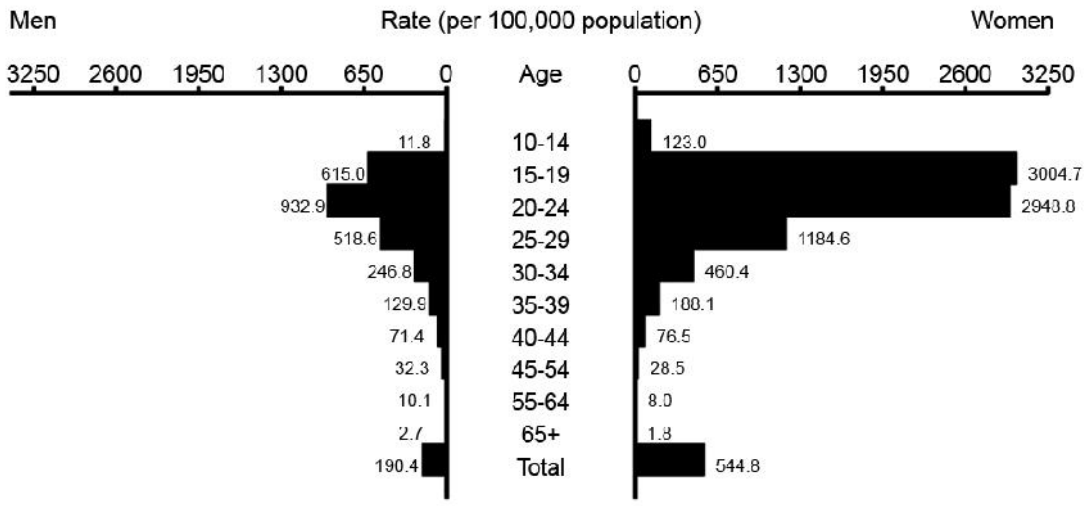


Figure 6. *Chlamydia — Age- and Sex-Specific Rates: United States, 2007.* CDC, 2008

Figure 6 illustrates that individuals between the ages of 15 and 30 have the highest concentrated rates of chlamydia; however, women have significantly higher rates overall. Women who are between the ages of 15 and 30 have the highest rates of chlamydia, with rates more than three times that of men within the same age group. Why do you think chlamydia is high in women between the ages of 15 and 34? Could it be that women are screened more frequently than men? This is just something to think about.

Looking at Figure 7, the 14 to 19 years old age group has the highest prevalence of chlamydia. In this same age group non-Hispanic Blacks have the highest rate of chlamydia. As you may recall from module 1, the Criminal Victimization, 2007 survey found that girls aged 16 to 19 are four times more likely than the general population to be victims of rape or sexual assault (U.S. Department of Justice, 2008).

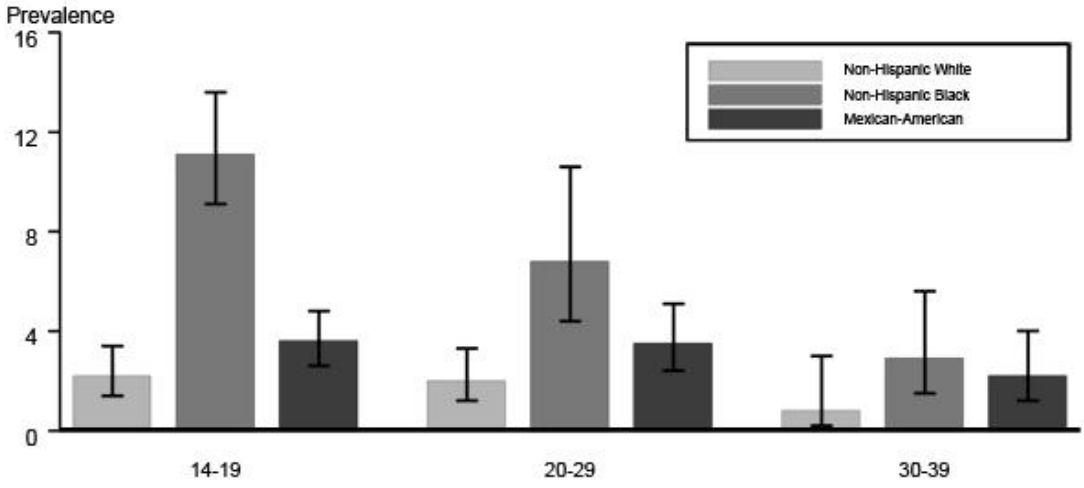


Figure 7. *Chlamydia — Prevalence by Age Group and Race/Ethnicity Reported from a National Survey, 1999–2002*. CDC, 2008

Symptoms of Chlamydia in Males and Females

In males, urethritis is one cause of *non-gonococcal urethritis (NGU*) (see Figure 8). The majority of men are asymptomatic, and if they have symptoms it may consist of mucoid or clear discharge from the

urethra and they may present complaining of dysuria. In symptomatic men, the incubation period is about 5 to 10 days. Complications in men include epididymitis (see Figure 9) and Reiter's syndrome, which in rare cases can cause chronic arthritis or infertility.

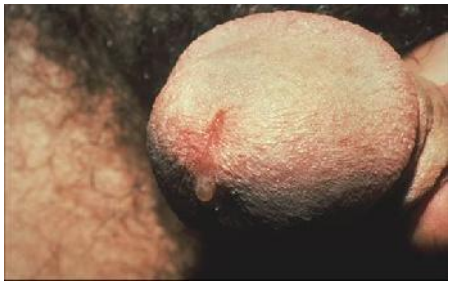

Figure 8. *Non-gonococcal Urethritis in the Male.*
Courtesy of: Seattle STD/HIV Prevention Training Center, University of Washington

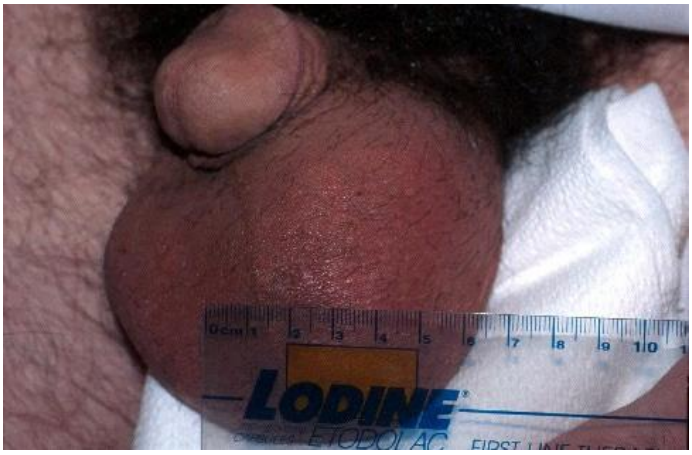


Figure 9. *Epididymitis in the Male*
Courtesy of: Seattle STD/HIV Prevention Training Center, Jeanne Marrazzo

In females, 70 to 80% of the cases are asymptomatic, and local signs of cervicitis may include:

- Mucopurulent endocervical discharge
- Edematous cervical ectopy with erythema and friability (bleeding easily)

The women may experience:

- Yellow white vaginal discharge
- Spotting between periods
- Burning and/or pain on urination
- An unusual urethral discharge

Asymptomatic urethritis may include dysuria, frequency, and pyuria. *Chlamydia trachomatis* complications include (CDC, n.d., Ready…chlamydia):

- Pelvic inflammatory disease which includes salpingitis and endometritis
- Other complications such as perihepatitis (Fitz-Hugh-Curtis syndrome and Reiter's syndrome)

The Physical Examination

The physical examination includes a complete abdominal and pelvic exam. Specific signs and symptoms that the SANE may assess that could indicate a chlamydial infection include:

- Cervical motion tenderness
- A raw appearance of the cervix
- Uterine and adnexal tenderness

A cervical culture is a gold standard in sexual assault care, but not all programs obtain cultures. Please refer to the protocols at your facility to determine what is required.

To perform a cervical culture insert a cystologic brush or sterile Dacron tipped swab one to two cm into the endocervix. If a wet prep is done, numerous white blood cells will be seen.

Obtaining a *culture* is a **gold standard** of care for sexual assault patients. Some of the non-culture tests include:

- Nucleic Acid Amplification Tests (NAATs) which amplify and detect organism-specific genomic or plasmid DNA or RNA
- FDA cleared urethral swabs from males/females
- Cervical swabs from females
- Urine from both males and females

Non-NAATs include:

- Direct fluorescent antibody (DFA) that detects intact bacteria with a fluorescent antibody
- A variety of specimen sites can be used to determine quality of endocervical specimens
- Enzyme immunoassay (EIA) detects bacterial antigens with an enzyme-labeled antibody
- Nucleic acid hybridization (NA probe) detects specific DNA or RNA sequences of *C. trachomatis* and *N. gonorrhoeae.*

(CDC, 2006c)

Medication Regimens for Chlamydia

Recommended CDC (2006c) regimens for chlamydia include the following:

- Azithromycin 1 g orally in a single dose, or
- Doxycycline 100 mg orally twice a day for 7 days

*Side Effects*

Azithromycin (Zithromax): Many drugs interact with azithromycin thus it is important for patients to inform their healthcare provider about all prescription and over-the-counter medications they are currently using. For example, statin medications used for lowering cholesterol can interact with this drug ("Zithromax," n.d.). The most serious reactions include anaphylaxis and QT prolongation. Common reactions include: diarrhea, nausea, abdominal pain, vaginitis, dyspepsia, dizziness, rash, vomiting, anorexia, and pruritus ("Azithromycin," n.d.).

Doxycycline (Vibramycin): This medication should not be given to patients younger than age 8 or those who are pregnant due to the risk of permanent tooth discoloration. Patients should also be instructed to avoid the sun. Common reactions include: headache, nausea, dyspepsia, joint pain, diarrhea, URI symptoms, rash, dysmenorrhea, photosensitivity, candidiasis, skin/tissue discoloration, and elevated BUN ("Doxycycline," n.d.).

*Treatment of Chlamydial Infection in Pregnant Women*

The patient should not have oral, anal, or vaginal sex for seven days after the treatment for chlamydia has been completed (NYSDOH, 2006a). Effective treatment of chlamydia may reduce HIV transmission and acquisition.

Chlamydia is reportable in all states, and all cases must be reported to the local or state STD program, which is often the Department of Health in your area. The STD Clinics in New York State (http://www.nyhealth.gov/diseases/communicable/std/clinics/) Web page contains links to contact information for STD clinics organized by county. You also can call the National STD Hotline (1-800-232-4636) to find a clinic near you (NYSDOH, 2006a).

**Key Points to Remember**

- ✓ Female cases of chlamydia are three times higher than for men.
- ✓ Obtaining a *culture* is a **gold standard** of care for sexual assault patients.
- ✓ Chlamydia is reportable in all states, and all cases must be reported to the local or state STD program.

**Gonorrhea**

What is Gonorrhea?

Gonorrhea is a sexually transmitted infection, often referred to as “clap” or “drip”. It is caused by *Neisseria gonorrhoeae*, a gram-negative intracellular diplococcus bacterium, which spreads through contact with the penis, vagina, mouth, or anus. It infects mucus-secreting epithelial cells and ejaculation does not have to occur for gonorrhea to be transmitted. It can grow and multiply easily in the warm, moist areas of the body such as the cervix, uterus, fallopian tubes, and in the urethra in men and women. It can also grow in the mouth, throat, eyes, and anus. During delivery gonorrhea can be acquired by the baby from the mother (NYSDOH, 2006b).

About 20% of men, who are in contact with infected women, develop gonorrhea, but approximately 80% of women that are in contact with an infected man acquire the infection. Gonorrhea may be associated with increased transmission and susceptibility to HIV infection.

The incidence of gonorrhea has remained unchanged for about ten years. The nation has not met the goal of Healthy People 2010, a national health promotion and disease prevention initiative with goals of increasing the quality and years of healthy life and eliminating health disparities (Healthy People, n.d.). In 2007, the rate of gonorrhea was 118.9 cases per 100,000 of the population. Of concern is the high rate of gonorrhea among adolescents and young adults. Fluoroquinolones are no longer recommended to treat gonococcal infections, continued monitoring for antibiotic resistance is critical. The fluoroquinolones the CDC is referring to include such medications as ciprofloxacin, ofloxacin, or levofloxacin, which have been found to have developed a resistance in the treatment of the *Neisseria gonorrhoeae* bacteria that causes gonorrhea (CDC, 2007).

The National Statistics

Let’s look at some figures recently compiled by the CDC.

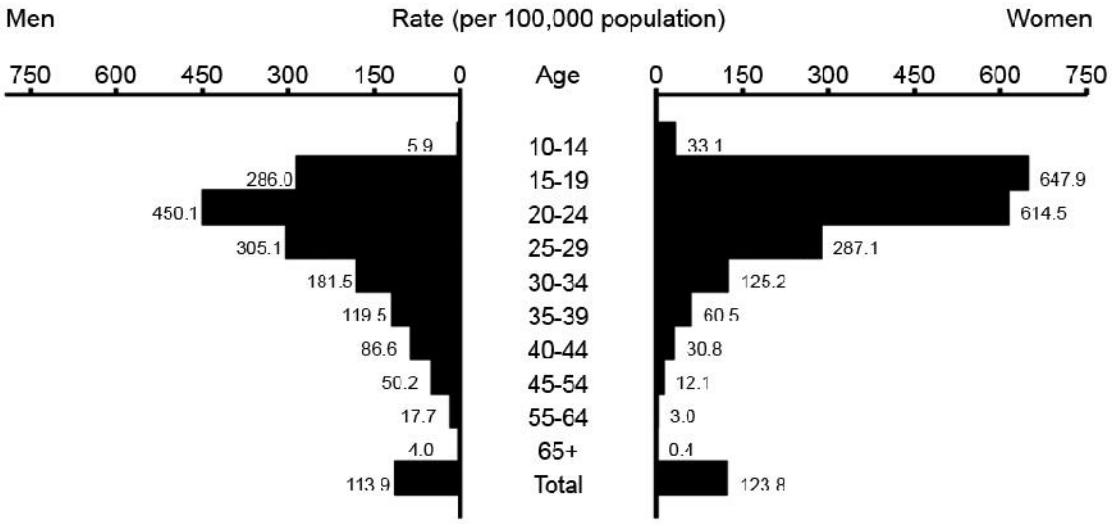


Figure 10. *Gonorrhea — Age- and Sex-Specific Rates: United States, 2007*. CDC, 2008

Individuals between the ages of 14 and 35 have the highest concentrated rates of GC; however, women have higher rates than men who fall within this same age group. Women between the ages of 14 and 25 have the highest rates of GC overall.

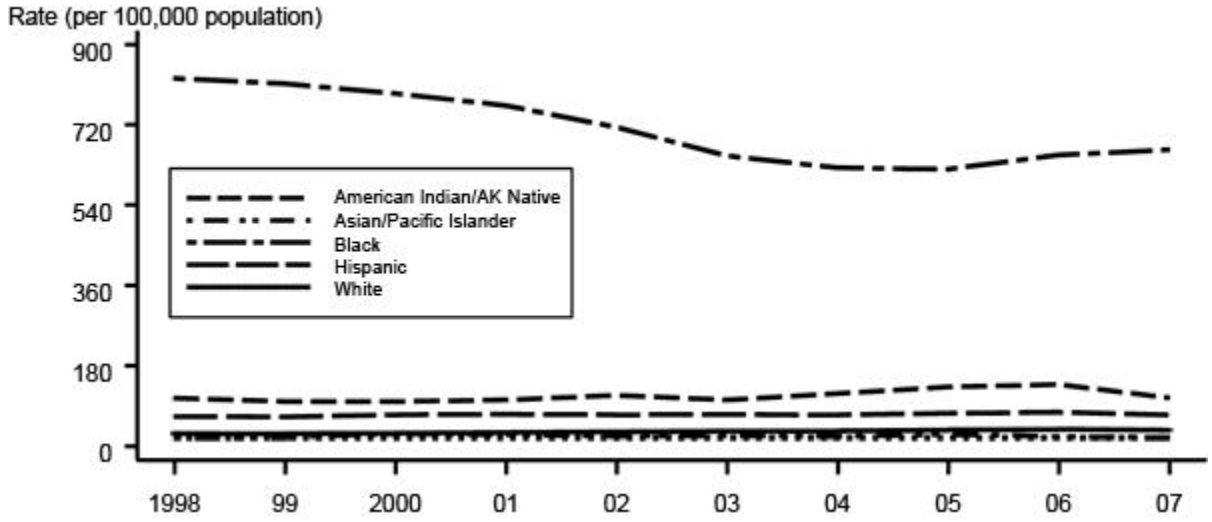


Figure 11. *Gonorrhea — Rates by Race/Ethnicity: United States, 1998–2007*. CDC, 2008

Looking at the racial/ethnic trends illustrated by Figure 11, African Americans or Blacks have a rate of GC that is more than four times that of American Indians, Asian/Pacific Islanders, Whites, and Hispanics. Using the data from Figure 10, one can deduct that Black women have the highest rate of GC.

The Signs and Symptoms of Gonorrhea for Males and Females

*Male Signs and Symptoms*

For a visual illustration of gonorrhea at the cellular level see Figure 12. A majority of men do have symptoms of gonorrhea (e.g., 85 to 90%) which include:

- Inflammation of the urethra called urethritis, or
- Inflammation of the epididymis called epididymitis.

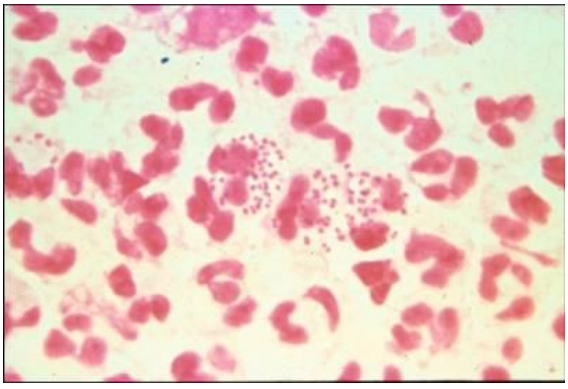

Figure 12. *Gonorrhea at the cellular level.* CDC, n.d., Ready…gonorrhea

The incubation of *urethritis* is usually about 1 to 14 days. Symptoms of urethritis (see Figure 13) include:

- Dysuria (burning or itching when urinating)
- Redness and swelling at the urethral meatus
- Purulent or mucopurulent urethral discharge, or clear/cloudy discharge

Figure 13. *Gonococcal Urethritis*
Courtesy of: Seattle STD/HIV Prevention Training Center,
Connie Celum, & Walter Stamm

Note: Refer to Figure 8 in the lesson on Chlamydia for a visual image of non-gonococcal urethritis.

The incubation period for *epididymitis* may be longer and symptoms include:

- Unilateral testicular pain
- Swelling

Note: You can refer to Figure 9 in the lesson on Chlamydia for a visual illustration of epididymitis.

With anal insertive sex, proctitis is often diagnosed.

*Female Signs and Symptoms*

Generally women are asymptomatic. If the female does have symptoms of gonorrhea, it often takes longer for symptoms to begin (5 to 10 days or as long as 60 days). About 50% of women experience symptoms of cervicitis or inflammation of the cervix such as:

- Greenish yellow discharge from the cervix
- Spotting between or bleeding during intercourse or in-between menstrual periods
- Lower abdominal pain
- Dyspareunia

Half of the women with clinical cervicitis do not have symptoms.

Almost half of the women (40 to 60%) with cervical gonococcal infection also have a urethral infection. Occasionally, the vulva will be puritic and erthematous and a urethral discharge may be noted. Sometimes women complain of pain during sex (dyspareunia). Complications in women include:

- Infection of the Bartholin's and Skene's glands (see Figure 14)
- Pelvic inflammatory disease (PID)
- Ritz-Hugh-Curtis Syndrome (perihepatitis)

Ritz-Hugh-Curtis Syndrome is a rare complication of pelvic inflammatory disease. The bacteria caused by gonorrhea and chlamydia can infiltrate the uterus and oviducts, causing infection and inflammation, it may cause scar tissue to form on the Glisson's capsule, tissue surrounding the liver (Frumovitz & Ascher-Walsh, 2006).

Gonorrhea primarily infects the cervix and fallopian tubes, which is the leading cause of PID (NYSDOH, 2006b).

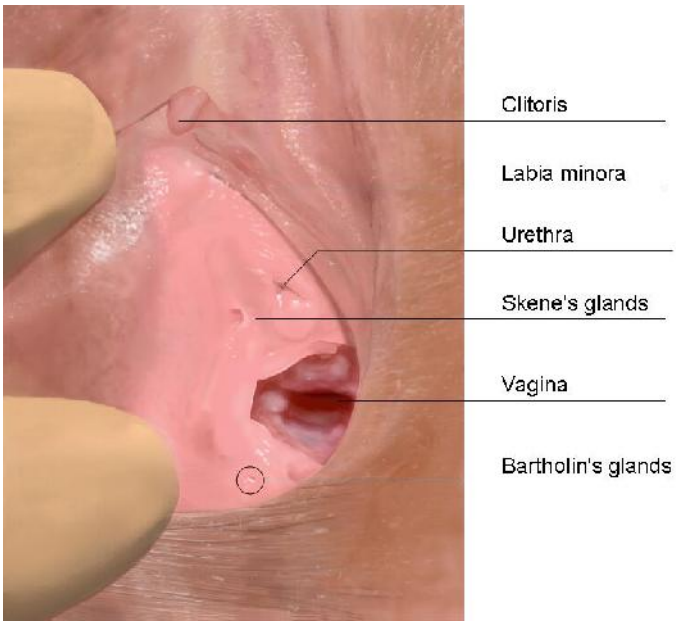


Figure 14. *Genital Organs of the Female*
Downloaded from: http://en.wikipedia.org/wiki/File:Skenes_gland.jpg

The Physical Examination

A complete abdominal examination must be done by the examiner with inspection of:

- External genitalia
- Milk Skene's glands and urethra
- Palpation of the Bartholin's glands for exudate and tenderness

Next, examine the cervix for:

- Cervical motion tenderness (CMT)
- Friability
- Exudate

Obtain a gonorrhea culture using a modified Thayer Martin medium (used to isolate gonorrhea).
If a wet prep is done, numerous white blood cells will be seen. Non-culture tests are available such as:

- The amplified tests (NAATs) such as the Polymerase chain reaction (PCR)
- Transcription-mediated amplification (TMA) (Gen-Probe Aptima)
- The strand displacement amplification (SDA) (Becton-Dickinson BD ProbeTec ET)

Non-amplified tests include:

- The DNA probe (Gen-Probe PACE 2, Digene Hybrid Capture II)
- A gram stain

In sexual assault cases, it is standard to obtain a *culture* to confirm *Neisseria gonorrhoeae.*

Rectal transmission of gonorrhea is common with anal intercourse and patients may complain of:

- Anal itching
- Rectal bleeding
- A discharge
- Pain

With pharyngeal transmission, the patient may have an erythematous throat as well as enlarged lymph nodes in their neck (NYSDOH, 2006b).

Medication Regimens for Gonorrhea

*Neisseria gonorrhoeae* produces beta-lactamase; therefore treatment agents include the agents with beta-lactamase stability. Fluoroquinolones are no longer recommended for therapy acquired in Asia, the Pacific Islands (including Hawaii), and California. On the basis of the most recent evidence, CDC no longer recommends the use of fluoroquinolones for the treatment of gonococcal infections and associated conditions such as pelvic inflammatory disease (PID). Only one class of drugs, the cephalosporins, is still recommended and available for the treatment of gonorrhea (CDC, 2007).

Recommended CDC (2008) regimens for uncomplicated gonococcal infections of the cervix, urethra, and rectum include the following:

- Ceftriaxone 125 mg in a single intramuscular (IM) dose, or
- Cefixime 400 mg in a single oral dose, PLUS
- Treatment for chlamydia if chlamydial infection is not ruled out

*Side Effects*

Ceftriaxone (Rocephin): Caution should be used in patients with a penicillin allergy as a small percentage of patients with a penicillin allergy will also have an allergy to ceftriaxone (DePestel et al., 2008). The most serious reaction to this medication is anaphylaxis. Common reactions include: local injection site reactions, eosinophilia, thrombocytosis, elevated liver transaminases, diarrhea, and leucopenia (“Ceftriaxone,” n.d.).

Cefixime (Suprax): Caution should be used in patients with a penicillin allergy as a small percentage of patients with a penicillin allergy will also have an allergy to cefixime (DePestel et al., 2008). The most serious reaction to this medication is anaphylaxis. Common reactions include: diarrhea, abdominal pain, nausea, dyspepsia, flatulence, rash, headache, dizziness, urticaria, pruritus, elevated liver transaminases, elevated BUN, Cr, and eosinophilia (“Suprax,” n.d.).

Alternative regimens include:

- Spectinomycin 2 g in a single IM dose, or
- Cephalosporin single-dose regimens

Recommended CDC (2008) regimens for uncomplicated gonococcal infections of the pharynx include:

- Ceftriaxone 125 mg in a single IM dose, PLUS
- Treatment for chlamydia if chlamydial infection is not ruled out
- Tetracycline and quinolone should not be given to women who are pregnant. If the pregnant woman is allergic to cephalosporin, they should be given a 2 g dose of spectinomycin IM (CDC, 2006a)

Further medication regimen for the treatment of gonorrhea can be found at www.cdc.gov/std/Gonorrhea.

**Key Points to Remember**

- ✓ Gonorrhea may be associated with increased transmission and susceptibility to HIV infection.
- ✓ In sexual assault cases, it is standard to obtain a culture to confirm *Neisseria gonorrhoeae*.

**Syphilis**

What is Syphilis?

Syphilis is a complex and multisystem disease caused by spirochete *Treponema pallidum*. It is acquired through:

- Sexual contact and kissing
- Biting
- Oral-genital intercourse

Initial lesions appear 2 to 4 weeks after exposure. There are non-Treponemal tests typically used for screening for syphilis such as the RPR (Rapid Plasma Reagent) and VDRL (Venereal Disease Research Laboratory). These are non-specific antibody tests and they are usually positive in 3 to 4 weeks after exposure correlates with disease activity. There are many false positives with these studies and some conditions such as autoimmune diseases, drug abuse, dermatologic diseases, and pregnancy contribute. Please see Table 1 for a more comprehensive list of false positive reactions. The RPR and VDRL are often followed after treatment.

Table 1. *Causes of false positive reactions in serologic tests for syphilis*

| **Disease** | **RPR/VDRL** | **FTA-ABS** | **TP-PA** |
|---|---|---|---|
| Age | | Yes | |
| Autoimmune Diseases | Yes | Yes | |
| Cardiovascular Disease | | Yes | Yes |
| Dermatologic Diseases | Yes | Yes | -- |
| Drug Abuse | Yes | Yes | |
| Febrile Illness | Yes | | |
| Glucossamin/chondroitin sulfate | | Possibly | |
| Leprosy | Yes | No | -- |
| Lyme disease | | Yes | |
| Malaria | Yes | No | |
| Pinta, Yaws | Yes | Yes | Yes |
| Pregnancy | Yes* | | |
| Recent immunizations | Yes | -- | -- |
| STD other than syphilis | | Yes | |
| *May cause increase in titer in women previously successfully treated for syphilis. | | | |
| Note. From the Syphilis Reference Guide. CDC, National Center for Infectious Diseases, 2002 | | | |

The confirmatory tests include:

- Fluorescent Treponemal Antibody, which is considered to be the “gold standard”
- ELISA Treponema specific

Treponemal tests are usually reactive for life and they measure the antibody directed against *T. pallidum* antigens, and read either positive or negative.

The National Statistics

Let’s look at some figures recently compiled by the CDC.

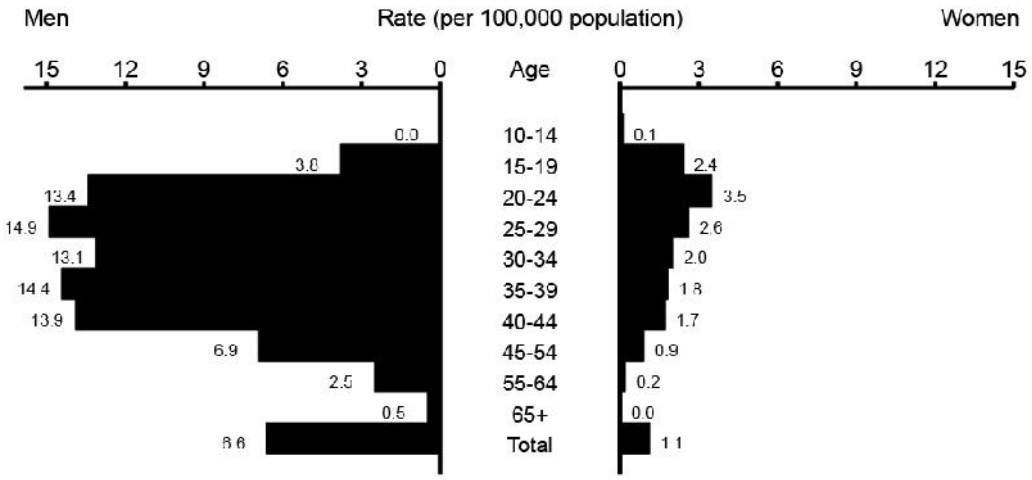


Figure 15. *Primary and Secondary Syphilis — Age- and Sex-Specific Rates: United States, 2007*. CDC, 2008

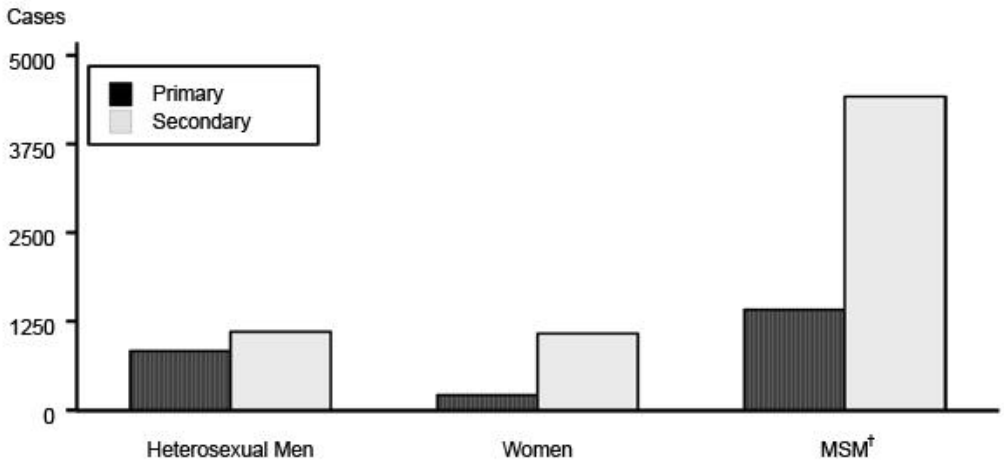


Figure 16. *Primary and Secondary Syphilis — Reported Cases by Stage and Sexual Orientation, 2007.* CDC, 2008

When compared to women in Figure 15, men have a significantly higher rate of primary and secondary syphilis overall. With this in mind, as you look at Figure 16 it should be clear that a large population at higher risk for syphilis is men who have sex with men.

## Stages of Syphilis and Treatment

*Primary syphilis* begins with a painless genital ulcer, with a clean base and indurated margins and localized lymphadenopathy.

Treatment:

- Benzathine penicillin G 2.4 million units IM in a single dose

If the patient has a penicillin allergy, treat with:

- Doxycycline 100 mg orally twice a day for 2 weeks, or
- Tetracycline 500 mg orally four times a day for two weeks

*Secondary syphilis* occurs a few weeks to months after initial chancre and is associated with:

- Flu-like symptoms
- A low grade fever

Generalized lymphadenopathy will be palpated and a maculopapular rash involving palms and soles are noted.

Treatment:

- Benzathine penicillin G 2.4 million units IM

If the patient has a penicillin allergy, treat with:

- Doxycycline 100 mg twice a day for 2 weeks, or
- Tetracycline 500 mg orally four times a day for 2 weeks

Figure 17 shows a close-up view of keratotic lesions on a patient's palms due to a secondary syphilitic infection. Syphilis has often been referred to as "the great imitator" because many of the signs and symptoms are indistinguishable from those of other diseases.

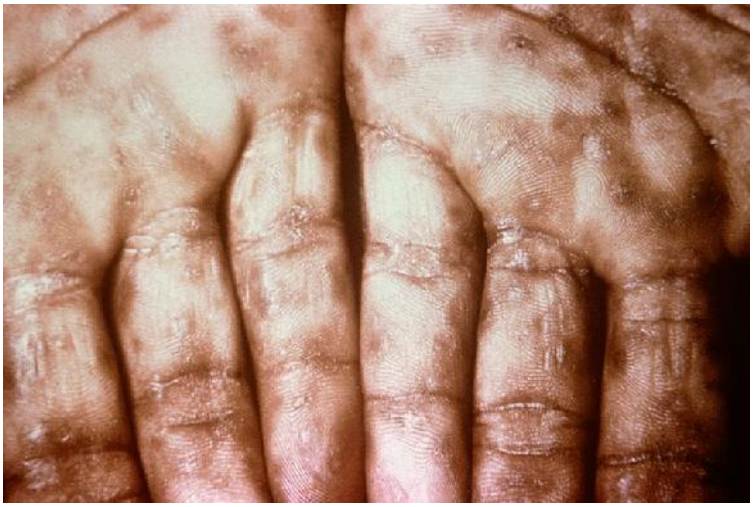

Figure 17. *Keratotic Lesions due to Secondary Syphilis*
Courtesy of: Public Health Image Library (CDC)

*Late syphilis* (tertiary syphilis) is irreversible. It is associated with granulomatous lesions involving skin, mucous membranes, and the bones.

This stage is also associated with aortic aneurysms and seizures.

Treatment:

- Benzathine penicillin G 2.4 million units IM weekly for 3 weeks

If the patient has a penicillin allergy, treat with:

- Doxycycline 100 mg orally twice a day for 4 weeks, or
- Tetracycline 500 mg orally four times a day for 4 weeks

Titers are drawn at 3, 6, and 12 months after treatment.

The CDC (2008) noted a decline in syphilis during the 1990s, and the lowest rate documented in 2000, since reporting began in 1941. An increase in syphilis between 2001 and 2007 was observed to be primarily due to men who have sex with men. Increases among women and infants provide evidence that syphilis among heterosexuals has been an emerging problem.

**Key Point to Remember**

- ✓ Primary and secondary syphilis has increased greatly in men who have sex with men.

Let's move on and take a briefer look at the other STIs.

**Pelvic Inflammatory Disease (PID)**

What is PID?

Pelvic Inflammatory Disease (PID) is an infection of the:

- Fallopian tubes
- Ovaries
- Uterus
- Pelvic peritoneum
- Pelvic vascular system or connective tissue

It may involve all or one structure and it maybe acute or chronic. PID may be caused by many different bacterial organisms such as:

- *N. gonorrhea*
- *C. trachomatis*
- Anaerobic bacteria
- *E. coli*
- *Mycoplasma hominis*
- *Ureaplasma urealyticum*
- *Gardnerella vaginalis*
- Group A *beta-hemolytic streptococci*
- *Haemophilus influenzae*

Diagnosis of PID must include:

- Lower abdominal pain
- Cervical motion tenderness
- Adnexal tenderness

Medication Regimen of PID

PID Treatment:

- Ceftriaxone 250 mg IM in a single dose, PLUS
- Doxycycline 100 mg orally twice a day for 14 days, WITH or WITHOUT
- Metronidazole 500 mg orally twice a day for 14 days

*Side Effects*

Information regarding side effects for ceftriaxone can be found in the section on Medication Regimens for Gonorrhea. For doxycycline, see the section on Medication Regimens for Chlamydia.

Metronidazole (Flagyl): This medication should be avoided in patients with alcohol use. Patients must wait 24 hours after their last consumption of alcohol and must avoid alcohol for the duration of treatment and for 72 hours following treatment with metronidazole. Serious reactions include: seizures and neutropenia. Common reactions include: nausea, vomiting, dyspepsia, diarrhea, metallic taste, dry mouth, rash, pruritus, headache, dizziness, syncope, ataxia, confusion, thrombophlebitis, fever, vertigo, paresthesias, furry tongue, and dark, red-brown urine ("Metronidazole," n.d.).

The Morbidity and Mortality Report (MMWR) updated CDC's Sexually Transmitted Diseases Treatment Guidelines, 2006, regarding the treatment of infections caused by *N. gonorrhoeae*. As has been noted previously in this module, the CDC no longer recommends the use of fluoroquinolones for the treatment of gonococcal infections and associated conditions such as pelvic inflammatory disease (PID). Consequently, only one class of drugs, the cephalosporin's, is still recommended and available for the treatment of gonorrhea (CDC, 2007).

**Trichomoniasis**

What is Trichomoniasis?

Trichomoniasis is a flagellated (e.g., fast movement) anaerobic protozoan (see Figure 18). Women are symptomatic or asymptomatic and men are asymptomatic. Trichomoniasis is transmitted during vaginal/penile intercourse. Trichomoniasis is characterized by foul-smelling, yellow-green, frothy vaginal discharge which may be profuse or scanty. It may cause dyspareunia and dysuria. On examination, pH level is elevated and petechial lesions are noted on the cervix, which is often called a "strawberry cervix" (see Figure 19). Vaginal wet smear (i.e., vaginal secretions affixed to a slide and viewed under a microscope) is highly specific, but not very sensitive (50 to 80%). Culture is the "gold standard", but not widely available.

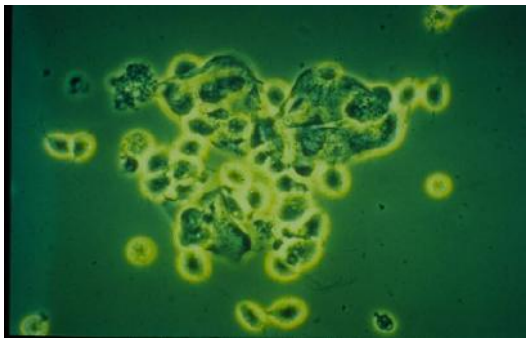

Figure 18. *Trichomoniasis*
Courtesy of: STD/HIV Prevention Training Center, University of Washington

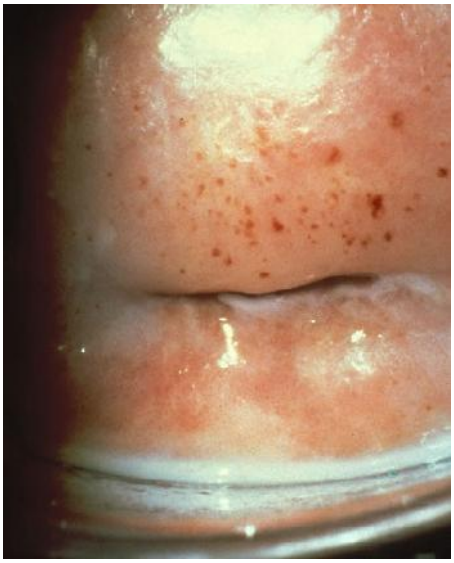

Figure 19. *Strawberry Cervix*
Courtesy of: STD/HIV Prevention Training Center, Claire E. Stevens

Medication Regimen of Trichomoniasis

Treatment:

- Metronidazole 2 grams orally once per day, or 250 mg orally three times per day for 7 days

**Bacterial Vaginosis (BV)**

What is BV?

Bacterial Vaginosis (BV) is also known as *Gardnerella vaginalis* or *hemophilus vaginalis*. It is caused by a high concentration of anaerobic bacteria raising the pH > 4.5. A nonsexual mode of transmission is through antibiotics, douching, or intercourse which can raise the normally acidic vaginal pH. Bacterial vaginosis is characterized by:

- Thin, dark, gray malodorous adherent vaginal discharge (see Figure 20)
- Positive whiff test (fishy odor) when KOH applied (KOH removes cytoplasm of cell)
- Presence of clue cells on wet-mount when evaluated through a microscopic (see Figure 21)

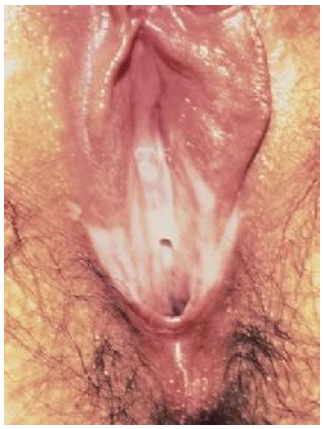

Figure 20. *Vaginal Discharge of Bacterial Vaginosis*
Courtesy of: STD/HIV Prevention Training Center, University of Washington

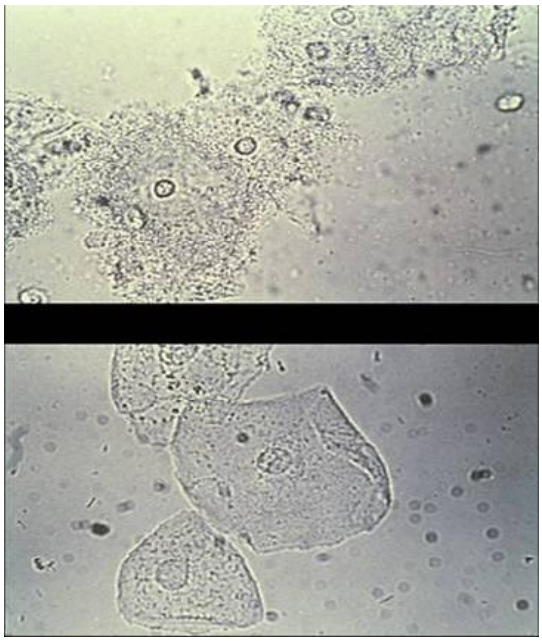

Figure 21. *Vaginal Saline Prep: Normal (below); Clue Cells (above)*
Courtesy of: STD/HIV Prevention Training Center, University of Washington

Medication Regimen for BV

*Treatment:*

- Metronidazole vaginal gel, one full application twice a day for 5 days
- Cleocin 2% vaginal cream; apply qhs x 7 nights
- Flagyl 500mg twice a day for 7 days (Metronidazole 2 g single-dose therapy has the lowest efficacy for BV and is no longer a recommended alternative regimen.)

**Candidiasis**

What is Candidiasis?

Candidiasis is an overgrowth of normal flora with risk factors such as:

- Antibiotic use
- Obesity
- Diabetes
- HIV infection
- Other immunosuppressive conditions

Candidiasis is characterized by:

- Vaginal itching
- Burning and irritation
- Dysuria (difficult or painful urination)
- Vaginal discharge may be thick white, maybe scanty or profuse

On exam it appears as a consistency of cottage cheese and adheres to the vaginal mucosa (see Figure 22). The mucosa may be inflamed and edematous. The pH is normal and there is no odor. It is diagnosed via KOH on wet mount (see Figure 23) and visual hyphal forms or budding yeast will be noted (CDC, 2006c).

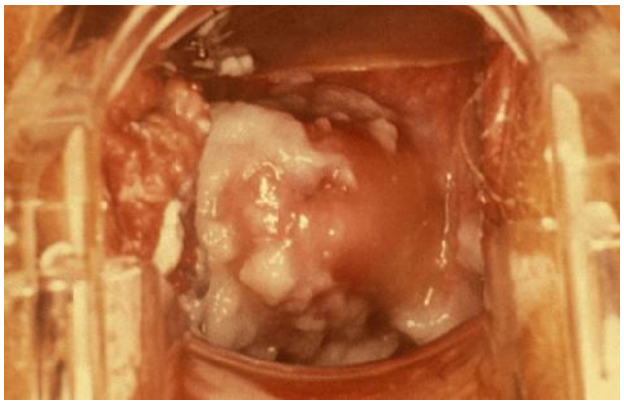

Figure 22. *Yeast - Classic Clinical Appearance*
Courtesy of: STD/HIV Prevention Training Center, University of Washington

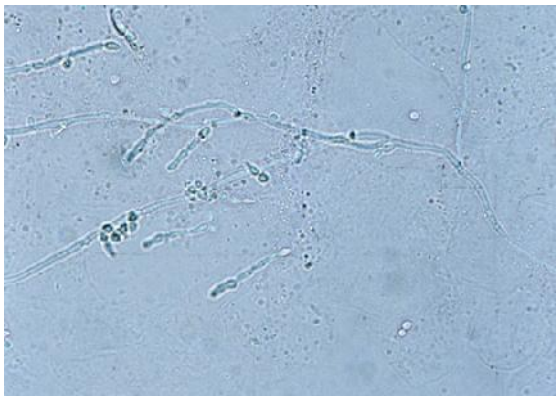

Figure 23. *Yeast seen in 10% KOH Wet Mount*
Courtesy of: STD/HIV Prevention Training Center, University of Washington

Medication Regimen for Candidiasis

Intravaginal Agents:

- Butoconazole 2% cream 5 g intravaginally for 3 days
- Butoconazole 2% cream 5 g (Butaconazole1-sustained release), 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, two tablets for 3 days

- Miconazole 2% cream 5 g intravaginally for 7 days
- Miconazole 100 mg vaginal suppository, one suppository for 7 days
- Miconazole 200 mg vaginal suppository, one suppository for 3 days
- Miconazole 1,200 mg vaginal suppository, one suppository for 1 day

- Nystatin 100,000-unit vaginal tablet, one tablet for 14 days

- 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, one suppository for 3 days

- Terizol cream intravaginally qhs x 3 nights

- Tioconazole 6.5% ointment 5 g intravaginally in a single application

Oral Agents:

- Fluconazole 150 mg oral tablet, one tablet in single dose

**Herpes Simplex Virus (HSV)**

What is HSV?

Herpes simplex Virus (HSV) is a recurring viral disease with two types:

- HSV-1 - produces oral lesions
- HSV-2 - produces genital lesions

It is transmitted by direct contact with an infected individual who is shedding the virus (see Figure 24).

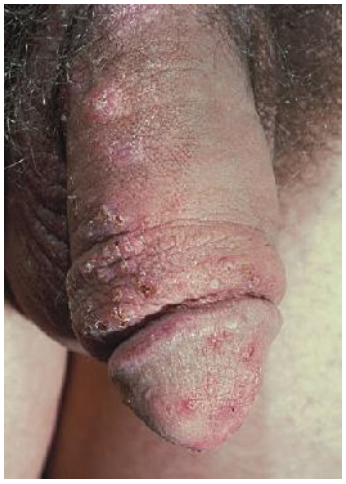

Figure 24 *Severe Primary HSV Infection with Penile Edema*
Courtesy of: STD/HIV Prevention Training Center, Connie Celum, & Walter Stamm

Types of Herpes and Treatment Regimen

*Primary Herpes*

Primary herpes is a systemic disease that is characterized by:

- Painful vesicular lesions
- Fever, chills, malaise, and
- Dysuria noted due to the genital lesions

Treatment of the initial infection includes:

- Acyclovir 400 mg orally three times a day for 7 to 10 days
- Acyclovir 200 mg orally 5 times per day for 7 to 10 days
- Famciclovir 250 mg 3 times a day for 7 to 10 days
- Valacyclovir 1 g two times a day for 7 to 10 days

After the onset of symptoms, the symptoms peak in 4 to 5 days where they may last 2 to 3 weeks.

*Recurrent herpes*

Recurrent herpes is characterized by:

- A localized infection
- Lesions that are usually less painful, and they resolve rapidly

Recurrent herpes lasts about 5 to 7 days. Some prodromal symptoms may occur prior to the onset of the recurrent herpes which may include burning, itching, or a swelling sensation.

Diagnostic testing is obtained by viral culture during the vesicular stage and serologic testing is done to test for HSV antibodies.

Suppression of recurrent infection:

- Acyclovir 400 mg twice a day
- Famciclovir 250 mg twice a day
- Valacyclovir 1 g daily
- Valacyclovir 500 mg daily for extended period of time

*Episodic therapy for recurrent genital herpes*

Recommended regimens:

- Acyclovir 400 mg orally three times a day for 5 days, or
- Acyclovir 800 mg orally twice a day for 5 days, or
- Acyclovir 800 mg orally three times a day for 2 days, or

- Famciclovir 125 mg orally twice daily for 5 days, or
- Famciclovir 1000 mg orally twice daily for 1 day, or

- Valacyclovir 500 mg orally twice a day for 3 days, or
- Valacyclovir 1.0 g orally once a day for 5 days

**Human Papillomavirus (HPV) Infection**

What is HPV?

Human Papillomavirus (HPV) infection is the most common of the viral sexually transmitted infections. The Papovavirus family consists of 60 strains that have been identified; 20 of which are associated with genital tract infections.

HPV lesions may be 1 mm or larger, and are flat, papular lesions noted on vulva, introitus, vagina, cervix perineum, urethra, and anus. An application of acetic acid will turn them white (candidiasis, folliculitis, contact dermatitis and psoriasis will also turn white).

Mother-child transfer at birth can occur. The incubation period is 3 weeks to 8 months or longer. HPV consists of:

- Papular lesions with a warty, granular surface
- A painless ulcer

Condyloma acuminata and low grade neoplasms are associated with HPV strains 6 and 11. High grades of genital dysplasia and carcinoma are associated with strains 16, 18, 31, 33, and 35.

Patients complain of:

- An odorous vaginal discharge
- Pain and burning on urination
- Pruritus

Patients may experience bleeding during and after coitus. In pregnancy, the lesions grow very large and can affect urination, bowel movements, mobility, and the birth of the baby; and rarely a c-section is needed.

Treatment of HPV - The CDC Guidelines

*In the absence of genital warts or cervical squamous intraepithelial lesions (SIL)*

The CDC guidelines (2006), recommend that *in the absence of genital warts or cervical squamous intraepithelial lesions (SIL)*, treatment is not recommended for subclinical genital HPV infection, whether diagnosed by colposcopy, biopsy, acetic acid application, or through the detection of HPV by laboratory tests.

Genital HPV infection often goes away on its own, and no therapy has been identified that can eradicate infection. If SIL is present; however, the management should be based on the pathology reports from the laboratory.

Colposcopy with direct biopsy is generally required for subclinical lesions, dysplasia, and malignancy or squamous intraepithelial lesions.

*If genital warts are present*

If genital warts are present, a **Trichloracetic acid** (TCA).or **Bichloroacetic acid** (BCA) 80%–90% may be used. A small amount of the acid should be applied only to the warts and allowed to dry, at which time a white “frosting” develops. If too much of the acid is applied, the treated area should be powdered with talc, sodium bicarbonate (e.g., baking soda), or liquid soap preparations to remove the unreacted acid. This treatment can be repeated weekly, if necessary.

**Cryotherapy**, with liquid nitrogen or a cryoprobe may also be used for external genital warts. The applications should be repeated every one to two weeks.

A **Podofilox** 0.5% solution or gel can be used and patients should apply the podofilox solution with a cotton swab, or podofilox gel with a finger, to visible genital warts twice a day for three days. This should be followed by four days of no therapy. This cycle may be repeated for up to four cycles if necessary.

The total wart area treated should not exceed 10 $cm^2$, and the total volume of podofilox should be limited to 0.5 ml per day. If possible, the healthcare provider should apply the initial treatment to demonstrate the proper application technique and identify which warts should be treated. The safety of podofilox during pregnancy has not been established.

**Podophyllin resin** - 10%–25% in a compound tincture of benzoin may be applied to the genital warts. A small amount should be applied to each wart and allowed to air dry. If necessary, the treatment can be repeated weekly.

To avoid the possibility of complications associated with systemic absorption and toxicity, the CDC (2006) notes two important guidelines that should be followed:

1) Application should be limited to <0.5 ml of podophyllin or an area of <10 $cm^2$ of warts per session
2) No open lesions or wounds should exist in the area to which treatment is administered.

Some specialists suggest that the preparation should be thoroughly washed off one to four hours after application to reduce local irritation. The safety of podophyllin during pregnancy has not been established

**Surgery and other referrals** - The advantage of using surgery to remove genital warts is that the warts can be removed at a single visit. This therapy requires substantial clinical training, additional equipment, and a longer office visit. After local anesthesia is applied, the visible genital warts can be physically destroyed by electrocautery. The depth of electrocautery needs to be carefully controlled to prevent scarring. The warts can be removed either by excision with a pair of fine scissors or a scalpel, or by curettage.


**Activity #1**

Read the following case study.

*Mary is a 33-year-old female who tells you she was at a bar last evening. This morning she woke up in a strange room alone, with her pants on, but not her underwear. She also tells you that she has been having vaginal discharge that has a fishy odor for the past few days. She says she just finished Azithomycin orally for a respiratory infection. You obtain a urine sample and blood for a "drug-facilitated sexual assault". On exam you notice a thin, dark gray, malodorous adherent vaginal discharge. After you apply KOH to a slide sample, you notice the fishy odor.*

Note. From the author's personal clinical experience.

Go to the discussion forum and post your responses to the following:

- What do you suspect is the STI and why?
- Describe what you anticipate the provider will order for treatment.

**Hepatitis A, Hepatitis B, Hepatitis C**

For this portion of the course, the author would like you to click on the links that follow to read about viral hepatitis A, B, and C.

**Hepatitis A**
Please click on the following link to review information written by the CDC in response to frequently asked questions related to statistics, transmission, symptoms, and treatment of hepatitis A.
http://www.cdc.gov/hepatitis/HAV/HAVfaq.htm

**Hepatitis B**
Please click on the following link to review the statistical information relating to hepatitis B. Please pay particular attention to the section relating to the transmission, symptoms, and treatment, as well as the information relating to the hepatitis B serology and the vaccine.
http://www.cdc.gov/hepatitis/HBV/HBVfaq.htm

**Hepatitis C**
Please click on the following link and review the sections on transmission and symptoms, testing, and the CDC recommendations for treatment regarding hepatitis C.
http://www.cdc.gov/hepatitis/HCV/HCVfaq.htm


**Activity #2**

When you are finished reading the information above, go to the discussion forum and compare and contrast three (3) differences between the treatment guidelines for hepatitis A, B, and C.

**Emergency Contraception (EC)**

Emergency contraception (EC) offers a way to prevent pregnancy after a contraceptive fails or following unprotected sex. There are numerous medications used for EC in the United States; however, there is only one progestin-only pill currently available: Plan B (levonorgestrel) or more commonly referred to as the "morning-after pill" (The Emergency Contraception Web site, n.d.). Plan B can not terminate an existing pregnancy, and works in different ways depending on where a woman is in her menstrual cycle.

How EC Works

In the follicular phase of the menstrual cycle, EC disrupts or delays ovulation; and in the luteal phase, it blocks fertilization as well as implantation. It is contraindicated if the woman is pregnant, hypersensitive to any of the components, or has undiagnosed, abnormal genital bleeding.

For additional information please visit the NYS DOH Web site for the brochure "Emergency Contraception: What you Need to Know": http://www.health.state.ny.us/publications/2018/index.htm.

It is safe to use with such diseases and conditions as:

- Diabetes
- HTN
- CAD, and if the patient is taking Coumadin
- Hepatitis
- DVT/PE

EC is safer than aspirin or pregnancy (Stanwood, 2008). When plan B is used, 87% of patients have their menses near the expected date, and 13% have a delayed period. If a female does not have her period in three weeks, a pregnancy test must be ordered.

What is Plan B?

In December of 2006, the FDA announced the approval of the emergency contraceptive drug Plan B as an over-the-counter (OTC) option for women aged 18 and older.

> On March 23, 2009, a federal court issued an order directing the FDA, within 30 days, to permit the Plan B drug sponsor to make Plan B available to women 17 and older without a prescription. FDA notified the manufacturer of Plan B informing the company that it may, upon submission and approval of an appropriate application, market Plan B without a prescription to women 17 years of age and older. (U.S. Food and Drug Administration, 2009)

Plan B, or emergency contraception, is a backup method to birth control. It is in the form of two levonorgestrel pills (0.75 mg in each pill) that are taken by mouth after a contraceptive fails or after unprotected sex. Levonorgestrel is a synthetic hormone that has been used in birth control pills for over 35 years. When taken as directed, Plan B can reduce the chances of a woman becoming pregnant, if she has had unprotected sex.

Plan B can be given up to five days following a sexual assault. It is the most effective when given immediately after a sexual assault, and its effectiveness decreases the longer it is given from the time a sexual assault occurred. This option should be offered to all patients following a sexual assault, provided they have a negative urine pregnancy test. A discussion regarding the possible side effects of this medication should be implemented by the SANE nurse.

Side effects include:

- Nausea
- Vomiting
- Tender breasts

- Headache
- Dizziness
- Fatigue
- Abdominal pain or cramps

The SANE should also teach the patient that taking this medication may change their menstrual cycle. It may appear longer, shorter, heavier, or lighter than normal. Patients should be instructed to follow up with their primary care provider, their gynecologist, or a health clinic to have a repeat pregnancy test, as this medication is not 100% effective against preventing pregnancy and there is still a chance they may become pregnant from this encounter.

*Additional EC Method*

A non-hormonal method to prevent pregnancy is the copper IUD. The IUD inhibits fertilization and implantation and can be inserted up to seven days after the sexual assault. The copper IUD reduces the risk of pregnancy by 99% and can also be used for contraception for the next ten years (Piaggio, von Hertzen, Grimes, & Van Look, 1999). Stewart and Trussell (2000) found that only 25% of women receive medical care for sexual assault and only 17% receive medical care within one week.

**Key Point to Remember**

- ✓ Plan B is now available without a prescription to women aged 17 and older.

**HIV Post Exposure Prophylaxis (PEP) Recommendations**

It is important for you as a SANE to understand the literature and identify what the data demonstrates in regard to HIV post exposure prophylaxis (PEP). You will be educating not only your patients but also the physicians. New York State has been offering HIV PEP for many years, since the CDC began to recommend HIV PEP in 2005.

New York State AIDS and CDC Recommendations

The following contrast the differences with the New York State AIDS Institute and the CDC recommendations:

*New York State AIDS Institute*

Updated in January, 2008

Initiation for non-occupational post exposure prophylaxis (n-PEP) and is used when the individual patient uses anti-HIV medication after they have been exposed to HIV through sexual intercourse, injection drug use, or in settings other than the workplace. Non-occupational PEP is done to prevent infection from occurring in the patient. The sooner n-PEP is started, the more likely it is to interrupt HIV transmission; but it is not known precisely how effective n-PEP is. Studies are ongoing to look at this question.

Up to 36 hours after exposure, n-PEP uses the following combination of drugs:

Zidovudine 300 mg orally twice a day
+
Lamivudine 150 mg orally twice a day
} Or Combivir 1 orally twice a day

PLUS

Tenofovir 300 mg orally once daily

**OR**

Zidovudine 300 mg orally twice a day

PLUS

Emtricitabine 200 mg orally once daily
+
Tenofovir 300 mg orally once daily
} Or Truvada 1 orally once daily

*CDC*

- January 21, 2005, the CDC recommendations were made for PEP after non-occupational exposure and were published in MMWR.
- Initiation for PEP up to 72 hours
- Regime: zidovudine (or tenofovir) + lamivudine (or emtricitabine) + efavirenz (or Kaletra)

Why Post Exposure Prophylaxis (PEP)?

The data supporting efficacy of HIV PEP is from *occupational* exposure data in which the CDC used a retrospective and multinational case control study. The study used Zidovudine (ZDV) after occupational exposure versus no PEP. Those who took PEP demonstrated an 81% reduction in seroconversion of the healthcare worker. In the mother-to-child transmission study, which was a randomized controlled trial, a 2/3 reduction was demonstrated in mother-to-child transmission with ZDV pre and intrapartum versus a placebo (CDC, 2002, February).

What Should You Do if You are Exposed to HIV?

Providers are often asked, "What would you do if you were exposed to HIV?"

It is important for you to understand HIV exposure. The source fluids associated with the risk include:

- Blood
- Visibly bloody fluid
- Semen, vaginal secretions
- CSF, pleural, pericardial, peritoneal, synovial, amniotic fluids

Body fluids that do not require HIV PEP include:

- Saliva
- Tears
- Sweat
- Non-bloody urine or feces

So how do we assess a patient's/victim's risk?

First we need to consider the following:

- Circumstances leading to HIV exposure
- Risk of HIV acquisition based on type of exposure
- Possibility that the source is HIV-infected

It is always important to provide risk-reduction and primary prevention counseling for those at high risk (e.g., sex workers, prostitutes). Remember HIV PEP is not indicated for negligible or low risk of HIV infection. This is an area you may spend most of your time educating your patients about HIV risk.

*HIV PEP for Victims of Sexual Assault*

Often a sexual assault victim may think of acquiring an STI or they may become pregnant, but they don't always think about their exposure to HIV. Table 2 shows the consideration of n-PEP according to the type of risk HIV exposure. Please click on the link located at the bottom of Table 2 to learn more about PEP for sexual assault survivors.

Table 2. *Risk of acquisition*

| **PEP recommended, if source HIV+ or at risk of HIV** | **PEP *NOT* recommended** |
|---|---|
| • Unprotected receptive & insertive vaginal or anal intercourse<br>• Unprotected receptive penile-oral contact with ejaculation<br>• Oral-vaginal contact with blood exposure<br>• Needle-sharing<br>• Injury with blood exposure - needlestick, bite, accident | • Kissing, or oral-oral contact & no mucosal damage<br>• Bites without blood<br>• Needles/sharps exposure not in contact with HIV + or at-risk person<br>• Mutual masturbation – intact skin<br>• Oral-anal contact<br>• Receptive penile-oral contact without ejaculation<br>• Insertive penile-oral contact<br>• Oral-vaginal – no blood exposure |
| Note. Adapted from NYSDOH, 2008: http://www.guideline.gov/summary/summary.aspx?doc_id=12567 | |

What is the estimated risk of transmission of HIV? The numbers are low, but not 0%. You also MUST consider the HIV status of the perpetrator-----which may change everything. Table 3 shows the estimated risk of HIV transmission following different types of exposures.

| Table 3. *Estimated HIV transmission risk* | |
|---|---|
| **Exposure Type if Source HIV-infected** | **Estimated Risk** |
| Needle-sharing exposure | 0.67% (1/150) |
| Receptive anal intercourse | 0.5% (1/200) to 3% (6/200) |
| Receptive vaginal intercourse | 0.1% (1/1000) |
| Insertive anal intercourse | 0.065% (1/1500) |
| Insertive vaginal intercourse | 0.05% (1/2000) |
| Oral sex with ejaculation | Conflicting data, but felt to be low-risk. PEP recommended for performer of oral sex who receives ejaculate. |
| Note. Adapted from *HIV Prophylaxis Following Non-Occupational Exposure Including Sexual Assault. New York State Department of Health AIDS Institute, 2008:* http://www.hivguidelines.org/GuideLine.aspx?guideLineID=2 | |


**Activity #3**

*Read the following case study.*

.

*A female sexual assault victim presents to the ED asking for pregnancy STI prophylaxis, not HIV PEP. Jenna is a 19-year-old female who states she was sexually assaulted by a friend at her school. She knows the perpetrator has used intravenous drugs in the past. It has been 30 hours since the assault. Jenna turns to you for education so you discuss the HIV PEP with her. She asks how much it costs and states that she doesn't want her parents to know.*

Note. From the author's personal clinical experience.

Go to the discussion forum and post your responses to the following:

- Based on the reading on HIV PEP, what are the key points you would like to highlight with Jenna regarding whether to take HIV PEP or not? What education would you provide her?
- How would you respond to her concerns regarding cost and not wanting her parents to know?
- How would your response be different if Jenna was 17?

<u>HIV and the Perpetrator</u>

So what is the HIV status of the perpetrator? If the perpetrator is known to be an HIV-positive source, then you need to consider their:

- CD4+ cell count
- Viral load
- Antiretroviral medication history
- Antiretroviral resistance history

But, often the patient may not know their status, or if there is an anonymous or unknown perpetrator, one needs to consider potential risk of HIV infection, including information on regional prevalence.

It is recommended that the patient have an exposure work-up and a baseline HIV test while in the ER, although declining an HIV test should not preclude HIV PEP, if indicated. As we talked about earlier, to assess for sexually transmitted infections (STIs) and provide prophylaxis in the sexually-exposed patient, this includes chlamydia, gonorrhea, and syphilis. A baseline pregnancy test is recommended for women and emergency contraception should be offered as discussed in an earlier section of this module.

Counseling for behavioral and risk-reduction should be offered. Behavioral interventions for risk-reduction should occur, regardless of whether PEP is initiated. In the acute setting, it is also important to assess for

emotional, psychological, and social factors such as depression, substance use, and history of sexual abuse. Victims of sexual violence should always be referred to mental health and/or substance use programs, as appropriate. Occasionally the patient may need acute psychiatric evaluation. This should be done following your hospital/program protocol.

Bites and Risk for HIV

There are an estimated 250,000 bites annually in the U.S. Studies have shown that HIV levels in saliva are very low. However, there is an increased risk of transmission when blood is present in addition to the saliva. So you need to consider PEP when there has been:

- Blood exposure to biter
- Blood exposure to bitten person (e.g., source has bleeding gums or lesions)
- Blood exposure to both parties

PEP is a very difficult decision for victims of sexual assault. As stated prior you want to assess whether or not a significant exposure has occurred, as well as:

- Knowledge of the HIV status of the alleged assailant
- Decision to recommend PEP should not be influenced by the geographic location of the assault
- Whether the survivor is willing to complete PEP

Remember, injuries heal very quickly in a moist environment, such as the vulva. The patient may have come into the ER 24 hours after the sexual assault and the injuries may have healed. Candidates for HIV PEP include survivors exposed by direct contact (to semen or blood of the alleged assailant) to the:

- Vagina
- Anus
- Mouth
- Broken skin
- Mucous membranes

PEP should be offered in cases of bites demonstrating visible blood.

If the sexual assault victim is too distraught to discuss or decide about PEP, offer prescribed first dose and follow-up within 24 hours. It is important to tell them that the sooner they take the medication the better, less likely chance of seroconversion. In New York State (remember) HIV PEP is offered for 36 hours after a sexual assault, where the CDC follows 72 hours.

If PEP is initiated, follow-up within 24 hours is also recommended to review understanding, tolerance, and adherence, and to ensure subsequent follow-up. Please refer to the guidelines listed in the following section. The patient may discontinue PEP if assailant is found to be HIV negative in certain situations.

How Does the Patient Pay for the Costs After a Sexual Assault?

Payment methods include:

- Medicaid/Medicare
- Private insurance, if prescription drug plan
- If no coverage, facility can include in annual Institutional Cost Report for indigent care
- Crime Victim's Board (CVB)
- Documentation of a medical visit for a forensic physical exam satisfies CVB reporting requirement
- Will directly reimburse pharmacy

To review the HIV PEP recommendations:

- HIV pep should be initiated ideally within 2 hrs, and up to 36 hrs (NYS DOH AIDS)

- CDC up to 72 hours

You should be able to discuss and document the following in considering PEP:

- Potential benefit
- Unproven efficacy and potential toxicity of PEP
- Importance of adherence
- Need to initiate/resume risk reduction, and
- Prevention behaviors
- Signs and symptoms of primary HIV infection
- Need for clinical and lab monitoring follow-up

Recommended Antiretroviral Regimen (3 agents) for 4 weeks:

- Zidovudine (ZDV) 300 mg twice a day
- Lamivudine (3TC), co-formulated as combivir 150 mg twice a day
- Tenofovir (TDF) 300 mg daily with food

**(**NYSDOH, 2008)

Note: In the presence of renal insufficiency, a dose reduction must be done.

What to Do 36 Hours after Sexual Assault

These are decisions regarding the initiation of PEP beyond 36 hours post-exposure, and they should be made by the provider in conjunction with the patient, with the realization that there is a diminished potential for success when the timing of initiation of PEP is prolonged.

**Monitoring of HIV PEP is recommended even if PEP is declined.** Table 4 represents the frequency of follow up visits and the required testing.

Table 4. *Follow up timeline and testing*

| | **Clinic Visit** | **CBC & Diff.** | **LFTs** | **HIV Ab** |
|---|---|---|---|---|
| **Baseline** | X | X | X | X |
| **Week 1** | X | | | |
| **Week 2** | X | X | X | |
| **Week 3** | X | | | |
| **Week 4** | X | X | X | X |
| **Month 3** | | | | X |
| **Month 6** | | | | X |

Note. Adapted from *New York State Department of Health AIDS Institute, 2008*

**Key Point to Remember**

✓ In New York, HIV PEP is offered for 36 hours after a sexual assault, where the CDC follows 72 hours.

**HIV Testing of Defendants of Felony Sexual Assault**

Testing of a defendant can be ordered when the result would provide a medical or psychological benefit to the victim. A new section 210.16 amended criminal procedure law and the public health law by requiring HIV testing in certain cases. The public health law was also amended to offer and make available appropriate HIV post exposure prophylaxis (PEP) and to help such necessary treatment become more financially available. The victim should be informed that payment assistance may be available from the crime victims' board. This was signed into law by our Governor on August 23, 2007 and effective November 1, 2007. You can visit http://www.health.state.ny.us/diseases/aids/testing/defendant/docs/chapter_571_-_laws_of_2007.pdf for further information.

Criminal Procedure Law States

- Indictment of certain "sexual offenses" as defined in section 130.00 of the penal law.
- Upon request of the victim within six months of the date of the crimes charged.
- May order defendant to submit to HIV-related testing.

Post exposure prophylaxis (PEP) following a sexual assault, DOES NOT change the HIV PEP regimen. These guidelines have been in place in New York State since 1998.

What Tests to Be Performed and When?

7 – 30 days after assault:

- HIV Antibody Test using standard HIV ELISA antibody test and HIV Viral Load Test. Positive antibody tests should be confirmed by a Western blot

30 Days to 6 Months from Sexual Assault HIV Antibody Test:

- When testing *30 days to 42 days* from the time of the assault: use a standard HIV ELISA antibody test
- When testing *43 days to 6 months* from the time of the assault: use either a rapid HIV antibody test or standard HIV ELISA antibody test

*Rapid Tests:*

The manufacturer's package insert states the window for rapid tests is up to 42 days; therefore, the standard ELISA antibody test should be used for defendant testing between 30 and 42 days from the time of the assault.

- Victim may request follow-up testing within six months of the date of the assault.
- Medically appropriate.
- Another court order would be needed.

Remember risk of exposure depends on…

- Viral load in ejaculate or blood
- Nature of exposure

REMEMBER:

- Risk of HIV is increased with trauma to mucosal tissue.

HIV PEP is not a guarantee, but it is effective. PEP is the same regimen for occupational or sexual assault prophylaxis.

*STI and HIV Post Exposure Prophylaxis Recommendations for Sexual Assault Patients*

Blood work:

- Send to lab HCG
- RPR
- CBC W/Diff
- SMA 7
- Hepatitis B antigen and antibodies
- Hepatitis C antibodies, HIV test if patient consents
- LFT's if consents to HIV pep

*When the Patient is Pregnant*

If pregnant, the patient should be evaluated by an ED attending and OBGYN resident for further treatment. If greater than 20 weeks pregnant (may be different depending on hospital policy) the patient should be evaluated on the labor deck prior to an ED evaluation.

*Emergency Contraception*

Pregnancy prophylaxis will be offered to every menstruating patient with a history of vaginal/penile penetration within 120 hours. A negative pregnancy test is mandatory prior to consideration for prophylaxis. Contraindications include pregnancy, thrombophlebitis or thromboembolic disorder, coronary artery disease, known or suspected breast cancer, liver tumors, jaundice with prior pill use, and CVA.

Plan B - Levonorgestrel 0.75 mg, take two pills x1.

**Key Points to Remember**

- ✓ PEP following sexual assault, DOES NOT change the HIV PEP regimen.
- ✓ PEP is the same regimen for occupational or sexual assault prophylaxis.
- ✓ HIV PEP is not a guarantee, but it is effective.

**NYS DOH Protocol for Routine STI Testing**

Testing for sexually transmitted infections differs between programs across New York State. Some programs offer testing for STIs at the time of the exam and others do not. Testing for STIs is program-specific and you should determine whether your hospital, facility, or program provides testing or does not.

Regarding testing at the time of the exam, the NYS DOH (2008) describes:

> The patient must be offered testing for HIV, hepatitis B, and hepatitis C at the time of the health care and evidentiary exam. Routine testing for gonorrhea, chlamydia, and syphilis is not recommended for the following reasons:
>
> - Testing for sexually transmissible infections at the time of the initial exam usually ascertains whether a patient had an STI before the assault.
> - Prior exposure to a STI can be used in court to bias a jury against a patient.
> - All patients are offered medication, as if infected, so testing a patient does not change the course of treatment.
>
> If the patient exhibits symptoms of a sexually transmissible infection or clinical findings are questionable, then testing is advised.
>
> Examiners must inform patients of the possible risks of contracting a STI, and provide them the information with which to make informed decisions regarding testing and treatment. Antibiotic prophylaxis is standard treatment. Even when antibiotic prophylaxis is given, the patient should be counseled about the symptoms of STIs, and advised that if he or she develops symptoms, they should seek prompt follow-up care from a primary care provider, gynecologist, or local STD clinic. The patient must be counseled that until STD prophylaxis is completed, abstinence is advised to prevent transmitting the infection to a sexual partner. If sexual contact has occurred after the assault and prior to treatment, the patient must be advised that his or her partner should seek medical evaluation for evidence of STIs.

**Sexually Transmitted Infections Prophylaxis**

Sexually transmitted disease prophylaxis is ordered by the provider and offered to all patients with a history of vaginal, oral, or rectal penetration. A negative pregnancy test is mandatory to determine appropriate antibiotic unless patient has had a hysterectomy or is postmenopausal.

Gonorrhea Prophylaxis

- Ceftriaxone 125 mg IM or 250mg IM x 1, or
- Cefixime 400 mg orally in a single dose

Alternative antibiotic regimens for the treatment of uncomplicated gonococcal infections of the cervix, urethra, and rectum include:

- Spectinomycin 2 g intramuscularly IM in a single dose, or
- Azithromycin, 2 g orally in a single dose

The azithromycin regimen is recognized by CDC as an option for treating gonorrhea infections, but is not recommended because of gastrointestinal distress and cost.

Chlamydia Prophylaxis

- Azithromycin 1 gm orally x 1, or
- Doxycycline 100 mg orally twice a day for 7 days

Trichomoniasis and Bacterial Vaginosis Prophylaxis

- Metronidazole 2 g orally x 1 (given with food)

Contraindications: If patient has had alcohol within the past 24 hours, they must wait for 24 hours after the last drink to take the metronidazole. The patient should be told to wait for 48 hours after taking metronidazole before ingesting any more alcohol.

The patient should not be given metronidazole if Antabuse is being taken.

HIV Prophylactic Treatment

NYSDOH, HIV PEP is only offered with significant exposure and within 36 hours of assault. The CDC extended HIV PEP to 72 hours for significant exposure. Call the infectious diseases (ID) consult team if the patient is pregnant, or if time frame is between 36 and 72 hours.

Ideally, PEP should be initiated within two hours. The first dose is given during the ED visit before discharge. HIV PEP medications include:

- Combivir one tablet orally twice a day for one month

There is not a Combivir liquid, but two other liquids - zidovudine (Retrovir) and lamivudine (Epivir) - together are the same ingredients. A dose of each liquid would be given twice a day.

- Tenofovir 300 mg orally daily for one month, or Kaletra

Kaletra comes as orange tablets and as a liquid, usually taken by mouth in a dose of up to (but no more than) two tablets or one teaspoon twice a day (exact dose depends on the child's age and size). Kaletra liquid should be taken with food. You may take Kaletra tablets with or without food.

*Side Effects*

Combivir: This medication has four black-box warnings regarding hematologic toxicity, myopathy, lactic acidosis/severe hepatomegaly, and hepatitis B exacerbation. Common reactions include: headache, nausea, malaise, fatigue, nasal symptoms, cough, diarrhea, nausea/vomiting, neuropathy, musculoskeletal pain, insomnia, dizziness, fever/chills, anorexia, abdominal pain, depression, rash, myalgia/arthralgia, dyspepsia, neutropenia, anemia, elevated liver transaminases, and elevated amylase ("Combivir," n.d.).

Tenofovir (Viread): This medication has two black box warnings for lactic acidosis/severe hepatomegaly, and hepatitis B exacerbation. Another serious consequence of this medication includes renal failure. Common reactions include: rash, hypercholesterolemia, headache, elevated CK, pain, diarrhea, depression, elevated amylase, back pain, fever, nausea/vomiting, fatigue, URI, abdominal pain, hematuria, asthenia, anxiety, arthralgia/myalgia, insomnia, pneumonia, dyspepsia, dizziness, elevated liver transaminases, and glycosuria ("Tenofovir," n.d.).

It is very important that the patient take the medicines exactly as prescribed. The patient may have been given different doses depending on their age and size. The pharmacy at your facility generally will put together a three day supply of HIV PEP medications for the patient at discharge.

Always discharge the patient with anti-nausea medications.

All patients (regardless of whether they are taking HIV PEP) should be referred for follow-up to a primary care provider or clinic within 2 weeks. Patients taking HIV PEP should be referred for follow-up within 1-2 days following the examination with a provider who specializes in HIV medicine or has significant knowledge or experience working with patients taking HIV PEP. Ideally, a patient should follow-up with an HIV specialist; however, they may not be available everywhere.

Patients should be informed of the risks and benefits of non-occupational exposure HIV PEP prior to making a decision on whether they should initiate this course of treatment. Patients should be educated that (Smith et al., 2005):

- There is no research to show that PEP works for non-occupational exposure. It is not known how soon after exposure to HIV will someone have to start PEP.

- PEP is not a "morning-after pill." It is a program of several drugs, several times each day, for at least 30 days. PEP is also very expensive because there are no generic forms of HIV PEP currently. From the experience of a SANE expert, the cost of these medications range from $1000 to $2000, depending on the geographic region in which you are located.

- For best results, patients have to take every dose of every PEP medication. Missing doses could mean that HIV infection will develop. It could also allow the virus to develop resistance to the medications. If that happens they would no longer work for the patient.

- Another concern is that if this medication fails and the patient develops HIV infection from the exposure, the infection may become resistant to the medication used in the HIV PEP. Therefore, patients will have decreased treatment options available to them.

- The medications have side effects, which can be serious in some cases. In 2005, of 492 healthcare workers that were reported to the occupational PEP registry, 76% experienced side effects such as nausea and fatigue and 29 (6%) did not complete PEP because of side effects. Only six (1%) experienced severe symptoms. Among 107 individuals taking nPEP, twelve (11%) modified or stopped taking nPEP because of side effects.

Hepatitis B Prophylaxis

A hepatitis B vaccination series should be initiated unless the client has previously been vaccinated or reports having had a Hepatitis B infection.

If the assailant is known to be chronically infected with hepatitis B, then hepatitis B immune globulin (HBIG) is recommended. HBIG is given when a sexual assault victim is exposed to a perpetrator who is known to be positive for hepatitis B. HBIG is a blood plasma which can prevent hepatitis B if given within 14 days of exposure. It is about 85-90% effective against hepatitis B for three months (Health-cares.net, n.d.). HBIG should be repeated if the patient is HBAg positive after three months and the survivor did not get vaccinated. Post exposure hepatitis B vaccination (without HBIG) should adequately protect against HBV.

Follow-up doses of vaccine should be administered one to two and four to six months after the first dose.

Diphtheria Tetanus

Diphtheria Tetanus prophylaxis 0.5 ml IM for all patients with injury that breaks the epidermis who have not had a dT within five years or is unsure of their dT status.

Follow-up After Discharge

The discharge instructions should include arrangements for a follow-up appointment:

- All patients treated with HIV PEP, must follow up with a provider within 1-2 days.
- Gonorrhea and chlamydia repeat testing in two weeks
- Syphilis - repeat testing in three months
- Pregnancy - if you miss your period, repeat the test in two weeks
- An HIV test should be completed in 30 days, at 12 weeks, and in 4-6 months
- Hepatitis B-Vaccine in 1-2 months, 4-6 months

If patient is not taking HIV PEP, encourage patient to seek medical evaluation for any symptoms or ongoing concerns. Instruct patient on symptoms of acute HIV infection. Review aftercare instructions with the patient.

Additional Referrals

Provide name and contact details for:

- Medical provider
- Law enforcement
- Victim services agency
- Mental health counselor


**Activity #4**

What other education could you provide to the patient at discharge? Go to the discussion forum and post your response.

## Conclusion

The initial examination of a sexual assault patient should include an evaluation for STIs. This is important for the early identification and management of possible STIs. Collection of cultures may be recommended depending on facility policy, including wet mounts and vaginal swabs as well as blood samples to evaluate for HIV, hepatitis B, and syphilis. Following the physical examination, the examiner will refer patients to another provider for follow-up monitoring for the possibility of infection that may not have been detected during the assault. Prophylactic medical management will be offered to the sexual assault patient that may include immunization against hepatitis B and tetanus, emergency contraception, antibiotics for STI prevention, and HIV PEP.

The SANE is in a unique position to provide necessary education and counseling regarding the treatment and prophylaxis that may be ordered (CDC, 2006b).

**Reminder!** If you have not already completed the required activities for the discussion forum please post your responses **BEFORE** attempting the examination.

**Additional Resources**

**HIV Clinical Resource**
Office of the Medical Director
New York State Department of Health AIDS Institute
http://www.hivguidelines.org/Content.aspx

**HIV Prophylaxis Following Non-Occupational Exposure Including Sexual Assault**
New York State Department of Health AIDS Institute
http://www.hivguidelines.org/GuidelineDocuments/a-npep.pdf

**2007 Chlamydia Prevalence Monitoring Project Annual Report**
Centers for Disease Control and Prevention
http://www.cdc.gov/std/chlamydia2007/

**2007 Gonococcal Isolate Surveillance Project Annual Report**
Centers for Disease Control and Prevention
http://www.cdc.gov/std/GISP2007/

**2007 Syphilis Surveillance Report**
Centers for Disease Control and Prevention
http://www.cdc.gov/std/syphilis2007/default.htm

**Sexually Transmitted Disease Surveillance 2007 Supplement**
Syphilis Surveillance Report, Division of STD Prevention, March 2009
http://www.cdc.gov/std/syphilis2007/Syphilis2007Complete.pdf

**STDs and Viral Hepatitis A, B, and C**
http://www.cdc.gov/hepatitis/Populations/STDs.htm

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## SANE Module 4: Post-Exposure Prophylaxis for STIs, and HIV

### Module Exam

After studying the module and completing the exam, you need to enter your answers online. **Answers cannot be graded from this downloadable version of the module.** To enter your answers online, go to e-leaRN's Web site, www.elearnonline.net and click on the Login/My Account button. As a returning student, login using the username and password you created, click on the "Go to Course" link, and proceed to the exam.

1. A pregnancy test should be completed prior to administration of Plan B.

    a. True
    b. False

2. Plan B is more effective when it is given more than 2 days after a sexual assault.

    a. True
    b. False

3. The "gold standard" for obtaining a chlamydia culture is inserting a cytologic brush or sterile Dacron tipped swab 1 to 2 cm into the endocervix.

    a. True
    b. False

4. Chlamydia is characterized by foul-smelling, yellow-green, frothy vaginal discharge with a pH less than 4.5.

    a. True
    b. False

5. The goal of HIV Post Exposure Prophylaxis (PEP) is to maximally suppress any limited viral replication that may occur and shift the biologic advantage to the host cellular immune system to prevent or abort early infection.

    a. True
    b. False

6. The initiation of Plan B:

    a. Delays ovulation
    b. Blocks fertilization
    c. Blocks implantation
    d. All the above

7. Gonorrhea is caused by:

    a. Gram-negative diplococci
    b. Gram positive bacilli
    c. E-coli bacteria
    d. A parasite infection

8. Which is the recommended medication for the treatment of uncomplicated chlamydia?

    a. Azithromycin 1 gram orally as a single dose
    b. Penicillin 500mg orally four times a day for 7 days
    c. Ceftriaxone 250mg IM once
    d. Ancef 2 grams IV once

9. Which medication is an alternative to Ceftriaxone for treatment of GC?

    a. Metronidazole 2 grams orally once
    b. Cefixime 400 mg orally once
    c. Azithromycin 1 gram orally once
    d. Amoxicillin 500 mg orally once

10. The SAFE can anticipate orders for which of the following medications when a sexually transmitted infections results after a sexual assault:

    a. Ceftriaxone, Azithromycin, and Metronidazole
    b. Augmentin, Amoxicillin, and Doxycyline
    c. Biaxin, Azithromycin, and Doxycyline
    d. Azithromycin, Erythromycin, and Ceftriaxone

11. Hepatitis A is considered a:

    a. Small RNA virus
    b. Bacterial infection
    c. Sexually transmitted disease
    d. Form of chronic hepatitis

12. When assessing the treatment options for a sexual assault patient, before offering HIV PEP, the SANE must consider:

    a. Direct contact of the victim's vagina, anus, or mouth with semen or blood or other body fluids of the perpetrator.
    b. Should not be dependent upon the presence of physical injury, tissue damage, or presence of blood at assault site.
    c. Geographic location of the assault or assumption of assailant should not influence the decision to recommend PEP.
    d. All of the above.

13. HIV testing Post Exposure Prophylaxis (PEP) is recommended at which time intervals?

    a. 8 weeks, 10 weeks, 4 months, 1 year
    b. 2 weeks, 12 weeks, 4 months
    c. 4 weeks, 12 weeks, 6 months
    d. 1 week, 12 weeks, 6 months

14. A 24-year-old woman reports to the clinic with a thin, dark gray discharge. A fishy odor is noted when KOH is applied and clue cells are present on wet-mount. She reports having been sexually assaulted two (2) weeks ago and she did not seek treatment at that time. Which STD do you suspect the woman most likely presents with?

    a. Gonorrhea
    b. Chlamydia
    c. Syphilis
    d. Bacterial vaginosis

15. Syphilis is suspected for a woman who presents to the emergency department. Which laboratory test would the SANE anticipate to rule out syphilis?

    a. Gram stain of the urethral meatus
    b. Vaginal culture
    c. Rapid reagent card test (RPR)
    d. Clean catch urine

16. The SANE is required to report which disease to the public health department?

    a. Pelvic inflammatory disease
    b. Epididymitis
    c. Ectopic pregnancy
    d. Syphilis

17. A male client presents to the ambulatory clinic with a possible diagnosis of gonorrhea. Which information would support this diagnosis?

    a. Watery diarrhea
    b. A chancre on the penis
    c. Inflammation of the scrotum
    d. A CD4 count of less than 200

18. Which assessment data supports the diagnosis of trichomonas?

    a. Small amount of white vaginal discharge and dyspareunia
    b. Strawberry spots on the vaginal surface and itching
    c. Purulent endocervical discharge and pelvic pain
    d. Curdlike vaginal discharge and no odor

19. Which of the following is not a mode of transmission for syphilis?

    a. Holding hands
    b. Kissing
    c. Biting
    d. Sexual intercourse

20. Which follow up instructions should be provided to a patient who will need Hepatitis B prophylaxis?

    a. A hepatitis B vaccination series should be initiated even if the client has previously been vaccinated or reports having had a Hepatitis B infection.
    b. Follow-up doses of vaccine should be administered 1-2 and 4-6 months after the first dose.
    c. Tenofovir 300 mg orally should be administered daily for one month.
    d. Doxycycline 100 mg orally twice a day for 7 days, then repeat in a month.