Sexually Transmitted Diseases

Chapter Fourteen
The Major Sexually Transmitted Diseases

- Also known as sexually transmitted infections
- The Major STDs (STIs)
  - HIV/AIDS
  - Chlamydia
  - Gonorrhea
  - Human papillomavirus
    - Genital warts (HPV)
  - Genital herpes
  - Hepatitis B
  - Syphilis
# Annual New Cases of STDs in the United States

<table>
<thead>
<tr>
<th>STD</th>
<th>NEW CASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trichomoniasis</td>
<td>7,400,000</td>
</tr>
<tr>
<td>HPV</td>
<td>6,200,000</td>
</tr>
<tr>
<td>Chlamydia</td>
<td>1,211,000</td>
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<tr>
<td>Genital herpes</td>
<td>292,000</td>
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<tr>
<td>Gonorrhea</td>
<td>337,000</td>
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<tr>
<td>HIV infection</td>
<td>56,000</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>46,000</td>
</tr>
<tr>
<td>Syphilis (all stages)</td>
<td>41,000</td>
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</tbody>
</table>

HIV Infection and AIDS

- About 1.1 million Americans are believed to currently be living with HIV, and about 56,000 new infections were reported in 2006.
- HIV infection is a chronic, progressive disease that damages the immune system.
- AIDS, Acquired Immunodeficiency Syndrome, is a generally incurable sexually transmitted viral disease that ultimately kills most of its victims; severe stage of HIV infection.
  - The destruction of the immune system begins with the loss of CD4 T cells (see Figure 14.1).
  - As the number of these T cells drop below 200/µl, this becomes the marker for AIDS.
Routes of HIV Transmission among Americans

* MSM = Men who have sex with men
  IDU = Injection drug users

**FIGURE 14.1** Routes of HIV transmission among Americans.

Transmitting the Virus

- HIV lives only within the cells and body fluids, not outside the body

- The 3 main routes of HIV transmission are:
  - Specific kinds of sexual contact
  - Direct exposure to infected blood
  - Contact between HIV-infected mother and her child during pregnancy, childbirth, or breastfeeding
HIV Infection: Symptoms

- Flu-like symptoms of acute HIV infection may occur within a few days or weeks of infection
- Since these symptoms are similar to common viral illnesses, the condition goes undiagnosed many times
- Opportunistic infections occur later as the immune system weakens
  - *Pneumocystis carinii* pneumonia
  - Kaposi’s sarcoma
  - Frequent and difficult-to-treat vaginal yeast infections
  - Tuberculosis
HIV Infection and AIDS: Diagnosis

- HIV antibody test detects the presence of antibodies to HIV, indicating infection
  - ELISA = first stage of test
  - Western blot = confirmatory test
  - HIV Replication Capacity
  - Blood, urine, or oral fluid; rapid tests are available
  - May take up to 6 months following infection for antibodies to appear

- HIV RNA assay measures the amount of the HIV virus in the blood; used to detect HIV infection in the earliest stages and to track the status of the infection
HIV Infection and AIDS: Treatment

- There is no known cure for HIV infection or AIDS
- Many drugs can significantly alter the course of the disease, such as:
  - Antiviral drugs
    - Reverse transcriptase inhibitors
    - Protease inhibitors
    - Integrase inhibitors
    - Entry inhibitors
HIV Infection and AIDS: Prevention

- Abstinence is the only truly safe option, unless you are in a long-term monogamous relationship with an uninfected partner
- Don’t drink or use drugs in sexual situations
- Limit the number of partners, especially those who have engaged in risky behavior; remember that many people are not truthful about their sexual history

- Use latex condoms correctly during every act of intercourse and oral sex
- Avoid sexual contact that could cause cuts or tears
- Don’t share needles, syringes, or anything that could have blood on it
- Get screened, get tested, get vaccinated for hepatitis B
Unprotected anal sex is the riskiest sexual behavior, especially for the receptive partner.

Unprotected vaginal intercourse is the next riskiest, especially for women, who are much more likely to be infected by an infected male partner than vice versa.

Oral sex is probably considerably less risky than anal and vaginal intercourse but can still result in HIV transmission.

Sharing of sex toys can be risky because they can carry blood, semen, or vaginal fluid.

Use of a condom reduces risk considerably but not completely for any type of intercourse. Anal sex with a condom is riskier than vaginal sex with a condom; oral sex with a condom is less risky, especially if the man does not ejaculate.

Hand-genital contact and deep kissing are less risky but could still theoretically transmit HIV; the presence of cuts or sores increases risk.

Sex with only one uninfected and totally faithful partner is without risk but effective only if both partners are uninfected and completely monogamous.

Activities that don't involve the exchange of body fluids carry no risk: hugging, massage, closed-mouth kissing, masturbation, phone sex, and fantasy.

Abstinence is completely without risk. For many people, it can be an effective and reasonable method of avoiding HIV infection and other STDs during certain periods of life.

**FIGURE 14.2** What's risky and what's not: the approximate relative risk of HIV transmission of various sexual activities.
Chlamydia

- Chlamydia trachomatis causes chlamydia, a prevalent bacterial STD in the United States
- Can cause PID, infertility, epididymitis, urethritis
- Symptoms are very few:
  - Males: painful urination, a slight watery discharge, and sometimes pain around the testicles
  - Women: increased vaginal discharge, burning with urination, pain or bleeding with intercourse, and lower abdominal pain
- Diagnosed with urine or lab tests
- Treated with antibiotics
Gonorrhea

- Caused by the bacterium *Neisseria gonorrhoeae* which affects mucous membranes

- Can cause PID, infertility, epididymitis, urethritis, rashes, arthritis; in infants, it can cause the serious eye infection gonococcal conjunctivitis

- Often asymptomatic in women; in men, it causes urinary discomfort and penile discharge

- Diagnosed with urine or lab tests

- Treated with antibiotics; however, many strains are resistant
Pelvic Inflammatory Disease (PID)

- PID is an infection that progresses from the vagina and cervix to the uterus, oviducts, and pelvic cavity
- Common following untreated cases of gonorrhea or chlamydia
- It is a leading cause of infertility in young women; also increases risk of ectopic pregnancy and chronic pelvic pain
- Symptoms vary greatly
- Treated with antibiotics; however, may require hospitalization
Human Papillomavirus Infection

- HPV, human papillomavirus, causes several human diseases including genital warts and genital cancers.

- HPV is one of the most common STDs in the United States, especially with young people.

- Symptoms of infected tissue may appear normal or may have obvious bumps or growths.

- Treatment does not eliminate the infection but focuses on reducing the number and size of warts.

- In 2006, the FDA approved vaccine for HPV (Gardasil) and in 2009 (Carvarix).
Genital Herpes

- Persistent viral infection affecting about one in five American adults

- Two herpes simplex viruses are of great concern:
  - HSV-1 usually causes cold sores
  - HSV-2 usually causes genital herpes

- Symptoms are recurrent outbreaks of painful genital lesions; often asymptomatic in the beginning stages

- Diagnosed from symptoms or blood test

- Treatment with antiviral drugs can reduce the frequency and severity of outbreaks; the virus remains in the body and can be transmitted even if no lesions are present
Hepatitis B

- Hepatitis, inflammation of the liver, can cause permanent damage to the liver and death
- Hepatitis B virus (HBV) can be transmitted sexually and through close nonsexual contact
- Symptoms may include:
  - Flu-like illness
  - Nausea
  - Vomiting
  - Dark-colored urine
  - Abdominal pain
  - Jaundice
- Diagnosed with blood tests through analysis of liver function
- There is no cure, but a vaccine is available and safe to use
Syphilis

- **Syphilis**, a bacterium caused by the spirochete *Treponema pallidum*, can be potentially fatal if not treated.

- Symptoms are different stages of infection:
  - Primary syphilis causes an ulcer called a chancre.
  - Secondary syphilis develops flu-like symptoms and a skin rash.
  - Late, or tertiary, syphilis becomes asymptomatic or symptoms of severe organ damage, possibly leading to eventual death.

- Diagnosed by examination of infected tissue and with blood tests.

- Treated with antibiotics.
Other STDs

- Trichomoniasis, aka ‘Trich’
  - Single-celled organism

- Bacterial vaginosis (BV)
  - Most common cause of abnormal vaginal discharge

- Pubic lice (crabs) and scabies
  - Highly contagious parasitic infections
What You Can Do About STDs

- Education
- Diagnosis and treatment
- Prevention
  - Abstain
  - Mutually monogamous relationship with one uninfected partner
  - Plan ahead for and practice safer sex