**HIV/AIDS and Communicable Diseases Education**

*(4 Credit Hours)*

**Learning objectives:**
- Know the difference between HIV Infection and AIDS.
- Detail how HIV is transmitted.
- Describe ways to prevent the spread of HIV/AIDS.
- Know how HIV/AIDS is treated.
- Learn about tuberculosis (TB) and hepatitis.
- Detail how TB and hepatitis are transmitted and treated.

**Bloodborne pathogens**

Bloodborne pathogens are microorganisms, such as viruses or bacteria that are carried in the blood and can cause disease in people. There are many different bloodborne pathogens including malaria, syphilis, and brucellosis, but hepatitis B virus (HBV) and the human immunodeficiency virus (HIV) are the two diseases specifically addressed by the OSHA (Occupational Safety & Hazard Administration) bloodborne pathogen standard. Hepatitis C virus (HCV) is another virus that has dramatically increased in the United States.

**Modes of transmission**

Bloodborne pathogens such as, HBV, HCV and HIV can be transmitted through contact with infected human blood and other potentially infectious body fluids such as:
- Semen.
- Breast milk.
- Vaginal secretions.
- Cerebrospinal fluid.
- Synovial fluid.
- Pleural fluid.
- Amniotic fluid.
- Saliva (in dental procedures).
- Any body fluid that is visibly contaminated with blood.

HBV, HCV and HIV are most commonly transmitted through:
- Sexual contact (Less likely for HCV).
- Sharing of hypodermic needles.
- From mothers to their babies at/before birth.
- Accidental puncture from contaminated needles, broken glass, or other sharps.
- Contact between broken or damaged skin and infected body fluids.
- Contact between mucous membranes and infected body fluids.

In most work situations, transmission is most likely to occur due to accidental puncture from contaminated needles, broken glass, or other sharps like scissors; contact between broken or damaged skin and infected body fluids; or contact between mucous membranes and infected body fluids. For example, if someone infected with HBV cut his or her finger on a piece of glass, and then you cut yourself on the now infected piece of glass, it is possible that you could contract the disease. Anytime there is blood-to-blood contact with infected blood or body fluids, there is a slight potential for transmission.

Unbroken skin forms an impervious barrier against bloodborne pathogens. However, infected blood can enter your system through:
- Open sores.
- Cuts.
- Abrasion.
- Acne.
- Any sort of damaged or broken skin such as sunburn or blisters.

Bloodborne pathogens may also be transmitted through the mucous membranes of the:
- Eyes.
- Nose.
- Mouth.

For example, a splash of contaminated blood to your eye, nose or mouth could result in transmission.

**HIV/AIDS Questions and Answers**

**What is HIV?**

HIV stands for human immunodeficiency virus. HIV destroys certain white blood cells called CD4+ T cells. These cells are critical to the normal function of the human immune system, which defends the body against illness. When HIV weakens the immune system, a person is more susceptible to developing a variety of cancers and becoming infected with viruses, bacteria and parasites.

**What is AIDS?**

AIDS stands for acquired immunodeficiency syndrome. A person who tests positive for HIV can be diagnosed with AIDS when a laboratory test shows that his or her immune system is severely weakened by the virus or when he or she develops at least one of about 25 different opportunistic infections – diseases that might not affect a person with a normal immune system but that take advantage of damaged immune systems.

**How is HIV detected?**

Several different types of laboratory tests can be used to determine whether a person is HIV-positive. It is impossible to look at someone and know whether he or she is HIV-positive. Most tests used to screen for the virus detect HIV antibodies – proteins the body produces to fight off the infection – in blood or oral fluid samples.

**How does HIV cause AIDS?**

HIV destroys CD4+ T cells that are important to the normal function of the human immune system. As the virus destroys these cells, HIV-positive people are susceptible to illnesses that generally do not affect people with healthy immune systems. According to studies including thousands of people, most HIV-positive people are infected with the virus for years before it does enough damage to the immune system to make them susceptible to AIDS-related diseases. Tests are available to measure the amount of HIV in the blood – the viral load – and those with higher viral loads are more likely to develop AIDS-related diseases and to experience a decline in their CD4+ T cells. Reducing the amount of virus in the body with antiretroviral medications can dramatically slow the destruction of a person’s immune system and the progression of illness.

**Why do some people make statements that HIV does not cause AIDS?**

The HIV/AIDS pandemic has attracted much attention both within and outside of the medical and scientific communities, possibly because of the many social issues related to HIV/AIDS, including sexuality, drug use and poverty. Although the scientific evidence is overwhelming and compelling that HIV is the cause of AIDS, the disease process is still not completely understood. This incomplete understanding has led some people to make statements that AIDS is not caused by an infectious agent or is caused by a virus that is not HIV. This is not only misleading, but may have dangerous consequences. Both the U.S. National Institutes of Health and UNAIDS offer explanations of why HIV leads to AIDS.

**How HIV causes AIDS and the evidence that HIV causes AIDS**

**How long does it take for HIV to cause AIDS?**

The time between HIV infection and progressing to AIDS differs for each person and depends on many factors, including a person’s health status and their health-related behaviors. With a healthy lifestyle, the time between HIV infection and developing AIDS-related illnesses can be 10 to 15 years, sometimes longer. Anti-retroviral therapy can slow the progression of HIV to AIDS by decreasing the amount of virus in a person’s body. There also are other medical treatments that can prevent or cure some of the illnesses associated with AIDS, although the treatments do not cure HIV or AIDS. As with other diseases, early detection of HIV infection allows for more options for treatment and preventive health care.

**What are some of the symptoms of HIV infection and AIDS?**

Once infected with HIV, a person may or may not experience any
symptoms. People who do experience symptoms might have a flu-like illness within one or two months after infection. Symptoms can include fever, headache, tiredness and/or enlarged lymph nodes. These symptoms usually disappear within a week to a month and are often mistaken for the symptoms of more common viral infections, like a cold. More persistent or severe symptoms might not appear for several years after a person is first infected with HIV. This period of “asymptomatic” infection is highly individual. Some people might begin to have symptoms within a few months, while others might be symptom-free for more than 10 years.

As the immune system is weakened by HIV, several complications and symptoms could begin to occur. These symptoms might be made worse if the HIV-positive person is not getting the care and services they need. For many people, the first signs of infection are enlarged lymph nodes or “swollen glands” that may be inflamed for several months. As the immune system is weakened by HIV, several complications and symptoms could begin to occur. Other symptoms that HIV-positive people might experience months to years before receiving an AIDS diagnosis include:

- Lack of energy.
- Weight loss.
- Frequent fevers and sweats (sometimes known as “night sweats”).
- Persistent or frequent yeast infections (oral or vaginal).
- Persistent skin rashes or flaky skin.
- Pelvic inflammatory disease in women that does not respond to treatment.
- Short-term memory loss.

Both men and women experience many of the same symptoms from HIV infection. However, women also experience unique complications that are primarily gynecologic. These could include recurrent vaginal yeast infections, severe pelvic inflammatory disease (PID) or human papillomavirus (HPV) infections. Other vaginal infections might occur more frequently and with greater severity in HIV-positive women (compared with HIV-negative women), including bacterial vaginosis and common sexually transmitted infections such as gonorrhea, chlamydia, and trichomoniasis. HIV-positive women also might experience disruptions or other irregularities in their menstrual cycles.

The signs and symptoms of HIV/AIDS are similar to the symptoms of many other illnesses. The only way to determine HIV infection is to be tested.

Is there a cure for HIV/AIDS?
There is no known cure for HIV/AIDS. There are medical treatments that can slow down the rate at which HIV weakens the immune system. There are other treatments that can prevent or cure some of the illnesses associated with AIDS. Researchers are testing a variety of preventive and curative vaccine candidates, but a successful vaccine likely is years away.

What is the link between HIV and tuberculosis?
The HIV epidemic is largely responsible for the growing number of TB cases in many parts of the world. HIV weakens the cells in the immune system that are needed to fight TB; up to half of all people living with HIV/AIDS eventually develop TB. Worldwide, TB is the leading cause of death among HIV-positive people.

What is the link between HIV and sexually transmitted diseases?
People with a sexually transmitted disease are far more vulnerable than others to becoming infected with HIV. For example, genital ulcers caused by herpes create an entry point for HIV. Even when the STD causes no breaks in the skin or open sores, the infection can cause an immune response in the genital area that can make HIV transmission more likely.

In addition, HIV-positive people are more vulnerable to acquiring sexually transmitted diseases than HIV-negative people because their immune systems are weakened. If an HIV-positive person is infected with another STD, that person is three to five times more likely than other HIV-positive people to transmit HIV through sexual contact.

How is HIV transmitted?
HIV transmission can occur when blood, semen, pre-seminal fluid, vaginal fluid or breast milk from an HIV-positive person enters the body of an HIV-negative person. HIV can enter the body through a vein, the lining of the anus or rectum, the lining of the vagina and/or cervix, the opening to the penis, the mouth, other mucous membranes—such as the eyes or inside of the nose—or cuts and sores. Intact, healthy skin is an excellent barrier against HIV and other viruses and bacteria.

Worldwide, the most common way that HIV is transmitted is through sexual transmission, including anal, vaginal or oral sex with an HIV-positive person. HIV also can be transmitted by sharing needles or injection equipment with an injection drug user who is HIV-positive, or from an HIV-positive woman to her infant before or during birth or through breastfeeding after birth. HIV also can be transmitted through receipt of infected blood or blood clotting factors.

Which body fluids transmit HIV?
Blood, semen, vaginal fluid, breast milk, and other body fluids containing blood taken from HIV-positive people can contain high concentrations of HIV. The virus also might be present in the fluid surrounding the brain and the spinal cord, fluid surrounding bone joints and fluid surrounding a fetus of an HIV-positive pregnant woman.

HIV has been found in the saliva and tears of some HIV-positive people but in very low quantities. A small amount of HIV in a body fluid does not necessarily mean that HIV can be transmitted by that body fluid. HIV has not been recovered from the sweat of HIV-positive people. Contact with saliva, tears or sweat has never been shown to result in HIV transmission.

How is HIV not transmitted?
HIV is not easily passed from one person to another. The virus does not survive well outside of the body. HIV cannot be transmitted through casual or everyday contact such as shaking hands or hugging. Sweat, tears, vomit, feces and urine do contain small amounts of HIV, but they have not been reported to transmit the disease. Mosquitoes and other insects do not transmit HIV.

How can HIV transmission be prevented?
The best way to avoid HIV infection is to avoid behaviors that would involve exposure to infected body fluids, including unprotected sexual intercourse or sharing needles to inject drugs. If avoiding such behaviors is not possible, numerous health organizations have determined that the use of latex condoms during vaginal, anal or oral intercourse can significantly reduce the risk of HIV transmission; HIV-positive pregnant women can take medications that can reduce the risk of HIV transmission to her child; and injection drug users should not share needles or injection equipment.

How effective are latex condoms in preventing HIV?
Latex condoms, when used consistently and correctly, are highly effective in preventing transmission of HIV. Laboratory studies have found that HIV does not pass through intact latex condoms even when they are stretched or stressed, according to the World Health Organization. Prospective studies looking at couples in which one partner is HIV-positive and the other is not have shown that, with consistent condom use, less than 1 percent of the HIV-negative people became infected annually. In 2000, representatives of four U.S. government agencies (U.S. Agency for International Development, Food and Drug Administration, Center for Disease Control and Prevention, National Institutes of Health) concluded in a report that, based on an analysis of published studies, male condoms significantly reduce the risk of HIV transmission for both men and women during vaginal intercourse when used correctly in every encounter.
Why is injection drug use a risk for HIV transmission?
At the start of every injection, blood is introduced into the needle and syringe. Therefore, a needle and syringe that an HIV-positive person uses can contain blood that contains the virus. The reuse of a blood-contaminated needle or syringe by another drug injector carries a high risk of HIV transmission because infected blood can be injected directly into the bloodstream.

Sharing other drug-using equipment also can be a risk for spreading HIV. Infected blood can be introduced into drug solutions through using blood-contaminated syringes to prepare drugs; reusing water; reusing bottle caps, spoons, or other containers used to dissolve drugs in water and to heat drug solutions; or reusing small pieces of cotton or cigarette filters used to filter out particles that could block the needle.

Can HIV be transmitted through casual contact (shaking hands, hugging, using a toilet, drinking from the same glass, or sneezing and coughing)?
HIV is not transmitted through day-to-day contact in workplaces, schools, or social settings. HIV is not transmitted through shaking hands, hugging, or casual kissing. A person cannot become infected from touching a toilet seat, a drinking fountain, a door knob, dishes, drinking glasses, food, or pets.

HIV is not an airborne or foodborne virus, and it does not live long outside the body. HIV can be found in blood, semen, or vaginal fluid of an HIV-positive person.

Can HIV be transmitted through mosquitoes?
No, mosquitoes do not transmit HIV. When mosquitoes feed on blood from a person they only inject their saliva, which serves as a lubricant and allows the insect to draw blood more easily. In addition, HIV does not reproduce or survive inside mosquitoes, unlike organisms that are transmitted via insect bites.

How well does HIV survive outside the body?
HIV does not survive for very long outside of the human body. HIV is unable to reproduce outside its living host, except under laboratory conditions. Therefore, it does not spread or maintain infectiousness outside its host.

Where did HIV come from?
In 1999, scientists reported that they had discovered the origin of HIV-1. They identified a subspecies of chimpanzees native to West Equatorial Africa as the original source of the virus. The virus most likely was introduced into the human population when hunters were exposed to the infected blood of non-human primates. More information about the origin of HIV is available from the National Institute of Allergy and Infectious Diseases.

How many people have HIV/AIDS?
UNAIDS estimates that 33.2 million people were living with HIV/AIDS worldwide as of the end of 2007, more than ever before.

What do endemic, epidemic and pandemic mean?
Endemic is the constant presence of a disease or infectious agent in a certain geographic area or population group. Epidemic is the rapid spread of a disease in a specific area or among a certain population group. Pandemic is a worldwide epidemic; an epidemic occurring over a wide geographic area and affecting a large number of people.

What is ARV?
ARV stands for anti-retroviral. Anti-retroviral medications are designed to inhibit the reproduction of HIV in the body. If ARV treatment is effective, the deterioration of the immune system and the onset of AIDS can be delayed for years. It is recommended that ARV drugs be used in combinations of at least three drugs.

What is HAART?
HAART stands for highly active anti-retroviral therapy. It is the combination of at least three ARV drugs that attack different parts of the virus from attaching to a target cell or prevent HIV from multiplying and to heat drug solutions; or reusing small pieces of cotton or cigarette filters used to filter out particles that could block the needle.

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What is HAART?
HAART stands for highly active anti-retroviral therapy. It is the combination of at least three ARV drugs that attack different parts of HIV or stop the virus from entering blood cells. Even among people who respond well to HAART, the treatment does not get rid of HIV. The virus continues to reproduce but at a slower pace.

What is drug resistance?
Drug resistance occurs when a virus is able to adapt, grow and multiply even in the presence of drugs that usually kill it. Drug resistance reduces the ability of ARV drugs to block the replication of HIV. In some people on HAART, the virus mutates and becomes highly resistant to current medications.

What is ABC in terms of HIV prevention?
ABC stands for Abstinence, Be faithful to a single partner and Condom use. Certain organizations and governments promote the ABC prevention message as a means to stop the spread of HIV.

Why are young women at a higher risk of HIV infection than young men?
Many young women lack information about sexual and reproductive health and disease prevention. In countries with generalized epidemics, the majority of women ages 15 to 24 do not have access to information or resources about reproductive health and HIV/AIDS. Young women may also lack access to health care and education. In addition, young women are among the most vulnerable because their genital tracts have less mature tissue, which may be more easily torn, and they are often victims of coercive or forced sex.

What factors make women more vulnerable?
A combination of biological, social, cultural and economic factors contribute to women’s increased vulnerability to HIV infection. In particular, gender inequalities prevent women from asserting power over their own lives and controlling the circumstances that increase their vulnerability to infection, particularly in the context of sexual relationships. Women are also physiologically more susceptible to becoming infected with HIV than men.

What biological factors make women more vulnerable?
Researchers believe that women are biologically more susceptible to HIV infection from heterosexual sex than men. The female genital tract has a greater exposed surface area than the male genital tract; therefore women may be prone to greater risk of infection with every exposure. Male-to-female HIV transmission is estimated to be twice as likely as female-to-male transmission in a single act of vaginal intercourse. Younger women might be even more biologically vulnerable to HIV infection because they have less mature tissue and are often victims of coercive or forced sex.

What new preventive technologies are in development?
Researchers currently are developing new technologies such as microbicides and vaccines to help prevent HIV infection. Microbicides are chemical compounds in the form of gels, films, sponges, lubricants or suppositories that women could use before sex to block HIV transmission. An effective microbicide would kill HIV in semen, block the virus from attaching to a target cell or prevent HIV from multiplying if the virus enters a target cell.

A preventive HIV/AIDS vaccine would elicit an immune response to protect the body from HIV infection. A vaccine would be administered orally or more likely through injection. Microbicides and vaccines are tools that potentially could be used without partner negotiation, which could grant women greater power over their own sexual health. It is also a possibility that a partially effective microbicide and a partially effective vaccine could be used in combination to prevent HIV infection.

How long after a possible exposure should I wait to get tested for HIV?
The tests commonly used to detect HIV infection actually look for antibodies produced by your body to fight HIV. Most people will develop detectable antibodies within three months after infection, the average being 25 days. In rare cases, it can take up to six months. For
this reason, the CDC currently recommends testing 6 months after the last possible exposure (unprotected vaginal, anal, or oral sex or sharing needles). It would be extremely rare to take longer than 6 months to develop detectable antibodies. It is important, during the 6 months between exposure and the test, to protect yourself and others from further possible exposures to HIV.

**Where can I get tested for HIV infection?**
Many places provide testing for HIV infection. Common testing locations include local health departments, offices of private doctors, hospitals, and sites specifically set up to provide HIV testing.

**Home testing kits:**
- Can be purchased in most pharmacies and via the Internet and involve no actual testing of the blood by the person using the kit. The only "at-home" components of the testing process involve the collection of a small sample of blood using a finger stick and the receipt of the results over the phone. First, the blood sample is mailed to the manufacturer for a standard EIA test. The consumer must call a phone number several days later to receive the results and be offered the choice of speaking to a trained counselor. A positive result must be confirmed with a blood-based Western Blot (which cannot be done with a home-based test kit).

**Rapid tests:**
- A rapid test is a screening test that produces very quick results, in approximately 20-60 minutes. In comparison, results from the other more commonly used HIV antibody screening test, the enzyme immunoassay (EIA), are not available for several days to a few weeks. Both the rapid test and the EIA look for the presence of antibodies to HIV. As is true for all screening tests, a reactive rapid HIV test result must be confirmed with a follow-up confirmatory test before a final diagnosis of infection can be made. Visit [www.cdc.gov](http://www.cdc.gov) for more information on rapid tests.

**For more information:**
The Centers for Disease Control and Prevention (CDC) National Prevention Information Network (NPIN) provides information about prevention of HIV infections, other sexually transmitted diseases, and tuberculosis.

**Trends in HIV transmission in the United States**
HIV is most commonly transmitted by sexual contact and the sharing of contaminated needles by injection drug users. By the end of 2000, an estimated 900,000 Americans were living with HIV. Approximately 40,000 new cases of active AIDS disease are diagnosed annually. Historically, HIV has been most prevalent among men who have sex with men whereas most new HIV infections are reported among men who have sex with men and among injection drug users. Recently, however, the proportion of HIV cases acquired through heterosexual contact has increased and almost equals the proportion of cases attributable to injection drug use. The proportion of all AIDS cases reported among women has tripled since the mid-1980s, primarily as a result of heterosexual exposure and secondarily through injection drug use. Minority groups are the most heavily affected by HIV associated with drug injection, and Blacks and Hispanics now account for an estimated 70 percent of all new AIDS cases.

**Alcohol and HIV/AIDS**
People with alcohol use disorders are more likely than the general population to contract HIV (human immunodeficiency virus). Similarly, people with HIV are more likely to abuse alcohol at some time during their lives. Alcohol use is associated with high-risk sexual behaviors and injection drug use, two major modes of HIV transmission. Concerns about HIV have increased as recent trends suggest a resurgence of the epidemic among men who have sex with men, as well as dramatic increases in the proportion of cases transmitted heterosexually. In persons already infected, the combination of heavy drinking and HIV has been associated with increased medical and psychiatric complications, delays in seeking treatment, difficulties with HIV medication compliance, and poorer HIV treatment outcomes. Decreasing alcohol use in people who have HIV or who are at risk for becoming infected reduces the spread of HIV and the diseases associated with it.

**Alcohol and HIV transmission**
People who abuse alcohol are more likely to engage in behaviors that place them at risk for contracting HIV. For example, rates of injection drug use are high among alcoholics in treatment, and increasing levels of alcohol ingestion are associated with greater injection drug-related risk behaviors, including needle sharing.

A history of heavy alcohol use has been correlated with a lifetime tendency toward high-risk sexual behaviors, including multiple sex partners, unprotected intercourse, sex with high-risk partners (e.g., injection drug users, prostitutes), and the exchange of sex for money or drugs. There may be many reasons for this association. For example, alcohol can act directly on the brain to reduce inhibitions and diminish risk perception. However, expectations about alcohol's effects may exert a more powerful influence on alcohol-involved sexual behavior. Studies consistently demonstrate that people who strongly believe that alcohol enhances sexual arousal and performance are more likely to practice risky sex after drinking.

Some people report deliberately using alcohol during sexual encounters to provide an excuse for socially unacceptable behavior or to reduce their conscious awareness of risk. This practice may be especially common among men who have sex with men. This finding is consistent with the observation that men who drink prior to or during homosexual contact are more likely than heterosexuals to engage in high-risk sexual practices.

Finally, the association between drinking levels and high-risk sexual behavior does not imply that alcohol necessarily plays a direct role in such behavior or that it causes high-risk behavior on every occasion. For example, bars and drinking parties serve as convenient social settings for meeting potential sexual partners. In addition, alcohol abuse occurs frequently among people whose lifestyle or personality predisposes them to high-risk behaviors in general.

**Alcohol and medical aspects of AIDS**
Alcohol increases susceptibility to some infections that can occur as complications of AIDS. Infections associated with both alcohol and AIDS include tuberculosis; pneumonia caused by the bacterium Streptococcus pneumonia; and the viral disease hepatitis C, a leading cause of death among people with HIV. Alcohol may also increase the severity of AIDS-related brain damage, which is characterized in its severest form by profound dementia and a high death rate.

The progression of HIV and the development of AIDS-associated infections may be controlled by highly active anti-retroviral therapy (HAART), a combination of powerful antiviral medications. Despite markedly increased survival rates, HAART is associated with several disadvantages, including the emergence of medication-resistant HIV strains and the occurrence of adverse interactions with other medications, some of which are prescribed for AIDS-related infections. In addition, many patients fail to comply with the complex medication regimen. Studies have associated heavy alcohol use with decreased medication compliance as well as with poorer response to HIV therapy in general. The outcome of HIV therapy improved significantly among alcoholics who stopped drinking.

**Alcoholism treatment as HIV prevention**
Studies show that decreasing alcohol use among HIV patients not only reduces the medical and psychiatric consequences associated with alcohol consumption but also decreases other drug use and HIV transmission. Thus, alcohol and other drug abuse treatment can be considered primary HIV prevention as well. Research found a 58 percent reduction in injection drug use, with similar decreases in high-risk sexual behaviors, among heterosexual patients one year after treatment. Participants who remained abstinent showed substantially greater...
improvement in both outcomes compared with those who continued to drink. For male alcoholics who have sex with men, the focus should be on those who socialize primarily in bars.

Alcoholism prevention among youth is of particular importance. AIDS is a leading cause of death among people ages 15 to 24, and new injection drug users who contract HIV or viral hepatitis often become infected within 2 years after beginning to inject drugs.

Researchers have found that:
- The prevalence of current, binge, and heavy drinking peaks between the ages of 18 and 24, which is a high-risk period for initiating injection drug use.
- Drug injection is usually associated with prior use of alcohol in conjunction with non-injection drugs, especially among adolescents with alcohol use disorders.
- High rates of risky sexual practices have been reported among adolescents and may be correlated with alcohol consumption.

Therefore, it has been suggested that HIV prevention programs for youth should target alcohol consumption in addition to injection drug use and sexual risk reduction.

Treatment access and integration

Analyses of HIV surveillance data collected by the national Centers for Disease Control and Prevention, urban and rural health departments, and health maintenance organizations revealed that blacks, Hispanics, women, the chronically mentally ill, and the poor are less likely to obtain appropriate HIV therapy compared with the general population. HIV-infected people in rural areas report reduced access to medical and mental health care services relative to their urban counterparts.

Timeliness is an essential aspect of effective HIV treatment and prevention. Early detection of HIV infection facilitates the prompt initiation of behavioral changes aimed at reducing transmission and also may enhance treatment effectiveness. Unfortunately, many facilities for the treatment of alcohol or other drug use disorders do not routinely or consistently screen their patients for HIV. In addition, many people who test positive for HIV fail to seek medical care until the disease has reached an advanced stage. Alcohol abuse has been associated with longer delays in seeking treatment.

Some evidence suggests that such problems may be ameliorated in part by designing programs that link primary medical care with treatment for abuse of alcohol and other drugs, HIV risk-reduction education, and psychiatric care when appropriate. In drug treatment programs, for example, both patients and clinicians may focus on what is perceived as the main problem (typically heroin or cocaine use), and neglect or minimize the use of other drugs, including alcohol. Yet in one study, a large proportion of patients in a residential drug treatment program reported daily consumption of large quantities of alcohol.

In a randomized controlled trial, researchers demonstrated the feasibility of incorporating a multidisciplinary medical clinic within a detoxification unit designed to treat alcohol, heroin, and cocaine dependence. Because the integration of different services at a single site can be expensive, the researchers recommended that efforts be made to facilitate information transfer or patient transportation among programs based at multiple locations.

HIV in the United States: At A Glance

Fast Facts
- 1.2 million people in the United States are living with HIV infection and 1 in 5 are unaware of their infection.
- MSM, particularly young, black MSM, are most severely affected by HIV.
- By race, blacks/African Americans face the most severe burden of HIV.

CDC estimates 1.2 million people in the United States (U.S.) are living with HIV infection. One in five (20%) of those people are unaware of their infection. Despite increases in the total number of people in the U.S. living with HIV infection in recent years (due to better testing and treatment options), the annual number of new HIV infections has remained relatively stable. However, new infections continue at far too high of a level, with approximately 50,000 Americans becoming infected with HIV each year.

In 2010, an estimated 47,129 people were diagnosed with HIV infection in the 46 states with confidential name-based HIV infection reporting since at least January 2007. In that same year, an estimated 33,015 people throughout the U.S. were diagnosed with AIDS. Since the epidemic began, an estimated 1,129,127 people in the U.S. have been diagnosed with AIDS.

AIDS cases by exposure category

Following is the distribution of the estimated number of diagnoses of AIDS by exposure category. A breakdown by sex is provided.

HIV/AIDS in Florida: A snapshot through 2010

Living with HIV/AIDS cases
- 95,335 Florida residents are known to be living with HIV/AIDS through 2010.
- 70% are male.
- 49% are black and 20% are Hispanic.
- 70% are currently 40 years of age or older (33% are currently 50 or older).
- 46% are attributed to men who have sex with men (MSM).
- 38% are attributed to heterosexual contact.

New HIV/AIDS Diagnoses in 2010
- 50,022 adults and 20 pediatrics (age <13) were newly diagnosed with HIV/AIDS in Florida in 2010.
- 75% were male.
- 49% were black and 22% were Hispanic.
- 22% were diagnosed at age 50 or older.
- 47% were attributed to MSM.
- 33% were attributed to heterosexual contact.
- 4% were among injection drug users.
- 25% lived in Miami-Dade County and 17% in Broward County.
- 10% were diagnosed with HIV and AIDS simultaneously.
### HIV Cases
#### 3 Single-year rates for all races, all sexes

<table>
<thead>
<tr>
<th>County</th>
<th>Number of reported new cases</th>
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### HIV Cases

3 Single-year rates for all races, all sexes (continued)

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### HIV/AIDS in Florida, Age-adjusted death rate 2008-2010

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HIV Disease: United States vs. Florida
United States, 2009

HIV Infection:
In 2009, 42,011 cases were diagnosed with HIV infection in 40 states:
\(\checkmark\) Of the adult cases, 76% were males
\(\checkmark\) 52% were black, 28% white and 17% Hispanic
\(\checkmark\) 166 were among children under 13 years of age

The top three leading states reporting the highest number of cases diagnosed with HIV infection in 2009 were: Florida (N=5,775), followed by California (N=4,886) and New York (N=4,649).

The five leading metropolitan statistical areas (MSAs) reporting the highest number of cases diagnosed with HIV infection in 2009 were:
1. New York, NY-NJ-PA* (N=6,513)
2. Miami, FL* (N=2,883)
3. Atlanta (N=2,063)
4. Chicago, IL-IN-WI* (N=1,791)
5. Dallas, TX* (N=1,407)

AIDS Diagnoses:
In 2009, 32,247 AIDS cases were diagnosed in the United States:
\(\checkmark\) Of the adult cases, 75% were males
\(\checkmark\) 49% were black, 28% white and 20% Hispanic
\(\checkmark\) 13 were among children under 13 years of age

Cumulatively through December 2009, 1,108,611 AIDS cases have been reported in the US, of which 9,448 were under the age of 13.

The top three leading states reporting the highest number of AIDS cases diagnosed in 2009 were: Florida (N=4,392), followed by New York (N=4,799) and California (N=3,760).

The five leading metropolitan statistical areas (MSAs) reporting the highest number of AIDS cases diagnosed in 2009 were:
1. New York, NY-NJ-PA* (N=5,153)
2. Miami, FL* (N=2,061)
3. Washington, DC-VA-MD-WV* (N=1,455)
4. Los Angeles, CA* (N=1,328)
5. Chicago, IL-IN-WI* (N=1,068)

An estimated 1.039-1.185 million are currently thought to be living with HIV in the US.


Florida 2010

In 2010, 5,211 people were reported with HIV infection in Florida, 24 were among children under 13 years of age. Of the adult cases (those over 13 years of age):
\(\checkmark\) 75% were males
\(\checkmark\) 47% were black, 29% were white and 22% Hispanic

The five leading counties in Florida reporting the highest number of HIV cases in 2010 were:
1. Miami-Dade (N=1,242)
2. Broward (N=864)
3. Orange (N=485)
4. Duval (N=434)
5. Hillsborough (N=352)

AIDS Diagnoses:
In 2010, 3,459 AIDS cases were diagnosed in Florida 2 were among children under 13 years of age. Of the adult cases (those over 13 years of age):
\(\checkmark\) 68% were males
\(\checkmark\) 54% were black, 25% white and 19% Hispanic

Cumulatively through, December 2010, 121,161 AIDS cases have been reported in Florida, of which 1,542 were under the age of 13.

The five leading counties in Florida reporting the highest number of AIDS cases in 2010 were:
1. Miami-Dade (N=728)
2. Broward (N=631)

3. Orange (N=296)
4. Palm Beach (N=250)
5. Duval (N=207)

In 2009, there were 395,299 HIV tests performed by county public health departments with 5,205 (1.3\%) of the tests being positive.

An estimated 135,000 persons, or roughly 11.4\% of the national estimate of 1,185,000 HIV infected people, are thought to be currently in Florida.

It is estimated that 25\% of new HIV infections are in people under the age of 25.

Source: Florida Department of Health, Bureau of HIV/AIDS
Date as of 12/31/10

Estimated Cumulative AIDS Cases Diagnosed for 30 States and Florida's Title I EMAs through 2009

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The following paragraphs specifically address some of the more common misconceptions about HIV transmission:

**HIV in the environment**

Scientists and medical authorities agree that HIV does not survive well in the environment, making the possibility of environmental transmission remote. HIV is found in varying concentrations or amounts in blood, semen, vaginal fluid, breast milk, saliva, and tears. In order to obtain data on the survival of HIV, laboratory studies have required the use of artificially high concentrations of laboratory-grown virus. Erroneous interpretation of conclusions drawn from laboratory studies have alarmed people unnecessarily.

Results from laboratory studies should not be used to determine specific personal risk of infection and to date no one has been identified with HIV due to contact with an environmental surface. Additionally, since HIV is unable to reproduce outside its living host (unlike many bacteria or fungi, which may do so under suitable conditions), except under laboratory conditions, it does not spread or maintain infectiousness outside its host.

**Other settings**

Although HIV has been transmitted between family members in a household setting, this type of transmission is very rare. These transmissions are believed to have resulted from contact between skin or mucous membranes and infected blood. To prevent even such rare occurrences, precautions, as later described in this course, should be taken in all settings – including the home – to prevent exposures to the blood of persons who are HIV infected, at risk for HIV infection, or whose infection and risk status are unknown.

For example:
- Gloves should be worn during contact with blood or other body fluids that could possibly contain blood. Personal service workers (e.g., barbers, cosmetologists) should wear gloves when waxing, giving manicures/pedicures, facials, tweezing or any other service that could possibly draw blood.
- Cuts, sores, or breaks on both the personal-service worker’s and the client or customer’s exposed skin should be covered with bandages.
- Hands and other parts of the body should be washed immediately after contact with blood or other bodily fluids.
- Surfaces soiled with blood should be disinfected with an EPA registered tuberculocidal disinfectant.
- Practices that increase the likelihood of blood contact, such as the careless use of razors, scissors and clippers, should be avoided.
- Needles and other sharp instruments should be used only when medically necessary and handled according to recommendations for health-care settings.

In 1985, CDC issued routine precautions that all personal service workers (e.g., barbers, cosmetologists, massage therapists) should follow, even though there is no evidence of transmission from a personal-service worker to a client or vice versa. Instruments that are intended to penetrate the skin (e.g., tattooing and acupuncture needles, ear piercing devices) should be used once and disposed of or thoroughly cleaned and sterilized.

Instruments not intended to penetrate the skin but which may become contaminated with blood (e.g., razors) should be used for only one client and disposed of or thoroughly cleaned and disinfected after each use. Personal-service workers can use the same cleaning procedures that are recommended for health-care institutions.

**Treatment of HIV/AIDS**

In recent years, medical science has made great progress in our ability to successfully treat HIV infection and associated opportunistic infections (OIs). Wider use of medications for preventing tuberculosis, pneumocystis carinii pneumonia (PCP), toxoplasmosis, and mycobacterium avium complex (MAC), for example, has helped reduce the number of people with HIV who develop serious illness and die from AIDS. Also, several new compounds in a new class of drugs, called protease inhibitors, have been federally approved to treat HIV infection. These drugs, when taken in combination with previously approved drugs such as AZT, 3TC and ddi, reduce the level of HIV particles circulating in the blood to very low levels in many individuals. Treatment results using these drugs have been extremely encouraging, as these drug combinations are more effective than any previously available therapies.

**Coinfection with HIV and hepatitis C virus**

About one quarter of HIV-infected persons in the United States are also infected with hepatitis C virus (HCV). HCV is one of the most important causes of chronic liver disease in the United States and HCV infection progresses more rapidly to liver damage in HIV-infected persons. HCV infection may also impact the course and management of HIV infection. The latest U.S. Public Health Service/Infectious Diseases Society of America (USPHS/IDSA) guidelines recommend that all HIV-infected persons should be screened for HCV infection. Prevention of HCV infection for those not already infected and reducing chronic liver disease in those who are infected are important concerns for HIV-infected individuals and their health care providers.

**Likely candidates for HIV-HCV coinfection?**

The hepatitis C virus (HCV) is transmitted primarily by large or repeated direct percutaneous (i.e., passage through the skin by puncture) exposures to contaminated blood. Therefore, coinfection with HIV and HCV is common (50 percent - 90 percent) among HIV-infected injection drug users (IDUs). Coinfection is also common among persons with hemophilia who received clotting factor concentrates before concentrates were effectively treated to inactivate both viruses (i.e., products made before 1987). The risk for acquiring infection through perinatal or sexual exposures is much lower for HCV than for HIV. For persons infected with HIV through sexual exposure (e.g., male-to-male sexual activity), coinfection with HCV is no more common than among similarly aged adults in the general population (3 percent - 5 percent).

**Effects of coinfection on disease progression of HCV and HIV?**

Chronic HCV infection develops in 75 percent - 85 percent of infected persons and leads to chronic liver disease in 70 percent of these chronically infected persons. HIV-HCV coinfection has been associated with higher titers of HCV, more rapid progression to HCV-related liver disease, and an increased risk for HCV-related cirrhosis (scarring) of the liver. Because of this, HCV infection has been viewed as an opportunistic infection in HIV-infected persons and was included in the 1999 USPHS/IDSA Guidelines for the Prevention of Opportunistic Infections in Persons Infected with Human Immunodeficiency Virus. It is not, however, considered an AIDS-defining illness. As highly active anti-retroviral therapy (HAART) and prophylaxis of opportunistic infections increase the life span of persons living with HIV, HCV-related liver disease has become a major cause of hospital admissions and deaths among HIV-infected persons.

The effects of HCV coinfection on HIV disease progression are less certain. Some studies have suggested that infection with certain HCV genotypes is associated with more rapid progression to AIDS or death. However, the subject remains controversial. Since coinfected patients are living longer on HAART, more data are needed to determine if HCV infection influences the long-term natural history of HIV infection.

**Prevention of coinfection with HCV**

Persons living with HIV who are not already coinfected with HCV can adopt measures to prevent acquiring HCV. Such measures will also reduce the chance of transmitting their HIV infection to others.
- Not injecting or stopping injection drug use would eliminate the chief route of HCV transmission.
- Toothbrushes, razors, and other personal care items that might be contaminated with blood should not be shared. Although there are no data from the United States indicating that tattooing and body piercing place persons at increased risk for HCV infection, these procedures may be a source for infection with any bloodborne
pathogen if proper infection control practices are not followed.

- Although consistent data are lacking regarding the extent to which sexual activity contributes to HCV transmission, persons having multiple sex partners are at risk for other sexually transmitted diseases (STDs) as well as for transmitting HIV to others. They should be counseled accordingly.

**How should individuals coinfected with HIV and HCV be managed?**

**General guidelines**

Persons coinfected with HIV and HCV should be encouraged to adopt safe behaviors (as described in the previous section) to prevent transmission of HIV and HCV to others.

Individuals with evidence of HCV infection should be given information about prevention of liver damage, undergo evaluation for chronic liver disease and, if indicated, be considered for treatment. Persons coinfected with HIV and HCV should be advised not to drink excessive amounts of alcohol. Avoiding alcohol altogether might be wise because the effects of even moderate or low amounts of alcohol (e.g., 12 ounces of beer, 5 ounces of wine or 1.5 ounces of hard liquor per day) on disease progression are unknown. When appropriate, referral should be made to alcohol treatment and relapse-prevention programs. Because of possible effects on the liver, HCV-infected persons should consult with their health care professional before taking any new medicines, including over-the-counter, alternative or herbal medicines.

Susceptible coinfected persons should receive hepatitis A vaccine because the risk for infection with hepatitis A is increased in persons with chronic liver disease. Susceptible patients should receive hepatitis B vaccine because most HIV-infected persons are at risk for HBV infection. The vaccines appear safe for these patients and more than two-thirds of those vaccinated develop antibody responses. Prevaccination screening for antibodies against hepatitis A and hepatitis B in this high-prevalence population is generally cost-effective. Postvaccination testing for hepatitis A is not recommended, but testing for antibody to hepatitis B surface antigen (anti-HBs) should be performed 1-2 months after completion of the primary series of hepatitis B vaccine. Persons who fail to respond should be revaccinated with up to three additional doses.

**Tuberculosis**

Tuberculosis, also known as TB, is an infectious disease that may affect almost any tissue in the body, especially the lungs. It is caused by the bacteria mycobacterium tuberculosis and characterized by tubercles, the characteristic lesion of tuberculosis.

Nearly one-third of the world’s population is infected with Tuberculosis (TB), which kills almost 3 million people a year. TB is the leading cause of death due to an infective agent in the world. In the mid-1980s a resurgence of outbreaks in the United States brought new attention to TB.

Increases in the incidence of TB are related to the high risk among immunosuppressed persons, particularly those infected with human immunodeficiency virus (HIV). Drug resistant strains of this deadly disease have contributed to the problem. Outbreaks have occurred in hospitals, correctional institutions, homeless shelters, nursing homes, and residential care facilities for AIDS patients. Nationwide, at least several hundred employees have become infected and have required medical treatment after workplace exposure to TB.

TB is spread through the air from one person to another. The bacteria are put into the air when a person with TB disease of the lungs or throat coughs or sneezes. People nearby may breathe in these bacteria and become infected. When a person breathes in TB bacteria, the bacteria can settle in the lungs and begin to grow. From there, they move through the blood to other parts of the body, such as the kidney, spine, and brain. TB in the lungs or throat can be infectious. This means that the bacteria can be spread to other people. TB in other parts of the body, such as the kidney or spine, is usually not infectious.

People with TB disease are most likely to spread it to people they spend time with everyday. This includes family members, friends, and coworkers. In most people who breathe in TB bacteria and become infected, the body is able to fight the bacteria to stop them from growing. The bacteria become inactive, but they remain alive in the body and can become active later. This is called TB infection.

**People with TB infection:**

- Have no symptoms.
- Don’t feel sick.
- Can’t spread TB to others.
- Usually have a positive skin test reaction.
- Can develop TB disease later in life if they do not receive preventive therapy.

Many people who have TB infection never develop TB disease. In these people, the TB bacteria remain inactive for a lifetime without causing disease. But in other people, especially people who have weak immune systems, the bacteria become active and cause TB disease.

**The basic facts on hepatitis**

**Viral hepatitis**

Hepatitis is an inflammation of the liver caused by medications, alcohol, or a variety of other agents including the viruses that cause mumps, measles, herpes and infectious mononucleosis. However, when health professionals talk about viral hepatitis, they usually mean hepatitis caused by the hepatitis A, hepatitis B, or hepatitis C virus.

**The differences between hepatitis A, B and C**

Although hepatitis A, B and C have similar symptoms, the viruses themselves are quite different. The hepatitis A virus can enter a person’s body when he/she eats or drinks something contaminated with the stool or blood of someone who has the disease. Symptoms usually appear within 2-6 weeks, but are not followed by the chronic problems that hepatitis B and C viruses can cause. The hepatitis B and C viruses can infect a person if his/her mucous membranes or blood are exposed to an infected person’s blood, saliva, wound exudates, semen or vaginal secretions. Symptoms appear more gradually than in hepatitis A. Unlike the hepatitis A virus, the hepatitis B and C viruses can stay in the body – sometimes for a lifetime – and eventually cause chronic, serious liver diseases.

**Protections against infection**

Because the different viruses that cause hepatitis enter the body in different ways, there are several steps you can take to protect yourself from infection. Practicing good hygiene and safer sexual behaviors is a good first step. For more specific information, see the individual sections for hepatitis A, B and C.

**The symptoms of viral hepatitis**

Early symptoms of viral hepatitis include:

- Fatigue.
- Tenderness in the upper right abdomen.
- Sore muscles and joints.
- Loss of appetite.
- An altered sense of taste and smell.
- Nausea, vomiting and diarrhea.
- Low-grade fever.
- Malaise.

Other symptoms can include:

- Jaundice – abnormally yellow skin & eyes caused by bile entering the blood.
- Darkened urine; light-colored or gray stool.

**Diagnosis of hepatitis**

Although health providers use information about a person’s symptoms, health history and behaviors to help make a diagnosis, only blood tests can confirm the diagnosis and pinpoint which type of hepatitis a person has.
Treatments for viral hepatitis

Since there’s no medication that can treat the initial illness that viral hepatitis causes, health professionals manage symptoms as they occur and try to help the body’s immune system fight the infection. If you have viral hepatitis, your health care provider may tell you to:

- Avoid alcohol and other drugs, large doses of vitamins, and prescription drugs metabolized by the liver (sometimes including birth control pills).
- Drink high-calorie fluids such as fruit juices and eat a balanced diet that includes dairy products; meat, poultry or seafood; breads and cereals; and fruits and vegetables (To control nausea, try eating several smaller meals).
- Limit activity if your hepatitis is symptomatic; this typically means bed rest at first, progressing to normal activity as symptoms disappear.

Your health professional may recommend hospitalization if you experience severe vomiting or do not feel better after several weeks. You should know that researchers are making gains in treating the chronic liver disease associated with both hepatitis B and C. There is not much available for treatment. Interferon has been approved in chronic hepatitis B and C cases for those aged 18 or older. Prevention is still the best option.

Hepatitis A (HAV)

Hepatitis A infects 125,000 - 200,000 people each year and can be easily transmitted. You can become infected by eating or drinking something that has been contaminated with the stool (feces) or blood of someone who has the disease.

Facts about hepatitis A

Symptoms occur 2-6 weeks after exposure and can last from several days to six months. The virus usually causes mild illness and is often mistaken for a stomach virus, although occasionally symptoms are more serious. It is rarely fatal and does not cause permanent liver damage.

A person with hepatitis A is considered contagious, which means they can transmit the virus to others as early as two weeks before symptoms appear.

The hepatitis A virus does not cause the long-term, chronic symptoms that other hepatitis viruses can cause.

Behavior practices associated with hepatitis A infection:

- Eating contaminated food, such as undercooked shellfish from contaminated water or food handled by someone who has hepatitis A.
- Using silverware, cups or glasses that an infected person touched with unwashed hands.
- Changing diapers or linens that contain stool from someone with hepatitis A and neglecting to wash your hands.
- Sharing food with an infected person or drinking water contaminated with sewage.
- Oral or anal sexual contact with an infected person.
- Traveling to developing countries where the disease is common.
- Sharing needles can also put you at risk. The hepatitis A virus can be transmitted through blood if needles are shared. However, poor hygiene – either among people who use drugs or among drug producers – is probably a more important reason for the high prevalence among drug users.

Prevention of hepatitis A

Practice good personal hygiene. Always wash your hands after any contact with blood, when cleaning or after using the toilet, and before preparing or eating food. Avoid foods that could be contaminated, such as under-cooked shellfish or food that’s been prepared by someone who has the virus. When traveling to developing countries, drink only bottled or boiled water, don’t use ice, and don’t eat raw fruits or vegetables unless they’ve been peeled. It is also a good idea to get the hepatitis A vaccine.

Exposure to hepatitis A

If you think you’ve been directly exposed to the hepatitis A virus, visit your health care provider immediately for treatment. Some treatments can help ward off the infection if administered in time (hepatitis A vaccine and IgG). All people who have close household or sexual contact with an infected person also need treatment.

Preventing the spread of hepatitis A

If you think you may be infected with hepatitis A:

- Always wash your hands well after using the toilet.
- Don’t prepare or handle food for others while you are infectious.
- Avoid sexual contact with other people until you are fully recovered.

Hepatitis B (HBV)

In the United States, approximately 300,000 people are infected with HBV annually. Of these cases, a small percentage is fatal.

“Hepatitis” means “inflammation of the liver,” and as its name implies, hepatitis B is a virus that infects the liver. Hepatitis B is transmitted through blood-to-blood contact. Hepatitis B initially causes inflammation of the liver, but it can lead to more serious conditions such as cirrhosis and liver cancer.

There is no “cure” or specific treatment for HBV, but many people who contract the disease will develop antibodies, which help them get over the infection and protect them from getting it again. It is important to note, however, that there are different kinds of hepatitis, so infection with HBV will not stop someone from getting another type.

The hepatitis B virus is very durable, and it can survive in dried blood for up to seven days. For that reason, this virus is the primary concern for employees such as housekeepers, funeral directors, custodians, laundry personnel and other employees who may come in contact with blood or potentially infectious materials in a non first aid or medical care situation.

Symptoms

The symptoms of HBV are very much like a mild “flu”. Initially there is a sense of fatigue, possible stomach pain, loss of appetite, and even nausea. As the disease continues to develop, jaundice (a distinct yellowing of the skin and eyes), and darkened urine often develop. However, people who are infected with HBV will often show no symptoms for some time. After exposure it can take 1-9 months before symptoms become noticeable. Loss of appetite and stomach pain, for example, commonly appear within 1-3 months, but can occur as soon as 2 weeks or as long as 6-9 months after infection.

Hepatitis B (HBV) and sexually transmitted disease prevented by HBV vaccine

The hepatitis B virus infects people of all ages. It is one of the fastest-spreading sexually transmitted infections (STI), and also can be transmitted by sharing needles or by any behavior in which a person’s mucus membranes are exposed to an infected person’s blood, semen, vaginal secretions, or saliva. While the initial sickness is rarely fatal, 10 percent of people who get hepatitis B are infected for life and run a high risk of developing serious, long-term liver diseases such as cirrhosis of the liver or liver cancer which can cause serious complications or death. A safe, effective vaccine that prevents hepatitis B is available. If you or someone you know practices behaviors that can spread hepatitis B, ask a medical professional about the vaccine. Don’t become one of the 300,000 Americans who contracts hepatitis B every year.

Facts about hepatitis B (HBV)

- Symptoms, if they occur, appear from one to six months after exposure to the virus.
- An infected person can begin infecting others four to six weeks before symptoms appear, and can continue infecting others long after symptoms subside.
- About one in ten people infected with hepatitis B become chronic carriers; they continue carrying the virus and spread it to others even
though their symptoms have disappeared. About one-quarter of these chronic carriers eventually die of severe, chronic liver diseases, including cirrhosis – a serious scarring of the liver – and liver cancer.

- About half of the people infected with hepatitis B virus never develop symptoms; but they can become chronic carriers.
- Since some areas of the world have high rates of infection, people from places such as Southeast Asia, South Pacific Islands, sub-Saharan Africa, Alaska, Amazon, Bahia, Haiti, and the Dominican Republic are at risk.

**Risk behaviors for contracting HBV**

- Practicing unsafe sex. The more partners with whom you have vaginal, anal or oral contact, the higher your risk of becoming infected with hepatitis B. Abstinence is the most effective way to prevent sex-related transmission. If you have vaginal, anal or oral contact, always use barrier protection. People who have sex with multiple partners should ask their health provider about getting vaccinated for hepatitis B.
- Sharing needles. No matter what drug is injected, whether it’s crack, heroin or steroids, sharing needles is extremely risky. In fact, an estimated 60-80 percent of the people who share needles are or have been infected with hepatitis B. Similarly, beware of needles that could be contaminated when getting tattoos, having acupuncture or your ears pierced. Select a reputable professional for these services.
- Close, frequent contact with the blood, semen, vaginal secretions or saliva of infected persons. Occasionally, people who share living quarters for a long time with others who have hepatitis B have gotten infected. Receiving a blood transfusion or other blood products no longer carries the threat of hepatitis B that it once did. Today, all blood is screened for hepatitis B before it is used.

**Prevention of hepatitis B**

If you are at risk of contracting hepatitis B, get vaccinated. The hepatitis B vaccine is an inactivated antigen (genetically engineered; not a live or killed virus). It is administered in a series of three injections over a six-month period. Approximately 95 percent of persons who receive the three injections obtain full immunity after receiving the vaccine. You are asked to report side effects (rash, nausea, joint pain, and/or fatigue) to your health care provider. Also, avoid high-risk behaviors and practice good personal hygiene when sharing food and using bathrooms. Don’t share razors, toothbrushes or pierced earrings with anyone.

**Exposure to hepatitis B**

If you have not been vaccinated against hepatitis B but are exposed to the virus, your health professional can treat you with hepatitis B immune globulin (HBIG), combined with the hepatitis B vaccination. Don’t delay – get immunized and vaccinated as soon as possible after exposure.

**Preventing the spread of hepatitis B**

- Don’t engage in sexual contact without a condom.
- Don’t donate blood. Bandage all cuts and open sores.
- Don’t share anything that could be contaminated with your blood, semen, vaginal secretions or saliva, such as needles, razors or toothbrushes.
- Wash your hands well after using the toilet.
- If you have hepatitis B and you’re pregnant, your baby must be immunized at birth. All pregnant women should be screened for hepatitis B.

**Hepatitis B vaccinations**

The hepatitis B virus vaccination is given in a series of three shots. The second shot is given one month after the first, and the third shot follows five months after the second. This series gradually builds up the body’s immunity to the hepatitis B virus.

**Hepatitis C (HCV)**

HCV is widely viewed as one of the most serious of the five hepatitis viruses. The hepatitis C virus is spread primarily through contact with infected blood and can cause cirrhosis (irreversible and potentially fatal liver scarring), liver cancer, or liver failure. Hepatitis C is the major reason for liver transplants in the United States, accounting for 1,000 of the procedures annually. The disease is responsible for between 8,000 and 10,000 deaths yearly. Some estimates say the number of HCV-infected people may be four times the number of those infected with the AIDS virus. Hepatitis C is less likely than the other hepatitis viruses to cause serious illness at first (only one-quarter of the people infected actually develop symptoms); about 70 percent of those infected develop chronic liver disease.

Like hepatitis B, hepatitis C can be spread by contact with infected blood, and possibly semen, vaginal secretions and saliva. Hepatitis C infects about 150,000 Americans each year.

**Risk behaviors**

You are at risk if you share needles; receive contaminated blood during a blood transfusion; or have sexual contact without barrier protection with infected partners.

**Prevention of hepatitis C**

Since hepatitis C is transmitted in much the same way as hepatitis B, you can help avoid infection by using some of the same precautions. Always use barrier protection during sexual contact; practice good personal hygiene; and never share needles, razors, toothbrushes or pierced earrings with anyone. All donated blood is screened for the virus. Drugs are licensed for treatment of persons with chronic infection, though they are only about 15-30 percent effective. Currently, there is no vaccine available.

**Hepatitis D (HDV)**

The delta virus (also known as hepatitis D) is a defective virus that may cause infection only in the presence of active hepatitis B infection. The symptoms and routes of transmission are similar to those of hepatitis B infection, but are particularly significant with intravenous drug abusers and pregnant women.

(Final examination questions on next page)
1. Bloodborne pathogens are microorganisms such as viruses or bacteria that are carried in the blood and can cause disease in people.  
   True  False

2. Bloodborne pathogens may be transmitted through the mucous membranes of the eyes, nose, and mouth.  
   True  False

3. Human immunodeficiency virus (HIV) is the virus that causes AIDS.  
   True  False

4. HIV is transmitted from one person to another through blood-to-blood and sexual contact.  
   True  False

5. In most work situations, transmission is likely to occur because of accidental puncture from contaminated broken glass, needles or other sharps like scissors.  
   True  False

6. HIV transmitted between family members in a household setting is very common.  
   True  False

7. There is evidence that mosquitoes can transmit HIV.  
   True  False

8. Alcohol increases susceptibility to some infections that can occur as complications of AIDS.  
   True  False

9. Latex condoms can provide protection against sexually transmitted diseases, including HIV infection, but only if they are used consistently and correctly.  
   True  False

10. Scientists and medical authorities agree that HIV survives well in the environment, making the possibility of environmental transmission great.  
    True  False