

Clinical Manifestations and Treatment

The Natural History of HIV Infection

A person with untreated HIV infection will experience several stages in infection. These include: viral transmission, primary HIV infection, seroconversion, asymptomatic HIV infection, symptomatic HIV infection, and AIDS. These stages are sometimes called the "natural history" of disease progression and are described below. The natural history of HIV infection has been altered dramatically in developed countries because of new medications. In countries where there is no access to these expensive medications, or in cases where people do not become aware of their HIV infection until very late, the disease progresses as described below.

Viral transmission

This is the initial infection with HIV. When a person is infected with HIV, they will probably have virus circulating in their bloodstream, and may become infectious to others within five days. **The person may be infectious before the onset of any symptoms.** They will remain infectious for the rest of their lives.

Primary HIV infection

During the first few weeks of HIV infection, an infected person has a very high amount of virus in their bloodstream. The high viral load means the individual may more easily pass the virus to others. Unfortunately, during primary infection, many people are unaware that they are infected.

The most common symptoms noticed by persons newly infected with HIV are fever, swollen glands in the neck, armpits and/or groin, rash, fatigue and a sore throat (also common with many other types of infections). This is sometimes called "seroconversion syndrome" or "seroconversion sickness." It resembles mononucleosis infection, with similar symptoms and length of illness. These initial symptoms go away in a few weeks, but the individual continues to be infectious to others.

Primary infection continued

It is extremely important that healthcare providers consider the diagnosis of HIV primary infection if an individual has behaviors which put him or her at risk for HIV and is presenting with the above symptoms. If individuals experience these symptoms after having unprotected sex or sharing needles, they should seek medical care and tell their provider why they are concerned about HIV infection. An HIV antibody test should be done but it will only reflect the person's prior HIV status. To detect acute HIV infection, an HIV RNA test that tests directly for the HIV virus must be done.

There are many arguments for and against treatment in primary infection, and healthcare providers have different opinions

regarding whether or not a newly HIV-infected person should start drug therapies immediately.

Seroconversion

Seroconversion is the time period that it takes from infection to the production of antibodies, which would show positive on an HIV test. This may vary from person to person.

As discussed on page 43 of the Testing and Counseling section of this manual, HIV antibodies are detectable sometime within the first six weeks to six months of infection, and in most cases will be detectable for life.

Asymptomatic HIV infection

During this time period an HIV-infected person has no noticeable signs or symptoms. The person may look and feel healthy, but can still pass the virus to others. It is not unusual for an HIV-infected person to live 10 years or longer without any outward physical signs of progression to AIDS. Meanwhile, the person's blood and other systems are affected by HIV. This would be reflected in laboratory tests. Unless a person in this stage has been tested for HIV, they will probably not be aware they are infected.

Symptomatic HIV Infection

During the symptomatic stage of HIV infection, a person begins to have noticeable physical symptoms that are related to HIV infection. Although there are **no** symptoms that are specific **ONLY** to HIV infection, some common symptoms are:

- a persistent low grade fever
- pronounced weight loss that is not due to dieting
- persistent headaches
- diarrhea that lasts more than one month
- difficulty recovering from colds and the flu
- a person may become sicker than they normally would
- women may have recurrent vaginal yeast infections
- thrush (a yeast infection) coating the mouth or tongue

Symptomatic HIV infection, continued

Anyone who has symptoms like these and has engaged in behaviors that transmit HIV should seek medical advice. The only way to know for sure if you are infected with HIV is to take an HIV antibody test.

AIDS

An AIDS diagnosis can only be made by a licensed healthcare provider. The diagnosis is based on the result of HIV-specific

blood tests, and/or the person's physical condition.

There is a list of "AIDS-defining illnesses," white blood cell counts and other conditions that are specifically linked to making an AIDS diagnosis. Once a person is diagnosed with AIDS, even if they later feel better, they do not "go backwards" in the classification system for HIV infection. This means that they are always considered to have AIDS.

People who have an AIDS diagnosis may often appear to a casual observer to be quite healthy, but continue to be infectious and can pass the virus to others.

Over time, people with AIDS frequently have a reduced white blood cell count and develop poorer health. They may also have a significant amount of virus present in their blood, which is measured as viral load.

Cofactors

A cofactor is a separate condition that can change or "speed up" the course of disease. There are several cofactors that can increase the rate of progression to AIDS. They include a person's age, certain genetic factors and possibly drug use, smoking, nutrition and HCV.

Time from infection to death

Currently, if the infection is untreated, the average time from HIV infection to death is 10-12 years. Early detection and medical treatment may mean that the person will live longer.

The 1993 Revised AIDS Surveillance Case Definition

In 1987, the CDC defined AIDS using a positive HIV antibody test plus a list of conditions that indicated a deficient immune system. In 1993, the CDC revised the definition of AIDS to include more conditions and a variety of CD4-cell counts. The revised definition meant that more people were considered to have AIDS. That year there was a "jump" in the number of people with AIDS which reflected the change in classification system.

An AIDS diagnosis is only made by a licensed healthcare provider, based on a confirmed HIV test result, the presence of certain defining physical conditions, and the person's CD4-cell count.

HIV has a wide spectrum of clinical presentations in children. The CDC developed a revised pediatric HIV classification system in 1994, to clarify HIV-infected pediatric patients into categories based on their immune system, CD4 cells, and clinical category. Pediatric classification of AIDS is different than the classification for adults.

The 1993 AIDS Surveillance Case Definition for Adolescents and Adults, which is the most current definition, is comprised of a 3 x 3 staging system. In this definition, any person who is HIV-infected and has either an AIDS indicator condition or a CD4+ ("T-cell count") less than 200 cells/mm³, or less than 14%, is considered to have AIDS.

AIDS Indicator Conditions (Adults)

A positive HIV test plus one or more of the following:

- Candidiasis, of esophagus, trachea, bronchi or lungs
- Cervical cancer, invasive
- Coccidioidomycosis, extrapulmonary
- Cryptococcosis, extrapulmonary
- Cryptosporidiosis with diarrhea greater than one month
- Cytomegalovirus of any organ other than liver, spleen, or lymph nodes
- Herpes simplex with mucocutaneous ulcer lasting longer than one month or bronchitis, pneumonitis, esopagitis
- Histoplasmosis, extrapulmonary
- HIV-associated dementia: disabling cognitive and/or motor dysfunction interfering with activities of daily living
- HIV-associated wasting: involuntary weight loss >10% of baseline plus chronic diarrhea (2 loose stools/day for 30 days) or chronic weakness and documented enigmatic fever 30 days
- Kaposi's sarcoma
- Lymphoma of brain
- Lymphoma, non-Hodgkins of B-cell or unknown immunologic phenotype and histology showing small, noncleaved lymphoma or immunoblastic sarcoma
- *Mycobacterium avium* complex or *M. kansasii*, disseminated
- Tuberculosis
- Nocardiosis
- *Pneumocystis carinii* pneumonia
- Pneumonia, recurrent-bacterial (2 episodes in 12 months)
- Progressive multifocal leukoencephalopathy
- Salmonella septicemia (non-typhoid), recurrent
- Strongyloidiasis, extraintestinal
- Toxoplasmosis of internal organs

The difference between clinical manifestations and opportunistic

When a person's immune system is suppressed, they have weaker defenses against the wide variety of bacteria, viruses, fungi and other pathogens that are present almost everywhere. A "clinical manifestation" is the physical result of some type of illness or

infections

infection.

The "opportunistic" diseases and infections associated with HIV infection are any of the infections that are part of an AIDS-defining classification.

For example: the opportunistic infection cytomegalovirus often causes the clinical manifestation of blindness in people with AIDS.

HIV in the Body

The original case definition of HIV infection was based on the clinical symptoms seen in men. In 1993, the CDC revised the classification system for HIV infection and expanded the case definition for AIDS to include invasive cervical cancer, obviously a condition found only in women. Since 1993, scientists have reported further differences in the way that HIV affects men, women and children.

How HIV works in the body

Scientists are always learning new information about how HIV affects the body. HIV infection seems to affect many body systems. It is well known that HIV infection causes a gradual, pronounced decline in the immune system's functioning. People with HIV are at risk for a wide variety of illnesses "both common and exotic."

HIV affects:

- the kind and number of blood cells
- the amount of fat and muscle distribution in the body
- the structure and functioning of the brain
- the normal functioning of the immune system
- the body's basic metabolism

How HIV works in the body, continued

HIV infection can cause many painful or uncomfortable conditions, including:

- confusion or dementia
- diarrhea
- fatigue
- fever
- nausea or vomiting
- painful joints, muscles, or nerve pain
- difficulty with breathing
- urinary or fecal incontinence
- vision or hearing loss

- thrush (yeast infections in the mouth)
- chronic pneumonias, sinusitis, or bronchitis
- loss of muscle tissue and body weight

HIV in children

Children show significant differences in their HIV disease progression and their virologic and immunologic responses, compared to adults. Without drug treatment, children may have developmental delay, pneumocystis carinii pneumonia, failure to thrive, recurrent bacterial infections and other conditions related to HIV. The antiretroviral treatments that are available for HIV infection may not be available in pediatric formulations. The medications may have different side effects in children than they do in adults.

It is vital that women know their HIV status before or during pregnancy. Antiretroviral treatment significantly reduces the chance that their child will become infected with HIV. Prior to the development of antiretroviral therapies, most HIV-infected children were very sick by seven years of age. In 1994, scientists discovered that a short treatment course of the medication AZT for pregnant women dramatically reduced the number, and rate, of children who became infected perinatally. C-sections for delivery in certain cases may be warranted to reduce HIV transmission. As a result, perinatal HIV infections have substantially declined in the developed world.

Early diagnosis of HIV infection in newborns is now possible. Antiretroviral therapy for infants is now the standard of care, and should be started as soon as the child is determined by testing to be HIV-infected. Current recommendations are to treat apparently uninfected children who are born to mothers who are HIV-positive with antiretroviral medicines for six weeks, to reduce any possibility of HIV transmission.

HIV in women

Certain strains of HIV may infect women more easily. The strain of HIV present in Thailand seems to transmit more easily to women through sexual intercourse.

Scientists believe that women and receptive partners are more easily infected with HIV, compared to the insertive partner. Receptive partners are at greater risk for transmission of any sexually transmitted disease, including HIV.

Women infected with HIV are at increased risk for a number of gynecological problems, including pelvic inflammatory disease,

abscesses of the fallopian tubes and ovaries, and recurrent yeast infections.

Some studies have found that HIV-infected women have a higher prevalence of infection with the human papilloma virus (HPV). Cervical dysplasia is a precancerous condition of the cervix caused by certain strains of HPV. Cervical dysplasia in HIV-infected women often becomes more aggressive as the woman's immune system declines. This may lead to invasive cervical carcinoma, which is an AIDS-indicator condition. It is important for women with HIV to have more frequent Pap tests.

Several studies have shown that women with HIV in the U.S. receive less health care services and HIV medications, compared to men. This may be because women aren't diagnosed or tested as frequently as men.

**Access to medical care
Access to good medical
care is important,
continued**

As the medications that are available to treat HIV infection have become more numerous and complex, HIV care has become a medical specialty. If possible, people who have HIV infection should seek out a physician who is skilled in the treatment of HIV and AIDS.

People in Washington State may begin to access an HIV specialist through the assistance of the case manager(s) in their county. Call your local health department or health district for information on case management programs.

The Impact of New Drug Therapies on HIV Clinical Progression

**History of newer HIV
drug therapies
History of newer HIV
drug therapies,
continued**

Before 1996, there were three medications that were available to treat HIV. These drugs were used singly and were of limited benefit. Researchers in 1996 discovered that taking combinations of these medications with new medications, either protease inhibitors or non-nucleoside reverse transcriptase inhibitors, dramatically reduced the amount of HIV, or "viral load," in the bloodstream of a person infected with HIV. Two or three different medications are used in combination. Each one targets a separate part of the virus and its replication.

The reduction of deaths from AIDS in the United States has been primarily attributed to this combination therapy, called "highly active antiretroviral therapy" (HAART).

The improved drug therapies for HIV are not helpful for all

Not everyone with HIV infection benefits from the new drug therapies. Some people cannot tolerate the unpleasant or serious side effects from the medications. Others cannot adhere to the complex treatment schedule. If a person does not take their medication every day according to their physician's instructions, the drugs do not work effectively and viral resistance may develop.

Cost of new drug therapies can be prohibitive

Insurance programs and government programs for individuals with low income pay for much of the cost of the HIV medicines in Washington State. These medicines may cost upwards of \$2,000 per person each month. People who live in other countries where the medication is unaffordable have very limited access to the newer therapies.

New therapies are not a "cure" for HIV infection

Although the new drug therapies work for many people to keep the amount of virus in their bodies to very low levels, they are not a "cure for HIV." Once therapy is discontinued, viral load will increase. Even during treatment, viral replication occurs and **the person remains infectious to others.**

Resistance to the HIV medications can develop

Many people find that after time, the virus becomes resistant to the medication, and they must change medications. This is especially true when the medications are not taken correctly, and it limits the number of possible drug therapies that the person might be able to use.

**Side effects of HIV medications
Side effects of HIV prescription medications**

Patients often have unpleasant side effects when they use prescription medications to treat their HIV infection. The list of side effects includes:

- nausea
- diarrhea
- peripheral neuropathy (numbness and/or pain in feet and hands)
- changes in body fat distribution called lipodystrophy, which presents with large fat deposits on the back of the neck, on the stomach area and in breast size in women and/or with pronounced thinning of the arms and legs.
- Interference with the metabolism of oral contraceptives

- osteoporosis
- diabetes or other changes in glucose metabolism
- very high cholesterol or triglycerides
- damage to the nervous system, liver and/or other body organs

Alternative therapies for HIV infection

People have used and relied on "alternative" (sometimes called complimentary) therapies to treat HIV infection for as long as HIV has been known. Many people use these treatments along with therapies from their medical provider. Other people choose to only use alternative therapies.

These therapies include a wide range of treatments, from vitamins, massage, herbs, naturopathic remedies, and many more. While there is no evidence of harm from these treatments, there is also very little evidence of benefit. Many of these remedies have not been studied to see if they help.

Interactions with other medications/drugs

It is important for people who are taking alternative therapies to tell their medical provider. There may be drug reactions or other harmful side effects from the interactions of the "natural" medicine and antiretrovirals. For example, St. John's Wort is an herbal remedy that has major interactions with the HIV medications.

Other drugs, including over the counter medications, prescription medications and "street drugs," may have serious interactions with antiretroviral medications. It is extremely important that people on HIV medications tell their doctor, pharmacist and social worker about all other drugs they take.

When will a vaccine be available? When will a vaccine be available, continued

Scientists have worked for years to develop a vaccine to prevent, or alleviate the severity of HIV infection. No one knows when a vaccine will be ready for distribution. Many promising developments have been made and it is possible that a vaccine will be available within this decade. Currently, prevention is still the only way to avoid HIV infection.

Finding case management

People living with HIV often seek the assistance of an HIV case manager who can help explain the different types of services available. Washington state has several systems in place to provide prescription and medical assistance to people living with HIV and AIDS. Contact your local health department or district to

find case management in your community. You can also call the Washington State Department of Health Client Services toll-free at 1-877-376-9316.

Children with HIV may also benefit from the "Children with Special Health Care Needs" program. Care coordinators for this program are located at every county health department/district. Local community-based organizations like the Northwest Family Center in Seattle, and specialty hospitals like Children's Medical Center in Seattle and Mary Bridge Children's Hospital in Tacoma may also provide additional support to children and families.

Tuberculosis, Other Sexually Transmitted Diseases and Hepatitis B and C

Because of the interrelationships between tuberculosis (TB) sexually transmitted diseases (STD), HBV, HCV and HIV, a brief discussion of each of these is included in this curriculum.

Tuberculosis and HIV

Definition of Tuberculosis (TB)

Mycobacterium tuberculosis (hereafter referred to as *M. Tuberculosis*, or TB) is transmitted by airborne droplets from people with active pulmonary or laryngeal TB during coughing, sneezing, or talking. Although the TB bacteria can live anywhere in the body, infectious pulmonary or laryngeal TB poses the greatest threat to public health.

Cause of TB

Latent infection, which is asymptomatic and not infectious, can last for a lifetime. A presumptive diagnosis of active TB is made when there are positive test results or acid-fast bacilli (AFB) in sputum or other bodily fluids. The diagnosis is confirmed by identification of *M. tuberculosis* on culture, which should be followed by drug sensitivity testing of the bacteria.

Epidemiology of TB

Globally, there are probably 2 billion people (1/3 of the world's population) infected with TB, and 8 million active cases of TB each year. Tuberculosis is one of the leading causes of death in the world.

A total of 256 new cases of tuberculosis were diagnosed among Washington residents in 2005. Twenty-three of 39 counties had at least one new case of TB. There were ten counties with five or more cases of TB. Among these, the five highest county-

specific incidence rates were King (7.0), Yakima (5.6), Yakima (5.6), Skagit (5.4), Snohomish (3.6), and Pierce (3.5).

Transmission & progression

When infectious secretions sneezed or coughed by an adult with pulmonary TB are breathed in by another person, the bacteria may come to rest in the lungs. After several weeks, the bacteria multiply and some asymptomatic, pneumonia-like symptoms may occur.

The TB bacteria are carried through the bloodstream and lymph system, pumped through the heart, and then disseminated through the body.

The largest amount of bacteria goes to the lungs. In most cases, this process, called primary infection, resolves by itself and something called "delayed-type hypersensitivity" is established. This is measured with the tuberculin skin test. The incubation period for this primary infection is two to 10 weeks. In most cases, a latent state of TB develops. 90% of people with latent TB never experience subsequent disease. Other than a positive tuberculin skin test, people with latent TB infection have no clinical, radiographic (x-ray), or laboratory evidence of TB and cannot transmit TB to others.

Among the other 10% of infected individuals, the TB infection undergoes "reactivation" at some time and they develop active TB. About 5% of newly infected persons do so within the first two years of primary infection and another 5% will do so at some point later in life.

Symptoms of TB

The period from initial exposure to conversion of the tuberculin skin test is four to 12 weeks. During this period, the patient shows no symptoms. The progression to active disease and symptoms (such as cough, weight loss, and fever) usually occurs within the first two years after infection, but may occur at any time.

Symptoms of TB

Prevention of TB

It is important to recognize the behavioral barriers to TB management, which include deficiencies in treatment regimens, poor client adherence to TB medications, and lack of public awareness. Primary health care providers need adequate training in screening, diagnosis, treatment, counseling, and contact tracing for TB through continuing education programs

and expert consultation. Promoting patient adherence to the sometimes complicated medication schedule also requires consideration of the patient's cultural and ethnic perceptions of his/her health condition. Providing strategies and services that address the multiple health problems associated with TB (such as alcohol and drug abuse, homelessness, and mental illness) also builds trust and promotes adherence to treatment plans.

Isoniazid daily regimen for 9 months is recommended because prospective, randomized trials in HIV-negative persons indicate that 12 months of treatment is more effective than 6 months of treatment. Although a 9-month regimen of isoniazid is the preferred regimen for the treatment of LTBI, a 6-month regimen also provides substantial protection. In some situations, treatment for 6 months rather than 9 months may provide a more favorable outcome from a cost-effectiveness standpoint. Thus, based on local conditions, health departments or providers may conclude that a 6-month rather than a 9-month course of isoniazid is preferred.

Clinical trials have shown that daily preventive therapy for 12 months reduces the risk for TB disease by more than 90% in patients with latent TB infection who complete a full course of therapy. There is evidence that six months of preventive therapy with Isoniazid may also prevent disease in approximately 69% of patients who complete the regimen. Every effort should be made to ensure that patients adhere to this therapy for at least six months. Children should receive at least nine months of preventive therapy.

Treatment of TB and multidrug resistant-TB

Treatment of TB and multidrug resistant-TB, continued

TB/HIV co-infection

In order to prevent drug resistance and cure TB, the CDC recommends that TB be treated with a multidrug regimen, which may last six to 12 months. Current recommendations can be found in the Washington State Department of Health's *Guidelines for the Prevention, Treatment and Control of TB*. A copy may be obtained by calling the Washington State Department of Health TB Program at (360) 236-3447. Treatment of multidrug-resistant TB (MDR-TB) is much more difficult and must be individualized. The patient with MDR-TB requires treatment for two years or more.

HIV/TB co-infected persons are at considerably greater risk of developing TB disease than those who only have TB. Studies suggest that the risk of developing TB disease is 7% to 10%

each year for persons who are infected with both *M.tuberculosis* and HIV, whereas it is 10% over a lifetime for a person infected only with *M.tuberculosis*.

In an HIV-infected person, TB disease can develop in either of two ways. A person who already has latent TB infection can become infected with HIV, and then TB disease can develop as the immune system is weakened. Or, a person who has HIV infection can become infected with *M. tuberculosis*, and TB disease can then rapidly develop because their immune system is not functioning.

Pulmonary TB and extrapulmonary TB are among the conditions included in the 1993 AIDS surveillance case definition. Any HIV-infected person with a diagnosis of TB disease should be reported as having TB and AIDS.

For More Information on TB Contact:

- the communicable disease staff in each county health department/district
- the Washington State Department of Health TB program, (360) 236-3447
- the Centers for Disease Control and Prevention Division of TB Elimination Web site: <http://www.cdc.gov/nchstp/tb>
- WA State Department of Health web site: www.doh.wa.gov/cfh/TB

Other STDs and HIV

Definition of STD

The term STD (sexually transmitted disease) refers to more than 25 infectious organisms transmitted through sexual activity and dozens of clinical syndromes that they cause. STDs affect men and women and can be transmitted from mothers to babies during pregnancy and childbirth. They are also called sexually transmitted infections (STIs).

Bacterial, viral, and other causes of STD

Different bacteria cause STDs such as chlamydia, gonorrhea and syphilis. Herpes, genital warts, hepatitis B and HIV have different viral causes. Scabies are caused by mites, and pubic lice cause “crabs.” Trichomoniasis is caused by tiny organisms called protozoa; “yeast” infections are caused by fungi. STDs such as pelvic inflammatory disease can have more than one cause - a woman may have both gonorrhea and chlamydia causing this condition. A man may have more than one cause for epididymitis, usually gonorrhea and/or chlamydia. Non gonococcal urethritis (NGU) is usually caused by bacteria.

STD, nationally and internationally

In 1999, the World Health Organization estimated that there were 340 million new cases of the four common curable STDs (gonorrhea, chlamydia, syphilis and trichomoniasis) worldwide among people age 15-49. Since the beginning of the AIDS epidemic, researchers have noted the strong association between HIV and other STDs.

Nationally, five of the top 10 most frequently reported communicable diseases are STDs. In the US in 2004, 929,462 new cases of chlamydia were reported to the CDC. Reported cases of gonorrhea rose to 330,132 in that year.

Primary and secondary cases of syphilis increased 11.2% to 7,980 cases from 2003 to 2004. The Kaiser Family Foundation's website (www.kff.org) lists estimates for incidence (new cases) and prevalence (total number of cases) of both bacterial and viral STDs in the US, noting that by age 24, at least one in three sexually active people are estimated to have contracted an STD.

Primary STD infections may cause pregnancy-related complications, congenital infections, infertility, ectopic pregnancy, chronic pelvic pain and cancers. STDs can also accelerate other infections like HIV.

HIV and STDs

The presence of infection with other STDs increases the risk of HIV transmission because:

- 1) STDs like syphilis and symptomatic herpes can cause breaks in the skin, which provide direct entry for HIV
- 2) Inflammation from STDs, such as chlamydia, makes it easier for HIV to enter and infect the body
- 3) HIV is often detected in the pus or other discharge from genital ulcers from HIV-infected men and women
- 4) Sores can bleed easily and come into contact with vaginal, cervical, oral, urethral and rectal tissues during sex
- 5) Inflammation appears to increase HIV viral shedding and the viral load in genital secretions

HIV and STDs, continued

STD transmission

STDs are transmitted in the same way that HIV is transmitted: by

anal, vaginal and oral sex. In addition, skin-to-skin contact is important for the transmission of herpes, genital warts and HPV infection, syphilis, scabies and pubic lice.

Symptoms of STD

In the past there was a great emphasis on symptoms as indicators of STD infection. Research has changed this. We now know that 80% of those with chlamydia, 70% of those with herpes and a great percentage of those with other STDs have no symptoms, but can still spread the infections.

Along with prompt testing and treatment for those who do have symptoms, the emphasis in the U.S. is screening for infection based on behavioral risk. Patients cannot assume that their health care providers do STD testing. In other words, women who are getting a pap test or yearly exam should not just assume that they are also being tested for chlamydia or any other STD.

Prevention of STD

The following steps will help prevent STD infection:

- Abstain or be in a mutually monogamous relationship with an uninfected partner
- Know that many STDs have no symptoms
- Know that birth control pills and shots do not prevent infections – you must use condoms along with other birth control methods
- Go with your sex partner(s) for tests
- Avoid douching
- Learn the right way to use condoms and then use them correctly and consistently every time you have sex
- Be sure all sex partners are examined and treated if an STD occurs
- Change the ways you have sex so that there is no risk of infection
- Learn how to talk about correct use of condoms with all sex partners
- Practice the prevention you have learned for HIV and hepatitis

Prevention of STD, continued

STD tests

At most sites, new urine LCR (urinate in a cup) tests for some STDs are available. Western Blot (blood tests) for herpes and hybrid capture tests for genital warts may also be available. In most places, however, cultures, wet preps and blood draws for syphilis remain the standard testing method. It is vital that women get pap tests, and that both men and women disclose a history of STD during medical workups.

STD treatment

STD treatment is based on lab work and clinical diagnosis. Treatments vary with each disease or syndrome. Because of developing resistance to medications for some STDs, check the latest CDC treatment guidelines.

Hepatitis B and HIV**What is Hepatitis?**

Hepatitis is the inflammation of the liver that may be caused by many things, including viruses. Current viruses include Hepatitis A (fecal/oral transmission) B, C, D and others.

What is Hepatitis B?

Hepatitis B (HBV) is a virus that is transmitted by the blood and body fluids of an infected person.

Prevention of HBV

A vaccine to prevent HBV is available. Hepatitis B vaccine is administered intramuscularly as a three dose series over 6 months. More than 90% of people who take the 3 injections become immune to HBV.

Why isn't everyone vaccinated for HBV?

HBV vaccine is relatively inexpensive for infants and children. The adult doses are more expensive (costing about \$150 per person.) This cost is the likely reason that most adults are not vaccinated against HBV.

HBV Epidemiology

Each year in the U.S. an estimated 60,000 people become infected with HBV. Of these, about 2-6% of adults will become chronically infectious carriers of the virus.

There are 1,250,000 carriers of HBV in the U.S. Each year, over 11,000 people will be hospitalized and about 4,000-5,000 people

will die in the U.S. from chronic liver disease or liver cancer caused by HBV.

How HBV is not transmitted

HBV is not transmitted by:

- Breastfeeding
- Sneezing
- Hugging
- Coughing
- Sharing eating utensils or drinking glasses
- Food or water
- Casual contact

Risk Factors for HBV infection

Unvaccinated people are at higher risk for getting HBV if they:

- share injection needles/syringes and equipment
- have sexual intercourse with an infected person or with more than one partner
- are a man and have sex with a man
- work where they come in contact with blood or body fluids, such as in a health care setting, prison, or home for the developmentally disabled
- use the personal care items (razors, toothbrushes) of an infected person
- are on kidney dialysis
- were born in a part of the world with a high rate of Hepatitis B (China, Southeast Asia, Africa, the Pacific Islands, the Middle East, South America and Alaska)
- Receive a tattoo or body piercing with equipment contaminated with the blood of someone infected with HBV

Progression of HBV

The average incubation period for HBV is about 12 weeks. People are infectious when they are "Hepatitis B surface antigen positive", (HbsAg) either because they are newly infected, or because they are chronic carriers.

Progression of HBV continued

HBV causes damage to the liver and other body systems, which can range in severity from mild, to severe, to fatal.

Most people recover from their HBV infection and do not become carriers. Carriers (about 2-6% of adults who become infected) have the virus in their body for months, years, or for life. They can infect others with HBV through their blood or other body fluid contact.

Symptoms of HBV

People with HBV may feel fine and look healthy. Some people who are infected with HBV display only mild symptoms, which could include:

- loss of appetite
- extreme fatigue
- abdominal pain
- jaundice (yellowing of the eyes and skin)
- joint pain
- malaise
- dark urine
- nausea or vomiting
- skin rashes

Others who are infected with HBV experience more severe symptoms, and may be incapacitated for weeks or months.

Long-term complications may also occur, and include:

- chronic hepatitis
- recurring liver disease
- liver failure
- cirrhosis (chronic liver damage)

Prevention of HBV

A vaccine for HBV has been available since 1982. This vaccine is suitable for people of all ages, even infants. People who may be at risk for infection should get vaccinated.

To further reduce the risk of or prevent HBV infection, a person can:

- abstain from sexual intercourse and/or injecting drug use
- maintain a monogamous relationship with a partner who is uninfected or vaccinated against HBV
- use safer sex practices (as defined in the Transmission section starting on page 6)
- never share needles/syringes or other injection equipment
- never share toothbrushes, razors, nose clippers or other personal care items that may come in contact with blood
- use Universal or Standard Precautions with all blood and body fluids

Prevention of HBV, continued

Infants born to mothers who are HBV carriers have a greater than 90% reduction in their chance of becoming infected with HBV, if they receive a shot of hepatitis B immune globulin and hepatitis B vaccine shortly after birth plus two additional vaccine doses by age six months.

It is vital that the women and their medical providers are aware that the woman is a HBV carrier.

People with HBV should not donate blood, semen or body organs.

Treatment of HBV

There are no medications available for recently acquired (acute) HBV infection. There are antiviral drugs available for the treatment of chronic HBV infection, however treatment success varies by individual. The vaccine is not used to treat HBV infection once a person is infected.

Hepatitis C and HIV

What is Hepatitis C?

Hepatitis C is a liver disease caused by the hepatitis C virus (HCV), which is found in the blood of persons who have this disease.

Hepatitis C is the leading cause of chronic liver disease in the United States. Hepatitis C was discovered in the late 1980s, although it was likely spread for at least 40-50 years prior to that.

HCV epidemiology

Globally, 180 million people are infected with HCV. An estimated 4.1 million Americans have been infected with HCV. This means that they have a current or previous infection with the virus. About 3.2 million are chronically infected. The CDC estimates that as many as 1 million Americans were infected with HCV from blood transfusions, and that 3.75 million Americans do not know they are HCV-positive. Of these, 2.75 million people are chronically infected, and are infectious for HCV. In the U.S., 8,000-10,000 deaths per year are attributed to HCV-associated liver disease. The number of deaths from HCV are expected to triple in the next 10-20 years.

HCV epidemiology, continued

An estimated 110,000 people in Washington State are infected with HCV.

Transmission of HCV

HCV is transmitted primarily by blood and blood products.

Blood transfusions before 1992 and the use of shared or unsterilized needles and syringes have been the main causes of the spread of HCV in the U.S. The primary way that HCV is transmitted now is through injection drug use. (Since 1992, all blood for donation in the U.S. is tested for HCV.)

Sexual transmission of HCV is considered low, but accounts for 10 - 20% of infections. If a pregnant woman is infected with HCV, she may pass the virus to her baby. However, this occurs in only about 5-6% of those pregnancies.

Household transmission is possible if people share personal care items such as razors, nail clippers, toothbrushes, etc.

How HCV is not transmitted

HCV is not transmitted by:

- Breastfeeding(unless blood is present)
- Sneezing
- Hugging
- Kissing
- Coughing
- Sharing eating utensils or drinking glasses
- Food or water
- Casual contact

Progression of HCV

The severity of HCV differs from HIV. The CDC states that, for every 100 people who are infected with HCV:

- about 15% will fully recover and have no liver damage
- 85% may develop long-term chronic infection
- 70% may develop chronic liver disease
- 20% may develop cirrhosis over a period of 20-30 years
- 1-5% may die from chronic liver disease

Symptoms of HCV Symptoms of HCV, continued

Persons with HCV may have few or no symptoms for decades. When present, the symptoms of HCV are:

- nausea and vomiting
- weakness
- fever
- muscle and joint pain
- jaundice (yellowing of the eyes and skin)
- dark-colored urine
- tenderness in the upper abdomen

Prevention of HCV

There is no vaccine to prevent HCV infection. The following steps can protect against HCV infection:

- Follow Universal and Standard Precautions to avoid contact with blood or accidental needlesticks.
- Refrain from acquiring tattoos or skin piercings outside of a legitimate business that practices Universal Precautions.
- Refrain from any type of injection drug use or drug equipment-sharing.
- Never share toothbrushes, razors, nail clippers or other personal care items.
- Cover cuts or sores on the skin.
- Persons who are HCV-infected may lower the small risk of passing HCV to their sex partner by using latex condoms and practicing safer sex.
- Women who are HCV-infected and wish to have children should discuss their choices beforehand with a medical specialist.

People with HCV should not donate blood, semen or body organs.

Treatment of HCV

Currently there are approved antiretroviral treatments for HCV. The cost of the treatments can be high, and the side effects can be significant (fatigue, flu-like symptoms, nausea, depression and anemia). People infected with HCV should abstain from alcohol use, as this can further damage the liver.

Testing for HCV

Many people who are infected with HCV are unaware of their status. People who should consider testing are:

- Current or former injection drug users
- Persons who received blood transfusions or an organ transplant prior to 1992
- Hemophiliacs who received clotting factor concentrates produced before 1987
- Persons who received chronic hemodialysis
- Infants born to infected mothers
- Healthcare workers who have been occupationally exposed to blood or who have had accidental needlesticks
- Persons who are sex partners of people with HCV

Testing for HCV, continued

Testing for HCV is available through physicians and some health departments.

In 1999, the Food & Drug Administration approved the first home test for HCV. The test kit, called "Hepatitis C Check" is available from the Home Access Health Company. The test is accurate if it has been at least six months since the possible exposure to HCV.

HIV/HCV co-infection

Many people who become infected with HIV from injection drug use are already infected with HCV. Some estimate that 40% of HIV-infected people in the U.S. are also infected with HCV. People who are co-infected with both viruses and have immune system impairment, may progress faster to serious, chronic or fatal liver damage.

Most new HCV infections in the U.S. are among injecting drug users. The majority of hemophiliacs who received blood products contaminated with HIV also are infected with HCV. Treating HIV in someone with HCV may be complicated, because many of the medicines that are used to treat HIV may damage the liver; however treatment for co-infection is possible in some cases with close physician supervision.

Comparison Chart of HIV, HBV, and HCV

	HIV	HBV	HCV
Transmission by: Blood	Yes	Yes	Yes
Semen	Yes	Yes	Rarely (more likely if blood present)
Vaginal fluid	Yes	Yes	Rarely (more likely if blood present)
Breast milk	Yes	No (but may be transmitted if blood is present)	No (but may be transmitted if blood is present)
Saliva	No	No	No
Target in the body	Immune System	Liver	Liver
Risk of infection after needlestick exposure to infected blood	0.5%	1-31%	2-3%
Vaccine available?	No	Yes	No

For more information on Hepatitis B or C:

Go to the CDC hepatitis website, at <http://www.cdc.gov/hepatitis/>

Or call the Hepatitis Hotline, at 1-888-4HEPCDC (1-888-443-7232).

The American Liver Foundation's website is: <http://www.liverfoundation.org/>

Immunization Action Coalition: <http://www.immunize.org>