HIV: Diagnosis, Treatment, and Prevention

Course Description

Over the past 20 years, HIV has emerged as one of the single most significant health threats of our time, claiming the lives of over 550,000 people in the United States (as of the end of 2005).
Over 25 million people worldwide In spite of efforts to contain this epidemic, HIV continues to spread. In the United States today there are 40,000 new cases of HIV infection are reported each year. Approximately one million people are living with HIV/AIDS.
This course has been designed to help you do your part in slowing the spread of HIV infection, by providing you with essential information on HIV testing options and the importance of testing. This course will further discuss HIV treatment and specific strategies for preventing the spread of HIV

Learning Objectives

After completing this course, you should be able to:

- Discuss the importance of HIV testing, including which patients should be offered testing
- Describe HIV testing options and state-specific requirements for testing and reporting
- Discuss the management of HIV infection, both before and after drug treatment is initiated
- List strategies for promoting patient adherence to an HIV treatment regimen
- Define and discuss regimen failure
- Discuss best practices for reducing risk of HIV exposure and infection, both within and outside the healthcare setting

1.1 Introduction

Welcome to the introductory lesson on the diagnosis, treatment, and prevention of HIV infection. This lesson provides the course rationale, goals and outline.

1.2 Course Rationale

Over the past 20 years, HIV has emerged as one of the single most significant health threats of our time, claiming the lives of:

- Over 550,000 people in the United States (as of the end of 2005)
- At the end of 2007, women accounted for 50% of all adults living with HIV worldwide, and for 59% in sub-Saharan Africa.
40,000 new cases of HIV infection are reported each year.

Young people (under 25 years old) account for half of all new HIV infections worldwide.


According to health reports, as of November 2007, The District of Columbia has the highest rate of AIDS infection of any city in the country and the disease is being transmitted to infants, older adults, women and heterosexual men at an epidemic pace, according to a report released Monday by city health officials.

Approximately one million people are living with HIV/AIDS. This course has been designed to help you do your part in slowing the spread of HIV infection, by providing you with essential information on:

- HIV testing options and the importance of testing
- HIV treatment
- Specific strategies for preventing the spread of HIV

1.3 Course Goals

After completing this course, you should be able to:

- Discuss the importance of HIV testing, including which patients should be offered testing
- Describe HIV testing options and state-specific requirements for testing and reporting
- Discuss the management of HIV infection, both before and after drug treatment is initiated
- List strategies for promoting patient adherence to an HIV treatment regimen
- Define and discuss regimen failure
- Discuss best practices for reducing risk of HIV exposure and infection, both within and outside the healthcare setting

1.4 Course Outline

This introductory lesson presented the course rationale and goals. Lesson 2 will provide information on HIV testing. Lesson 3 will discuss treatment of HIV. Finally, lesson 4 will cover the prevention of HIV/AIDS, including best practices.

HIV Testing and Reporting

2.1 Introduction & Objectives

Welcome to the lesson on HIV testing and reporting.
- After completing this lesson, you should be able to:
- Recall strategies for encouraging patient acceptance of testing
- Identify patient populations and individual patients to whom HIV testing should be offered
- List three ways of testing for HIV, and describe how and when each method is used
- Discuss confidentiality of testing, including exceptions

2.2 Importance of Testing

As many as 25% of the people infected with HIV are unaware of their infection. They can spread HIV to others. Studies have shown that many HIV-infected people decrease their high-risk behaviors (e.g., unprotected anonymous sex, multiple sex partners, sharing injection-drug needles/syringes) once they are aware of their HIV-infection status. **HIV testing is the only way to determine HIV-infection status.** For this reason, HIV testing can play an important role in curbing high-risk behaviors, thereby potentially slowing the spread of HIV/AIDS.

2.3 Patient Acceptance

Given the importance of early HIV testing, it is critical to make testing as acceptable as possible to patients.

2.4 Routine HIV Testing vs. Targeted Testing

Patients are more likely to accept testing when it is offered routinely. Does this mean that HIV testing should be offered routinely to all patients? Or should specific patients be targeted? Let's take a closer look on the following screen.

2.5 Current Testing Recommendations: General Patients

According to current recommendations, all patients should be tested for HIV unless the patient declines this screening. Testing should still be voluntary and patients must be notified before testing is done.

The CDC recommends that:

- HIV testing be a normal part of medical practice for all patients aged 13 to 64 years, after notification, unless declined by the patient
- Repeat testing be provided to persons at high risk for HIV infection
- High risk persons be tested for HIV annually
- Patient risk factors be determined and documented If documented HIV prevalence is <0.1%, routine testing may not be warranted.

2.6 Current Testing Recommendations: Pregnant Women
For pregnant women, the CDC recommends that:

- HIV testing be a normal part of prenatal care for all pregnant women, after notification
- HIV testing be included in the routine prenatal screening panel
- Repeat testing be provided during the third trimester for women in areas with elevated rates of HIV infection among pregnant women

2.7 State-Specific Regulations

In addition to CDC recommendations, certain states have enacted laws regarding maternal/neonatal testing. Depending on the state, providers may be required by law to:

- Offer HIV testing to all pregnant women
- Perform HIV testing on all pregnant women, unless the woman refuses
- Perform mandatory HIV testing on all newborns. In states without maternal testing legislation, providers are free to follow CDC recommendations (i.e., offer voluntary testing to all pregnant women).

2.8 Review

Standard HIV testing should not be performed. All patients should be asked about HIV risk. HIV testing should be offered routinely to all patients. HIV testing should be offered only to patients who request it. Select the answer that best fits the question.

2.9 Options and Alternatives for Testing

Now that you have an understanding of who should be tested, let’s take a look at the how of testing.

This section of the lesson describes HIV testing options and alternatives, with an emphasis on how these options can:

- Encourage patients to accept recommended testing
- Ensure that patients receive their test results

2.10 HIV Tests

Tests for HIV include:

**Viral load test**
Viral load refers to the amount of virus present in a person's body. The viral load test is
used primarily to follow the course of a diagnosed HIV+ patient, and will be discussed in greater detail in the lesson on treatment of HIV.

**p24 antigen assay**

p24 is a detectable protein specific to HIV. The p24 antigen assay test is used primarily to screen donated blood for HIV.

**Antibody detection**

An antibody is a molecule produced by the body's immune system to fight infection. Antibodies are highly specific, targeting only specific pathogens, and they are produced only after the body has been exposed to a particular pathogen. The most reliable and most common way to determine a person's HIV-infection status is to look for antibodies specific to HIV.

The one drawback to this test is that most people infected with HIV do not develop detectable levels of anti-HIV antibody until three to six months after infection. This means that antibody tests performed less than three to six months after exposure may not reliable. The results of antibody tests performed six or more months after exposure should be definitive in most cases.

Click on each test in the list above to learn more about how and when each test is used.

**2.11 Antibody Testing Options**

Antibody testing options include:

- Standard testing
- Rapid testing
- Home collection with lab testing

Let's take a closer look at each.

**2.12 Standard Testing: Source of the Sample**

When present, HIV antibodies are detectable in:

- Venous blood
- Finger-prick blood
- Oral fluid
- Urine

Any of these bodily fluids may be used for the standard HIV antibody test, depending on:

- Patient preference
- Facility resources
Note: The ability to test urine or oral fluid provides options for patients reluctant to have blood drawn.

2.13 Standard Testing Steps 1 and 2: ELISA

Once a sample has been collected, the first test performed is an enzyme-linked immunosorbent assay (ELISA). This test also may be referred to as an enzyme immunoassay (EIA).

If HIV antibodies are not detected, the sample is non-reactive. The patient is considered HIV-negative.

The sample is reactive if HIV antibodies are detected. In this case, the sample must be retested in duplicate.

If either of the duplicate retests is reactive, the sample is reported as "repeatedly reactive". A more specific confirmatory test must be used, as described on the next screen.

2.14 Standard Testing Step 3: Western Blot

The most common confirmatory test is the Western blot. In rare cases, a test known as the immunofluorescence assay (IFA) may be used.

If a repeatedly reactive sample tests positive by Western blot or IFA (HIV antibodies are detected), the patient is considered HIV-positive.

If the results of the Western blot are negative or indeterminate, the patient should be retested after a month.

2.15 Standard Testing: Summary

2.16 Rapid Testing: Overview

As we have seen, the standard protocol for HIV antibody testing is lengthy. Test results are usually not available for several days.

In recent years, the U.S. Food and Drug Administration (FDA) has approved five different rapid HIV tests.

All five tests:

- Have been approved for testing blood samples
- Use a rapid ELISA method to test for HIV antibodies
- Can deliver results within an hour (some as quickly as ten minutes)

Note: In March 2004, the FDA approved one of the rapid tests for use with oral fluid samples, further expanding the options available to patients and providers.

2.17 Rapid Testing: Confirmation
Patients who test negative by rapid testing are considered HIV-negative and require no further testing. **All patients who test positive by rapid testing should have confirmatory testing by Western blot or IFA.** If the Western blot is negative or indeterminate, the patient should be retested after one month (as per standard protocol).

### 2.18 Rapid Testing: Advantages

Rapid HIV testing is useful in urgent medical situations, such as testing a pregnant woman during labor. If the woman tests positive, IV drugs may be started to help decrease risk of transmission to her baby during delivery. Rapid testing also is useful in clinical settings where patients tend not to return for their HIV test results (such as some STD clinics). Rapid tests ensure that these patients learn of their HIV-infection status, which may help decrease risky behaviors.

### 2.19 Home-Collection Kits with Lab Testing

There are more than a dozen different HIV home test kits advertised today. Only the Home Access test system is FDA approved and legally marketed in the United States. Home test kits allow patients to collect blood samples at home, and then send their samples to an approved lab for HIV testing. This is a useful option for patients who are reluctant to have testing performed at a healthcare facility (e.g., for reasons of embarrassment, shame, fear).

### 2.20 Review

Viral load remains low until six months after exposure. Some infected individuals do not develop detectable antibodies until six months after exposure. Viral RNA levels are often not detectable until at least six months after exposure. All of these are correct. None of these is correct. Select the answer that best fits the question.

### 2.21 Confidentiality and Anonymity

We have looked at:  
* **Who** should be tested for HIV  
* **How** HIV testing is performedNow let's discuss confidentiality of test results, and the option of anonymous testing.

### 2.22 Confidentiality of Test Results
Patient confidentiality is of paramount importance in all aspects of healthcare. Privileged patient information, such as HIV test results, should never be released to unauthorized individuals.

2.23 Limits of Confidentiality

When recommending HIV testing to your patients, inform each patient of your commitment to maintaining his or her confidentiality. At the same time, be certain that your patients understand the limits of confidentiality. Explain that confidentiality does not mean that only you and the patient will know the patient's test results. By law, states require one of the following:

Name-based reporting (47 states + District of Columbia) Name-based reporting
The patient's name is reported with the positive test result.

Code-based reporting (3 states) Code-based reporting
A coded identifier is substituted for the patient's name when reporting a positive test result. Click on each type of reporting to learn more about the implications for patient confidentiality.

2.24 Reporting Requirements: Implications

Be sure to familiarize yourself with the reporting requirements in your state. Inform your patients regarding whether positive results will be reported to the State Department of Health, and, if so, in what form. This may affect your patient's decision to be tested.

2.25 Anonymous Testing

In an anonymous test usually available through anonymous testing centers the patient's name is not associated with the test result. The patient is linked to the test result only through a coded identifier. The availability of anonymous testing, like reporting requirements, differs from state to state. As of February 2007:

- 37 states allow for either confidential or anonymous testing.
- 10 states allow for confidential, but not anonymous testing. Be sure to familiarize yourself with the laws and regulations governing anonymous testing in your state. If anonymous testing is available, inform your patients of this option.

2.26 Review

Confidential testing
Anonymous testing
Code-based reporting of confidential test results
No reporting requirement for confidential test results
Select the answer that best fits the question.

2.27 Summary

You have completed the lesson on HIV testing.
Remember:
Many HIV-infected people decrease their high-risk behaviors when they learn of their infection status.
Testing may be provided in a way that encourages patient acceptance.
HIV testing should be part of routine medical care for all patients.
HIV testing should be part of the routine medical care of all pregnant women.
The most reliable and most common way to determine a person's HIV-infection status is to look for antibodies to HIV.
Antibody testing options include: standard testing, rapid testing, and home collection with lab testing.
Know the laws and regulations governing HIV testing and reporting in your state.

This introductory lesson presented the course rationale and goals.
Lesson 2 will provide information on HIV testing.
Lesson 3 will discuss treatment of HIV.
Finally, lesson 4 will cover the prevention of HIV/AIDS, including best practices.

Treatment of HIV

3.1 Introduction & Objectives

Welcome to the lesson on treatment of HIV.
After completing this lesson, you should be able to:
List and discuss key baseline measurements for HIV-positive patients
List reasons for delaying drug treatment of HIV
List criteria for starting treatment after an initial delay
Recall the key characteristics of a HAART treatment regimen
Discuss patient compliance, including strategies for helping patients adhere to their treatment regimen
Discuss the monitoring of treatment

3.2 Baseline Measurements

Baseline measurements are important to establish the HIV-positive patient's initial status.
Key baseline measurements include:
**CD4 count**
CD4 count gives an indication of severity of infection, as well as status of the immune system.
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Viral load
Viral load is a measure of how much virus is present in the body. The two test methods for determining viral load are:

- HIV RNA amplification (or RT-PCR) test
- Branched chain DNA (bDNA) test

Both tests look for HIV genetic material (RNA or DNA) to estimate how many copies of the virus are present in the patient's body. Click on each measurement to learn more.

3.3 Other Baseline Tests

To further establish overall baseline health of an HIV-positive patient, the following tests may be appropriate:

- Complete blood count
- Blood chemistry profile (including liver function tests)
- Tests for other STDs
- Tests for other infections (e.g., hepatitis, tuberculosis, toxoplasmosis)

3.4 Follow-Up Testing

Once a baseline has been established:

- Viral load test should be repeated every three to four months.
- CD4 count should be repeated every three to six months. By comparing the results of later tests with the patient's baseline results, the clinician can:
  - Track the patient's status.
  - Track the progress of the infection.
  - Help the patient make an informed decision regarding when to start drug treatment.

The CDC (2002) states that CD4 counts should be used to determine when to start antiretroviral therapy instead of viral loads.

3.5 Drug Treatment

The drugs currently available to treat HIV do not cure the infection. They do, however, slow the progress of the infection, and help the patient stay healthy. For these purposes, anti-HIV drugs are useful at any stage of infection. Then why not start drug treatment right away for all HIV-positive patients, regardless of baseline CD4 count and viral load? Let's take a closer look on the following screen.
3.6 Delaying Drug Treatment (1)

Reasons for delaying drug treatment include the following:

- Once a patient has started drug treatment, he or she may need to continue treatment for the rest of his or her life.
- Many anti-HIV medications must be taken several times a day, at specific times, with or without food. This may require the patient to change meals or mealtimes, and/or make other disruptive changes in his or her life.
- Many anti-HIV medications have side effects. These can range from uncomfortable to extremely unpleasant to toxic.

3.7 Delaying Drug Treatment (2)

With the use of drugs, drug resistance can develop, limiting future treatment options. Testing for HIV resistance to antiretroviral drugs is a useful tool for guiding antiretroviral therapy. Genotyping assays can be done rapidly, and results can be reported within 12 weeks of sample collection. This is usually done in collaboration with an infectious disease specialist.

When considering the initiation of drug treatment, be sure to discuss all of these issues with patients.

3.8 Starting Drug Treatment

3.9 Available Drugs

Once a patient decides to initiate drug treatment, what drugs are available? As of this writing, over 20 medications have been approved by the FDA for the treatment of HIV.

All of the approved medications are antiretroviral drugs. These drugs interfere with the reproduction of HIV, slowing progression of the disease.

3.10 Drug Choice

The U.S. Department of Health and Human Services (DHHS) provides HIV treatment guidelines. These guidelines are updated regularly, and may be found at http://aidsinfo.nih.gov/guidelines/.

Currently, the recommended regimen for treatment of HIV uses a combination of three or more drugs, administered in a regimen known as HAART: Highly Active AntiRetroviral Therapy.

The preferred HAART regimens use one of the following two combinations of drugs:

- Sustiva + Epivir + (Retrovir or Viread or Zerit)
- Kaletra + Epivir + (Retrovir or Zerit)

A 28-day course of HAART should be considered for a person seeking care ?72 hours after nonoccupational exposure to blood, genital

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secretions, or other potentially infectious body fluids of a person known to be HIV infected.

3.11 Alternative Regimens

The DHHS guidelines provide many alternative HAART regimens, in addition to the two preferred HAART combinations. It is critical to tailor the regimen to the individual patient and his or her lifestyle and limitations. Factors to consider when planning a treatment regimen include:

- Patient travel, sleep, and eating schedule
- Other patient medications
- Other patient conditions, including pregnancy

3.12 Review

CD4 count and viral load
Herpes screening and TB test
Toxoplasmosis screening and hepatitis test
Complete blood count and liver function tests
Select the answer that best fits the question.

3.13 Importance of Compliance

When planning a treatment regimen, be sure to consider the issue of patient compliance. Compliance is critical. If patients miss doses:

- Drugs may not be effective in decreasing viral load.
- HIV may mutate to develop resistance to one or more of the prescribed drugs.

3.14 Promoting Compliance

To help promote compliance, explain the consequences of poor adherence to your patient. Then:

- Discuss factors and challenges that may put the patient at risk for poor adherence.
- Address identified risk factors and challenges. Let's take a closer look.

3.15 Risk Factors for Poor Adherence

Risk factors for poor adherence can include the following:
The complexity of the drug regimen (i.e., many pills, many medication times, restrictions on taking drugs with or without food)
- Unpleasant medication side effects (e.g., nausea)
- Sleeping through doses
- Traveling away from home
- Being too busy to take all doses
- Feeling sick or depressed
- Forgetting about doses
- Other personal issues that may affect compliance, such as substance abuse, unstable housing, or mental illness

Be certain to ask patients whether they anticipate difficulties associated with any of these factors.

3.16 Addressing Challenges

After discussing potential challenges with a patient, recommend and discuss potential solutions. Depending on the patient, some or all of the following may be appropriate:

- Help the patient arrange a medication schedule around his or her usual routine.
- Give the patient a written copy of the medication plan, listing each medication and its specifications (when and how much to take, with food or on an empty stomach).
- Encourage the patient to take his or her medications at the same times each day.
- Suggest that the patient start each week by placing the week's supply of pills in a labeled pillbox.
- Suggest the use of timers, alarm clocks, and/or pagers to remember doses.

3.17 Addressing Challenges

Additional possibilities for addressing challenges and promoting compliance include:

- Advise the patient to keep his or her medication where it will be taken (home, office, etc.)
- Suggest a backup supply to be kept at the workplace or in a briefcase or purse
- Recommend that the patient keep a medication diary, listing each dose in a daily planner, and checking each dose off after taking it
- Remind the patient to plan ahead for weekends, holidays, travel, and other changes in routine
- Encourage the patient to develop a support network of friends, family members, and workmates, to act as "dose reminders"
- Remind the patient to monitor his or her medication supply, and to contact you if his or her medications will not last until the next scheduled visit

3.18 Monitoring Treatment: Viral Load
Once a patient has started on HIV drug treatment, it is important to monitor his or her progress. The most important indicator of progress is viral load.

Viral load should be tested:

- Two to eight weeks after the start of treatment
- Every three to four months thereafter, throughout treatment.

As treatment progresses, viral load should decrease. Within four to six months, viral load should reach

3.19 Monitoring Treatment: CD4 Count and Overall Health

In addition to decrease in viral load, other indicators of treatment progress include:

- CD4 count
- Overall health

CD4 count should be tested every three to six months throughout treatment, and should remain stable or go up. Overall health should remain good.

3.20 Need for Changes in Treatment Regimen

At any point in the course of treatment, a patient's drug regimen may need to be changed. The two primary reasons for changing a drug regimen are:

**Drug toxicity**
Drug toxicity occurs when a patient experiences severe side effects from a drug. If the side effect cannot be treated, one or more drugs in the patient's regimen may need to be changed.

**Regimen failure**
Regimen failure occurs when a patient's drugs are not effective in treating HIV infection. For example:

- Viral load does not drop to undetectable levels.
- Viral load increases after an initial decrease.
- The patient develops an HIV-related infection.
- CD4 counts do not increase as expected.

Let's take a closer look at each.
3.21 Regimen Change: What to change

Should the entire regime be changed or only the problem drug? Ideally, all three drugs should be changed, to decrease the risk of development of drug resistance. If all three drugs cannot be changed, change at least two.

Selection of new medications should be based on:

- Patient medication history
- Potential medication side effects
- Results of drug-resistance testing

3.22 Review

True
False
Select the answer that best fits the question

3.23 Summary

You have completed the lesson on treatment of HIV.

Remember:

- Key baseline measurements (especially CD4 count and viral load) are important to establish an HIV-positive patient's initial status.
- Once a baseline has been established, tests should be repeated periodically to monitor the patient and help determine when to start drug treatment.
- Although drug treatment can help a patient from the moment of infection, there are a number of reasons for delaying drug treatment until clinically indicated (i.e., through symptoms, CD4 count, or viral load).
- HIV drug treatment slows the progress of the disease, but does not cure HIV.
- Current DHHS HIV treatment guidelines recommend the use of HAART: Highly Active Anti Retroviral Therapy, using three or more anti-HIV drugs.
- If patients do not comply with their treatment regimen, the drugs may not be effective in decreasing viral load, and drug resistance may develop.
- Be sure to examine each patient's risk factors for poor adherence, then recommend and discuss potential solutions for each challenge.
- With effective anti-HIV drug treatment, viral load should reach undetectable levels within four to six months. Even when virus is undetectable, the patient is still infectious.
- Drug regimen change may be necessary. If the regimen must be changed, ideally, all three drugs should be changed, to reduce risk of drug resistance.

Preventing HIV Exposure and Infection

4.1 Introduction & Objectives
Welcome to the lesson on preventing HIV exposure and infection.

After completing this lesson, you should be able to:

- Discuss strategies for helping patients to prevent sexual exposure to and transmission of HIV.
- Discuss strategies for helping patients prevent exposure to and transmission of HIV through injection-drug use.
- Recall ways to protect yourself from occupational exposure to HIV.

4.2 Educating and Counseling Patients

As you learned in the course **HIV: Pathology and Epidemiology**, three high risk modes of transmission for HIV are:

- Unprotected sex (oral, anal, vaginal)
- Sharing syringes
- Mother-to-child

Let's take a look at educating patients with regard to preventive strategies for each.

4.3 Sexual Transmission

With regard to preventing sexual transmission of HIV, only two methods are 100% effective:

- Sexual abstinence
- Sexual activity only in the context of a long-term, mutually monogamous relationship with an HIV-negative partner

For some of your patients, these may be realistic recommendations. For other patients, however, you will need to provide information on how to make short-term and/or non-monogamous sexual relationships safer.

4.4 Safer Sex Practices

Safer sex practices include:

- Using latex condoms
- Having fewer partners
- Having less risky partners

On the following screens, let's take a closer look at educating patients with regard to each of these safer sex practices.
4.5 Safer Sex: Latex Condoms

According to the CDC:
Latex condoms, when used consistently and correctly, are highly effective in preventing the sexual transmission of HIV, the virus that causes AIDS.
Be sure patients understand the significance of "consistent" and "correct" use.
If necessary, be prepared to describe/demonstrate the correct use of condoms.

4.6 Latex Condoms: Specific Risk-Reduction Goals

As indicated on the previous screen, patients need to understand that latex condoms are only "highly effective" in preventing the transmission of HIV if used correctly, with every act of intercourse.
At the same time, "always use condoms" may not be a realistic goal for some patients.
With regard to encouraging condom use, focus on each patient's unique circumstances and risk, and help each patient set concrete, realistic goals. (See image to the right for examples.)

4.7 Safer Sex: Fewer/Less Risky Partners

Risk of HIV infection increases with:

- More sex partners
- Riskier sex partners (e.g., injection-drug users)

As with condom use, focus on each patient's unique circumstances and risk, and help each patient set concrete, realistic goals related to having fewer and/or less risky sex partners.

4.8 Transmission Through Sharing Needles

For injection-drug users, the safest practice is to stop using injection drugs.
As with sexual abstinence, however, abstinence from drug use may not be a realistic goal for many patients who use injection drugs.
Again, the key is to focus on each patient's specific circumstances and risk, and help each patient set concrete, realistic goals for change.
For example:

- Contact a drug treatment center and make an appointment.
- Obtain clean works (needles, etc) tomorrow, so you have them before you use next time.

4.9 Needle-Sharing and State Law

Patients who cannot or will not stop injecting drugs should consistently use sterile equipment.
As of 2003, 33 states supported sterile syringe exchange programs, either directly or indirectly:

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- Directly: State statute explicitly authorizes exchange programs.
- Indirectly: State law does not forbid exchange programs.

Be aware of the laws in your state, and inform patients accordingly.

4.10 Mother-to-Child Transmission

As you learned in lesson 3, the CDC recommends that HIV testing should be offered to all pregnant women.

If a pregnant woman tests positive, she has the option of a three-part, one-drug regimen, to reduce the risk of transmitting HIV to her child during pregnancy, labor, or delivery. This regimen uses the drug AZT (Retrovir), and involves:

- Oral AZT, starting at 14 to 34 weeks of pregnancy
- Intravenous AZT (IV) during labor and delivery
- Liquid AZT, administered to the baby every six hours, for the first six weeks of life

This three-part AZT regimen lowers the risk of mother-to-child transmission by almost 70%.

4.11 Review

4.12 Occupational Exposure

Now that you know how to help protect your patients from HIV exposure/infection, let's take a look at reducing your risk.

4.13 Bloodborne Pathogens Standard

OSHA issued the Bloodborne Pathogens Standard in 1992, to help protect workers from HIV and other bloodborne infections.

The Standard was revised in 2001, to meet the requirements of the newly passed Needlestick Safety and Prevention Act.

The Bloodborne Pathogens Standard:

- Covers any worker who can reasonably expect to come in contact with blood or other potentially infectious materials as part of his or her job
- Requires employers to take certain steps to help ensure the safety of such workers

4.14 Standard Precautions
As one of its key provisions, the Bloodborne Pathogens Standard mandates the use of Standard Precautions. According to Standard Precautions, healthcare workers should:

- Assume that all blood and other bodily fluids are potentially infectious
- Use barrier protection (gloves, face shield, protective clothing, etc.) at appropriate times to prevent skin and mucous membrane contamination with patient blood and other bodily fluids
- Wash hands and/or other skin surfaces immediately and thoroughly if contaminated with patient blood or other bodily fluids
- Wash hands immediately after glove removal
- Avoid accidental injury from needles, scalpel blades, and other sharps
- Dispose of used needles and other sharps appropriately

**4.15 Provisions for Occupational Exposure**

Your facility should have policies and protocols in place, to respond to an occupational exposure. These protocols should allow for:

- Prompt reporting of any potential exposure
- Evaluation of the exposed worker
- Counseling and treatment for the exposed worker
- Follow-up care and evaluation of the exposed worker

Let's take a closer look at each.

**4.16 Reporting Exposure**

Any unprotected worker exposure to patient blood or other potentially infectious bodily fluids should be reported immediately.

Policies and procedures should be in place to facilitate:

- Prompt reporting
- Prompt response to all reports of exposure

**4.17 Evaluation**

PEP should be considered when serious exposure is suspected as a result of:

- Exposure to a large amount of blood
- Blood came in contact with cuts or open sores on the skin
- Blood was visible on a needle that stuck someone
- Exposure to blood from someone who has a high viral load (a large amount of virus in the blood)
4.18 Counseling and Treatment (1)

In 2002, the CDC approved, OraQuick, a Rapid HIV-1 antibody test. It is able to detect HIV in finger stick whole blood specimens. The results are available in 20 minutes.

- If the results are negative, it's recommended that a re-test be scheduled in 3 months.
- If the test is positive, in 3 months the Western Blot or immunofluororecence assay should be done to confirm test results.
- The exposed worker should be counseled regarding recommendations for post-exposure prophylaxis (PEP): drug treatment to prevent HIV infection after a known exposure.

4.19 Counseling and Treatment (2)

Prompt initiation of PEP (i.e., PEP initiated within hours of exposure) can reduce the rate of infection in health care workers exposed to HIV by 79%.

For most HIV exposures, recommended PEP consists of two antiretroviral drugs for four weeks:

- Combivir® (AZT and 3TC in one pill) or
- Combivir® plus Crixivan® An "expanded" three-drug regimen may be recommended for exposures with increased risk of transmission. For example:
  - A severe percutaneous exposure from an HIV-positive source with a known high viral load
  - Counseling is necessary to help the exposed worker weigh the risk of transmission against the potential toxicity of the PEP drugs.

4.20 Follow-Up

The exposed worker should have periodic HIV antibody testing for at least six months after the exposure, to monitor for seroconversion (i.e., development of HIV antibodies). The worker also should receive information on how to prevent potential secondary transmission of the virus.

For example, especially in the first six to twelve weeks after exposure, the patient should:

- Refrain from sex or use a latex condom for every act of intercourse
- Refrain from donating blood, plasma, organs, tissues, or semen
- Consider discontinuing breastfeeding (if applicable)
4.21 Review

The Standard mandates the use of Universal Precautions (now Standard Precautions). The Standard helps protect healthcare workers from exposure to HIV. The Standard places the burden of prevention on the worker, and does not specify requirements for employers. The Standard protects any worker who can reasonably expect to come in contact with blood or other potentially infectious materials as part of his or her job. Select the answer that best fits the question.

4.22 Review

True
False
Select the answer that best fits the question.

4.23 Summary (1)

You have completed the lesson on prevention.

Remember:

- To prevent sexual transmission of HIV, only two methods are 100% effective: sexual abstinence or mutual monogamy with an HIV-negative partner.
- For patients who are not abstinent or in mutually monogamous relationships, correct and consistent use of latex condoms is a highly effective method for preventing transmission of HIV.
- Risk of HIV infection decreases with fewer sex partners and less risky sex partners.
- For injection-drug users, the safest practice is to stop using injection drugs. Patients who cannot or will not stop injecting drugs should be counseled regarding the importance of using sterile equipment.
- When counseling patients on HIV-risk reduction, it is important to 1) focus on each patient's unique circumstances and risk; 2) avoid global or generic advice; and 3) help the patient set concrete, realistic goals for reducing risky behaviors.
- HIV-positive pregnant women have the option of a three-part, one-drug regimen to reduce the risk of transmitting HIV to their babies during pregnancy, labor, or delivery. This regimen lowers the risk of mother-to-child transmission by almost 70%.
- Be aware of state laws and regulations that may affect how you counsel patients regarding risk-reduction strategies.

4.24 Summary (2)
- OSHA's Bloodborne Pathogens Standard helps protect workers from HIV and other bloodborne pathogens.
- The Bloodborne Pathogens Standard mandates the use of Universal (now Standard) Precautions.
- Healthcare workers who suffer an occupational exposure to patient blood or other potentially infectious bodily fluids have the option of post-exposure prophylaxis (PEP) to help prevent HIV infection.
- In considering PEP, risk of transmission/infection (i.e. severity or volume of exposure and source of exposure) must be weighed against potential toxicity of PEP drugs.
- Exposed workers should have periodic HIV antibody testing, and should receive counseling on how to prevent secondary transmission of the virus.

Thank you for your participation in this program. Please complete the post test and email your answer sheet to info@suncoastseminars.com or print hem out and mail it to:

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