

# Module One: Introduction, Background, and Rationale

Total time for this module: 1 hour, 30 minutes

## Training Objectives

- Participants will learn the basics of HIV and AIDS, how HIV is transmitted, progression of the disease, laboratory diagnosis, and treatment of HIV.
- Participants will understand the reasons why TB patients need to be tested for HIV, including—
  - The relationship between HIV and TB;
  - The medical benefits of clinicians knowing their patients have both HIV infection and TB disease;
  - The benefits of HIV-infected patients' knowing their status so that they may get care and treatment and prevent the spread of HIV.
- Participants will understand the reasons why TB clinics are ideal places for providing provider-initiated and delivered HIV testing and counseling (PTC).
- Participants will understand some of the challenges that TB clinics may face in providing this new service to their patients and ways to overcome the challenges.

## Advance Preparation

- Prepare overheads (or use the PowerPoint presentation):
  - Overhead 1-1: Overview of HIV Infection
  - Overhead 1-2: What is HIV?
  - Overhead 1-3: What is AIDS?
  - Overhead 1-4: HIV vs. AIDS
  - Overhead 1-5: How Is HIV Transmitted?
  - Overhead 1-6: How Is HIV Transmitted? (2)
  - Overhead 1-7: HIV Is Not Transmitted
  - Overhead 1-8: HIV: A Global Pandemic
  - Overhead 1-9: HIV Epidemic in (country name)
  - Overhead 1-10: HIV Epidemic in (country name) (2)
  - Overhead 1-11: HIV Epidemic in (country name) (3)
  - Overhead 1-12: How Does HIV Cause Illness?
  - Overhead 1-13: HIV Disease Progression
  - Overhead 1-14: HIV Disease Progression (2)
  - Overhead 1-15: HIV Disease Progression (3)
  - Overhead 1-16: WHO HIV/AIDS Classification System
  - Overhead 1-17: Laboratory Diagnosis of HIV
  - Overhead 1-18: Basic Terms for Understanding HIV Rapid Tests
  - Overhead 1-19: Structure of HIV
  - Overhead 1-20: Window Period
  - Overhead 1-21: Laboratory Tests Used to Monitor Disease Progression and Response to Therapy
  - Overhead 1-22: When CD4 Cell Counts Not Available
  - Overhead 1-23: Can Disease Progression Be Delayed?
  - Overhead 1-24: Reasons to Test TB Patients for HIV
- Have name tents or name tags ready for the participants.

- Prepare newsprint with the points for the participants' introductions.
- Prepare newsprint for listing participants' expectations of the training.
- Prepare newsprint with ground rules. Leave space for additional ground rules the participants may want to add.
- Prepare newsprint with the title, "Parking Lot."
- Have newsprint ready to capture responses from the participants on the issues of why TB clinics are ideal for HIV testing and counseling and challenges posed by offering HIV testing and counseling.

### **Overview of Module One**

In Module One, the trainer will make the participants feel welcome. Participants will get to know each other a little better through self-introductions that include some information about each person's work history.

The trainer will go over ground rules for participating and general housekeeping issues before covering the goals of the training session.

After these introductory issues, the trainer will cover the basics of HIV and the reasons why it is important to conduct PTC for HIV in TB patients. Participants will brainstorm why TB clinics are good places to do PTC and what some of the challenges are.

## Welcome and Introductions

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**8:30 – 9:15 AM**

**Welcome. My name is ....**

**We are here today to start training on incorporating HIV testing and counseling in TB clinical settings. This training will go through the next 4 days.**

*Ask participants to write their names on name tents or name tags.*

**Before we get started, I would like you to write your name on the table tent in front of you. We will begin with introductions and getting to know each other a little better.**

**Then we will briefly go over what will be covered in this training.**

**Welcome by  
the Host**

*Ask the representative of your host organization to formally welcome the participants (if applicable) and briefly address the importance of learning how to incorporate HIV testing and counseling into TB clinics.*

*You can suggest that the host include basic information about HIV/AIDS and TB in their district or country and the reasons why WHO and UNAIDS so strongly recommend this initiative.*

*If your host is not available, consider making this presentation yourself.*

**Introductions**

*Introduce yourself briefly. Include your educational background, your experience in HIV counseling and testing, TB, or with this training, and your knowledge and history of the geographic area.*

*Have co-trainers introduce themselves with the same information.*

*Write the bulleted items that follow on newsprint to remind people what to include in their introductions.*

*As the participants introduce themselves, prompt them for any part of the introduction that they omit.*

*Write on newsprint the goals and expectations the participants mention and post it in a visible place in the room.*

**Let's go around the room and have each of you introduce yourself to the group. I would like you to include the following information in your introductions:**

- **Name**
- **Agency or organization**
- **Your role or position in your organization**
- **The amount of time you have worked in this position or in working with TB patients**
- **What you hope to learn from the training (expectations)**

*Acknowledge the group's experience and commitment they bring to the training.*

## **Ground Rules**

*Display the newsprint titled "Ground Rules."*

*Post the ground rules in an obvious place. Make sure the suggestions in the script in the right column appear on the completed list. If participants do not bring them up, suggest them yourself.*

*You might make comments about any of the ground rules to clarify. For examples of some of these, see accompanying script.*

*An important ground rule for the trainer to remember is to stay organized with materials, time, and structure of the course. You should model this in every way, giving participants a visual of your structured and focused approach to training.*

**To help everyone meet their goals and objectives for the training, we should go over some ground rules that will help the class run smoothly and keep discussions open and comfortable.**

**These ground rules will be posted throughout the entire training and should be kept in mind at all times.**

**Actively participate:** This training should be viewed as an opportunity to learn and practice new skills. To be successful in this class requires that you make a commitment to actively participate.

**Silence cell phones.** Cell phones, even in vibration mode, are very distracting to the class. Talking on the cell phone means that the person misses part of the training. People should return calls during breaks, at lunch, or the end of the day.

**Manage time and stay on task:** Because there is so much material to cover, staying on task and on time is extremely important. I will do my best to keep track of time, but everyone is responsible for arriving on time at the start of class and after breaks. I encourage discussion and questions, but recognize that sometimes I will have to cut discussion short to move on with the material.

**Listen to and respect all opinions:** Participants may differ in their ideas and may disagree on certain issues. By respecting all ideas and opinions we can learn about subjects from different angles. Thinking about issues from all sides will help counselors understand their clients and the issues better.

**No side conversations or “class within a class.”** One way to show respect to the rest of the people in the class is not to have side conversations with the people around you. Besides being distracting, you miss what the class is discussing.

**Honor confidentiality:** It is extremely important to make sure that everyone feels comfortable sharing experiences in this class. Personal stories that people share should stay in this class. Do not make assumptions about a person’s character according to their gender, age, economic situation, or race.

**HIV and all of us:** HIV testing and counseling can be an emotional topic. None of us are untouched by the HIV pandemic. Some of us may have a loved one who is living with HIV/AIDS, or who has died from the disease. Some of us may be HIV positive. Let’s remember to talk respectfully about persons living with HIV/AIDS. It affects all of us.

**Have fun:** This training is an opportunity to learn new skills, share ideas, and meet new people in a comfortable setting.

**Do any of you have any suggestions for additional rules or guidelines for the class to follow?**

*Acknowledge any additional ground rules and include them on the newsprint.*

*Place the newsprint titled “Parking Lot” on the wall.*

*At the end of the day or anytime before the end of the training course, you should address the issues that are listed on this newsprint.*

**Throughout this training course, this newsprint will stay on the wall. If we cannot cover issues that you raise at the time they are brought up, we will write them on the newsprint.**

**Parking Lot –  
Issues to  
Return to Later**

**These can be issues that are not directly related to what we are discussing at the moment. Or they can be relevant, but we've run out of time and need to remember to address them later. We will address these either at the end of the day or before the course ends.**

***Housekeeping***

*Go over housekeeping details, such as location of the toilets, phones, emergency exits, security issues, parking, and any other housekeeping details that may need to be discussed including issues of reimbursements and/or payments for participation in the training.*

## Training Goals and Overview

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9:15 – 9:25 AM

Over the next few days we will be learning a great deal about HIV and TB and how to test for HIV in TB clinical settings. UNAIDS and the World Health Organization consider this so important that they have developed recommendations for HIV testing and counseling of all TB patients.

This course is designed to help you implement these recommendations. By the end of the course, you will understand—

- The reasons why TB patients need to be tested for HIV, including:
  - The relationship between HIV and TB
  - The medical benefits of providers knowing their patients have both HIV infection and TB disease
  - The benefits of HIV-infected patients knowing their status so that they may get care and treatment and prevent the spread of HIV
- You will understand the reasons why TB clinical settings are ideal places for providing HIV testing and counseling.
- You will understand some of the challenges that TB clinical settings may face in providing this new service to their patients and ways to overcome the challenges.
- You will learn how to guide your patients through the HIV testing process. This includes explaining the importance of knowing HIV status, how the test is conducted, and delivering the results of the test to the patient.

Let's look again at the expectations each of you mentioned when you introduced yourselves.

*Refer back to the expectations that the participants mentioned and which are listed on newsprint. Indicate what will be covered in the training and when that will happen. If someone brings up a topic that will not be covered, say why this is not part of the training or talk with the person separately about where this information might be acquired.*

## Overview of HIV Infection

9:25 – 10:00 AM

### Overhead 1-1

#### Overview of HIV Infection

This module will cover:

- The difference between HIV infection and AIDS
- How HIV is transmitted
- The HIV pandemic
- How "window period" may affect HIV testing results
- The progression of HIV infection

Overhead 1-1

**Before we begin our training on providing HIV testing and counseling in TB clinics, we will take a few minutes to cover some basic information about HIV infection.**

- **We will cover what HIV is, what AIDS is, and the difference between HIV and AIDS.**
- **Next we will describe how HIV is transmitted.**
- **We will talk about the numbers of people who are HIV-infected in different parts of the world and the impact of HIV in our country.**
- **We will explain how the window period may affect HIV testing results.**

### What is HIV and AIDS?

### Overhead 1-2

#### What is HIV?

- **H**uman: Infecting human beings
- **I**mmunodeficiency: Decrease or weakness in the body's ability to fight off infections and illnesses
- **V**irus: A pathogen (germ) having the ability to replicate only inside a living cell

Overhead 1-2

**HIV stands for Human Immunodeficiency Virus. It is the virus that causes AIDS. The virus is called HIV because:**

- **It infects HUMANS**
- **It weakens the IMMUNE system, which is an important system in the body for fighting off infections and illnesses.**
- **It is a VIRUS, which is a pathogen or germ that reproduces itself inside a living cell.**

Overhead 1-3

**What is AIDS?**

- **A**cquired: To come into possession of something new
- **I**mmune **D**eficiency: Decrease or weakness in the body's ability to fight off infections and illnesses
- **S**yndrom**e**: A group of signs and symptoms that occur together and characterize a particular abnormality

**AIDS is the final stage of the disease caused by infection with a type of virus called HIV.**

Overhead 1-3

**HIV infection leads to a weakened immune system, making a person with HIV vulnerable to a group of illnesses, called opportunistic infections. Healthy people are not so easily affected by these infections.**

**AIDS results when HIV infection progresses to an advanced stage, damaging the immune system to a point at which the body can no longer fight illness.**

**AIDS is a syndrome because it is characterized by a group of illnesses.**

**Drugs are available that can treat HIV and AIDS. These drugs are called antiretrovirals or ARVs. They prevent the virus from replicating and slow the progress of the disease, but there is still no cure for AIDS or vaccine to prevent HIV transmission.**

Overhead 1-4

**HIV vs. AIDS**

- HIV is the virus that causes AIDS
- Not everyone who is infected with HIV has AIDS
- Everyone with AIDS is infected with HIV
- AIDS is result of progression of HIV infection
- Anyone infected with HIV, although appearing healthy, can still transmit the virus to another person

Overhead 1-4

**In summary, HIV is the virus that causes AIDS. Not everyone who is infected with HIV has AIDS. However, everyone with AIDS is infected with HIV. This is because AIDS is the result of the progression of HIV infection.**

**And a very important fact is that anyone infected with HIV can still transmit the virus to another person—even though they appear healthy.**

**How Is HIV Transmitted?**

**Overhead 1-5**

**How is HIV Transmitted?**

- Unprotected sexual contact with an infected partner
- From HIV-infected mother to infant during pregnancy, labor and delivery or breastfeeding
- Transfusion with HIV-infected blood



Overhead 1-5

**It is very important for you to understand how HIV is transmitted as you learn how to counsel your patients who will be tested for HIV. Part of HIV testing and counseling is providing your patients who test HIV-positive with information about not spreading HIV to their partners and also counseling those who are HIV-negative about how to remain uninfected.**

- **People can be infected with HIV by having unprotected sex with an infected partner. Unprotected sex is sex that does not involve the correct use of a condom.**
- **HIV can be transmitted from mothers to their babies during pregnancy, labor and delivery, or through breastfeeding.**
- **People can also be infected during a transfusion with HIV-infected blood.**

**Overhead 1-6**

**How Is HIV Transmitted?<sup>(2)</sup>**

- Exposure of broken skin or wound to infected blood or bodily fluids
- Injection using needles or syringes contaminated with HIV
- Accidental cuts in a hospital setting with contaminated sharp instruments



Overhead 1-6

**Other ways to become infected include:**

- **Exposing an uninfected person's broken skin or wound to blood or bodily fluids that are infected**
- **Using needles or syringes contaminated with HIV**
- **Accidental cuts in a hospital setting with sharp instruments contaminated with HIV**

Overhead 1-7

**HIV Is Not Transmitted**

- Casual contact such as sharing food, shaking hands, hugging, “dry” kissing
- Airborne exposure via person who is coughing or sneezing
- Being a blood donor (giving blood)  
– (although receiving a transfusion of HIV-infected blood is a source of transmission)

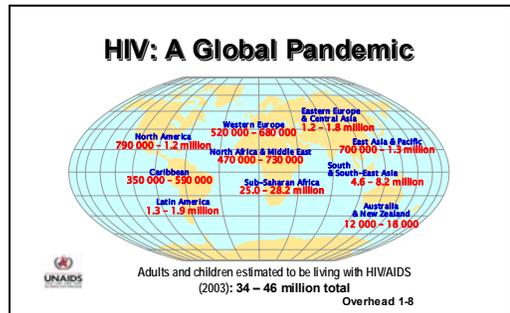
Overhead 1-7

**HIV is not transmitted through:**

- **Casual contact such as sharing food, shaking hands, hugging, or “dry” kissing**
- **Airborne exposure via a person who is coughing or sneezing**
- **Being a blood donor or by giving blood—**  
**Although receiving a transfusion of HIV-infected blood can be a source of transmission**

**HIV: A Global Pandemic**

Overhead 1-8



**This slide produced by UNAIDS is familiar to many of you and provides estimates for the numbers of persons living with HIV on different continents. A total of between 34 and 46 million persons live with HIV. Most of these live in Africa. HIV infection is a worldwide epidemic—a pandemic—affecting people everywhere.**

**HIV in Your Country**

**Overhead 1-9**

**HIV Epidemic in [country name]**

- [percentage] of 15– to 49-year-olds HIV-infected
- Thus [number of] people living with HIV/AIDS (PLWHA)
- UNAIDS estimates [number of] deaths due to HIV/AIDS by the end of [year]

Overhead 1-9

*This slide is a template for you to add in your own country data. These data can be found at [www.unaids.org](http://www.unaids.org). Click on “geographical area,” then select “by country.” You will see a list of countries. Click on your country of interest.*

**Overhead 1-10**

**HIV Epidemic in [name of country]**

- Causes of HIV transmission
  - [percentage] through heterosexual contact
  - [percentage] through homosexual contact
  - [percentage] through drug injection
  - [percentage] through blood transfusion

Overhead 1-10

*This slide is a template for adding your country’s data about causes of HIV transmission. You may use exact percentages from epidemiologic data from your country, or you may use words such as “mostly,” “mainly,” or “rarely.” If you can’t find this data, you may omit this slide, or add other epidemiologic data.*

**Overhead 1-11**

**HIV Epidemic in [name of country]**

- [percentage] of TB patients that are HIV-infected
- TB is a leading cause of mortality among AIDS patients
  - TB causes [percentage] of all AIDS deaths

Overhead 1-11

*This slide is a template for adding your country data. You may omit this slide if you cannot find these data.*

**HIV Disease  
Progression**

**Overhead 1-12**

**How Does HIV Cause Illness?**

- HIV invades the CD4 cell.
- CD4 cells are the body's soldiers for fighting infections and illnesses.
- CD4 cells die off slowly over a period of months to years.
- As the number of CD4 cells declines, the body is less and less able to fight off infections and is said to become immune-suppressed.

Overhead 1-12

**HIV invades a specific type of cell within the immune system called the CD4 cell. These cells are the body's soldiers for fighting infections and illnesses.**

**The CD4 cells die off slowly over a period of months to years. As the number of CD4 cells declines, the body is less and less able to fight off infections, and is said to become immune-suppressed.**

**Overhead 1-13**

**HIV Disease Progression**

- HIV infection generally does not cause AIDS or death immediately.
- People can be infected for many years before becoming ill.
- However, even if they are healthy, infected people can transmit HIV to others.

Overhead 1-13

**HIV infection generally does not cause AIDS or death immediately.**

**People can be infected for many years before becoming ill.**

**However, even if they appear healthy, infected people can transmit HIV to others.**

**WHO Clinical Stages of HIV**

**Overhead 1-14**

**HIV Disease Progression**

HIV disease progression has been classified into 4 clinical stages by WHO

- WHO Clinical Stage 1
  - No symptoms or generalized lymphadenopathy
- WHO Clinical Stage 2
  - Minor skin problems, herpes zoster within 5 years, recurrent upper respiratory tract infections, weight loss less than 10% body weight

Overhead 1-14

**HIV disease progression has been classified into 4 clinical stages by WHO.**

**WHO Clinical Stage 1:**

**Patients have no symptoms or may have generalized lymphadenopathy.**

**WHO Clinical Stage 2:**

**Patients may have any of these symptoms: minor skin problems, herpes zoster within 5 years, recurrent upper respiratory tract infections, weight loss less than 10% body weight.**

**Overhead 1-15**

**HIV Disease Progression**

- WHO Clinical Stage 3
  - Weight loss more than 10% body weight, pulmonary TB, oral candidiasis (thrush), severe bacterial infections (pneumonia), others
- WHO Clinical Stage 4
  - Wasting syndrome, *Pneumocystis carinii* pneumonia, toxoplasmosis of brain, Kaposi's sarcoma, lymphoma, extrapulmonary TB, extrapulmonary cryptococcosis, others

Overhead 1-15

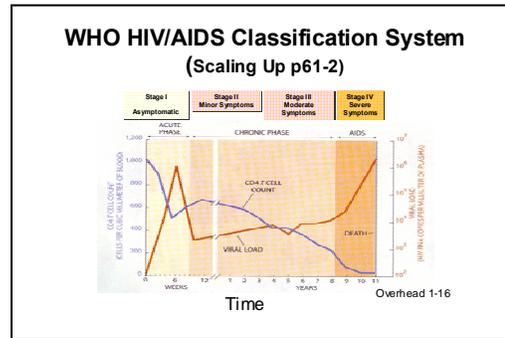
**WHO Clinical Stage 3:**

**Patients in this stage experience weight loss more than 10% body weight, pulmonary TB, oral candidiasis (thrush), severe bacterial infections (pneumonia), and other diseases.**

**WHO Clinical Stage 4:**

**This is the end-stage of HIV disease which is often called AIDS. In this stage, patients experience wasting syndrome, *Pneumocystis jiroveci* pneumonia (PCP), toxoplasmosis of brain, Kaposi's sarcoma, lymphoma, extrapulmonary TB, extrapulmonary cryptococcosis, and other diseases.**

Overhead 1-16



This slide summarizes HIV disease progression. Across the top of this graph, you will see the WHO stages, and how they relate to what is happening in the body.

The graph indicates the level of CD4 cells (blue line—colors are on the PowerPoint slide) and the viral load or amount of virus in the blood (red line) over the average life span of an HIV-infected patient. As we said before, infected people can live many years after becoming HIV-infected.

The first weeks after primary infection are associated with a rapid increase in the amount of virus in the body and a significant drop in the number of CD4 cells. Over the course of HIV infection, the CD4 cells (blue line) gradually decrease and are very low at the time of death.

The viral load increases rapidly at first, but declines as the body is able to initially fight the virus. However, in the chronic phase, the viral load increases as the CD4 cells decline. The viral load is very high at the time of death.

**Laboratory  
Diagnosis of HIV  
and the Rapid  
Test**

Overhead 1-17

**Laboratory Diagnosis of HIV**

- Blood or oral fluid tests that measure antibody to the virus
- Rapid antibody tests

Overhead 1-17

The most common laboratory tests used to diagnose HIV infection detect antibodies to the virus that are present in the blood or oral fluid.

Antibodies are proteins produced by the body to fight infections. When someone is infected with HIV, their body

**makes antibodies to the virus, which can be measured with blood tests.**

**The tests used to measure these antibodies are called “rapid tests” because they can be performed in a matter of minutes.**

**Overhead 1-18**

**Basic Terms for Understanding  
HIV Rapid Tests**

- **Antigen:** A substance which is recognized as foreign by the immune system. Antigens can be part of a virus, e.g., envelope, core (p24); antigens trigger antibody production.
- **Antibody:** A protein (immunoglobulin) made by the body's immune system to recognize and attack foreign substances.

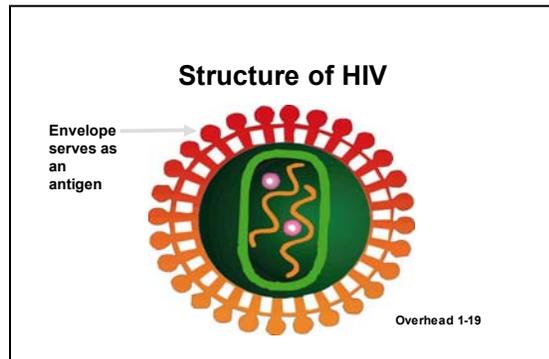
Overhead 1-18

**Before you can understand how rapid tests work, there are 2 terms that you need to know:**

**Antigen:** A substance which is recognized as foreign by the immune system. Antigens can be part of a virus, for example, an envelope, core (p24). Antigens trigger antibody production.

**Antibody:** A protein (immunoglobulin) made by the body's immune system to recognize and attack foreign substances.

**Overhead 1-19**



**Looking through a very powerful microscope, HIV looks somewhat like this: a spherical particle of 80 to 100  $\mu$ m in diameter.**

**Like all viruses, it is made up of 2 main elements: the external envelope, and the internal core.**

**The envelope serves as an antigen, and a person's body makes antibodies to the HIV envelope antigen. These are the antibodies measured in the most common HIV tests.**

**Window Period**

**Overhead 1-20**

**Window Period**

- Time from initial infection with HIV until antibodies are detected by antibody tests.
- Usually 3-4 weeks, but can be up to 3 months before antibodies are detected.
- May test false-negative for HIV antibodies during this time period.
- However, false-negatives are extremely rare.
- Can still pass the virus to others during this period.
- TB patients are rarely in the window period.

Overhead 1-20

**The window period represents the stage immediately after becoming infected but before your body has created antibodies. In most people, it takes the body 3-4 weeks to make enough antibodies to be detected by laboratory tests. In rare cases, however, it may take up to 3 months for laboratory tests to detect HIV antibodies in a person's body.**

**If people are tested during the window period, they will test negative even though they are infected because the body has not produced enough antibodies to trigger a positive test result. However, false-negatives are extremely rare. It is also rare to find a TB patient in the window period.**

**“Seroconversion” is a term used to describe the change when antibodies are produced and the blood tests positive. The virus can pass from one person to another during the window period.**

**Laboratory Tests**

**Overhead 1-21**

**Laboratory Tests Used to Monitor Disease Progression and Response to Therapy**

- CD4 cell counts
- Viral load

Overhead 1-21

**Disease progression and response to therapy is determined by tracking the CD4 cell count and measuring the amount of virus in the blood. The amount of virus in the blood is called the viral load.**

**Overhead 1-22**

When CD4 Cell Counts Not Available

- CD4 cells are one type of lymphocyte
- Total lymphocyte count < 1200/mm<sup>3</sup> plus clinical symptoms can be used in place of CD4 count

Overhead 1-22

**Measuring CD4 cells takes special equipment and laboratory training that is not always available to providers.**

**When CD4 counts are not available, total lymphocyte counts can be used to determine whether treatment is indicated for HIV disease. A patient whose total lymphocyte count is <1200 cells per cubic millimeter and has clinical symptoms should be started on HIV treatment.**

**Overhead 1-23**

**Can Disease Progression Be Delayed?**



- Prevention and early treatment of opportunistic infections (OIs)
- Antiretroviral therapy

Overhead 1-23

**Can HIV disease progression be delayed?  
The answer is YES!**

**HIV disease progression can be delayed by 2 types of clinical management:**

- **Prevention and early treatment of opportunistic infections (OIs)**
- **Antiretroviral therapy**

**We will discuss these topics more in Module Five later this week.**

**Reasons for  
Performing HIV  
Screening in  
TB Clinics**

**Overhead 1-24**

**Reasons To Test TB Patients for HIV**

- TB patients are very likely to have HIV infection. HIV-infected TB patients need treatment for HIV/AIDS.
- HIV is a serious disease that requires care and treatment, prevention of transmission and other infections.
- TB and HIV drugs can interact, requiring modification of therapy.
- WHO and UNAIDS recommend that all TB patients be tested for HIV.

Overhead 1-24

**You will learn much more about HIV and its relationship to TB in Module 5. But for now, let's continue with the reasons why TB patients should be tested for HIV. These reasons include:**

- **TB patients are very likely to have HIV infection. HIV-infected TB patients need treatment for HIV/AIDS.**
- **HIV/AIDS is a serious disease that requires care and treatment, and life-saving therapy for HIV is becoming more and more available.**
- **TB and HIV drugs can interact, causing the need to modify therapy.**
- **UNAIDS, other global agencies, and some national policies here have recommended that TB patients be tested for HIV.**

**Let's go over each of these in more detail.**

**TB patients are likely to have HIV infection.**

- **The prevalence of HIV among TB patients is very high. Some generalized studies in several sub-Saharan African countries indicate that up to half or more of TB patients may have HIV.**
- **As we saw earlier, HIV is a chronic infection which may not manifest any signs or symptoms until years after infection. HIV affects the body by damaging the immune system, which weakens the body's ability to fight off illnesses. This is called immunosuppression.**
- **The immunosuppression caused by HIV infection makes a person with latent TB infection more likely to progress to active TB disease.**
- **As HIV infection progresses, patients become more immunosuppressed. This means that they become less able to fight off other infections like TB that may already be in**

**their bodies, or new infections they may acquire, including TB.**

- **HIV-infected patients progress more quickly from latent TB infection to active disease than HIV-uninfected patients.**
- **HIV-infected TB patients who are immunosuppressed may not respond as well to treatment for TB as TB patients without HIV immunosuppression.**

**We will cover these clinical issues later today and in much more detail in Module Five. We are mentioning them now because we want you to understand the importance of testing TB patients for HIV.**

**TB can be an indicator of HIV immunosuppression and the need for antiretroviral therapy in HIV-infected patients.**

- **TB is considered an opportunistic infection in HIV-infected patients.**
- **Pulmonary TB is WHO stage III disease and ART may be indicated, depending on CD4 cell counts and national policies.**
- **Extra-pulmonary TB in HIV-infected patients is WHO stage IV disease and ART is indicated during and after TB treatment.**
- **Mortality rates are higher for HIV-infected TB patients, particularly in the first month of TB diagnosis, than in those without HIV infection.**

**Therefore, it is important to diagnose and treat HIV in TB patients:**

- **HIV is a serious problem that cannot be treated unless the diagnosis is known. Because many patients with HIV infection have active TB, these clinical settings are a good way to identify those infected with HIV.**
- **Treatment for HIV is becoming more and more available. By diagnosing HIV and getting our patients into treatment, we can help them live longer.**
- **It is also important to help patients understand how to protect themselves against other infections and to prevent transmitting the HIV virus to their sexual partners.**

**The drugs used for TB and HIV may interact:**

- **Some antiretroviral drugs, or ARVs, that are used for treatment of HIV and TB treatment drugs interact. This makes modifications of standard ARV therapy necessary for some patients.**
- **Treatment for HIV is now becoming more available, and an increasing number of TB patients will be receiving ARV therapy. Providers will need to be aware of these patients and know how to properly manage them.**
- **When providers are knowledgeable about these issues, they can improve the clinical management of HIV-infected TB patients, resulting in better patient outcomes.**

**For all these reasons, UNAIDS/WHO, CDC, and national policies recommend HIV testing and counseling of TB patients. Testing for HIV in TB patients is recommended as the standard of care and best medical practice.**

**Let's pause for a moment. Are there any questions about reasons for testing TB patients for HIV?**

***What are some of the benefits of incorporating HIV testing and counseling into TB clinical settings?***

*In this section of the training, you should help the participants understand the strengths of TB clinics and providers in providing HIV testing and counseling.*

*Use newsprint to list the participants' suggestions. Make sure that the following bulleted issues are included.*

*If participants are hesitant to suggest strengths, ask them about the issues listed below. For example, to focus the participants on the first point, you might ask, "Do you think that a TB provider's clinical training and long-term relationships with patients will be valuable in dealing with HIV testing? Why?"*

**Next, let's consider why TB clinics are ideal places to conduct HIV testing and counseling.**

**Do any of you have some suggestions why this is true?**

*Responses should cover:*

- **Providers are well prepared for providing HIV testing services as a result of their clinical training and their expertise based on their long-term relationship with the patients.**
- **TB clinics and staff are used to dealing with an infectious disease requiring extended patient care and management.**

- **TB providers understand many of the concepts that also apply to managing HIV disease such as adherence to therapy, long-term therapy, transmission to others, and screening of family members.**
- **TB providers are experienced at counseling patients about serious medical conditions.**
- **Provider recommendations to patients are credible and effective, and patients trust recommendations made by their health care providers.**

***What are some of the challenges of incorporating HIV testing and counseling into TB clinics?***

**You have come up with many good suggestions as to why TB clinics are good places for HIV testing and counseling.**

**However, we also know there will be challenges. What do you think will be more challenging issues related to the impact that HIV services might have on primary functions of TB clinics?**

*Write the challenges suggested on newsprint. Suggestions from the participants will probably cover the bulleted points that follow.*

*If participants do not offer suggestions, ask them questions about the bulleted points listed below. For example, for the first bullet: Do you think that offering HIV testing and counseling will make your patients feel differently about their TB treatment or providers?*

*Note that for each concern, potential solutions are given in italics.*

*Challenges that may be identified include:*

- **Participants may be concerned that the integrity of TB services and DOT program be preserved.**

*Respond to this concern by reassuring trainees that TB clinics remain primarily focused on TB treatment and control, but they are also practicing good medicine by identifying HIV infection in their patients. Trainees will learn the aspects of patient management that are expected of TB providers and what aspects will be the responsibility of the HIV providers.*

- **Dual stigma eroding the gains made by the TB program might be mentioned.**

*Respond by reassuring trainees that in this training they will learn how to minimize stigma and prevent discrimination.*

- **Lack of resources (and maybe infrastructure) in TB clinics to provide this extra service may be an issue.**

*Trainees will plan strategies to incorporate HIV testing into their TB clinic. Tools and methods for problem-solving will be provided.*

- **The issue of HIV screening and ARV treatment of TB clinic staff may come up.**

*Trainees will be working through some of their own fears about HIV.*

- **The need to coordinate with HIV treatment and referral resources in the community will require consideration. For example, will there be enough HIV treatment services for those identified as HIV-positive within the TB clinics?**

*Trainees will be provided with tools and methods to help solve some of these issues.*

- **Another issue is institutional culture, that is, the vertical nature of National TB Program (NTP) and the National AIDS Control Program (NACP). TB clinics may need to determine how to establish linkages between these two important disease control programs.**

- **TB clinic staff, particularly providers, may feel uncomfortable talking with patients about HIV testing, and may not have been tested themselves. They may also feel uncomfortable about discussing sexual behavior.**

*This training is designed to alleviate fears and increase providers' confidence in talking to patients about sensitive matters such as HIV.*

**Let's summarize what you have come up with.**

*Summarize the discussion, using the points in italics to reassure participants that you will be covering many of their issues in the training.*

**Break**  
**10:00 – 10:20 AM**

**Let's take a break now. Please return to this classroom in 20 minutes.**

## **Overheads**

### **Module 1: Introduction, Background, and Rationale**

# Overview of HIV Infection

This module will cover:

- The difference between HIV infection and AIDS
- How HIV is transmitted
- The HIV pandemic
- How “window period” may affect HIV testing results
- The progression of HIV infection

# What is HIV?

- Human: Infecting human beings
- Immunodeficiency: Decrease or weakness in the body's ability to fight off infections and illnesses
- Virus: A pathogen (germ) having the ability to replicate only inside a living cell

# What is AIDS?

- Acquired: To come into possession of something new
- Immune Deficiency: Decrease or weakness in the body's ability to fight off infections and illnesses
- Syndrome: A group of signs and symptoms that occur together and characterize a particular abnormality

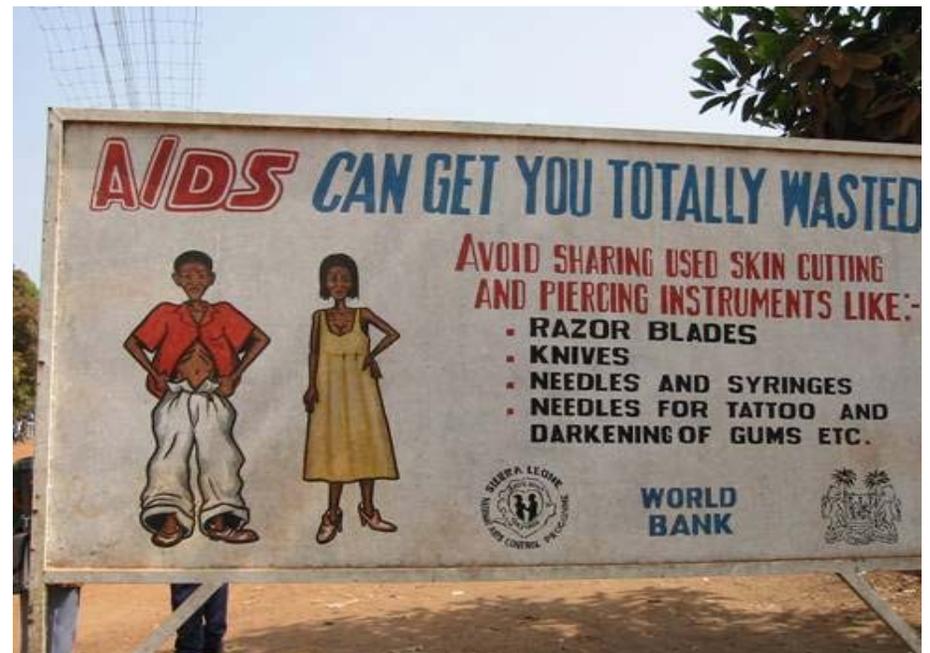
AIDS is the final stage of the disease caused by infection with a type of virus called HIV.

# HIV vs. AIDS

- HIV is the virus that causes AIDS
- Not everyone who is infected with HIV has AIDS
- Everyone with AIDS is infected with HIV
- AIDS is result of progression of HIV infection
- Anyone infected with HIV, although appearing healthy, can still transmit the virus to another person

# How Is HIV Transmitted?

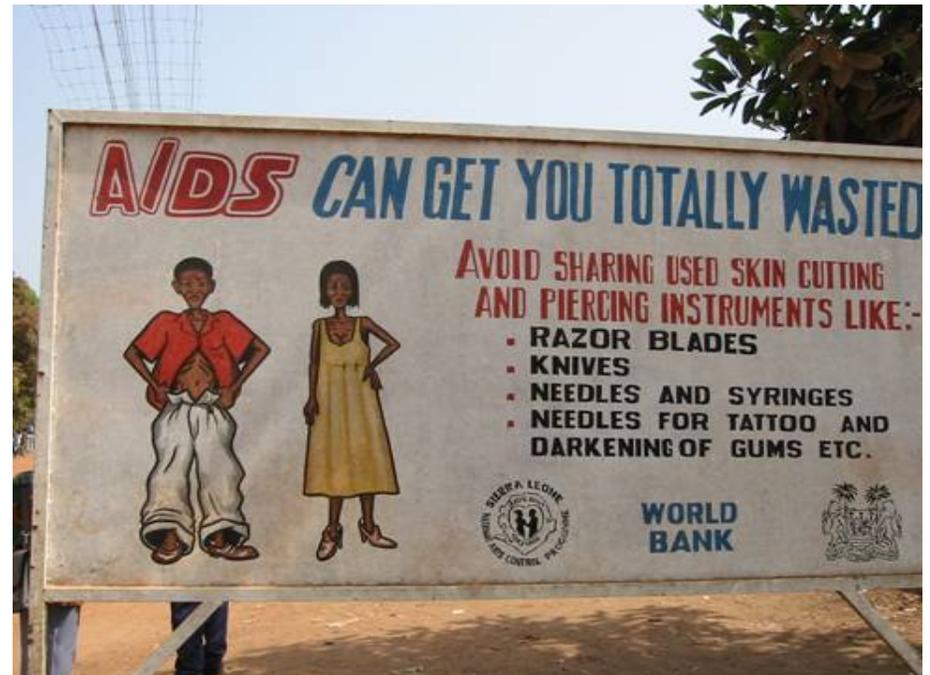
- Unprotected sexual contact with an infected partner
- From HIV-infected mother to infant during, pregnancy, labor and delivery or breastfeeding
- Transfusion with HIV-infected blood



Overhead 1-5

# How Is HIV Transmitted? (2)

- Exposure of broken skin or wound to infected blood or bodily fluids
- Injection using needles or syringes contaminated with HIV
- Accidental cuts in a hospital setting with contaminated sharp instruments

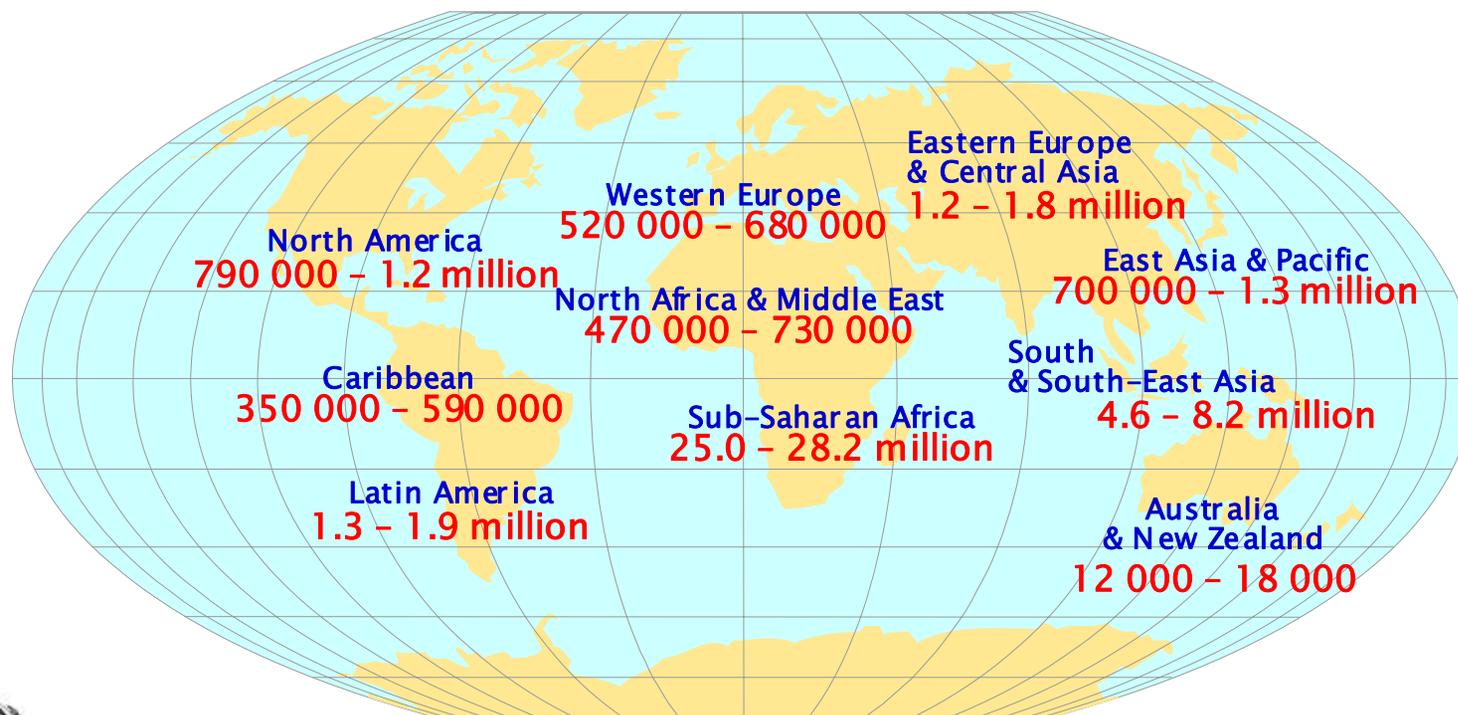


Overhead 1-6

# HIV Is Not Transmitted

- Casual contact such as sharing food, shaking hands, hugging, “dry” kissing
- Airborne exposure via person who is coughing or sneezing
- Being a blood donor (giving blood)
  - (although receiving a transfusion of HIV-infected blood is a source of transmission)

# HIV: A Global Pandemic



Adults and children estimated to be living with HIV/AIDS  
(2003): **34 – 46 million total**

Overhead 1-8

# HIV Epidemic in *[country name]*

- *[percentage]* of 15– to 49-year-olds HIV-infected
- Thus *[number of]* people living with HIV/AIDS (PLWHA)
- UNAIDS estimates *[number of]* deaths due to HIV/AIDS by the end of *[year]*

# HIV Epidemic in *[name of country]*

- Causes of HIV transmission
  - *[percentage]* through heterosexual contact
  - *[percentage]* through homosexual contact
  - *[percentage]* through drug injection
  - *[percentage]* through blood transfusion

# HIV Epidemic in *[name of country]*

- *[percentage]* of TB patients that are HIV-infected
- TB is a leading cause of mortality among AIDS patients
  - TB causes *[percentage]* of all AIDS deaths

# How Does HIV Cause Illness?

- HIV invades the CD4 cell.
- CD4 cells are the body's soldiers for fighting infections and illnesses.
- CD4 cells die off slowly over a period of months to years.
- As the number of CD4 cells declines, the body is less and less able to fight off infections and is said to become immune-suppressed.

# HIV Disease Progression

- HIV infection generally does not cause AIDS or death immediately.
- People can be infected for many years before becoming ill.
- However, even if they are healthy, infected people can transmit HIV to others.

# HIV Disease Progression

HIV disease progression has been classified into 4 clinical stages by WHO

- WHO Clinical Stage 1
  - No symptoms or generalized lymphadenopathy
- WHO Clinical Stage 2
  - Minor skin problems, herpes zoster within 5 years, recurrent upper respiratory tract infections, weight loss less than 10% body weight

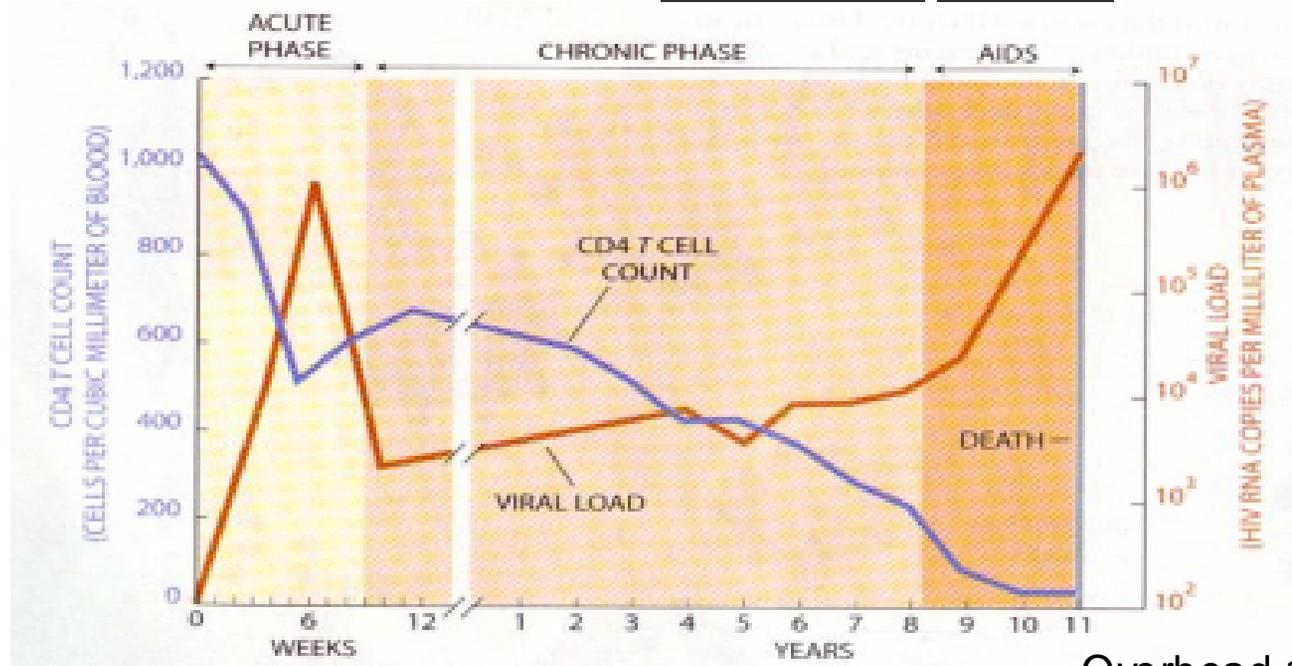
# HIV Disease Progression

- WHO Clinical Stage 3
  - Weight loss more than 10% body weight, pulmonary TB, oral candidiasis (thrush), severe bacterial infections (pneumonia), others
- WHO Clinical Stage 4
  - Wasting syndrome, Pneumocystic carinii pneumonia, toxoplasmosis of brain, Kaposi's sarcoma, lymphoma, extrapulmonary TB, extrapulmonary cryptococcosis, others

# WHO HIV/AIDS Classification System

## (Scaling Up p61-2)

Stage I Asymptomatic	Stage II Minor Symptoms	Stage III Moderate Symptoms	Stage IV Severe Symptoms
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Time

Overhead 1-16

# **Laboratory Diagnosis of HIV**

- **Blood or oral fluid tests that measure antibody to the virus**
- **Rapid antibody tests**

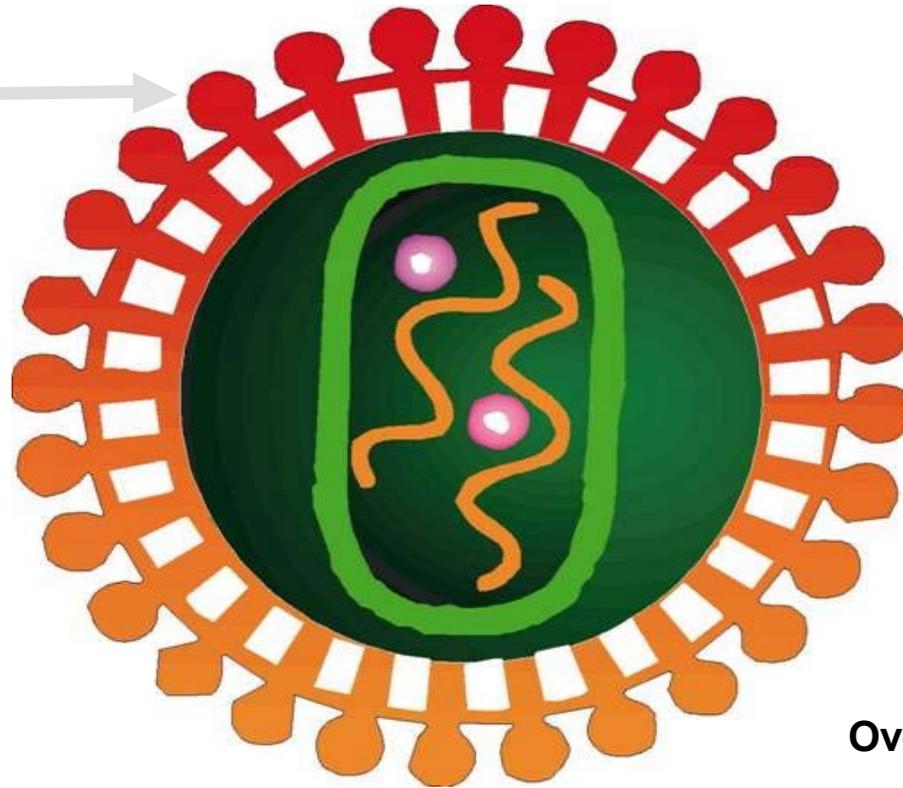
**Overhead 1-17**

# Basic Terms for Understanding HIV Rapid Tests

- **Antigen:** A substance which is recognized as foreign by the immune system. Antigens can be part of a virus, e.g., envelope, core (p24); antigens trigger antibody production.
- **Antibody:** A protein (immunoglobulin) made by the body's immune system to recognize and attack foreign substances.

# Structure of HIV

Envelope  
serves as  
an  
antigen



Overhead 1-19

# Window Period

- Time from initial infection with HIV until antibodies are detected by antibody tests.
- Usually 3-4 weeks, but can be up to 3 months before antibodies are detected.
- May test false-negative for HIV antibodies during this time period.
- However, false-negatives are extremely rare.
- Can still pass the virus to others during this period.
- TB patients are rarely in the window period.

# **Laboratory Tests Used to Monitor Disease Progression and Response to Therapy**

- **CD4 cell counts**
- **Viral load**

# When CD4 Cell Counts Not Available

- CD4 cells are one type of lymphocyte
- Total lymphocyte count  $< 1200/\text{mm}^3$  plus clinical symptoms can be used in place of CD4 count

# Can Disease Progression Be Delayed?



- Prevention and early treatment of opportunistic infections (OIs)
- Antiretroviral therapy

# Reasons To Test TB Patients for HIV

- TB patients are very likely to have HIV infection. HIV-infected TB patients need treatment for HIV/AIDS.
- HIV is a serious disease that requires care and treatment, prevention of transmission and other infections.
- TB and HIV drugs can interact, requiring modification of therapy.
- WHO and UNAIDS recommend that all TB patients be tested for HIV.