



## **Module 1: Introduction to HIV/AIDS**

**SECTION 1:** Scope of the HIV/AIDS Pandemic

**SECTION 2:** Basic Facts about HIV/AIDS

**SECTION 3:** Natural History and Transmission of HIV

### **Objectives**

At the end of this module, participants should be able to:

- Describe the global and local impact of the HIV/AIDS epidemic
- Discuss HIV transmission
- Describe the progression from HIV infection to AIDS
- Answer basic questions about HIV/AIDS in women, children and families

### **Introduction**

The HIV/AIDS pandemic remains a major public health problem world wide, more so in sub-Saharan Africa where more than 80 percent of all people living with HIV/AIDS reside. Heterosexual transmission is the most common mode by which the virus spreads in developing countries, resulting in large numbers of HIV-infected women of childbearing age who sustain the paediatric HIV infection epidemic through transmission to their children. Estimates from UNAIDS show that out of the 3 million people infected in 2004, 640,000 of them were children. In Nigeria, AIDS has left a staggering 1.2 million orphans, the largest in the world.

HIV-1 is the most common type worldwide including Nigeria and the natural history is no different from what has been observed in several sub-Saharan African countries. The impact of HIV/AIDS has been felt in virtually all aspects of life, including the individual, the family and the community.

The content of this module have been designed to update the knowledge of the participants on the epidemiology of HIV/AIDS and other areas of the ever-expanding field of HIV infection.

The following sections present the basic facts about HIV/AIDS including the state of the epidemic, pathology of the infection, modes of transmission and the natural history of HIV infection.

## SECTION 1 Scope of the HIV/AIDS Pandemic

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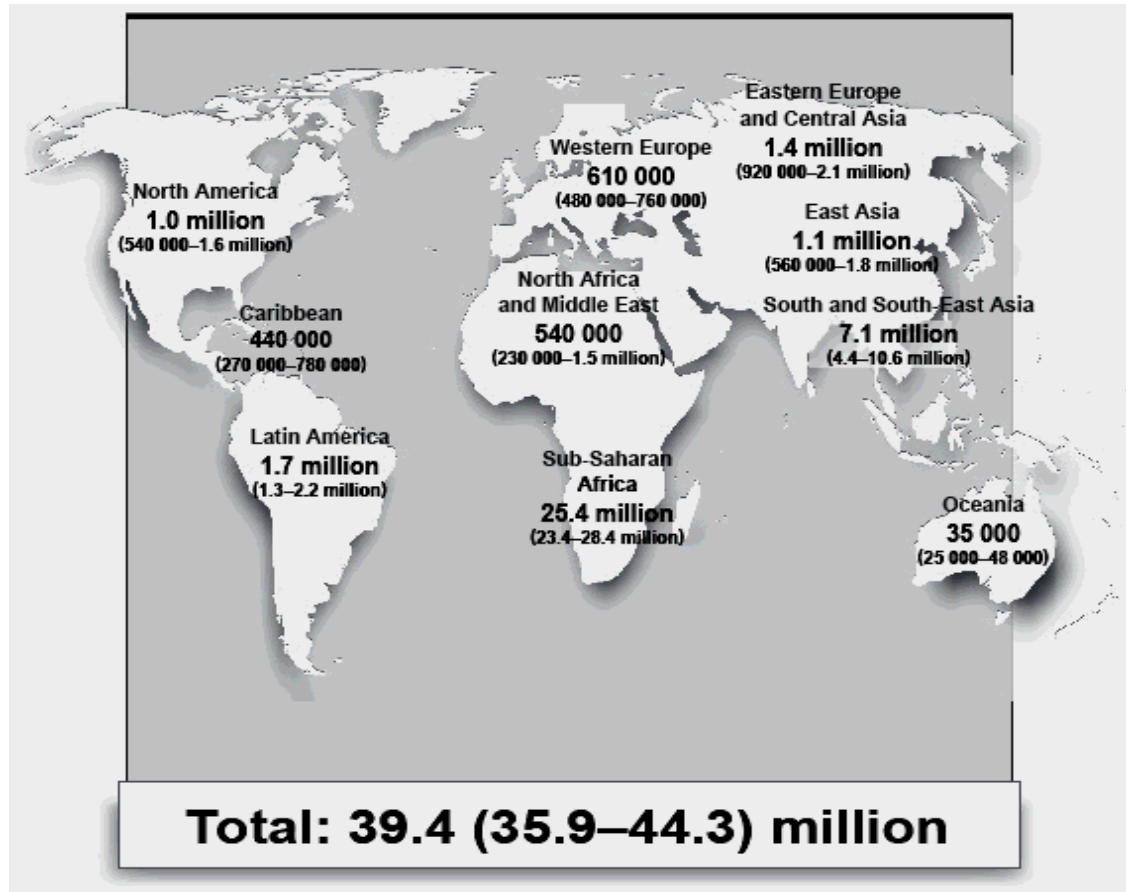
UNAIDS estimates that at the end of 2004:

- 40 million people worldwide were living with HIV/AIDS
- 2.2 million people with HIV/AIDS were children younger than 15 years old
- 90% of the children living with HIV/AIDS were from sub-Saharan Africa
- 640,000 children worldwide were newly infected in 2004
- 510,000 child deaths are estimated to have occurred from HIV/AIDS during 2003

According to UNAIDS, about 14,000 new infections occurred *each day* in 2004. Of these new infections:

- About 6,000 each day were among persons 15 to 24 years old.
- Almost 2,000 each day were in children younger than 15 years old.
- Most of the infections in children younger than 15 years old occurred through mother-to-child transmission (MTCT) of HIV.

**Figure 1.1 ADULTS AND CHILDREN ESTIMATED TO BE LIVING WITH HIV/AIDS, END 2004**



Source: UNAIDS, Global Summary of the HIV/AIDS Epidemic, December 2004.

Table 1.1

<b>Regional HIV and AIDS statistics and features, end 2002 and 2004</b>				
	<b>Adults and children living with HIV</b>	<b>Adults and children newly infected with HIV</b>	<b>Adult prevalence (%)*</b>	<b>Adult and child deaths due to AIDS</b>
<b>Sub-Saharan Africa</b>				
<b>2004</b>	25.4 million [23.4–28.4 million]	3.1 million [2.7–3.8 million]	7.4 [6.9–8.3]	2.3 million [2.1–2.6 million]
<b>2002</b>	24.4 million [22.5–27.3 million]	2.9 million [2.6–3.6 million]	7.5 [7.0–8.4]	2.1 million [1.9–2.3 million]
<b>North Africa and Middle East</b>				
<b>2004</b>	540 000 [230 000–1.5 million]	92 000 [34 000–350 000]	0.3 [0.1–0.7]	28 000 [12 000–72 000]
<b>2002</b>	430 000 [180 000–1.2 million]	73 000 [21 000–300 000]	0.2 [0.1–0.6]	20 000 [8300–53 000]
<b>South and South-East Asia</b>				
<b>2004</b>	7.1 million [4.4–10.6 million]	890 000 [480 000–2.0 million]	0.6 [0.4–0.9]	490 000 [300 000–750 000]
<b>2002</b>	6.4 million [3.9–9.7 million]	820 000 [430 000–2.0 million]	0.6 [0.4–0.9]	430 000 [260 000–650 000]
<b>East Asia</b>				
<b>2004</b>	1.1 million [560 000–1.8 million]	290 000 [84 000–830 000]	0.1 [0.1–0.2]	51 000 [25 000–86 000]
<b>2002</b>	760 000 [380 000–1.2 million]	120 000 [36 000–360 000]	0.1 [0.1–0.2]	37 000 [18 000–63 000]
<b>Oceania</b>				
<b>2004</b>	35 000 [25 000–48 000]	5000 [2100–13 000]	0.2 [0.1–0.3]	700 [<1700]
<b>2002</b>	28 000 [22 000–38 000]	3200 [1000–9600]	0.2 [0.1–0.3]	500 [<1000]
<b>Latin America</b>				
<b>2004</b>	1.7 million [1.3–2.2 million]	240 000 [170 000–430 000]	0.6 [0.5–0.8]	95 000 [73 000–120 000]
<b>2002</b>	1.5 million [1.1–2.0 million]	190 000 [140 000–320 000]	0.6 [0.4–0.7]	74 000 [58 000–96 000]
<b>Caribbean</b>				
<b>2004</b>	440 000 [270 000–780 000]	53 000 [27 000–140 000]	2.3 [1.5–4.1]	36 000 [24 000–61 000]
<b>2002</b>	420 000 [260 000–740 000]	52 000 [26 000–140 000]	2.3 [1.4–4.0]	33 000 [22 000–57 000]
<b>Eastern Europe and Central Asia</b>				
<b>2004</b>	1.4 million [920 000–2.1 million]	210 000 [110 000–480 000]	0.8 [0.5–1.2]	60 000 [39 000–87 000]
<b>2002</b>	1.0 million [670 000–1.5 million]	190 000 [94 000–440 000]	0.6 [0.4–0.8]	40 000 [27 000–58 000]
<b>Western and Central Europe</b>				
<b>2004</b>	610 000 [480 000–760 000]	21 000 [14 000–38 000]	0.3 [0.2–0.3]	6500 [<8500]
<b>2002</b>	600 000 [470 000–750 000]	18 000 [13 000–35 000]	0.3 [0.2–0.3]	6000 [<8000]
<b>North America</b>				
<b>2004</b>	1.0 million [540 000–1.6 million]	44 000 [16 000–120 000]	0.6 [0.3–1.0]	16 000 [8400–25 000]
<b>2002</b>	970 000 [500 000–1.6 million]	44 000 [16 000–120 000]	0.6 [0.3–1.0]	16 000 [8400–25 000]
<b>TOTAL</b>				
<b>2004</b>	39.4 million [35.9–44.3 million]	4.9 million [4.3–6.4 million]	1.1 [1.0–1.3]	3.1 million [2.8–3.5 million]
<b>2002</b>	36.6 million [33.3–41.1 million]	4.5 million [3.9–6.2 million]	1.1 [1.0–1.2]	2.7 million [2.5–3.1 million]

Source: UNAIDS, Global Summary of the HIV/AIDS Epidemic, December 2004.

## Sub-Saharan Africa

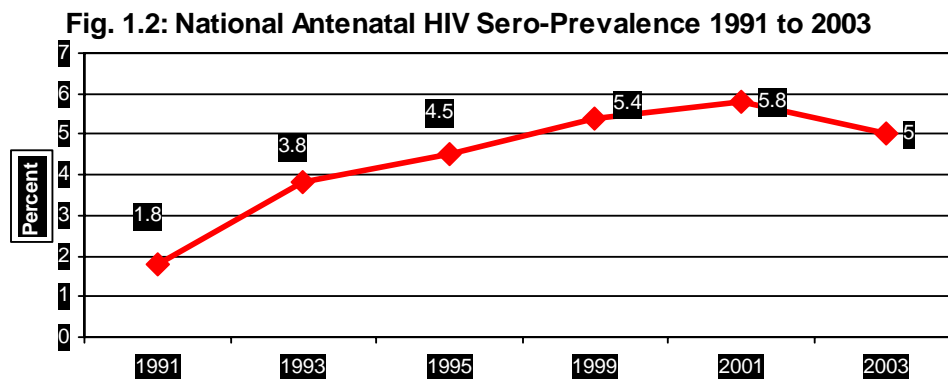
Sub-Saharan Africa remains the region worst-affected by the HIV/AIDS epidemic. In 2004 an estimated 25.4 million people in this region were living with HIV, including the 3.2 million who became infected during the past year.

AIDS killed approximately 2.3 million people in 2003.

Unlike women in other regions in the world, African women are at least 1.2 times more likely to be infected with HIV than men. Among young people aged 15–24, this ratio is highest: women were found to be two-and-a-half times as likely to be HIV-infected as their male counterparts, according to six recent surveys. These discrepancies have been attributed to several factors. They include the biological fact that HIV generally is more easily transmitted from men to women (than vice versa). Furthermore, sexual activity tends to start earlier for women, and young women tend to have sex with much older partners. HIV prevalence varies considerably across the continent—ranging from less than 1% in Mauritania to almost 40% in Botswana and Swaziland. More than one in five pregnant women are HIV-infected in most countries in Southern Africa, while elsewhere in sub-Saharan Africa median HIV prevalence in antenatal clinics exceeded 10% in a few countries.

### Disease Burden in Nigeria

- Since the first reported case in 1986, prevalence has increased over the years from 1.8% in 1991 to 5.0% in 2003
- 3.8 million Nigerians are estimated to be living with HIV; the third-largest number of people living with HIV in the world (after South Africa and India)
- 10% of HIV infections are a result of mother-to-child transmission
- Heterosexual transmission accounts for nearly 80 % of all infections
- 350,000 to 700,000 PLWHA require antiretroviral therapy (ART)
- It is estimated that 100,000 HIV-positive children are born annually and 1.2 million children have been orphaned since the beginning of the epidemic; the highest number for any country globally



**Figure 1.2:** Most of these estimates are based on surveillance systems that focus on pregnant women who attend selected antenatal clinics. This method assumes that HIV prevalence among pregnant women is a good approximation of prevalence among the adult population (aged 15–49 years).

## Global impact of HIV

The global impact of the HIV/AIDS pandemic is especially severe in resource-constrained settings, and results in the following:

- Negative impact on countries' economic development
- Overwhelmed healthcare systems
- Decreasing life expectancy in many countries
- Deteriorating child survival rates
- Increasing number of orphans

Effects of the HIV/AIDS pandemic on individuals include the following:

- Illness and suffering
- Shortened life span
- Loss of work and income
- Death of family members, grief, poverty, and despair
- Stigma and discrimination
- Deteriorating child health and survival
- Weakened integrity and support structure of the family unit

Effects on families:

- Transfer of infection
- Burden of nursing care
- Impoverishment
- Impairment of children's training, schooling and rights
- Death of the generation of parents
- Orphans

<b>Exercise 1.1 Hope exercise: group discussion</b>	
<b>Purpose</b>	To begin the PMTCT training with a feeling of hope and optimism despite the devastation left by decades of HIV.
<b>Duration</b>	15 minutes
<b>Activities</b>	<p>Think for a moment about positive responses to the HIV/AIDS pandemic in Nigeria.</p> <p>Record your ideas on paper to share in the group discussion. Some examples might be:</p> <ul style="list-style-type: none"><li>▪ Groups in the community that have never worked together before have connected with each other to address HIV/AIDS.</li><li>▪ Global community has allocated increased funding for healthcare systems in the developing world, especially HIV/AIDS care systems.</li><li>▪ The Ministry of Health in many countries has become a stronger advocate for the healthcare needs of people in all sectors of society.</li><li>▪ Global community has become more attentive to TB because of its connection to HIV.</li><li>▪ There is increased awareness of safer sex practices that protect people from other STIs and HIV.</li></ul>

## Section 2: Basic Facts about HIV/AIDS

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### Definitions of HIV and AIDS

HIV stands for *human immunodeficiency virus*, the virus that causes AIDS.

**H:** Human  
**I:** Immunodeficiency  
**V:** Virus

- HIV breaks down the body's defence against infection and disease (the body's immune system) by infecting specific white blood cells.
- As time passes, the immune system becomes unable to fight the HIV infection and the person may develop serious and deadly diseases, including other infections and some types of cancer.

**When a person is infected with HIV, the person is known as “HIV–infected.” When person who is HIV–infected has tested positive for HIV, the person is “HIV–positive.”**

**AIDS** is an acronym for *acquired immunodeficiency syndrome* and refers to the most advanced stage of HIV infection.

- A:** Acquired, (not inherited) to differentiate from a genetic or inherited condition that causes immune dysfunction
- I:** Immuno–, because it attacks the immune system and increases susceptibility to infection
- D:** Deficiency of certain white blood cells in the immune system
- S:** Syndrome, meaning a group of symptoms or illnesses

### Differences between HIV, HIV infection, and AIDS

- HIV is the virus that causes HIV infection.
- The person who is HIV–infected may have no signs of illness but can still infect others.
- Most people who are HIV–infected will develop AIDS after a period of time, which may be several months to more than 15 years.
- AIDS is a group of serious illnesses and opportunistic infections that develop after being infected with HIV.
- A diagnosis of AIDS is based on specific clinical criteria and laboratory test results.

(See Appendix 1–A for information about the World Health Organization (WHO) staging systems for HIV infection and Disease and Appendix 1–B for the U.S. Centers for Disease Control and Prevention (CDC) AIDS Surveillance Case Definitions. The WHO staging system is used in Nigeria).

### The Human Immunodeficiency Virus and types

**The Human Immunodeficiency Virus was discovered to be the cause of AIDS (Acquired Immunodeficiency Syndrome) in 1983.**

**Types of HIV**

HIV-1 and HIV-2 are types of HIV. Both types are transmitted the same way, and both are associated with similar opportunistic infections and AIDS. HIV-1 is more common worldwide. HIV-2 is found predominantly in West Africa, Angola, and Mozambique where it represents less than 2% of all HIV infections.

**Differences between HIV-1 and HIV-2**

HIV-2 is less easily transmitted than HIV-1. It is less pathogenic, meaning that the period between initial infection and illness is longer. In some areas, a person may be infected with both HIV-1 and HIV-2. While HIV-2 can be transmitted from an infected mother to her child, this appears to be rare.

## Section 3: Natural History and Transmission of HIV

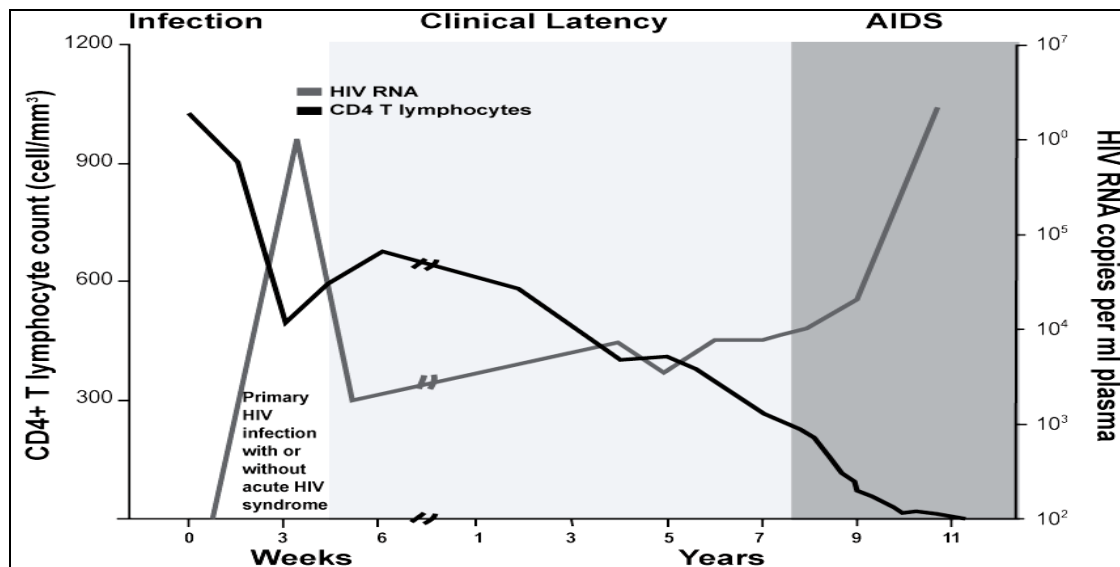
### Background information on CD4 count and viral load

The CD4 count and viral load are two measures of the progression of HIV. When HIV actively multiplies, it infects and kills CD4 T cells—a specific type of white blood cell—that are the immune system's key infection fighters. The effects of HIV are measured by the decline in the number of CD4 cells.

The CD4 count is the number of CD4 cells in the blood and reflects the state of the immune system. The normal count in a healthy adult is between 600 and 1,200 cells/mm<sup>3</sup>. When the CD4 count of an adult falls below 200 cells/mm<sup>3</sup>, the risk of opportunistic and serious infection is high.

Viral load is the amount of HIV in the blood. It can be measured by the HIV ribonucleic acid polymerase chain reaction blood test (HIV–RNA PCR). The test is also used as a marker of response to antiretroviral (ARV) treatment. The viral load is very high shortly after primary HIV infection. It falls steeply when the body develops antibodies and rises again after a number of years as the CD4 count drops. High viral load leads to higher transmission risk. Most often, after a number of years, high viral load is also a sign of more severe disease as people develop AIDS (Figure 1.3).

**Figure 1.3 Characteristic viral load and CD4 changes over time in HIV/AIDS**



### Sero-conversion

People infected with HIV usually develop antibodies 4 to 6 weeks after being infected, but it may take as long as 3 months for antibodies to develop. The period of time between when a person is infected with HIV and when the antibody test result is positive is called the "**window period.**"

Unlike for most diseases, having antibodies for HIV does not indicate protection but indicates infection.

When a recently infected person develops antibodies that can be measured using a laboratory test, sero-conversion is occurring. Some people may experience a glandular illness (fever, rash, joint pains, and enlarged lymph nodes) at the time of sero-conversion.

HIV testing detects antibodies or antigens associated with HIV in whole blood, saliva, or urine.

A person whose blood test results show HIV infection is said to be sero-positive or HIV-positive.

A person whose blood test results do not show HIV infection is said to be sero-negative or HIV-negative.

**A person who tests HIV-negative but who has engaged in risky behaviour within the past 3 months should be tested again in 3 months.**

### **Asymptomatic HIV infection**

A person who is HIV-infected but looks and feels healthy is asymptomatic. None of the physical signs or symptoms that indicate HIV infection is present.

Whether they have symptoms or not, people who are HIV-positive can still pass the virus to others.

The duration of the asymptomatic phase varies greatly from person to person. Some adults may develop symptoms of HIV as quickly as a few months after primary infection; others may take as long as 15 years or more to develop symptoms.

For children infected with HIV through MTCT, during pregnancy, labour and delivery, and breastfeeding, the asymptomatic phase is shorter. A few infants who are HIV-positive will become ill within the first weeks of life. Many children start to develop symptoms before their first birthday; a few remain well for several years.

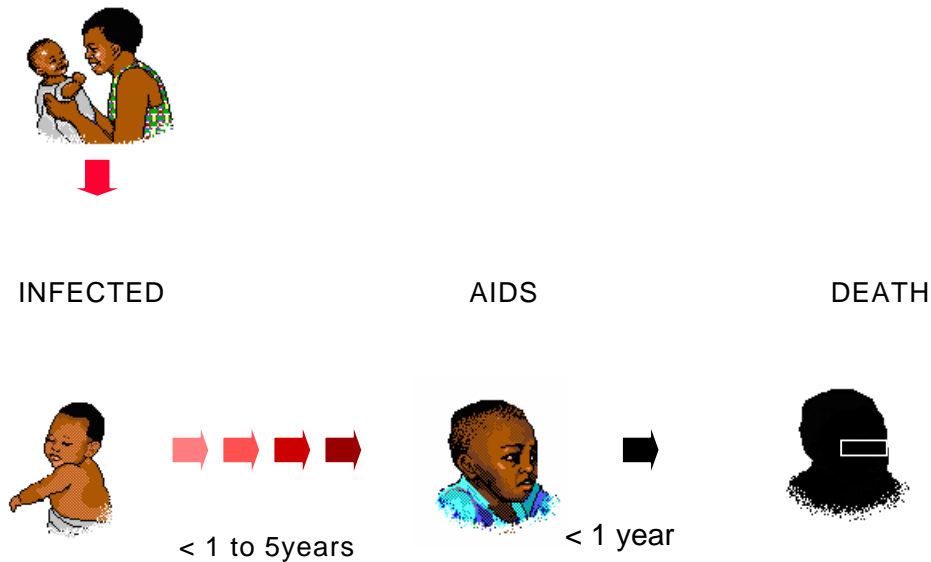
### **Symptomatic HIV infection**

A person who has developed physical signs of HIV and reports symptoms related to HIV is *symptomatic*.

The immune system weakens and CD4 count decreases during this phase.

The progression of HIV depends on the type of virus and specific host characteristics including general health, nutritional, and immune status.

## HIV incubation period (Children)



Source: Adapted from FHI manual on VCT

### AIDS

Almost all people who are HIV-positive will ultimately develop HIV-related disease and AIDS, the end stage of HIV infection. As HIV infection progresses, the CD4 count continues to decrease and the infected person becomes susceptible to opportunistic infections.

An *opportunistic infection* is an illness caused by a germ that might not cause illness in a healthy person, but will cause illness in a person who has a weakened immune system. For example, herpes zoster (shingles) is very common in people infected with HIV. People living with advanced HIV infection suffer from opportunistic infections of the lung, brain, eyes, and other organs. Common opportunistic infections in persons diagnosed with AIDS are Tuberculosis (TB), Community Acquired Pneumonias, Severe Diarrhoea, Oro-pharyngeal Candidiasis and some types of cancers, such as Kaposi's sarcoma.

*ARV treatment and prophylaxis and treatment of opportunistic infections help preserve the CD4 cells, lower viral load, and prolong the time it takes for HIV to progress to the symptomatic phase and, ultimately, to AIDS.*

### Staging systems for HIV

Staging systems for HIV can:

- Contribute to the care of individuals who are HIV-infected
- Provide a framework for follow-up and management
- Help define prognosis and guide patient counselling
- Be used to help evaluate new treatments

### **World Health Organization (WHO) staging system for HIV**

The WHO staging system groups HIV progression into four clinically relevant stages—Stages I to IV—that correspond to the natural history of HIV. (See Appendix 1–A.)

### **U.S. Centers for Disease Control and Prevention (CDC) surveillance case definition**

The CDC AIDS Surveillance Case Definitions include clinical and immunologic categories. (See Appendix 1–B.) This system uses a combination of symptoms and CD4 count levels to establish criteria for AIDS.

### **Routes of HIV transmission**

HIV can be transmitted through blood, sexual contact, or injection drug use, and from mother to child (also known as vertical transmission).

**The most common route of HIV transmission is through sexual contact, especially heterosexual intercourse.**

#### **Blood-to-blood transmission**

- Transfusion with HIV–infected blood
- Direct contact with HIV–infected blood
- Reuse of unsterilised sharps (needles, surgical blades)
- Needle stick injury

#### **Sexual contact**

- Unprotected sexual intercourse (anal > vaginal > oral)
- Direct contact with HIV–infected body fluids such as semen and vaginal and vaginal secretions

**Women of childbearing age are at particular risk for acquiring HIV. The main behaviour that places them at risk is unprotected sex with an infected male partner.**

Heterosexual transmission is the primary mode of acquiring HIV in developing countries. Women, especially young girls, are more likely than men to become infected following heterosexual intercourse due to biological, socio–economic and cultural reasons. Cases of HIV infection resulting from sexual abuse of children, and even infants, have been reported.

#### **Drug use**

- Injection of drugs with needles or syringes contaminated with HIV

#### **Vertical transmission (MTCT)**

- From mothers who are HIV–positive to their infants during pregnancy, labour, delivery, and breastfeeding

## **Transmission of HIV in children**

Children can become infected with HIV through the same modes as those by which adults are infected (exposure to contaminated blood or other body fluids, e.g. through transfusions of infected blood products, through contact with needles or other instruments contaminated with infected blood or other body fluids, and through sexual abuse), and also through MTCT.

Vertical transmission encompasses MTCT before delivery (antepartum), during delivery (intrapartum), or through breastfeeding in the first few days of life (postnatal).

In medical literature, the term "perinatal" is used synonymously with "vertical" to describe MTCT, but generally does not include transmission by breastfeeding after the first few days of life.

In resource-rich countries, where safe alternatives to breastfeeding are available, vertical HIV transmission accounts for virtually all new cases of HIV infection in children.

Without interventions to prevent transmission, the risk of MTCT of HIV ranges from 15–30% among non-breastfeeding populations, and from 30–45% among breastfeeding populations. Untreated HIV infection proceeds through three phases: 1) acute infection, 2) latent infection, and 3) chronic infection progressing to AIDS.

## **Rates and Timing of MTCT, Risk Factors for MTCT**

### **Rates of MTCT**

The majority of children born to HIV-infected mothers are uninfected. Without interventions to prevent MTCT of HIV, rates of MTCT range from 13% in Europe to approximately 40% in Africa. Although there are many possible explanations for this difference, breastfeeding among HIV-infected mothers in resource-poor settings is an important factor.

### **Timing of MTCT**

MTCT of HIV occurs during three different time periods: antepartum, intrapartum, and postnatally through breastfeeding. With the advent of highly sensitive techniques for detecting the virus in the peripheral circulation of the infant, it is possible to estimate the timing of MTCT more accurately. In the absence of breastfeeding, an estimated 50 to 70% of transmissions occur around the time of delivery, with the remainder occurring in utero.

### **Risk Factors for MTCT**

Risk factors for MTCT of HIV can be characterised into:

- Viral
- Maternal
- Obstetrical
- Foetal
- Infant related factors  
(See Module 2 for Overview of PMTCT)

### **HIV CANNOT be transmitted by:**

- Coughing or sneezing
- Being bitten by an insect
- Touching or hugging

- Holding a baby
- Kissing
- Going to a public bath/pool
- Using a public toilet
- Shaking hands
- Working or going to school with a person who is HIV–infected
- Using telephones
- Drinking water or preparing or eating food
- Sharing cups, glasses, plates, or other utensils

## **Public health strategies to prevent HIV infection**

### **Blood–to–blood transmission**

- Screen all blood and blood products for HIV.
- Follow universal precautions which include:
  - Use of protective equipment
  - Safe use and disposal of sharps
  - Sterilisation of equipment
  - Safe disposal of contaminated waste products

### **Sexual contact**

- Promote abstinence or being faithful to one uninfected partner.
- Provide instruction on the consistent and correct use of barrier methods.
- Promote use of male or female condoms for vaginal intercourse
  - Non–lubricated condoms for oral intercourse on a male
  - Dental dams, plastic wrap, or latex panties for oral intercourse on a female
  - Condoms for anal intercourse
- Prevent, identify, and provide early treatment for sexually transmitted infections (STIs).
- Provide access to HIV testing and counselling.

*Condoms provide protection from HIV transmission as well as other sexually transmitted infections (STIs) when used correctly and consistently.*

### **Drug use**

- Educate about the risks of infection through drug use with contaminated needles and syringes.
- Provide referral for treatment of drug dependence.

Drug use in any form may increase the risk of HIV infection by limiting judgment and facilitating engagement in risky behaviours. Even occasional use of alcohol, marijuana, and other “recreational” drugs may increase risk of HIV infection.

### **Vertical transmission from mothers who are HIV–positive**

- Provide ARV treatment when indicated and available.
- Provide ARV prophylaxis during labour and delivery.

- Provide appropriate ARV prophylaxis to the infant.
- Offer elective caesarean section when safe and feasible.
- Follow safer delivery practices.
- Provide linkages to treatment, care and social support for mothers and families with HIV infection.
- Provide infant-feeding counselling.

### **Module 1: Key Points**

- HIV is a global pandemic. In Nigeria, the number of people living with HIV is the third largest in the world (after South Africa and India).
- The number of people living with HIV worldwide continues to increase.
- The HIV epidemic is especially severe in sub-Saharan Africa
- HIV is a virus that destroys the immune system, leading to opportunistic infections.
- The progression from initial infection with HIV to end-stage AIDS varies from person to person and can take more than 15 years.
- The most common route of HIV transmission worldwide is heterosexual transmission.
- Women of childbearing age are at particular risk for acquiring HIV. The main behaviour that places them at risk is unprotected sex with an infected male partner.
- Pregnant women who are HIV-infected are at risk of passing HIV infection to their newborn.

<b>Exercise 1.2 HIV 1, 2, 3 Knowledge interactive game</b>	
<b>Purpose</b>	To present basic and advanced HIV/AIDS information in an easy and enjoyable way while allowing participants an opportunity to demonstrate what they know. This game also gives the participants a chance to get to know each other.
<b>Duration</b>	40 minutes
<b>Activities</b>	<ul style="list-style-type: none"> <li>▪ Review the HIV/AIDS–related questions in Exercise 1.2 (located after the appendices).</li> <li>▪ Select one member of your team to record the group's answers on the question sheet provided.</li> <li>▪ You will be asked to choose a question from one of the categories above and answer it in 10 seconds. If the answer is correct, your team will be credited for a proper response. If the answer is not correct, the question will be passed on to the next team.</li> <li>▪ You cannot choose a question that has already been answered.</li> <li>▪ The first team to correctly answer 6 questions from 6 different categories wins.</li> </ul> <p><b>The winning team will receive a prize.</b></p>

## APPENDIX 1–A: WHO staging systems for HIV infection and disease in adults, adolescents, and children

### WHO staging system for HIV infection and disease in adults

<b>Clinical stage I</b>	
<ul style="list-style-type: none"> <li>▪ Asymptomatic</li> <li>▪ Generalised lymphadenopathy</li> </ul> <p><b>Performance Scale 1:</b> asymptomatic, normal activity</p>	
<b>Clinical Stage II</b>	
<ul style="list-style-type: none"> <li>▪ Weight loss of less than 10% of body weight</li> <li>▪ Minor mucocutaneous manifestations (seborrhoeic dermatitis, prurigo, fungal nail infections, recurrent oral ulcerations, angular cheilitis)</li> <li>▪ Herpes zoster within the last 5 years</li> <li>▪ Recurrent upper respiratory tract infections (e.g., bacterial sinusitis)</li> </ul> <p>And/or <b>Performance Scale 2:</b> symptomatic, normal activity</p>	
<b>Clinical Stage III</b>	
<ul style="list-style-type: none"> <li>▪ Weight loss of more than 10% of body weight</li> <li>▪ Unexplained chronic diarrhoea lasting for more than 1 month</li> <li>▪ Unexplained prolonged fever (intermittent or constant) lasting for more than 1 month</li> <li>▪ Oral candidiasis (thrush)</li> <li>▪ Oral hairy leukoplakia</li> <li>▪ Pulmonary tuberculosis</li> <li>▪ Severe bacterial infections (e.g., pneumonia, pyomyositis)</li> </ul> <p>And/or <b>Performance Scale 3:</b> bedridden less than 50% of the day during the past month</p>	
<b>Clinical Stage IV</b>	
<ul style="list-style-type: none"> <li>▪ HIV wasting syndrome<sup>a</sup></li> <li>▪ <i>Pneumocystis carinii</i> pneumonia</li> <li>▪ Toxoplasmosis of the brain</li> <li>▪ Cryptosporidiosis with diarrhoea lasting more than 1 month</li> <li>▪ Cryptococcosis, extrapulmonary</li> <li>▪ Cytomegalovirus (CMV) disease of an organ other than liver, spleen or lymph node (e.g., retinitis)</li> <li>▪ Herpes simplex virus (HSV) infection, mucocutaneous (lasting for more than 1 month), or visceral</li> <li>▪ Progressive multifocal leukoencephalopathy (PML)</li> <li>▪ Any disseminated endemic mycosis</li> </ul>	<ul style="list-style-type: none"> <li>▪ Candidiasis of the oesophagus, trachea, bronchi</li> <li>▪ Atypical mycobacteriosis, disseminated or pulmonary</li> <li>▪ Non-typhoid salmonella septicaemia</li> <li>▪ Extrapulmonary tuberculosis</li> <li>▪ Lymphoma</li> <li>▪ Kaposi's sarcoma (KS)</li> <li>▪ HIV encephalopathy<sup>b</sup></li> </ul>
<p>And/or <b>Performance Scale 4:</b> bedridden more than 50% of the day during the last month</p>	

<sup>a</sup> HIV wasting syndrome: weight loss of more than 10% body weight, plus either unexplained chronic diarrhoea (lasting longer than 1 month) or chronic weakness and unexplained prolonged fever (lasting longer than 1 month)

<sup>b</sup> HIV encephalopathy: clinical findings of disabling cognitive and/or motor dysfunction interfering with activities of daily living progressing over weeks to months, in the absence of a concurrent illness or condition other than HIV infection that could explain the findings

Source: World Health Organization (WHO). 2004. *Scaling up antiretroviral therapy in resource-limited settings: Treatment guidelines for a public health approach, 2003 Revision*, Appendix D: WHO staging system for HIV infection and disease in adults and adolescents, p. 42

## APPENDIX 1–A: WHO staging systems for HIV infection and disease in adults, adolescents, and children *(continued)*

### WHO staging system for HIV infection and disease in children

<b>Clinical stage I</b>	
<ul style="list-style-type: none"> <li>• Asymptomatic</li> <li>• Persistent generalised lymphadenopathy (PGL)</li> <li>• Hepatosplenomegaly</li> </ul>	
<b>Clinical Stage II</b>	
<ul style="list-style-type: none"> <li>• Papular pruritic eruptions</li> <li>• Seborrheic dermatitis</li> <li>• Fungal nail infections</li> <li>• Angular chelitis</li> <li>• Lineal gingival erythema</li> <li>• Extensive HPV or molluscum infection (&gt;5% of body area/face)</li> <li>• Recurrent oral ulcerations (&gt;2 episodes/6 months)</li> <li>• Parotid enlargement</li> <li>• Herpes zoster (&gt;1 episode/12 months)</li> <li>• Recurrent or chronic upper respiratory infection (URI): otitis media, otorrhea, sinusitis (&gt;2 episodes/6 months)</li> </ul>	
<b>Clinical Stage III</b>	
<ul style="list-style-type: none"> <li>• <i>Unexplained</i> moderate malnutrition (-2 SD or Z score) not responding to standard therapy</li> <li>• <i>Unexplained</i> persistent diarrhoea (&gt;14 days)</li> <li>• <i>Unexplained</i> persistent fever (intermittent or constant, &gt;1 months)</li> <li>• Oral candidiasis (outside neonatal period)</li> <li>• Oral hairy leukoplakia</li> <li>• Pulmonary tuberculosis</li> <li>• Severe recurrent presumed bacterial pneumonia (&gt;2 episodes/12 months)</li> <li>• Acute necrotizing ulcerative gingivitis/periodontitis</li> <li>• Lymphoid interstitial pneumonitis (LIP)</li> <li>• <i>Unexplained</i> anemia (&lt;8 gm/dL), neutropenia (&lt;1,000/mm<sup>3</sup>), or thrombocytopenia (&lt;30,000/mm<sup>3</sup>) for &gt;1 months</li> <li>• HIV-related cardiomyopathy</li> <li>• HIV-related nephropathy</li> </ul>	
<b>Clinical Stage IV</b>	
<p>Symptomatic HIV-antibody positive infant age &lt;18 months*</p> <ul style="list-style-type: none"> <li>• Two or more of the following:</li> <li>• Oral candidiasis/rush</li> <li>• Severe pneumonia</li> <li>• Failure to thrive</li> <li>• Sepsis</li> </ul> <p>* Presumptive diagnosis of Stage 4 disease in HIV-antibody positive infants &lt;18 months requires confirmation with HIV virologic tests when possible, or by antibody tests after age 18 months.</p> <p>(Any Age)</p> <ul style="list-style-type: none"> <li>• <i>Unexplained</i> severe wasting or severe malnutrition (-3 SD or Z score) not responding to standard therapy</li> <li>• Pneumocystis pneumonia</li> <li>• Recurrent severe bacterial infections (&gt;2 episodes/12months, <i>excluding</i> pneumonia)</li> <li>• Chronic orolabial or cutaneous HSV (lasting &gt;1 month)</li> </ul>	<ul style="list-style-type: none"> <li>• Extrapulmonary tuberculosis</li> <li>• Kaposi's sarcoma</li> <li>• Esophageal candidiasis</li> <li>• CNS toxoplasmosis</li> <li>• Cryptococcal meningitis</li> <li>• Any disseminated endemic mycosis</li> <li>• Cryptosporidiosis or isosporiasis (with diarrhoea &gt;1 month)</li> <li>• CMV infection of organ other than liver, spleen, lymph nodes (and onset age &gt;1 month)</li> <li>• Disseminated mycobacterial disease other than tuberculosis</li> <li>• Candida of trachea, bronchi or lungs</li> <li>• Acquired recto-vesico fistula</li> <li>• Cerebral or B cell non-Hodgkins lymphoma</li> <li>• Progressive multifocal leukoencephalopathy (PML)</li> <li>• HIV encephalopathy</li> </ul>

## APPENDIX 1–B: CDC AIDS surveillance case definitions for adolescents, adults, and children

### I. CDC AIDS surveillance case definition for adolescents and adults

Clinical Categories			
CD4 Cell Categories	A	B	C*
<b>mm<sup>3</sup>(%)</b>	Asymptomatic, PGL or Acute HIV Infection	<b>Symptomatic**</b> <b>(not A or C)</b>	<b>AIDS Indicator Condition (1987)</b>
<b>1</b> >500/mm <sup>3</sup> (≥29%)	A1	B1	C1
<b>2</b> 200–499/mm <sup>3</sup> (14–28%)	A2	B2	C2
<b>3</b> <200/mm <sup>3</sup> (<14%)	A3	B3	C3
<p>All patients in categories A3, B3 and C1–3 are defined as having AIDS, based on the presence of an AIDS–indicator condition (see the following table) and/or a CD4 cell count of less than 200/mmP<sup>3P</sup>.</p> <p>**Symptomatic conditions not included in Category C that are: a) attributed to HIV infection or indicative of a defect in cell–mediated immunity or b) considered to have a clinical course or management that is complicated by HIV infection. Examples of B conditions include but are not limited to bacillary angiomatosis; thrush; vulvovaginal candidiasis that is persistent, frequent or poorly responsive to therapy; vaginal dysplasia (moderate or severe); vaginal carcinoma in situ; constitutional symptoms such as fever (38.5° C) or diarrhoea lasting longer than 1 month; oral hairy leukoplakia; herpes zoster involving two episodes or more than 1 dermatome; idiopathic thrombocytopenic purpura (ITP); listeriosis; pelvic inflammatory disease (PID) (especially if complicated by a tubo–ovarian abscess); and peripheral neuropathy.</p> <p>Source: U.S. Centers for Disease Control and Prevention. 1992. 1993 Revised classification system for HIV infection and expanded surveillance case definition for AIDS among adolescents and adults. <i>MMWR</i> 41(RR–17) <a href="http://www.cdc.gov/mmwr/preview/mmwrhtml/00018179.htm">http://www.cdc.gov/mmwr/preview/mmwrhtml/00018179.htm</a></p>			

Clinical Categories			
CD4 Cell Categories	A	B	C*
<b>mm<sup>3</sup>(%)</b>	Asymptomatic, PGL or Acute HIV Infection	<b>Symptomatic**</b> <b>(not A or C)</b>	<b>AIDS Indicator Condition (1987)</b>
<b>1</b> >500/mm <sup>3</sup> (≥29%)	A1	B1	C1
<b>2</b> 200–499/mm <sup>3</sup> (14–28%)	A2	B2	C2
<b>3</b> <200/mm <sup>3</sup> (<14%)	A3	B3	C3

## II. CDC AIDS case surveillance definition for infants and children

### CDC immunologic categories based on age-specific CD4 counts and percent of total lymphocytes

Immunologic category	<12 months	1–5 yrs	6–12 yrs
	mm <sup>3</sup> (%)	mm <sup>3</sup> (%)	mm <sup>3</sup> (%)
<b>Category 1:</b> No evidence of suppression	≥ 1,500 (> 25)	≥1,000 (> 25)	≥500 (> 25)
<b>Category 2:</b> Evidence of moderate suppression	750–1,499 (15–24)	500–999 (15–24)	200–499 (15–24)
<b>Category 3:</b> Severe suppression	< 750 (<15)	< 500 (<15)	< 200 (<15)

### Clinical categories for children with HIV

#### CATEGORY N: NOT SYMPTOMATIC

Children who have no signs or symptoms considered to be the result of HIV infection or who have only one of the conditions listed in Category A.

#### CATEGORY A: MILDLY SYMPTOMATIC

Children with two or more of the conditions listed below but none of the conditions listed in Categories B and C.

- Lymphadenopathy (U<sub>≥</sub>U 0.5 cm at more than two sites; bilateral = one site)
- Hepatomegaly
- Splenomegaly
- Dermatitis
- Parotitis
- Recurrent or persistent upper respiratory infection, sinusitis, or otitis media

#### CATEGORY B: MODERATELY SYMPTOMATIC

Children who have symptomatic conditions other than those listed for Category A or C that are attributed to HIV infection.

Examples of conditions in clinical Category B include but are not limited to:

- Anemia (<8 gm/dL), neutropenia (<1,000/mmP<sup>3</sup>), or thrombocytopenia (<100,000/mmP<sup>3</sup>) persisting U<sub>≥</sub> 30 days
- Bacterial meningitis, pneumonia, or sepsis (single episode)
- Candidiasis, oropharyngeal (thrush), persisting (>2 months) in children >6 months of age
- Cardiomyopathy
- Cytomegalovirus infection, with onset before 1 month of age
- Diarrhoea, recurrent or chronic
- Hepatitis
- Herpes simplex virus (HSV) stomatitis, recurrent (more than two episodes within 1 year)
- HSV bronchitis, pneumonitis, or esophagitis with onset before 1 month of age
- Herpes zoster (shingles) involving at least two distinct episodes or more than one dermatome
- Leiomyosarcoma
- Lymphoid interstitial pneumonia (LIP) or pulmonary lymphoid hyperplasia complex
- Nephropathy

- Nocardiosis
- Persistent fever (lasting >1 month)
- Toxoplasmosis, onset before 1 month of age
- Varicella, disseminated (complicated chickenpox)

#### **CATEGORY C: SEVERELY SYMPTOMATIC**

- Serious bacterial infections, multiple or recurrent (i.e., any combination of at least two culture–confirmed infections within a 2–year period), of the following types: septicemia, pneumonia, meningitis, bone or joint infection, or abscess of an internal organ or body cavity (excluding otitis media, superficial skin or mucosal abscesses, and indwelling catheter–related infections)
- Candidiasis, esophageal or pulmonary (bronchi, trachea, lungs)
- Coccidioidomycosis, disseminated (at site other than or in addition to lungs or vaginal or hilar lymph nodes)
- Cryptococcosis, extrapulmonary
- Cryptosporidiosis or isosporiasis with diarrhoea persisting >1 month
- Cytomegalovirus disease with onset of symptoms at age >1 month (at a site other than liver, spleen, or lymph nodes)
- Encephalopathy (at least one of the following progressive findings present for at least 2 months in the absence of a concurrent illness other than HIV infection that could explain the findings): a) failure to attain or loss of developmental milestones or loss of intellectual ability, verified by standard developmental scale or neuropsychological tests; b) impaired brain growth or acquired microcephaly demonstrated by head circumference measurements or brain atrophy demonstrated by computerized tomography or magnetic resonance imaging (serial imaging is required for children <2 years of age); c) acquired symmetric motor deficit manifested by two or more of the following: paresis, pathologic reflexes, ataxia, or gait disturbance
- Herpes simplex virus infection causing a mucocutaneous ulcer that persists for >1 month; or bronchitis, pneumonitis, or esophagitis for any duration affecting a child >1 month of age
- Histoplasmosis, disseminated (at a site other than or in addition to lungs or vaginal or hilar lymph nodes)
- Kaposi's sarcoma
- Lymphoma, primary, in brain
- Lymphoma, small, noncleaved cell (Burkett's), or immunoblastic or large cell lymphoma of B–cell or unknown immunologic phenotype
- Mycobacterium tuberculosis, disseminated or extrapulmonary
- Mycobacterium, other species or unidentified species, disseminated (at a site other than or in addition to lungs, skin, or vaginal or hilar lymph nodes)
- Mycobacterium avium complex or Mycobacterium kansasii, disseminated (at site other than or in addition to lungs, skin, or vaginal or hilar lymph nodes)
- *Pneumocystis carinii* pneumonia
- Progressive multifocal leukoencephalopathy
- Salmonella (nontyphoid) septicemia, recurrent
- Toxoplasmosis of the brain with onset at >1 month of age
- Wasting syndrome in the absence of a concurrent illness other than HIV infection that could explain the following findings: a) persistent weight loss >10% of baseline OR b) downward crossing of at least two of the following percentile lines on the weight–for–age chart (e.g., 95th, 75th, 50th, 25th, 5th) in a child U≥U 1 year of age OR c) <5th percentile on weight–for–height chart on two consecutive measurements, ≥30 days apart PLUS a) chronic diarrhoea (i.e., at least two loose stools per day for >30 days) OR b) documented fever (for U≥U 30 days, intermittent or constant)

**Adapted from: US Centers for Disease Control and Prevention. 1994. Revised classification system for human immunodeficiency virus infection in children less than 13 years of age. MMWR (RR–22).**

## MODULE 1: Participant exercise

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### Exercise 1.2 HIV 1, 2, 3 Knowledge interactive game

#### Category 1: HIV/AIDS Transmission

Question	Answer
List at least three ways in which HIV infection is transmitted.	
Name the two types of HIV.	
What body fluids contain high concentrations of HIV?	
What is the major route of HIV transmission worldwide?	
What specific part of the human body does HIV attack and what does this cause?	

#### Category 2: Prevention

Question	Answer
What are the ABCs of prevention (on an individual level)?	
Universal precautions are a set of practices designed to protect health workers and patients from infection. Name at least four interventions that are universal precautions.	

#### Category 3: Infant Feeding

Question	Answer
Exclusive breastfeeding is defined by WHO as giving an infant only breast milk (including expressed breast milk), with the exception of _____ (fill in the blank).	
List two reasons why cup feeding is preferred over bottle feeding when the mother chooses replacement feeds (rather than breastfeeding).	
At what age does WHO recommend starting a child on complementary foods (food in addition to milk)?	
Name two reasons why a woman may choose to breastfeed rather than give a breast milk substitute to her infant.	

## MODULE 1: Participant exercise *(continued)*

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### Category 4: Testing

Question	Answer
What is specifically measured when an HIV screening test is done?	
With regard to HIV testing, what does the "window period" mean?	
Name two advantages of the HIV rapid test (compared with the traditional ELISA test).	

### Category 5: Mother-to-Child Transmission

Question	Answer
If 100 women who were HIV-infected gave birth to 100 infants, how many of the infants will typically become infected during pregnancy?	
If 100 women who were HIV-infected gave birth to 100 infants, how many of these infants will typically become infected during labour and delivery?	
Name two maternal factors that may increase the risk of HIV transmission during pregnancy.	
Name two factors that may increase the risk of HIV transmission during breastfeeding.	

### Category 6: Linkages to Treatment, Care and Social Support

Question	Answer
Name at least two activities that should be included in the 6-week postnatal visit for the woman who is HIV-infected.	
Name one test that will tell you if an infant is infected with HIV.	
Name one of the more common symptoms associated with HIV infection in the infant or child.	

## MODULE 1: Participant exercise *continued*

### Category 7: Prevention in Healthcare Settings

Question	Answer
Name one disinfectant that is capable of inactivating HIV.	
If a healthcare provider accidentally got stuck with a needle that had previously been used on a patient with HIV (and not cleaned), what is the chance that he or she would become HIV-infected?  A. 1% B. 5% C. 3% D. 20%	
List two things that you can do when attending to a client in obstetrics to reduce risk of occupational exposure to HIV.	

### Category 8: Wild Card

Question	Answer
AIDS is the _____ (choose number) cause of death in Africa?  A. Number 1 B. Number 2 C. Number 3 D. Number 4	
The HIV/AIDS epidemic is growing fastest in what region of the world?	
In sub-Saharan Africa, women represent what percentage of all people living with HIV/AIDS?  A. 78% B. 72% C. 58% D. 48%	
What is the difference between stigma and discrimination?	
What is the difference between monitoring and evaluation?	