

Part A:
HIV/AIDS Care and Treatment



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Module A1

HIV/AIDS Programming and HIV Disease: An Introduction



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Session 1: Program Overview

This session introduces the participants to the course on HIV/AIDS care and provides an overview of the program.

Session 2: General Background on HIV/AIDS: Epidemiology

Participants learn about the HIV/AIDS epidemic and its impact worldwide, including in sub-Saharan Africa. The session addresses the epidemiology of HIV/AIDS, mechanisms of transmission and disease progression.

Session 3: HIV/AIDS Prevention

Participants learn about the components of comprehensive HIV/AIDS programming. The session covers risk reduction, behavior change communication, voluntary counseling and testing, care and treatment and the relationships among these different components.

Session 4: Comprehensive Care for People Living with HIV/AIDS

This session provides an opportunity for participants to explore issues and strategies involved in providing comprehensive care and treatment services.

Session 5: Immunology and Natural History of HIV/AIDS

Participants learn about the normal immune system, how the HIV virus damages and destroys the immune system, and how the disease progresses.

Session 6 : Diagnosis of HIV

Participants learn how to make an initial assessment, what questions to ask when taking a history, and what to look for in a physical exam. Participants practice taking a sexual history and learn when and how to advise patients to consider HIV testing. They learn about serologic and laboratory tests to diagnose HIV infection and AIDS.

Session 7: Patient Clinical Presentation, Differential Diagnosis, and Follow-up

Participants learn about oral lesions, dysphagia and odynophagia, including common etiological agents, recommended diagnostics, common findings, management and treatment.

SESSION 1 Program Overview

PURPOSE

This session introduces participants to the course on HIV/AIDS care and provides an overview of the program.

The goal of this course is to train doctors and others involved in patient care (nurses, pharmacists, lab technicians) in resource-limited countries to diagnose and manage HIV/AIDS and HIV-related diseases, including opportunistic infections. Improving care for opportunistic infections and HIV-related conditions is a critical component of HIV/AIDS programs.

The course presents the biomedical facts of care for people with HIV/AIDS in the context of a comprehensive public health approach, taking into account the physical and psychosocial needs of clients, patients, and their households. It approaches the specific recommendations for diagnostic measures and patient treatment from a global perspective and directs the facilitator and participants to refer to and discuss local guidelines.

The course uses participatory approaches and methodologies, such as clinical management algorithms and case studies.

A preliminary pretest and self-assessment of knowledge and skills in the major areas of the workshop opens the course; a post-workshop assessment uses the same tools.

OBJECTIVES:

By the end of this session, participants will be able to

1. Identify the goals, objectives and areas to be addressed.
2. Assess and discuss their own level of knowledge and sense of competency in those areas.

TIME:

50 minutes

SESSION 2 General Background on HIV/AIDS: Epidemiology**PURPOSE**

In this session, participants will learn about the HIV/AIDS epidemic and its impact worldwide, including in sub-Saharan Africa. The session will address the epidemiology of HIV/AIDS, mechanisms of transmission and disease progression. Different regions should incorporate locally relevant facts about epidemiology and other aspects of HIV/AIDS.

OBJECTIVES

By the end of this session, the participants will be able to:

1. Discuss the impact of the HIV/AIDS epidemic globally and in Africa.
2. Describe the various types and subtypes of HIV.
3. Discuss how HIV is transmitted and the biological and socioeconomic factors that facilitate transmission.

TIME

30 minutes

1. Epidemic Update

- Global picture:
 - Fourth biggest killer worldwide
 - Estimated 42 million now living with HIV
 - About one-third are aged 15-24
 - Most people do not know they are infected
 - Young women are especially vulnerable, for reasons discussed later
- Sub-Saharan Africa:
 - The region most affected by the epidemic
 - HIV is now the leading cause of death in that region
 - Estimated 3.5 million new HIV infections in 2002
 - 29 million Africans now live with the virus
 - 11 million children have lost their mother or both parents, and this figure is expected to double over the next decade
- National and local data
 - Country of workshop: Estimated national prevalence _____
 - Areas of country that have an especially high prevalence

2. Types and Subtypes of HIV

Two types of HIV are currently recognized: HIV-1 and HIV-2. Worldwide, the predominant virus is HIV-1. Transmission of both types of virus is by sexual contact, through blood, and from mother to child, and they appear to cause clinically indistinguishable AIDS. However, HIV-2 is transmitted less easily, and the period between initial infection and illness is longer in the case of HIV-2

a. HIV-1

Because of its high rate of replication, HIV-1 mutates rapidly into subtypes.

We currently know of at least 10 genetically distinct subtypes of HIV-1 within the major group (group M), containing subtypes A to J.

In addition, group O (Outliers) contains a distinct group of very heterogeneous viruses.

These subtypes are unevenly distributed throughout the world.

For instance:

- Subtype B is found mostly in the Americas, Japan, Australia, the Caribbean and Europe.
 - Subtypes A and D predominate in sub-Saharan Africa.
 - Subtype C predominates in South Africa and India.
 - Subtype E predominates in Central African Republic, Thailand and other countries of southeast Asia.
- Subtypes F (Brazil and Romania), G, and H (Russia and Central Africa), I (Cyprus) and O (Cameroon) are of very low prevalence.
- In Africa, one finds most subtypes, though subtype B is less prevalent.

What are the major differences among these subtypes?

The major difference is their genetic composition; biological differences observed in vitro and/or in vivo may reflect this. It may be that certain subtypes are associated predominantly with specific modes of transmission, for example: subtype B with homosexual contact and intravenous drug use (essentially via blood) and subtypes E and C with heterosexual transmission (via a mucosal route).

- Many countries report a variety of subtypes.
- A person can be coinfecting with different subtypes.
- Subtype C currently accounts for more than half of all new HIV infections worldwide.

b. HIV-2

- This is another human retrovirus, causing a similar immune deficiency because of depletion of CD4 cells.
- Confined primarily to West Africa
- Compared to HIV-1, is less transmissible, is associated with a lower viral burden and a slower rate of both cell decline and clinical progression.
- Note local HIV-2 prevalence: _____.

3. HIV Transmission

Geographic and socioeconomic factors influence which modes of transmission predominate. In some countries more than one of the modes of HIV transmission below is responsible for the HIV/AIDS epidemic.

a. Modes of transmission

- **Sexual contact:** male-to-female, female-to-male, male-to-male, and female-to-female
- **Parenteral:** blood transfusion, intravenous drug use (IDU) through needle-sharing, needle stick accidents
- **Perinatal:** in utero, during labor and delivery, postpartum through breastfeeding

Worldwide, sexual transmission is the predominant mode.

HIV cannot be transmitted by casual contact (for example, hugging or shaking hands), surface contact (for example, toilet seats) or from insect bites (for example, from mosquitoes).

b. Biological factors affecting transmission

- Factors that increase risk of transmission

Infectiousness of host

High viral load: initial stage of infection and more advanced stages

Presence in semen and genital secretions

Exposure to blood, for example, genital ulcers, trauma during sexual contact, menstruation during sexual contact

Breastfeeding by HIV-positive mother

Susceptibility of recipient

Inflammation or disruption of genital or rectal mucosa

Lack of circumcision in heterosexual men

Sex during menstruation, increasing a woman's risk

Presence of an ulcerative or non-ulcerative STD

Viral properties

Virus may be resistant to antiviral drugs

- Factors that decrease risk

Correct and consistent use of latex condoms (Condom use also helps prevent reinfection by another group or subtype of HIV in those who are HIV positive).

Antiretroviral therapy (ART) may decrease, but not eliminate, the risk of HIV transmission. Therefore, patients on ART need intensive counseling on continued risk reduction behaviors.

ART has been shown to reduce vertical transmission from a mother to a fetus by more than 50% when administered late in pregnancy or during labor.

c. Socioeconomic factors facilitating transmission

- Social mobility

Global economy: more people traveling and working away from home

HIV/AIDS follows the routes of trade and commerce

Men have sex with prostitutes, contract HIV and return home to their wives, who contract HIV and pass it along to their infants in utero or through breast milk.

- Stigma and denial

Denial and silence regarding HIV are the norm.

People with HIV are stigmatized for many reasons:

HIV is a slow, incurable disease, resulting in illness and death.

HIV is considered a death sentence.

People often do not understand how HIV is spread and are irrationally afraid of acquiring it from those infected with it.

HIV transmission is often associated with moral violations of social mores concerning sexual relations, so people with HIV are tainted with the notion of their having done something “bad.”

People do not want to admit that a fatal disease spread by behavior branded as “immoral” could be rampaging through their community or country.

People tend to stigmatize or blame certain groups for spreading HIV, for example, sexually promiscuous people or drug users.

Stigma prevents people from speaking about or acknowledging HIV as a major cause of illness and death.

Stigma prevents HIV-infected people from seeking care and from taking preventive measures.

Even when counseling and testing are offered, people may not want to know if they are infected for fear of being stigmatized; this fuels the spread of the disease.

- People in conflict

AIDS is spread at times of instability, war, and violent struggles for power.

Members of the military engage in commercial sex.

They use rape as a way to humiliate and control civilians or to weaken an enemy by destroying the bonds of family and society.

- Cultural factors

Cultural traditions, beliefs and practices affect people’s understanding of health and disease and their acceptance of conventional medical treatment.

Culture describes learned behavior affected by gender, home, religion, ethnic group, language, community and age group.

Culture can create barriers that prevent people, especially women, from taking precautions.

For example, in many cultures, domestic violence is viewed as a man’s right, which reduces a woman’s control over her environment. This means she cannot question her husband’s extramarital affairs, cannot negotiate condom use and cannot refuse to have sex.

Give country-specific examples.

- **Gender**
Gender roles have a powerful influence on HIV transmission. In many cultures, men are expected to have many sexual relationships. There is social pressure for them to do so. This increases their risk of becoming infected. Because women often suffer economic inequities, as described elsewhere, they often need to use sexual exchange as a means of survival. This exposes them to unacceptable risks when they try to negotiate safe sex (for example, rejection, loss of support and violence).
- **Poverty**
Poor people lack access to information needed to understand and prevent HIV/AIDS. Ignorance of the basic facts makes millions of people worldwide vulnerable to HIV infection. A study in Carleton, South Africa showed that one-third of people were convinced that HIV-positive people always show symptoms.
- **Drug use and alcohol consumption**
These lower a person's inhibitions and impair judgment, which may result in risky behavior. Injecting illicit drugs frequently involves the sharing of needles and injection equipment, increasing the risk of HIV transmission.

SESSION 3 HIV/AIDS Prevention

PURPOSE

In this session, participants will learn about the components of comprehensive HIV/AIDS programming. The session covers risk reduction, behavior change communication, voluntary counseling and testing, and care and treatment. It also explores the relationships among the different components.

OBJECTIVES:

By the end of this session, participants will be able to:

1. Describe the major components of HIV/AIDS programs and the factors that make programs effective.
2. Discuss interventions targeted at risk reduction and causative factors.
3. Identify approaches to STI management, VCT, and the synergy among prevention, care and treatment.

TIME:

50 minutes

A. Prevention Interventions

1. Mainstays of a successful prevention program

- a. To be successful, prevention interventions must address the modes of HIV transmission.
- b. Heterosexual intercourse is the most common mode of HIV transmission in resource-poor countries. Interventions must take into account variables that fuel heterosexual transmission and ways of reducing this transmission.
- c. The key factors in heterosexual transmission of HIV are:
 - Frequent change of sexual partners
 - Unprotected sexual intercourse
 - Presence of STIs and poor access to STI treatment
 - Lack of male circumcision
 - Social vulnerability of women and young people
 - Economic and political instability of the community
 - Lack of knowledge of serostatus
- d. Ways to reduce heterosexual transmission of HIV:
 - Better recognition of the symptoms of STIs and improved behavior in seeking treatment
 - Better management of STIs
 - Sexual abstinence or delayed onset of sex, especially for adolescents
 - Fewer sexual partners
 - Safer sex practices, including consistent, correct use of condoms
 - Supportive social environment to sustain behavioral change
 - Reduced stigma and discrimination against people with HIV
 - Promotion of male circumcision
 - Abstinence
- e. Despite the explosive spread of HIV/AIDS, several intervention programs have been successful. The mainstays of these programs are:
 - Improved access to VCT
 - Behavior change communication that includes messages about abstinence, fidelity and condom use
 - Improved access to condoms to reduce the risk of infection and to decrease vulnerability to HIV
 - Effective management of STIs
 - Change in social norms to support behavior change
 - Safe blood transfusions through widespread testing of donors
 - Rigorous application of universal precautions and PEP in health care settings

2. Interventions aimed at decreasing the risk of infection include:

- Interventions to reduce high-risk sexual behaviors such as frequent changes in sexual partners, unprotected sexual intercourse and early sexual debut.
- Interventions aimed at changing situations that support high risk sexual behavior, such as poverty among young women, truck stop situations in communities where these women live, heavy alcohol use associated with sexual behavior. High-risk groups are typically sex workers and their clients; people who are highly mobile, such as long distance truck drivers and migrant workers; the military; and police.
- Behavior change interventions and behavior change communications can be targeted at the general population or at high-risk groups, and must be tailored accordingly. Examples include:

- Community drama to increase a community's awareness of risks for HIV transmission
- Peer education sessions to teach skills in condom use and condom negotiation
- Group discussions with youth about delaying sexual debut
- Social marketing of condoms
- Social norm changes to support risk reduction through drama, peer education and community meetings

3. Interventions must address causative factors, including vulnerability

Vulnerability results from individual and societal factors that increase the risk of HIV infection. These factors—which include poverty, unemployment, illiteracy, gender inequities, cultural practices, lack of information and services, and human rights abuses—greatly increase the vulnerability of some groups, most typically adolescent girls, women, sex workers, illegal immigrants, orphans and displaced persons. Young people are often more vulnerable because they lack financial independence and are in a stage of life where experimentation is common.

The following are examples of how vulnerability can be an issue for some of these groups:

- Illiterate women with limited skills, few job opportunities and limited access to health information and services are more likely than other women, and the population as a whole, to engage in unprotected sex for money.
- Child prostitution and financial enticement of young girls by adult men increase girls' vulnerability to HIV/AIDS in many countries.
- Orphaned girls often have to curry favors from their teachers or other adult men in order to stay in school or support their siblings.

Interventions to decrease vulnerability include those that aim to:

- Change adverse policies, social norms and harmful cultural practices.
- Create income-generation schemes and programs for orphans and other vulnerable children.

Behavior change interventions need to take into account the factors that increase vulnerability

4. Effective management of STIs can reduce the risk of HIV infection.

This is because STIs increase the transmission and acquisition of HIV. Worldwide, more than 300 million new cases of STIs occur each year, mostly in poor countries, and the global distribution of HIV is similar to that of STIs. Note that STIs are an important cause of ill health, especially in women and children.

B. Voluntary Counseling and Testing (VCT)—An Essential First Step

There is a synergistic relationship between VCT and HIV care and treatment.

Counseling and testing is not only an effective prevention, care and support intervention aimed at the public in general, it is an essential first step in the diagnostic process for people with suspected HIV-related illness. Counseling is an important component of testing. Counseling has a place at both pre- and post-test points, and testing can be both an entry point to care and an opportunity to reinforce prevention messages. This applies to those who test positive and to those who test negative. For those who are positive, this is an important opportunity to promote affirmative living.

- A randomized control trial in Kenya, Tanzania and Trinidad showed that VCT significantly reduced high-risk sexual behavior among individuals and couples.

C. Care and Treatment: Enhancing the Efficacy of Prevention

Providing care and treatment enhances the efficacy of prevention in several ways. Access to care and treatment:

- Helps provide hope to those living with HIV/AIDS and their families
- Helps restore dignity to PLHA and thereby reduce the stigma associated with HIV infection
(Providing hope and restoring dignity help to decrease stigma, thereby increasing the likelihood that there will be community dialogue about HIV, which is a prerequisite to prevention.)
- Helps reduce the risk of sexual transmission through effective ART
- Helps encourages people to seek VCT and PMTCT services
- May promote behavior change
- Provides additional opportunities for prevention education and counseling

Note: Studies in industrialized countries have shown that access to ARV drugs may lead to more high-risk behavior. Counseling on prevention while on ART is critical.

SESSION 4 Comprehensive Care for People Living with HIV/AIDS (PLHA)

PURPOSE

To provide an opportunity for participants to explore issues and strategies involved in providing comprehensive care and treatment services

OBJECTIVES:

By the end of the session participants will be better prepared to:

1. Describe the purpose and components of a comprehensive care and treatment program in primary, secondary and tertiary health care settings.
2. Discuss the HIV/AIDS continuum of care.
3. Discuss the management of HIV/AIDS as a chronic disease.
4. Describe the importance of and elements of standards of care.
5. Discuss the opportunities within care and treatment programs to promote prevention.
6. Discuss HIV/AIDS programmatic issues in their local situation.

TIME:

2 hours

1. Background

Care, treatment and support programs should be designed to respond to the needs and demands of people living with HIV/AIDS and their families or households. This often requires considering a context of stigma, fear, neglect and impoverishment that complicates the clinical picture. Access to antiretroviral treatment can help mitigate the effect of this context.

The purpose of HIV/AIDS care, treatment and support programs is to:

- Assure equitable access to diagnosis, medical care, pharmaceuticals and supportive services.
- Reduce morbidity and mortality from HIV/AIDS and related complications.
- Promote prevention opportunities within care, treatment and support clinical encounters.
- Improve the quality of life for adults and children living with HIV/AIDS and their families.

2. Components of comprehensive care, treatment and support

Providing HIV/AIDS care to people living with HIV and AIDS, and to their families requires a broad range of services that includes not only medical care and pharmaceuticals, but also supportive services to assure adequate nutrition; psychological, social, and daily living support; and prevention messages wherever the opportunity arises.

Comprehensive HIV care includes the following components:

- Medical and nursing care
 - Counseling and testing for screening and diagnostic purposes
 - Prophylaxis of opportunistic infections
 - Management of HIV-related illnesses, including opportunistic infections
 - TB control
 - STI management
 - Management of HIV disease with HAART
 - Palliative care
 - Access to HIV-related drugs, including drugs for opportunistic infections, antiretrovirals and traditional therapies
 - Interventions to reduce parent-to-child transmission of HIV
 - Clinical HIV/AIDS care for mothers and infants
 - Support systems such as functional laboratories and drug management systems
 - Nutritional support
 - Health education
 - Adequate universal precautions in clinical settings and post-exposure prophylaxis (PEP)
- Psychological support
 - Community services to meet the emotional and spiritual needs of positive individuals and their families, including support through post-test clubs and peers
- Socioeconomic support
 - Material and social support within communities to ensure that nutritional and daily living needs are met
 - Support for orphans and vulnerable children (OVC)
- Involvement of HIV-positive individuals and their families in service planning and delivery to ensure that HIV care, treatment and support programs intended for them address their needs and include human rights
- Respect for human rights and legal needs
 - Services that address stigma and discrimination issues in health facilities, in communities and in the workplace as well as promote equal access to care

Figure A1, 4.1, below illustrates the main domains and elements of HIV comprehensive care.

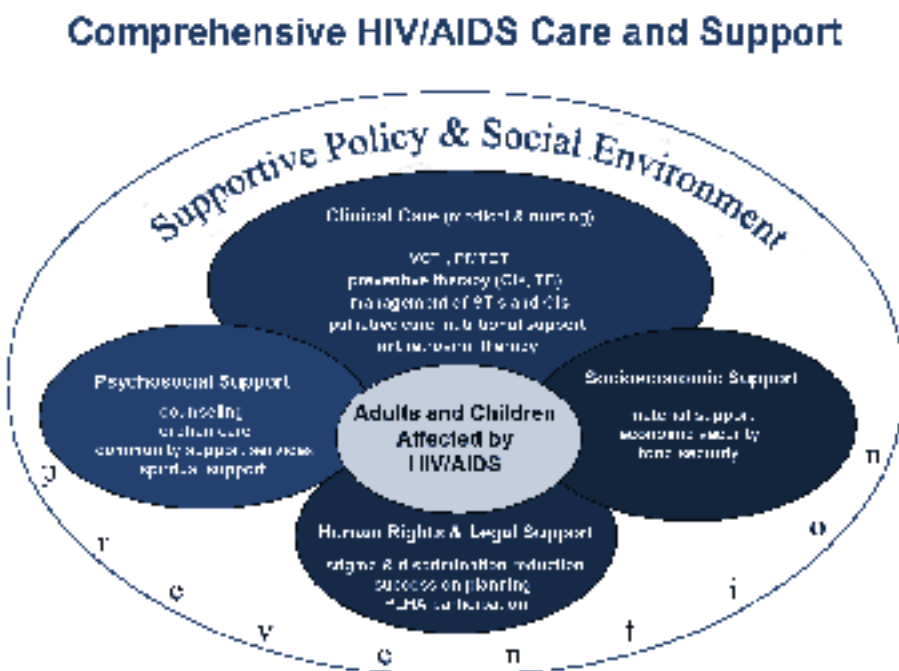


Figure A1, 4.1: Comprehensive HIV/AIDS Care, Treatment and Support

In this comprehensive approach, each service is linked to and reinforces other services.

3. Continuum of HIV/AIDS care, treatment and support

Multiple providers or programs may offer the range of care, treatment and support services in different locations. However, partnership and collaboration are essential to make timely patient access to the appropriate services possible. The HIV Care Continuum (Figure A1, 4.2, below) illustrates how these linkages should function in a referral system. Care providers at any service point should know who provides other services within comprehensive care, where the services are located, and when and how to make a referral.

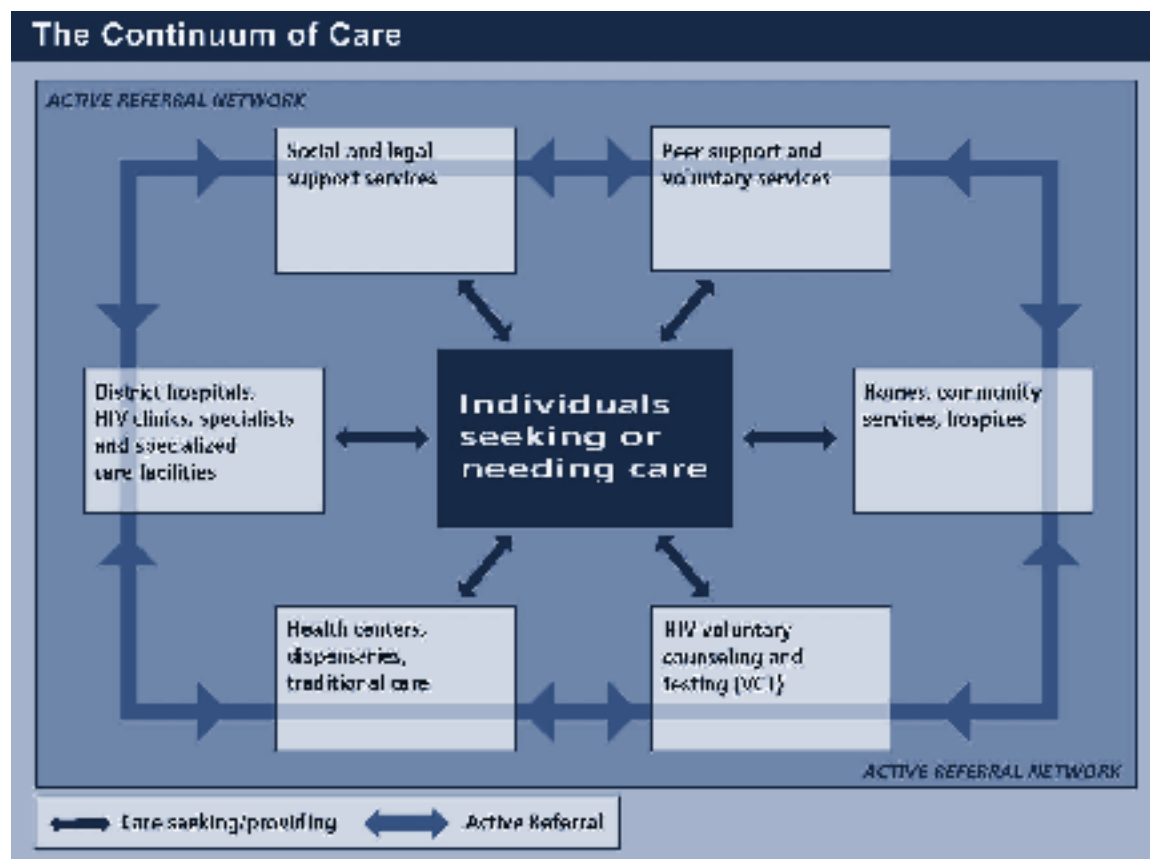


Figure A1, 4.2: The HIV Care Continuum

In the medical and nursing domain, referrals need to be made to higher echelons and discharge planning to lower echelons, for example, home care. Home care providers should be able to assess risk situations for referrals to both medical and support services. Referrals at all levels must be explicit to ensure that social, legal, human rights, and peer support needs are being met. Peers from PLHA support groups play a major role and should be involved in shaping the delivery of care in communities.

4. HIV/AIDS care requires a chronic disease management approach

In resource-poor settings, chronic disease management has been relegated to the background. Priority has been given to acute illnesses, for example, respiratory illnesses and malaria. But chronic disease management is essential, especially once life-prolonging treatment for HIV/AIDS is available, creating a demand for long-term care.

Principles of chronic disease management that are pertinent to HIV/AIDS care follow.

- a. The patient and health providers work as a team to foster the patient's self-management skills, the health care provider's application of technical knowledge and skills, and assistance from social services. This demands a steady relationship between patient and health care team members. At a minimum, the team includes a clinician authorized to prescribe medications, a nurse and a pharmacist. Supporting this is collaboration with community service organizations providing services to meet the patient's many nonmedical needs. There should be regular interdisciplinary care team meetings to discuss care issues, review treatment protocols, express concerns, and support colleagues.
- b. Continuing care involves regularly scheduled visits with clinical and support staff, on a predetermined schedule, to (1) monitor disease status and treatment effect, including labs; (2) provide ready response to emerging health and socioeconomic issues; while at the same time (3) maintaining up-to-date, easily retrievable documentation. The corollary is that continuing care always tries to avoid or reduce disease-related exacerbations that require acute management.
- c. Support for care team members is essential to provide quality of care and avoid frustration and burnout.
- d. Currently, available treatment is life-long. It is to be expected that motivation to maintain wellness and adhere to treatment will fluctuate during the course of the disease.

5. Standards of care

- a. Setting standards of care for HIV-infected persons is intended to promote delivery of the highest possible quality of care and establish measures to evaluate and improve client services. This requires deciding how to achieve the standards, applying them in clinical practice and then evaluating whether they have been achieved (what is needed/process issues/desired outcomes).
- b. There will be different standards for a comprehensive care package at each level of the health care system—that is, referral hospital, district or peripheral hospital, health center and dispensary/community. Developing practice standards and then monitoring the quality of their implementation are both important to delivering appropriate HIV care.
- c. Clinical services include affordable and standardized practices based on international and national guidelines: preventive therapies, management of HIV-related conditions and opportunistic infections, laboratory services, secure supply of prescribed medications, highly active antiretroviral therapy (HAART), post-exposure prophylaxis (PEP) for occupational injuries and rape, STI management and palliative care.

6. Prevention as a part of care and treatment

Prevention must not be neglected as PLHA receive care and treatment. In developed countries, there has been a tendency to relax prevention behaviors, such as condom use, once many with HIV/AIDS are treated. This can be a tragic consequence of what is perceived as an enhanced program for PLHA.

At each point in the process of providing care and treatment, opportunities exist to introduce or reinforce prevention messages.

Targets of opportunity for integrating prevention into care and treatment follow:

Clinic waiting room	<ul style="list-style-type: none"> • Posters about preventing HIV transmission (partner reduction, abstinence, condom use) • General HIV/AIDS videos • Simple visually oriented brochures about transmission
Provider-patient interaction	The provider should remind clients about preventing HIV transmission at each visit (through simple messages, such as “Remember the ABCs,” and checking to see that the client understands, as well as by providing condoms or at least having them visibly available in the provider’s office).
Home care	Visitors to the homes of PLHA can also carry condoms and talk to the family about proper precautions in caring for patients, as well as reminding them of general and specific risk reduction behaviors for themselves.

SESSION 5 Immunology and Natural History of HIV/AIDS

PURPOSE:

In this session, participants will learn about the normal immune system, how the HIV virus damages and destroys the immune system, and how the disease progresses.

OBJECTIVES:

By the end of this session, participants will be able to:

1. Discuss how the normal immune system works.
2. Describe the HIV lifecycle and its effect on the immune system.
3. Describe the stages of disease progression, including symptoms, laboratory findings and management of primary infection and seroconversion.

TIME:

60 minutes

A. The Normal Immune System

1. The Normal Immune System

- a. Protects the body by recognizing antigens on invading bacteria and viruses and reacting to them.
- b. Consists of lymphoid organs and tissues, including the bone marrow, thymus gland, lymph nodes, spleen, tonsils, adenoids, appendix, blood and lymphatic vessels.
- c. All components are vital in the production and development of lymphocytes or white blood cells.
- d. B-cells and T-lymphocytes (T-cells) are produced from stem cells in the bone marrow. B-cells mature in the marrow, but T-cells travel to and mature in the thymus gland.
- e. B-cells recognize specific antigen targets and secrete specific antibodies that coat the antigens by making them more vulnerable to phagocytosis or by triggering the complement system.
- f. T-cells regulate the immune system and kill cells that bear specific target antigens. Each T-cell has a surface marker such as CD4, CD8 and CD3 that distinguishes it from other cells.
- g. CD4 cells are helper cells that activate B-cells, killer cells (CD8) and macrophages when a specific antigen is present.
- h. Phagocytes include monocytes and macrophages—large white blood cells that engulf and digest cells carrying antigenic particles.
- i. The complement system consists of 25 proteins and is capable of inducing an inflammatory response when it functions with antibodies to facilitate phagocytosis or to weaken the bacterial cell membrane.
- j. When the immune system is weakened or destroyed by a virus such as HIV, the body is vulnerable to opportunistic infections.

2. The Human Immunodeficiency Virus

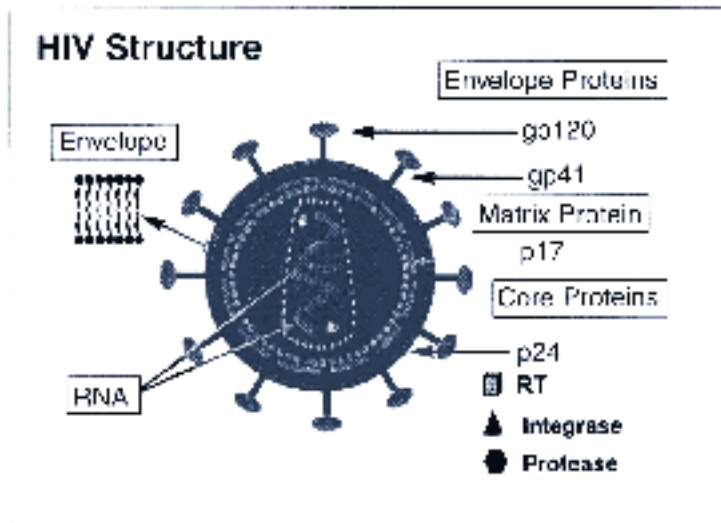


Figure A1, 5.1: The Human Immunodeficiency Virus

- a. It is a retrovirus, which uses its RNA and the host's DNA to make viral DNA. It has a long incubation period (clinical latency).
- b. It consists of a cylindrical center surrounded by a sphere-shaped lipid envelope. The center consists of two single strands of ribonucleic acid (RNA).
- c. It causes severe damage to and eventually destroys the immune system by utilizing the DNA of CD4 lymphocytes to replicate itself. In the process, the virus destroys the CD4 lymphocyte.
- d. HIV lifecycle
 - Host cells infected with HIV have a very short lifespan.
 - Therefore, HIV is continuously using new host cells to replicate itself.
 - Up to 10 million individual viruses are produced daily.
 - In the first 24 hours after exposure, the virus attacks or is captured by dendritic cells (type of phagocyte) in the mucous membranes and skin.
 - Within five days of exposure, infected cells make their way to lymph nodes and eventually to the peripheral blood, where viral replication becomes very rapid.
 - The five phases are: binding and entry, reverse transcription, replication, budding, and maturation (see Figure A1, 5.2, below).

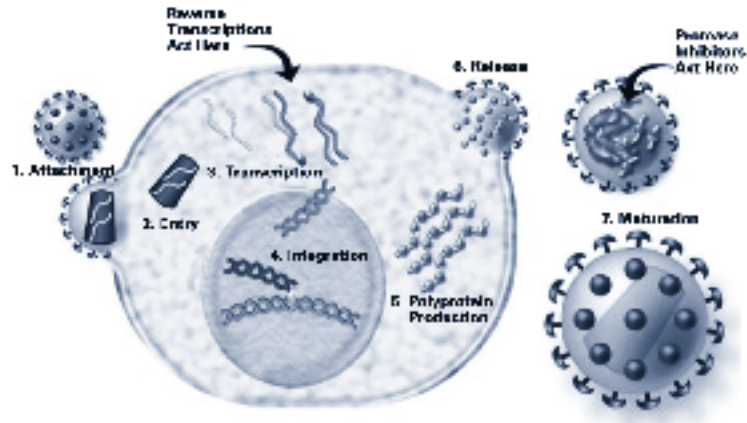


Figure A1, 5.2: The Five Phases of the HIV Lifecycle

B. Natural History: The Chronology of HIV-Induced Disease

1. Primary HIV Infection and Seroconversion

a. Clinical features

- On first exposure, there is a 2-4 week period of intense viral replication before onset of an immune response and clinical illness.
- Acute illness lasts from 1-2 weeks and occurs in 53% to 93% of cases.
- Clinical manifestations resolve as antibodies to virus become detectable in patient serum.
- Patients then enter a stage of asymptomatic infection lasting months to years.

b. Seroconversion illness

- Manifests as a flu-like syndrome. General symptoms may include:
 - Acute onset of fever with or without night sweats
 - Myalgia is common, may be associated with muscle weakness
 - Lethargy and malaise are frequent and often severe, may persist for several months
 - Depressed mood
 - Pharyngitis/sore throat
 - Lymphadenopathy
 - Arthralgia
 - Anorexia/weight loss
- Neurological symptoms
 - HIV readily isolated from the cerebrospinal fluid during primary infection
 - Early infection of central nervous system frequently results in aseptic meningoencephalitis with symptoms of headache, photophobia and retro-orbital pain.
 - Other more unusual features include:
 - Myelopathy
 - Peripheral neuropathy
 - Brachial neuritis
 - Facial palsy
 - Guillain-Barre syndrome

- Gastrointestinal symptoms
 - Mucocutaneous ulceration is a distinctive feature. Ulcers are generally small, round or oval. Surrounding mucosa looks normal.
 - Pharyngeal edema is common.
 - Oral/oropharyngeal candidiasis
 - Nausea/vomiting
 - Diarrhea

- Dermatological symptoms
 - Erythematous, non-pruritic, maculopapular rash is common.
 - Roseola-like rash
 - Diffuse urticarias
 - Desquamation of palms and soles
 - Alopecia

- Laboratory findings

First 1-2 weeks:

- Profound reduction in CD4 and CD8 lymphocyte counts with inversion of the CD4:CD8 (The normal ratio is 2:1—2 CD4 cells to 1 CD8 cell.)
- Followed by a peripheral lymphocytosis consisting of predominantly CD8 cells.
- Mild thrombocytopenia is common.
- C-reactive protein level and erythrocyte sedimentation rate are frequently elevated.
- Hemoglobin level usually remains stable.
- Elevated serum alkaline phosphatase and transaminase levels are common.

First 2-6 weeks:

- Antibodies to HIV are detectable.
- HIV antigen (p24) may be detected in serum before detecting antibodies; therefore, antigen testing is important in diagnosing seroconversion.
- The *window period*: Period in which HIV-positive patients may not test positive for anti-HIV antibodies. Generally limited to first 2-6 weeks, but up to 3 months is given to be sure. In rare cases, the window period may last as long as 6-12 months.

Note: In high prevalence, high incidence settings such as STD or sex worker clinics, as many as 5% of those testing HIV antibody negative will actually be in the window phase and are really infected with HIV. People in these settings who test HIV negative should be counseled strongly to return in three months for repeat testing.

- Management

Clinical management is primarily symptomatic.

The goal at this stage is to give appropriate counseling and education to prevent further spread.

Issues to consider:

- The physical distress of the illness
- Tentative nature of the diagnosis before serodiagnosis is made
- Patient's self-reproach
- Implications for the patient's lifestyle
- Contact tracing should be attempted to identify the source.
(Contact person may be unaware of their infection; may be seroconverting themselves; may be unaware of safe sex or safe injecting practices.)
- Study of using antiretroviral agents during this stage is underway
- If serious symptoms of seroconversion persist (e.g., neurological), consider ART.

2. Stages of Disease Progression

a. Early immune depletion (CD4 cell count >500/ μ L)

- During this stage, level of virus in blood is very low.
- HIV replication taking place mostly within lymph nodes
- Generally lasts for five years or more
- Persistent Generalized Lymphadenopathy (PGL) without other symptoms may be noted.
- Usually symptom-free, but several autoimmune disorders may appear, such as:
Idiopathic thrombocytopenia (ITP)
Guillain-Barre syndrome

b. Intermediate immune depletion (CD4 cell count between 500 and 200/ μ L)

- Immune deficiency increases.
- Infections start and persist or increase as the CD4 cell count drops.
- Consider beginning first-line antiretroviral therapy (if indicated by the guidelines).

Consider preventive treatment for TB and Cotrimoxazole PT

- Less severe infections appear, particularly of skin and mucosal surfaces:

Tinea	Molluscum contagiosum
Seborrheic dermatitis	Bacterial folliculitis
Warts	Gingivitis

- Other infections begin to manifest
 - Oral candidiasis appears late in this phase.
 - Reactivation of herpes zoster and herpes simplex may occur.
 - Infection with *Mycobacterium tuberculosis* often occurs during this phase, although it can occur at any time.
 - Chronic sinusitis

[Refer to chart depicting chronology of HIV induced diseases.]

c. Advanced immune depletion (CD4 cell count <200/ μ L)

- Case definition of AIDS is having a CD4 cell count of less than 200/ μ L.

SESSION 6 | Diagnosis of HIV**PURPOSE:**

Clinicians or health care providers all too often miss the diagnosis of HIV. They need to know the many presentations of HIV disease and use a systematic framework to ensure a proper diagnosis.

In this session, participants will learn how to make an initial assessment, what questions to ask when taking a history and what to look for in a physical exam. They will practice taking a sexual history and learn when and how to advise patients to consider HIV testing. They will learn about the various serologic and laboratory tests available for diagnosing HIV infection and AIDS, as well as how they work and how they are used, and will discuss the various options available in their local situation, including availability and costs.

OBJECTIVES:

By the end of this session, participants will be able to:

1. Describe why establishing trust between the caregiver and the patient is essential.
2. Identify the questions to ask in taking a patient's history and what to look for on a physical exam.
3. Discuss why it is important to take a proper sexual history.
4. Take a sexual history using open-ended questions and listening skills.
5. Identify clinical and lifestyle clues using an algorithmic approach to HIV testing, and describe when and how to advise patients to consider HIV testing.
6. Describe the various serologic tests and how they work.
7. Interpret the results of the tests and make a diagnosis.
8. Establish the stage of the disease and exposure to other infectious diseases through a baseline laboratory evaluation of CD4 cell count.
9. Discuss guidelines for testing in their local situation based on availability and cost.

TIME:

2 hours and 40 minutes

A. Overview

1. Clinicians and health care providers all too often miss the diagnosis of HIV infection. They need to know the many presentations of HIV disease.
2. Knowing when and how to advise patients to consider HIV testing is a challenge.
3. The chronology of HIV disease provides a useful framework.
4. Using clinical decision-making algorithms helps decide whether or not to advise HIV testing.

B. Patient Assessment

1. Initial Assessment

- a. Establishing trust is essential
 - Providers should remember that most patients are anxious and frightened by the mention of HIV; it is a life-threatening disease with stigma attached to it.
 - The ability to empathize, share knowledge without being patronizing, provide reassurance and remain non-judgmental helps gain a patient's trust.
 - Trust between caregiver and patient is essential in order to obtain accurate information and care for the patient.

- b. The patient interview

The interview is a way to establish trust between the patient and the doctor or nurse (or health care worker of any discipline). Interviews have three main functions: to gather information, to handle emotions, and to manage behavior. You need to develop the specific skills for each of these functions. Doing so takes time. This workshop does not deal with this particular set of skills, but all professionals caring for people with HIV/AIDS should get special training addressing them.

Here is a brief overview of the three functions of the interview and the skills associated with them, with examples:

- **Information gathering**

Skills

- Open-ended questions (cannot be answered with a simple “yes” or “no”)
 - “Tell me about how things have been going since your last visit.”
- Facilitation
 - “Go on...I am listening.” (nonverbal: nodding)
- Direction
 - “I understand that many things are bothering you...could we focus on the diarrhea for just a minute?”
- Summarizing
 - “So, from what I understand, you have had a lot of nausea and some cramping, you have taken all of the pills each day this week and you want some help with these symptoms...do I have it all right?”

- **Emotion handling**

This is especially important in caring for PLHA and their families.

Skills

- Empathy
 - “I can see that you are very discouraged.”
- Reassurance
 - (Understandability) “It is understandable that you are sad...look at what has happened in the last month: you lost your best friend, you are feeling weak and your son is not doing well in school...anyone would

be sad facing all of that.”

(Time limitedness) “It might help to keep remembering that these symptoms last for no more than one month in most people, and you’ve been through this for three weeks now.”

- Education about illness
- Support /partnership
 - “I want you to know that I will be here to help you through this.”

- **Behavior management**

This is used to achieve both medication adherence and lifestyle change (such as risk reduction). You can accomplish this best through education and motivational skills.

Skills

- Authority/modeling
 - “I have seen this drug work in many patients.”
- Conditioning
 - “You really did well this week....you remembered most of your pills.”
- Trait and choice attribution
 - Trait “You do a good job of keeping track of things at work and caring for your children, so you probably can keep track of these medicines.”
 - Choice “It is up to you to decide what method you want to use to remind yourself of when to take which pills.”
- Rehearsal and affirmation of intent.
 - Through rehearsal, you help the patient think through a typical day, review what they will be doing about their medication and say what they intend to do (Affirmation of intent).

History specific to HIV/AIDS:

In addition to the usual aspects of history taking, you should address the following areas:

- Previous tests for HIV? If yes, why tested and what were results?
- Presence of HIV-associated signs and symptoms
- History of sexually transmitted diseases and other infectious diseases
- Other medical diagnoses, for example, malignant or premalignant conditions
- Mental health history (look for signs of depression)
- Family history: age and health of children, HIV in other family members
- Medications taken regularly
- Social history
- Sources of support (family, friends, community, health care providers)
- Sexual history (see 2 and 3 below)
- If appropriate, ask if he/she remembers ever being treated for HIV. (If yes, then *ideally* you would find out about the pretherapy CD4 cell count, HIV viral load and treatment, including duration/adherence.)

c. The physical exam: looking for signs of HIV

- General: look for evidence of wasting, marked fat loss in extremities, face and buttocks
- Skin: rash, papular, macular, vesicular or ulcerative lesions
- Eyes: examine conjunctiva and fundus for changes (retinal opacification, cotton wool spots)
- Oropharynx: (often yields earliest evidence of HIV) examine for thrush, etc.
- Lymph nodes: nontender or minimally tender lymphadenopathy, regional adenopathy, extremely tender lymph nodes
- Lungs: rales
- Gastrointestinal: hepatosplenomegaly
- Neurology: dementia, headache, seizures, focal neuropathies
- Pelvic exam: discharge, ulcers, abscesses

2. Taking a sexual history

a. Why it is important

- Taking an effective and comprehensive sexual practice and lifestyle history is an integral part of medical management.
- Taking a sexual history helps to determine the possibility of past exposure. Emphasize eliciting information about behavior that might have placed the person at risk.
- You will decide to recommend testing on the basis of clinical and lifestyle information obtained from a patient's history and from physical exam.

b. Try to begin with the least sensitive issues.

c. Put patient at ease by asking other relevant details, such as any history of symptoms or signs of concern to the patient and details of past illnesses, including STDs, etc.

d. Explain that taking a sexual history is important in order to assess the person's overall health and determine what tests to do.

e. If possible, ask questions in the context of a general medical history.

f. The interview should move from open-ended to close-ended questions.

In the examples below, most are closed-ended questions on the assumption that the interview has progressed from the initial, more open-ended stage. For example: "Please tell me about how you see your risk for HIV?" to "When was the last time you engaged in sexual intercourse without a condom?"

g. Listen carefully to the responses and ask clarifying questions.

h. Make sure that the patient understands the terms you are using. If possible, use the patient's vocabulary, and be culturally sensitive.

i. Modify your questions to suit the situation and the responses.

j. Be sure all questions about sexual practices are free of any assumptions regarding sexual orientation or monogamy.

k. Be sure to establish whether the patient has had unprotected sex at any time, and especially during the last three months, or has at any time had problems using condoms (for example, breakage).

l. Elicit a history of sexual contacts, taking the most recent first and working back from there.

3. Questions for sexual history

The following questions are mostly close-ended, to be asked only after there has been time for more open-ended discussion and the development of rapport:

- a. To initiate a more detailed discussion of sexual history in relation to potential exposure:
 - Tell me what part sexual activity plays in your life right now? (If necessary, ask “Are you sexually active?”)
 - Can you describe for me what you think about your risk for HIV infection? Why do you think you may/may not be at risk?
 - Have you ever had a sexually transmitted infection? (It helps to give examples.) Do you know if any of your sexual partners have developed a sexually transmitted disease or AIDS?

- b. To elicit more details about the number and sex of partners and the use of condoms:
 - Have you ever had, or do you currently have, sex with men, with women or both?
 - How many sexual partners have you had? (If possible, determine the number of partners in the patient’s lifetime, during the past year and in the past three months.)
 - Do you use condoms?
 - If so, how often?
 - When did you begin using condoms?
 - If not, what was your reason for not using condoms?

- c. To identify sexual practices:
 - What form of sex do you usually have with your partner?
 - Do you have vaginal intercourse?
 - Do you have anal sex? (This may require additional explanation or description.)
 - Do you have oral sex? (This may require additional explanation or description.)

- d. To elicit (nonsexual) lifestyle clues to the risk of HIV infection:
 - Injecting drug use
 - Do you smoke cigarettes, drink alcohol or use other drugs?
 - If the patient currently injects drugs:
 - Do you share needles or other drug equipment?
 - If the patient is a former injecting drug user:
 - When did you stop injecting drugs?
 - Did you share needles or other drug equipment? If so, until when?
 - Blood products
 - Have you ever had a blood transfusion?
 - Have you ever had surgery or a major accident?
 - Did you receive any blood as a result of this surgery/accident?

Role-Play #1

ROLE PLAYER INSTRUCTIONS: PROVIDER

You are a primary care doctor in rural Ghana. This is your 35th patient of the day. She is a 20-year-old woman who looks very worried. This makes you worry about how long this will take and how much trouble it will be to find out what is really going on. You think she is the niece of your neighbor.

CUT OR SEPARATE SHEET HERE

ROLE PLAYER INSTRUCTIONS: PATIENT

You are a 20-year-old woman who has just learned that your boyfriend is HIV positive. You also have been having some headaches, but otherwise you feel well. You are upset about your boyfriend and decided to come to the hospital so the doctor could treat your headaches. The headaches feel like a grabbing sensation around your head and have been there for two weeks. They last all day. They do not wake you up or cause nausea, vomiting or other problems. Aspirin helps.

For your sexual history: You began having sex at the age of 15. But it was not a good experience. Your teacher in high school seduced you after class one day, and you felt you couldn't refuse. You liked him but didn't think sex with him was in the picture. You have not told anyone about this except for one girlfriend, whom you suspected he had also had sex with.

You and your current boyfriend have been together for one year. You have vaginal intercourse (no anal intercourse or oral sex) about every other week when you are able to be alone. He travels a lot for his work as a truck driver and you suspect he has been with other women, but the two of you have never talked about this.

You and your boyfriend have used condoms occasionally, but usually you don't.

Your boyfriend is your fourth partner in the last four years. The others were all men you knew well; you were with each for about one year. You always used condoms with them and had sex about every other week, as well. None of them ever reported an STD or other problem, and you have had no STDs until this boyfriend. He told you three months ago that you should get checked because he had had an ulcer for a few weeks while he was away.

You have never had a blood transfusion and use no IV drugs.

You are nervous because the doctor looks a little familiar to you and you don't want anyone in your family to know about your situation.

Role-Play #2

ROLE PLAYER INSTRUCTIONS: PROVIDER

You are a primary care doctor in Ghana. This is your 35th patient of the day. He is a 45-year-old doctor from a district about four hours away. You have met him at medical meetings. He looks worried, and you wonder what is going on.

CUT OR SEPARATE SHEET HERE

ROLE PLAYER INSTRUCTIONS: PATIENT

You are a 45-year-old physician in a rural district in northern Ghana, where you have worked for six months after returning from postgraduate studies in rural health in the UK.

You began experiencing a cough a few weeks ago and also got a rash and a fever. You spent last summer in Zambia where you saw many AIDS patients. You have been careful but wanted to leave your district to get checked and maybe discuss your fear of being HIV infected, even though you feel you are at low risk. You cannot get it out of your mind.

You have been happily married for 13 years to a woman who is your age. You have four children, now between 5 and 12 years old.

You and your wife have vaginal intercourse about twice a week, no anal intercourse, but oral sex fairly frequently. You were with one other woman twice during your time in London. You engaged in vaginal intercourse using a condom with no breaks or problems with the condom. You have had no STI symptoms, and you do not know if your partner in London has or has not had an STI. To your knowledge, your wife has been faithful and has not had any STIs. For the last 13 years, your wife and the one other woman have been your only partners.

You do not use drugs or alcohol and have not had a blood transfusion.

C. Laboratory Testing

1. Introduction

- a. HIV antibody tests detect antibodies that the immune system forms against HIV. These tests do not look for the virus itself, but search for antibodies produced against a number of viral capsules and core antigens.
- b. *Sensitivity* means the ability of the test to detect antibodies in general.
- c. *Specificity* is the ability of the test to detect antibodies to specific HIV viral proteins.
- d. *Predictive values* measure whether or not an individual actually has the infection, given the result of the screening test. (Accuracy of HIV serology is excellent.)

2. Serologic tests

- a. ELISA (enzyme-linked immunosorbent assay)/EIA (enzyme immunoassay)
 - Tests for a number of antibody proteins in combination
 - A very *sensitive* test, but not entirely *specific*—can detect antibodies to antigens other than HIV, making it possible to give a false positive
 - A positive (or indeterminate) ELISA result means that the sample needs to be tested further by western blot or a different ELISA test.
- b. Western Immunoblot test
 - Used as a confirmatory test
 - Detects antibodies to a number of specific HIV proteins and is considered to be very specific for HIV
 - Samples yielding a negative result are reported as negative.
 - Antibodies to only a selection of viral proteins may yield an indeterminate western blot; you need to collect a further sample to confirm diagnosis.
 - Bands corresponding to p24 and p55 typically are detected early in seroconversion, followed by glycoprotein bands (gp120; gp41) of the viral envelope [refer to diagram of HIV structure shown in section B.2 above].
- c. DNA PCR (polymerase chain reaction)
 - A qualitative test used to detect intracellular virus
 - Can detect 1-10 copies of HIV proviral DNA
 - Used primarily for viral detection with neonatal infection and with indeterminate serology
- d. Rapid Tests
 - There are various tests available that provide results in about 10 minutes. SUDS, Recombigen and Genie are three examples.
 - *Sensitivity* approaches 100 percent; *specificity* is >99 percent—analogous to EIA screening tests.
 - You can report negative tests as definitely negative; you should confirm positive results with standard serology or with another rapid test.
 - Useful in situations where immediate results are important to management decisions, such as:
 - Cases of occupational exposure, where the use of post-exposure prophylaxis (PEP) may be possible
 - STD clinics and emergency rooms, where seroprevalence rates are high, but follow-up may be impractical or compliance with follow-up poor

3. WHO testing strategy

a. Overview

- HIV infection is diagnosed by a positive HIV test. Many low-income countries cannot afford expensive Western tests.
- WHO has recommended testing strategies based on a combination of screening tests that do not require expensive Western Blot (WB) confirmation assays.
- HIV testing has become much more widely available, and the diagnosis of HIV purely on clinical features is not recommended.
- Confirmatory assays (WB) should be used only to resolve indeterminate results for diagnostic purposes.
- A note about tests results:
 - *Positive test results:* Criteria for a positive test are: (1) a positive ELISA followed by a different positive HIV test or (2) a positive WB. (Depending on the criteria, two different rapid tests reporting positive results can also be considered a positive result.) For rapid tests, there should be guidelines based on a validated algorithm that indicates two tests that can be used together, which, when both are positive, indicate positive serostatus.

Tests that can predict antigens other than HIV can give a false positive result (for example, ELISA).

- *Negative test results:* A negative test result means the patient has not been infected with HIV or that the infection is so recent that detectable antibodies to the virus have not yet appeared in the blood.

False negative test results may occur because of time delay following infection (the “window”), the HIV strain type (for example, HIV-2), and the reagents used.

- *Indeterminate results:* Most often indeterminate results come from a positive ELISA and an indeterminate Western blot, for example, one showing a single band, usually p24. In the case of rapid tests, two different results from two different rapid tests also constitute an indeterminate result.

b. Objectives of the test:

- Transfusion and transplant safety
- Surveillance
- Diagnostic

c. Prevalence of infection in the sample population

- UNAIDS and WHO recommendations for HIV testing strategies according to test objectives and prevalence of infection in the sample population:

Objective of the testing	Prevalence of infection	Testing Strategy
Transfusion and transplant safety	All prevalences	I
Surveillance	>10%	I
	< or =10%	II
Diagnostic	>30%	I
	≤30%	II
Asymptomatic	>10%	II
	≤10%	III



WHO/CDC/UNAIDS/USAID Guidelines for Using HIV Testing Technologies in Surveillance: Selection, Evaluation, and Implementation. 2001. WHO/CDS/CRS/EDC/2001.16, UNAIDS/01.22E

Order of use: The order of use is determined by the specificity and sensitivity of the tests.

- The *sensitivity* of a test is the probability of a positive result if infection or disease is truly present. As the sensitivity of a test increases, the proportion of false-negatives decreases.
- The *specificity* of a test is the probability of a negative result if infection or disease is truly absent. As the specificity of a test increases, the proportion of false-positives decreases.
- The first test should have a higher sensitivity (greater than 99 percent), resulting in fewer false negatives. The second and third tests should have a higher specificity (greater than 99 percent), resulting in fewer false positives.
- In most situations where you are involved in the clinical care of AIDS patients, the prevalence of HIV infection in the population is high, and you encounter patients who meet clinical stage III or IV of HIV infection.

In this situation, one **simple** positive screening test is sufficient to diagnose AIDS. (**testing strategy I**)

- For safe transfusion, testing **strategy I** (1 test) is also sufficient to reject blood if it is positive.
- In all other situations, you will need at least two tests to diagnose AIDS. (**testing strategy II and III**)

4. Voluntary Counseling and Testing (VCT)

a. Perform HIV testing for individual diagnosis according to the rules of voluntary counseling and testing (VCT) services:

a. Testing is done **voluntarily**, with **informed consent**. You should exercise no coercion. Mandatory testing is out of the question. Everyone has the right to know (or not know) his or her HIV status.

- Pre- and post-test **counseling** services are in place
- **Confidentiality** must be guaranteed in order to prevent discrimination
- The test must be **technically sound**, and there must be access to a confirmation test.
- The tests are financially (and culturally) **accessible**
- **Minimum care** is available for the patient

- The rationale behind VCT is that it may reinforce preventive behavior in seronegative people.
- If people know they are seropositive, they can take measures to prevent the development of some OIs, to prevent further HIV transmission, and to prepare themselves and their families for the future.
- *Note:* In high prevalence, high incidence settings such as STD or sex worker clinics, as many as five percent of those testing HIV antibody negative will be in the window phase and will in fact be infected with HIV. People in these settings who test HIV negative should be counseled strongly to return in three months for repeat testing.

5. Baseline laboratory tests

- a. After diagnosis is confirmed, a baseline laboratory evaluation is needed to establish the stage of the disease and exposure to other infectious diseases as quantified by the CD4 count.
- b. Other recommended baseline tests include:
 - CBC
 - Serum chemistry panel
 - Syphilis serology
 - Chest x-ray
 - PPD skin testing
 - PAP smears
 - Serology for hepatitis B (HBV)
- c. CD4 lymphocyte count
 - Normal laboratory ranges are usually 500-1400/mm.
 - A CD4 count is the most useful test for assessing immune function.
 - Depletion of CD cells is the most consistent and notable laboratory abnormality observed in persons with HIV.
 - Knowing the baseline CD4 count is vitally important in assessing the patient.
 - Staging of HIV infection, recommendations for antiretroviral treatment, and prophylaxis against OIs are based on the degree of immunosuppression.

6. Syndromic approach to diagnosis

- a. Where diagnostic facilities are severely limited, management decisions must be based on clinical features and simple laboratory findings. It is always preferable to use HIV testing to make a diagnosis.
- b. Flowchart algorithms are useful tools in the assessment and clinical management of HIV infection in adults in resource-limited settings.
- c. The algorithms in this manual are based on MSF/WHO guidelines and cover the following clinical syndromes:
 - Respiratory problems
 - Neurological disorders
 - Chronic diarrhea and gastrointestinal problems
 - Lymphadenopathy
 - Oral lesions and odynophagia and dysphagia
 - Skin lesions
 - Fever

SESSION 7 Patient Clinical Presentation, Differential Diagnosis and Follow-up**PURPOSE:**

There are several different ways to define HIV infection and AIDS. In this session, participants will learn about the clinical presentation of HIV/AIDS and common disorders associated with HIV infection, including the WHO laboratory and clinical classification systems.

Since initial diagnosis of HIV infection may be difficult because the more general signs and symptoms are common to many other infections, participants will also learn about diseases with a similar presentation to HIV and how to make a differential diagnosis.

OBJECTIVES:

By the end of this session, the participants will be able to:

1. Identify common disorders associated with HIV infection.
2. Diagnose HIV infection based on major and minor signs and symptoms when CD4 lymphocyte counts are not available.
3. Diagnose HIV infection based on the WHO laboratory and clinical classification systems.
4. List diseases that have a similar presentation to HIV infection.
5. Describe the importance of testing for HIV when testing for these other diseases.
6. Give examples of factors that help in making a diagnosis.
7. Discuss follow-up procedures in their local situation.

TIME:

110 minutes or 1 hour and 50 minutes

A. Patient Clinical Presentation

1. Introduction:

- a. Diagnosing and staging of HIV disease in a person living in a resource-limited country is not as easy and quick as one might think.
- b. You need to do a good clinical examination and thorough interview; this can easily take 20 minutes per patient. Common findings to look for on a physical examination include:
 - Oral thrush
 - Macular rash on palate as a sign of Kaposi's sarcoma
 - Herpes zoster scar
Example: In Zambia, in patients under 40 years old, 9 out of 10 with herpes zoster have HIV.
 - Florid nature of skin manifestations, a hallmark of HIV
 - Condition of the pectoralis, temporalis, biceps, gluteus and shin cover muscles as a clue to wasting. Ask yourself if hair is standing up straight. HIV is a wasting *disease* like cancer and TB.
 - Lymphadenopathy usually not >2.5 cm.
- c. In resource-limited countries, health care workers use the WHO AIDS case definitions and staging system adapted for countries with limited clinical and laboratory diagnostic facilities.
- d. Where laboratory monitoring is available, one should use a further refinement of the WHO staging system.

2. WHO case definitions for HIV/AIDS surveillance in countries with limited clinical and laboratory diagnostic facilities

- a. Where HIV testing is *not* available, diagnose patients clinically based on major and minor signs and symptoms.
- b. The presence of at least two major signs and at least one minor sign fulfill the case definition for HIV/AIDS.
 - Major signs:
 - Weight loss >10 percent of body weight
 - Chronic diarrhea (>1 month)
 - Prolonged fever (>1 month)
 - Minor signs:
 - Persistent cough for more than one month (in case of TB, do not use this criterion)
 - Generalized pruritic dermatitis
 - History of herpes zoster
 - Oropharyngeal candidiasis
 - Chronic progressive or disseminated herpes simplex infection
 - Generalized lymphadenopathy
 - The presence of either generalized Kaposi's sarcoma or cryptococcal meningitis suffices for the case definition of AIDS

This method has the problem of low sensitivity and specificity.

c. Where HIV testing is available

- A positive HIV test together with the presence of one or more of the conditions below fulfills the case definition for HIV/AIDS.
- Weight loss >10 percent of body weight, or cachexia—with diarrhea or fever, or both—for at least one month and not known to be the result of a condition unrelated to HIV infection
- Cryptococcal meningitis
- Tuberculosis (pulmonary or extrapulmonary)
- Kaposi's sarcoma
- HIV encephalopathy: neurological impairment that prevents independent daily activities and not known to be the result of a condition unrelated to HIV infection
- Esophageal candidiasis
- Life-threatening or recurrent episodes of pneumonia
- Invasive cervical cancer

d. The WHO Clinical Staging System

- WHO has also developed a staging system that includes a clinical classification system and a laboratory classification to categorize the immunosuppression of adults by their total lymphocyte counts.
- This staging system has been proven reliable for predicting morbidity and mortality in infected adults.
- Clinical markers believed to fall into four stages of prognostic significance form the basis of the WHO Clinical Staging System. The system incorporates a patient performance scale.

Clinical Stage I

1. Asymptomatic infection
2. Persistent generalized lymphadenopathy (PGL)
3. Acute retroviral infection

Performance scale 1: asymptomatic, normal activity

Clinical Stage II

4. Unintentional weight loss, <10 percent of body weight
5. Minor mucocutaneous manifestations (e.g., seborrheic dermatitis, prurigo, fungal nail infections, oropharyngeal ulcerations or angular cheilitis)
6. Herpes zoster within previous five years
7. Recurrent upper respiratory tract infections (for example, bacterial sinusitis)

Performance scale II: symptoms, but nearly fully ambulatory

Clinical Stage III

8. Unintentional weight loss, >10 percent of body weight
9. Chronic diarrhea, > one month
10. Prolonged fever (intermittent or constant) > one month
11. Oral candidiasis (erythematous or pseudomembranous)
12. Oral hairy leukoplakia
13. Pulmonary tuberculosis (typical or atypical) within the previous year
14. Severe bacterial infections (for example, pneumonia or pyomyositis)
15. Vulvovaginal candidiasis, chronic (> one month) or poorly responsive to therapy

Performance scale III: in bed < 50 percent of normal daytime, but more than normally during previous month

Clinical Stage IV

16. HIV wasting syndrome

17. Pneumocystis carinii pneumonia (PCP)
18. Toxoplasma of the brain
19. Cryptosporidiosis with diarrhea, > one month
20. Isosporiasis with diarrhea, > one month
21. Extrapulmonary cryptococcosis
22. Cytomegaloviral disease of an organ other than the liver, spleen or lymph node
23. Herpes simplex virus infection, mucocutaneous (> one month) or visceral (any duration)
24. Progressive multifocal leukoencephalopathy (PML)
25. Any disseminated endemic mycosis (for example, histoplasmosis or coccidioidomycosis)
26. Candidiasis of the esophagus, trachea, bronchi and lungs
27. Atypical mycobacteriosis, disseminated
28. Non-typhoid Salmonella septicemia
29. Extrapulmonary tuberculosis
30. Lymphoma
31. Kaposi's sarcoma (KS)
32. HIV encephalopathy

Performance scale IV: in bed for longer than 50 percent of the day over the previous month

- WHO Improved Clinical Staging System

A further refinement of the WHO clinical staging system includes a laboratory axis. The laboratory axis subdivides each category into three strata (A, B, C) depending on the number of CD4 cells. If this is not available, use total lymphocytes as an alternative marker.

Laboratory Axis		Clinical Axis			
Lymphocytes*	CD4**	Stage I Asymptomatic PGL	Stage II Early HIV	Stage III Intermediate (ARC)***	Stage IV Late AIDS
A >2000	>500	1A	2A	3A	4A
B 1000-2000	200-500	1B	2B	3B	4B
C <1000	<200	1C	2C	3C	4C

* Reference range total lymphocytes: 1500-4000/mm₃

** Reference range CD4 count: 450-1400/mm₃

*** ARC: AIDS-related complex

Grey area refers to progression to AIDS

Note: Data from the developed world are the basis for the reference values used for lymphocytes and CD4 count. There are indications that Africans may have a physiologically higher lymphocyte count. If possible, projects with laboratory equipment to conduct lymphocyte counts in HIV patients should collect data about lymphocyte counts and CD4 counts and correlate them with the disease stage.

B. Differential Diagnosis and Follow-up

1. Differential diagnosis

- a. Initial diagnosis of HIV may be difficult
 - The more general signs and symptoms of HIV are common to many infections.
 - Patients may have acquired both HIV and other sexually transmitted or blood-borne diseases at the same time.
 - Be sure to consider HIV testing when testing for other infections that have a similar presentation.

- b. The following diseases have a similar presentation, and you should consider them when making a differential diagnosis:
 - Epstein-Barr virus mononucleosis
 - Cytomegalovirus mononucleosis
 - Toxoplasmosis
 - Rubella
 - Syphilis
 - Viral hepatitis
 - Primary herpes simplex virus infection
 - Disseminated gonococcal infection
 - Other viral infections

- c. Examples of differentiating factors:
 - Epstein-Barr virus mononucleosis

Factor	EBV infection	HIV infection
Onset	Insidious	Acute
Tonsillar hypertrophy	Common	Mild enlargement
Exudative pharyngitis	Common	Rare
Skin rash	Rare	Common
Mucocutaneous ulcers	Rare	Common
Jaundice	Occurs in 8 percent	Rare
Diarrhea	Unknown	Occurs
Atypical lymphocytes	Occurs in 80-90 percent	Occurs < 50 percent

- Ulcers

HIV infections	Other infections
Mucocutaneous ulceration is a distinctive feature and has been reported on the buccal mucosa, gingiva, palate, esophagus, anus and penis.	Such ulceration is uncommon in most conditions that constitute the differential diagnosis.
Ulcers are generally small, round or oval, and surrounding mucosa usually look normal.	Only primary herpes may present with similar ulcers.

- Rash

HIV infections	Other infections
An erythematous, non-pruritic, maculopapular rash is common during primary HIV infection.	Skin rashes are not a feature of infectious mononucleosis, toxoplasmosis or cytomegalovirus infection.
It is generally symmetrical and may become generalized, with lesions 5-10 mm in diameter.	
The face or trunk is usually affected, but extremities, including the palms and soles, can also be involved.	Rashes involving the palms and soles are rare in most viral infections.

d. You can use laboratory tests to make the diagnosis. See session 7.

2. Follow-up visits

- After being informed about their test results, patients may need closer follow-up (weekly or monthly).
- An accessible system of referrals is important, and the clinician following the patient should not fall into three common errors of thinking:
 - That they must provide for all of the patient's needs
 - That the only needs the patient has are those that a physician can provide, that is, that nutrition, emotional support, and the like are not the concern of the clinician
 - That "follow-up" means care for acute problems and not continuous contact
- Once the relationship has been established, and the patient understands his or her situation and is in stable condition, you may extend the interval to every three months.
- The subsequent visits should include:
 - Blood tests:
 - Complete blood count every three months
 - CD4 cell count or total lymphocyte count (TLC) every six months (some use every three months for TLC)
 - Other examinations according to symptoms

References

PART A: MODULE A1

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