



**Federal Democratic Republic of Ethiopia
Ministry of Health**

Communicable Diseases

Part 3 HIV and AIDS

Blended Learning Module for the Health Extension Programme



HEAT

Health Education and Training
HEAT in Africa

Acknowledgements

Communicable Diseases is the largest of the 13 Blended Learning Modules for the Ethiopian Health Extension Programme. Together with the practical skills training sessions that accompany each of the supported self-study texts, this programme will upgrade the Health Extension Workers who complete the curriculum to Health Extension Practitioners at Level-IV of the Ethiopian Occupational Standards. The upgrading programme is sponsored by the Ethiopian Federal Ministry of Health (FMOH) and the Regional Health Bureaus (RHBs). The FMOH gratefully acknowledges the receipt of funding for this programme from the Ethiopian Office of UNICEF (the United Nations Children's Emergency Fund), The Open University UK, the Alan and Nesta Ferguson Foundation Trust UK, and AMREF (the African Medical and Research Foundation). We are also thankful for the support of the Ethiopian Offices of Jhpiego and the World Health Organization (WHO) for freely enabling their experts to participate in the development of this Module.

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We acknowledge the vital contributions of the Programme Coordinators within Ethiopia:

Ato Mohammed Hussein Abeseko, UNICEF Ethiopia and the Federal Ministry of Health

Ato Tedla Mulatu, AMREF Ethiopia

The cover design for *Communicable Diseases* is by Chris Hough, Learning and Teaching Solutions, The Open University UK. The cover photographs are reproduced with the permission of UNICEF Ethiopia, with acknowledgement to Indrias Getachew.

We particularly wish to acknowledge our use in this Module of adapted extracts and illustrations from the *Integrated Management of Adolescent and Adult Illness Guidelines* for HIV/AIDS at health centre and primary care level, including *Acute Care*, *Chronic HIV Care with ART and Prevention*, *General Principles of Good Chronic Care*, *Palliative Care: Symptom Management and End-of-Life Care*, and *TB Care with TB-HIV Co-management*, WHO, 2007, accessed from <http://www.who.int/hiv/pub/imai/en/index.html>.

The opinions expressed in this Module are those of the authors and do not necessarily reflect the views of any of the donor organisations whose generous support made the production of *Communicable Diseases* possible.

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Study Session 20

Introduction to HIV/AIDS

Introduction

In Parts 1 and 2 of this Module, you learnt about the basic principles underlying the transmission, diagnosis, management and prevention of communicable diseases, and the application of this knowledge to vaccine-preventable diseases, malaria, tuberculosis and leprosy. In Part 3 of the Module, we focus on HIV and AIDS — a cause of increasing concern for the health of Ethiopians.

The **human immunodeficiency virus (HIV)** is a virus that infects humans and weakens the immune system. As a result, HIV-infected people are more prone to acquiring other infections and diseases that individuals who haven't been infected with HIV are able to fight off easily. The collection of diseases that results from HIV infection is called **Acquired Immunodeficiency Syndrome (AIDS)**. In this study session, we will first briefly describe the status of the HIV epidemic in Ethiopia, so you understand the magnitude of the problem and how it may affect your community. We will then describe some important functions of the immune system — the main target of HIV in the human body — so that you have a basic understanding of the biology of HIV infection, and how it eventually leads to AIDS. Finally, we will outline the different modes of HIV transmission between humans. This knowledge will help you in providing effective care and health education for your HIV-infected clients, and in the implementation of HIV prevention measures in your community. Care, health education and prevention in the context of HIV/AIDS will be discussed in greater detail in later study sessions.

Learning Outcomes for Study Session 20

When you have studied this session, you should be able to:

- 20.1 Define and use correctly all of the key words printed in **bold**. (SAQs 20.1 and 20.2)
- 20.2 Summarise the main features of the HIV epidemic in Ethiopia. (SAQ 20.1)
- 20.3 Describe the basic components and functions of the immune system, and explain what HIV is and how the immune system is affected by it. (SAQs 20.1, 20.2 and 20.3)
- 20.4 Describe the usual course of an HIV infection and how it progresses to AIDS in the absence of effective treatment. (SAQs 20.1, 20.2 and 20.3)
- 20.5 Describe the modes of transmission of HIV. (SAQ 20.1)

20.1 The HIV epidemic in Ethiopia

We begin this study session by describing the current extent of the HIV epidemic in Ethiopia. In order to do this, we first need to remind you of several terms that you learnt in earlier study sessions, which you will need to know again here as we describe the *epidemiology* of HIV/AIDS.

Epidemiology is the statistical study of the occurrence, distribution, potential causes and control of diseases, disabilities or other health problems in human populations.

- In relation to disease epidemiology, can you recall the difference between prevalence and incidence?
- Prevalence and incidence were described in Study Session 2 of this Module. **Prevalence** refers to the *total number* of cases of a particular disease or health condition existing in a population at a certain point in time, or during a given period (e.g. a particular month or year). **Incidence** refers only to the numbers of *new cases* of a disease or condition that are identified in a given period.

In the context of HIV/AIDS, you will also come across the term **people living with HIV** (abbreviated to **PLHIV**) when describing epidemic statistics, and indeed when we talk about other aspects of this disease. PLHIV refers to everyone who is infected with the virus, whether or not they remain in good health or have developed any HIV-associated diseases, including AIDS.

In Ethiopia, there were an estimated 1.2 million PLHIV in 2010. Thus, the *prevalence* of HIV infection in Ethiopia in 2010 was estimated to be 2.4% of the general population (2.9% of all females and 1.9% of all males). The HIV epidemic in Ethiopia is generally levelling off (stabilising), with signs of decline in major cities, but a rising epidemic in small towns and market centres. Women and children are particularly affected by HIV/AIDS; in 2010, close to 60% of the PLHIV in the country were females (totalling around 700,000 women) and about 80,000 were children.

Another important factor for you to consider in terms of the impact of HIV/AIDS in your community is geographical distribution. There is a marked variation in HIV infection between regions in Ethiopia (Figure 20.1).

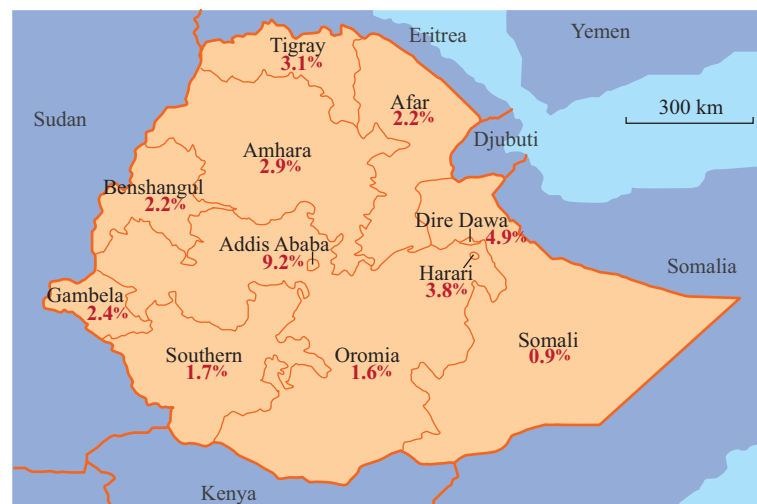


Figure 20.1 Prevalence of HIV in the general population in Ethiopia according to region in 2007. (Source: Federal HIV/AIDS Prevention and Control Office, *Single Point HIV Prevalence Estimate in Ethiopia 2007: Sixth Report*)

- Compare the prevalence of HIV infection in Addis Ababa to that of other regions in Figure 20.1. Would you expect HIV infection to be more prevalent in urban or rural areas in Ethiopia?
- The prevalence of HIV in Addis Ababa, an entirely urban population, is much higher (9.2%) than in other regions with a mixed urban and rural population. Therefore, HIV infection appears to be more prevalent in urban than in rural areas.

Indeed, the average prevalence of HIV infection across all urban areas in Ethiopia is 7.7%, whereas in rural areas it is 0.9%. Another epidemiological factor that you should consider in order to help target prevention programmes is the fact that the highest HIV prevalence occurs in the 15–24 years age group. Note that reproductive health issues related to this risk group are covered in the Module on *Adolescent and Youth Reproductive Health*.

In response to the HIV/AIDS epidemic, the government of Ethiopia launched a free HIV/AIDS therapy programme in January 2005. Currently, about 550 health facilities, most of which are health centres, provide HIV/AIDS therapy services in Ethiopia, and you should become aware of the nearest one to your health post. Similarly, you should know the location of the nearest centres providing HIV counselling and testing services (see Figure 20.2; there are more than 2,184 sites providing counselling and testing in Ethiopia), and/or providing services for pregnant mothers (about 1,352 health facilities are mainly focused on prevention of mother-to-child transmission of HIV).



Figure 20.2 Voluntary HIV counselling and testing centres can be found all over Ethiopia. (Photo: Carrie Teicher)

20.2 HIV and the immune response to infection

In this section, you will first learn what HIV is and then about the basic functions of the immune system, which are gradually destroyed by HIV infection. This knowledge will help you to understand how HIV induces disease in infected people.

20.2.1 What is HIV?

HIV is a **virus**, and like all viruses it is not a true cell, but a microscopic particle much smaller than a bacterium. Viruses are essentially minute ‘boxes’ made of proteins containing the genetic material that carries the information needed to make more viruses of the same type. But viruses cannot reproduce *unless* they invade a true cell and take control of the normal chemical processes taking place in the cell. The virus turns the cell into a virus ‘factory’, producing millions of new viruses and killing the host cell as it sheds its load of viruses into the body.

There are different types of viruses, and HIV belongs to a group called the **retroviruses**. This name is important because the drugs that have been developed in recent years to treat PLHIV are called **antiretrovirals** (or **ARVs**), and the combination of drugs and other treatments that an individual receives is called **antiretroviral therapy** (or **ART**). You will learn all about ARVs and ART in Study Sessions 22 and 23.

There are two species of HIV, known as HIV-1 and HIV-2. HIV-1 is the virus responsible for the majority of HIV infections in most countries, including Ethiopia. HIV-1 is more infectious and has a much greater ability to be transmitted between people than HIV-2. (HIV transmission will be discussed in more detail in Section 20.4.) HIV-2 infection is mainly prevalent in West African countries, and it is thought to induce progression to HIV-associated diseases and AIDS more slowly than HIV-1.

20.2.2 The human immune system

The **immune system** is a collection of cells, tissues and organs in the human body, with the combined function of protecting us against invasion by infectious agents (see Figure 20.3 on the next page). In the absence of an effective immune system, our bodies would easily be invaded by **pathogenic** (disease-causing) viruses, bacteria, protozoa and parasites, which would

rapidly cause our death. The exact functioning of the immune system is very complex, and explaining it in detail would go beyond the scope of this Module. Rather, we will focus here on a particular aspect of the immune system, so that you can understand what HIV does to the human body once it gets inside us.

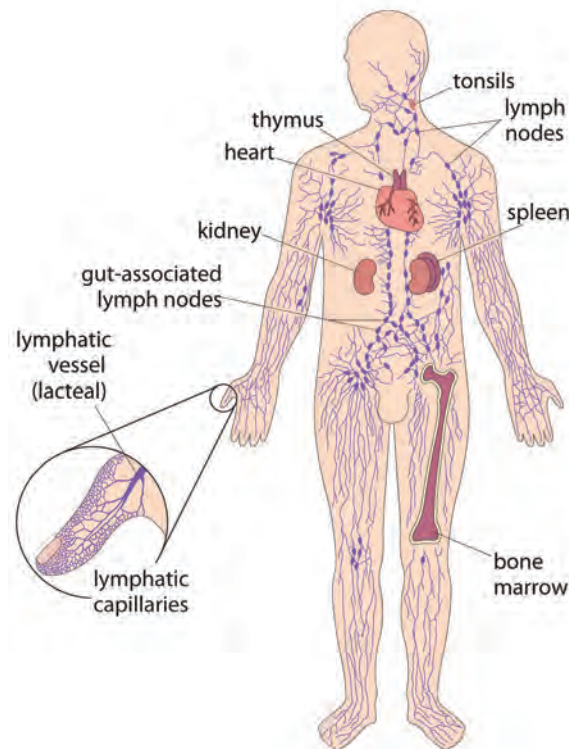


Figure 20.3 The sites in the body (in addition to the blood) where cells of the human immune system are concentrated. (Source: The Open University, SXR376 Preparatory Reading, Figure 1.2, page 7)

Biologists and doctors use the term 'leukocytes' instead of white blood cells; we will use both terms in this study session. You will probably say 'white blood cells' when talking to your clients.

The immune system first recognises infectious agents as not being a normal part of the body, or, in other words, 'foreign' to the body. Then the cells of the immune system organise a concerted attack against the infectious agents in order to destroy them. These immune cells are most often known as **white blood cells** — although the name is misleading because they are found throughout the body's tissues and organs, as well as in the blood, as Figure 20.3 shows. There are several different types of white blood cells, and we will say more about one of them shortly.

The immune response by a person's white blood cells takes a few days to build up during the first time that a particular type of infectious agent gets into his or her body. During this delay, there is usually time for the infectious agents to multiply and cause symptoms of the illness. However, as the immune attack builds up, it may become strong enough to eliminate the infection, and the person recovers spontaneously from a so-called **self-limiting infection**. But in some types of infection, the immune response cannot protect the person sufficiently from the infectious agents, they become more and more ill, and without medical intervention they may eventually die. This is what happens in PLHIV unless they receive modern medical treatments.

One important feature of the immune system is that it very quickly recognises the *same* infectious agents if they have invaded that individual in the past. This is known as **immunological memory**. It enables the immune system to organise a stronger, faster and more efficient attack if it comes across the same infectious agent again in the future. You will see later that the immune

system manages to keep HIV under control for months or years after it first invades the body, but eventually it becomes overwhelmed by the virus.

20.2.3 Lymphocytes and the immune response to infection

We will now describe how the immune system attacks a virus (such as HIV), but note that similar processes occur when bacteria and protozoa invade the human body. The most important group of white blood cells in our defence against infection are the **lymphocytes**, of which there are several types (Figure 20.4). Lymphocytes called *B cells* are responsible for producing special proteins called **antibodies** against the invading infectious agents. Antibodies are proteins that bind to viruses (and other infectious agents), attracting other types of lymphocyte (we have called them *cytotoxic T cells* in Figure 20.4) to come and destroy the invaders. Viruses can only multiply inside the body's own cells, so destroying our own body cells if they have been infected by viruses is a price worth paying, because it slows down the production of more viruses.

Cytotoxic means 'able to kill cells'.

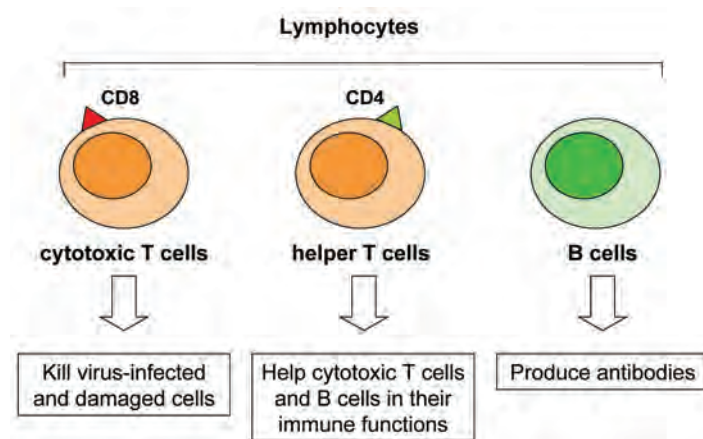


Figure 20.4 Three types of lymphocytes involved in the immune response against infectious agents in the human body. (Diagram: Dr Ignacio Romero)

Most importantly, the *helper T cells* in Figure 20.4 'help' all the other cells of the immune system to make antibodies and attack invading infectious agents. These cells are also known as **CD4 lymphocytes** (or **CD4 cells**) because they have a special protein on their surface called CD4. These are the terms we will use in this Module. Without a large number of CD4 lymphocytes circulating around the body acting as 'helpers', the functioning of the whole immune system collapses, and the person is defenceless against invasion by infectious agents.

20.2.4 Lymph nodes

If you look back at Figure 20.3, you can see that lymphocytes accumulate in sites located throughout the body, including the **lymph nodes** (or lymph glands). When an infection occurs, cells of the immune system, particularly lymphocytes, divide and produce more cells that help fight the infection. This process results in the lymph nodes becoming enlarged, as a result of the increased number of lymphocytes they contain. The lymph nodes in the neck can sometimes be seen as small swellings under the skin, or felt by touching with your fingers, if you have a bad cold or a throat infection. Enlarged lymph nodes may also be felt in the armpits and groin during some other infections. They return to their normal size once the infection has been eliminated.

20.3 How does HIV disable the immune system?

In this section, we explain how infection with HIV disables the human immune system. The key to this lies in the CD4 lymphocytes.

20.3.1 HIV infects the CD4 lymphocytes

Like all viruses, HIV has to enter (i.e. infect) healthy cells in the body in order to produce more copies of itself. These newly-produced viruses are then released into the blood in order to infect other susceptible cells. You may think of an HIV-infected cell as a sort of HIV factory. However, not all cells in the human body can be infected by HIV. Its main targets are the CD4 lymphocytes. Figure 20.5 shows in more detail the mechanism of infection of a CD4 lymphocyte by HIV.

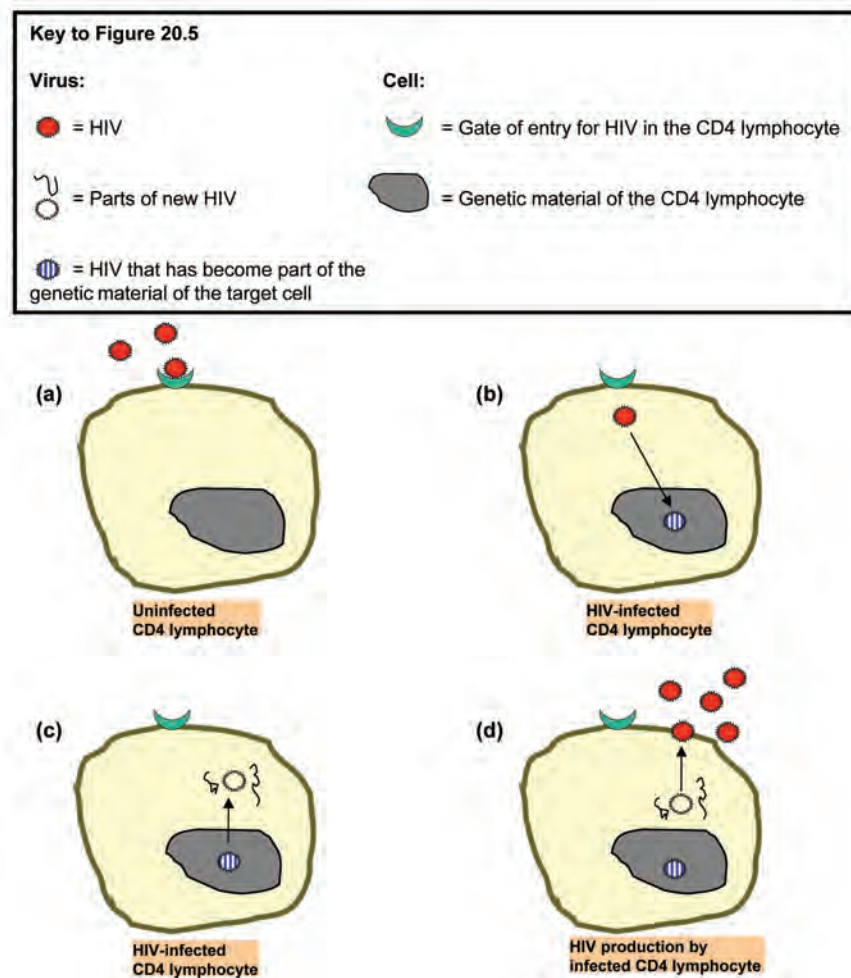


Figure 20.5 the life cycle of HIV. (a) HIV binds to proteins located on the surface of the target cell, in this case a CD4 lymphocyte. (b) HIV enters the cell, changes its structure and becomes part of the genetic material of the infected cell. (c) Many copies of HIV's genetic material are produced inside the cell, together with viral proteins necessary to construct more viruses. (d) HIV's genetic material and proteins assemble at the surface of the cell, and millions of new viruses are released outside the cell, where they can infect other CD4 lymphocytes. (Diagram adapted by: Drs Aschalew Endale and Ignacio Romero, from Participants Manual, WHO/IMAI, *Integrated Management of Adolescent and Adult Illness*, Basic Clinical HIV Care, ART and Prevention Training Course, 2007)

20.3.2 How does HIV damage our immune system?

In a newly HIV-infected person, the virus enters some of the CD4 lymphocytes, which produce many new copies of the virus and shed them into the body. The CD4 lymphocytes eventually die as they release their load of viruses. The new copies of HIV circulate in the body and attack other CD4 lymphocytes, which in turn produce more HIV and then die. This goes on and on — more and more CD4 lymphocytes are destroyed, as more and more HIV copies are made.

- What effect will the destruction of many CD4 lymphocytes have on the immune system's ability to protect the person from other infections?
- The CD4 lymphocytes give essential help to the other types of lymphocytes that make antibodies, or kill virus-infected cells in the body; without this help, the rest of the immune system cannot function properly.

Over time, the number of CD4 lymphocytes declines to the extent that the immune system cannot protect the person from illnesses like chest infections and diarrhoeal diseases that it would normally fight off. We will return to this point shortly.

20.4 The progression from HIV infection to AIDS

Understanding the difference between HIV and AIDS, and the natural course of an HIV infection, is important when you teach community members about HIV transmission and prevention. It also explains why you need to refer PLHIV quickly if they develop new health problems, or their health deteriorates.

20.4.1 The natural course of HIV infection

As you learnt in Study Session 1 of this Module, an infected person may not show symptoms of the disease right away — it generally takes some time to develop a disease after an infection. Likewise, when we say someone is 'infected with HIV', we mean that the person has the virus in their blood, and this has been confirmed by doing a laboratory analysis for HIV, or a rapid diagnostic test (RDT) on their blood. Note that an HIV-infected person may not have any symptoms and may look healthy, but they can still transmit the virus to their sexual partner(s).

During the first years of infection, the immune system, although weakened by the loss of some of its CD4 lymphocytes, still functions quite well. The infected person will have no symptoms, or only minor symptoms — perhaps a little loss of weight, or inflammation of the sinuses in the head. Many HIV-infected people do not know that they have acquired the virus at this stage.

Over several years, the person's immune system gradually becomes weaker, and they become vulnerable to persistent communicable diseases that they would previously have fought off before symptoms even developed, or would have quickly recovered from. These diseases are called **opportunistic infections (OIs)** because the infectious agents that cause them only have the 'opportunity' to multiply in the body because the PLHIV's immune system has been so badly affected by HIV.

You will learn how to do the HIV rapid diagnostic test in Study Session 24 of this Module.

You will learn about opportunistic infections in detail in Study Session 21.

You will learn about prevention of mother-to-child transmission of HIV in Study Session 27, and about HIV in children in Study Session 28.

WHO HIV clinical staging is described in Study Session 21.

In adults, it usually takes around 5–10 years after HIV infection before the person becomes very sick, if he/she is not taking ART. The natural course of HIV infection is shorter in children and infants when compared to adults. In Section 31.1 you will learn why HIV-infected children progress faster to AIDS.

20.4.2 Clinical staging of HIV disease and AIDS

As time passes and the number of CD4 lymphocytes declines even further, to a very low level, the incidence of opportunistic infections and other health problems in PLHIV increase, and the person is said to have reached a particular stage of HIV disease. The final stage of this progressive deterioration is known as AIDS — **Acquired Immunodeficiency Syndrome** — based on diagnostic criteria developed by the World Health Organization (WHO).

20.5 Modes of transmission of HIV

Now you know what HIV does once it has infected someone. But how is HIV transmitted from person to person? Getting infected with HIV does not happen as easily as, for instance, infection by the viruses that cause measles or influenza, which are transmitted in airborne droplets, typically during normal social contact with an infected person.

HIV needs ‘transport’ to get into the body of another person. This ‘transport’ can be blood, semen (the male sexual secretion containing sperm), vaginal fluid, or breastmilk.

- Suggest some ways in which these transport media could be transferred from one person to another.
- HIV can be transmitted through sexual intercourse with an infected person; through transfusion of contaminated blood, or blood products, in medical treatment; through sharing of needles, syringes and cutting or perforating objects contaminated by HIV-infected blood or body fluids; through the blood of an infected mother passing into the baby during pregnancy or delivery; and finally through the breastmilk of an infected mother being fed to the baby.

We will look briefly at each of these routes in turn, but you will discover more details in later study sessions.

20.5.1 Transmission through sexual relations

Unsafe sex (sexual intercourse without a condom) is responsible for the majority of HIV infections worldwide. HIV is primarily considered as a **sexually-transmitted infection (STI)**, an infection that is transmitted through sexual intercourse. Different types of sexual practice have different degrees of risk for transmitting HIV, as described below.

Anal sex

Anal sex refers to the penetration by the male penis into the anus of another person. It represents the biggest risk of infection if one of the partners is HIV-infected, because the anal **mucosa** does not produce natural lubrication, is fragile, and wounds and bleeds very easily during anal sex. Also, the penis can have **microlesions** (tiny areas of damaged tissue that are too small to be visible with the eyes), which permit the entrance of the virus into the

Mucosa (also known as mucous membrane) is a very thin layer of moist tissue that lines some organs and body cavities, including the mouth, anus and the reproductive tract.

bloodstream. The soft tissue of the male foreskin in uncircumcised men is especially vulnerable to infection during both anal and vaginal (see below) sex.

Vaginal sex

Vaginal sex involves penetration of the female vagina by the male penis, and is the most common type of sexual practice. HIV can be found in large quantities in the semen of infected men, and to a lesser amount in the vaginal secretions of infected women. The risk of infection is still high in vaginal sex, but less than with anal sex, because the vagina produces natural lubrication and is more elastic. However, unprotected vaginal sex represents a serious risk of HIV infection, because the vaginal mucosa (as well as the penis) can have microlesions which permit entry of the virus into the body. Figure 20.6 is a poster which was designed to raise awareness about the dangers of unprotected vaginal sex, and to inform people about ways to reduce the risk of HIV infection



Figure 20.6 An HIV/AIDS awareness-raising poster used in Ethiopia to warn of the dangers of unprotected sex and inform people about ways they can protect themselves from HIV

Oral sex

The term **oral sex** means there is contact between the genitals and the mouth. Compared to anal and vaginal sex, oral sex represents the smallest risk for HIV transmission. However, very small wounds in the mouth can allow entry of the virus into the body.

Other STIs increase HIV transmission risk

Note that in all types of sexual practice, the presence of other STIs causing damage to the genitals (discharge or ulcers) increases the risk of acquiring and transmitting HIV. This is because, in people with an STI, transmission of HIV is easier due to the presence of lesions in the genital mucosa.

You will learn about other STIs in Study Session 31.

20.5.2 Transmission through blood contact

The blood is another way of transmitting HIV. HIV can be transmitted through transfusion of an infected blood or blood products; sharing contaminated needles and syringes to inject illegal drugs; accidental puncturing of the skin by contaminated instruments during healthcare; and sharing contaminated piercing or cutting instruments used in tattooing or harmful traditional practices, like *uvulectomy* (cutting out the uvula in the roof of the throat) and *female genital mutilation* (cutting the clitoris and labia).

20.5.3 Transmission from mother to child

HIV can be transmitted from an infected mother to her child through the placenta during pregnancy, or (more often) during labour and delivery. Also, breastfeeding can transmit the virus from mother to child because the breastmilk of an infected mother contains HIV, which can penetrate the mucosa lining the baby's gastrointestinal tract.

20.5.4 Myths about HIV transmission

Knowing how HIV is *not* transmitted, and educating community members about the myths that some may believe (see Box 20.1 and Figure 20.7), helps to increase the *inclusion* of PLHIV in society, and reduce the stigmatisation and discrimination they often experience.



Figure 20.7 A poster raising awareness about work-related issues connected with HIV. (Source: <http://indiandevelopmentfoundation.blogspot.com/2008/12/facts-about-hiv-aids.html>)

Box 20.1 Myths about HIV transmission

HIV is *not* transmitted by:

- tears, saliva, sweat or urine
- personal contacts — kisses on the mouth, hugging, handshakes
- social contact — at work, in school, in cafés and restaurants
- air or water — sneezing, coughing or swimming
- contact with common items — pens, toilets, towels, sheets, soap
- insects — mosquito bites or bites by other insects.

In Study Sessions 25–27, we demonstrate how understanding the modes of transmission of HIV is the basis for implementing prevention measures against HIV infection at the community level, and for healthcare providers, including yourself.

Summary of Study Session 20

In Study Session 20, you have learned that:

- 1 At the time of writing, the HIV prevalence in Ethiopia is 2.4%, and an estimated 1.2 million people live with the virus; prevalence is much higher in urban than in rural areas, and more women than men are infected.
- 2 HIV affects the immune system by destroying the CD4 lymphocytes, which ‘help’ all the other white blood cells to defend the body against infection.
- 3 Infected CD4 lymphocytes produce many new copies of HIV and then die. The new viruses infect other CD4 lymphocytes, which make more new viruses and die, until so many CD4 lymphocytes are destroyed that the immune system weakens, and the PLHIV develop opportunistic infections.
- 4 The first few years with an HIV infection are usually healthy, or with only mild symptoms; the person may not know they are infected and can transmit HIV to others.
- 5 It may take 5–10 years following HIV infection to develop more serious opportunistic infections and progress to AIDS (in the absence of ART).
- 6 HIV is transmitted by sexual intercourse, by contact with infected blood and from mother to child.
- 7 The highest risk of sexual transmission is through unprotected anal sex, but the most common route is unprotected vaginal sex.
- 8 There are many myths about HIV transmission; educate your community that it cannot be transmitted by normal personal and social contacts with PLHIV, or contact with air, water, common objects or biting insects.

Self-Assessment Questions (SAQs) for Study Session 20

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 20.1 (tests Learning Outcomes 20.1, 20.2, 20.3, 20.4 and 20.5)

Which of the following statements is *false*? In each case, explain what is incorrect.

- A HIV is more prevalent among young sexually active people than among elderly people.
- B In Ethiopia, more females than males are infected with HIV.
- C In most cases, an HIV infection can lead to AIDS in a few months.
- D In the early course of HIV infection, people may not know that they are infected with the virus because they feel healthy (have no symptoms and signs).
- E HIV mostly infects the red blood cells of humans.
- F HIV can only be transmitted through sexual intercourse with an infected person.
- G HIV is not transmitted through oral sex.
- H Unprotected anal sex has a lower risk of transmission of HIV than unprotected vaginal sex.
- I Eating and shaking hands with PLHIV *cannot* transmit HIV to uninfected individuals.

SAQ 20.2 (tests Learning Outcomes 20.1, 20.3 and 20.4)

The main targets of HIV infection are the CD4 lymphocytes.

- (a) What is a CD4 lymphocyte and what is its role in the human body?
- (b) How does HIV infection of the CD4 lymphocytes determine the natural course of HIV disease progression to AIDS?
- (c) Is the progression from HIV infection to AIDS the same for every person living with HIV?

SAQ 20.3 (tests Learning Outcomes 20.3 and 20.4)

Why are opportunistic infections given this name?

Study Session 21 Opportunistic Infections and WHO HIV Clinical Staging

Introduction

In this study session, you will be introduced to the most common opportunistic infections and diseases that result from the decreased immunity observed in people living with HIV (PLHIV). Knowledge of the signs and symptoms of opportunistic infections will enable you to easily recognise them in patients in your healthcare and community settings.

In addition, you will learn how to categorise HIV patients into the four stages recognised by the World Health Organization (WHO). The WHO clinical staging system has been adapted by the Ethiopian Federal Ministry of Health (FMOH) to include a list of the common infections and diseases occurring in PLHIV in an Ethiopian context. After studying this session, you should be able to group patients living with HIV into the four different WHO clinical stages of HIV/AIDS. Staging will help you to differentiate patients who need urgent clinical assessment and referral to the nearest health facility to receive standardised care and treatment interventions.

Lastly, this session describes the standard **chemoprophylactic treatments** for opportunistic infections offered to PLHIV. You are not expected to provide prophylactic treatments at your setting, but you should be familiar with the commonly used prophylactic drugs so that you can make community follow-ups for PLHIV.

Chemoprophylactic treatments (or chemoprophylaxis) refers to drug-based medication taken to prevent opportunistic infections from developing.

Learning Outcomes for Study Session 21

When you have studied this session, you should be able to:

- 21.1 Define and use correctly all of the key words printed in **bold**. (SAQ 21.1)
- 21.2 Explain why opportunistic infections occur more frequently in PLHIV. (SAQs 21.1 and 21.2)
- 21.3 Identify common opportunistic infections in PLHIV and use this knowledge to help patients seek healthcare promptly. (SAQs 21.2 and 21.3)
- 21.4 Describe WHO HIV clinical staging and classify patients into the appropriate clinical stages. (SAQ 21.3)
- 21.5 Explain the use of chemoprophylactic treatments to prevent opportunistic infections in PLHIV. (SAQs 21.1 and 21.4)

21.1 What are opportunistic infections?

An **opportunistic infection** is an infection caused by harmful infectious agents, or **pathogens** (bacteria, viruses, fungi, parasites or protozoa), that usually do not cause disease in a healthy person, i.e. one with an immune system whose function is not impaired. Opportunistic infections observed in PLHIV include a wide range of diseases, from minor ailments like chronic skin itching to severe diseases such as tuberculosis (TB).

You may be asking yourself why PLHIV are so susceptible to opportunistic infections compared to an uninfected person. Remember from Study Session 20 that the immune system in HIV-infected people becomes progressively weakened. A weak immune system presents an ‘opportunity’ for

An **immune-competent** person is an individual whose immune system is healthy and functions normally.

pathogens to cause an infection. Thus, PLHIV can be infected by pathogens causing opportunistic infections more easily than HIV-negative immune-competent people, because HIV damages the function of the immune system.

There are several important issues that we need to consider here before we describe the possible opportunistic infections that PLHIV may present (Section 21.4).

First, serious opportunistic infections usually develop 5 to 10 years following infection with HIV. You should expect a person who is infected with HIV to show minor and/or mild episodes of opportunistic infections during the early period of the disease. However, untreated PLHIV will increasingly acquire more serious infections as they progress to AIDS, mainly due to the gradual deterioration of their immune system.

- Based on your previous study of the role of the immune system in the progression to AIDS, why do you think serious opportunistic infections do not develop until later in the course of the disease?
- As you learnt in Section 20.2, during the first few years of HIV infection, a person's immune system is weakened, but it still functions quite well. Thus, it is able to fight off most infectious agents for some time.

Nasal means associated with the nose and its related structures.

Indeed, an HIV-infected person may have no symptoms during the first stages of HIV infection. Sometimes minor symptoms like skin diseases, a little loss of weight, or repeated *sinusitis* (inflammation of the nasal sinuses and nasal passages) may be present, and this is indicative of a slightly weakened immune system. The most important information for you to remember here is that the immune system has to be compromised beyond a certain level for serious opportunistic infections to arise in PLHIV.

Secondly, the onset of opportunistic infections will be different for each person living with HIV, and will depend on many factors such as nutritional status, exposure to pathogens, individual level of immunity, etc. These factors differ from person to person. Hence, in some cases PLHIV may progress to AIDS rapidly, while in others it may take longer for serious opportunistic infections to arise.

Thirdly, not all PLHIV develop the same opportunistic infections. The opportunistic infections developed by a person living with HIV depend primarily on the pathogens they have been exposed to. Although progression to AIDS from HIV infection follows a somewhat stereotyped series of different clinical stages, each individual patient has a unique pattern of progression through them (i.e. they present with different opportunistic infections at each stage).

Finally, we also need to briefly consider opportunistic infections in the context of HIV-infected children (Study Session 28). Indeed, opportunistic infections appear earlier in children than in adults. In the absence of treatment, around half of HIV-infected children die by the age of two years, due to serious opportunistic infections and diseases. This is because children have immature immune systems, so their immune system becomes weakened faster than in adults, who already have a well-developed immune system before they get HIV.

In addition, other factors that influence the onset of opportunistic infections, such as exposure to pathogens and malnutrition, are more common problems in children than in adults. You will be learning about HIV in children in detail in Study Session 28. Here, we will be focusing on opportunistic infections occurring in adults.

21.2 Why are opportunistic infections common in PLHIV?

In Study Session 20, you learned that **CD4 lymphocytes** (also known as **CD4 cells**) are a type of white blood cell with important functions in immunity. In this study session, we will use the simpler term, CD4 cells.

- What is the function of CD4 cells in the immune system?
- CD4 cells help to activate other white blood cells in the immune system, in the defence of the body against invasion by pathogens (Section 20.2.3).

Indeed, a reduced number of CD4 cells results in an impaired immune system. The lower the number of CD4 cells, the more impaired the immune system will be. Remember that HIV weakens the immune system precisely by infecting (and ultimately destroying) CD4 cells. Hence, the **CD4 count** (i.e. the number of CD4 cells in a specified volume of blood) is a good indicator of the 'health' of the immune system in PLHIV.

The CD4 counts of *uninfected* people usually fall between 800 and 1500 cells/mm³. At the early stages of the disease, HIV-infected people with immune systems that are functioning adequately have CD4 counts between 450 and 1500 cells/mm³. However, the risk of acquiring opportunistic infections increases proportionally to the decline in CD4 counts observed as the disease progresses. In other words, if the CD4 count falls below a certain limit, the immune system is unable to cope with invading pathogens and opportunistic infections become more frequent. In general, the following thresholds concerning CD4 counts are observed in adults and adolescents:

- When the CD4 count has decreased below 450 cells/mm³, a person living with HIV will start to acquire some mild or moderate opportunistic infections.
- When the CD4 count has decreased below 200 cells/mm³, a person living with HIV is highly likely to acquire severe opportunistic infections. It is at this stage that a person living with HIV is considered to have AIDS.
- Based on your previous studies, why are CD4 counts determined in the blood, and not in other tissues and/or fluids such as urine?
- CD4 cells reside primarily (although not exclusively) in the blood, where they are most likely to encounter invading pathogens (Section 20.2.2 and Figure 20.3).

The concentration of cells in the blood is usually expressed as the number of cells per cubic millimeter (cells/mm³), which is the same volume of blood as a millilitre (ml).

21.3 WHO HIV clinical stages in adults and adolescents

The **WHO HIV clinical staging system** is a staging system developed for PLHIV to help healthcare providers, such as Health Extension Practitioners, estimate the degree of immune deficiency that an HIV patient presents.

Staging means categorising the patient clinically into one of the four WHO HIV stages. It is useful to know these stages because it enables you clinically to identify patients with mild and severe diseases associated with HIV.

A PLHIV in WHO clinical stage 1 usually does not have a serious immune deficiency, and shows no signs of opportunistic infections (i.e. they are asymptomatic — no symptoms). A patient in WHO clinical stage 2 also does not have a serious immune deficiency, but usually shows signs of mild opportunistic infections. Patients in stage 3 or 4 usually have a severe immune deficiency, and show signs of moderate and severe opportunistic infections respectively. Stage 4 is considered to be AIDS.

- Would you expect a person living with HIV in stage 2 to have a higher or lower CD4 cell count than a person living with HIV in stage 4 of the WHO clinical staging system? Why?
- As the immune status of a person living with HIV becomes weaker, the HIV clinical stage gets higher. Therefore, stage 2 patients have stronger immunity than stage 4 patients, and the CD4 cell count is higher in stage 2 than in stage 4 patients.

Table 21.1 (on the next page) summarises the WHO HIV clinical staging for adults and adolescents adapted for the Ethiopian primary healthcare setting. Most opportunistic infections common in PLHIV will be explained in detail in Section 21.4, but for now you should use Table 21.1 as a reference to give you an idea of how clinical staging of PLHIV is implemented. Some opportunistic conditions may be diagnosed by a health worker in a health centre, whereas others need a diagnosis by doctors or health officers working at regional hospitals (marked with an asterisk in Table 21.1). These patients should be referred for appropriate diagnosis and treatment. Note that if the patient has clinical conditions that fall into more than one WHO clinical stage, the patient will be placed in the *highest* WHO clinical stage that fits the symptoms.

However, staging of a person living with HIV is not a permanent fixture. For example, a PLHIV who has been successfully treated for, and recovered from, *Pneumocystis pneumonia* may be downgraded from stage 4 to stage 3 if no other severe conditions are present.

Some opportunistic conditions may be easily identified by Health Extension Practitioners (HEPs), and these will be explained in detail in Section 21.4. For other opportunistic infections you may come across in PLHIV, a short description has been included in the table. You are not expected to memorise the details of these latter conditions. All conditions that require a diagnosis by doctors or health officers working at regional hospitals are marked with an asterisk.

We will discuss the WHO paediatric staging for children with HIV in Study Session 28.

Table 21.1 WHO adult and adolescent HIV clinical stages. (* requires diagnosis by a doctor or health officer)

Stage 1 Asymptomatic	Stage 2 Mild disease
No symptoms or only persistent generalised lymphadenopathy (PGL) (Section 21.4.1)	Weight loss 5–10% Skin problems (Section 21.4.2): seborrhoea prurigo (PPE) herpes zoster Mouth/throat problems (Section 21.4.3): angular cheilitis recurrent mouth ulcers Recurrent upper respiratory infections (repeated throat infections, sinusitis, or ear infections)
Stage 3 Moderate disease	Stage 4 Severe disease (AIDS)
Weight loss greater than 10% Mouth/throat problems (Section 21.4.3): oral thrush oral hairy leukoplakia acute necrotising ulcerative gingivitis/periodontitis (severe gum disease accompanied by ulcers) Diarrhoea (for more than 1 month; sometimes intermittent) Unexplained fever (for more than 1 month; sometimes intermittent) Severe bacterial infections (e.g. pneumonia, muscle infection): pulmonary TB (Section 21.4.4) TB lymphadenopathy (chronic swelling of lymph nodes around the lungs)	HIV wasting syndrome (Section 21.4.5) Oesophageal thrush (Section 21.4.3) Herpes simplex ulcerations (large and chronic painful wounds on the genitals and/or anus for more than 1 month) Lymphoma* (cancer of the immune system) Kaposi's sarcoma* (dark lesions on the skin and/or mouth, eye, lungs, intestines) Invasive cervical cancer* (cancer of the female reproductive system) <i>Pneumocystis</i> pneumonia* (severe pneumonia with shortness of breath on exertion and dry cough) <i>Extrapulmonary</i> TB* (TB in tissues other than lungs, e.g. bone) <i>Cryptococcal</i> meningitis* (meningitis caused by a fungus which can present without neck stiffness) <i>Toxoplasma</i> brain abscess* (infection of the brain by a parasite) Visceral leishmaniasis* (infection of internal organs by a protozoan) HIV encephalopathy* (neurological impairment).

21.4 Common opportunistic clinical manifestations in people with HIV

In this section, we will be describing the clinical signs and symptoms associated with common opportunistic clinical manifestations that you may encounter in PLHIV during community visits, or at your health post. Where possible, we have included photographs showing typical clinical manifestations of an opportunistic disease in a PLHIV, so that you become familiar with them.

Identifying opportunistic infections and diseases will help your work in the context of PLHIV in two ways. First, you may be able to categorise patients in one of the four stages of the WHO HIV clinical staging. You will then be able to refer them to the nearest health centre for comprehensive HIV services, such as cotrimoxazole chemoprophylaxis (used for prevention of opportunistic infections, explained in Section 21.6), and for specific treatments for HIV/AIDS. In some cases, you will need to refer the person living with HIV urgently, whereas in others you will just need to reassure the patient, and/or treat minor ailments. Note that all conditions described below should be referred to the nearest health centre if they are clinical stage 2 and above, with increasing urgency the higher the WHO clinical stage.

Secondly, if staging has been carried out by a health worker at a health centre or hospital, you will be able to appreciate at what stage of the disease a person living with HIV is, and provide the best possible care for that patient.

21.4.1 Persistent generalised lymphadenopathy (PGL)

Persistent generalised lymphadenopathy (PGL) is a chronic swelling of the lymph nodes in at least two areas of the body outside the groins, which lasts three months or longer. PGL is common in the neck and underarm areas, as shown in Figure 21.1. Up to half of PLHIV show PGL at one point during disease progression. In some instances, PGL is present even if they are in the early stages of the disease (asymptomatic stage), i.e. when the patient has relatively good immunity. PGL results from a reaction of the patient's immune system against the virus entering the body and establishing a chronic infection. You should reassure a person living with HIV that this sign does not affect their overall health.



Figure 21.1 PGL on the left side of the neck. Note the swelling of the lymph node. (Photo: *Training Guidelines for Integrated Management of Adolescent and Adult Illnesses* (IMAI), World Health Organization, Ethiopian Adaptation, 2007)

21.4.2 Skin problems

Skin problems are common in HIV/AIDS patients. You need to differentiate minor skin problems from other severe opportunistic diseases that also present with skin manifestations, but need urgent referral. For instance, fungal infections in the blood and internal organs such as *cryptococcosis* (Stage 4; see Table 21.1), may also result in nodular skin lesions. The following minor skin problems are indicative of WHO clinical stage 2, and you should refer PLHIV presenting these to the nearest health centre for treatment.

Itching skin rash may be due to the following two conditions:

Seborrhoea is a scaly skin rash that usually appears on the edge between face and hair, on the side of the nose, or on the chest. The areas with the rash often contain greasy or oily scales, and are surrounded by some redness of the skin (Figure 21.2).



Figure 21.2 Scaly skin rash on the face, mainly around the nose, caused by seborrhoea. (Photo: WHO, 2007, as in Figure 21.1)

Prurigo (Pruritic Papular Eruptions, PPE) is an itchy skin eruption on the arms and legs. Often it has small **papules** (small, solid and usually inflammatory elevations of the skin) and scratch marks. Once cleared, papules may leave dark spots with light centres (Figure 21.3).



Figure 21.3 Multiple papular rash caused by PPE. (Photo: WHO, 2007, as in Figure 21.1)

Herpes zoster ('almaz bale chira' in Amharic) is a painful blistering skin rash caused by the *herpes zoster* virus (also known as *varicella zoster*). It is characterised by **vesicles** (fluid-filled blisters formed in, or beneath, the skin) that appear in only one area on one side of the body, usually on the chest (Figure 21.4), but also on a leg, arm or one side of the face or the back. Vesicles then turn into lesions, and later into crusts that may become inflamed, and even infected. Vesicles usually heal in two to three weeks and they rarely reappear, but there is often scarring after healing. Note that vesicles are accompanied by intense shooting pain, and sometimes the pain may continue after the lesions heal.



Figure 21.4 Vesicles around the lower chest area, caused by herpes zoster. (Photo: WHO, 2007, as in Figure 21.1)

21.4.3 Mouth, throat and oesophagus problems

Mouth and throat problems are also common in HIV patients. Mouth and throat problems include sores at the corners of the mouth, and fungal infections of the oral mucosa and the oesophagus (the tube that connects the mouth and throat to the stomach). These problems are indicative of different WHO clinical stages (2 to 4), and you should refer PLHIV presenting these to the nearest health centre, with a degree of urgency related to the specific stage.

Angular cheilitis: These are small chronic sores or cracks around the lips, often at the corners of the mouth (Figure 21.5). Angular cheilitis occurs early in HIV infection, and is indicative of WHO clinical stage 2.



Figure 21.5 Small sores and cracks, at the corners of the mouth caused by angular cheilitis. (Photo: WHO, 2007, as in Figure 21.1)

Recurrent mouth ulcers (aphtous ulcers): These are small sores or ulcers inside the mouth that appear repeatedly. Ulcers are painful, self-healing and can recur. They can also involve the gums and throat. Note that mouth ulcers are also common in people who are not HIV positive who, for example, have malnutrition. However, in PLHIV, the ulcers are usually severe, making food intake difficult.

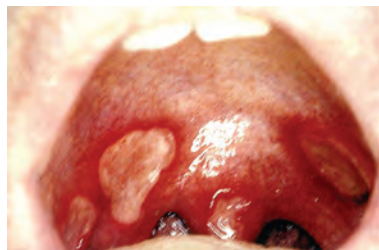


Figure 21.6 Recurrent aphtous ulcers on the upper part of the mouth. (Photo: WHO, 2007, as in Figure 21.1)

Oral thrush: Also known as oral candidiasis, this is an infection of the lining of the mouth caused by a fungus called *candida* (the same organism that causes oesophageal thrush which is described below, and vaginal candidiasis; see Study Session 31). Oral thrush is a sign of clinical stage 3, and is characterised by white patches (although at times they may appear red) that can be removed with an oral spatula (Figure 21.7).



Figure 21.7 White patches in the mouth caused by oral thrush. (Photo: WHO, 2007, as in Figure 21.1)

Oesophageal thrush is a *candida* infection of the oesophagus. You can identify patients with oesophageal thrush by asking them whether they experience pain while swallowing. A patient who has white patches indicative of oral thrush, *and* who has severe pain on swallowing, may have oesophageal thrush. Oesophageal thrush is a serious infection, since it can prevent the patient from eating. The pain may be so intense that a patient is unable to swallow. Oesophageal thrush indicates a higher degree of immune suppression than oral thrush, and is a sign of clinical stage 4 (which requires an urgent referral to the nearest health centre).

Oral hairy leukoplakia appears as fine white patches (e.g. white vertical lines) on the side of the tongue, which are painless but cannot be removed. Oral hairy leukoplakia is different from oral thrush or oesophageal thrush in that it does not need to be treated. However, oral hairy leukoplakia (like oral thrush) is still a sign of clinical stage 3, and the patient should be referred to the health centre for health check-ups.

21.4.4 Pulmonary tuberculosis (PTB)

Pulmonary tuberculosis (PTB), that is, TB in the lungs, is extremely common in PLHIV. Remember from Study Session 13 that you should suspect pulmonary TB if a patient has a chronic cough for more than two weeks, whitish sputum, fever or sweating (often at night), loss of appetite, weight loss, and sometimes chest pain or spitting up blood. The presence of pulmonary TB in a person living with HIV indicates WHO HIV clinical stage 3. Note that extra-pulmonary TB (outside the lungs) is indicative of WHO clinical stage 4, and requires an urgent referral.

21.4.5 HIV wasting syndrome

A **syndrome** is actually not an opportunistic infection, but a clinical presentation in patients consisting of specific signs and symptoms.

- Can you recall an example of a syndrome?
- Acquired immunodeficiency syndrome, or AIDS.

As the disease progresses, the immune system of PLHIV is increasingly weakened, and this is associated with a gradual loss of weight. At WHO clinical stage 4, HIV wasting syndrome is characterised by an extreme loss of weight (more than 10%), associated with chronic fever and/or chronic diarrhoea. Patients presenting with HIV wasting syndrome require urgent clinical treatment and care, and should be urgently referred to the nearest health centre.

- A 32-year-old person living with HIV comes to your health post with unexplained weight loss of 7 kg. His normal weight was 60 kg, but he doesn't complain of other health problems. How do you explain his weight loss in terms of WHO HIV clinical staging?
- Weight loss is one sign used in WHO HIV clinical staging. In this case, the patient has lost 7 kg, which is 11.6% ($7 \times 100/60$) of his normal body weight. Losing more than 10% of normal body weight will immediately put him at WHO clinical stage 3. This patient might have other opportunistic infections that he is not aware of, and he needs to be referred to the health centre for further investigation.

21.5 Opportunistic infections and provider-initiated counselling and testing

You should be aware that only HIV-infected people can be categorised using the WHO clinical staging system. Occasionally, a person showing signs of opportunistic infections may not know their HIV status. If you suspect an HIV-related disease, you should offer them provider-initiated testing and counselling (Study Session 24). This is particularly recommended for individuals with PGL (persistent generalised lymphadenopathy), the most common clinical presentation that leads you to suspect HIV infection. Similarly, the presence of *herpes zoster* scars, or unexplained weight loss, should be indications for you to advise individuals with unknown HIV status (especially if they also show PGL) on provider-initiated HIV testing and counselling.

- Makeda is a 23-year-old woman who has come to your health post for a consultation. She complains about swellings under her arms and on her neck. What would you advise Makeda?
- First, you need to verify whether the swellings appear to be PGL. If so, PGL is a good reason for you to suspect HIV infection in this patient. You may need to ask Makeda if she knows her HIV status. If she is a person living with HIV, you should reassure her that PGL will not affect her health. If she does not know her HIV status, you should offer her provider-initiated counselling and testing (Study Session 24).

21.6 Prevention of opportunistic infections

It is very important to know about measures to reduce the risk of developing opportunistic infections in PLHIV, some of which can be fatal. Prevention is carried out by giving certain drugs to PLHIV on a daily basis, before they develop symptoms of the disease, in this case, opportunistic infections. As you learnt in Study Session 1, the use of drugs for the prevention of common infectious diseases is called **chemoprophylaxis**. Good prophylaxis is not expensive or complicated, but can increase the duration and quality of life of a person living with HIV.

- Give one example of a chemoprophylactic drug used in prevention of an infectious disease, which you learned about in Part 2 of this Module.
- Isoniazid is a chemoprophylactic drug used to prevent TB infection in children and PLHIV (Study Session 16).

The most commonly used prophylactic drug for HIV/AIDS is **cotrimoxazole**, a wide-spectrum antibiotic that targets the pathogens causing the most common opportunistic infections. These include pneumonia, brain abscess and chronic diarrhoea caused by protozoans, as well as by some bacterial infections. Note that you do not need to memorise these infections as they need to be diagnosed at a health centre or regional hospital. However, you will need to closely monitor patients on cotrimoxazole in your community on follow-up visits or consultations, in order to check whether they are taking their drugs correctly, and/or to refer them if they experience adverse side-effects.

21.6.1 Criteria for starting cotrimoxazole prophylaxis by adult PLHIV

All HIV-positive people at WHO clinical stages 2, 3, 4, or with a CD4 count less than 350 cells/mm³, should start **cotrimoxazole prophylaxis**. Patients should first be asked if they are allergic to sulfa-containing drugs like Fansidar — if they are, these patients should *not* be given cotrimoxazole. The drug regimen for cotrimoxazole prophylaxis is two 480 mg tablets, or one 960 mg tablet daily. Note that you are not expected to either prescribe or refill prophylactic drugs. However, information about the criteria for cotrimoxazole prophylaxis will enable you to identify patients who need prophylaxis, and to refer them to the appropriate health centre.

Sulfa drugs are mainly antibiotics related to sulphonamide. Many PLHIV may develop adverse reactions to this class of drugs. Cotrimaxazole is a sulfa-containing drug.

21.6.2 Duration of cotrimoxazole prophylaxis for adult PLHIV

If a person living with HIV has no access to HIV treatment, cotrimoxazole prophylaxis should be taken for the rest of the patient's life. If the patient has access to antiretroviral therapy (ART) for HIV (Study Session 22), cotrimoxazole prophylaxis should be stopped when the CD4 count has increased to 350 cells/mm³ and remains above that level for at least six months. Note that only the healthcare provider at the health centre should stop the cotrimoxazole prophylaxis — you are not expected to stop cotrimoxazole prophylaxis.

21.6.3 Side-effects of cotrimoxazole prophylaxis

If a patient on cotrimoxazole experiences adverse side-effects, medication should be stopped and the patient should be referred to the health centre. Common side-effects include skin rashes involving the eyes or mucous membranes inside the mouth, yellow discolouration of the eyes, and paleness of the conjunctiva (the mucous membrane that lines the exposed portion of the eyeball and inner surface of the eyelids), due to anaemia and tendency to bleed easily.

21.6.4 Monitoring cotrimoxazole prophylaxis

As already mentioned, cotrimoxazole prophylaxis is prescribed by health workers at the health centre or regional hospital. You are not expected to prescribe the drug, but once these patients are referred back to the community you should make sure they are taking their drugs correctly. As a standard, you will need to follow-up patients on cotrimoxazole prophylaxis every month for the first three months. Later, if no problems occur and if the patient takes the drugs correctly, the follow-up can be done every three months.

Follow-up visits from you should include monitoring for side-effects, and education of the patient on the importance of taking the drugs correctly (this will be further explained in Study Session 23).

Summary of Study Session 21

In Study Session 21, you have learned that:

- 1 An opportunistic infection is caused by pathogens that usually do not cause disease in a healthy person, i.e. one with a healthy immune system.
- 2 The WHO HIV clinical staging system is a staging system developed for patients with HIV to help determine the degree of immune deficiency.
- 3 Identifying opportunistic infections and diseases will help you to categorise PLHIV in one of the four stages of the WHO HIV clinical staging. Stages 1 and 2 correspond to asymptomatic or mild disease, whereas stages 3 and 4 imply serious clinical health problems. Stage 4 is AIDS.
- 4 Common opportunistic infections in PLHIV may be mild (e.g. persistent generalised lymphadenopathy (PGL) at Stage 1), progressing to skin rashes and more serious infections of the mouth, throat and oesophagus at stages 2–4, tuberculosis at stages 3 or 4, and HIV wasting syndrome at stage 4.
- 5 The most commonly used chemoprophylaxis to prevent common opportunistic infections in HIV/AIDS is to administer cotrimoxazole, a wide-spectrum antibiotic that targets several opportunistic infections.
- 6 All PLHIV at WHO clinical stages 2, 3, 4, or with a CD4 count less than 350 cells/mm³, should start cotrimoxazole prophylaxis. Monitoring adherence to the prescribed drug regimen is an important part of the Health Extension Practitioner's role.

Self-Assessment Questions (SAQs) for Study Session 21

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions (SAQs) at the end of this Module.

SAQ 21.1 (tests Learning Outcomes 21.1, 21.2 and 21.4)

Are the following statements that describe the relationship between opportunistic infections in PLHIV and their immune status true or *false*? In each case, explain your reasoning.

- A The decline in the function of the immune system of a person living with HIV is associated with the onset and increasing severity of opportunistic infections.
- B The onset of severe opportunistic infections usually occurs at CD4 counts between 800 and 1500 cells/mm³.
- C The occurrence of an opportunistic infection in a person who has not been tested for HIV is suggestive of HIV infection.
- D PLHIV can be categorised by the WHO clinical staging system according to their most severe opportunistic infection.

SAQ 21.2 (tests Learning Outcomes 21.2 and 21.3)

A 27-year-old woman comes to the health post complaining of a painful rash over her back on the right side which started three days earlier. The pain is severe and runs along horizontally. You examine her and identify that the rash is due to vesicles.

- (a) What is the possible diagnosis of this patient?
- (b) What will you do to help this patient?

SAQ 21.3 (tests Learning Outcomes 21.3 and 21.4)

You are asked to provide a home visit to a 40-year-old man who has been bedridden for four months. He is extremely thin, has diarrhoea and appears feverish. He can hardly speak. His wife died one year ago and he has two children. The elder son says his father was tested positive for HIV four years earlier, but he has not gone back to the health centre since then.

- (a) What is the possible diagnosis of this patient?
- (b) What is his WHO HIV clinical staging?
- (c) What should be done for the patient and his children?

SAQ 21.4 (tests Learning Outcome 21.5)

A 19-year-old HIV-positive woman comes to you and tells you she wants to stop the cotrimoxazole prophylaxis given to her by the nurse in the nearest health centre. She says she is feeling well and doesn't need to take the drugs any longer. What will you advise her?

Study Session 22 Introduction to Antiretroviral Therapy

Introduction

In this study session you will learn about the main therapy used to treat people living with HIV (PLHIV), and its benefits and goals, so that you will be able to help patients get the full benefits of the treatment, and maintain their health for as long as possible. The treatment used for HIV-positive people is called **antiretroviral therapy**, which can be shortened to **ART**. It consists of giving drugs termed **antiretrovirals (ARVs)**, which work by attacking the human immunodeficiency virus (HIV) itself.

For ART to be successful, you should be aware of two things. First, ARV drugs should be given in the correct way; that means using a combination of three ARVs which act on the virus differently. Secondly, ART should be given continuously as a *lifelong* treatment. In addition to improving the quality of life for patients, ART also has the benefits of reducing stigma and discrimination, and increasing the chances of PLHIV going to HIV/AIDS services to ask for help.

Even though you are not expected to prescribe ART for patients, you need to be familiar with the basic concepts and the most common adverse side-effects of the drugs. This information will help you to provide good care for PLHIV who are being treated with ARVs. Remember that drug treatments for chronic diseases require **adherence**, which means taking medications as instructed by the prescribing health professional. It is also important for you to trace ‘treatment defaulters’ (PLHIV who stop taking their medications), to reduce the consequences for the patient, and for public health at large.

Adherence and defaulter tracing, in the context of HIV/AIDS, are discussed in Study Session 23 of this Module.

Learning Outcomes for Study Session 22

When you have studied this session, you should be able to:

- 22.1 Define and use correctly all of the key words printed in **bold**. (SAQs 22.1 and 22.2)
- 22.2 Explain what antiretroviral therapy (ART) is, and its goals and benefits. (SAQs 22.1, 22.2 and 22.4)
- 22.3 Explain why three antiretroviral (ARV) drugs are needed for effective ART and how they can be combined. (SAQ 22.3)
- 22.4 State the four first-line ARV regimens, their common side-effects, and describe what you should do if these side-effects occur. (SAQs 22.3 and 22.5)

22.1 The difference between treatment and cure in HIV/AIDS

Knowing the difference between treatment and cure is quite important in providing care to patients with chronic illnesses like HIV/AIDS. **Treatment** is the application of a medicine or a remedy to relieve symptoms and/or signs of an illness; in the context of a communicable disease like HIV/AIDS, it doesn’t necessarily mean getting rid of the infectious agent from the patient’s body.

On the other hand, **cure** means *eradication* of the cause of the illness — the complete removal of the pathogen from the body; for example, there is a *cure* for malaria or tuberculosis, but not yet for HIV.

You need to understand that antiretroviral therapy for HIV does not cure HIV, because it cannot eradicate the virus from the body. Even though effective treatments to *control* HIV exist now, there is still no cure. It is important that you make sure all the PLHIV in your care also understand this, for the following reasons:

- *HIV treatment is for life*: It will be easier for PLHIV to understand that, because it is not curative, HIV treatment will be for the rest of their lives, and they must continue taking the drugs even though they may have adverse side-effects (which will be covered later in this study session).
- *Drug resistance*: You will be better placed to explain to PLHIV that if treatment is interrupted, HIV may become **drug resistant**, that is, the virus in their bodies will not respond to treatment in future because the virus is no longer susceptible to the drugs. If this happens, it will be necessary to use other drugs that may not be as effective in keeping the virus levels in the blood down, or that may have more side-effects (drug resistance will be referred to again later in this study session).
- *Minimising risk of transmission*: Since there is still no vaccine to prevent HIV, you will need to educate and discuss prevention strategies with PLHIV consistently. They must understand that they are still able to transmit HIV to a healthy uninfected person, even if they feel healthier because they are on ART.

You will learn more about prevention of HIV transmission for PLHIV in Study Session 26.

22.2 The benefits of ART

The benefits of ART can be divided into three — benefits to PLHIV, benefits to the health service, and benefits to the community at large, as described below.

Benefits of ART to the patient:

- Prolongs life and improves quality of life.
- Decreased stigma surrounding HIV infection, since treatment is now available.
- Households can stay intact, because patients survive for so much longer.
- Businesses and jobs can stay intact for the same reason.
- Reduces mother-to-child transmission of HIV.
- Less money is spent on treating opportunistic infections and providing palliative care (end-of-life care).

Benefits of ART to the health service:

- Increased number of people who accept HIV testing and counselling, because treatment is available.
- Increased motivation of health workers, since they feel they can do more for PLHIV.

Benefits of ART to the community:

- Decreased number of orphans.
- Increased awareness of HIV in the community, since more people accept HIV counselling and testing.

22.3 Antiretroviral drugs (ARVs) and antiretroviral therapy (ART)

In Study Session 20, you learnt that HIV is a virus. In fact, there are many types of viruses. The classification of viruses is very complex, and explaining it here would go beyond the scope of this study session. For your work as a Health Extension Practitioner, you only need to know that HIV is a type of virus that is termed a *retrovirus*. Hence, drugs that are used to treat HIV infection are called **antiretroviral drugs**, which can be shortened to **ARVs**.

Antiretroviral therapy (HIV treatment), also known as ART, is a treatment that uses ARV drugs. The two main goals of ART are:

- 1 to reduce the number of viruses in the patient's blood to a very low level
- 2 to increase the number of CD4 lymphocytes in the patient as much as possible, to increase the body's immunity to infection, including immunity against HIV.

Lymphocytes are a type of white blood cell involved in the immune system; **CD4 lymphocytes** (or **CD4 cells**) are a specialised type of lymphocyte, which stimulate all the other defensive mechanisms in the immune system. For this reason, they are sometimes also called 'helper T cells'.

Remember from Section 20.2 that once inside the body, HIV first infects a previously uninfected CD4 lymphocyte. Then the HIV-infected CD4 lymphocyte produces many copies of the virus that are released into the blood to infect other CD4 lymphocytes, and so the process goes on, again and again. The ARV drugs work to stop this cycle by acting at different stages of the process.

22.3.1 Groups of ARV drugs

There are three big groups of ARV drugs available in Ethiopia, as listed below:

- 1 The *NRTI drugs*: this stands for 'Nucleoside and Nucleotide Reverse Transcriptase Inhibitors' (divided into NsRTIs and NtRTIs).
- 2 The *NNRTI drugs*: this stands for 'Non-Nucleoside Reverse Transcriptase Inhibitors'.
- 3 The *PI drugs*: this stands for 'Protease Inhibitors'.

Note that you don't need to know the complex mechanisms of action of these drugs. Likewise, you don't need to memorise the names of the drug groups.

Table 22.1 (on the next page) lists the commonly used ARV drugs in Ethiopia, arranged into the various groups, together with some rarely used drugs. But be aware that the table is not a complete list of all the ARV drugs; for example, it does not include all the rare drugs, or drugs that are not yet available in most resource-constrained settings like Ethiopia. You can use Table 22.1 as a reference in case a patient asks you about a specific drug, but remember to refer him or her to a health centre for more detailed advice than you can give at health post level. The drugs listed in the first three columns of Table 22.1 are the ones most widely used in Ethiopia, and we will say more about them later in this study session (Sections 22.3.3 and 22.4).

Table 22.1 Commonly used antiretroviral drugs (with their common abbreviations).

Nucleoside reverse transcriptase inhibitors (NsRTI)	Nucleotide reverse transcriptase inhibitors (NtRTI)	Non-nucleoside reverse transcriptase inhibitors (NNRTI)	Protease inhibitors (PI)
Stavudine (d4T) Lamivudine (3TC) Zidovudine (AZT or ZDV) Didanosine (ddI) Abacavir (ABC)	Tenofovir disoproxil fumarate (TDF)	Nevirapine (NVP) Efavirenz (EFV)	Lopinavir (LPV) Ritonavir (RTV) Atazanavir(ATV)

Note that you do not need to memorise the different classes and names of the drugs in Table 22.1

22.3.2 Why is the combination of three antiretroviral drugs necessary?

Combination therapy, in the context of HIV/AIDS, means prescribing three or more ARV drugs to be taken together. Combination therapy is useful for many reasons. Here are the most important ones.

Three or more drugs are needed to stop HIV

Remember that HIV makes new copies of itself very rapidly in infected CD4 lymphocytes. Given time, HIV infection/production escalates out of control, and eventually will result in high levels of viruses in the blood, and low levels of CD4 lymphocytes.

- What are the consequences of this for PLHIV?
- They are very likely to develop the opportunistic infections described in Study Session 21.

One drug, by itself, can slow down this fast rate of HIV infection and/or production. Two drugs acting at different points of the virus production cycle can slow it down more, and three drugs together have a very powerful effect. Since ARVs from different drug groups attack the virus in different ways, the standard combination in ART is to use three different ARV drugs.

Combining ARV drugs may overcome or delay drug resistance

Viruses, like bacteria, quickly adapt to their environment, so they can carry on multiplying even when the conditions change for the worse. When a person living with HIV is given ARV drugs for the first time, the environment (in this case, the human body), surrounding the billions of viruses, changes so that it is more difficult for the viruses to multiply. HIV quickly adapts to this new environment by changing its structure in ways that make ARV drugs less effective. The result of this process is that it can go on multiplying even when the drugs are present — this is called **drug resistance**.

HIV has to make only a single, small change to its structure in order to resist the effects of a particular group of ARV drugs. However, if drugs from more than one group are given in combination, HIV has to make several different changes in its structure in order to resist them all.

It takes longer for HIV to make all the changes necessary for resistance to develop to two drugs, and when three drugs are given together, it takes even longer. This means that giving a combination of three drugs will remain effective in treating HIV infection for a longer period of time than giving just a single drug (or even two).

Note that HIV/AIDS treatment programmes do not *randomly* prescribe *any three* ARV drugs. There are strict national guidelines on how to prescribe the different ARV drugs in standard combinations in Ethiopia, as in other countries, as you will see below.

22.3.3 How are antiretroviral drugs combined?

A prescribed or recommended collection of medications intended to treat a disease is called a **treatment regimen** (or simply a **regimen**). The regimens used in ART can be first line, second line, or even third line.

First-line regimens

A **first-line regimen** is a combination of drugs that will be given to an HIV-positive patient who has never taken any ARV drugs before. Most commonly, a first-line regimen will consist of two NsRTIs and one NNRTI.

Box 22.1 lists the most common first-line regimens used in Ethiopia at the present time (2010).

Box 22.1 Common first-line drug regimens for ART

- AZT-3TC-NVP
- AZT-3TC-EFV
- d4T-3TC-NVP
- d4T-3TC-EFV
- TDF-3TC-EFV
- TDF-3TC-NVP

The full names of the drugs in Box 22.1 can be found from their abbreviations by looking back at Table 22.1.

Note that 3TC is included in all of the first-line regimens in Box 22.1 (always listed in the middle of the three drugs). Some drugs are not used together in the same regimen. Note that d4T and AZT are not used together, and NVP and EFV are not used together.

Second- and third-line regimens

Many patients on ART will eventually develop **failure of therapy**, which means the first-line regimen will not be effective anymore. This is often because the drugs were not taken correctly, and this allowed HIV to become resistant to them. In that case, the doctor may decide to switch to a **second-line regimen**, which is more expensive. Usually, the second-line regimen will consist of two NRTIs and one PI drug in combination. The second-line regimen is stronger, but there are more pills to take, and this regimen sometimes has food restrictions and more side-effects. Even a second-line regimen can fail, if not taken consistently and correctly, so a third-line regimen may have to be used.

Note that if ART is interrupted, the virus levels in the patient's blood will increase, and the numbers of CD4 lymphocytes will slowly decrease, until finally the health of the patient will deteriorate. Therefore, making sure that ART is continuously maintained, or in other words, that the patient maintains the *adherence* to the treatment, is extremely important.

First-line drug regimens and fixed-dose combinations

First-line ARVs (Box 22.1) are mainly given twice a day. But there are some drugs which are given once a day, like Efavirenz (EFV) and Tenofovir disoproxil fumarate (TDF). Note that Abacavir (ABC) and TDF can also be used as first-line ARV drugs. According to the current Ethiopian ART guidelines, new adult and adolescent patients are not started on a d4T-containing regimen; instead they are prescribed AZT or TDF-containing regimens.

First-line drug regimens commonly include ARVs in **fixed dose combinations**, meaning combinations of three ARV drugs in fixed doses in the *same tablet* (e.g. AZT + 3TC + NVP in one tablet, see Figure 22.1a); this is taken twice a day (every 12 hours) except in the first two weeks of ART. There are also fixed drug combinations which contain two drugs in one tablet (e.g. AZT + 3TC), which is given with a third drug separately (e.g. Efavirenz or EFV, see Figure 22.1 b) in a different tablet.

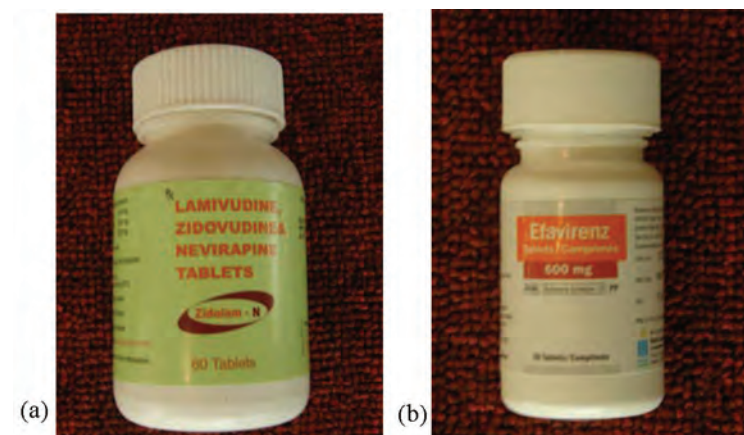


Figure 22.1 Antiretroviral drugs: (a) A fixed-dose combination of Lamivudine (3TC), with Zidovudine (AZT or ZDV) and Nevirapine (NVP) in single tablets. (b) A single drug, Efavirenz (EFV), which may be taken in addition to other ARV drugs. (Photos: Basiro Davey)

22.4 ARV side-effects and how to manage them

Every drug can have **side-effects**, which means unwanted effects that result when taking the drug for treatment. ARV drugs can have multiple side-effects, some of which are common, and others which are rare. The most common side-effects of ARV drugs are shown in Table 22.2 (on the next page). You may need to advise patients when some of these occur, or refer them to a nearby health centre or hospital if serious side-effects arise.

Table 22.2 The most common side-effects of ARV drugs used in the first-line regimen.

ARV drug	Very common side-effects	Potentially serious side-effects	Side-effects occurring later during treatment
	Counsel patients about these and suggest ways they can manage them; also be prepared to help manage them when patients seek care at home.	Warn patients, and tell them to seek care <i>urgently</i> (or refer them <i>urgently</i>) if these occur.	Advise patients to seek care at a health centre or hospital.
Stavudine (d4T)	<ul style="list-style-type: none"> Nausea (the sensation of having an urge to vomit) Diarrhoea 	<p><i>Refer urgently:</i></p> <ul style="list-style-type: none"> Severe abdominal pain; Fatigue and shortness of breath. <p><i>Refer as soon as possible:</i></p> <ul style="list-style-type: none"> Tingling (a sensation of prickling), numbness (unable to feel, or loss of sensations), or painful feet, legs or hands. 	<p>Changes in fat distribution of the body:</p> <ul style="list-style-type: none"> Arms, legs, buttocks, cheeks become <i>thin</i>; Breasts, belly, back of neck become <i>fat</i>.
Lamivudine (3TC)	<ul style="list-style-type: none"> Nausea Diarrhoea. 		
Nevirapine (NVP)	<ul style="list-style-type: none"> Nausea Diarrhoea. 	<p><i>Refer urgently:</i></p> <ul style="list-style-type: none"> Yellow eyes Skin rash Fatigue and shortness of breath Fever. 	
Zidovudine (AZT or ZDV)	<ul style="list-style-type: none"> Nausea Diarrhoea Headache Fatigue (a feeling of tiredness, or lack of energy) Muscle pain. 	<p><i>Refer urgently:</i></p> <ul style="list-style-type: none"> Pallor (anaemia). 	
Efavirenz (EFV)	<ul style="list-style-type: none"> Nausea Diarrhoea Strange dreams Difficulty sleeping Memory problems Headache Dizziness (light-headed, feeling faint, unsteady, loss of balance). 	<p><i>Refer urgently:</i></p> <ul style="list-style-type: none"> Yellow eyes Psychosis or confusion (Psychosis involves loss of contact with reality, usually with false beliefs about what is taking place or one's own identity (delusions), and seeing or hearing things that aren't there (hallucinations). It is discussed in detail in the Module on <i>Non-Communicable Diseases, Emergency Care and Mental Health</i>). Skin rash. 	

Note that side-effects such as nausea, vomiting and diarrhoea are very common with many ARV drugs, especially in the first 2–3 weeks of treatment. If a patient has nausea, you should advise him/her to take the tablets with food (or just after eating food). Patients who develop diarrhoea should be advised to drink more fluids, including oral rehydration salts, eat small and frequent meals, and avoid spicy foods. If the nausea, vomiting or diarrhoea worsens, the patient should be referred to a health centre or hospital as soon as possible.

Summary of Study Session 22

In Study Session 22, you have learned that:

- 1 Antiretroviral therapy (ART) means giving antiretroviral (ARV) drugs to people who are HIV-positive to reduce the level of viruses in their bodies and increase the number of CD4 lymphocytes.
- 2 There are three big groups of ARVs (NRTIs, NNRTIs and PIs).
- 3 The standard regimen in ART is to give a combination of three different ARV drugs for maximum possible treatment effect, and to overcome or delay the development of drug resistance by HIV. Prescribing only one ARV drug increases the risk of resistance developing quickly to that drug.
- 4 ART has many benefits, including improving the quality of life for patients, decreasing stigma and discrimination, prevention of transmission of the virus from mother to child, and increasing uptake of other HIV services, like counselling and testing.
- 5 First-line drug regimens are given to patients who have never taken ARV drugs previously. If these combinations fail, or the patient experiences severe side effects, different second-line or even third-line drug combinations can be prescribed, but these are more expensive and may be less effective.
- 6 The most common side-effects of ARV drugs are nausea, vomiting, diarrhoea and headaches, especially in the first few weeks of ART. Examples of serious side effects which require urgent referral are severe abdominal pain, fever, yellow eyes, tingling and numbness, fatigue with shortness of breath, yellow eyes, pallor (anaemia) and skin rash.

Self-Assessment Questions (SAQs) for Study Session 22

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions (SAQs) at the end of this Module.

SAQ 22.1 (tests Learning Outcomes 22.1 and 22.2)

Is the following statement *true* or *false*? Explain your answer.

‘There are effective ARVs to treat HIV, and a vaccine which cures HIV/AIDS. But these treatments are not available in Ethiopia.’

SAQ 22.2 (tests Learning Outcomes 22.1, 22.2 and 22.3)

Which of the following statements is true? For each *false* statement, explain what is incorrect.

- A ART can completely eliminate HIV from the human body.
- B The two main goals of ART are to reduce the number of CD4 cells, and eradicate the virus from the blood.
- C Two ARV drugs are combined in the most effective treatment for HIV.
- D All of the above statements are false.

SAQ 22.3 (tests Learning Outcomes 22.3 and 22.4)

Explain why a combination of three ARV drugs will be more effective at stopping the multiplication of HIV in the human body than two drugs, or one alone.

SAQ 22.4 (tests Learning Outcome 22.2)

Is the following statement *true* or *false*? Explain your answer.

‘One of the major benefits of ART is to make the patient feel healthy and to enable him or her to practise unsafe sex, because the treatment stops HIV from being passed on.’

SAQ 22.5 (tests Learning Outcome 22.4)

First read Case Study 22.1, and then answer the question that follows it.

Case Study 22.1 Abebech's story

Abebech is a 47-year-old female who is HIV-positive and living in your village. She started on ART two weeks ago at a nearby health centre. While conducting a household visit you find that she has nausea and has been vomiting one or two times per day since the start of ART. The vomiting occurs several hours after eating. Upon checking her medication you learn that she is taking AZT + 3TC + EFV. She can eat food, and has no fatigue.

What advice should you give to Abebech, and why?

Study Session 23 Adherence to HIV Care and Treatment

Introduction

In the previous study session, you were introduced to the main antiretroviral treatments (ARTs) used for people living with HIV (PLHIV) in Ethiopia. Remember that HIV treatment is a lifelong therapy that improves the quality of life of patients but does not completely eradicate HIV infection; that is, the virus persists within the infected person's body. It is therefore essential that a person living with HIV takes their medication correctly. In this study session, we turn our attention to a critical aspect in HIV treatment and care — adherence. The purpose of this study session is to describe the key concepts of adherence to HIV care and treatment in the context of the services provided for PLHIV in Ethiopia. Here, you will learn why adherence to ART is important, what factors influence adherence from both a patient's and the health facility's perspective, and how you can provide advice to HIV patients in the community and at the health post to achieve optimal adherence.

We will then describe the common barriers to adherence to HIV care and treatment that PLHIV face. This will enable you to help patients to continue their follow-up at healthcare units in order to maintain and improve their health. The knowledge gained in this study session will also help you to assess and identify patients who adhere poorly to their treatment and encounter challenges in taking their drugs properly. Hence you will be able to offer them supportive advice in the form of follow-ups at the community and/or refer them to the nearest health centre to provide additional support and treatment services, and ultimately improve the outcome of patient care.

Learning Outcomes for Study Session 23

When you have studied this session, you should be able to:

- 23.1 Define and use correctly all of the key terms printed in **bold**. (SAQ 23.1)
- 23.2 Explain the factors affecting adherence and their importance in maintaining adherence to HIV treatment. (SAQ 23.2)
- 23.3 Describe optimal adherence to HIV treatment and its goal. (SAQ 23.3)
- 23.4 Explain the consequences of poor adherence to HIV therapy and its association with drug resistance. (SAQ 23.1)
- 23.5 Assess the adherence status of PLHIV and advise them on how to improve it. (SAQ 23.3)
- 23.6 Describe the adherence support mechanisms that cover specific needs of patients on HIV therapy. (SAQs 23.2 and 23.4)

23.1 What is adherence?

Adherence to treatment in the context of any disease is essential to maintain and improve a patient's health. Similarly, adherence to HIV therapy is essential for the general improvement of quality of life of PLHIV. In the context of HIV treatment, **adherence** means that a patient takes antiretroviral (ARV) drugs correctly. Incorrect drug taking may not only be inefficient in



Figure 23.1 Adherence means taking the correct ARVs exactly as prescribed. (Photo: Basiro Davey)

Viral replication refers to the production of new viruses by infected cells. 'Viral replication' and 'viral multiplication' can be used interchangeably.

treating HIV infection, but it may also lead to drug resistance (Study Session 22, Section 22.3.2). Using these drugs correctly involves taking the right drug, in the right dose, in the right frequency, at the right time. We will describe the importance of each of these aspects of taking drugs in turn.

- *The right drug:* The drug that is prescribed by the health practitioners should not be changed or replaced by any other drug. PLHIV may take various drugs at any given moment depending on their health situation. Usually, patients take ARV drugs to treat HIV infection and other drugs, such as cotrimoxazole, to prevent opportunistic infections. Therefore, it is not unusual for PLHIV to become confused, and they may find it difficult to differentiate between the many different drugs they may be taking (Figure 23.1). Your support is essential in enabling PLHIV to take the *right drugs*.
- *In the right dose:* As you learnt in the previous study session, ARV drugs have *specific dosages* for adults and children. The dose may also sometimes be different amongst adult patients depending on their health status. Therefore, if you are making follow-ups for patients who are taking drugs for HIV in your community, you have to make sure and encourage them to take the correct dose of the drugs.
- *With the right frequency* (number of times per day): Like other drugs, ARV drugs are prescribed by health practitioners at the health centre or hospital with instructions on how frequently they should be taken in a day. You have to advise patients to follow those instructions strictly.
- *At the right time:* The time at which ARV drugs should be taken is also essential, maintaining a *regular and correct time difference between doses*.

Taking the correct ARV drugs at the right doses and frequency, spaced at regular intervals, helps patients to maintain the optimum levels of drugs in their blood to prevent HIV multiplication.

- Based on what you learnt in previous study sessions, why is it important to take ARV drugs for the duration of a patient's lifetime?
- ART is a lifelong treatment because it doesn't eradicate HIV infection; rather it suppresses the multiplication of the virus in the body. This prevents the destruction of CD4 lymphocytes and maintains the normal function of the immune system.

Note that adherence to HIV treatment and care not only involves the points above concerning ARV drugs, but also attendance by the patient to all scheduled visits at health centres or hospitals to undertake regular check-ups and clinical assessments. Regular clinical follow-ups may include clinic appointments, laboratory tests and prescription refills. You need to support and encourage PLHIV to regularly visit health facilities as advised by the health workers who follow their treatment and/or provide care. In fact, adherence should involve a long-lasting partnership between the patient and the whole healthcare team, including Health Extension Practitioners (Section 23.5.2).

23.2 What is non-adherence?

Non-adherence is the patient's inability to take their drugs correctly, or attend scheduled clinical visits in the prescribed manner as recommended by their healthcare providers. Non-adherence has a number of implications for the health outcome of your patients. A patient who is not taking drugs correctly will have poor health and get ill with opportunistic infections frequently. They

may also end up developing resistant strains of HIV (or other infectious agents in the case of non-adherence to treatment for opportunistic infections) that will be difficult to treat with the conventional treatments available in your settings. Therefore you need to help and actively advise patients to strictly adhere to all of the services they receive from the health facilities.

In addition to good adherence, other factors should be considered if a patient with HIV needs to be started on ART.

The health practitioners who are monitoring the patient at the health centre or hospital should check whether they are eligible to start ART. This is carried out by clinical assessment (i.e. symptoms and/or signs of disease), and by checking the CD4 cell count of the patient.

23.3 The goal of adherence to ART

From a clinical point of view, patients need to achieve optimal adherence to ART to maintain an efficient level of drugs in their bodies. The measurable goal of adherence for your patients in the community or at the health post should be 100%. Poor adherence (adherence below 100%) leads to drug resistance, increased viral load, increased sickness, and increased possibility of death. Therefore, your activity in the community consisting of follow-up visits to patients on ART or other treatments contributes significantly to the general adherence status of your patients.

Optimal means 'the most effective'.

How do you assess the adherence status of a person living with HIV on ART? Adherence is a measurable pattern of behaviour. For example, you can calculate the percentage of tablets taken correctly in a month by dividing the total taken by the total number that should be taken. Then you multiply that number by 100 to obtain the **percentage adherence** of an individual on ART. Optimal adherence is 100%, which means that a patient should take all of their drugs correctly without missing any one at any single time (Figure 23.2).



Figure 23.2 Every ARV drug should be taken at the right time for 100% adherence. (Photo: Basiro Davey)

- Calculate the monthly percentage adherence of a patient who missed six tablets out of the total he should be taking in a 30-day month. He should take two tablets every day.
- This patient takes two tablets every day, so he should take a total of 60 tablets in one month. However he missed six tablets in one month. So his monthly adherence is 54 tablets out of 60. So, by dividing 54 by 60 and multiplying the result by 100, his percentage adherence can be calculated as 90% ($54/60 = 0.9 \times 100 = 90$).

23.4 Why is drug resistance important for ART?

Blood levels of ARV drugs have to be maintained at optimal concentrations in order to be effective against HIV. Poor adherence to ART will result in low blood levels of ARV drugs, and these low concentrations will be unable to completely suppress viral multiplication. In these conditions, the virus can change in such a way that it resists the action of the drugs, even if drug blood levels return to normal, that is, even if the patient resumes good adherence to ART. Hence, drug-resistant viruses will multiply faster in a patient with a history of poor adherence, leading to the patient becoming sicker. In addition, drug-resistant HIV can be transmitted to other individuals for whom these drugs will not work either.

Whether a person living with HIV is infected with drug-resistant HIV can be confirmed at a hospital by specific blood tests. If this is the case, the regimen of drugs taken by that individual will have to be modified and new drugs prescribed. However, drug resistance is not without problems when it comes to HIV treatment, for two reasons. First, there are limited numbers of drugs available in Ethiopia. Secondly, it may be more difficult for a patient to maintain adherence to the drugs used to replace first-line ARV drugs to which HIV has become resistant, due to their increased side-effects and the larger number of tablets to be taken.

- What are the consequences for a patient who has not adhered to their ART treatment and failed to respond to first-line drugs?
- In general if patients needing ART treatment fail to adhere to their initial treatment, then HIV within these patients may develop resistance to their ARV drugs. If this patient is not prescribed other combinations of ARV drugs (which may be more difficult to adhere to), they will eventually become sick and develop AIDS-related symptoms.

23.5 Why do people fail to take ARV drugs correctly?

In order to help patients in your community, you need to understand the common problems that people on ART encounter that may influence adherence. These are usually different from community to community, and even from individual to individual. In this section, we will give you a general overview of the factors that may affect adherence either negatively or positively. We have classified these factors as either related to the patients, or to the healthcare provider like nurses, doctors, or you working in the community.

23.5.1 What personal, family or community factors influence adherence?

Barriers to adherence arising from the patients themselves include personal, family or community factors. Examples of personal circumstances that negatively influence adherence are patients that repeatedly forget to take their medication, patients that travel away from home without medication, and patients who develop mental health issues, or who have a history of drug or alcohol abuse that may interfere with their ability to take drugs as prescribed. Economic problems, such as lack of money for transportation to the healthcare provider can also negatively affect adherence. Other issues are related to low literacy or lack of understanding of the treatments a patient should be taking.

Religious beliefs should also be taken into account in the context of adherence. For instance, fasting during daytime is a common religious practice for many Ethiopians, and may therefore interfere with the frequency of daily doses to be taken for ART.

At the family or community level, stigma and/or discrimination may make it difficult for a patient to adhere to ART due to the absence of a supportive environment. Another example involves pressure from others to comply with certain practices (i.e. travelling to Holy Water or other local rituals) that may negatively influence adherence (Figure 23.3).

In the context of HIV/AIDS, **Stigmatisation** is the negative labels or stereotypes used when referring to PLHIV. Stigmatised PLHIV often feel isolated, abused and discriminated against by other members of the community.



Figure 23.2 Travelling may influence adherence negatively. PLHIV have to plan ahead for changes in their routine to promote adherence to ART.
(Photo: Ignacio Romero)

By contrast, other factors can help your patients to take their treatments properly. The ability of your patients to make their medication a routine part of their life is the first step in good adherence practice. Most patients use reminders to take their treatment at the right time. Some may use alarms, and others may use routine activities such as prayer time as reminders. You may have to help your patients find the right reminder, based on their individual circumstances.

- What other factors involving the family and/or community may positively influence adherence to ART?
- Social support, motivation and encouragement are all helpful. Treatment supporters such as friends and partners, or members of an ART support group can contribute tremendously to adherence in ART.

23.5.2 How can healthcare providers affect patient adherence?

The role of health workers like you is essential for good adherence to ART. Good knowledge and skills about ART and issues concerning adherence, and about patient education and counselling, can provide them with practical support. Healthcare providers can help patients by providing medication alerts, charts, diaries, by giving them advice on the use of reminders, and by putting into place tracking mechanisms for their drug intake. By providing support for patients, you can create trust and maintain a fruitful partnership between the patients and the health system.

Negative attitudes towards patients' ability to adhere to ART will discourage your patients and undermine their efforts to maintain good adherence practices. By contrast, positive views about patients' attitude to treatment, and being careful to avoid patients feeling controlled, will help you to build a successful partnership with patients to promote optimal adherence (Section 23.6).

23.5.3 What other factors negatively affect adherence to ART?

There are other factors unrelated to patients or to the healthcare provider that result in poor adherence. The most common ones are the large number of tablets to be taken, high frequency of doses, and common side-effects like nausea and vomiting. Pill burden is one of the key factors that can affect adherence negatively. These factors are relatively easy to deal with — for example, patients may simply need reassurance about the treatment's side-effects, or a change in the frequency of doses (twice versus three times per day). Other factors, especially those associated with drug interactions and food restrictions towards different drugs, may require referral to a health centre or hospital for counselling and other support services. At the health centre, health workers will help your patients to find solutions related to common adherence problems.

- A patient on ART in your community tells you that he wants to stop taking his cotrimoxazole prophylaxis medication because he is also taking ARV drugs. He describes how difficult it is to take so many tablets in a day. What advice will you give him?
- Reassure the patient that drugs should be taken as prescribed by the health workers. As you are not allowed to stop any of the drugs, refer him for further support to the health centre.

23.6 Encouraging good adherence in patients on ART

During follow-up visits, you need to keep in mind several general issues when giving advice and counselling related to adherence to HIV therapy and care to PLHIV.

First, giving information to patients, and their active involvement in deciding whether to follow ART, are essential for good adherence practices and hence for treatment success. Patients should be informed beforehand of the consequences for their lifestyle of starting HIV therapy. They should realise that the decision whether to take ARV drugs or not will influence their own long-term health. Moreover, patients should be aware of the fact that ART is a lifelong commitment. In preparing patients to start ART, other factors that may affect adherence should be discussed, including those related to disclosure of their HIV-status to partners and family members, and socio-cultural issues like stigma and discrimination.

Secondly, a patient's adherence to ART may be affected by difficult life situations. The support and monitoring provided to patients by their healthcare providers is critical for maintaining good adherence throughout the patient's life. In your community, you will need to undertake follow-up and monitoring activities to ensure adherence to ART and HIV care services. This is particularly important in the instances when a patient is confronted with

difficult life situations. If adherence has not been strictly followed, patients need to be supported, not blamed, punished, made to feel guilty, or controlled in any way. In order to achieve this, you and the patient will need to work collectively as a team with the health practitioners in health centres and hospitals, including nurses, doctors, adherence counsellors, pharmacists, pharmacy technicians and voluntary health workers in the community.

Finally, it is important to discuss with patients and identify a person who is willing to escort PLHIV on ART to the health facilities as a treatment supporter. This may be the patient's partner, a friend, or a family member chosen by the patient to help them remember not only to attend clinic appointments, but also to take the drugs correctly. Similarly, PLHIV or ART support groups can encourage adherence. Support groups are good sources of information and educational resources for those who start treatment, or are already on treatment.

23.6.1 What should you do before a patient starts ART?

Starting ART is a life-changing experience for most PLHIV. As adherence is a skill that your patients learn progressively, you have to start supporting them by providing information, education and counselling about maintaining complete adherence. Before starting ART, the health workers or adherence counsellors at the health centre should ensure that the topics listed in Box 23.1 are well explained to the patient. At the community level, you may also be expected to repeat this kind of information and education for patients who are about to start ART, as the patient may feel overwhelmed by the amount of information they receive.

Box 23.1 Information that should be given to patients before they start ART

- Define antiretroviral therapy (ART) and give basic drug information.
- Define adherence and teach the goal of 100% optimal adherence.
- Discuss reasons why adherence is important and the consequences of non-adherence.
- Help patients learn what to expect from the treatment, the timing of taking their drugs, and possible side-effects.
- Tell them what to do if they miss a dose.
- Help them identify potential barriers to optimal adherence and create plans for success.

This information will enable patients to understand their treatment regimen better, and empower them to adhere to their prescriptions more successfully once they start ART. You should also help them identify potential barriers to adherence, and organise support systems in the community or at home to promote adherence. If they encounter difficulties once they start treatment, patients should be reassured that these will be solved in partnership with the healthcare team. Patients should understand that sometimes you will refer them to other support services to help address barriers like financial difficulties, transportation, housing and food support. Discuss with your patient delaying the start of ART until significant barriers are addressed.

Tailoring treatment to the patient's lifestyle and routine is a key factor for good adherence. For example, you could encourage the patient's self-confidence by helping them to identify reminder strategies like daily activity planning, pill box, diary, calendar, telephone reminder, etc. Alternatively, you could suggest they associate taking ARV drugs with regular daily events such as meals or prayer, or designate specific places and times for taking medications. Patients have to plan ahead for changes in routine lifestyle, such as travel. You need to educate them about possible side effects, and instruct patients on how to manage them, or to go to the health facilities for further care and support if they are struggling to maintain 100% adherence.

23.6.2 What should you do after a patient starts ART?

Once patients start ART, they need to get support from you and the rest of the healthcare system to maintain adherence at all times. From the perspective of a Health Extension Practitioner, you need to follow-up patients closely and frequently in the form of regular visits or appointments. At these meetings, you should be vigilant of factors that can affect adherence significantly. This is particularly important at the start of ART, as there might be side-effects that may result in poor adherence. Discuss adherence at each visit and ask patients about new symptoms or any changes in their health status. If they have new symptoms, refer them to the health centre for better management. Reinforce the information and education about adherence given previously by assessing their knowledge and skills.

Providing support for adherence to HIV treatment and care involves creating a comfortable atmosphere where exchange of information between you and the patient is encouraged on each visit or appointment (Figure 23.4). As you talk to your patient, always use simple terms and visual aids, if available. Being non-judgmental and creating a trusting environment are essential in making the patient feel comfortable. Asking open-ended questions will enable you to assess whether the patient has understood the information you have provided in the current meeting or in earlier meetings. For example, 'Sometimes it is difficult to take medications on time. Have you missed any pills since your last appointment?', or 'Why do you think you were unable to take your pills on time?'



Figure 23.4 A healthworker chatting comfortably with a person living with HIV.

Assessment of adherence should also be part of each visit as patients come for appointments, or as you visit them in the community. You should assess their percentage adherence (as explained in Section 23.3). If adherence is not 100%, try to get specific information about missed doses and work with the patient to determine why they encountered problems and which specific strategies might enable them to achieve 100% adherence. You should also attempt to recognise and acknowledge the difficulties of adherence and show a positive attitude. Patients should be regularly reminded about taking their medicine at the right time, but in a way that makes them feel motivated and encouraged to achieve 100% adherence to improve their quality of life.

If doses are missed, use the following rule to help your patients: If the drug is taken twice a day, the missed dose can be taken up to six hours later, but no later than that. For example, if the normal dose is taken at 7:00 a.m., the missed dose can be taken up to 1:00 p.m. Again, you can convey this message to the patient in simpler terms. For example, 'If you miss a dose, take the dose as soon as you remember, but not if it is almost time for your next regular dose. Never take a double dose.'

Notify an HIV/AIDS healthworker at the nearest health centre if there are adherence difficulties, and discuss it with the healthcare team. In your regular follow-ups with PLHIV, help them to identify strategies to improve adherence. These may include using a treatment supporter, more home visits, either by you or by voluntary community health workers, a referral to home-based care, or encouraging patients to participate in social support activities such as participation in a PLHIV support group.

Summary of Study Session 23

In Study Session 23, you have learned that:

- 1 Adherence to HIV care and treatment is essential for improving the health and quality of life of PLHIV.
- 2 Adherence to treatment means taking the right drugs at the right dose and prescribed frequency.
- 3 Adherence to ART is unique, in that for optimal treatment it requires 100% strict adherence.
- 4 The result of poor adherence to ART is the development of resistance to the drugs, which leads to more difficult options for future treatment.
- 5 There are factors relating to the patients' life circumstances, their family, their community, and the behaviour of health workers that affect adherence negatively and positively, and you need to identify them to help your patients on ART in the community.
- 6 Before starting ART, there are essential issues such as adherence preparation and education that need to be discussed with patients.
- 7 In adherence follow-up meetings, one of your responsibilities is to calculate the percentage adherence of your patients and encourage them to maintain good adherence.

Self-Assessment Questions (SAQs) for Study Session 23

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 23.1 (tests Learning Outcomes 23.1 and 23.4)

Explain what poor adherence to ART means, and why it results in drug resistance and poor health in PLHIV.

SAQ 23.2 (tests Learning Outcomes 23.2 and 23.6)

A female patient who is on ART comes to your health post and tells you that she takes her drugs in hiding from her family, as she does not want them to know about her HIV status. She says she has missed three tablets in the last two weeks, as she could not take them in front of her relatives. How can you help her?

SAQ 23.3 (tests Learning Outcomes 23.3 and 23.5)

For the patient in SAQ 23.2, ART involves taking one tablet twice per day. Based on the total number of missed tablets in a month, calculate her adherence percentage. Is her adherence percentage optimal?

SAQ 23.4 (tests Learning Outcome 23.6)

Explain what it means to form a partnership between you, as the Health Extension Practitioner, and your patient in adherence counselling.

Study Session 24 Provider-Initiated HIV Testing and Counselling

Introduction

In this study session, you will learn about the benefits of HIV testing and your role as a Health Extension Practitioner in counselling and testing for HIV infection, an important prevention measure. The focus of this study session is provider-initiated HIV testing and counselling (PITC) and rapid HIV testing, but other issues such as confidentiality and informed consent will also be addressed.

PITC is HIV testing which is *initiated by the health worker* either in the health facility or at community level, and is part of the developing role for health workers in preventing the spread of HIV and identifying those individuals at risk and in need of treatment.

All the photographs shown in this study session have been provided by the Ethiopian Health and Nutrition Research Institute.

Learning Outcomes for Study Session 24

When you have studied this session, you should be able to:

- 24.1 Define and use correctly all of the key words printed in **bold**. (SAQs 24.1 and 24.3)
- 24.2 Explain the benefits and barriers of HIV testing. (SAQ 24.2)
- 24.3 Explain the different modes of HIV counselling and testing. (SAQ 24.3)
- 24.4 Describe how to recommend HIV testing, and give pre-test counselling, including maintaining confidentiality and obtaining informed consent. (SAQ 24.4)
- 24.5 Describe how to perform rapid HIV testing using three different test kits, and read and interpret the test results. (SAQ 24.5)
- 24.6 Explain how to deliver HIV test results and post-test counselling. (SAQ 24.4)

24.1 Benefits and barriers of HIV testing

24.1.1 The benefits of HIV testing

There are several benefits of HIV testing. Firstly, it allows people infected with HIV to gain early access to HIV treatment and care; secondly, it encourages those tested to reduce their *high-risk behaviour* and avoid transmission to partners; thirdly, it helps HIV-negative people to develop a plan to remain negative; and lastly, it allows couples where one or both is HIV-positive to choose appropriate family planning methods to reduce the risk of infection.

In Ethiopia, HIV counselling and testing sites are a key entry point for HIV prevention, treatment, care and support services. It is important for individuals and couples to learn about their HIV status and make *informed decisions* about their future.

High-risk behaviour in the context of HIV/AIDS refers mainly to sexual intercourse without the use of a condom (see Study Session 25).

24.1.2 The barriers to HIV testing

In this context, a 'client' is an individual who wishes to be tested for HIV.

Barriers to HIV testing are those obstacles that prevent people from getting tested, either voluntarily or when offered a test by a healthworker. These barriers fall into three categories: client-related, healthworker-related and health facility-related. Examples of client-related barriers include fear of stigma, shame or disapproval attached to something regarded as socially unacceptable, and **discrimination** (unfair treatment of people found to be HIV-positive). Other client-related barriers include the fear of being ill and dying from a non-curable disease, if the test is positive for HIV infection; the loss of family support; and difficulties of keeping or finding a job.

Healthworker-related barriers include the fear of damaging the patient-provider relationship; the unpredictability of the patient's emotional reaction; lack of time; and fear of overwhelming the client. Examples of health facility-related barriers are lack of space, equipment and supplies.

24.2 Modes of delivering HIV counselling and testing

HIV counselling and testing is central to preventing the spread of HIV infection and identifying those individuals at risk. As discussed in Study Session 20, we can only say that a person has HIV in their blood when they are tested and found to be HIV-positive. In this section, you will learn that there are three different modes of delivering the counselling and testing service: voluntary counselling and testing (VCT), provider-initiated HIV testing and counselling (PITC), and mandatory HIV testing.

Voluntary counselling and testing (VCT) is *initiated by the clients themselves*. In other words, individuals request HIV testing without the health worker offering or recommending testing. VCT often takes more time than PITC because clients expect, and have allowed time for, additional counselling both before and after a test result. Note that you are not expected to perform VCT yourself. If individuals ask you for HIV testing voluntarily, you should refer them to a health centre that offers VCT.

Remember that under most conditions, an HIV test should only be done after obtaining the informed consent of the individual concerned.

The World Health Organization (WHO) and health services in many countries, including Ethiopia, promote a policy of **provider-initiated HIV testing and counselling (PITC)**. This means that when trained to do so, you should offer and provide HIV testing and counselling yourself. PITC enables specific clinical decisions to be made and medical services to be offered that would not be possible without the knowledge of a person's HIV status. A period of pre-test counselling and education should always accompany testing, and people should never be forced to undergo testing against their will.

PITC is further divided into *diagnostic testing* and *routine offer*. **Diagnostic testing** is part of the clinical process of determining the HIV status of a sick person, such as someone with TB or other symptoms that suggest possible HIV infection. On the other hand, a **routine offer** of testing and counselling means offering an HIV test to all sexually active people who seek medical care for other health issues.

Unlike VCT, PITC needs only a brief period of pre-test information/education before performing the test, and can be done in a few minutes. PITC is recommended for countries like Ethiopia where HIV is *endemic* (always present in the population). PITC is not a replacement for VCT. Instead, it provides an entry point to HIV services, it helps to prevent HIV transmission in the community, and also helps people make healthier choices. Those individuals who are found to be HIV-positive can then be referred into treatment and care.

Under normal conditions, a person would only undergo HIV testing after they have given their **informed consent**, that is consent based on fully understood information about the test and what the result may mean. A signed consent form is not needed in Ethiopia for PITC (although it is for VCT), but obtaining *verbal consent* is essential.

Mandatory HIV testing, on the other hand, does not require the consent of the individual about to be tested. It is done by force or without informed consent, and is usually performed at the request of a court in cases involving rape or other sexual assault.

Respecting an individual's rights is an integral part of the process of HIV counselling and testing, and this is often referred to as the '3 Cs' — **consent**, **confidentiality**, and **access to counselling**.

24.2.1 The five steps in PITC

The flow chart in Figure 24.1 illustrates the *five* key steps involved in PITC. As PITC is central for the work of Health Extension Practitioners, we will focus on PITC for the remainder of this study session. Each step will be explained in detail.

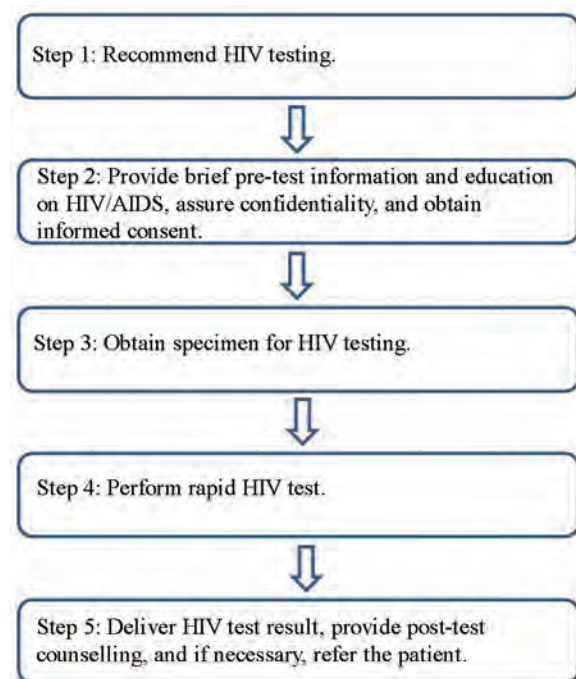


Figure 24.1 The five steps involved in provider-initiated testing and counselling (PITC).

24.3 Step 1: How to recommend HIV testing

Diagnostic testing is part of the clinical process of determining the HIV status of a sick person whom you suspect may be infected with HIV. If the person presents with symptoms consistent with HIV infection, explain that they will be tested for HIV as part of their clinical check-up.

The following is an example of how a trained health worker might recommend a *diagnostic HIV test*:

‘As you told me, you have diarrhoea that has lasted three months and you have lost a lot of weight. I want to find out why. In order for us to diagnose and treat your illness, you need a test for HIV infection. Unless you object, I will conduct this test.’

A routine offer is made to sexually active people regardless of their initial reason for seeking medical attention.

Below is an example of how to make a *routine offer* for HIV testing:

‘One of our guidelines is to offer everyone the opportunity to have an HIV test, so that we can provide you with care and treatment while you are here and refer you for follow-up afterwards. Unless you object, I will conduct this test and provide you with counselling and the result.’

24.4 Step 2: Pre-test counselling, confidentiality and informed consent

24.4.1 Pre-test information and education on HIV/AIDS

Before testing, you should provide the individual about to be tested with information on HIV/AIDS, and, importantly, give them enough opportunity to ask questions. You should include the basic facts about HIV, its transmission and prevention; the importance of knowing one’s own HIV status and the advantages of disclosing one’s own HIV status to family members, close friends and others. Also, explain about follow-up support and the services available if the test is positive for HIV. Box 24.1 summarises the key information you should provide as part of pre-test counselling and education on HIV/AIDS.

Box 24.1 Pre-test information/education as part of PITC

HIV is a virus that destroys parts of the body’s immune system. A person infected with HIV may not feel sick at first, but slowly the body’s immune system is destroyed. They then become ill and are unable to fight infections. Once a person is infected with HIV, they can transmit the virus to others unless they practice preventative measures and safe sex (Study Sessions 25 and 29).

HIV can be transmitted:

- through exchange of HIV-infected body fluids such as semen, vaginal fluid or blood during unprotected sexual intercourse.
- through HIV-infected blood transfusions.
- through sharing sharp cutting or piercing instruments.
- from an infected mother to her child during pregnancy, labour and delivery, and during breastfeeding.

HIV cannot be transmitted through:

- hugging, shaking hands, eating together, sharing a latrine, or mosquito bites.

A blood test is available that enables a person’s HIV status to be determined.

If the HIV test is positive, knowing this will help you to:

- protect yourself from re-infection, and your sexual partner(s) from infection.
- get early access to chronic HIV care and support, including regular follow-up and support, treatment for HIV, and cotrimoxazole prophylaxis (preventative treatment with antibiotics).
- cope better with HIV infection and be able to make future plans. For pregnant mothers or for married couples intending to have a child in the future, it gives a chance of early access to services for the prevention of mother-to-child transmission (PMTCT) of HIV (Study Session 27).

If the HIV test is negative, knowing this will help you explore ways to remain HIV-negative.

24.4.2 How to assure confidentiality

Assure the person about to undergo testing that the result is confidential, and emphasise the following points:

- The result will only be shared with him or her.
- He/she decides to whom to disclose the result of the test.
- The result will only be provided to another person with his/her written consent. If the result of the test is needed to ensure appropriate clinical care, explain the advantages of sharing the result with the medical team.

24.4.3 How to obtain informed consent

After providing pre-test counselling on HIV/AIDS and assuring confidentiality, you need to confirm the individual's willingness to proceed with the test. You should ask them whether they agree with you and give consent for the test to be done. If they give their consent, make sure they are willing to discuss the implications of the test with you once the result is known.

Remember, informed consent can be given verbally for PITC.

24.5 Step 3: Obtaining a specimen for HIV testing

Specimens used for HIV testing include serum, whole blood, or oral fluids. In Ethiopia, whole blood is used for rapid HIV testing. The blood specimen is obtained by a finger prick (as outlined below and illustrated in Figure 24.2 on the next page).

- 1 Prepare a container for disposing of sharp instruments; also prepare gloves, lancet, alcohol swab, cotton swab, pipette, capillary tube, the test kits, and other necessary materials (Figure 24.2a).
- 2 Wash your hands with an antiseptic soap and water.
- 3 Wear clean gloves.
- 4 Position the hand of the person to be tested palm-side up. Select the softest finger; avoid those fingers that have calluses or hardened skin (Figure 24.2b).
- 5 Massage the chosen finger to help the blood to flow (Figure 24.2c).

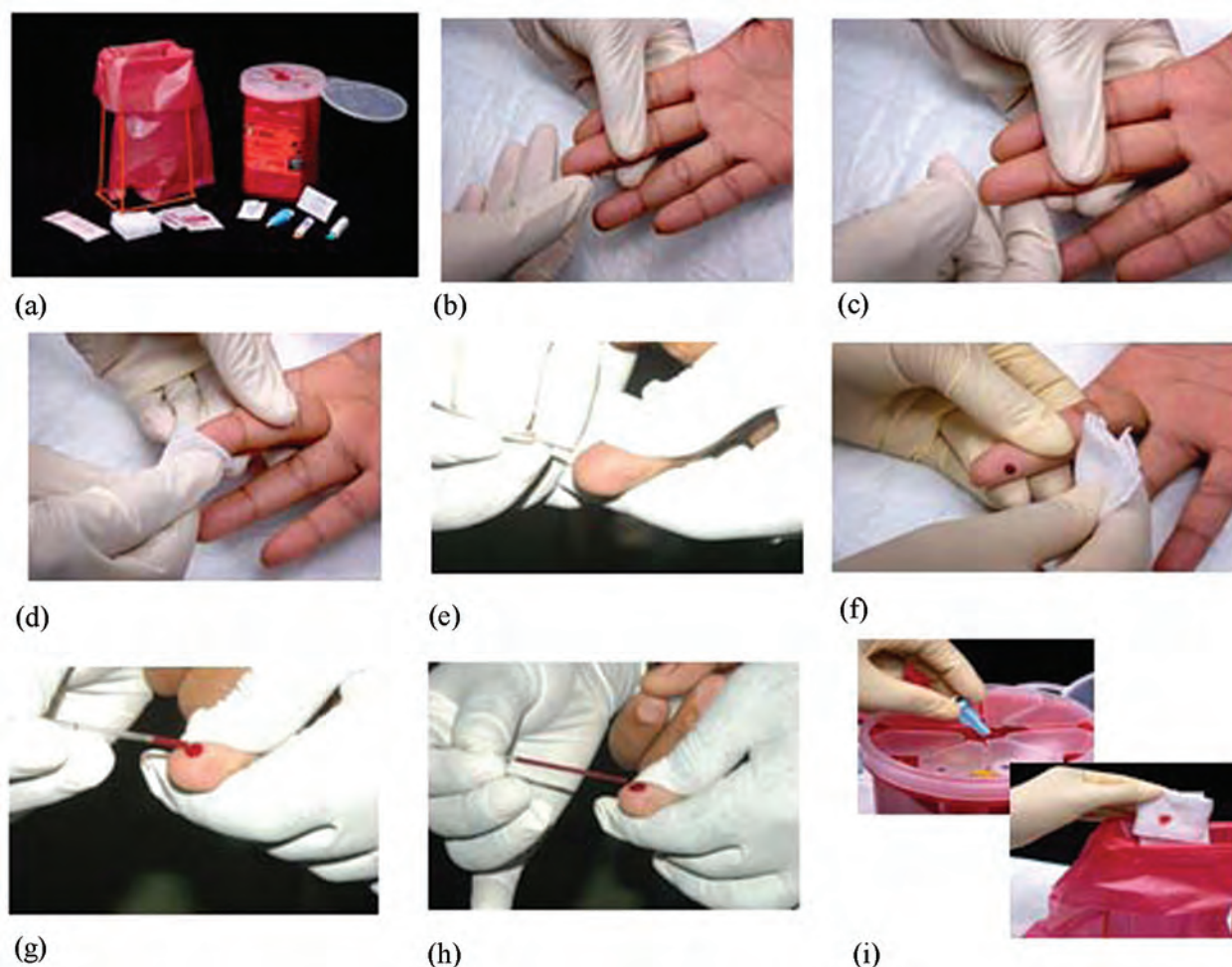


Figure 24.2 The procedure used to take a sample of blood for HIV testing.

(a) Preparation of supplies required for taking a blood sample (gloves are not shown). (b) The hand of the person to be tested is placed palm-side up. (c) The finger selected for pricking is massaged to encourage blood flow. (d) The finger is cleaned using an alcohol swab. (e) Holding the finger firmly, the sterile lancet is placed off-centre. (f) A drop of blood is squeezed out. (g) The tip of the capillary tube is placed in the drop of blood. (h) The capillary tube is filled with blood between the two marked lines on the tube. (i) All contaminated supplies are disposed of safely.

6 Clean the fingertip with an alcohol swab (Figure 24.2d). Start in the middle of the finger and work outwards; this will prevent contamination of the cleansed region. Allow the finger to dry.

7 Hold the finger and firmly place a new sterile lancet off-centre on the fingertip. Firmly press the lancet to puncture the fingertip. (Figure 24.2e).

8 Wipe away the first drop of blood with a sterile gauze pad or cotton ball. Apply intermittent pressure in the base of the punctured finger several times (Figure 24.2f).

9 Blood may flow best if the finger is held lower than the elbow. Touch the tip of the capillary tube to the drop of blood (Figure 24.2g).

10 Ensure you fill the capillary tube with blood between the two marked lines. Avoid getting air bubbles trapped in the capillary tube (Figure 24.2h).

11 Properly dispose of all contaminated supplies (Figure 24.2i).

24.6 Step 4: How to perform a rapid HIV test

Both HIV-1 and HIV-2 can be detected by rapid HIV tests. The advantages they offer over other testing technologies is that they can be performed on small amounts of blood, the results are available within minutes, and they can be done in a person's home or at a health post.

In Ethiopia we use three types of rapid HIV test kits. They are known as:

- KHB (a trade name)
- STAT-PAK (a trade name)
- Uni-gold (a trade name).

The logical step-by-step procedure for using the three rapid test kits to determine an individual's HIV status is called the **HIV testing algorithm** (Figure 24.3).

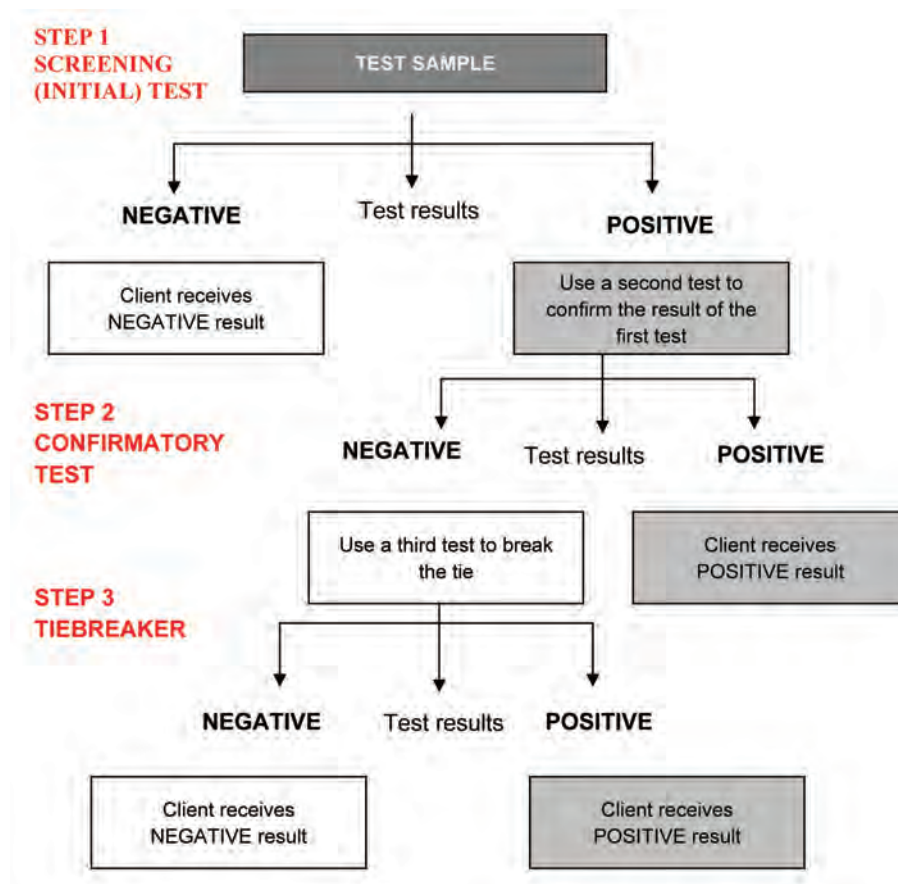


Figure 24.3 National HIV testing algorithm currently in use in Ethiopia.

The algorithm uses three types of tests — the screening test, the confirmatory test, and a tiebreaker. The **screening test** is the first test in the sequence. The **confirmatory test** is used to confirm a positive result if the first test is positive. A **tiebreaker** is the final test which is done when there is a difference between the screening and confirmatory test results. In Ethiopia, we use KHB as a screening test, STAT-PAK as a confirmatory test, and Uni-gold as a tiebreaker.

If a test is *non-reactive* when using the KHB test kit, we do not need to do another test and we report it as *negative* — the individual tested is HIV-negative.

Reactive means the test yielded a positive result. A non-reactive result is a negative result.

If the test is *reactive* with KHB, we need to perform a second test using STAT-PAK to confirm the result. If the test is also reactive with STAT-PAK, we report it as *positive* — the individual tested is HIV-positive.

If the test is *reactive* with KHB, but *non-reactive* with STAT-PAK, we need to do a tiebreaker test (Uni-gold). If the Uni-gold is *non-reactive*, we report the result as *negative*. However, if the Uni-gold is *reactive*, we report the result as *positive*.

- After how many tests do you notify the client that the outcome of the testing process is that he or she is HIV-positive?
- You should not report a positive HIV test result after just using one test. At least two different rapid tests have to be reactive before you report a positive result.

The following sections provide guidance on how to conduct a rapid HIV test.

24.6.1 Performing an HIV test using the KHB rapid test kit

First, collect the test items and other necessary laboratory supplies. Remove the KHB device from its packaging, and label it using a code number or a client identification number. The client is the patient or person taking the test. Code numbers should be used to ensure the test is anonymous.

The device has two parts — at the bottom there is a deep circular area where the blood sample is placed (the sample port); at the top there are two areas marked ‘C’ for control and ‘T’ for the test result line.

A photograph of a KHB test is shown in Figure 24.4. The KHB, STAT-PAK and Uni-gold kits have similar structures and parts, though the Uni-gold kit has a different shape.

Collect the specimen using a capillary tube, as described in Section 24.5 of this study session.

Add a drop of whole blood from the capillary tube, enough to cover the sample port of the device (this is shown in Figure 24.5), before adding one drop of running buffer using a pipette. (A running buffer is a liquid that contains reagents and provides optimal conditions for the test to develop).



Figure 24.4 A photograph of a KHB kit showing the location of the sample port and the control and test lines. The insert shows a health worker marking the test with a code or client number.



Figure 24.5 A sample of blood is placed in the sample port of a KHB test device, using the capillary tube.

Now wait for 30 minutes for the test to develop. The control line will be the first to show, and this indicates that the test is working correctly and is valid.

Reading the result of a KHB test

After 30 minutes the test result is ready. Interpretation of the KHB test is straightforward, and examples of real test results are shown in Figure 24.6.

If both the control line and test line are seen, the result is considered to be reactive (top panel of Figure 24.6). If *only* the control line appears and *no* test line is seen, the result is considered to be non-reactive (middle panel of Figure 24.6).

If the control line is *not seen*, the test has not worked correctly (it may have been damaged) and the result is considered to be *invalid* (bottom panel of Figure 24.6). If the result is invalid, the procedure is repeated using a new KHB device. The result must be recorded on a worksheet, together with any relevant information.

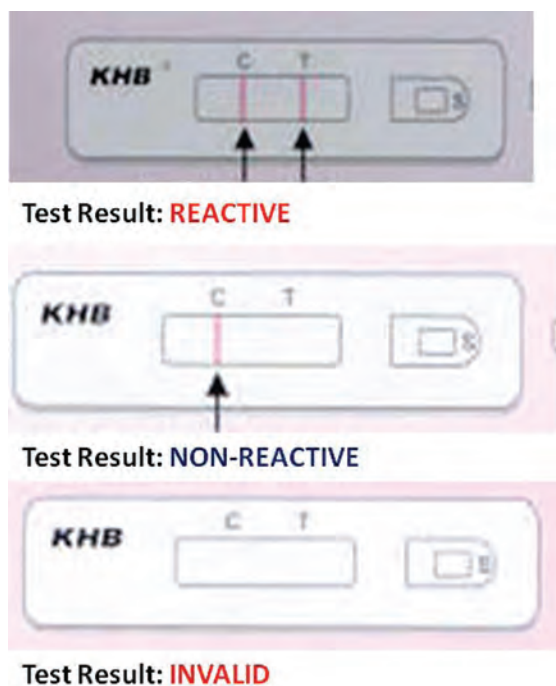


Figure 24.6 How to interpret the KHB device. The top picture shows a reactive result, the middle one is a non-reactive result; and the bottom picture has no lines showing and is therefore an invalid result.

- How would you interpret a non-reactive KHB result?
 - This indicates that the person who supplied the blood is HIV-negative and therefore there is no need to proceed to the STAT-PAK test.
- What do you do if you get a reactive result using the KHB device?
 - If you get a reactive result with the KHB device, you should proceed to the second test, which is STAT-PAK, to confirm the result.

24.6.2 Performing an HIV test using the STAT-PAK rapid test kit

The procedure for this test is very similar to that used for the KHB test. However, there are some differences. The procedure for the STAT-PAK test is outlined below.

First, collect the test items and other necessary laboratory supplies. Remove the STAT-PAK device from its packaging, and label it using a code number or a client identification number.

Like the KHB device, the STAT-PAK also has a sample port and an area where the control and test lines are read.

Collect the specimen using a capillary tube as described earlier in this study session, and place some of the blood on a microscope slide.

Using the special applicator provided with the STAT-PAK kit, collect blood from the microscope slide and then transfer it to the sample port. Now add one drop of running buffer using the bottle of reagent supplied with the kit (these steps are shown in Figure 24.7).

Now wait ten minutes for the test to develop. The control line will be the first to show, and this indicates that the test is working correctly and is valid.

The STAT-PAK test only takes 10 minutes to develop, whereas the KHB test can take up to 30 minutes to produce a result.

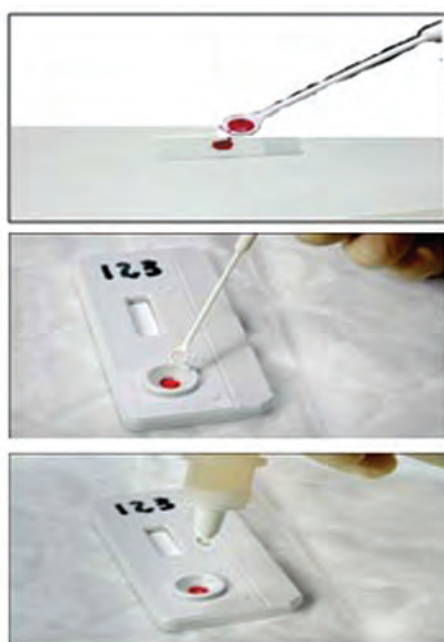


Figure 24.7 Loading the STAT-PAK device top: blood being collected from the microscope slide. Middle: blood being loaded into the sample port. Bottom: running buffer being loaded into the sample port.

Reading the result of a STAT-PAK test

After ten minutes the test result is ready. Interpretation of the STAT-PAK device is the same as for the KHB device, and this is shown in Figure 24.8. If the result is invalid, the procedure is repeated using a new STAT-PAK device. The result must be recorded on a worksheet, together with any relevant information.



Figure 24.8 How to interpret the STAT-PAK device. The picture on the far right has no lines showing and is therefore an invalid result.

- How would you interpret the results of a STAT-PAK test?
- A reactive result would indicate that the person who supplied the blood is HIV-positive. If the result was non-reactive, you would proceed to the tiebreaker test using the Uni-gold device.

24.6.3 Performing an HIV test using the Uni-gold rapid test kit

The procedure for this test is very similar to that used for the KHB and STAT-PAK tests. However, there are some differences. The procedure for the Uni-gold test is outlined below.

First, collect the test items and other necessary laboratory supplies. Remove the Uni-gold device from its packaging, and label it using a code number or a client identification number. The Uni-gold also has a sample port and an area where the control and test lines are read.

Unlike the other tests, blood is collected from the punctured finger using a pipette and then *two drops* of blood (60 µl) are placed into the sample port of the Uni-gold device (see Figure 24.9). Two drops of running buffer (60 µl) are then also added to the sample port.

µl means 'microlitre'.



Figure 24.9 Loading the Uni-gold device. Left: blood is collected using a pipette. Middle: two drops of blood are loaded into the sample port. Right: two drops of running buffer are also loaded into the sample port.

Now wait for ten minutes (and no longer than twenty minutes) for the test to develop. The control line will be the first to show, and this indicates that the test is working correctly and is valid.

Reading the result of a Uni-gold test

After ten minutes the test result is ready. Interpretation of the Uni-gold device is similar to the other devices, and this is shown in Figure 24.10. If the result is invalid, the procedure is repeated using a new Uni-gold device. The result must be recorded on a worksheet, together with any relevant information.

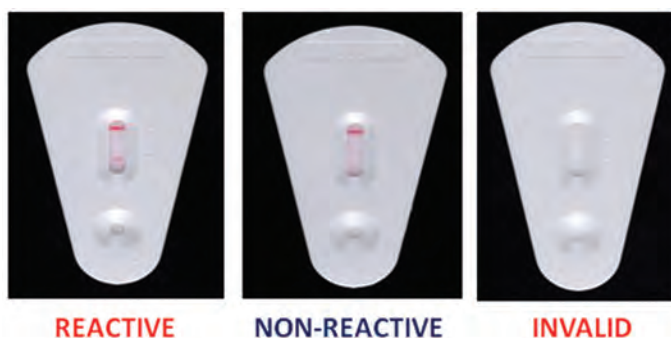


Figure 24.10 How to interpret the Uni-gold device. The picture on the left shows a reactive result. The image in the middle shows a non-reactive result. The image on the right has no lines showing and is therefore an invalid result.

-
- How would you interpret the result of a Uni-gold test?
 - A reactive result indicates that the person who supplied the blood is HIV-positive, whereas a non-reactive result indicates that they are HIV-negative.

24.7 Step 5: Delivering an HIV test result, post-test counselling, and referral for treatment

The focus of post-test counselling for people with HIV-positive test results is to provide psychosocial support to help the tested person cope with the emotional impact of the test result, to facilitate (i) access to treatment, (ii) care services, (iii) prevention of transmission, and (iv) disclosure of HIV status to sexual partners.

24.7.1 Delivering the result and post-test counselling when the result is HIV-positive

During post-test counselling, you should cover the following points:

- Inform the person of the result simply and clearly, and give him or her time to consider it. You could ask ‘Are you ready to hear the result?’, allowing the person an opportunity to ask additional questions before you give the result. Most people are ready to hear their result and this should be delivered without undue delay.
- Ensure that the person understands the result. Avoid using technical language such as ‘reactive’ and ‘non-reactive’.
- Allow the person time to ask questions.
- Help the person to cope with emotions arising from the test result. The emotional response to an HIV-positive result can include confusion, anger, denial, sadness, loss, uncertainty, fear of death, shame (embarrassment), fear of stigma and discrimination.
- Discuss any immediate concerns, and assist the person to determine who in their social network may be available and acceptable to offer immediate support.
- Describe follow-up services that are available in the health facility and in the community, focusing on the available treatment, prevention of mother-to-child transmission, and HIV care and support services.
- Provide information on how to prevent transmission of HIV, including provision of male and female condoms and guidance on their use (Study Sessions 25 and 29).
- Provide information on other relevant preventative health measures, such as good nutrition, cotrimoxazole (for prophylactic chemotherapy of opportunistic infections) and, in malarious areas, insecticide-treated bed nets.
- Discuss possible disclosure of the positive result, when and how this may happen, and to whom.
- Encourage and offer referral for testing and counselling of current and former partners, and children who may be at risk.
- Assess the risk of violence or suicide, and discuss possible steps to ensure the physical safety of people with an HIV-positive test result, particularly women.

You should also arrange a specific date and time for a follow-up visit or referral for treatment, care, counselling, support, and other services as appropriate, e.g. tuberculosis screening and treatment, prophylaxis for opportunistic infections, treatment for other sexually transmitted infections (STIs), family planning and antenatal care.

24.7.2 Delivering the result and post-test counselling for HIV-negative people

An HIV-negative test result can produce a range of emotional responses, including relief, excitement, or optimism (the result may feel like a new opportunity). The person may also feel confused — they may have perceived themselves as HIV-positive, and they may have an HIV-infected current or former partner.

An important issue to consider when delivering a negative HIV test result is what is termed the **window period**. The window period refers to the time between HIV infection and the time at which HIV can be detected by available tests. Rapid HIV tests detect anti-HIV antibodies in the blood, but it usually takes about three months from the original HIV infection for the immune system to develop sufficient levels of antibodies against HIV to be detected by these tests. So individuals who are within this window period (i.e. who have been recently infected by HIV) may test negative in a rapid HIV test and yet still be able to transmit the virus. Therefore, you should advise people who may have recently been exposed to HIV (by unprotected sex and/or blood-contaminated products) to have another confirmatory HIV test at least three months after exposure to the virus.

Counselling for individuals with HIV-negative test results should include the following information:

- An explanation of the test result, including information about the window period for the appearance of HIV antibodies, and a recommendation to re-test in case of a recent exposure.
- Basic advice on methods to prevent HIV transmission.
- Provision of male and female condoms, and guidance on their use.
- The health worker and the tested person should then jointly assess whether there is a need for more extensive post-test counselling or additional prevention support, for example, through community-based services.

Summary of Study Session 24

In Study Session 24, you have learned that:

- 1 HIV testing has several benefits — it creates early access to HIV treatment and care, it encourages reduction of high-risk behaviour, it helps people to make lifestyle changes and avoid transmission of the virus to partners; and for those found to be negative, it helps them to develop a plan to remain HIV-negative.
- 2 The barriers to HIV testing can be client-related, healthworker-related and health facility-related.
- 3 There are three different modes of delivering HIV testing and counselling — voluntary counselling and testing (VCT), provider-initiated HIV testing and counselling (PITC), and mandatory testing.

-
- 4 HIV testing and counselling should respect human rights. Informed consent should be obtained prior to testing. Mandatory HIV testing can be ordered by a court in cases dealing with sexual assault and rape.
 - 5 There are five steps in delivering PITC:
 - Step 1: Recommend HIV testing.
 - Step 2: Provide brief pre-test information and education on HIV/AIDS, assure confidentiality, and obtain informed consent.
 - Step 3: Obtain specimen for HIV testing.
 - Step 4: Perform rapid HIV test.
 - Step 5: Deliver HIV test result, provide post-test counselling, and refer the patient if necessary.
 - 6 The three rapid HIV test kits used in Ethiopia are KHB as a screening test, STAT-PAK as a confirmatory test, and Uni-gold as a tiebreaker test. Testing follows a standard set of procedures as laid out in the HIV testing algorithm.

Self-Assessment Questions (SAQs) for Study Session 24

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 24.1 (tests Learning Outcome 24.1)

Is the statement below *true* or *false*. Explain your reasoning.

‘PITC is HIV testing initiated by the client.’

SAQ 24.2 (tests Learning Outcome 24.2)

Which of the following is *not* a benefit of HIV testing? Explain why.

- A It creates early access to HIV treatment and care.
- B It provides an opportunity to reduce high-risk behaviour.
- C It helps in preventing transmission of HIV.
- D It helps those found to be HIV-negative to practise sex without the need for protection.

SAQ 24.3 (tests Learning Outcomes 24.1 and 24.3)

Which of the following is *not* a mode of delivery of HIV counselling and testing that requires the client’s consent? When should this method be applied?

- A PITC
- B VCT
- C Mandatory HIV testing.

SAQ 24.4 (tests Learning Outcomes 24.4 and 24.6)

Which of the five steps of performing PITC is crucial for linking HIV patients to comprehensive HIV prevention, care, treatment and support services? Explain why.

SAQ 24.5 (tests Learning Outcome 24.5)

Is the following statement *true* or *false*. Explain your reasoning.

‘We can report a positive HIV test just by doing a KHB rapid test.’

Study Session 25 Prevention of HIV Infection, and Community Mobilisation

Introduction

In this study session, you will learn about two distinct but interrelated subjects concerning prevention of HIV infection. First, we will describe general prevention measures that individuals can practise in order to avoid or minimise the risk of HIV infection, with particular emphasis on ways to avoid the sexual route of HIV transmission. Secondly, you will learn about a series of steps you should undertake to mobilise your community in the context of HIV prevention. As a result, you will become familiar with ways to facilitate and organise numerous community mobilisation activities at your *kebele*, in order to both encourage members of different groups in your society to participate actively in HIV prevention measures and, at the same time, create awareness about available services in the higher-level health facilities closest to them. We will also discuss the Ethiopian Federal Ministry of Health (FMOH)'s national strategy for HIV prevention in the context of your work in the community. At the end of this study session, you will be able to relate HIV infection preventative measures at the individual, community and national levels.

Learning Outcomes for Study Session 25

When you have studied this session, you should be able to:

- 25.1 Define and use correctly all of the key words printed in **bold**. (SAQs 25.1 and 25.2)
- 25.2 Describe the basic principles of prevention of HIV transmission. (SAQ 25.1)
- 25.3 Explain the importance of safe sex as a prevention measure for HIV transmission in the community. (SAQ 25.2)
- 25.4 Describe the main national HIV community mobilisation strategies, and the processes and steps in community mobilisation. (SAQ 25.3)
- 24.5 Identify your role in community mobilisation activities related to HIV/AIDS. (SAQ 25.3)

25.1 General principles for preventing HIV infection

The goal of prevention in the context of HIV/AIDS is to avoid or minimise the risk of transmission of HIV from an infected person to an uninfected person. HIV prevention measures currently recommended at the individual and community levels are based on our knowledge of how HIV can be transmitted from person to person.

- What are the modes of transmission of HIV?
- Through sexual relations; through direct contact with contaminated blood; and from mother to child.

In this section, we will focus on prevention measures that individuals in a community should take in order to avoid HIV transmission through sexual relations and through direct contact with contaminated blood. In later study



sessions, you will learn about how to protect yourself against HIV infection in the workplace (Study Session 26) and about specific preventative measures to reduce mother-to-child HIV transmission (Study Session 27).

Provider-initiated testing and counselling for HIV are also important preventative measures for HIV transmission (Study Session 24). Note that the measures described below are aimed at all individuals within a community, whether they know their HIV status or not. Specific issues concerning the prevention of HIV transmission from people living with HIV (PLHIV) to their partners will be discussed in more detail in Study Session 29.

25.1.1 Strategies for preventing sexual transmission of HIV

Sexual transmission accounts for the majority of HIV infection cases in Ethiopia. Remember from Study Session 20 that HIV can be transmitted via blood or sexual fluids (from a man's penis or a woman's vagina) through sexual intercourse, which includes vaginal, anal and oral sex. HIV infection may then occur when infected fluids come into contact with the internal linings of someone's body (usually the vagina, mouth, or anus) through which the virus can enter the bloodstream. Thus, HIV-transmission prevention through the sexual route aims to avoid or reduce contact between blood and/or sexual fluids of an infected person and the internal linings of another person.

The most widely known strategies for prevention of HIV transmission through the sexual route are often known as the '**ABC rules**':

- '**A**' stands for '**Abstinence**', which means refraining from premarital sexual intercourse.
- '**B**' stands for '**Be faithful**', which means maintaining faithful relationships with a long-term partner.
- '**C**' stands for '**proper use of Condoms**', which means correct and consistent use of condoms in sexual relations.



Abstinence

Abstinence in principle is the most effective way to prevent sexual HIV transmission, as there is no possibility of direct contact between infected blood and/or sexual fluids and another person's body. Abstinence is therefore a valid option for individuals who do not have a regular sexual partner, or for PLHIV. However, many sexually active people may find difficulties in maintaining abstinence for long periods of time, making it an unrealistic choice. Moreover, the 'A' rule excludes the circumstances of forced sexual relations, as in the cases of rape and coercive marriage of young girls, which unfortunately still occur in Ethiopia.

Maintaining faithful relationships

For faithfulness (the 'B' rule of Being faithful) to be successful and minimise transmission of HIV, it is essential that both partners, or the multiple partners in polygamous relationships, know whether they are HIV negative before starting unprotected sexual intercourse. Without condoms there are no barriers for the transmission of HIV between partners. **Unprotected sexual intercourse** refers to all penetrative practices (through vagina, anus or mouth) performed without a condom. Thus, an important role for health workers such as you is to provide HIV counselling and testing to partners before marriage, or before starting faithful relationships (Study Session 24). It is important for them to realise that, if either of the partners has unprotected sex outside the

relationship, it is not only they who are put at higher risk of HIV infection, but also their long-term partner.

In addition, remember that people who have recently been infected with HIV may test negative in the rapid HIV tests while they are in the ‘window period’, but they are still able to transmit HIV to others if they practise unprotected sex.

- Based on your previous studies, why may some people test negative on a rapid HIV test during the first few months of infection?
- Rapid HIV tests detect antibodies against HIV in the blood. The immune system of individuals recently infected by the virus may take a few months to produce enough antibodies to reach levels detected by HIV rapid tests. These individuals might test negative even though they are infected with HIV.

Therefore, it is important to advise individuals who are about to embark on a faithful relationship not to practise unprotected sexual intercourse before their negative HIV status is confirmed by two separate HIV rapid tests performed at least three months apart. Note also that if one or both partners is HIV positive, maintaining faithful relationships will not be sufficient to prevent HIV infection (this issue will be further discussed in Study Session 29).

Forced marriage of young girls, also known as child brides, may make them more vulnerable to HIV infection. Their future husbands may already be infected with HIV, especially if they are much older. In addition, it may be more difficult for young girls to negotiate sexual decisions with their partners such as maintaining faithful relationships, practicing safer sexual practices (see below) and/or demanding HIV testing.

Issues such as these are discussed in more detail in the Module on Adolescent and Youth Reproductive Health.

Safer sexual practices

As discussed above, abstinence and faithfulness to one’s partner(s) are viable alternatives for some individuals to actively reduce their risk of HIV infection. However, **safer sexual practices** (also known as safer sex) should be actively encouraged for all of your clients who have an active sexual life outside a faithful relationship. Safer sex includes non-penetrative sexual activities and the correct use of condoms. The goal of safer sex is to reduce the possibility of transmitting HIV by minimising exchange of blood or sexual fluids. Practising safer sexual practices also reduces the risk of other sexually transmitted infections or STIs (Study Session 31). Remember from Study Session 20 that the presence of STIs in an individual increases the likelihood of becoming infected by HIV, so safer sexual practices target HIV transmission both directly and indirectly.

The following four points should form the basis of the education you provide in your community about preventing the further spread of HIV:

- 1 Individuals with multiple partners increase their chances of contracting or spreading HIV (the higher the number of partners, the more likely it is that HIV will be transmitted from person to person). Being faithful to one partner, or multiple partners in a polygamous marriage, decreases the chances of transmitting or contracting HIV.
- 2 Non-penetrative sexual practices constitute an alternative way to satisfy sexual needs without being at risk of HIV infection. These alternative practices to sexual intercourse include hugging, kissing, rubbing and



masturbation, which are all considered to have an extremely low risk of transmitting HIV infection.

- What is the most common route of sexual transmission of HIV in Ethiopia? How can this be avoided?
- Heterosexual sex is the most common route of HIV transmission in our country, that is anal and/or vaginal penetrative sex between two people of the opposite sex. There are also reports of anal transmission of HIV between men who have sex with men. Avoiding unprotected penetrative sex constitutes an important preventative measure for HIV infection.

3 If penetrative sexual intercourse is the preferred choice, advise clients on the correct and consistent use of condoms, and the importance of using them every time they have sex. Box 25.1 contains important points to remember about condom use that community members can be made aware of through health education or counselling sessions.

Box 25.1 Important points about condom use for safer sex practices

- Use only latex condoms.
- A new condom should be used for each sexual act.
- A damaged condom can allow HIV to be transmitted and should never be used.
- Many condoms have expiration dates and you should always check the package before use.
- Avoid damage to condoms by always using water-based lubricants. Oil-based lubricants, such as Vaseline or creams, can cause condoms to break and should not be used.

All sexually active individuals should be educated on the correct handling of condoms during and after sexual intercourse, as summarised in Box 25.2 and illustrated in Figure 25.1, which follows it.

Box 25.2 Instructions for using a condom during sexual intercourse

- Do not use an 'out of date' condom.
- Open the package carefully. Take care not to tear the condom, or damage it with your fingernails.
- Pinch the end of the condom and place it on the erect penis.
- Still pinching the end, unroll the condom right down the penis.
- If you want to use a lubricant, choose one that is water based. Oil-based lubricants can cause condoms to tear.
- After ejaculation, hold the condom and withdraw the penis before it becomes soft. Never re-use a condom.
- Wrap and dispose of the condom in the trash bin, not in a toilet.

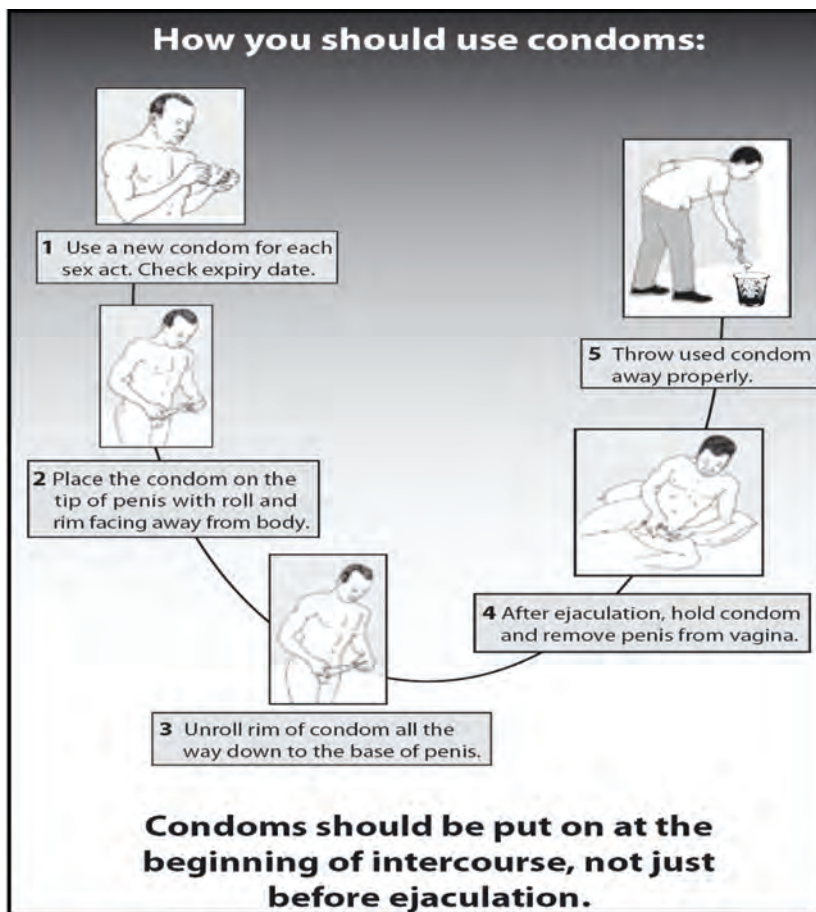


Figure 25.1 How to use a condom correctly. (Source: *Integrated Management of Adult and Adolescent Illnesses*, WHO, 2008)

Confusion or misunderstandings on how to use condoms correctly are unnecessary risks for HIV transmission. Make sure that patients and clients have clearly understood these instructions.

4. Finally, safer sex practices should be practiced regularly and consistently, that means in every sexual encounter, to prevent HIV transmission effectively.
- Do you think it would give added protection against HIV transmission to use a double condom (two condoms, one on top of another) during penetrative sex?
 - No. Even though you may think that using double condoms would give added protection against HIV infection, there is no evidence that using them is more effective than single condoms. Rather, the use of double condoms may lead to incorrect use of condoms and increased risk of HIV transmission.

25.1.2 Strategies to prevent HIV transmission from contaminated blood

Prevention measures in the community may also be aimed at reducing personal contact with the blood of an HIV-infected person, and/or with objects contaminated with their blood. These may include avoiding the shared use of objects such as a toothbrush and/or sharps (blades, needles, etc.), either in households or in traditional healing; and avoiding harmful traditional practices (uvulectomy, tonsillectomy, milk teeth extraction, female genital mutilation).

Female genital mutilation is discussed in the Module on Adolescent and Youth Reproductive Health.

It is worth noting here that medical blood transfusions are potentially a route for HIV transmission. However, the FMOH has adopted an international standard of quality assurance for blood screening of HIV and other important pathogens. Hence, you need to reassure people in your community that blood transfusions are safe.

25.2 Community mobilisation for HIV prevention

Having discussed strategies that individuals can implement to prevent HIV transmission, we now turn our attention to collective HIV prevention strategies.

25.2.1 What is community mobilisation?

You learnt the basic principles of community mobilisation in the *Module on Health Education, Advocacy and Social Mobilisation*.

Community mobilisation is a capacity building process through which a community, individuals, groups and organisations plan, carry out and evaluate activities on a participatory and sustained basis to achieve an agreed-upon goal, either on their own initiative or stimulated by others. It uses deliberate, participatory processes to involve local institutions, local leaders, community groups and members of the community to organise for collective action towards a common purpose. Community mobilisation is characterised by respect for the community and its needs.

Community mobilisation for HIV is a process in which a community makes use of its own assets and capacities to prevent and control HIV/AIDS. A community takes ownership of actions with a shared sense of urgency to reduce and reverse the spread of the epidemic. It involves all relevant segments of society in order to create an enabling environment and effect positive behaviour and social change. It also brings together the community to provide care and support to infected, affected and vulnerable individuals; and to increase utilisation of HIV/AIDS services through creation of knowledge and skills at community level.

The daily routine of most people in Ethiopia is closely linked with religious, cultural and traditional values and norms. Formal and informal leaders, religious and other community leaders, have irreplaceable roles in mobilising their community due to their unique spiritual and traditional position. Hence, they have a critical role through community mobilisation, and in challenging traditional values and norms that are counterproductive to the prevention and control of HIV/AIDS.

Clearly, community mobilisation is a key intervention that brings different groups of your community together and uses community resources for shared and agreed action in the prevention and control of HIV.

25.2.2 Basic steps for community mobilisation

Community mobilisation in general involves certain basic steps that can be applied to HIV/AIDS-related community mobilisation efforts. These steps should be taken into account when preparing any type of community mobilisation to realise significant impact. At each level of the community mobilisation process, full participation of all relevant stakeholders is essential for successful community mobilisation. The basic steps of community mobilisation involve the following features:

Defining the problem

The first step in community mobilisation is to collect the basic information about the issue, in this context the HIV/AIDS epidemic in your community and/or catchment area. This will give you an idea of the extent of the problem and what the underlying causes are. In doing so, you will have a clear statement of the problem and identify the target population in the community affected by it. Traditionally, the most at-risk groups of HIV infection in Ethiopia include female sex workers, uniformed forces, long-distance drivers, migrant labourers and men having sex with men, among others. But it may also include family men who are unfaithful to their wives and will not use condoms, or cannot afford them (Figure 25.2).



Figure 25.2 Discussion of problems in preventing HIV transmission can help communities to mobilise their efforts to find solutions.

Establishing a community mobilisation group

The aim is to establish a group that can influence community mobilisation activities. It usually consists of partners that have a stake in the issue (e.g. PLHIV and/or their families), as well as influential groups and members of the community such as formal and informal leaders and religious and traditional leaders.

Designing strategies, setting objectives and selecting target groups

To achieve a planned change at community level, resources need to be mobilised from the community and other external partners. After obtaining resources, the community mobilisation group should design strategies to address the identified problem with objectives that are SMART, which means Specific, Measurable, Achievable, Relevant and Time-bound. The objectives should be assessed for their impact on the targeted groups in the community.

Developing an action plan with a time line

An action plan links the general community mobilisation plan with time lines for the actual implementation of the planned activities, and the deadlines set for goals to be achieved. This enables the progress of activities to be monitored against the targets set during the planning phase.

Building capacity

Capacity building involves identifying existing capacity resources and assessing the gaps that exist to implement the community mobilisation. The gaps identified should be supplemented by capacity building of the community groups and other relevant stakeholders in the community involved in community mobilisation.

Identifying partners

In the community there are various partners that work independently to achieve similar goals. Therefore, it is important to identify relevant partners through a simple mapping exercise. With respect to prevention and control of HIV/AIDS, for instance, the following partners may be relevant: religious institutions, local non-governmental organisations (NGOs), *kebele* forums, *maheber*, *idir*, *woreda* HIV/AIDS Prevention and Control Office (HAPCO).

Implementing the plan of activities

Based on the action plans developed with all of the relevant community level partners, implementation of the community mobilisation activities is the main task. In the implementation process, a clear role for any partners that are involved should be put in place and communicated with all of them.

Monitoring and evaluation

Monitoring and evaluation is the last, but essential, element of community mobilisation. It enables you to check whether the action plan has been implemented effectively and the specific objectives are met with respect to the issue the community is mobilised to achieve.

25.2.3 National community mobilisation strategies for HIV

The Ethiopian Federal Ministry of Health (FMOH) advocates community mobilisation approaches for the prevention, control and treatment of HIV/AIDS. In general, this involves conducting an ongoing community dialogue about HIV/AIDS-related problems. Key strategies are to enable the community to establish or strengthen groups of individuals, associations and other community organisations aimed at preventing HIV infection and improving the health and quality of life for PLHIV. Community mobilisation in HIV/AIDS serves its purpose by empowering the community, and creating an opportunity to identify and solve the community's health problems using their own resources.

The process of engaging with the community at each stage creates locally appropriate responses, and supports the creative potential of communities to develop a variety of strategies and approaches to HIV/AIDS. Bringing various groups of the community together enhances community participation in ways that recognise diversity and equity, particularly of those who are most affected by HIV/AIDS. One of its core values is preventing discrimination and stigmatisation of people infected and affected by HIV/AIDS, and providing continual support.

By utilising influential groups in the community, mobilisation creates a positive model for all behaviours and practices related to HIV/AIDS. It also fosters linking communities with external resources like NGOs and other funding institutions for technical and financial assistance. The FMOH recognises that committing enough time and resources to work with communities and partners is necessary to achieve the goals of community mobilisation for HIV prevention.

25.2.4 Respecting cultural values in community mobilisation

Different groups in the community have different values, norms and beliefs, which require different approaches to address their problems. Community mobilisation brings the community together, and helps to improve community awareness and mobilise community opinion and innovations towards a certain

issue like HIV/AIDS. It also invests in the community's capacity to apply its own resources to prevent diseases and promote better health.

- Can you give any examples of community mobilisation activities that you may have participated in, or been aware of, for prevention of communicable diseases?
- You may have come across Enhance Outreach Strategy (EOS) for child health, Community Conversation (CC) for HIV prevention, house to house counselling to pregnant women for prevention of maternal-to-child transmission of HIV (covered in Study Session 27), and Indoor Residual Spraying (IRS) for malaria prevention.

In HIV prevention, groups such as those involving the most 'at-risk' populations, local traditional associations and influential others, should be systematically mobilised to encourage HIV testing and counselling, and increase access to treatment services. Similarly, it helps to work with influential leaders and programme managers to improve adherence to treatment (Study Session 23).

A targeted HIV prevention programme is one of the key strategies adopted by the FMOH in Ethiopia, so one of the key activities in HIV community mobilisation is identifying the target groups.

- Who are the most 'at-risk' population groups for HIV in Ethiopia?
- The most 'at-risk' groups include female sex workers, uniformed forces, long-distance drivers, migrant labourers, and men who have sex with men.

Networking and partnership of all relevant stakeholders is essential, because community mobilisation is a group responsibility and it will be destined to fail if a partner does not take responsibility for their activities. So you need to coordinate and organise the various local and external groups working with you to mobilise the community on HIV control and prevention. When interacting with different influential groups of the community, you need to be politically sensitive, know cultural values, and take into consideration the gender bias that can affect the transmission of the virus. In summary, you should communicate clearly, and be able to facilitate different events together with civil societies and local associations in your community. In all your activities, you must respect cultural values that could affect HIV prevention and control.

25.2.5 Principles of community mobilisation to address HIV/AIDS

You need to recognise the key principles of HIV community mobilisation. They include the following:

- *Community ownership and leadership.* From planning to evaluating community mobilisation, the local community has to own the initiative and be involved in leadership responsibilities. This ensures sustainability of the programme, and capacity building of local managers and leaders.
- *Shared sense of urgency* by the target group and members of the community mobilisation groups.
- *Involvement of most 'at-risk' and targeted populations.* In Ethiopia, most at-risk populations include, among others, young people, commercial sex workers, construction workers, uniformed forces, men having sex with

men, long-distance truck drivers, and daily labourers migrating from other areas for a commercial work purpose. In mobilising the community for control and prevention of HIV, these groups have to be actively involved in all steps of the process.

- *Involvement of PLHIV.* Maximising the involvement of PLHIV in both prevention and care interventions is important in reducing stigma and discrimination. It also ensures that PLHIV have an active role in HIV prevention and control activities.
- *Evidence-based and result-oriented plans.* HIV prevention plans should be clear in that they should address what needs to be done, by whom, when it should be completed, and how it is done. They should be based on clearly identified problems and on evidence-based solutions. They should also be accompanied by learning from the process of activities to be implemented, through monitoring and evaluation of the overall initiative.
- *Coordinated effort and strong partnership.* Coordination of all involved, with clear roles and responsibilities of partnership, is also important. You should play a lead role in bringing community groups together, and maintaining a healthy partnership for a common goal.

25.2.6 Community mobilisation activities for preventing HIV/AIDS

Below are common community mobilisation activities that you should undertake in your community:

- Mobilise local individuals, institutions and community groups including *idir*, *maheber*, *iqub*, anti-AIDS clubs, peer support groups, women's support groups, religious groups, and other local civil society groups.
- Lead community conversation activities in your *kebele*. Community conversation is a key community mobilisation strategy advocated by the FMOH for different programmes, including the HIV prevention and care programme, and child and maternal health issues. The details of community conversation are not discussed here. You need to refer to the national guidelines for community conversation to have an in-depth insight and knowledge about how to use it in your community.
- Transmit HIV prevention messages through different forums like anti-AIDS clubs, student groups at schools, HIV associations, mothers' groups and other civil associations.
- Help the community share best experiences from other communities and model families in their community.
- Build the capacity of voluntary community health workers who can facilitate community conversations and refer mothers for PMTCT (Study Session 27).
- Facilitate and hold local anti-HIV/AIDS festivals and events such as coffee ceremonies.
- Mainstream your community mobilisation activities for HIV prevention in local associations and governmental organisations at different levels.
- Sign contractual performance agreements on the joint implementation of community mobilisation plans and goals with various external and local partners.

Community conversation is described in detail in the Module on Health Education, Advocacy and Community Mobilisation.

Summary of Study Session 25

In Study Session 25, you have learned that:

- 1 The main ways to prevent sexual HIV transmission among adults are abstinence from premarital sexual intercourse, faithfulness to a partner, and correct and consistent use of condoms, often termed the 'ABC rules'.
- 2 Discussion on safer sexual practices for sexually active people should include decreasing the number of partners, and consistent and regular non-penetrative sexual practices, and/or use of condoms for penetrative sex.
- 3 Prevention of HIV transmission via contaminated blood involves avoiding contact with objects potentially contaminated with blood, and reducing unsafe and/or harmful traditional practices.
- 4 Community mobilisation is a process through which community, individuals, groups and organisations plan, carry out and evaluate activities on a participatory and sustained basis to achieve an agreed-upon goal, either on their own initiative or stimulated by others.
- 5 Community mobilisation in general involves certain basic steps, including defining the problem, designing and evaluating strategies, setting objectives, selecting target groups, and identifying partners. These also apply to HIV/AIDS-related community mobilisation efforts.
- 6 The national HIV prevention strategy generally involves conducting an ongoing community dialogue about HIV/AIDS-related problems to create awareness and stimulate behavioural change.
- 7 Active involvement of most 'at risk' populations and PLHIV are integral in the effort to maximise community mobilisation for HIV prevention.

Self-Assessment Questions (SAQs) for Study Session 25

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 25.1 (tests Learning Outcomes 25.1 and 25.2)

Which of the following is *not* a strategy to prevent transmission of HIV? Explain your answer.

- A Providing information on ABC rules of safer sex to clients.
- B Providing information on prevention of mother-to-child HIV transmission.
- C Provider-initiated HIV testing and counselling.
- D Implementing HIV infection prevention measures at your health post.
- E Not mobilising your community to reduce harmful traditional practices such as uvulectomy.

SAQ 25.2 (tests Learning Outcomes 25.1 and 25.3)

A young couple who do not know their HIV status have been using condoms for six months and then started to practise unprotected penetrative sex because they felt that they were in a faithful relationship. What would you advise them?

SAQ 25.3 (tests Learning Outcomes 25.4 and 25.5)

Read Case Study 25.1 and then answer the questions below it.

Case Study 25.1 Community mobilisation for HIV prevention

You are working as a Health Extension Practitioner in one of the rural *kebeles* but close to a semi-urban town. Though the prevalence of HIV in your *kebele* is lower than the national average, the prevalence in the small town near your *kebele* is 10%. Recently, a private road contractor has started to build the main road to Addis Ababa in your region. They have built many camps for the daily labourers working for the construction company near your *kebele*. In addition, trading women come to the camp area from the small town, as well as from other areas, to serve the daily labourers.

- (a) What steps would you plan to mobilise your community to prevent an increase in HIV transmission?
- (b) Who would be your target groups for the community mobilisation programme?
- (c) Who are your potential partners for this community mobilisation?
- (d) What HIV prevention strategies will you be implementing?

Study Session 26 Universal Precautions, Infection Prevention and Post-Exposure Prophylaxis for Health Workers

Introduction

So far, in this part of the Module, you have learnt many important topics concerning HIV and AIDS. This study session gives you the opportunity to learn about another aspect of this condition, which is especially important to you in your work as a Health Extension Practitioner. In particular, you will learn about:

- the basic principles and procedures of universal precautions
- infection-prevention methods in healthcare settings
- post-exposure HIV prophylaxis
- measures to be taken when a healthworker suffers a needle-stick injury
- referral for post-exposure prophylaxis for someone who has been raped.

You need to learn about infection prevention because the procedures to be described are very important for your daily work in the health post, and in the community at large. In particular, the guidance we give here will mean that you are unlikely to become infected with HIV and other blood-borne infectious agents through **occupational exposure** during your work as a Health Extension Practitioner.

Learning Outcomes for Study Session 26

When you have studied this session, you should be able to:

- 26.1 Define and use correctly all of the key words printed in **bold**. (SAQs 2.1 and 26.3)
- 26.2 Describe the basic principles and standard procedures of universal precautions to prevent exposure and transmission of blood-borne infectious agents. (SAQ 26.1)
- 26.3 Describe the standard procedures for giving safe injections to prevent occupational exposure to infectious agents. (SAQ 26.2)
- 26.4 Explain the principles of post-exposure prophylaxis. (SAQ 26.3)
- 26.5 Assess the risks of HIV infection following accidental occupational exposures. (SAQ 26.4)
- 26.6 Describe the measures that should be taken when a healthcare worker suffers a needle-stick injury. (SAQ 26.4)
- 26.7 Explain how you would refer someone who has been raped for post-exposure HIV prophylaxis. (SAQ 26.5)

26.1 Universal precautions

The term **universal precautions (UP)** refers to the standards of infection control developed to prevent exposure and transmission of blood-borne infectious agents like HIV and hepatitis virus. In some texts you will find them referred to as ‘standard procedures’, because they should be routine in all contacts with patients. The universal precautions that are described here should be implemented and practised at all times by all healthcare providers

Standard procedures is the term used in Part 2 of this Module in the prevention of occupational exposure to tuberculosis.

and caregivers in all settings, in particular in hospitals, health centres, health posts and community settings, as well as in the homes of your patients.

26.1.1 Why are universal precautions needed?

Universal precautions were developed because it is not possible to identify all patients with blood-borne diseases caused by microorganisms. With many of the patients you are looking after, there is no risk of HIV transmission. So, it is not appropriate to routinely test every health worker or patient for HIV. However, increased risks are faced by healthcare workers when providing care to HIV-positive patients, or those infected with other blood-borne agents such as the hepatitis virus. It was in response to such concerns that UPs were developed — the term ‘universal’ reflects the fact that they are intended to refer to contact with *all* patients, not just those known to have blood-borne infections.

UPs are designed to provide for the safe handling of infectious material, including amniotic fluid, cerebrospinal fluid, pleural fluid, abdominal fluid, serum, semen, vaginal fluids, blood and blood-tainted body fluids. As part of this process, barriers to infection were developed, such as gloves, gowns, masks and eye goggles to protect health workers from splashes or sprinkles of infectious materials. The procedures summarised below are designed to keep all healthcare workers safe, and to protect the public against infectious waste material that could pose a risk to them. Safety involves not just patient contact, but the management of the environment in which the patient is situated. Note that, with universal precautions, everyone is considered infectious, since it is impossible to tell ahead of time who is infected and who is not.

26.1.2 Specific universal precautions

Universal precautions include the following measures and actions:

- *Increased attention to the correct handling of sharps and all infected materials.* The safe disposal of **sharps** (e.g. needles, scalpels, lances and suture materials) is relatively easy to achieve. Home-made containers that have an open top, firm sides, and are made of durable materials, can be used as containers for used sharps (Figure 26.1).



Figure 26.1 A safety box for the disposal of used sharps. (Photo: Basiro Davey)

- *Safe disposal of waste contaminated with blood or body fluids.* Contaminated clinical waste includes used bandages, dressings, and linens or materials contaminated with blood or body fluids; these must all be



Never fill a safety box beyond three-quarters full. Beyond this point you risk an injury when adding more sharps to the box!

handled with gloved hands and placed in containers for safe disposal, as shown in Figure 26.2.



Figure 26.2 Buckets are used to collect used instruments, wet waste and dry waste respectively; Zomba Mental Hospital, Malawi. (Photograph courtesy of Dr Aschalew Endale, FMOH/WHO, Ethiopia)

- *Hand washing with soap and water before and after all procedures.* This is the single most important step that all healthcare workers can take to ensure the safety of their patients and themselves. You must wash your hands before and after putting on gloves, and before and after you move from one patient to another.
- *Use of protective barriers* (personal protective equipment or PPE) when in direct contact with potentially infected body fluids. Protective barriers such as gloves, gowns, masks and goggles protect healthcare workers from occupational exposure to infectious material (see example in Figure 26.3). Gloves provide an important barrier between infectious material and the healthcare provider. Using gloves does not mean that you don't have to wash your hands.



Figure 26.3 A cleaner wearing personal protective equipment (PPE), Zomba Mental Hospital, Malawi. (Photo: courtesy of Dr Aschalew Endale, FMOH/WHO, Ethiopia)

- *Proper disinfection of instruments and other contaminated equipment.* In an effort to make universal procedures routine, more emphasis is put on preventing the transfer of infection from one patient to another by proper disinfection of instruments and contaminated equipment.

26.2 The safe injection of patients

A common source of injury for healthcare workers is poor practise when giving injections. This section shows the standard procedures for giving an injection, designed to ensure your safety and that of your patient when giving injections in the health post and in the patient's home.

26.2.1 Preparing to give an injection

Using a new sterile syringe and needle for each injection is one of the most effective ways to prevent the spread of blood-borne infections.

- Use a new packaged sterile syringe and needle for *every* injection.
- Inspect the packaging very carefully. Discard a needle or syringe if the package has been punctured, torn or damaged in any way.
- Check the expiry date on the package. Never use needles or associated injection materials that are 'out of date'.
- Prepare injections in a clean designated area or on a clean surface; in a patient's home you will need to use a clean dish or tray that you have washed in soap and water, left to air dry and then swabbed with alcohol before laying out the injection equipment.
- Prepare each dose immediately before administering; do not prepare several syringes in advance.
- Do not touch the needle. Discard a needle that has touched a non-sterile surface.

26.2.2 Avoiding needle-stick injuries

A **needle-stick injury** refers to a healthcare worker accidentally puncturing their own skin with a needle that has previously been used to inject a patient. Needle-stick injuries can occur at any time, but they happen most frequently during and immediately after an injection is given. They can also occur when needles are not disposed of in safety boxes, for example when a healthcare worker picks up contaminated waste in which a needle has been left unnoticed.

In general, the more injection equipment that is handled, the greater the risk of needle-stick injuries. *But these injuries are preventable.* Box 26.1 lists the simple steps you can follow to reduce the risk of needle-stick injuries.

Box 26.1 Steps to reduce the risk of needle-stick injuries

- Handle needles and syringes as little as possible; avoid recapping the needle after use, and do not remove a used needle from the syringe.
- Handle needles and syringes safely; ensure you wear suitable gloves, and avoid recapping needles (Section 26.2.3 gives more details).
- Set up the injection preparation area so as to reduce the risk of injury. A safe work area for a clinic is shown in Figure 26.4.
- Position the patient, especially children, correctly for injections. (You will learn how to give injections via different routes of administration in the Module on *Immunization*, and in your practical skills training.)
- Place a safety box close to where the injections are being given, so that used syringes and needles can be disposed of immediately. Practise safe disposal of all contaminated sharps and waste.



Figure 26.4 Injection area with safe injection procedures posted on the wall, (Zomba Mental Hospital, Malawi). The yellow safety box for collecting used needles and syringes can be seen in the right-hand corner. (Photo: courtesy of Dr Aschalew Endale, FMOH/WHO, Ethiopia)

26.2.3 Recapping used needles

Although you should not recap needles routinely, you may need to recap a needle to avoid carrying an unprotected sharp when immediate disposal is not possible, or if an injection is delayed because a child is agitated. If it does become necessary for you to recap a used needle, follow the *one-handed recapping* technique (also called the *single-handed scoop* method) illustrated in Figure 26.5.

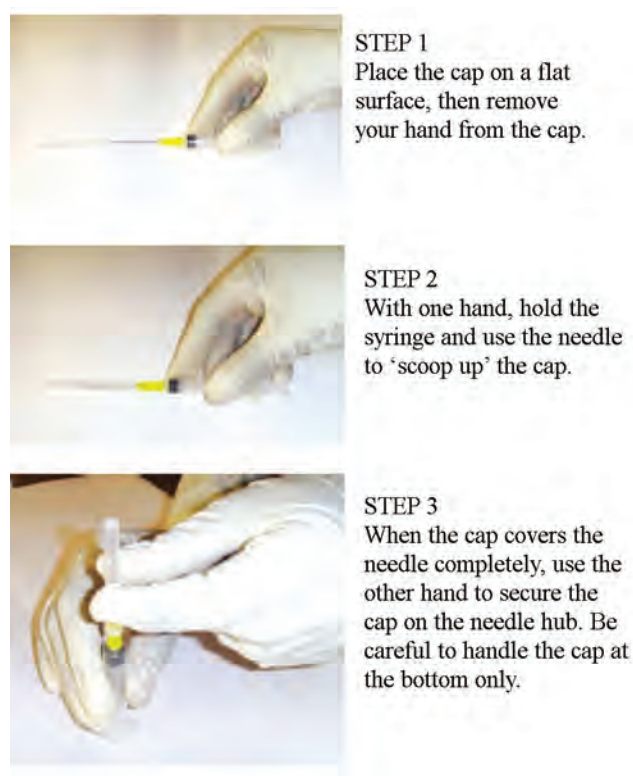


Figure 26.5 The 'one-handed' technique for recapping a needle. (Photos: courtesy of Sister Atsede Kebede and Kerry Murphy)

26.3 Post-exposure prophylaxis (PEP)

The most effective (and cheapest) way to deal with exposure to disease-causing agents is *prevention*, so the implementation of universal precautions, with appropriate training and monitoring should be your immediate priority. However, although universal precautions will decrease the occurrence of occupational exposure, ‘accidents’ and unanticipated exposures will sometimes occur, and it is essential to know how to deal with them.

Chemoprophylaxis means using drugs to prevent a disease from developing in the first place. **Post-exposure prophylaxis (PEP)** for HIV means taking antiretroviral medication (ARVs were described in Study Session 22) as soon as possible *after* a possible occupational exposure to HIV, so that the exposure will be less likely to result in HIV infection. PEP is also provided after rape to prevent possible HIV transmission. Due to the psychosocial impact of HIV/AIDS, and the fact that the disease is not curable, PEP for HIV is made freely available in Ethiopia.

- What does occupational exposure mean?
- **Occupational exposure** means coming in contact with infectious agents whilst carrying out your duties as a healthcare worker.

Examples of occupational exposure to HIV are needle-stick or other sharps injuries, a splash of infected body fluid into the eyes or onto cracked skin, bites and sexual assaults by infected patients. Procedures such as gynaecological examinations, spinal taps, labour and delivery, and surgery can also place the healthworker at risk. Splash exposure carries a lower risk than a needle-stick injury, but it should be taken seriously in both the workplace and the patient’s home.

For healthcare workers, PEP usually relates to exposure to HIV or hepatitis virus, but we will only deal with HIV exposure here. (Note: you learnt about hepatitis B in Study Session 4.) The risk of transmission of HIV after accidental occupational exposure is about *100 times less* than the risk of occupational transmission of the hepatitis B virus.

26.3.1 Risks of HIV infection after accidental occupational exposures

Transmission of HIV is estimated to occur in about 1 in 300 cases of occupational exposure. The factors that *increase* the risk of transmission of HIV after an occupational exposure are if:

- exposures are deeply penetrating, as opposed to superficial splashes onto mucus membranes (e.g. broken skin, mouth, eyes).
- the injury is caused by a device that was in an artery or vein in the infected person.
- blood is visible on any device involved in the exposure.
- exposure is to a large volume of blood, or other potentially infectious fluids, such as blood plasma, pus or cerebrospinal fluid (from a spinal tap).
- the injury is caused by wet instruments, which have a much higher risk of transmission than with dry instruments.
- hollow bore needles are involved in the exposure; they are more likely than solid needles to bring about transmission of HIV.
- gloves are not used while preparing and giving injections.



Note that you cannot prescribe ARVs for PEP. You must refer such cases to health centres providing ARVs as a matter of urgency.

Hollow bore needles are used as intravenous (IV) needles or cannulae, or to give drug injections. Solid needles are those used in suturing wounds.

- the ‘source patient’ has advanced HIV disease, taking into account factors such as the clinical stage of the illness, the extent of virus circulating in the blood, and the presence of antiretroviral drugs in their blood. The level of risk relates to the number of viruses present in the infected blood or body fluid involved in the exposure.
- From the above list, can you identify circumstances in which the risk of HIV transmission after an occupational exposure will be reduced, relative to these higher-risk criteria?
- The risk will be lower if the exposure is onto mucus membranes, not deeply penetrating, or involves body fluids other than blood; and also:
 - if the device is dry;
 - it is not previously in the patient’s vein or artery,
 - and/or blood is not visible on the device;
 - the device is a solid (not hollow bore) needle;
 - the amount of blood transferred is very small;
 - gloves are worn;
 - the patient is not in an advanced stage of HIV disease.

26.3.2 Immediate actions after occupational exposure to HIV

The following measures should be taken immediately after an accidental occupational exposure to a possible source of HIV infection.

Care of the exposure site

Wash the wound from a needle-stick or other sharps injury with soap and water, and let it bleed freely. The wound should be *irrigated* (flushed) with sterile saline and a disinfectant. Exposure to mucosal membranes (e.g. broken skin, mouth, eyes) should be dealt with by washing the affected area thoroughly with clean water, sterile saline or sterile eye irrigant from an eye-wash bottle.

Assessing the exposure risk

The level of risk will depend on the type of injury as described in Section 26.3.1 above.

Testing the source of the exposure

If the HIV status is unknown, a rapid HIV test should be performed on the individual or patient who is the source of the exposure, after counselling and consent has been secured. If the source is found to be HIV negative, there is no need for further assessment of the exposed healthcare worker. If the result is positive, the healthcare worker needs to be HIV tested.

Testing the healthcare worker

A rapid HIV test should be performed on the healthcare worker immediately after exposure. If the result shows that the healthcare worker is already HIV positive PEP cannot help them. If the test is negative then the healthcare worker should be administered PEP as described below. The HIV test should be repeated at six weeks, three months, and six months after exposure. If, as a consequence of these repeat tests, the healthcare worker is found to have become HIV positive, then they will be assessed for HIV care and treatment.

Following exposure to HIV, there is a need for psychosocial support and counselling on safer sexual practises. If ARVs are prescribed, close monitoring will need to follow to support adherence and identify any adverse side-effects of treatment (as described in Study Sessions 22 and 23).

- Why should the HIV test be repeated at intervals up to six months after the exposure?
- It takes up to three months before the body of a person newly infected with HIV produces enough anti-HIV antibodies to be detectable in an HIV rapid test. This is called the ‘*window period*’. A negative test result during this period cannot be taken as evidence that the exposure did not transmit HIV.



You must refer yourself, or any health worker you witness suffering a sharps injury from a contaminated instrument, or a splash exposure to their mucus membranes, as quickly as possible to an appropriate health facility.

Starting PEP

If you suffer an occupational exposure to blood or body fluids from *any* patient, you should seek PEP *immediately*, even before the HIV status of the source is known. To be effective, PEP has to be started as soon as possible, ideally within one to two hours after exposure. It is not worth undertaking PEP beyond 72 hours after the exposure, because by this time, if the virus has been transmitted, it will have entered the person’s bloodstream. PEP cannot prevent it from circulating around the body and possibly causing HIV infection. A standard course of PEP will normally last for 28 days. It can be provided only by trained nurses, health officers or physicians at health facilities offering antiretroviral therapy (ART). Most of the health centres and hospitals offer PEP services.

26.4 Referral after rape for post-exposure HIV prophylaxis

Rape is a major crime that could happen in your community, and you need to be prepared to support the victims, both in terms of their mental health and their physical health. Cases are treated according to the Ethiopian law for rape management, and anyone who suffers a rape or other penetrating sexual assault should be referred for post-exposure prophylaxis in case the rapist was infected with a blood-borne disease such as HIV or hepatitis. Since police procedures may take time, you have to urge the raped person, and whoever is caring for them, to go immediately to a health centre or hospital that provides PEP. Currently, all ART sites provide this service, as should most of the health centres in your catchment area.

Anyone who has been raped should be counselled by the examining healthcare worker about the potential risks of HIV infection (Figure 26.6). Under these circumstances, the HIV status of the rapist should be considered as ‘unknown’, and therefore HIV transmission is a potential risk. Parents or guardians of traumatised children or adolescents should also be counselled and informed about the risk of HIV infection after a sexual assault.



Figure 26.6 A health worker counselling a woman who has been raped; her father is present, with her consent.

Points to be covered in counselling after a rape include:

- The precise degree of risk of HIV transmission is not known, but it exists.
- HIV testing is very important, and should be made clear to the person who has been raped and their caregivers, but explain that testing cannot give a confirmed negative result until after the window period is over.
- The raped person can choose to be tested for HIV immediately. However, if they refuse, testing can be delayed until 72 hours after the initial examination visit.
- The management guidelines on sexual assault provide for a three-day starter pack of PEP for those who prefer not to be tested immediately, or those that are not ready to receive the results immediately.

PEP is not recommended if the person presents to a health facility later than 72 hours after the sexual assault. They should be counselled about the possible risk of infection, and the possibility of transmitting infection to another person during the window period. They should be told to return after six weeks and three months for further HIV testing and counselling.

- Why is PEP not recommended if a person presents to a health facility more than 72 hours after a sexual assault?
- Because by this time the virus has entered the bloodstream, and PEP given more than 72 hours after exposure is not effective. Ideally, PEP has to be started within one to two hours after exposure. If this is not possible, it should be started within the first 72 hours.

A person who undergoes PEP after a sexual assault should be carefully evaluated for psychosocial support and monitored for any adverse side-effects of PEP treatment. They should also be screened for other sexually transmitted infections and referred for treatment as appropriate.

Summary of Study Session 26

In Study Session 26, you have learned that:

- 1 Universal precautions should be practised by all healthcare providers to reduce the risk of exposure and transmission of blood-borne infectious agents like HIV and hepatitis virus.
- 2 The most important infection control method is thorough hand washing with soap and water.
- 3 Correct handling and disposal of sharps is critical for reducing occupational exposure to blood-borne infectious agents.
- 4 The level of risk of HIV transmission after an occupational exposure varies depending on the source of the contamination, the type of injury, and the clinical stage of the infected individual.
- 5 Referral for PEP should occur immediately if a healthcare worker is exposed to blood or body fluids from *any* patient, without first waiting for the patient to be HIV tested.
- 6 PEP should begin ideally within 1–2 hours of exposure, or up to 72 hours afterwards. It is not effective if begun after 72 hours.
- 7 After a sexual assault, the victim (and/or the parents or guardians) should be counselled about the importance of HIV testing. If an HIV test is refused initially, a three-day starter pack of PEP can begin.
- 8 Counselling is on the risks of HIV transmission, psychosocial support, and the need to return for repeat testing after six weeks and three months; follow-up should monitor the effects of PEP.

Self-Assessment Questions (SAQs) for Study Session 26

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 26.1 (tests Learning Outcomes 26.1 and 26.2)

State if the following statement is *true* or *false*. Explain your reasoning.

‘Universal precautions are used only with very sick patients.’

SAQ 26.2 (tests Learning Outcome 26.3)

Which of the following statements about the standard procedures for giving safe injections is *false*? In each case, explain what is incorrect.

- A The more you handle an injection instrument, the more skilful you will become at avoiding the risk of needle-stick injury.
- B Place a safety box close to the person giving injections, so used syringes and needles can be disposed of immediately.
- C Do not manually remove a used needle from the syringe.
- D Do not carry used syringes and needles around with you.
- E Avoid recapping the needle after you have given an injection.
- F Close the safety box when it is full, and start a new one.

SAQ 26.3 (tests Learning Outcomes 26.1 and 26.4)

State if the following statement is *true* or *false*. Explain your reasoning.

‘If a health facility has all the personal protective equipment (PPE), the healthcare workers in that facility do not need a post-exposure prophylaxis (PEP) service.’

SAQ 26.4 (tests Learning Outcomes 26.5 and 26.6)

Read Case Study 26.1, and then answer the questions that follow.

Case Study 26.1 Ayelech’s story

Ayelech is a healthcare worker trained to provide a safe and clean delivery service (this is covered in the *Labour and Delivery Care* Module). One day she was attending a delivery in a household in her catchment area. The mother had been sick for about two months before the delivery with diarrhoea on and off, but she had persistently refused Ayelech’s counselling to be tested for HIV. Ayelech didn’t use any personal protection equipment for the delivery except gloves. After the delivery, she injected the mother with intramuscular (IM) oxytocin to help deliver the placenta and prevent excessive bleeding. Ayelech was trying to recap the needle with two hands, when she accidentally pricked her left index finger with the needle. Her finger was bleeding and it was a deep needle-stick injury, but the placenta was coming and the baby needed attention, so she ignored the injury.

- (a) Was Ayelech following universal precautions? Say why or why not.
- (b) Is there a risk that Ayelech could be infected with HIV? If so, what is the degree of the exposure?
- (c) Explain what she should have done immediately after the injury.
- (d) Explain what Ayelech should do next.

SAQ 26.5 (tests Learning Outcome 26.7)

Read Case Study 26.2, and then answer the questions that follow.

Case Study 26.2 Fatuma’s story

While working in your health post, Fatuma, a 15 year-old girl, arrives with her parents. They have brought her because six hours earlier she was raped by a man whose HIV status is not known.

- (a) What do you tell Fatuma and her parents first?
- (b) What will be the final advice you give to them?

Study Session 27 Prevention of Mother-to-Child Transmission of HIV

Introduction

As you will recall from Study Session 20, one of the routes of transmission of HIV is from mother to child. This occurs when an HIV-infected woman passes the virus to her baby during pregnancy, during labour and delivery, or during breastfeeding. In this study session, you will learn about **prevention of mother-to-child transmission (PMTCT)** of HIV.

Learning Outcomes for Study Session 27

When you have studied this session, you should be able to:

- 27.1 Define and use correctly all of the key words printed in **bold**. (SAQ 27.1)
- 27.2 Describe the routes and risks of HIV infection in the context of a mother and child. (SAQ 27.1)
- 27.3 Explain why it is important to offer counselling on HIV testing to all pregnant women, and describe the features of the 'opt out' approach to HIV testing. (SAQs 27.2 and 27.3)
- 27.4 Describe the drugs and regimens used for prevention of HIV transmission from mothers to children. (SAQ 27.4)
- 27.5 Explain counselling on breastfeeding options for preventing mother-to-child transmission. (SAQs 27.1 and 27.2)

27.1 Transmission of HIV from mother to child

We know that not every baby born to an HIV-positive mother will be infected by the virus. This is because the placental membrane between the fetus and the mother remains intact during pregnancy. However, if the HIV-infected mother has problems during pregnancy, such as a lack of antenatal care (ANC), infections or poor nutritional support, she may become sick, which will further weaken her immunity. As a consequence, the number of viruses circulating in her blood will rise, and this increases the likelihood of the virus crossing the placenta and infecting the unborn child.

The placental membrane forms a barrier between the blood of the mother and the fetus, limiting the transmission of HIV.

HIV is mostly transmitted from mother to child during delivery, at a time when the cuts and abrasions that often occur during birth increase the risk of the baby coming in contact with his or her mother's blood. Therefore, it is essential that an HIV-infected pregnant woman is supported by ANC services, and that she delivers her baby safely at a health facility, as illustrated in Figure 27.1 (on the next page). Importantly, if the baby is born in a setting where birth trauma is less likely to occur, the likelihood of transmission of HIV from mother to child is reduced.

It is part of your role as a Health Extension Practitioner to counsel and encourage a pregnant mother to come to you for antenatal care, and to give birth to her baby at a health facility.

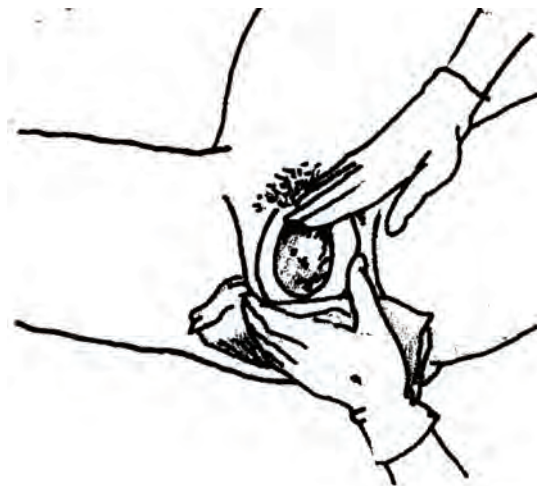


Figure 27.1 An HIV-positive mother who has her baby in a health facility reduces the risk to both mother and child. (Illustration: courtesy of Jude Melling)

After delivery, HIV may be transmitted from mother to child through breastfeeding (although the risk is not as high as that during delivery). During breastfeeding, the virus may pass through the gut wall of the baby, particularly if it is inflamed, due to infection, by bacteria causing diarrhoea.

PMTCT can reduce the chances of HIV from mother to child from 30% to 10%. This is a dramatic improvement, and HIV-positive mothers should be encouraged to seek PMTCT.

The risk of HIV transmission from mother to child for pregnant women who are not supported by ANC and PMTCT services is summarised in Figure 27.2. It has been estimated that 30 out of 100 babies (30%) born to mothers with HIV will be infected with the virus if the mothers do not attend ANC to receive PMTCT services. The outcome can be dramatically improved if the HIV-infected mother takes prophylactic drugs, which greatly reduce the chances of her baby becoming infected with HIV. The success of chemoprophylaxis depends on the drugs taken, and on good antenatal care follow-up to ensure adherence to treatment. In general, less than 10 out of 100 children will be infected by HIV if drugs for PMTCT are taken by the mother.

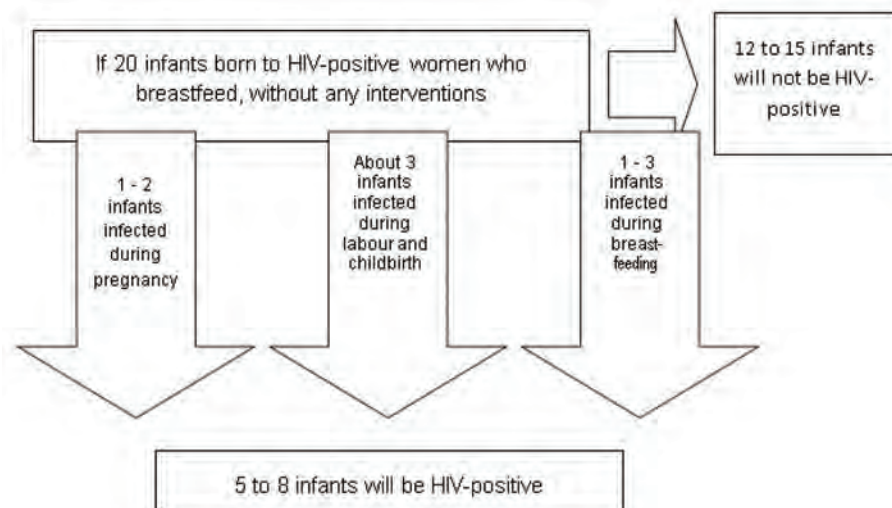


Figure 27.2 Flow chart showing the likely HIV outcome for the infant if the mother does not take any precautions to limit the transmission of the virus.

27.2 HIV testing and counselling for PMTCT

In this section you will learn about the advantages and challenges of testing and counselling HIV-infected pregnant mothers. For pregnant women, knowing their HIV status may help them to make informed decisions about their pregnancy, in particular if they are identified as being HIV positive. Your role in this process is to inform them about the advantages of receiving ANC, HIV testing and counselling services at the health post. HIV-infected pregnant mothers will then be able to decide whether to receive appropriate and timely interventions to reduce the risk of HIV transmission to their unborn baby. The interventions available to them are described in Box 27.1.

Box 27.1 Interventions for PMTCT available in Ethiopia

Antiretroviral treatment/prophylaxis

If a pregnant mother is HIV positive, the risk of HIV transmission to her baby can be greatly reduced by administering a single ARV drug, or a combination of several drugs (these were introduced in Study Session 22). For the purposes of PMTCT, ART is taken for a short period between the end of pregnancy and at early postpartum time. It is possible that the HIV-infected mother is also eligible to start antiretroviral treatment (this depends on her clinical stage; WHO HIV clinical staging was introduced in Study Session 21).

Breastfeeding

Another route by which HIV can be transmitted to the infant is through breastmilk. One of your duties is to provide counselling on safe infant feeding, and this will be discussed further in Section 27.6.

Family planning

Family planning counselling for mothers who are HIVpositive is another means of preventing the transmission of HIV to their children. This is done through preventing unwanted pregnancies. You will be expected to counsel and inform pregnant mothers about family planning in the context of HIV.

An additional advantage of PMTCT includes the fact that the mother will receive education on the importance of giving birth in a setting where standard precautions for infection prevention and safer obstetric practices are implemented. This ensures safe delivery for the mother and her child, not only in the context of HIV/AIDS, but also in case other complications arise during labour.

PMTCT counselling and HIV testing also contributes to the prevention of HIV transmission between adults, by spreading information about HIV/AIDS amongst the community. Mothers who are HIV positive and continue to receive follow-up and ongoing healthcare for themselves and their HIV-exposed infant usually transmit this information to relatives and/or friends. In order to help with dissemination of information on HIV prevention, you should encourage mothers to disclose their status to partners and family members. In addition, this helps them to get support from their family, and reduces stigma and discrimination from other members of their community.

As a health worker, you may come across pregnant women who are reluctant to undergo HIV testing and counselling for PMTCT. Indeed, when confronted

A supportive partner and family will have a positive effect on how a pregnant mother engages with PMTCT; improving the life outcomes for both the mother and her child.

with a life-changing situation (such as knowing your HIV status), women may take into account many personal and community-related factors before making a decision on whether to take a test for HIV and counselling for PMTCT.

When you discuss these intervention measures with them, you should be aware of the most common challenges associated with HIV testing and counselling programmes for women in this situation. They may experience diagnosis-related stigmatisation, or discrimination from their family and community. They will be concerned about the reaction of their partner, and this is often the main obstacle to testing and counselling. HIV testing and counselling for couples encourages mutual support and reduces the stigma and discrimination that might result from being HIV positive. Indeed, the support of the male partner is essential for a pregnant woman who is about to take advantage of PMTCT, if the new situation is to be accepted by the family.

27.3 Approaches to HIV testing in antenatal care settings

Knowing the HIV status of a pregnant woman is the cornerstone of PMTCT. You will recall from Study Session 24 that those about to be tested for HIV need to be offered appropriate pre-test education and counselling and this particularly applies to pregnant women. There are two approaches to HIV testing. Both provide information to the client about HIV, and the risks and benefits of testing in a language that is easily understood. However, the two approaches differ in the process through which consent by the client is obtained. These are known as ‘opt-in’ and ‘opt-out’ approaches.

27.3.1 Opt-in approach to HIV testing

In this approach, you should provide information and individual counselling to the client about HIV/AIDS, about testing for HIV and about the consequences for their lives if they test positive. The pregnant woman is given the choice of either refusing or consenting to a HIV test. This option should be presented in a neutral, supportive manner. Women who ‘opt in’ explicitly request to be tested, and their informed consent is clearly established. The opt-in approach requires an active step by the individual woman to agree to be tested.

27.3.2 Opt-out approach to HIV testing

This approach expects you to provide information on HIV/AIDS and HIV testing in the form of group education. The opt-out approach is offered as a routine part of standard care. In this case, pregnant women are informed and routinely offered HIV testing and counselling. They are then given the opportunity to decline the test should they choose to do so or, in other words, to ‘opt out’ of a HIV test. The opt-out approach emphasises that HIV testing is a *routine* component of ANC.

However, you should stress to pregnant women that HIV testing is still voluntary under the opt-out approach, and that they have a right to refuse testing. You should identify and resolve issues that prevent a pregnant woman from accepting HIV testing. The Ethiopian FMOH recommends the opt-out approach and therefore you are expected to offer HIV testing and counselling to all pregnant mothers coming to your health post, or that you encounter in your community during house-to-house visits.

Remember, consent can be given either in writing or verbally. Women should not be coerced into giving consent.

- A pregnant mother who is HIV positive and two months pregnant comes to you with signs and symptoms of WHO HIV stage 4 disease. What will you do?
- As you have learnt previously, WHO HIV stage 4 patients need ART, and you have to refer them to the health centre for thorough care and ART.

27.3.3 Preferred ANC testing approach in Ethiopia

The 'opt-out' strategy is the recommended approach by the Ethiopian Federal Ministry of Health for HIV testing and counselling in the ANC setting. This helps normalise HIV testing, and makes the test a routine component of ANC. Importantly, this is also likely to increase the number of women who get tested for HIV.

PMTCT programmes must adhere to the three guiding principles of testing and counselling. These are *informed consent*, *confidentiality* and the provision of post-test *counselling* and support services. Informed consent deals with asking mothers for their willingness to be tested. So you should obtain verbal or written consent after you counsel the mother about HIV testing. The mother has to make an informed decision. You also have to keep all information about the mother confidential. Information is only used to help the client to get the necessary health services, and the information has to be kept at the health facility. After counselling and testing for HIV, the provision of post-test counselling is essential for both HIV-negative and HIV-positive mothers. For services including PMTCT, you will be expected to refer the mother to the nearest health centre.

Recall the '3 Cs' introduced in Study Session 24. 'consent, confidentiality and counselling'.

- A mother comes to the health post a few days before her due date. She has never been tested for HIV. Do you think it is important to provide her with HIV testing and counselling?
- Yes, it is essential that you offer her HIV testing and counselling, and refer her to the nearest health centre for further care.

HIV testing, and PMTCT services when appropriate, are offered at several time points during the healthcare provision and management of pregnant women. PMTCT is integrated into antenatal care, labour and delivery, postnatal care, family planning, and other settings where pregnant women and women of childbearing age receive healthcare services and education.

Therefore, you need to provide comprehensive information and counselling services for all pregnant women presenting to ANC and women of childbearing age at your health post. Mothers and potential mothers should receive information on the following issues:

- Pre-test counselling, HIV testing, post-test counselling and follow-up services that should be offered to the mother and her partner for PMTCT of HIV.
- Prevention of HIV in infants and young children, including interventions for PMTCT. Prevention of HIV in infants and young children includes the use of ARVs and safe breastfeeding practices.
- Safer sex practices that would promote the prevention of transmission of HIV infection.

27.4 Steps in the HIV testing process

The steps involved in HIV testing were fully explained in Study Session 24, and will only be touched upon briefly here. You will recall that the key steps are:

- 1 Provide pre-test counselling and education.
- 2 Obtain verbal or written consent.
- 3 Obtain a blood test sample; at health-post level, you take a finger-prick blood sample or venous blood.
- 4 Process the sample using the nationally recommended rapid HIV test procedures.
- 5 Obtain and interpret results.
- 6 Keep results and all information confidential.
- 7 Provide results to the client.
- 8 Provide post-test counselling, support, and referral.

As part of this process, as mentioned earlier, you will also need to provide essential information on PMTCT. You should also discuss safer sexual practices, the importance of disclosure of the test result, and partner testing.

27.5 ARV treatment options for PMTCT

27.5.1 General considerations

Though at this time you may not be allowed to prescribe drugs for PMTCT, it may soon be available for you to provide the service for HIV-positive pregnant mothers in your own community. The type of antiretroviral drug treatment offered will depend on the clinical stage of the mother. You will therefore have to differentiate between HIV-positive pregnant mothers who need ARV drugs for PMTCT, and those who need ARV drugs for treatment of their own condition. The main criteria for PMTCT in HIV-infected pregnant women who still do not need ART for themselves are outlined below. You should be aware though that all options of PMTCT using ARV drugs significantly reduce HIV transmission to the child.

Pregnant mothers should take ART if they fulfil the following criteria:

- 1 If their CD4 count is available:
 - WHO clinical stage 4: Regardless of the CD4 count, they have to receive ART for treatment.
 - WHO stage 3: They need treatment with ART if their CD4 count is less than $350/\text{mm}^3$.
 - WHO clinical stage 1 or 2: They need treatment with ART if their CD4 count is less than $200/\text{mm}^3$.
- 2 If their CD4 count is not available:
 - All women who are in WHO clinical stage 3 or 4 need ART.
 - Women who are in WHO clinical stage 2 need ART if they do not have a CD4 count, but their total lymphocyte (white blood cells) count is less than $1200/\text{mm}^3$.

You should note that the above criteria are used to identify HIV-infected pregnant mothers who need ART treatment. If an HIV-positive pregnant mother is taking ART treatment, she doesn't need to take any additional ARV drugs for PMTCT. HIV-positive pregnant mothers will be screened at health-centre and hospital level, and if they fulfil one of the above criteria they will

Remember that the CD4 count refers to the number of CD4 lymphocytes per cubic millimetre (mm^3) of blood.

be advised to start ART treatment. If they do not fulfil the criteria, they will be counselled for PMTCT using ARV drugs.

Therefore, if you find pregnant mothers who are HIV positive at your health post or in your community, refer them to have their CD4 count checked at the nearest health centre. If they are referred back to you from the health centre, you need to make a proper follow up of them in the community.

27.5.2 Single-dose Nevirapine, and other ARV options for PMTCT

The simplest drug regimen used to prevent HIV transmission is a single dose of *Nevirapine* given to the mother at the onset of labour, and a single dose given to the baby after delivery. It is estimated that this regimen reduces the rate of HIV transmission by half. As it is given only once to the mother and baby, it is relatively cheap and easy to administer. Consequently, it has been the mainstay of many PMTCT programmes in Ethiopia and other resource limited countries. You may be expected to use this simple intervention at your level for PMTCT.

Because of concerns about drug resistance, and that a single-dose regimen may not be as effective as combination drug therapies, there is now general agreement that single-dose Nevirapine should be used only when no alternative PMTCT drug regimen is available. Whenever possible, women should receive a combination of drugs to prevent HIV resistance problems, and to decrease mother-to-child transmission rates even further.

Nevirapine, however, is still the only single-dose drug available for PMTCT. Other treatments require women to take drugs during and after pregnancy, as well as during labour and delivery. This means they are much more expensive and more difficult to implement, unlike Nevirapine, which can be used with little or no medical supervision at all. For the moment, single-dose Nevirapine remains the only practical choice for PMTCT in areas with minimal medical resources.

In addition to single-dose Nevirapine, two other options are available, but these are beyond the scope of this study session (some of these drugs were introduced in Study Session 24):

- 1 Combining AZT with single-dose Nevirapine and Lamivudine.
- 2 Three full-dose combination of ARVs.

At this point it should be emphasised that short-term ARV prophylaxis for PMTCT does not treat maternal HIV immunosuppression, and therefore does not provide long-term benefits for the health of the mother. For this reason, women should be regularly assessed for ART eligibility. And if a pregnant mother is eligible to start ARV drugs, she should be referred to the nearest health facility to start the treatment.

- Explain the difference between using ARV drugs for ART or PMTCT.
- When ARVs are used for treatment purposes, usually patients take three or more combined drugs, and they are taken for life. In PMTCT, ARVs are taken as prophylaxis for a short duration, with the aim of preventing the transmission of the HIV from the mother to the child. In addition, in PMTCT a single drug, or a combination of drugs, can be taken.

27.6 Breastfeeding options for PMTCT

Exclusive breastfeeding is defined as feeding *only* breastmilk to the infant for the first six months of its life (the mother's milk is the sole source of nourishment). Exclusive breastfeeding is NOT recommended for HIV-infected women. However, the alternatives, using formula or animal milk, are not always a viable option and in such cases breastfeeding should be used. Exclusive breastfeeding should be avoided if the following criteria, established by the WHO and called the **AFASS criteria**, can be met:

- **Acceptable:** replacement feeding for breast milk should be acceptable by the family and others who are close to the family.
- **Feasible:** the mother has access to clean and safe water for cleaning utensils such as feeding bottles and teats.
- **Affordable:** the family has to be able to buy formula milk or animal milk.
- **Sustainable:** the mother is able to prepare feeds for the child as frequently as recommended.
- **Safe:** the formula milk should be safe for the health of the infant.

Figure 27.3 illustrates the AFASS decision pathway used to determine how an HIV-infected mother should feed her baby.

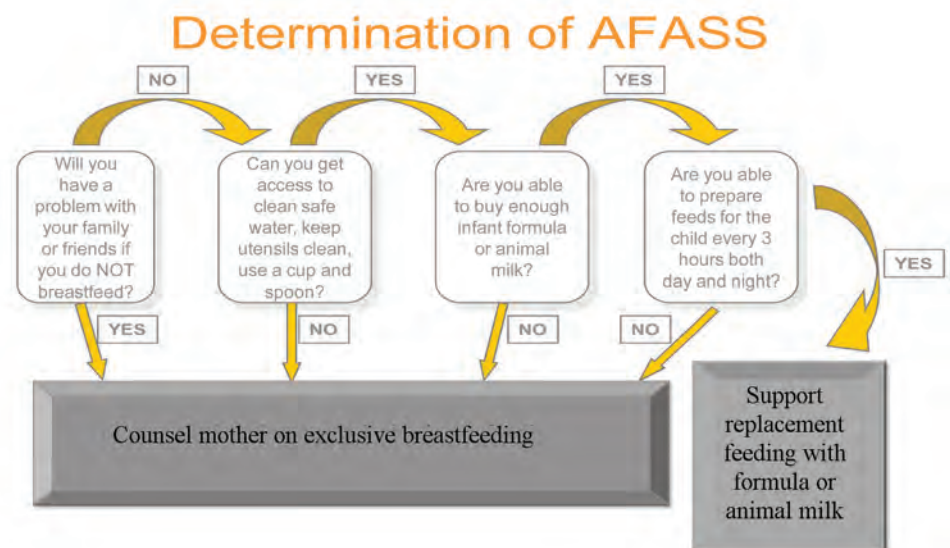


Figure 27.4 An HIV-infected mother is feeding her baby with replacement formula milk using a bottle. She is able to meet the AFASS criteria and has chosen this option to feed her child; by doing so, she has reduced further the risk of her child being infected with HIV. (Illustration: courtesy of Jude Melling)

Figure 27.3 AFASS criteria used to determine if a mother should use replacement milk to feed her baby, or use exclusive breastfeeding. (WHO recommendations)

When replacement feeding fulfils AFASS criteria, avoidance of *all* breastfeeding by HIV-infected women is recommended (Figure 27.4). At six months, if replacement feeding is still not *acceptable, feasible, affordable, sustainable* and *safe*, continuation of breastfeeding with additional complementary foods is recommended, while the mother and baby continue to be regularly assessed. All breastfeeding should stop once a nutritionally adequate and safe diet without breastmilk can be provided.

27.7 Four interventions for PMTCT in the community

In this section you will be introduced briefly to the four intervention strategies associated with PMTCT. In your work as a Health Extension Practitioner you have to keep in mind these interventions aim to increase the number of mothers willing to use PMTCT services.

Component 1: Prevention of new HIV infections in parents-to-be

This intervention targets young women and their partners, and promotes the use of condoms, and voluntary counselling and testing (VCT) before marriage, and during pregnancy. You should ensure that all women know that they have access to family planning and counselling, and you should encourage open discussions on reproductive health issues. This intervention also emphasises the early treatment of sexually transmitted infections (STIs), and encourages a sensible attitude towards sexual activity – strategies that will help prevent HIV transmission.

Component 2: Prevention of unwanted pregnancies in HIV-infected women

Here you should give information and counselling to HIV-infected women on family planning methods. You will also have to explain access to family planning counselling, and services that promote the correct and consistent use of condoms.

Contraceptive methods are fully explained in the *Family Planning Module*.

Component 3: PMTCT using ARV drugs

This intervention aims to encourage all HIV-positive women who are pregnant or who have recently delivered a baby and their newborns to receive ARV drugs in order to minimise the risk of HIV transmission during pregnancy, labour or during the postnatal period.

Component 4: Care and support of HIV-positive mothers and their families

This intervention seeks to provide clinical care and prophylaxis for opportunistic diseases that HIV-infected mothers (or their HIV-positive family members) may acquire. This strategy includes social, financial and psychological support for both HIV-infected pregnant women and their family members.

Summary of Study Session 27

In Study Session 27, you have learned that:

- 1 PMTCT is one of the key strategies to prevent the transmission of HIV.
- 2 PMTCT significantly reduces the risk of HIV transmission from mothers to their infants and helps establish a link to other HIV-related comprehensive services.
- 3 Community mobilisation to increase attendance of pregnant women for antenatal care and institutional delivery increases the coverage of PMTCT services in Ethiopia.
- 4 HIV testing and counselling services using the 'opt out' approach are provided routinely to pregnant mothers as an entry point for HIV care.
- 5 There are three ARV options for PMTCT, but the most widely used at community level is the single-dose Nevirapine regimen.

-
- 6 When the AFASS criteria for replacement feeding are not met, then exclusive breastfeeding is the nationally recommended strategy for HIV-positive mothers in Ethiopia. Ideally, HIV-positive mothers should not breastfeed their babies if a replacement feeding option is available.
 - 7 The interventions implemented by the FMOH for PTMCT target four components: prevention of new HIV infections, prevention of unwanted pregnancies in HIV-infected women, the use of different ARV drug regimens for PMTCT, and care and support services for HIV-positive mothers and their families.

Self-Assessment Questions (SAQs) for Study Session 27

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 27.1 (tests Learning Outcomes 27.1, 27.2, 27.3 and 27.5)

Can a pregnant woman transmit HIV to her baby during pregnancy, delivery or breastfeeding? What should you recommend to her?

SAQ 27.2 (tests Learning Outcome 27.3)

Can women with HIV have normal healthy babies? What are the most important ways of reducing the risk of mother-to-child transmission of HIV?

SAQ 27.3 (tests Learning Outcome 27.3)

Why should a pregnant mother be tested for HIV? Explain the advantages of HIV testing and counselling for PMTCT.

SAQ 27.4 (tests Learning Outcome 27.4)

Which of the following statements is *false*? In each case, explain what is incorrect.

- A Less than 10 out of 100 children will be infected by HIV if drugs for PMTCT are taken by the mother.
- B All pregnant women who are HIV-positive and in WHO clinical stage 3 or 4 need antiretroviral therapy (ART).
- C A pregnant woman who is taking ARV drugs to treat her own HIV infection also has to take additional ARV drugs for PMTCT.
- D PMTCT with single-dose Nevirapine means giving one dose of this drug to the newborn baby.

Study Session 28 HIV in Children

Introduction

In Study Session 27, you learnt that mother-to-child transmission of HIV during pregnancy, delivery and labour, and breastfeeding are the main sources of HIV infection in children. In this study session, we will focus on the consequences of HIV infection in children. You will first learn about the key differences in chronic HIV care between adults and children. The immune system in young children is still developing, and as a consequence HIV-infected children suffer from many more opportunistic and common infections, and also progress more rapidly to AIDS than HIV-infected adults. For these reasons, early diagnosis and treatment of HIV infection is particularly important in children.

Within your health post, you will have to establish a link between your own family-focused care and HIV care services. To do so, you will need to learn how to routinely discuss and recommend HIV testing for children born to HIV-infected mothers, and when it is appropriate to refer them. Finally, we will briefly describe important issues concerning the care of HIV-infected children, namely their nutritional status and psychosocial needs. You will learn more on the diagnosis of HIV in children, and the care for HIV-exposed infants and HIV-infected children in the *Integrated Management of Newborn and Childhood Illness* (IMNCI) Module.

Learning Outcomes for Study Session 28

When you have studied this session, you should be able to:

- 28.1 Define and use correctly all of the key words printed in **bold**. (SAQ 28.1)
- 28.2 Describe the key differences in diagnosis of HIV status and chronic HIV care between adults and children. (SAQs 28.1 and 28.2)
- 28.3 Explain when to refer HIV-exposed infants born to HIV-positive mothers for early diagnosis. (SAQ 28.3)
- 28.4 Describe the nutritional and psychosocial needs of children with HIV. (SAQ 28.3)

28.1 Critical issues in HIV infection and progression to AIDS in children

There are important differences in HIV infection and progression to disease between adults and children. These have implications for the care needed by HIV-infected children (explained further in Section 28.3). We will describe here the main issues related to HIV/AIDS and children that will help you provide the best care for HIV-infected children in your community.

Remember the AFASS criteria. It is not always possible for a mother to give her child replacement milk; sometimes breastfeeding is the only viable option.

28.1.1 Minimising risk of infection in children

The most important thing for you to remember in the context of HIV prevention in children is that mother-to-child transmission is the main source of HIV infection. Children at any age who continue to be breastfed from HIV-positive women are at risk of acquiring HIV infection through contaminated breastmilk throughout the time they are breastfed. You should provide feeding advice to mothers according to the national guidelines on infant feeding (this is covered in detail in the *Integrated Management of Newborn and Childhood Illness* Module). Where one child is HIV positive, it is possible that other family members, including **siblings** (brothers and sisters), are already infected. Therefore, you should always encourage HIV testing of parents, and young, siblings of HIV-exposed infants and HIV-infected children. You should appreciate that unless an HIV test result is confirmed, infants born to HIV-positive mothers are called **HIV-exposed infants**, and **HIV-infected children** are those whose HIV test results are confirmed as being positive.

- What is the main route of HIV transmission among adults?
- The main route of HIV transmission among adults is sexual intercourse.

28.1.2 Early diagnosis of HIV

There are differences in disease progression and diagnosis of HIV infection between adults and children. The main differences in disease progression and diagnosis are listed below:

- Young children have immature immune systems and thus are more susceptible to common childhood infections, as well as opportunistic infections.
- Early diagnosis of HIV infection in children is essential, as the infection in infants and children progresses faster than that of adults. Although HIV-infected infants are generally symptom-free at birth, in the absence of any intervention, most of them develop severe symptoms in the first two years of life, and die. Therefore, early diagnosis and management of HIV-exposed and HIV-infected children is key to ensure maximum benefit from ART, and to reduce AIDS-related morbidity (the presence of an illness or disease) and death in children.
- In HIV-exposed infants, maternally acquired antibodies make the diagnosis of HIV challenging. The antibodies present in the blood of an HIV-exposed infant may originate from the mother and not the infant itself. Therefore, a positive rapid HIV test is not definitive for the diagnosis of HIV infection in children below the age of 18 months. However, a rapid test, done six or more weeks after the complete cessation of breastfeeding, which gives a negative result, is more useful, because it excludes HIV infection in HIV-exposed infants.

The antibodies the mother makes against her HIV can cross the placenta and get into the fetal bloodstream. After birth, these antibodies can show up when the baby is HIV-tested.

28.1.3 Differences in the management of children and adults with HIV

The management of HIV in children, especially the young ones, differs from that of adults. Below are some of these differences:

- Normal CD4 counts are higher in young children than in adults, and decrease with age to reach adult levels around the age of six years. In children younger than six years, it is better to use the percentage of CD4

cells in the blood as a criterion to start ART. This is more stable than the CD4 cell count used in adults.

- Once started on ART, children need to be followed-up more frequently than adults. Their response to ART should be checked by regular monitoring of growth and development (Figure 28.1 illustrates the profound improvement that can be seen in HIV-positive children given ART).
- ARV drug dosages need to be adjusted regularly to account for changing body weight and growth as children develop.
- Communication with children can be challenging. This regards issues related to disclosure, counselling and explaining the need for long-term treatment, particularly adherence to the treatment regimen.



Figure 28.1 A South African child living with HIV. The image on the left was taken immediately prior to ART and the photo on the right shows the marked improvement achieved after only six months of therapy. (<http://www.tac.org.za/community/taxonomy/term/49>)

28.2 Providing care for HIV-exposed infants and HIV-infected children

Routine childhood services, e.g. immunization, nutrition, OPD (out-patient department) and in-patient (hospital ward) services, are entry points for HIV-exposed and infected children. Health workers should use these services as opportunities to provide access to early diagnosis of HIV for families with children at risk.

As we discussed above, HIV-exposed infants/children should be enrolled into HIV care services and receive a regular follow-up at a health centre or hospital. They should also be given cotrimoxazole prophylaxis to prevent severe infections such as *pneumocystis* pneumonia (a fungal infection of the lungs), which can cause death in HIV-infected children. Cotrimoxazole prophylaxis is given to HIV-exposed children starting from four to six weeks of age, until a diagnosis of HIV infection is definitely excluded. Those who present late to a health facility should also be given cotrimoxazole prophylaxis.

Cotrimoxazole prophylaxis is also protective against opportunistic bacterial infection, as you learnt in Study Session 21.

Remember that a rapid HIV test is not a reliable test to diagnose HIV infection in children under the age of 18 months. This is because there are maternally acquired antibodies in the blood of the child, and these antibodies

can give a false positive HIV test result. Therefore, the best test for diagnosing HIV infection in children less than 18 months of age is a **DNA PCR** test (see Figure 28.2 on the next page). This test detects the presence of viral components in blood. However, you are not required to know the details of this test.



Figure 28.2 Blood samples are collected from a baby for a DNA PCR test. The samples are collected as a series of 'dry blood spots' which will then be tested for the presence of the virus.

(Photo: courtesy of UNICEF UK, Lesotho 2007/Gideon Mendel)

DNA PCR does not rely on the detection of antibodies – remember, these could come from either the mother or baby. Instead, this test looks for DNA molecules that can only come from the virus. If the test is positive, it means the virus is in the baby's blood.

The Federal Ministry of Health of Ethiopia has already started a DNA PCR service at several regional laboratories, where blood samples can be sent for analysis to aid *early infant diagnosis*. DNA PCR can be done as early as six weeks of age. Therefore, you, as a health worker, should encourage the family of an HIV-exposed infant/child to take the infant/child to a nearby health centre for early diagnosis.

When you encounter such children, either when visiting a household or at the health post, you should inform the family or caregiver about the importance of follow-up care and cotrimoxazole prophylaxis for the HIV-exposed child. The caregiver might not easily recognise the importance of cotrimoxazole prophylaxis and follow-up care, particularly if the child appears to be healthy. Your role is to coordinate the care of the HIV-exposed child with that of the mother.

28.3 Nutritional and psychosocial support for children with HIV

HIV-exposed infants and HIV-infected children need special nutritional and psychosocial support, both at the level of the health facility and the community. Below we will discuss why they need this special support.

28.3.1 Nutritional needs of HIV-infected children

The nutritional status of a child will significantly affect the incidence and severity of **HIV-related illnesses**, such as tuberculosis and diarrhoea. In addition, HIV-related illnesses also have severe nutritional consequences that commonly precipitate appetite loss, weight loss and wasting. Clinical situations that may impair the nutrition of HIV-infected children are recurrent or chronic infection, fever, intestinal infections, oral or oesophageal lesions, and persistent diarrhoea. Box 28.1 (on the next page) summarises some of the key issues that need to be considered when thinking about the nutritional needs of HIV-infected children.

Box 28.1 Nutritional management of HIV-infected children

- Increase energy intake by 50% to 100% over normal requirements in children experiencing weight loss.
- Identify local foods that are available and affordable, and provide advice for the caregiver on energy requirements. For the type of local foods that are available, you may find it useful to refer to a local food adaptation table.
- HIV-infected children from the age of six months should receive vitamin A supplements every four to six months (100,000 IU for infants up to 12 months, and 200,000 IU for children above 12 months.) This level is consistent with the current WHO recommendations for the prevention of vitamin A deficiency in all children.
- For persistent diarrhoea, refer to the *IMNCI* Module.
- Feeding and increased fluids should continue during illness. The child may develop nausea and vomiting as a result of ARV drugs. Encourage small, frequent fluids, and give foods that the child likes. Let the child eat before medication. For a child with sores in the mouth, give soft and mashed food, or give paracetamol half an hour before solid feeding.

Note: you will also learn more on this topic in the *IMNCI* Module.

The Module on *IMNCI* includes the treatment of diarrhoea and HIV diseases in children.

28.3.2 Providing psychosocial support to children infected with HIV

Beyond disease management, children infected with HIV face a number of problems that impact upon their social, educational and emotional development and wellbeing. These children require psychosocial support, which includes a range of interventions that enable individuals and families to cope with the overwhelming feelings that result from their experiences with long-term disease and death. Providing psychosocial support may include addressing self-esteem, adaptation to illness and its consequences, communication, social functioning and relationships — these topics will be discussed in more detail in Study Session 30 (Providing Palliative Care for people living with HIV.)

Health facility-based and home-based stimulation of children improves their mental, social and emotional development. Remember, encourage family members to play and talk with the children. This will help provide an enriching and stimulating environment that will greatly enhance and support the children's psychosocial development.

Children's development will flourish when they form secure attachments to a responsive caregiver. Furthermore, children need to be provided with psychological (relating to both the mental and social aspects of life) and emotional support within their family or through other caregivers, and to be able to communicate openly about their own or their family member's condition, so as to give relief to deep fears that may be difficult to share.

For those children who are also malnourished, combining psychosocial stimulation with food supplementation has been shown to produce better outcomes and growth for the children.

You may need to provide psychosocial support to HIV/AIDS orphans (children who have lost their parents through HIV/AIDS).

For caregivers to provide this support to children, they must themselves be provided with psychosocial support. This can be done when you do home visits, or through community-based organisations or peer support groups. It is important for you to ensure adequate linkage of families with these groups, and to pay attention to the psychosocial needs of the whole family on each visit.

Summary of Study Session 28

In Study Session 28, you have learned that:

- 1 There are differences between HIV infection in adults and children. The main differences are the mode of transmission of HIV, disease progression, diagnosis of HIV infection, especially among children less than 18 months of age, and that CD4 counts are higher in children compared with adults.
- 2 ARV drugs are handled differently in children's bodies, affecting the doses that are needed. Dosages in children need to be adjusted to the child's weight as the child grows.
- 3 Communication, adherence and disclosure in children are challenging.
- 4 Infants and children born to HIV-positive parents should be tested for HIV as early as possible. If not, they may die of common childhood illnesses and opportunistic infections in a shorter time. You need to refer such infants/children to a nearby health centre/hospital for early infant diagnosis.
- 5 HIV-infected children need special psychosocial and nutritional support.

Self-Assessment Questions (SAQs) for Study Session 28

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 28.1 (tests Learning Outcomes 28.1 and 28.2)

What is meant by the term 'HIV-exposed infant'? How is the child's HIV status diagnosed?

SAQ 28.2 (tests Learning Outcome 28.2)

Which of the following statements is *false*? In each case, explain what is incorrect.

- A The progression of HIV infection in children is slower than that of adults because they have fewer viruses in their body.
- B Rapid HIV testing can confirm HIV infection in a six-months-old infant born to an HIV-positive mother.
- C ARV drug dosages should be adjusted as the child gains weight or grows.
- D Young children normally have higher CD4 counts than adults, and it is better to use the CD4 percentage (instead of the CD4 cell count) as a criterion of whether to start them on ART.

SAQ 28.3 (tests Learning Outcomes 28.1, 28.3 and 28.4)

Read Case Study 28.1, and then answer the questions that follow it.

Case Study 28.1 Kebede's story

Kebede is a one-year-old male child who is the last of three siblings. All of the three live with their grandmother who is 65 years old. You hear from the grandmother that the mother of the children died of AIDS six months after giving birth to Kebede, and their father died in an accident 10 months ago. The grandmother also explains to you that Kebede is not feeling well, and has had diarrhoea on and off for two months. He has also lost weight. The grandmother needs your help.

- (a) What do you say about Kebede's HIV status?
- (b) Explain what you should do for Kebede.
- (c) Will screening his siblings for HIV help the family?

Study Session 29 Positive Living and Prevention of HIV Transmission for PLHIV

Introduction

In previous study sessions, you have learnt about the basic biology of HIV and opportunistic infections associated with AIDS. You have also learnt about the treatment used by people living with HIV (PLHIV) to prevent and/or slow down progression to AIDS. Remember that patients infected with HIV need to follow their treatment correctly and strictly in order to maintain a healthy life. In this study session we will be discussing *positive living*, which means a lifestyle for PLHIV that is aimed at maintaining their quality of life for as long as possible. To encourage a positive living lifestyle, PLHIV should actively sustain the following practises: be informed about health issues; take medications as prescribed; work as their energy allows; avoid stress; maintain good nutrition; prevent infections; practise regular exercise; and seek regular medical care. Most importantly, positive living for PLHIV also involves playing an active role in preventing the spread of HIV, and you should stress the importance of safer sex practises in this context.

After studying this session, you will be able to advise PLHIV in your community to adopt a 'positive living' lifestyle and to make them aware of the fact that, even if they are on antiretroviral therapy (ART), they can still transmit the virus. In this way, you will also be able to provide information to patients who have misconceptions about HIV, its transmission and treatment. In addition, you may consider referring patients to the nearest health centre if you determine that they should receive additional clinical services and psychosocial support. In brief, by helping PLHIV to adopt positive living practises, you will be able to encourage them to live a healthy and good quality life.

Learning Outcomes for Study Session 29

When you have studied this session, you should be able to:

- 29.1 Define and use correctly all of the key words printed in **bold**. (SAQ 29.1)
- 29.2 Explain that people taking antiretroviral therapy can still transmit HIV, and can still be re-infected with another strain of HIV. (SAQs 29.1 and 29.2)
- 29.3 Explain how you would advise PLHIV on positive living and good nutrition. (SAQ 29.1)
- 29.4 Explain how you would advise PLHIV about the importance of seeking regular medical care at the health centre or hospital. (SAQ 29.3)

29.1 What is positive living?

Positive living is a lifestyle adopted by an HIV-infected person in order to live life as fully as possible while slowing progression to AIDS. Adopting positive living practises improves the quality of life of PLHIV remarkably. Important aspects of positive living for PLHIV include making positive choices to care for one's mental and physical health, having a positive outlook on life, and avoiding risky behaviours.

In this context, **risky behaviours** refer to situations in which there is an increased risk of transmission of HIV and/or other infections such as STIs for the patient or for their partners (e.g. unsafe penetrative sex).

Your role as a Health Extension Practitioner consists in promoting positive living practises for PLHIV in the community. In doing so, you will maintain the continuity of care patients receive from the health centres and hospitals at the level of their own community. Your role in supporting PLHIV to practise positive living includes the following key tasks:

- Becoming familiar with different aspects of positive living, as you may need to provide information to patients about them.
- Understanding what ‘positive living’ means for PLHIV. Positive living includes many topics that can help a person living with HIV to live a healthier life, and postpone progression to AIDS.
- You may provide referrals, if necessary, to guide patients to services that will help them live positively. These services might be available at healthcare service delivery points, or other social and economic support organisations existing in your community.

The points listed in Box 29.1 should form the basis of your discussions with PLHIV to promote the adoption of positive living practises. In the following sections we will be discussing these specific issues in more detail.

Box 29.1 Points of discussion for advising PLHIV on positive living practises

- 1 Prevent the spread of HIV.
- 2 Be informed about your health.
- 3 Take medications as prescribed by the healthcare worker.
- 4 Work as your energy allows.
- 5 Avoid stress.
- 6 Maintain good nutrition.
- 7 Prevent infections.
- 8 Get regular exercise.
- 9 Seek regular medical care.

29.2 PLHIV and prevention of HIV transmission

In Study Session 25, you learnt about preventative measures that individuals — whether they know their HIV status or not — may take into consideration in order to reduce risks of HIV infection via the sexual route, and by direct contact with objects contaminated with infected blood. In this section, we are going to discuss specific issues that relate to sexual transmission of HIV, and to a lesser extent transmission by contact with infected blood, in the context of HIV treatment, care and support provided to PLHIV.

Patients who are on antiretroviral therapy (ART) should be informed that HIV transmission to other people is still possible, even if treatment has been effective and they are informed by health workers that they have undetectable levels of HIV in their blood. Very low levels of HIV can still be present in the

blood and/or sexual fluids of PLHIV undergoing ART, and these may be sufficient for the virus to infect another person.

29.2.1 Re-infection with HIV

Another subject that PLHIV should consider is **re-infection**, which refers to the situation in which a person already living with HIV is infected with a new strain of HIV from another PLHIV. Re-infection can accelerate progression to AIDS in two ways. First, re-infection can increase the **viral load** (i.e. the levels of HIV in the blood) of a person living with HIV, as it may take some time for either the patient's immune system (whose function is already impaired), or antiretroviral (ARV) drugs to be effective against the new type of virus. This will result in further damage to the immune system, making the person with a re-infection more vulnerable to opportunistic infections.

Secondly, a PLHIV may be re-infected with another type of HIV that is already resistant to the ARV drugs they are taking, which may ultimately lead to treatment failure. The consequence of ART failure of first-line drugs is replacement with second-line ARV drugs, which may be less effective in controlling HIV infection (Study Session 23). Thus, it is always advisable for PLHIV not only to minimise risks of HIV transmission to other people, but also to avoid re-infection by HIV from another person.

29.2.2 Strategies to minimise HIV transmission

Having established that PLHIV can still transmit the virus to uninfected individuals or to other PLHIV, we shall now discuss ways that PLHIV can minimise the risks of HIV transmission via the sexual route.

- What are the most widely known strategies for prevention of HIV transmission through the sexual route?
- These are known as the 'ABC Rules'. 'A' stands for 'Abstinence', which means refraining from premarital sexual intercourse; 'B' stands for 'Be faithful', which means maintaining faithful relationships with a long-term partner; and 'C' stands for 'proper use of Condoms', which means correct and consistent use of condoms in sexual relations (Study Session 25).

Abstinence

Abstinence is certainly a choice for PLHIV with the aim to eliminate the risks of transmitting HIV to uninfected people or other PLHIV. However, it is still possible for PLHIV to engage in a rich and satisfying, active sex life, and we will discuss this topic in the context of the 'B' (maintaining faithful relationships) and 'C' (safer sex practises) rules.

Maintaining faithful relationships

In general, maintaining faithful relationships is an effective measure for individuals to reduce the risk of HIV infection. Remember the linear relationship between HIV transmission and the number of sexual partners that is; the higher the number of partners, the higher the risk of HIV transmission (Study Session 25). This particularly applies to PLHIV — the more partners they have, the more likely it is that they transmit the virus to other people and/or that they become re-infected.

However, for the 'B' rule to be effective, both partners need to be confirmed as HIV negative. It is not sufficient to maintain a faithful relationship in order to prevent HIV transmission where PLHIV are concerned, whether their

partner(s) are HIV negative (as it would lead to HIV infection of a previously uninfected person) or HIV positive (as it would lead to re-infection of a person living with HIV).

Safer sex practises

In this context, it is critical that you stress the importance of consistent and correct safer sex practises to PLHIV (whether they have opted for faithful relationships or for multiple sex partners).

- What are the safer sex alternatives to unprotected penetrative sex?
- Non-penetrative sex practices, or penetrative sex with a condom (Study Session 25).

Thus, to reduce the risk of HIV transmission or re-infection, sexually active PLHIV should be advised to ALWAYS engage with a partner using either non-penetrative sex practises, or penetrative sex practices with a correctly used condom. If condoms are correctly used they can prevent the transmission of HIV by more than 98% (the remaining 2% reflects incorrect use of condoms). Refer to Study Session 25 for information on the correct use of condoms. In this context, safer sexual practises are also beneficial in the prevention of other sexually transmitted infections (STIs), a topic that will be further discussed in Study Session 31.

Engaging the sexual partners of PLHIV

When providing information to PLHIV about general and specific issues on prevention of HIV transmission via the sexual route, it is also important to engage their partner(s) in the discussion, whether they know their HIV status or not. This is important so that all partners involved play an active role in the prevention of HIV transmission (or re-infection). However, you should discuss with PLHIV the benefits (e.g. good adherence to ART) and/or problems of disclosing their status to their partners before they decide to do so.

- Biruk and Hiwot are a young married couple in your community. Biruk is HIV-positive, so for the duration of their marriage they have engaged in safer sex practises to reduce the risk of HIV transmission to Hiwot (who has remained HIV-negative). They now want to have a baby. What issues would you discuss with them?
- You should make sure that they understand that unprotected penetrative sex will greatly increase the risk of HIV infection for Hiwot. This may have consequences for the health of Hiwot and for the health of the child, should she become pregnant. If they are still intent on having a baby, refer them to the nearest health centre for further care and support.



Figure 29.1 Each member of a household with a person living with HIV should have their own easily-identifiable toothbrush to avoid exposure to contaminated blood. (Photo: Basiro Davey)

Finally, you should also advise PLHIV (and their partner(s) and close family) on issues related to HIV transmission via contact with blood-contaminated objects. PLHIV and their close family should be particularly attentive to sharing common objects that may have been contaminated with blood. These include utensils such as needles, razor blades and toothbrushes (Figure 29.1).

It is also important to emphasise that PLHIV should never give blood for transfusion, as this could result in HIV transmission to other patients that receive their blood or blood-related products.

29.3 PLHIV should be informed about their health

Informing the PLHIV in your care about their health status builds up their confidence, thereby encouraging their active involvement in improving their own health. At each visit, you should inform patients about how they are progressing health-wise, and provide them with health information materials that are available from your health post to build their ability to manage their own health issues. When working with patients, you should ask them if they have any questions about HIV/AIDS and/or their specific health issues in a relaxed and non-confrontational manner. It is advisable to encourage PLHIV to attend their visits accompanied by members of their family or treatment supporters, especially if this helps them express any concerns they may have about their health status (Figure 29.2).

You should encourage your patients to learn, to the best of their abilities, about HIV infection, AIDS and related health problems. Understanding more about HIV may lessen a patient's fear of HIV, and help them identify and maintain strategies to stay healthy. Knowing more about HIV may also help your patients remember to take their medications correctly and at the prescribed times, hence promoting good adherence to ART.



Figure 29.2 Clear information about HIV/AIDS and positive living is vital for PLHIV.

29.4 PLHIV should take medication as prescribed

In Study Session 23, you learnt about the importance of adherence to ART for PLHIV. Remember that 100% adherence is the goal for patients who are on ART so that HIV replication is suppressed (Figure 29.3).

- What are the consequences of poor adherence for the health of a person living with HIV?
- Poor adherence may lead to drug resistance, increased viral load, decreased levels of CD4 lymphocytes, higher incidence of opportunistic infections and faster progression to AIDS, and increased possibility of sickness and death.

Therefore, educating patients about essential points of good adherence to treatment at regular visits is essential to promote health for PLHIV, and to strengthen positive living. For example, you should make sure that HIV-positive patients understand that HIV has no cure, that HIV infection is at present a lifelong condition, but also that medications can help a patient live a healthier and longer life.

Adherence is not restricted to ARV drugs, and should include medication (such as cotrimoxazole) for prevention of opportunistic infections. The message given to patients should be concise and clear. Here is an example:

‘You may feel well now but, if you want to stay healthy, you should take all your medications regularly and consistently.’

In addition, medications may be available to help manage some side-effects of ART, such as pain, vomiting and diarrhoea. Although strict adherence to these treatments is not as critical for the long-term health of PLHIV as it is for adherence to ART and opportunistic infection prophylaxis, all medications should be taken in the proper doses and on time for them to be effective in improving a patient's health.



Figure 29.3 Strict adherence to drug regimens is essential for PLHIV. (Photo: Basiro Davey)

Lifestyle and unprescribed medications may influence the outcome of ART. Many herbal/traditional medications can interact with ARV or prophylactic drugs and render them less effective. Thus, patients should not take any medication without first consulting their respective health worker. Alcohol, cigarettes, and chewing ‘khat’ may also interfere with ART or prophylactic medication, and these should be avoided. In addition, these lifestyle choices will have a negative effect on the overall health (in particular, the function of the immune system) of the patient, who will then become more susceptible to opportunistic infections.

29.5 PLHIV should work as their energy allows, and avoid stress

Being able to work, either full- or part-time, and/or being involved in daily routines are important assets for maintaining a positive attitude and a healthy lifestyle. When discussing positive living practises with PLHIV, you should emphasise that work provides income, stability, satisfaction, friendships and fulfilment to many people, and may therefore promote their psychological and physical wellbeing. You should encourage your patients to continue working for as long as they are able to reasonably manage their workloads. In the event of episodes of ill health, it may be quite difficult to continue regular work, and PLHIV should determine whether they are fit enough for work. However, they should keep in mind that returning to work after illness may help improve their quality of life.

Avoiding stress and dealing with worries in a positive manner is also important for PLHIV to maintain their health. Specific strategies on how to deal with stress, anxiety and depression are discussed in detail in the Module on *Non-Communicable Diseases, Emergency Care and Mental Health*. For example, they may need to find positive ways to deal with stress such as talking with friends or family members, and avoid negative ways of dealing with stress such as abusing alcohol, chewing khat or taking other recreational drugs. It is important to emphasise that alcohol or chewing khat may make them forget their problems for a short while, but may lead them to be involved in risky behaviours such as unsafe sex.

29.6 PLHIV should maintain good nutrition

Maintaining a good nutritional status is essential for improving the quality of health of people presenting with any disease, including HIV and AIDS, as sick people have more nutritional needs than healthy ones. HIV infection by itself, in particular at the late stages of the disease, and/or the presence of opportunistic infections, have been associated with poor nutritional status and extreme weight loss. Poor nutrition in PLHIV may lead to further impairment in the function of an already damaged immune system and favour an increased incidence of opportunistic infections.

Other contributing factors to weight loss are the presence of diarrhoea and vomiting (common in patients with AIDS), which impair nutrient absorption through the gut, and loss of appetite, sometimes related to difficulties in eating. In addition, nausea and vomiting are common side-effects of ARV drugs, and may also play a role in the poor nutritional status observed in many PLHIV. You should advise PLHIV in your community to adhere to the following recommendations if they feel nauseated or they lose their appetite — eat small frequent meals, eat bland foods (e.g. porridge), do not eat oily or spicy foods, and take ARV drugs with or soon after meals.

Also remember that the nutritional requirement of people who are sick is greater than that of healthy people. This is because additional energy is needed to compensate for the increased energy needs of the body due to illness. PLHIV who are also coping with opportunistic or other infections will need to eat more nutritious food in order to help their immune system fight the infectious agents.

PLHIV, in particular those diagnosed with AIDS, should eat a well-balanced diet consisting of regular meals (even when they do not feel hungry). Meals should include protein, fat, carbohydrates and vitamins in the recommended proportions, as described in the *Nutrition* Module, and illustrated in Figure 29.4. In addition, a well-balanced diet involves drinking plenty of clean water, up to two litres per day. You should discuss with patients about how to incorporate a well-balanced diet into their life routines, and about factors such as lifestyle and economic status that may negatively affect it. If needed, suggest they ask for help when preparing meals and cooking. You may also need to refer patients to food support services at your nearest health centre.



Figure 29.4 A well-balanced diet should include a variety of foods. This is particularly important for vegetarian diets such as the one shown.
(Photo: Tom Heller)

29.7 PLHIV should avoid getting infections

As you already know, since HIV affects the function of the immune system, a person with HIV is more susceptible to opportunistic infections. People with HIV should take effective actions to prevent communicable diseases which may have important consequences for their health. Here, we will briefly discuss some preventative measures to reduce the risks of some common infections, but you should refer to the more detailed discussion of prevention in other study sessions in this *Communicable Diseases* Module when giving advice to PLHIV.

- Can you give any examples of common infectious diseases that PLHIV may contract due to improper handling of food and unclean water?
- You may have thought of giardiasis, amoebiasis and diarrhoeal diseases caused by bacteria or viruses.

To prevent the occurrence of **faeco-oral diseases**, caused by transmission of infectious agents from the faeces to the mouth (usually on the hands or in food and water), your advice should include instructions on clean preparation of food and water before consumption. For example, vegetables and fruits

You will learn about specific faeco-oral diseases in Study Sessions 32 to 34 of this Module.

should be washed with clean water. Drinking water should be cleaned by boiling it vigorously for a few seconds, then cooling it. Advise your patients to eat only well-cooked food. For example, cooked meat should be brown and have no traces of blood in it, and soups should always be boiled before being eaten.

Another very important hygienic measure used to prevent faeco-oral diseases includes frequently washing hands with soap, in particular after using the toilet and before preparing food or eating.

Prevention of sexual transmission of HIV (Section 29.2) and sexually transmitted infections (STIs) (Study Session 31) should be actively encouraged. Remember that PLHIV can still transmit HIV if they are involved in unsafe sexual practises, even if they are on ART.

- What are the main preventative measures to reduce the risk of STIs and HIV re-infection?
- Abstaining from sex, being faithful to a long-term partner, and adopting safer sex practices, such as the use of condoms.

If your community is in a malaria-endemic area, you should educate PLHIV to use bed nets regularly at night, to prevent being bitten by mosquitoes (Study Session 9). This is because PLHIV are particularly susceptible to malaria.

Finally, common hygienic measures to reduce the risk of infections from minor injuries or wounds include thorough cleaning and wound care. You should actively encourage PLHIV to attend the nearest health post or health centre as soon as possible in the event of a minor injury or wound.

29.8 PLHIV should get regular exercise and rest

Exercise is a good and low-cost way of maintaining the health of your clients. You should encourage PLHIV to practice regular exercise and to find time for adequate rest to improve and maintain their health. Regular exercise includes any sort of activities that fits into the daily routine life of your clients. These activities may range from moderate exercise (being more active around the house), to active team sports or jogging. There are many ways in which PLHIV may improve their regular exercise routine, such as walking to and from work; walking to the church or the mosque; and indoor regular exercise routines (for example, work-outs early in the morning before bathing). The benefits of regular exercise include increased energy levels, increased appetite and decreased nausea, which will also help your patients to maintain a good nutritional status. Exercise also helps to maintain muscle tone, which may be beneficial to prevent weight loss.

In the same way you advised your patients to continue working as long as they are able to reasonably manage it, PLHIV should not exert themselves by regular exercise to the extent that it becomes detrimental to their health. You should advise your patients to take sufficient rest and sleep between exercise routines. In the event of episodes of ill health, PLHIV should determine whether they feel fit enough to continue regular exercise. However, they should keep in mind that returning to regular exercise routines after illness may help improve their quality of life.

29.9 PLHIV should seek regular medical care

PLHIV should be given information about when and how to seek medical care. These situations may include their regular scheduled visits at the health centre or hospital, or new appointments at your health post or at the clinic when they feel ill.

Attending regular scheduled visits at the health centre or hospital helps PLHIV to monitor their health status. For example, all patients on ART will be assigned a clinic appointment schedule. This schedule will include regular follow-ups and medication refills at the health centre and hospital, regardless of whether the patient feels healthy or not. Patients should be encouraged to strictly adhere to all appointments at the health centre and hospital. A way you can help them is by reminding them when their next appointment is scheduled.

Patients should attend a clinic promptly and regularly during episodes of ill health. Early treatment of infections can prevent further illnesses and slow down progression to AIDS. During your regular visits or appointments, you should ask PLHIV to describe any new symptoms they may have experienced since your last visit, and encourage them to get prompt treatment for any health problems that cannot be managed at home or at your health post. If this is the case, refer them to the health centre without delay.

Summary of Study Session 29

In Study Session 29, you have learned that:

- 1 Positive living is a lifestyle choice for PLHIV that includes preventing the spread of HIV, being informed about their health, taking medication as prescribed, working as their energy allows, avoiding stress, maintaining good nutrition, preventing infections, getting regular exercise, and seeking regular medical care.
- 2 It is essential that PLHIV put measures into place to reduce the risks of sexual HIV transmission, even if they are on ART. These may include abstinence, maintaining faithful relationships, and/or safer sex practises.
- 3 Complete adherence to all HIV treatment, care and support is critical to maintaining the health of PLHIV.
- 4 Giving clear information about HIV/AIDS and positive living to PLHIV helps their active participation in managing their own health, and seeking advice in episodes of ill health.
- 5 PLHIV need to eat more food than normal to help their immune system to fight infections.
- 6 Personal hygiene is particularly important for PLHIV to avoid infections, and they should keep minor wounds clean.
- 7 Regular exercise is recommended for PLHIV, as long as their energy allows. They also need plenty of rest.

Self-Assessment Questions (SAQs) for Study Session 29

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the notes on the Self-Assessment Questions at the end of this Module.

SAQ 29.1 (tests Learning Outcomes 29.1, 29.2, and 29.3)

Which of the following statements in relation to positive living and PLHIV are *false*? In each case explain what is incorrect.

- A A Person living with HIV who is on ART cannot transmit HIV to other people.
- B The correct use of condoms prevents the transmission of HIV by about 50%.
- C The nutritional needs of PLHIV who have an opportunistic infection are higher than that of uninfected people.
- D Hand washing with soap and water is important to prevent faeco-oral diseases.

SAQ 29.2 (tests Learning Outcome 29.2)

In your community a couple who are both HIV-positive come to your health post asking for advice on their sexual life. Both consider they should not be using condoms as they are already HIV-positive. What will your advice to them be?

SAQ 29.3 (tests Learning Outcome 29.4)

A 30-year old man comes to the health post. He tells you he was diagnosed HIV-positive six months earlier. He says he is not feeling well these days. He barely sleeps at night and sometimes thinks he will be dying very soon. He feels so anxious that he has stopped working. What will you advise him?

Study Session 30 Providing Palliative Care for People Living with HIV

Introduction

In this study session you will learn what palliative care means; how to obtain information, grade pain and provide pain relief; how to advise patients on home-based methods for controlling pain; and on home-based and end-of-life care for people living with HIV (PLHIV). You will also learn how to provide psychosocial and nutritional support. In the future you may be involved in providing community-based palliative care services for PLHIV.

Palliative care is care given to chronically ill people to improve their quality of life and that of their families. It involves prevention and relief of suffering, pain and other physical problems, and attention to psychosocial and spiritual issues. Palliative care is also provided for terminally ill patients with conditions such as cancer, heart disease and stroke. The four components of palliative care in Ethiopia which you will learn about in this session are symptom management, including pain management; psychosocial and spiritual support; home-based care, and end-of-life care.

Learning Outcomes for Study Session 30

When you have studied this session, you should be able to:

- 30.1 Define and use correctly all of the key words printed in **bold**. (SAQ 30.1)
- 30.2 Explain what palliative care means, its importance, and its four components. (SAQ 30.1)
- 30.3 Describe how to provide pain management, with and without medication, and assess when to refer patients for further pain treatment. (SAQs 30.2 and 30.3)
- 30.4 Describe how to prevent and manage the common symptoms of HIV/AIDS using home-based care. (SAQ 30.3)
- 30.5 Describe how to provide psychosocial and spiritual care at home for chronically ill people with HIV/AIDS. (SAQ 30.3)
- 30.6 Describe how to provide preventative home-based care services for bedridden patients with AIDS. (SAQ 30.4)
- 30.7 Describe how to provide end-of-life care, especially bereavement care. (SAQ 30.5)

30.1 Palliative care and its significance in chronic illness

Palliative care aims to improve the quality of life for chronically ill patients and their families, by preventing and giving relief for pain and other physical, psychosocial and spiritual problems. It is also an essential part of comprehensive HIV care and support services. Palliative care is provided for patients from the time the chronic disease is diagnosed until the end of life. It regards dying as a normal process, and affirms life. It also offers support to help the patient and family cope during the illness and in the **bereavement period**, the time of grief due to the loss of a loved one through death.

Note that palliative care does not only mean the terminal care given to people dying from an incurable chronic illness.

Cancer, diabetes, heart disease and chronic lung disease are described in the *Non-Communicable Diseases, Emergency Care and Mental Health Module*.

Palliative care is not only useful for patients with HIV/AIDS, but also for people with chronic communicable and non-communicable diseases who require long-term care at home. It is also important for people with a curable illness with symptoms that last a long period of time (e.g. many months) before they are cured.

- Can you think of a curable chronic communicable disease whose patients may benefit from palliative care?
- Treatment for tuberculosis may involve long-term care at home.

The palliative care needs of patients increase with time, particularly in a situation where the underlying disease is getting worse rather than better. In areas where patients present late for medical care, the need for palliative care is high. With good treatment and support, palliative care can help many patients live comfortably with a chronic disease for many years. For those who have advanced disease in a terminal phase, palliative care focuses on promoting quality of life by providing good symptom management. This can help patients continue to function and enjoy life at home for as long as possible.

- What are the four major components of palliative care in Ethiopia?
- They are: symptom management, including pain management, psychosocial and spiritual support, home-based care and end-of-life care.

Below we will discuss each of the four components of palliative care for PLHIV in detail. Remember that these components are inter-related.

30.2 Symptom management, including pain management

In palliative care for PLHIV, the aim is to manage symptoms arising from:

- AIDS itself and associated opportunistic infections, like headaches and other pains, nausea, vomiting, diarrhoea, fever, weight loss, anxiety, fatigue, depression, skin and mouth problems, neurological disorders, etc.
- the side-effects of antiretroviral drugs to treat HIV disease and chemoprophylactic drugs to treat opportunistic infections.

30.2.1 Management of pain in PLHIV

Pain is one of the most common symptoms in HIV/AIDS patients with advancing disease. If your patients complain of pain, they should be assessed carefully (as described below); severe cases should receive urgent referral for specialist consultation and treatment.

How to assess pain

First, ask the patient ‘Where is the pain?’ and ‘What makes it better or worse?’ ‘What type of pain is it, and what medication (if any) is being taken for the pain?’ Note that pain could result from severe opportunistic infections, and this may need urgent referral to a health centre or hospital.

Secondly, determine the type of pain. Is it a familiar pain (such as bone or mouth pain), or a special and unusual pain (such as shooting nerve pain or muscle spasms)?

Thirdly, check if there is a psychological or spiritual component to the pain. Does it feel worse when the patient is depressed or anxious? Does it feel better when the person is doing something interesting that takes their attention away from the pain?

Fourthly, grade the pain from 0 to 5 with the faces chart (especially when working with children), as illustrated in Figure 30.1, or using your hand with different numbers of fingers raised (no fingers being no pain, and five fingers the worst possible pain).

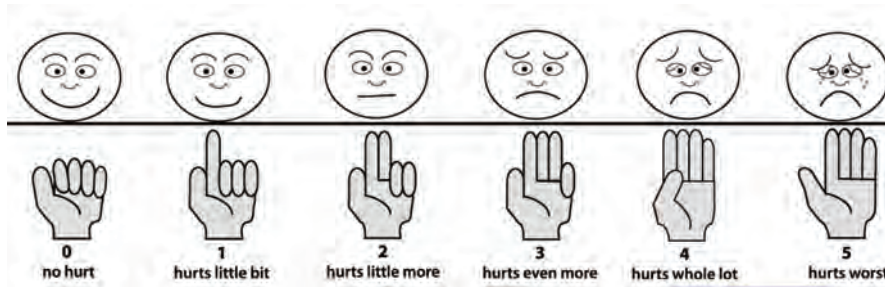


Figure 30.1 Pain grading scales. (Courtesy of the FMOH, Ethiopia, *Palliative Care Module, Ethiopian National Comprehensive HIV Care/Antiretroviral Therapy Training Package*)

How to manage pain at community level

Manage the pain with paracetamol if it is at grade 1 or grade 2. Paracetamol is the anti-pain medication that you are allowed to give at community level. Refer patients with pain at grades 3, 4 and 5 to the nearest health facility.

- Why do you think you should refer patients with grade 3 pain or above?
- You should refer such patients quickly because the pain may be indicating severe disease, which needs better diagnosis and management with anti-pain drugs that can only be given by a doctor.

Pain can also be managed without the use of modern medication. Indeed, spiritual and emotional support and counselling should always accompany pain medication. This is because pain can be harder to bear when there is guilt, fear of dying, loneliness, anxiety or depression. Likewise, answering questions and providing information on HIV/AIDS health-related issues is important to relieve fear and anxiety, which in turn makes pain more bearable. The other ways to relieve pain are deep breathing and relaxation techniques (unless the patient has severe mental health problems); or distracting the patient's attention using music, conversation, or imagining a calm scene.

- In your catchment area, how do people treat pain without using modern medication? Give two examples of local pain treatments which are *not* effective in relieving chronic pain.
- Local pain remedies vary in different parts of the country, but you may have thought of tying the painful area with a scarf or other cloth to treat headache or back pain; or burning the skin of the painful area using very hot wooden or metal sticks, sometimes to treat headaches, but mainly for pains in the hands and feet. These treatments are not effective and can make the pain worse. Burning the skin creates a wound that could become infected.



Traditional medication for pain relief may interfere with ARV drugs. Refer patients to the nearest health centre for advice on this topic.

30.2.2 How to manage other common symptoms of HIV/AIDS

Study Session 22 has already described how to manage the adverse side-effects of drugs used to treat HIV disease. In this section we summarise the advice you should give to help someone manage the symptoms of advanced HIV disease.



Note that persistent vomiting needs medical treatment, and you must refer the patient urgently.

Nausea and vomiting

Advise the sick person to:

- seek locally available foods which he or she likes (tastes may change with illness), and which cause less nausea.
- eat small but frequent locally available foods such as roasted potatoes.
- let the patient drink what he/she likes, e.g. water, tea, ginger drink, etc.
- avoid being near the person who is cooking.
- use effective local remedies for nausea.
- seek help from the health facility if vomiting occurs more than once a day, or if dry tongue, or passing little urine, or abdominal pain is present.

Diarrhoea

Advise the sick person to:

- drink fluids frequently in small amounts, preferably oral rehydration solution (ORS). If ORS is not available, give home-made fluids such as rice soup, porridge, weak tea, water (with food), and other soups.
- avoid sweet drinks, milk, coffee, strong tea and alcohol.
- continue eating. For persistent diarrhoea, suggest a supportive diet, like carrot soup, which helps to replace vitamins and minerals, soothes the bowels and stimulates the appetite. Other foods that may help to reduce diarrhoea are rice and potatoes.
- avoid eating raw foods (like bananas and tomatoes), cold foods, high-fibre foods, and foods containing fat. Tell them to avoid milk and cheese, but yogurt is better tolerated.

Refer patients with diarrhoea to a health centre if:

- there is vomiting with fever.
- blood is seen in the stool.
- diarrhoea continues for more than five days and the patient becomes even weaker.
- there is broken skin around the rectal area.

30.3 Psychosocial and spiritual support

Psychosocial support is a fundamental part of palliative care, and includes a range of interventions that enable the person who needs palliative care, and their caregivers and families, to cope with the overwhelming feelings that result from their experiences with long-term disease and the threat of death. Providing psychosocial support may include supporting their **self-esteem** (self-respect or confidence in oneself), helping them to adapt to the illness and its consequences, and helping them to improve their communication with each other and with you, and their social functioning and their relationships.

Spiritual support involves taking into account not only the patient's religious or faith beliefs and practices, but also their understanding of the purpose and meaning of life.

30.3.1 Support for the patient

PLHIV often feel unhappy, and even depressed at times. They will be calmer if they accept the illness as much as they are able to, and realise that it is possible to live a healthy life and be productive if they take their medication correctly. You can help by introducing them to a nearby PLHIV association, or a community-based organisation which provides support to PLHIV (if available).

Psychosocial support for PLHIV should also address practical aspects of care, such as finances, housing, and assistance with daily living. Regarding spiritual support, you may want to discuss spiritual beliefs, cultural issues and personal values. The following tips will help you to provide spiritual support to patients:

- Be prepared to discuss spiritual matters if patients would like to. Some useful questions you may use are:
 - What is important to you in life?
 - What helps you through difficult times?
 - Do you have a faith that helps you make sense of life?
 - Do you ever pray?
- Learn to listen with empathy.
- Understand reactions to the losses in their life (the different stages of grief).
- Be prepared to 'absorb' some reactions, for example, patients may express anger towards you, but this is only because they are afraid and anxious.
- Connect the patient's needs with a spiritual counsellor or religious leader, according to their religion and wishes.
- Do not impose your own views. If you share religious beliefs, praying together may be appropriate.
- For some patients, it is better to talk about the meaning of their life, rather than directly about spirituality or religion.

30.3.2 Support for the caregivers

Caregivers in the family frequently feel anxious or depressed, or have problems with sleeping, as the person they care for comes closer to the end of life. You can encourage caregivers to share their feelings with you by asking questions about their perception of the patient's illness and its impact on their life. Mild **psychological distress** (mental suffering caused by grief, anxiety or unhappiness) is usually relieved by emotional support from health workers who have effective communication skills. By explaining the patient's physical and psychological symptoms, and challenging false beliefs about death and dying, you can bring a reasonable hope to caregivers and to the patient, and reduce the sense of isolation they may feel. Empower the family to provide care by explaining that as human beings, we know how to care for each other. Reassure them that they already have much of the capacity needed, and that you can give them more information and support their skills.

30.4 Home-based care

Home-based care is the care of people affected by HIV/AIDS, cancer, and other chronic diseases, that is based in the patient's home. In the case of HIV/AIDS, the need for home-based care largely corresponds to late HIV disease (stage 3) or AIDS (stage 4). Home-based care involves the community (depending on available resources) and healthcare workers in supporting the care provided by the family at home. Patients receiving home-based care may have been treated earlier in hospital, and may continue to receive some care from the health facility nearest to their home. Some of the preventative home-based care services for PLHIV are described below.

30.4.1 Support for oral hygiene

For patients able to self-care, advise them that twice a day they should use a soft toothbrush (or a piece of soft stick or clean cloth if a toothbrush cannot be obtained; see Figure 30.2) to gently brush their teeth, tongue, palate and gums to remove debris. Use toothpaste if affordable and available. Rinse the mouth with diluted salt water after eating and at bedtime (usually three to four times daily). For patients who cannot do this for themselves, tell the caregivers to provide oral care to the patient two to three times every day, as described above.

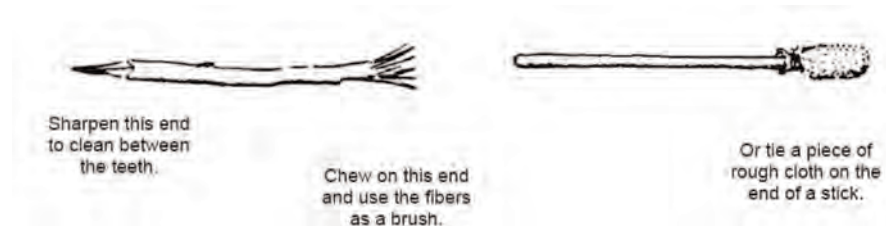


Figure 30.2 A soft toothbrush and a piece of wooden stick used to clean the teeth. Oral hygiene can prevent mouth infections in PLHIV.

30.4.2 Preventing bedsores in bedridden patients

To prevent bedsores, you should do the following:

- Help the patient to sit out in a chair from time to time if possible. (We will show you how to do this later.)
- Lift the patient up off the bed slowly — do not drag the person's body as it breaks the skin. Ask a family member to help you — two people can do this much more easily, with less discomfort for the patient. (Later we will show you how to do it if you are on your own.)
- Encourage the patient to move around in the bed as much as they are able to. If they cannot move, change their position on the bed frequently, if possible every one or two hours (Figure 30.3). Use pillows or cushions beside the patient to help them keep the new position.
- Keep the bed sheets clean and dry. Put extra soft material, such as a soft cotton towel, under the patient.
- Look for damaged skin (change of colour) on the patient's back, shoulders and hips every day. Massage the back and hips, elbows, heels and ankles every day with petroleum jelly if available, or any other soothing cream or oil. This helps to prevent 'bed sores' from developing.

A **bedridden patient** is one who is too sick to get out of bed at all, or only for short periods.



Figure 30.3 A caregiver and Health Extension Practitioner changing the body position of a bedridden patient.

30.4.3 Moving a bedridden patient

You or the patient's caregiver need to know how to move a bedridden patient if you are on your own. If the patient is unconscious or unable to cooperate, it is better to have two people to help with moving the patient, but this is not always possible. When transferring the patient from the bed to a chair, use the procedures shown in Figure 30.4. This will help to protect you and the patient from strain and injury.

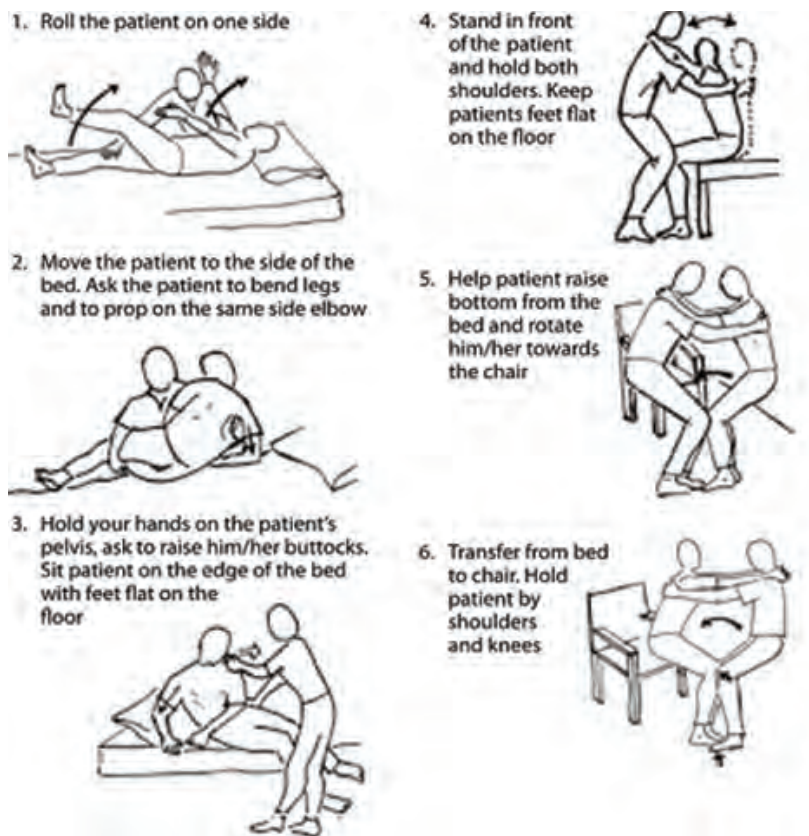


Figure 30.4 How to transfer a bedridden patient from the bed to a chair in six stages. (Source: As Figure 30.1)

30.4.4 Hygienic care of the body

Remember to provide privacy for the patient during bathing, which is necessary every day to give hygienic care of the body and skin. Show the caregivers how to follow these procedures:

- Dry the skin gently after washing with a soft clean towel or cloth.
- Oil the skin with cream or body oil if available; if not, you can use a vegetable oil.
- Use plastic sheets under the bed sheets to keep the bed dry, if the patient cannot control urine or faeces.
- If there is leakage of urine or stools, protect the patient's skin with petroleum jelly applied around the genital area, anus, back, hips, ankles and elbows.
- Support the sick person over the container when passing urine or stools to avoid injury and wetting the bed.

30.4.5 Preventing stiff joints and muscles

Figures 30.5 to 30.8 illustrate some of the ways you and the caregivers can help a patient to exercise their joints and muscles to prevent stiffness and contraction due to pain, or lying still for a long time.



Figure 30.5 Exercise the elbow by gently bringing the hand as close as possible to the shoulder.



Figure 30.6 Exercise the wrist by moving it around in circles.



Figure 30.7 Exercise the shoulder by lifting the arm up and bringing it behind the head and gently laying it back as far as possible.



Figure 30.8 Exercise the knee by lifting the thigh up and bringing it close to the chest as far as possible.

30.5 End-of-life care

The end of life is the **terminal phase** in the advanced stages of disease when the patient is expected to die in a matter of days. **End-of-life care** aims to recognise that life and death are normal. It neither hastens nor postpones death, it achieves the best quality of life in the time remaining, and provides good control of pain and other symptoms. It helps the dying patient and loved ones to adjust to the many losses they face, and ensures a dignified death with minimal distress. It also provides support and help for the family to cope with bereavement.

A major challenge you will face is to decide when the patient has reached the terminal phase of the illness and needs end-of-life care. A **terminal illness** is one for which no cure is available, and from which the patient is expected to die relatively soon.

Patients with terminal illness are usually treated with palliative care at home rather than in hospital.

Once a patient has been declared terminally ill, management of some conditions will change, and some medications may stop altogether. You may need to consult your supervisor or a nurse to help you decide when an HIV/AIDS patient is terminally ill.

30.5.1 Preparing for death

Encourage communication within the family. Discuss worrying issues and offer practical support in resolving concerns such as making a will, custody of children, family support, future school fees, old quarrels, or funeral costs.

Tell the patient that he/she is loved and will be remembered. Talk about death if the person wishes to, but keep in mind cultural taboos if you are not in a close relationship with the patient. Help the patient accept his/her own death. Ask him/her how they wish to die, for example with pastoral or religious leaders present, or with family only.

Make sure that what the patient wants is always respected.

Respond sensitively to the patient's grief reaction to realising they are dying. This may include denial, disbelief, confusion, shock, sadness, anger, humiliation, despair, guilt, and finally acceptance. Make sure the patient gets help with feelings of guilt or regret. Keep communication open — if the dying person does not want to talk, ask 'Would you like to talk now or later?'

30.5.2 A checklist for end-of-life care

Here are some points for you to bear in mind when you are caring for a person at the end of his/her life.

Presence

- Be present with compassion.
- Visit regularly.
- Move slowly and quietly.

Caring and comfort

- Moisten the lips, mouth and eyes. Offer sips of liquid to drink.
- Keep the patient clean and dry, and prepare for leakage from the bowel (faeces) and bladder (urine).
- Provide physical contact by light touch. Hold the person's hand, listen and converse if they want to talk.
- Reassure the patient that eating less is alright; don't make them eat if they don't want to.

Medication and symptom control

- Only give essential medication — anti-diarrhoeal remedies, and paracetamol to treat pain or fever. Make sure pain is controlled.
- Help the patient control other symptoms by ensuring that medical treatment prescribed by the doctor is taken at the right times and in the right dosages.
- Skin care requires the patient to be turned every two hours, or more frequently, as already described in Section 30.4.2.

30.5.3 Recognising signs of death

When a patient is very close to death, watch for these signs:

- Decreased social interaction — the person sleeps more, they may act or speak with confusion when awake, and they may slip into a coma (become unconscious).
- Decreased food and fluid intake — the person no longer feels hunger or thirst.
- Decreased urine and bowel movements, or incontinence.
- Respiratory changes — irregular breathing or ‘death rattle’ (a rough gurgling noise that sometimes comes from the throat when a person is close to death, caused by breath passing through mucus).
- Circulatory changes — the hands and feet may feel cold and appear greyish or purple as the heart slows and can no longer pump blood to these extremities. You may notice a decreased heart rate and blood pressure.

When the patient dies, you can confirm death by checking that:

- breathing stops completely.
- heartbeat and pulse stop completely.
- the person is totally unresponsive to shaking or shouting.
- the eyes are fixed in one direction, with eyelids open or closed.
- the skin changes tone and becomes pale.

30.5.4 Bereavement counselling

Provide bereavement counselling for the patient before death (as described above) and for the family after death of their beloved. They may also feel denial, disbelief, confusion, shock, sadness, anger, humiliation, despair and guilt about the dead person and the care they received before death. Help the family accept the death of the loved one. Share the sorrow — encourage them to talk and share their good memories. Do not offer false comfort — offer simple expressions and take time to listen.

Remember to offer practical help. For example, try to see if friends or neighbours can help with cooking, cleaning, running errands, child care, etc. for a few days after the death. This can help in the midst of grieving. Ask the family if they can afford the funeral costs and future school fees, and help in finding a solution if possible.

Encourage patience — it can take a long time to recover from a major loss. Say that they will never stop missing their loved one, but the pain will ease and allow them to go on with life.

Summary of Study Session 30

In Study Session 30, you have learned that:

- 1 Palliative care is an essential part of comprehensive care and support for PLHIV. It is care given to chronically ill patients to improve their quality of life and that of their families by preventing and relieving suffering.
- 2 The four components of palliative care for PLHIV in Ethiopia are symptom management, including pain management, psychosocial and spiritual support, home-based care and end-of-life care.
- 3 Pain is one of the most common symptoms in HIV/AIDS. If patients complain of pain, they should be assessed carefully, and in severe cases urgent referral and consultation is needed.
- 4 Common but mild symptoms of HIV/AIDS, like nausea, vomiting and diarrhoea, can be managed at home by giving advice on diet, fluids, hygiene, skin care and other home-based interventions.
- 5 Chronically ill patients who are bedridden need oral, skin and body care, with frequent repositioning to prevent development of bed sores. Simple exercises/movements can ease stiffness of joints and muscles.
- 6 Psychosocial support and bereavement counselling is an essential part of palliative and end-of-life care. It includes communication, caring and practical skills that enable individuals and families to cope with the often overwhelming feelings that result from their experiences with long-term disease and death.

Self-Assessment Questions (SAQs) for Study Session 30

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the questions below. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 30.1 (tests Learning Outcomes 30.1 and 30.2)

Which of the following statements regarding palliative care for PLHIV is *false*? In each case, explain what is incorrect.

- A Palliative care is only given to patients who are near to death.
- B Palliative care is provided only to PLHIV because HIV/AIDS is not curable.
- C Palliative care is an essential part of care for patients with cancers.
- D Patients with chronic illnesses like diabetes or stroke may need palliative care.
- E Palliative care includes prevention and relief of suffering, pain and other physical problems, as well as attention to psychosocial and spiritual issues.

SAQ 30.2 (tests Learning Outcome 30.3)

Is the following statement *true* or *false*? Explain your reasoning.

‘Relieving pain is not a routine part of palliative care, since it is not treating the chronic disease that caused the pain.’

SAQ 30.3 (tests Learning Outcomes 30.3, 30.4 and 30.5)

Read Case Study 30.1, and then answer the questions that follow it.

Case Study 30.1 Ato Aytenfisu’s story

Ato Aytenfisu is a 45-year-old man living with HIV who started antiretroviral medication two weeks ago. During your home visit you find that he is feeling ill. He has had a mild headache and watery diarrhoea two to three times per day for the past four days. He looks very unhappy. He has no vomiting, fever, neck stiffness or other symptoms.

- (a) What should you do first for Ato Aytenfisu?
- (b) What should you do regarding the headache?
- (c) What should you give him for the diarrhoea? What advice should you give him about managing the diarrhoea?
- (d) How can you help him relieve his unhappiness?

SAQ 30.4 (tests Learning Outcome 30.6)

Which of the following is *not* part of the preventative home-based care you will give to bedridden patients with AIDS? Explain why it is not included.

- A Frequent repositioning of a bedridden patient and skin care to prevent bed sores
- B Providing oral care
- C Providing hygienic care of the body
- D Exercising the joints to prevent muscle stiffness and contraction
- E Treating infection of the lungs.

SAQ 30.5 (tests Learning Outcome 30.7)

Is the following statement *true* or *false*? Explain your reasoning.

‘Since terminally ill patients will die soon, it is a waste of a health worker’s time to provide them with end-of-life care.’

Study Session 31 Prevention and Control of Sexually Transmitted Infections

Introduction

In this study session you will be learning about prevention and control of **sexually transmitted infections** (STIs) or in other words, infectious diseases that are transmitted primarily (although in some cases not exclusively) by the sexual route. You will also be studying about the relationship between HIV and other STIs. This session also describes **syndromic management of STIs**, that is a diagnosis based on the identification of the symptoms the patient reports and the signs the health care provider observes. Syndromic management of STIs is the standard approach for diagnosis and management of these communicable diseases recommended by the WHO and adapted by the FMOH for use at both health centre and hospital level. After studying this study session you should be able recognise patients who have STIs in the community. This will help you to refer patients with STIs to the nearest health facility. Treatment and care for STIs includes HIV testing and counselling, prevention and treatment of other STIs, and couple counselling and treatment. Note that at the moment you are not expected to treat or manage patients with STIs at the health post or in the community. You are expected to recognise cases of STIs in your community or at the health post and refer them to the health centre for further care.

Learning Outcomes for Study Session 31

When you have studied this session, you should be able to:

- 31.1 Define and use correctly all of the key words printed in **bold**. (SAQ 31.1)
- 31.2 Explain the routes of transmission and risk factors for the common sexually transmitted infections (STIs). (SAQ 31.1)
- 31.3 Describe the signs and symptoms of common STIs. (SAQ 31.2)
- 31.4 Briefly describe the importance of syndromic management of STIs. (SAQs 31.3 and 31.2)
- 31.5 Explain the importance of STIs in the prevention of HIV transmission. (SAQ 31.4)
- 31.6 Describe how you would identify and offer provider-initiated testing and counselling for people with STIs and refer them to the nearest health centre for treatment. (SAQ 31.2)

31.1 Introduction to sexually transmitted infections (STIs)

Sexually transmitted infections (STIs) is a term used to describe more than 20 different infections that are transmitted mainly through sexual contact via the exchange of semen, vaginal fluid, blood and other fluids; or by direct contact with the affected body areas of people with STIs. Sexually transmitted infections are also called sexually transmitted diseases (STDs) or venereal diseases. In this study session, we will be talking about STIs in general, with particular emphasis on their impact on individual health. You will also

appreciate the implications of preventing STIs in reducing HIV transmission, and the complications resulting from untreated STIs.

STIs are very common. The most widely known are gonorrhoea, chlamydia, syphilis and HIV. STIs can cause serious and permanent complications in infected people who are not treated in a timely and effective way. In people with untreated STIs, the complications and long-term consequences can be devastating. The social and economic burden of STIs can be enormous. Untreated STIs can lead to loss of employment and broken marriages. STIs can place a heavy financial burden on families, communities and health services.

Prevention campaigns in order to reduce the incidence of STIs have a marked impact on the general health of the population. Effective prevention of STIs reduces complications that are life threatening for the infected individual, and decreases economic and psychosocial problems associated with the complications arising from STIs.

Fewer STIs means fewer complications like **pelvic inflammatory disease (PID)**, inflammation of the uterus and fallopian tubes due to bacterial infection or other pathogens), infertility, **ectopic pregnancy** (pregnancy outside of the uterus), etc. as well as decreased rate of HIV transmission during unprotected sexual contacts.

For patients who are HIV-negative, or who have not been tested, the presence of an STI is an important indication to trigger testing (or repeat testing). Because STIs and HIV infection frequently co-exist and are transmitted together, anyone seen for an STI should be offered HIV testing and counselling. So you should refer any patient presenting with STIs for HIV counselling and testing services.

31.2 Transmission and risk factors for STIs

31.2.1 Transmission of STIs

Now you are going to learn about how STIs are transmitted from one person to another person. As the name implies, by far the most common mode of transmission of STIs is sexual transmission. The modes of transmission could be vaginal or anal sex. In Ethiopia, most STIs in relation to sexual transmission are through the vaginal route (though cases of anal transmission are also common). **Heterosexual** (sexual intercourse with an individual of the opposite sex) transmission is the most common mode of transmission of STIs. Another mode of transmission is mother-to-child during pregnancy (e.g. HIV and syphilis), at delivery (e.g. gonorrhoea and chlamydia), and during breastfeeding (e.g. HIV). Rarely STIs can also be transmitted through unsafe use of unsterile needles or injections, or coming in contact with contaminated blood or blood products (e.g. syphilis, HIV and hepatitis).

- From your previous studies, what are the common modes of transmission of HIV in Ethiopia?
- Sexual transmission is by far the most common mode of transmission; next comes transmission of HIV from mothers to children.

The uterus and fallopian tubes form part of the female reproductive system. You have learned about the female reproductive system in Study Session 3 of the *Antenatal Care* Module, Part 1.

31.2.2 Risk factors for STIs

There are a number of factors that increase the risk of transmission of STIs, including biological, behavioural and socio-cultural factors. In this section we will be discussing the major risk factors that are associated with the transmission of STIs. Understanding these factors will help you in identifying the factors that promote STIs and their relation to the most 'at risk' groups of the population affected by STIs. In your daily assessment you will utilise this knowledge to assess patients and give them health education and counselling support in order to prevent STIs.

Biological factors

Biological factors are related to the age, sex and immune status of an individual. Certain age groups of the population are known to have a high prevalence of STIs.

Women in general are at greater risk of HIV transmission than men due to the larger vaginal surface area that comes in contact with the penis during sexual intercourse. In particular, young women between 15 and 24 years old, and women going through the menopause, are at high risk of acquiring STIs. Young women also may not have a comprehensive knowledge of STIs transmission. In addition, the risk of transmission of STIs is high in these groups due to immature or weakened vaginal mucosal lining of young and menopausal women, respectively.

The immune status of an individual also determines the risk of STIs. People with weak immunity have a greater risk of acquiring STIs than individuals who have a healthy immune system.

Behavioural factors

Behavioural factors are associated with actions of individuals towards a certain situation, in this case their sexual behaviour. It is well known that certain risky behaviours expose people to the transmission of STIs. These factors include having more than one sexual partner or having sex with 'casual' partners, for instance sex workers or their clients. One of the main risk behaviours that promotes transmission of STIs is unprotected sexual intercourse, that is sex without using a condom. Proper use of condoms effectively prevents the transmission of STIs; hence you should educate your clients at health post level, or in the community, about the proper use of condoms (Study Session 25). Changing sexual partners frequently is also a behavioural risk factor.

The use of alcohol, stimulants like 'khat' or illegal drugs may negatively affect the proper use of condoms. They usually affect our ability to weigh up risky situations and may result in involvement in unsafe sexual acts.

Socio-cultural factors

These are factors that indirectly affect the ability of individuals to take an independent responsibility for their behavioural actions. For example, factors like gender bias of a community, women's economic dependence on men, and young marriage, affect women indirectly to be exposed to the transmission of STIs more than men. Harmful traditional practices like tattoos and unsterile circumcisions are also associated with contracting of STIs directly from the sharp materials that are used for that purpose.

31.2.3 Epidemiology of STIs in Ethiopia

There is little information on the incidence and prevalence of STIs in Ethiopia. The prevalence of HIV has been mentioned in Study Session 20 and that of syphilis is thought to be about 2.7% (FMOH, 2006). There is no actual information or estimate on other STIs in Ethiopia. This is because reports often under-represent the true number of people infected with STIs. As you can imagine the reasons are many, but a major contributing factor is that people with STIs who have minor or no symptoms do not seek treatment at public health facilities. They usually tend to take self-prescribed drugs or go to private pharmacies to buy treatment without consulting trained health workers.

Another contributing factor to the lack of information on STIs is also irregular access to treatment; that is health facilities offering treatment for STIs may be too far away from clients who present with STIs. Stigma associated with attending public STI clinics is also a factor in that clients tend to shy away from being seen at STI clinics. As noted above, many patients may then choose to go to alternative providers like pharmacies and traditional healers that do not report formally to the Federal Ministry of Health.

The formal public health facilities also do not report all STI cases properly and comprehensively for data to be compiled nationally. Last but not least some patients also do not attend formal STI clinics due to economic factors and they would rather go to traditional healers that provide services for free or with cheap costs.

31.3 Presentation of common STIs

In this section you will study the clinical presentations of common STIs caused by bacteria, viruses or protozoa. The clinical signs and symptoms of common STIs described below will help you to reasonably identify STIs. Now let us describe them.

31.3.1 STIs caused by bacteria

Gonorrhoea

Gonorrhoea is one of the most common STIs and is caused by bacteria called *Neisseria gonorrhoeae*. Men with gonorrhoea may present with a burning sensation while urinating and a discharge from the urethra (Figure 31.1), whereas women may present with vaginal discharge and lower abdominal pain. A **discharge** is a yellowish or whitish substance released from the opening of the reproductive tract in both men and women. Most men infected with gonorrhoea have symptoms, but in women gonorrhoea is commonly asymptomatic (i.e. they do not have any symptoms). Women who have gonorrhoea (with or without symptoms) can transmit the bacteria to infants during birth. In newborn babies, gonorrhoea usually presents with eye disease (termed neonatal conjunctivitis) and can lead to blindness.

- What can you see in Figure 31.1? What could be the possible cause?
- A whitish discharge from the opening of the penis can be seen; the likely clinical diagnosis is gonorrhoea.

All the photos in Figures 31.1 to 31.5 are taken from the Ethiopian Adaptation, 2007, of the WHO/IMAI Guidelines acknowledged at the front of this Module.



Figure 31.1 Gonorrhoeal urethral discharge.

Chlamydia

Chlamydia is also one of the most common (if not the commonest) STIs, and is caused by bacteria called *Chlamydia trachomatis*. In men it usually presents with discharge from the urethra and in women it presents with cervicitis (inflammation of the neck of the womb or cervix) and lower abdominal pain. The discharge is generally less ‘sticky’ and lighter in colour than for gonorrhoea. Chlamydia, like gonorrhoea, can also be asymptomatic, but in this case in both men and women. In addition, pregnant women with chlamydia can also transmit the STI to their babies during childbirth and cause neonatal conjunctivitis.

Syphilis

Syphilis is caused by bacteria called *Treponema pallidum*. Syphilis has four stages: primary, secondary, latent and tertiary syphilis, with different signs and presentations according to the time passed from the initial infection. The different stages can be described as follows:

- **Primary syphilis** is characterised by a painless ulcer (known as chancre) in the genital or anal area resulting from direct sexual contact with a person with syphilis. The chancre has obvious edges, and the lymph nodes in the groin may also appear swollen. Primary syphilis takes 10 to 90 days to develop from initial exposure to the bacterium.
- Describe what you see in Figure 31.2. What could be the most likely diagnosis?
- A solitary ulcer with clear edges on the penis. The possible diagnosis is primary syphilis.
- **Secondary syphilis** is characterised by a non-itchy rash over the trunk and the extremities, arising 1 to 6 months after primary syphilis.
- **Latent syphilis** is the stage between secondary and tertiary syphilis in which an infected patient shows few or no symptoms.
- **Tertiary syphilis** is a rare phenomenon characterised mainly by soft tumour-like balls of inflammation under the skin, or on bones, that may appear anywhere in the body. Some individuals with tertiary syphilis may show serious neurological (nervous system) or cardiovascular problems (heart and blood vessels). Tertiary syphilis takes 1 to 10 years to develop, but it can take up to 50 years.



Figure 3.2 Primary syphilitic chancre.

Chancroid

Chancroid is caused by bacteria termed *Haemophilus ducreyi* and in the majority of cases it presents with painful ulcers and sores in the genital area (particularly in the foreskin of the penis). Many patients also develop a bubo, an enlargement of the lymph nodes on one side of the groin that exudes liquid. By contrast, most infected women do not show any symptoms.

Granuloma inguinale

Granuloma inguinale is caused by an infection with bacteria called *Calymmatobacterium granulomatis*. It presents initially with small lesions in areas surrounding the anus and/or genitals, which are difficult to differentiate from chancroid, but then turn into ulcerative lesions and lead to painless raised solid bumps in both sides of the groin area (Figure 31.3).



Figure 31.3 Raised solid bumps on both sides of the groin caused by granuloma inguinale.

31.3.2 STIs caused by viruses

HIV, the virus that causes AIDS, has been dealt with extensively in previous study sessions. Here we will focus on other STIs caused by viruses.

Herpes genitalis

Herpes genitalis is the most common STI caused by a viral infection. The pathogen responsible for genital herpes is *Herpes simplex virus type 2 (HSV-2)*. Genital herpes usually presents with blisters that, when they break, lead to painful sores and ulcers in the outer surface of the genitals and in areas surrounding the anus. Following initial infection, it may take around 2–4 weeks for the lesions to heal, but symptoms usually recur weeks or months after the first outbreak. Although genital herpes may affect anyone, if it involves an extensive area of the genitals and persists for longer than a month as seen in Figure 31.4, you should suspect an HIV-related opportunistic infection. Hence you should offer or refer these patients for provider-initiated HIV testing and counselling if their HIV status is unknown.



Figure 31.4 Extensive ulcers and sores caused by Herpes genitalis.

Cancers (including cervical cancer) are covered in Study Session 3 of the *Non-Communicable Diseases, Emergency Care and Mental Health Module*.

Genital warts

Genital warts is a viral STI caused by *human papilloma virus (HPV)* and commonly presents with small fleshy growths of skin on the genital area or around the anus (Figure 31.5). HPV has also been shown to be the causative agent of cervical cancer in women. However, the types of HPV that cause genital warts are not the same as the types that can cause cancer, which is usually asymptomatic for years.



Figure 31.5 Small fleshy growths on the penis caused by HPV.

31.3.3 STI caused by a protozoan

Trichomoniasis is a STI caused by a protozoan that is usually found in vaginal and urethral tissues. It presents in women with profuse and frothy vaginal discharge. Although this condition is most often treated in women, men can also be infected but often show no symptoms.

31.3.4 STI caused by a fungus

Vaginal candidiasis is a vaginal infection caused by a fungus termed *Candida albicans*. The main symptoms of candidiasis in women are a curd-like vaginal discharge, vaginal itching and sometimes a burning sensation.

- From Study Session 21, which opportunistic infection in PLHIV is caused by the same organism that causes vaginal candidiasis?
- Oral thrush in HIV-positive people is also caused by *Candida albicans*.

31.4 Syndromic management of STIs

A **syndrome** is a group of symptoms that patients describe, combined with classic signs that health workers observe during clinical assessment. A number of different organisms that cause STIs give rise to a limited number of syndromes.

Now that you have studied about how common STIs present, in this section you will learn about how to group similar STI together and manage them. You should identify and classify patients into syndromes for effective management of their condition.

31.4.1 Classification of patients into syndromes

Using the syndromic approach, health workers at health centres and hospitals can identify one of these syndromes and treat accordingly. The objective of introducing you to **syndromic management** of STIs is to help you identify and refer cases to the nearest health centre. At this moment you are not expected to treat STI cases either at the health post or in the community. In the health centre the patient will receive all necessary services including testing for HIV. Table 31.1 shows a modified summary version of syndromic management of the common STIs described in Section 31.3 and others. For detailed reading you can refer to the Ethiopian National Syndromic Management of STIs Guideline.

Table 31.1 Main sexually transmitted infection syndromes.

Syndrome	Signs and symptoms	Most common causes	Management
Vaginal discharge	Unusual vaginal discharge, vaginal itching, dysuria (pain on urination and pain during sexual intercourse)	Trichomoniasis Bacterial vaginosis	Refer to health centre
		Candidiasis	Refer to health centre. Consider HIV-related illness if it is recurrent
		Gonorrhoea Chlamydia	Refer to health centre Counsel and refer for HIV and syphilis testing Include partner tracing
Urethral discharge	Urethral discharge, dysuria, frequent urination	Gonorrhoea Chlamydia	Refer to health centre Offer HIV testing and counselling and refer for syphilis testing Consider HIV-related illness Consider partner tracing
Genital ulcer	Genital sore	Syphilis, Chancroid	Refer to health centre Promote and provide condoms Consider HIV-related illness; offer HIV testing and counselling Educate on STIs, HIV and risk reduction
		Genital herpes	Refer to health centre
Lower abdominal pain	Vaginal discharge, fever, lower abdominal pain and tenderness	Gonorrhoea Chlamydia,	Refer to health centre. Consider HIV-related illness Consider partner tracing
Scrotal swelling	Pain and swelling of the scrotum	Gonorrhoea Chlamydia	Refer to health centre. Consider HIV-related illness Consider partner tracing
Inguinal bubo	Painful enlarged lymph nodes on the groin	Lymphogranuloma venereum (LGV) Chancroid	Refer to health centre Consider HIV-related illness; offer HIV testing and counselling Educate on STIs, HIV and risk reduction
Neonatal conjunctivitis	Swollen eyelids, eye discharge in newborns and infants	Gonorrhoea Chlamydia	Refer to the nearest health centre for management

31.4.2 Treatment and management of STI syndromes

The aim of syndromic management is to identify the seven syndromes listed in Table 31.1 and manage them accordingly. While clinical diagnosis is based on identifying just one specific causative agent, syndromic diagnosis leads to immediate treatment for all of the most important *possible* causative agents. This is important because mixed infections occur frequently in STIs. Besides, syndromic management of STIs can effectively treat cases in settings with limited laboratory capacity like health posts and health centres. This means that, if necessary drugs are available and affordable, syndromic treatment can quickly render the patient non-infectious.

Therefore the key features of **syndromic case management of STIs** are first that it is problem-oriented, i.e. it responds to the patient's symptoms; second, it is efficient in identifying the causes of STIs; and third, it does not miss multiple infections caused by different pathogens.

Syndromic management also makes treatment and control services for STIs more accessible to patients as it can be implemented at health centre level. For example, syndromic management offers a good opportunity to provide health education and HIV testing and counselling during any encounter with STI cases.

In managing STI cases using syndromic management, the health worker is guided through logical steps of clinical decision-making. The following four steps are to be followed:

- 1 Assessing patients for symptoms, signs and risk factors.
 - 2 Syndromic diagnosis and treatment.
 - 3 Education and counselling on HIV testing and safer sex, including condom use, promotion and provision.
 - 4 Management of sexual partners, in your case tracing sexual partners.
- A patient complains of a discharge from the penis. Upon examination, you notice a discharge from the urethra. What syndrome does the sign and symptoms suggest? What action should be taken, and why?
 - Urethral discharge syndrome is suggested. It is commonly caused by gonorrhoea and/or chlamydial infection. Not only can these cause serious complications, but also they can facilitate the transmission and acquisition of HIV. It is therefore essential that we treat the patient for both.
 - A young woman complains of a sore on her vulva. Upon examination you notice an ulcer on the outer labia. What syndrome does the sign and symptoms signify? What are the possible causes?
 - This indicates the syndrome of genital ulcer. There are two main bacterial causes of genital ulcer: chancroid and syphilis.

31.5 Common complications of STIs

In this section we will just briefly describe the common complications of STIs. You have to note that complications of STIs have huge health, social and economic implications. Therefore your active identification and referral of STIs cases in the community greatly reduces the burden associated with them. Table 31.2 summarises the common complications of STIs with their respective causes.

Table 31.2 Common complications resulting from STIs.

STI infection	Complication
gonococcal (gonorrhoea) and chlamydia infection	<ul style="list-style-type: none"> • Infection of the testis in men that may lead to infertility • Ectopic pregnancy (pregnancy outside of the uterus) due to damage to fallopian tubes in women • Pelvic and generalised peritonitis • Infertility in women
gonococcal infection (gonorrhoea)	Conjunctivitis and blindness in infants
human papilloma virus	Genital or cervical cancer
chlamydia, gonorrhoea, herpes virus and trichomoniasis bacteria	Increased transmission of HIV from genital inflammations due to the cuts, tears, abrasions that would expose the genital mucosa to HIV.

31.6 STIs and HIV

Remember that you have learned that HIV is sexually transmitted in Study Session 20. HIV infection is therefore a STI but due to its high priority as a general health concern it has been dealt with separately in this module. In this section you will learn about the relationship between HIV and other STIs. It is important that you remember that HIV is transmitted in the same ways as any other STIs. There are strong links between having an STI and becoming HIV-positive. STIs increase the risk of HIV transmission and HIV infection may make people more susceptible to other STIs and even make other STIs more difficult to treat. These observations make it even more urgent to prevent and control STIs.

31.6.1 The link between STIs and HIV/AIDS

Certain STIs facilitate the spread of HIV. The following three points generally describe the relationship between HIV and other STIs:

- Certain STIs facilitate the transmission of HIV through the small cuts and inflammations they cause around the genitalia.
- The presence of HIV can make people more susceptible to the transmission of STIs. This is because HIV weakens the immunity that can protect us from other infections like STIs.
- The presence of HIV increases the severity of some STIs and makes them more difficult to treat than in HIV-negative individuals. This is also related to the poor immunity of PLHIV.

31.6.2 Which STIs facilitate the transmission of HIV?

A person with open sores in the genital area is much more likely both to contract and to transmit HIV. Chancroid and syphilis are the main bacterial causes of sores: if they are correctly diagnosed and treated, these routes of HIV transmission can be reduced. Genital herpes also facilitates HIV transmission. Genital herpes causes recurrent genital ulcers. An ulcer in the genital area provides an open door, through which HIV can easily pass. Chlamydia, gonorrhoea and trichomoniasis can also facilitate the transmission of HIV although they do not cause sores. This may be due to the fact that

genital inflammation associated with these STIs can cause microscopic cuts in genital tissues, creating potential sites where HIV can enter the body.

31.6.3 HIV increases the risk of infection with other STIs

It is also true that people infected with HIV are more vulnerable to getting multiple infections. This is because changes in their body's immunity make them more vulnerable to infection by pathogens in general.

31.6.4 Key issues regarding STIs and HIV infection

You need to keep in mind the following essential points about the relationship between HIV and STIs. Firstly, an obvious point in common between STIs and HIV is behavioural. For example, unprotected sexual behaviour exposes people to both HIV and other STIs as you learned in Section 31.2.1 and elsewhere in this Module. Equally, the consistent use of condoms can prevent both kinds of infection. So, you need to educate and counsel your clients about the proper and consistent use of condoms to reduce the risk of transmission of both HIV and other STIs.

Secondly, STI control is also important for preventing the spread of HIV from PLHIV, which you learned in Study Session 29 on positive living. PLHIV are more likely to transmit HIV to others if they also have another STI. PLHIV should thus be taught how to recognise STI symptoms and be encouraged to seek care promptly if they think they may have an infection.

Note that all STI cases that you identify at your health post and in your community have to be referred to the nearest health centre for treatment. In the health centre, STI treatment should be provided along with the following key interventions:

- Educating clients about the transmission, treatment and control of STIs and HIV
 - Providing risk reduction counselling by focusing on the prevention of STIs and HIV
 - Condom promotion and provision for all clients
 - Consideration of HIV-related illness and offering provider-initiated counselling and testing
 - Partner counselling and treatment: management of partners for STIs is an essential component of STIs to stop further recurrent infection among partners
 - Encouragement for HIV testing through provider-initiated counselling
 - Referral of patients and their partners to counselling units and laboratories for HIV and syphilis testing, or to higher health care if they do not respond to syndromic treatment of STIs.
- Why do STIs increase the risk of HIV transmission? List three STIs that can increase the risk of HIV transmission.
- It is due to the fact that genital inflammation associated with STIs can cause small cuts in genital tissues, creating potential sites where HIV can enter the body. Examples of STIs that increase the transmission of HIV are genital herpes, syphilis and gonorrhoea.

Summary of Study Session 31

In Study Session 31, you have learned that:

- 1 STIs are very common communicable diseases in the community.
- 2 The transmission of STIs is greatly affected by demographic, social, biological, economic and behavioural factors.
- 3 Syndromic management of STIs is an important tool to simplify the diagnosis and treatment of STIs. It involves treating all possible causes, even though the specific infectious agents have not been identified.
- 4 HIV testing and counselling is an essential component of STI management.
- 5 The risk of HIV transmission increases when an individual has concurrent and untreated STIs. The presence of HIV increases the severity of some STIs and makes them more difficult to treat.

Self-Assessment Questions (SAQs) for Study Session 31

Now that you have completed this study session, you can assess how well you have achieved its Learning Outcomes by answering the following questions. Write your answers in your Study Diary and discuss them with your Tutor at the next Study Support Meeting. You can check your answers with the Notes on the Self-Assessment Questions at the end of this Module.

SAQ 31.1 (tests Learning Outcomes 31.1 and 31.2)

- (a) List all routes of transmission of STIs and give two examples for each.
- (b) Explain why the risk of transmission of STIs is greater in women than in men.

SAQ 31.2 (tests Learning Outcomes 31.3, 31.4 and 31.6)

A 22-year-old young man came to the health post complaining of a yellow urethral discharge with burning pain on urination. He has had these complaints for the past five days.

- (a) What syndrome does this young man present with?
- (b) What will you do?

SAQ 31.3 (tests Learning Outcome 31.4)

Explain why syndromic management of STIs is a feasible intervention in settings like Ethiopia.

SAQ 31.4 (tests Learning Outcome 31.5)

Explain how the presence of HIV can increase the risk of transmission of other STIs and vice versa.

Notes on the Self-Assessment Questions (SAQs) for Communicable Diseases, Part 3

Study Session 20

SAQ 20.1

- A is true. HIV is more prevalent among young sexually active people than among elderly people.
- B is true. In Ethiopia, more females than males are infected with HIV.
- C is *false*. In most cases, an HIV infection leads to AIDS in 5–10 years, and only if the person does not get antiretroviral therapy.
- D is true. In the early course of HIV infection, people may not know that they are infected with the virus because they feel healthy (have no symptoms and signs).
- E is *false*. HIV mostly infects CD4 lymphocytes, which are a type of *white* blood cell in humans.
- F is *false*. HIV can be transmitted through sexual intercourse with an infected person, but also by transfusion of infected blood, or blood products sharing — or accidental puncture with — sharp objects contaminated by infected blood; and from mother to child.
- G is *false*. HIV *can* be transmitted through oral sex; the virus can get in through microlesions in the mucosa lining in the mouth.
- H is *false*. Unprotected anal sex has a *higher* risk of transmission of HIV than unprotected vaginal sex.
- I is true. Eating and shaking hands with PLHIV *cannot* transmit HIV to uninfected individuals.

SAQ 20.2

- (a) A CD4 lymphocyte is a special type of white blood cell in the immune system, which circulates in the body and ‘helps’ other lymphocytes to function in the immune response, e.g. by making antibodies, or attracting killer cells to destroy virus-infected cells.
- (b) HIV infection of the CD4 lymphocytes determines the natural course of HIV disease progression to AIDS, because the number of CD4 lymphocytes in the body gradually declines over time. They die when they shed millions of new viruses, made in every infected CD4 lymphocyte under instructions from the HIV that originally infected it. As the CD4 lymphocyte numbers fall, they can no longer ‘help’ the immune system to function effectively, and PLHIV begin to develop more and more infections and other health problems. These ultimately progress to the worst stage — AIDS — unless the person gets antiretroviral therapy.
- (c) The progress of HIV infection is faster in children and infants when compared to adults.

SAQ 20.3

These diseases are called *opportunistic infections* because the infectious agents that cause them only have the ‘opportunity’ to multiply in the body because the CD4 lymphocytes are being destroyed by HIV. This leaves the immune system unable to protect the person from infection he or she would otherwise have been able to fight off.

Study Session 21

SAQ 21.1

A is true: As the immune system’s ability to defend against infectious diseases declines in PLHIV, various and more severe opportunistic infections appear.

B is *false*: The appearance of severe opportunistic infections usually occurs when the CD4 count falls to below 450 cells/mm³.

C is true: Patients with opportunistic infections who have not been tested for HIV may be unknowingly HIV-positive. You should counsel and refer the patient for HIV testing. However, you should not classify a patient according to the WHO clinical staging system unless they have tested positive for HIV.

D is true: To classify a patient on the WHO HIV clinical staging system, the patient has to be HIV-positive, and specific diagnoses of opportunistic infections and diseases are required. PLHIV are classified into different stages according to their most severe opportunistic infection.

SAQ 21.2

- (a) The vesicles suggest it may be a *herpes zoster* rash.
- (b) You need to know first whether the patient is HIV-positive or whether she has ever been tested. If the patient doesn’t know her HIV status, advise her on provider-initiated counselling and testing for HIV. In either case, refer the patient to the health centre for treatment.

SAQ 21.3

- (a) He may have HIV wasting syndrome.
- (b) This is classified as WHO HIV clinical stage 4.
- (c) The patient has to be referred to the nearest health centre urgently. He needs urgent treatment for his wasting syndrome as well as antiretroviral therapy for HIV. His children also need to be tested for HIV, as it is possible that the mother died of AIDS-related illnesses.

SAQ 21.4

You need to tell the patient that cotrimoxazole prophylaxis has to be taken continuously unless she is told to stop by her nurse at the health centre. You need to encourage her to take the drugs, and explain that they are helping her to avoid some of the common infections associated with HIV infections such as those that can cause diarrhoea, lung and brain disease. If she needs more help, refer her to the health centre for further support and care.

Study Session 22

SAQ 22.1

The statement is *false*. Even though effective treatments to *control* HIV exist now, there is still *no cure* for HIV/AIDS anywhere in the world, and no vaccine to prevent it.

SAQ 22.2

The answer is (D). All of the statements are *false* because:

- A ART cannot completely eliminate HIV from the human body.
- B The two main goals of ART are to *reduce* the number of viruses in the blood to a very low level (they cannot be eradicated by current treatments), and to *increase* the number of CD4 lymphocytes as much as possible, to boost immunity.
- C Combining only two ARV drugs is less effective than treating HIV with a combination of three ARV drugs from different groups.

SAQ 22.3

One ARV drug can slow down the fast rate of new HIV production in the body, but two drugs acting at different points of the multiplication cycle can slow it further, and three drugs together have an even more powerful effect. This is because ARV drugs from different drug groups attack the virus in different ways. HIV would have to make several different changes in its structure in order to develop resistance to all three drugs.

SAQ 22.4

That is absolutely *wrong*! HIV can still be transmitted from a person on ART to an uninfected sexual partner if they practise unsafe sex. Remember that ART *does not cure* HIV/AIDS.

SAQ 22.5

First, start by reassuring Abebech that nausea and vomiting are common side-effects of most ARV drugs, especially in the early weeks of treatment. Then advise her to take the drugs with food, and drink plenty of fluids. Tell her that if the vomiting worsens, she should go back to the health centre for further assessment and management.

Study Session 23

SAQ 23.1

Poor adherence to ART means not taking drugs as prescribed by the health workers. It results in low levels of drugs in the blood so that multiplication of HIV is not completely suppressed, thereby inducing resistance to drugs. As a result of increased multiplication of the virus, CD4 lymphocytes will be destroyed, which results in various opportunistic infections that damage the patient's health.

SAQ 23.2

One of the barriers of adherence is stigma and discrimination resulting from patients not disclosing their HIV status to people around them. In this patient's case, counselling about disclosure is essential, and you should try to find someone in the family or the community who will support the patient in taking ART. Otherwise, refer the patient to the health centre for further support.

SAQ 23.3

If she is taking two tablets per day, then a total of 28 doses are expected in 14 days. If she misses three tablets, then she has taken 25 out of 28 tablets. Therefore, her adherence level is $25 \times 100/28 = 89\%$. Her adherence is not 100%; therefore you need to counsel her about strict adherence.

SAQ 23.4

In adherence counselling, a partnership between the patient and the healthcare team is vital. It means you should treat your patients as an active agent of their own health. Your relationship with them shouldn't be like a boss who tries to control their behaviour. An equal partnership greatly helps in building trust with your patients.

Study Session 24

SAQ 24.1

The statement is *false* because PITC is HIV testing initiated by the healthworker either in the health facility or at community level.

SAQ 24.2

Statement D is not a benefit of HIV testing because individuals found to be HIV-negative should have a plan to remain HIV-negative. They should plan to avoid sexual behaviour and practices that increase the possibility of being exposed to HIV. As part of this plan, they should practise safe sex.

SAQ 24.3

The answer is C. Mandatory HIV testing is only used when requested by a court in rape or other sexual assault cases.

SAQ 24.4

It is the fifth step. HIV-positive people may not be linked to these services unless you do proper post-test counselling, referral and follow-up of the referral.

SAQ 24.5

The statement is *false* because you have to perform a second test using STAT-PAK before reporting a positive test. A third test using a Uni-gold device may be required if the STAT-PAK test is non-reactive.

Study Session 25

SAQ 25.1

E is incorrect. Harmful traditional practices such as uvulectomy promotes sharing of sharp objects contaminated with blood, and hence facilitates HIV transmission. All the other statements are good ways to prevent HIV transmission.

SAQ 25.2

You should inform them that maintaining faithful relationships is effective for HIV prevention only if both partners are confirmed HIV-negative. You should provide counselling for HIV testing and inform them about the consistent use of safer sex practices, including the correct and regular use of condoms in every sexual encounter for couples who are not tested for HIV.

SAQ 25.3

- (a) You may use the standard steps of community mobilisation, though you can modify or skip some of them depending on the availability of time and resources. You should consider the following:
- Clearly define the problems, including the causes, by gathering information about ways that HIV transmission could increase.
 - Identify and establish community mobilisation groups from the community, *kebele* and *woreda* offices, and local charity organisations if they exist.
 - Design your HIV prevention strategies.
 - Plan the list of activities that you will implement in a certain time period.
 - Identify all of your partners and their roles, including community mobilisers, target groups and other external partners.
 - Implement your activities based on your designed HIV prevention strategies.
 - Monitor and evaluate your implementation results, comparing it to your plan.
- (b) The target groups for your community mobilisation could be:
- sex workers
 - trading women
 - daily labourers
 - clients of sex workers
 - the construction company workers.

- (c) Your potential partners could be:
 - formal and informal *kebele* leaders
 - *woreda* HAPCO
 - local associations of PLHIV support groups
 - HIV/AIDS clubs
 - charity organisations
 - the construction company management team
 - Ethiopian roads authority.
- (d) HIV prevention strategies at community level may include:
 - behavioural change communication using health education and other methods
 - community condom distribution
 - HIV prevention campaigns
 - outreach peer education
 - life skills training for vulnerable women.

Study Session 26

SAQ 26.1

The statement is *false* because universal precautions are standard procedures used when we manage *all* patients. Universal precautions should be implemented and practised by all healthcare providers and caregivers in all settings, in particular in hospitals, health centres, health posts and community settings, as well as the homes of your patients.

SAQ 26.2

A is *false*. The more you handle an injection instrument, the *more likely* you are to suffer a needle-stick injury.

B is true. Place a safety box close to the person giving injections, so used syringes and needles can be disposed of immediately.

C is true. Do not manually remove a used needle from the syringe.

D is true. Do not carry used syringes and needles around with you.

E is true. Avoid recapping the needle after you have given an injection.

F is *false*. Safety boxes should be closed when they are *three-quarters* full; you risk a sharps injury if you try to add needles or other instruments to a full safety box.

SAQ 26.3

The statement is *false*. Remember that although universal precautions will decrease the occurrence of occupational exposure, there are ‘accidents’ and unanticipated exposures, which necessitate PEP for HIV. Even if a health facility has all the PPE, it needs a PEP service for its healthcare workers to prevent HIV transmission through accidental occupational exposure. If PEP is not available in a health facility, or when there is nobody trained in how to manage such cases, referral of the exposed health worker to a nearby health facility which has a PEP service should be arranged as soon as possible.

SAQ 26.4

- (a) No, Ayelech was not following universal precautions, because she didn't use PPE except for wearing gloves. She also recapped the needle with two hands, instead of with one hand.
- (b) Yes, Ayelech is at risk of being infected with HIV. The HIV status of the mother is not known, but the fact that she was sick makes the possibility of HIV infection more likely. It is a high-risk exposure since the needle-stick was a deep injury with a hollow needle, and the mother was sick.
- (c) Immediately after the injury, Ayelech should wash the wound with soap and water and let it bleed freely. There should be antiseptic or disinfectant in the bag she takes to deliveries, and she should flush the wound with it.
- (d) Ayelech should call for help for the mother and newborn, and go to the nearby health centre/hospital as soon as possible to begin PEP immediately. Ayelech should also be tested for HIV. If she is found to be positive, she doesn't need the PEP and should be enrolled for HIV care at the health centre.

SAQ 26.5

- (a) You should first tell Fatuma and her parents about the potential risk of HIV infection from the sexual assault, and explain that Fatuma should get PEP quickly, which you don't have in your health post.
- (b) You should *refer* Fatuma *immediately* to the nearby health centre or hospital for physical examination, PEP, and other necessary investigations and medications. You need to convince Fatuma and her parents that the legal process is a lower priority, as she has to take the PEP within 72 hours of the assault.

Study Session 27**SAQ 27.1**

An HIV-infected pregnant woman can pass the virus on to her unborn baby, either before or during birth, so she should give birth in a health facility. HIV can also be passed on during breastfeeding. Exclusive breastfeeding is therefore not recommended but will be necessary if the AFASS criteria cannot be met. If a woman knows that she is infected with HIV, there are drugs she can take to greatly reduce the chances of her child becoming infected.

SAQ 27.2

Women who are infected with HIV are able to have normal and healthy pregnancies if they use ANC services and PMTCT to improve the chances of having an HIV-negative baby.

- It is important that HIV-infected pregnant women attend antenatal care to decrease the risk of transmitting the virus to their infants during pregnancy.
- Because of the risk of HIV transmission from mother to baby during labour and delivery, HIV-infected mothers should plan to deliver their baby in a healthcare facility, where there are safer delivery practices.
- It is also critical that the baby and mother continue to receive ongoing care in the post-delivery period to reduce the likelihood of transmission through breastfeeding, and to monitor the infant's health, growth and development.

SAQ 27.3

There are a number of reasons why a pregnant woman should be tested for HIV:

- Knowing her HIV status can help her make informed decisions about her current and future pregnancies.
- If she is infected, knowing her status can help her to access other HIV care and treatment services.
- If she is infected, she can learn how to prevent HIV transmission to her baby.
- If she is infected, she can learn how to reduce the risk of infecting other people.
- If she is not infected, it will help her to stay uninfected, and keep her family safe from HIV infection.
- Whether she is infected or not, testing can help to plan for the future.

SAQ 27.4

A and B are true.

C is *false*. A pregnant woman who is taking ARV drugs to treat her own HIV infection does *not* need additional ARV drugs for PMTCT.

D is *false*. Single-dose Nevirapine for PMTCT is given to the *mother* at the onset of labour, as well as to the newborn baby.

Study Session 28

SAQ 28.1

HIV-exposed infants are infants born to HIV-infected mothers. The HIV status of such infants is regarded as unknown until a definitive rapid diagnostic test is carried out at the proper age and conditions (e.g. cessation of breastfeeding for longer than 6 weeks before the test), or until a DNA PCR test (that measures directly viral components in the blood) is performed. If the test confirms the presence of HIV in the infant's blood, we considered the infant to be infected by HIV.

SAQ 28.2

Statements C and D are true.

A is *false*. Compared to adults, HIV infection progresses *more* rapidly in children, due to their immature immune system.

B is *false*. In children under the age of 18 months we do not use a rapid HIV test to confirm HIV infection, because maternally acquired antibodies can give a false positive test result. The definitive diagnosis of HIV at this age is done by using DNA PCR testing.

SAQ 28.3

- (a) Kebede is an HIV-exposed infant, since he was born to an HIV-positive mother. Remember that unless their HIV test result is confirmed, infants born to HIV-positive mothers are called HIV-exposed infants.
- (b) You should teach the grandmother about HIV transmission and prevention. You should stress that HIV might have been transmitted to Kebede from his mother. Hence, you should advise the grandmother to take Kebede to a nearby health centre or hospital for management of the diarrhoea and early infant diagnosis of HIV infection. You should provide her with oral rehydration salts (ORS) and tell her how to give it to the infant until he arrives at the health centre. Remember that she should continue feeding him with locally available foods recommended for children with chronic diarrhoea.
- (c) Screening Kebede's siblings for HIV is also important to provide early care for them if they are HIV-infected.

Study Session 29**SAQ 29.1**

A is *false*: Even if patients are taking ART they can transmit HIV to other people if they engage in unprotected penetrative sex. This is because ARV drugs do not eliminate HIV from the body; they suppress viral replication.

B is *false*: If condoms are correctly used, they can prevent the transmission of HIV by more than 98%. The remaining 2% transmission usually results from incorrect use of condoms by the user.

C is true: The nutritional requirement of sick people is higher than that of healthy people. This is because additional energy is needed to compensate for the increased metabolic needs due to illness.

D is true: Handwashing with soap and water is very important in preventing faeco-oral diseases.

SAQ 29.2

Even when both partners are HIV-positive, they have to practise safer sex alternatives such as the consistent and correct use of condoms. If they are involved in unsafe sex, re-infection may occur and different strains of HIV will be passed from one person to the other. This will result in the replication of new viruses that may have different sensitivity to the drugs currently taken by the patient.

SAQ 29.3

In the early periods after being diagnosed as HIV-positive, patients may have different psychological reactions. In this case, the patient might be suffering from mental illness associated with the life-changing news of being HIV-positive. You should encourage him to take a more positive mental attitude, and reassure him about the effectiveness of ART. Refer him to the health centre for further psychological and/or psychiatric evaluation and management. You also need to encourage him to come to your health post or to the health centre for any issues related to his health and/or psychological and physical wellbeing.

Study Session 30

SAQ 30.1

C, D and E are true.

A is *false*. Palliative care is not terminal care (care given to dying patients only); it is the care provided to patients with a chronic illness, from the time the disease is diagnosed until the end of life. It regards dying as a normal process, and affirms life. This is well described in statement E, which is true.

B is *false*. Palliative care is also needed for patients with other non-curable chronic diseases like cancer, diabetes and strokes, as described in the true statements C and D.

SAQ 30.2

The statement is *false*. Even though the disease causing the pain is not curable, we have to manage pain properly. The reason for doing this is because pain makes patients suffer a lot, which in turn affects their quality of life. Treating pain is relieving patients from this suffering, and hence giving them a better quality of life. Pain management should be an integral part of managing non-curable chronic illnesses.

SAQ 30.3

- (a) First, you reassure Ato Aytenfisu that his symptoms could be adverse side-effects from the ARV drugs he is taking, and that he will be alright after some days. But make sure he knows that if the headache and diarrhoea get worse, or if blood is seen in stools, he should visit the nearby health centre as soon as possible.
- (b) For the headache you should give him paracetamol, as it is a mild symptom.

- (c) Regarding the diarrhoea, you should give him oral rehydration solution (ORS) and advise him to drink it frequently in small amounts. If there is no ORS, you can advise him to take home-made fluids such as rice soup, weak tea or just plain water, but avoid taking sweet drinks, milk, strong tea or alcohol. Tell him to continue eating as usual. If the diarrhoea worsens, he should go to the nearby health centre for better management.
- (d) With respect to the unhappiness, you could advise him to accept the illness as much as he can, and that it is possible to live a healthy life and be productive if he takes the antiretroviral drugs correctly. If available, you need to introduce him to a nearby PLHIV association, or a community-based organisation which provides support to PLHIV. You also need to arrange a follow-up visit.

SAQ 30.4

E (treating infection of the lungs) is not part of preventative home-based care for bedridden patients. First, it is a treatment, not palliative care. Secondly, if the patient develops a lung infection, he/she has to be referred to a nearby health facility for specialist treatment as soon as possible. All the other statements (A to D) are part of preventative home-based care for bedridden patients.

SAQ 30.5

This statement is absolutely *false*, because end-of-life care is very important for patients with a terminal illness. Indeed, it helps us to recognise that life and death are normal events. It helps the dying patient and loved ones to adjust to the many losses they face, and tries to ensure that a dignified death occurs with minimal distress.

Study Session 31

SAQ 31.1

- (a) The following are the common routes of transmission of STIs, together with two typical examples.
 - 1 Sexual: e.g. HIV, gonorrhoea
 - 2 Mother to child: e.g. HIV, chlamydia
 - 3 Unsafe injections and blood transfusion: e.g. HIV, syphilis.
- (b) The risk of transmission of STIs is higher in women than men mainly due to biological and socio-cultural factors. Specifically, young women 15 to 24 years old and menopausal women are at higher risk of STIs. This is because young women usually lack comprehensive knowledge of STIs transmission. In addition, the risk of transmission of STIs is higher due to immature and weakened vaginal mucosal lining of young and menopausal women respectively. Also the surface area of the vagina that comes in contact during sexual intercourse is larger than that of the penis and this is associated with an increased risk of transmission. Socio-cultural issues like gender bias, economic dependence, societal values relating to sexuality and harmful traditional practices like female genital mutilation also contribute significantly to the increased risk of STIs in females.

SAQ 31.2

- (a) The syndrome that this patient appears to have is urethral discharge.
- (b) You need to refer him to the health centre urgently for further care and support. Provider-initiated testing and counselling can also be offered for HIV. You need to ask him about past sexual partner(s) so that they can be traced and encouraged to access screening for HIV or other STIs at the health centre.

SAQ 31.3

Syndromic management of STIs enables health workers to treat similar causes all together. Syndromic diagnosis leads to immediate treatment for all of the most important causative agents of an STI. This is important because infections by multiple pathogens occur frequently in STIs. Besides, syndromic management can be implemented to effectively treat cases in settings with limited laboratory capacity such as health centres in Ethiopia.

SAQ 31.4

The following points explain the relationship between HIV and other STIs:

- 1 Certain STIs facilitate the transmission of HIV through the small cuts and inflammations they cause around the genitalia.
- 2 The presence of HIV can make people more susceptible to the transmission of STIs. This is because HIV weakens the immunity that can protect us from other infections like STIs.
- 3 The presence of HIV increases the severity of some STIs and makes them difficult to treat. This is also related to poor immunity in PLHIV.

