




NATIONAL GUIDELINES

FOR THE MANAGEMENT OF HIV AND AIDS

NATIONAL AIDS CONTROL
PROGRAMME (NACP)
Third Edition (revised February 2009)



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LIST OF ABBREVIATIONS

3TC	Lamivudine
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal care
ART	Antiretroviral treatment
ARV	Antiretroviral
ATV	Atazanavir
AZT	Zidovudine
CBO	Community based organization
CHBC	Community Home Based Care
CHW	Community Health Worker
CoC	Continuum of Care
CSF	Cerebrospinal Fluid
CTC	Care and Treatment Clinic
CTU	Care and Treatment Unit (NACP)
d ₄ T	Stavudine
ddI	Didanosine
DOTS	Directly observed therapy, short course
EFV	Efavirenz
FBO	Faith Based Organisation
FDC	Fixed Dose Combination
HAART	Highly active antiretroviral therapy
HBC	Home Based care
HIV	Human Immunodeficiency Virus
IMCI	Integrated Management of Childhood Illnesses
INH	Isoniazid
IPT	Isoniazid Preventive Therapy
IRIS	Immune Reconstitution Inflammatory Syndrome
LPV	Lopinavir

M&E	Monitoring and evaluation
MCH	Maternal and child health
MDR	Multi-drug resistant
MOHSW	Ministry of Health and Social Welfare
MTCT	Mother-to-child transmission
NFV	Nefinavir
NGO	Non-governmental organization
NNRTI	Non-nucleoside reverse transcriptase inhibitors
NRTI	Nucleoside reverse transcriptase inhibitors
NSAID	Non Steroidal Anti inflammatory drugs
NVP	Nevirapine
OI	Opportunistic infection
PCR	Polymerase Chain Reaction
PEP	Post-exposure prophylaxis
PI	Protease inhibitors
PITC	Provider Initiated Testing and Counseling
PLHAs	People living with HIV/AIDS
PMTCT	Prevention of mother-to-child transmission
RTV	Ritonavir
STI	Sexually Transmitted Infection
TB	Tuberculosis
TDF	Tenofovir
THP	Traditional Health Practitioners
TLC	Total lymphocyte count
VCT	Voluntary counselling and testing
VL	Viral Load

FOREWORD

During the past 24 years of the HIV epidemic in Tanzania, the country has responded in several ways, including putting in place a series of strategic plans and preventive interventions. Since November 2004, a nation-wide care and treatment programme aimed at providing care and treatment to People Living with HIV and AIDS (PLHAs) is being implemented. The main focus of the program is to improve access to ARVs and Home Based Care (HBC) for as many PLHAs as possible.

By December 2007 (three years after the program was launched) and in collaboration with a number of development partners, a total of 165,000 eligible patients have been started on ARVs and those who are not eligible yet are being closely monitored through Care and Treatment Centres (CTCs) spread all over the country. In spite of this impressive success in a relatively short time, there is still a need to expand the services to more PLHAs. This requires an increased effort to ensure the availability of not only ARVs, but also well-trained staff, adequate space and supporting facilities such as laboratories and counselling facilities — in short, a quality and functional health system.


HIV and AIDS is a rapidly evolving field. This is particularly true in the field of care and treatment of individuals infected with HIV. Newer and more potent drugs are continuously being developed and used; and knowledge of the existing drugs in terms of their efficacy, as well as short and long-term side effects is becoming clearer as we gain more experience. The second edition of this document, “*The National Guidelines for Clinical Management of HIV and AIDS*,” was produced only a few years

ago. However, recent developments and experience in the field of HIV and AIDS care and treatment has made it necessary for the country to come up with another edition of these guidelines to reflect the changes that have taken place. This will help to improve the quality of care and treatment of our patients.

In this edition, all chapters have been reviewed to include new information. Due to observed changes and developments the number of regimens to be used for care and treatment of HIV and AIDS has been expanded to give clinicians more flexibility in providing quality care.

The current edition is also presented in a style that will hopefully be easy to read, while at the same time serve as a basic reference for information on HIV and AIDS management. Like the previous one, it covers Adult and Paediatric HIV and AIDS management; Nutrition; Management of Opportunistic Infections; Home Based Care and the Continuum of Care; and Counselling for HIV Testing as well as ART adherence. Other areas covered include: health facility certification, standard precautions in care settings and laboratory services, post exposure prophylaxis, as well as ARV logistics and dosages.

As rapid changes will continue to take place in the field of HIV and AIDS, feedback from users of this manual is vital and will be used to revise, improve and update the manual to keep abreast with changes. For that reason, your timely feedback will be highly appreciated.



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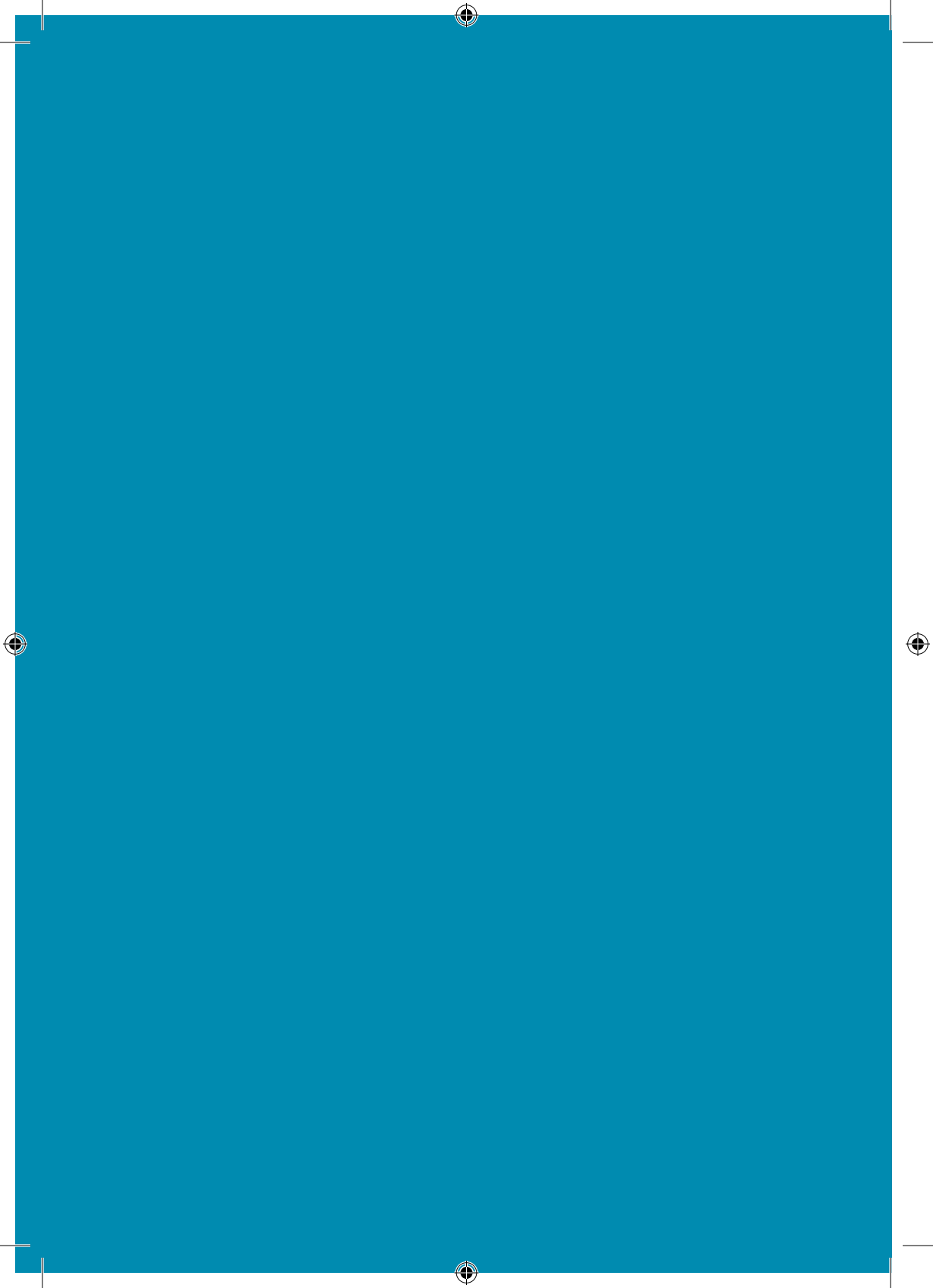
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CHAPTER 1:

Overview



CHAPTER 1: OVERVIEW

Epidemiology of HIV and AIDS

HIV and AIDS are a major global health problem. By the end of 2007, it was estimated that a total of 33.2 [30.6 – 36.1] million people worldwide were living with HIV and AIDS. Sub-Saharan Africa is the world's most severely affected region. With only 10% of the world's population, it shelters about two thirds of the global total number of people living with HIV and AIDS. One in 12 adults in this region is reported to be infected with HIV.

Although there are now reports of declining trends in HIV incidence in a number of countries, presumably due to changes in behaviour and prevention programmes, the number of people with HIV has continued to rise, due to population growth, and more recently, the life-prolonging effects of antiretroviral therapy.

Since the first three AIDS cases were reported in Tanzania in 1983, the HIV epidemic has spread rapidly to all districts and communities and has affected all sectors of the society. During the year 2003 a total of 18,929 AIDS cases were reported to the National AIDS Control Programme (NACP) from the 21 regions, bringing the cumulative total of reported cases since the epidemic broke to 176,102.

In 2007 about 2 million persons were estimated to be living with HIV and AIDS, with approximately 600,000 (30%) in need of ART. Recent data based on household surveys estimate the seroprevalence in adults aged between 15 – 49 years in Tanzania to be 7%, with a wide variation across the regions. Sexual intercourse is the main mode of transmission of infection. That is why sexually active individuals aged between 15 and 49 are most severely affected, with women being at a higher risk of being infected than men.

Today, in Tanzania as in most Sub-Saharan African countries, HIV and AIDS are recognized not only as a major public health concern, but also as a socio-economic and development problem. Data from a study conducted by the Adult Morbidity and Mortality Project (AMMP) in 2002 in the districts of Hai, Temeke and Morogoro rural showed that HIV/AIDS and TB were the leading causes of mortality in those areas.

Impact of HIV and AIDS

Health Impact

The HIV pandemic has had a profound impact on the health care system of all countries world wide but mostly those in Sub-Saharan Africa. It has reduced resources available for other health problems which has had an unfavourable effect on the quality of health care services being provided. In Tanzania for example, most of the urban district and regional hospitals report a bed occupancy rate of up to 50-60% for HIV-related conditions. And since health care personnel are also infected, there is a human resource crisis in all health care facilities which adversely affects the initiation of care and treatment programs with antiretroviral therapy (ART).

The HIV and AIDS pandemic has interacted with other underlying public health problems, particularly Tuberculosis (TB) which has been established as one of the principal causes of death in persons with HIV infection. National TB infection rates in Sub-Saharan Africa and South-East Asia have escalated over the past decade. Since the mid-1980s, annual TB notification rates in many African countries with well-organized programs have increased fourfold, reaching peaks of more than 400 cases per 100,000 individuals. In some countries, up to 70% of patients with sputum smear-positive pulmonary TB are HIV-infected.

The majority of hospital admissions in Sub-Saharan countries are due to HIV-related conditions including TB. It is therefore very important that all HIV infected patients be actively screened and promptly treated for TB.

Economic Impact

There is a close relationship between HIV/AIDS and economic development. HIV and AIDS negatively affect economic growth which makes it difficult for countries and individuals to initiate adequate and comprehensive responses to the epidemic, due to a weak economic base. Poverty is a powerful co-factor to the spread of HIV and AIDS. The economically and socially disadvantaged sections of the population including women, youth and other marginalized groups in society are disproportionately affected by the epidemic.

Ill health and death due to AIDS have reduced agricultural labour force, productivity and disposable incomes in many families and rural communities. Data from Kagera, one of the regions most severely affected by HIV and AIDS in Tanzania, indicate that between 1983 and 1994 respectively, the annual Gross Domestic Product (GDP) declined from USD 268 to USD 91. Although this decline was multi-faceted, AIDS is believed to be a major cause. Similar trends of declining GDP associated with reduced agricultural production and an increase in number of AIDS cases were observed in the coastal region of Tanga.

Social Impact

AIDS is widespread in both urban and rural communities and mostly affects persons at the peak of their sexual and productive lives. The death of a young adult often means loss of a family's primary income generator. Studies conducted in Arusha, Kagera

and Mwanza regions show a serious and growing breakdown of social networks, which have up until now sustained African societies. Materialistic practices are on the increase; orphans are not only subjected to material, social and emotional deprivation, but also lack opportunities for education and health care. Widows and orphans are deprived of their inheritance rights (by relatives of their deceased husbands) due to the application of outdated traditional practices and customary laws. And often, widows are blamed for the premature deaths of their husbands.

Despite these challenges, experience has shown that the epidemic can be stabilized or reversed even in countries with modest resources if a supportive environment exists. Programs to mitigate the impact of HIV/AIDS should include among other things, strong and high-level political leadership for HIV prevention; a national HIV and AIDS strategic plan; adequate funding for a national HIV and AIDS response; strong community involvement and initiatives, and supportive policies. Data from Kagera has shown that the decline in HIV prevalence rates was a result of a combination of all these factors.

The components of a minimum package for HIV and AIDS response include but are not limited to: blood safety initiatives, STD management and prevention, and care and support for PLHAs including access to antiretroviral drugs. Others are: functional referral systems and linkages; education to the general community particularly the youth; condom programming; prevention of mother to child transmission (PMTCT) and voluntary counselling and testing (VCT).

National Response

The national response to HIV and AIDS has shifted hypotheti-

cally from one solely based on interventions aimed at prevention to one that puts more emphasis on care and treatment as well. Since 2004, the Government, in collaboration with partners, initiated a care and treatment programme under the NACP. Currently, a total of 172,736 HIV-infected people have been enrolled at 152 NACP sites throughout Tanzania. However, the scaling up of ART provision remains a challenge. Out of the estimated 600,000 HIV-infected Tanzanians who qualify for ART, only 136,700 (22.2%) are currently on ART (NACP, 2007). More vigorous efforts are needed to promote VCT; to reduce HIV stigma among the public and health professionals; to improve on the quality and quantity of human resources; to improve ARV supply management; and to integrate HIV care with other health services, such as TB.

Basic Facts about HIV

Aetiology of HIV

In Tanzania, infection with HIV is caused by HIV-1 subtype. No infection with HIV-2 has been reported yet. The common HIV-1 subtypes (clades) in Tanzania are A, C, D and their recombinants.

HIV Transmission

HIV infection is acquired through sexual intercourse with an infected partner, exposure to infected blood and blood products, and from an infected mother to her unborn child, in the uterus, during delivery, or from breast milk. More than 90% of adults in Sub-Saharan Africa including Tanzania acquire HIV infection from unprotected sexual intercourse with infected partners. Transmission of HIV through body fluids other than blood and genital secretions such as CSF, pleural fluid, and amniotic fluids is also possible. However, HIV transmission resulting from exposure to saliva, urine or sweat is not very likely, if at all.

Pathophysiology of HIV Infection

Interaction between the viral envelope proteins (gp120) and receptors on the cell membrane is critical for HIV to enter and infect the host cell. High concentrations of the CD₄ molecules and co-receptors have been detected on the surface of T-lymphocytes and macrophages. Other cells that have been found to have CD₄ molecules on their surface include the Langerhans cells (found in the skin) and the microglial cells of the brain.

Following entry of the virus into a susceptible host cell, using the enzyme reverse transcriptase, the viral genome copies itself from RNA to DNA genetic material. The viral DNA copy then enters the nucleus of the host cell and becomes intimately incorporated into the host cell's own DNA using the enzyme integrase, and the virus becomes a permanent part of an infected person's nuclear proteins of the infected cells. This is followed by a latent period during which the provirus in the infected host cell nucleus waits for an external stimulus to start reproducing.

When CD₄⁺ T lymphocytes are stimulated by new virus or any other infection, they will respond to these stimuli by increasing viral replication. As more and more viruses are produced and leave the host cell, the cell membrane weakens and ultimately leads to the death of the infected CD₄⁺ T lymphocytes. Other factors which are mostly unknown lead to the rapid depletion of the CD₄⁺ T lymphocytes. The decline in the CD₄⁺ T lymphocytes count is a reflection of a declining cellular immunity, which eventually manifests itself by the appearance of opportunistic infections.

The Natural History of HIV Infection

During the past few years, major advances have been made in understanding the complex pathogenetic mechanisms leading

to the spread of HIV infection over time and to the progression of HIV disease and AIDS.

Initial infection with HIV (Primary HIV infection, PHI) is characterized by a relatively brief period of high-level acute virus replication. People who are newly infected are highly infectious although they may test negative for HIV; particularly if they are tested using the common tests that depend on detection of antibodies against HIV. The high level of viraemia present at the time of sero-conversion may persevere for about three months but eventually stabilize at an individual “set point.”

This is followed by an asymptomatic phase of the infection, whereby the levels of CD₄+ T-lymphocytes, the prime target cell for HIV, gradually decline. The rate of decline varies substantially among patients. Major factors that are known to influence the rate of CD₄+ T-lymphocyte decline in a patient include:

- Genetic factors
- Viral load (number of HIV-RNA copies/ml) at the “set point”
- Viral characteristics
- Age

Studies of cohorts of patients over long periods, both clinically and biologically, have demonstrated the value of measuring viral load as the most powerful predictive indicator of disease progression. A person’s viral load and the number of circulating CD₄+ T-lymphocytes/mm³ are the two most important laboratory parameters to consider when assessing the need for treatment. Viral load is the measure of disease activity and can be used to evaluate the rate of the immune system deterioration

before and during treatment as well as the risk of developing resistance during treatment. The CD₄ count can also be used to evaluate the risk of complications, including the development of opportunistic infections.

A higher “set point” has been shown to be associated with rapid disease progression than a lower one. Infection with syncytium forming viruses is associated with a more rapid rate of disease progression compared to non-syncytium forming viruses. Development of severe immuno-suppression could occur within 2-4 years but may be delayed for more than 15 years. However, in the “typical” HIV infected patient it takes 8-10 years. The gradual decline of the immune function ultimately reaches a stage where the CD₄ count is below 200 cell/ μ l, or where a patient develops specific opportunistic (AIDS-defining) illnesses in a proportionate amount to severe immunodeficiency. This is the AIDS stage and if left un-treated, the patient ultimately dies.

The activation of the immune system by infections such as TB and worm infestation accelerates the onset of immuno-suppression. The risk of a rapid onset of immuno-suppression can be minimized by initiating preventive therapy to opportunistic infections, early detection and administration of effective and appropriate treatment of infective conditions in persons with HIV infection. Preventive therapies currently used include those for TB, bacterial infections, *Pneumocystis Carinii* Pneumonia, (PCP), toxoplasmosis and cryptococcal meningitis.

Comprehensive and quality clinical care of persons with HIV disease requires health care personnel to have appropriate clinical knowledge and experience and laboratory support to identify patients with subtle and/or gross features of HIV disease. Once

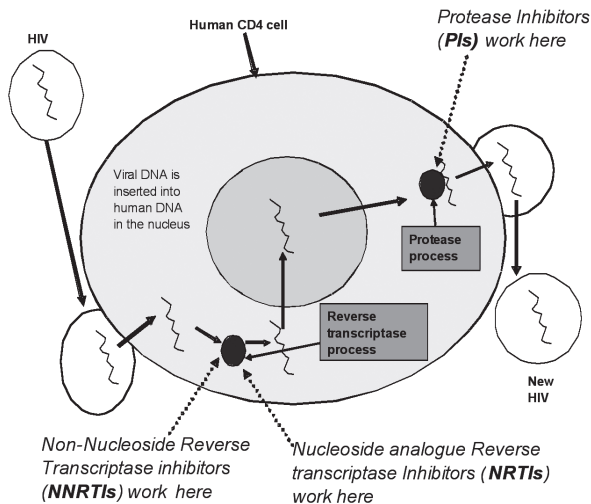
diagnosis of HIV infection is made, the goal of any treatment plan is to limit or delay progression towards AIDS for as long as possible in order to reduce morbidity and to increase survival rate.

Theoretically, the multiple steps in the replication of HIV provide opportunities for intervention. As shown in the figure below, therapeutic regimens may be directed at one or several of the following stages essential for viral replication:

- Attachment of HIV to host cell
- Reverse transcription of viral RNA to DNA
- Integration of the proviral DNA into the host cells' DNA

Expression of the viral gene after it has been integrated into the host cell's DNA includes the process of transcription of more viral RNA and the translation of viral proteins.

Figure 1.1 Processing and post-translational modification of protein products of the virus.



Antiretroviral drugs that are currently available in Tanzania function by targeting either the Reverse transcriptase enzyme or the Protease enzyme. This results into a halted viral replication and a consequent halting or reversal of further decline in CD₄⁺ T lymphocytes.

Clinical Progression of HIV Infection (see WHO Clinical Staging Criteria in Table 8.1 in Chapter 8)

In the absence of anti-retroviral therapy, HIV infected patients go through the following clinical stages:

Primary Infection (becoming HIV infected)

Most people who become infected with HIV do not immediately notice that they have been infected, although some may have a short illness soon after acquiring infection. This is known as sero-conversion illness which may last for a few weeks and is often accompanied by flu like symptoms with fever, malaise, enlarged lymph nodes, sore throat, skin rash, and/or joint pains. During this period of acute febrile illness there is a widespread dispersal of the virus to different tissues, especially to the lymphoid system. However, most newly infected persons are clinically asymptomatic in spite of this ongoing extensive immunological battle. At this point, results from HIV blood tests that are designed to detect the presence of HIV antibodies such as ELISA and Rapid Immunoassays are usually negative.

Clinically Asymptomatic Stage

This stage may last for an average of between 8-10 years with no symptoms, although the infected person may experience swollen glands or a condition medically known as Persistent Generalized Lymphadenopathy (PGL). All HIV infected individuals can transmit the virus but the chances of transmission

are higher with a higher viral load. Infected persons at this stage are categorized as WHO stage 1.

Symptomatic HIV

Over time, the immune system loses the struggle to contain the virus and therefore symptoms develop. Symptomatic HIV infection is often caused by the emergence of opportunistic infections. The most common infections include fever, respiratory infections, cough, TB, weight loss, skin diseases, viral infections, oral thrush, pain and lymphadenopathy. This stage encompasses WHO stages 2 and 3 depending on the particular opportunistic infection seen.

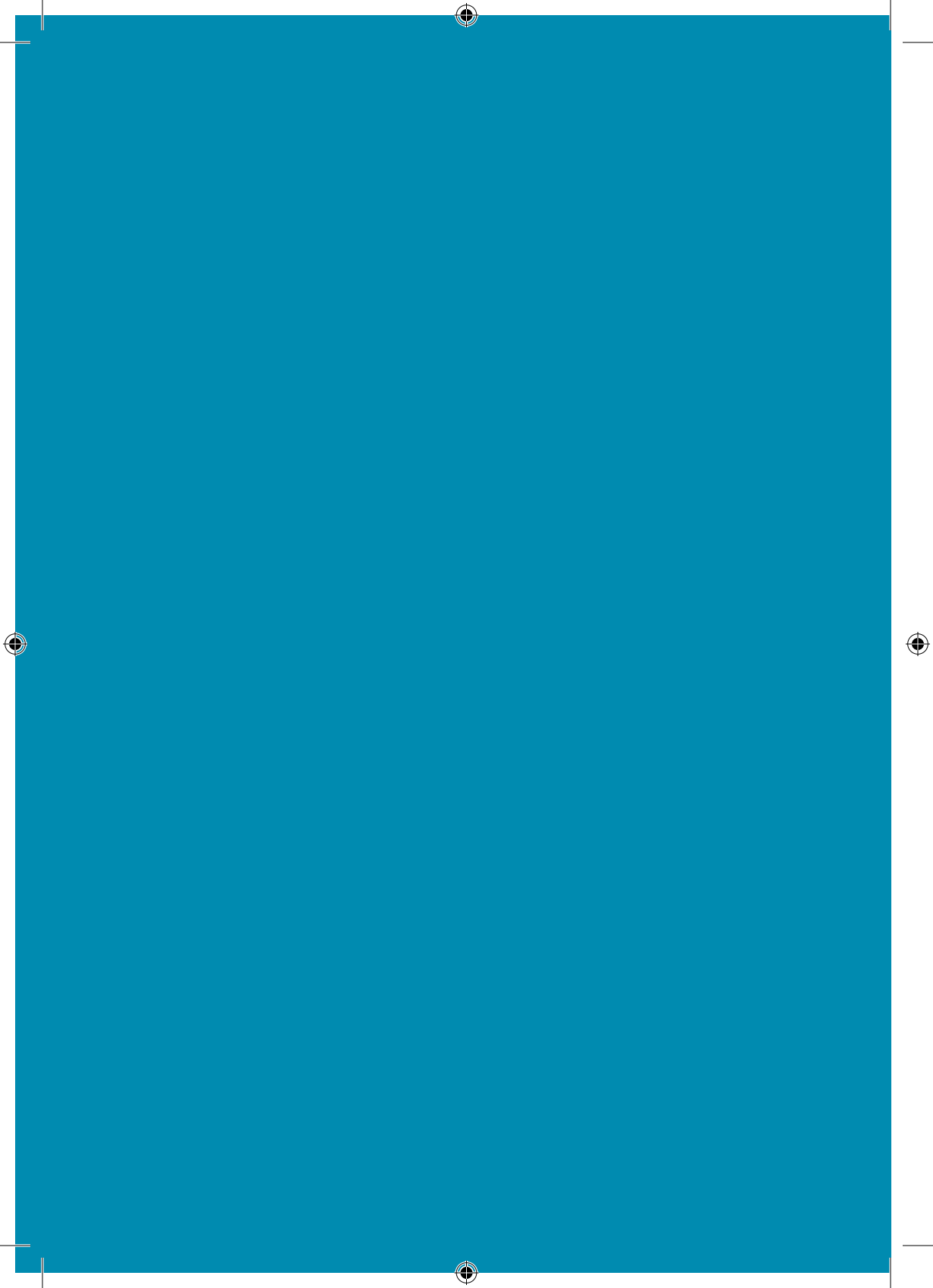
AIDS

The diagnosis of AIDS is confirmed when a person with HIV develops one or more of a specific number of severe opportunistic infections or cancers. Such conditions include Kaposi's sarcoma, Cryptococcal meningitis, PCP, Toxoplasmosis and CMV retinitis. This is WHO stage 4.



CHAPTER 2:

Organization of HIV and AIDS Care and Treatment



CHAPTER 2: ORGANIZATION OF HIV AND AIDS CARE AND TREATMENT

Introduction

The Health Sector HIV and AIDS Strategic Plan (HSHSP) 2008-2012 builds on the National HIV and AIDS Care and Treatment Plan for People Living with HIV and AIDS (PLHAs) which was developed in 2003. Between 2004 and 2006, a total of 204 health facilities, mainly hospitals, had begun providing care and treatment. From 2007 onwards the program rolled out to include an additional 500 health centres and dispensaries. The HSHSP calls for the provision of quality HIV and AIDS care and treatment services at all health care facilities across the country. Setting standards in the provision of care and treatment will require the establishment and organization of effective Care and Treatment Clinics (CTCs) at all health care facilities. Different tools for the assessment and certification of health care facilities, the training of health care workers, conducting supportive supervision and clinical mentoring as well as for monitoring the patients and the programme have already been developed to facilitate the provision of quality care to PLHAs.

Identifying People Living with HIV and AIDS in Need of Care and Treatment and Sensitization of Communities

In order to meet the goals of the HIV and AIDS Care and Treatment Plan an expanded effort involving all segments of the health care system is required to identify patients in need of care and treatment. Voluntary Counselling and Testing (VCT) services are an important but not sufficient mechanism to identify people in need of care and treatment services. Provider Initiated

Testing and Counselling (PITC) is being introduced to allow more people who attend health facilities at the outpatient clinics and in-patients wards to get tested and access care and treatment services. However, people in both urban and rural areas need to be sensitized using all available communication channels within communities and health facilities, to come forward for testing and counselling so that those in need of care and treatment can be linked to those services.

Scope of Activities to Provide Care and Treatment

The establishment of CTCs at health care facilities that have been selected to provide care and treatment services including ARVs has helped to increase the number of people being enrolled and provided with HIV care and treatment. Once enrolled, CTC clients are also linked to a wide range of other services including TB, reproductive health and family planning, social and spiritual support and home based care services.

The core elements of HIV services that need to be provided at CTC level include basic education regarding the mode of HIV transmission and disease progression, and management of disease symptoms. This is done through the following:

- Education about behaviour change and condom use for infected people (prevention for positives)
- Orientation to the care and treatment programme
- Education and regular counselling on life-long disease management, in particular on treatment adherence
- Education and counselling about actions that may delay disease progression and reduce co-morbidities by addressing issues regarding nutrition, food safety, clean water and use

- of insecticide treated bed-nets
- Routine clinical care and nutritional assistance to malnourished patients
 - Proactive exclusion of co-morbidities such as TB and effective referral to TB clinics
 - Prophylaxis for OIs as indicated by these guidelines (see chapter 6)
 - Assessing eligibility for ART (clinical staging, social eligibility and CD₄ counts, see chapter 8).
 - Effective referrals to essential hospital services such as antenatal clinics for MTCT; family planning advice before and while on ART; STI or other specialized clinics
 - Recording and reporting according to the established electronic and paper system
 - Registration and appointment systems for effective treatment continuation
 - Referral to community services such as HBC, social welfare, and legal support

In order to provide effective and quality HIV and AIDS Care and Treatment, service delivery needs to be organized in a manner to ensure efficiency, user friendliness and regular and standardized follow up.

Organization of Care and Treatment Services

Staffing and Team Approach

For a CTC to function well, adequate and trained staff need to have clearly outlined roles and responsibilities. Since HIV and AIDS are now manageable chronic diseases, the principles of chronic disease management need to be followed. Team approaches involving a patient and a family carer and a healthcare team consisting of at least a triage nurse, a doctor and a treat-

ment/adherence nurse, will ensure the building of an ongoing relationship between patient and the health care team for life-long care. Regular scheduled visits that minimize drug depletion at home require easily retrievable records and files and disciplined observance to appointment schedules. Weekly CTC team meetings to discuss bottlenecks and case studies will help to build the team spirit, while quarterly staff meetings between heads of relevant units involved in HIV care such as CTC, TB, VCT, MCH/MTCT and in-patient will help to build better internal cooperation and patient referrals.

The National Standard Operating Procedures manual outlines the following staff roles for the various functions at the CTC:

- Registration and appointments management; filling of CTC 1 and CTC 2 basic information; height and weight
- Triage: assessment of immediate medical needs, TB screening questionnaire, support and referring the patient to the next relevant unit or staff at the CTC
- Clinical management
- Patient ART preparedness and adherence counselling
- Data collection and management
- Referral management within the hospital and with community organizations

Patient Visit Plan

At the initial clinic visit a triage nurse will assess the patient's needs, register basic information, issue relevant forms, weigh the patient and refer him/her to the relevant site. Blood will be drawn for a confirmatory HIV test if there is doubt on the patient's status and CD₄ cell count, before the patient meets with a counsellor and clinician. Given that CD₄ test results will typically not be available

on the same day, the patient will be scheduled for a follow-up visit with a clinician to discuss clinical staging and the test results.

At the follow-up visit, after consultation with a clinician, patients who are recommended for and agree to initiate therapy will meet with a counsellor to discuss issues related to adherence, medication dosing and adverse event management. Another blood sample will be drawn for tests that will help inform the treatment protocol and identify baseline values for monitoring toxicity. Patients will be scheduled for a follow-up visit after two weeks, then monthly for adherence counselling follow up and clinical care and monitoring of their response to therapy (including toxicity management). During these visits, the patient will first meet with a counsellor, then the evaluating clinician, have further examinations done if necessary, before picking up their medication from the CTC or pharmacy. After six months, the patient will be requested to continue to visit the clinic once a month for adherence counselling and medication refills or if in need of clinical management. CD₄ counts and basic blood tests will be performed at six month intervals. The patients will also see an evaluating clinician for follow-up and to evaluate response to therapy.

Those who do not immediately qualify for treatment will require regular **monitoring** of their status with assessment of clinical staging and CD₄ count every 6 months for all asymptomatic cases (i.e. WHO stage 1) and all symptomatic cases (i.e. WHO stage 2 and stage 3 with CD₄ above 350).

All patients are advised to come to the CTC immediately should their condition deteriorate prior to their next scheduled visit.

Adherence management and lifestyle counselling

Patient non-adherence to prescribed medication is a global

problem. Patients on ARV treatment should be strongly encouraged to identify an adherence or treatment assistant. This can be any person identified by the patient (e.g. a family member, friend, colleague, or community member) to support the patient in treatment protocols.

During their monthly visits to the CTC, each patient will be screened for TB and provided with cotrimoxazole prophylaxis as indicated. In addition an adherence and lifestyle counselling session which will be used to identify possible lapses of adherence and reinforce key practices related to optimal adherence. Patients will also receive information and counselling on transmission risk reduction (positive prevention), nutritional and family planning advice, and adverse event management. Other psychosocial needs such as social or legal support, disclosure of HIV status, mental health, referrals to home based care services and facilitation for joining PLHA support groups will also be addressed during the counselling session.

Note: Adherence assessment can be done in various ways including pill counting, self reporting, home-based care reporting and review of patient records.

Medical Records System

Patient identification cards (CTC 1), Patient Record Forms (CTC 2), Registers (pre-ART and ART) and Reporting Forms (for Cross-sectional and Cohort analysis) have been designed to facilitate patient identification, and patient and programme monitoring respectively. In addition, an appointment book to record booking appointments and tracking lost to follow up patients is also included in the patient monitoring system.

The **Patient Identification Card (CTC₁)** is a card with a pre-assigned unique patient identification number issued at the

registration section of the facility during the first visit. The card is for patients on ARV treatment as well as HIV positive clients who are not yet on treatment but are being monitored by the programme. The card should be kept by the patient and used for identification purposes at every visit.

It is important that the patient carries treatment relevant information with him/her whenever he sees a new clinician, such as when he transfers to another facility. The same initial identification number will be retained to avoid lost to follow up and double recording of the patient.

The **Patient Record Form (CTC₂)** is a form initiated at the first visit for all HIV positive persons attending the CTC. It is issued by the facility registration unit of the CTC by the attending clinician or by the attending clinician's order. The form has a unique ID number, copied from the Patient Identification Card. It is kept in a file and retained in the facility registry or dedicated HIV and AIDS care and treatment cabinet for retrieval at each visit. Key information on patient management is filled in by the attending clinician.

Registers

There are two types of registers used at the CTC: the Pre-ART register and ART register.

The **Pre-ART register** is a tool for tracking and monitoring the progress of patients that are enrolled in HIV care as they become eligible for ART. **All** patients who first enrol for HIV care, whether they are on ART or not, are initially listed in the pre-ART register and counted as enrolled in HIV care. This includes patients who transfer in with or without records, who were previously receiving care at another facility but are not

yet on ART. The only patients who will **NOT** be entered into the pre-ART register are patients on ART who transfer in with records. Patients who were taking ART but do not have confirmatory records will be entered into the system as new patients and screened for eligibility (i.e. new CTC 2, new entry in pre-ART register, eligibility screening). Once the patient begins ART, he/she is transferred to the ART register and is no longer tracked through the pre-ART register.

The **ART register** is a tool used for patient and programme monitoring. However, it is only used **AFTER** a patient has started ART. The purpose of the register is to collect the same information (transferred from their individual CTC 2s) about an entire group of patients in a single location (the register).

Note: The information on the CTC 2 form facilitates the monitoring of individual patients and that collected in the register facilitates the monitoring the whole group of patients.

Reporting

Reporting at the CTC should be done as follows using the appropriate reporting forms and tools:

Monthly and Quarterly Reports

A summary of newly enrolled patients is reported monthly, and a cross-sectional (cumulative total) summary of all patients currently in care and on ART from a single health facility (or a single project within a large facility, with its own registers) is reported on a quarterly basis. This is done using a **cross-sectional reporting form**.

The monthly section covers the first to the last day of the previous month while the quarterly section covers the first to the last

day of the previous quarter. The cross-sectional form is filled using data from the pre-ART and ART registers. It provides the following important information:

- New patients enrolled and eligible for ART but not yet started on ART
- New patients on ART (in the last reporting period; not transfer in)
- Cumulative patients enrolled in HIV care (including transfer in)
- Cumulative patients ever started on ART
- Patients currently on ART and currently in care (non-ART plus ART)
- Patients currently on ART and what proportion are on first line and second line regimens
- Subset of patients on treatment or prevention for OIs

Programme monitoring

Programme monitoring is done at the facility-level as well as higher up in the system using a **cohort analysis reporting form** which comprises a collection of indicators for ART start-up groups (monthly cohort) with their status at 6 months, 12 months, and 24 months. Data is gradually filled out by a member of the Care and Treatment Team as results become available and then transferred to an identical cohort analysis report form that is filled out by the District Coordinator/Supervisor for submission to higher levels in the system. The cohort analysis reporting form provides information that helps the Care and Treatment Team and district, regional and national levels to monitor how well the programme is doing with regard to patients started on ART. It contains information on the following:

- Surviving patients
- Patients still on the first line regimen
- Patients that were able to work at 6 and 12 months

It also provides a comparison between patients with 6 months of ART and other patients with 6 months of ART elsewhere.

Because the data from the cohort analyses are of critical importance, it is essential for the District team's designated person in charge of patient monitoring to fully verify it. This requires going back to the registers to re-calculate the results for each monthly cohort.

An **Appointment Book** should be kept by a member of the Care and Treatment Team at the registration unit and filled after the patient has received the date for the next visit. It should contain the patient's name, date, unique CTC ID number, the reason for visit and a column for the patient's show up. Information on patient show up is crucial for tracking missing patients who can easily be identified and traced if the patient show up column is properly filled out.

Each facility participating in the National Care and Treatment Programme should identify a specific person to be responsible for care and Treatment data handling and reporting.

Linkages Across a Continuum of Care

Effective linkages with a variety of care-related providing units within the facility and with partnering programmes in the community are encouraged at all levels. Partnerships and regular dialogue between the CTC and support programs in the community need to be established within the district in order to ensure a continuum of care through functional referral mechanisms.

Dialogue can be promoted through the expanded Council Health Management Team (CHMT) or through continuum of care subcommittees. The following programmes or services should be considered when developing a continuum of care:

- PMTCT
- VCT and PITC
- STI
- TB Clinics
- Community and Home Based Care including PLHA support groups

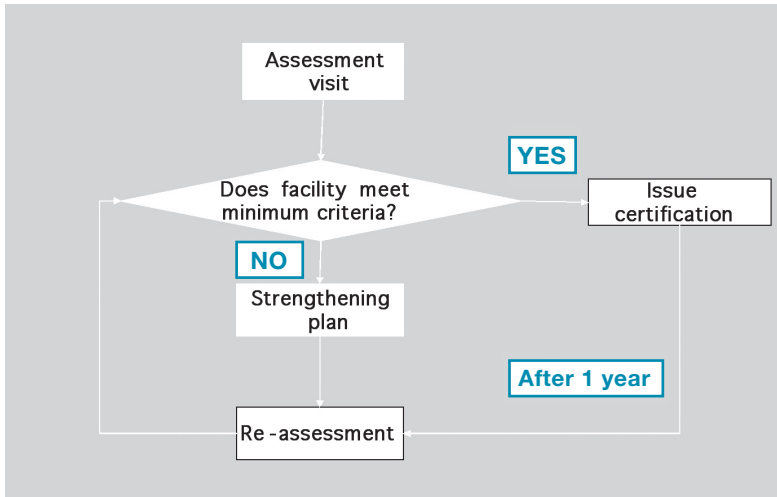
Certification of Health Facilities to Deliver HIV and AIDS Care and Treatment

In order to have as many health facilities as possible qualify for the provision of care and treatment to PLHAs, the National AIDS Control Programme (NACP) developed a service strengthening and certification procedure which involves the following steps:

- Assessment of the availability and quality of essential elements to start and/or expand care and treatment
- Identification of areas for strengthening and improvement to upgrade health facilities for the provision of comprehensive care to PLHAs
- Issuance of certification to health facilities to enable them to start or expand care and treatment once they have met a minimum set of criteria

The setting of standards helps to ensure that care and treatment services are delivered at an appropriate quality. It also provides an opportunity for health facilities to identify needs and channel resources to meet those needs.

Figure 2.1: Preparing facilities for certification



In collaboration with other divisions of the MoHSW, the Care and Treatment Unit of the NACP continues to target new facilities where care and treatment can be administered on a regular basis. Assessment tools and checklists with minimal criteria to provide care and treatment services have already been developed by NACP.

Health authorities at regional and district level such as members of the RHMT and CHMT and partner organizations supporting the roll out of care and treatment in respective regions must be involved in assessing the facilities as well as in the preparation and support of strengthening plans.

Between 2004 and 2006 more than 200 health facilities were assessed by multidisciplinary assessment teams, comprising clinical, nursing, laboratory and pharmaceutical experts and involving health staff at national, regional and district facilities and partner organizations.

The Strengthening Plan is the key tool in preparing facilities for participation in the care and treatment programme. It is jointly prepared and agreed upon by assessment team members, facility officers in charge and the DMO.

Planning for strengthening the facility's capacity should include a set of functioning related services within the continuum of care including among others, VCT services, coordination with CHMT and Multisectoral AIDS Committees (MACs), and NGO community based services.

Table 2.1: Minimum criteria to start/expand ART for hospitals

Organisation of HIV and AIDS Care services within facility
1. Space for registration of HIV and AIDS patients
2. Clearly described and functioning patient flow plan (including referral within the facility)
3. Coordination of the HIV and AIDS care and treatment services at the facility to be done by Project Manager (this can be a member of the C&T team)
Human resource capacity, training and continuous education
1. A dedicated Care and Treatment team consisting of <ul style="list-style-type: none"> – 1 assessing/prescribing clinician (MD/MO or AMO) – 1 ARV-evaluating clinician (AMO or CO) – 1 nurse-counsellor (treatment counselling) – 1 laboratory technician – 1 pharmaceutical technician – 1 data-clerk
2. The above team should have been trained according to approved national curricula

3. Availability of the most recent Guidelines including National Guidelines for the Clinical Management of HIV and AIDS, PMTCT, Laboratory, Pharmacy, HBC and VCT guidelines.
Clinical HIV and AIDS care and treatment services
1. Confidential consultation room
2. TB-diagnosis and treatment services
3. STI-diagnosis and treatment services
Patient records and reporting systems
1. An established and working medical record system
2. Locked area with limited and authorized access to medical records
Continuum of Care: Organisation of HIV and AIDS care services with and between facility units, outside referral sites and community support services
1. A functional referral system from health facilities to the community and vice versa (linkage with HBC, NGOs, CBOs, FBOs and other community-based organisations), and to specialised referral facilities
2. System for patient tracking
Counselling and Testing services
1. 1 confidential counselling room
2. 1 VCT counsellor

Laboratory services
<i>District level</i>
1. Adequate facilities (enough space, 2-4 rooms)
2. Rapid HIV testing
3. Manual haematology
4. Manual biochemistry
5. Routine testing stool and urine
6. Malaria blood smears
7. TB sputum smears
8. Pregnancy testing
9. Screening for blood safety
10. Refrigerator including freezer compartment
11. Lockable room or cabinet for record storage
12. Lockable inventoried store
13. SOPs
14. Internal quality system
15. External quality system
16. Reliable transport
Regional level (should include criteria for district level plus the criteria listed below)
1. Emergency water reserve
2. Electricity supply back up (generator, solar)
3. Automated haematology (low volume)
4. Automated biochemistry (low volume)
5. ELISA testing
6. CD4 testing (low volume)
7. Refrigerator including freezer compartment for samples

8. Refrigerator including freezer compartment for reagents
9. Freezer, -20°C
Pharmacy services
1. Storage space for 1 month supply of ARVs
2. Key policy (with limited access)
3. Functional ARV tracking system
4. SOPs (national ARV pharmacy instructions)
5. Refrigerator
Finances
1. Budget earmarked for strengthening clinical HIV and AIDS services
2. External quality control arrangement
3. Internal quality control arrangement

Roll Out to Certify Health Centres and Dispensaries

From 2007 onwards Care and Treatment services will reach an increasing number of people living in rural areas. This will be achieved through roll out to health centres and dispensaries. Assessment tools and minimum criteria lists have been developed allowing sites to qualify for three degrees of service delivery. These include:

- A Care and Treatment **initiating** site
- An ART **refilling** site or
- An **outreach** service site from the nearest hospital.

Facilities are categorized on the basis of the availability of the following:

1. Supervision from district level
2. Adequate human resource (staff levels and qualifications)
3. Laboratory services
4. Infrastructure, including drug store
5. Proper patient records and reporting system
6. Counseling and testing services
7. Continuum of care (including community home based care)

Management of Antiretroviral Medicines

Introduction

Proper management of medicines ensures optimal use of resources to avail quality drugs to patients when they need them. The process of management involves identification of the drugs needed, acquisition of the needed drugs from reliable sources (e.g. MSD) and ensuring proper utilization of the drugs at end user point.

HIV and AIDS related commodities are relatively expensive and therefore they require proper handling to ensure effective use.

Rational Drug Use (RDU) of ART

Rational drug use is the process of delivering medication that is appropriate to a patient's clinical needs at the appropriate frequency and duration and at the lowest cost.

ART is a complex undertaking that involves a large variety and quantity of drugs. It is a life long treatment that is in constant development. It is therefore very important to use drugs rationally since irrational drug use (especially in the context of ART) may have unwanted consequences at both individual and population levels, including:

- Treatment failure
- Rapid development of drug resistance
- An increase in the risk of toxicity
- Wastage of money

Prescriptions

Only trained and authorized prescribers in certified health care facilities are allowed to write ARV prescriptions.

Dispensing

Antiretroviral drugs are prescription-only medicines. They should only be dispensed to treatment-ready patients with clear instructions and advice. The dispenser should ensure that the prescription is appropriately written and signed by an authorized prescriber before issuing the drugs. The prescription for ARVs should clearly indicate the name, age, sex of patient, medicines and dosage, and should include the name, signature and prescriber's code (where applicable). Additionally, ARVs should only be given to the named patient or appointed adherence assistant. Adequate time should be scheduled for antiretroviral dispensing and counselling.

The pharmacist/dispenser should make sure that the patient understands the dosage and drug intake schedule as well as instructions regarding the storage and food requirements. The pharmacist/dispenser should also caution patients about possible side effects, respond to specific questions and problems related to ARV treatment encountered by patients and advise them on measures to be taken to reduce these side effects including immediate return to the clinic when that happens.

Records

In order to facilitate efficient administration and management

of ARVs, all information regarding ARV issuance should be recorded in a dedicated register book and ART patient card.

Pharmacy Register

The Pharmacist/Dispenser should record and sign all the dispensed ARVs in the dedicated register book located in the dispensing unit at the pharmacy. Reports on drug consumption and stocks of drugs should be sent to the Ministry of Health and Social Welfare through the DMO for program monitoring.

Patient Identification Cards

Each patient must be issued with a patient identification card, include for medication (CTC 1). Patients (or appointed adherence assistants where patients can not collect the medication themselves) must present the cards to the dispenser every time they collect medicines and all medications received must be recorded on the card.

Storage

To ensure proper control and security of ARVs and other drugs, the following procedures should be used at the facility pharmacy:

Stock must be kept in a high security storage area with a single pharmacist/pharmaceutical technician (at any one time) responsible for receipts and issues.

Normal stock records must be kept for all receipts and issues along with a running balance, and ledgers maintained for each item. At the end of each month, the pharmacist in charge must check the physical stock against the stock records.

ARVs must be stored at the appropriate temperature and/or refrigerated such as drugs like Kaletra (Lopinavir/Ritonavir) if required.

Commodities must be stored according to the first-to-expire first-out (FEFO) procedure and stock management.

Damaged and expired commodities should be immediately separated from usable ones in the inventory and disposed using the laid out procedures.

The pharmacist should maintain adequate stocks of ARVs for all required medications (first line, second line, adults, paediatrics) at all times.

Procurement

The procurement of ARVs shall be done by the Medical Stores Department which will then distribute the medicines to all the accredited facilities across the country. Requisition of antiretroviral drugs from the facilities will follow the normal procedure for other drugs except that a separate requisition form will be used.

On receipt of the drugs at the facility, the pharmacist shall check the ARVs brought by MSD and sign the delivery note. An adequate buffer stock of drugs must be kept at all times and closely monitored to avoid stock outs.

Ordering ARVs

Ordering of ARVs will be done by the pharmacist using the “Integrated Logistic System” (ILS) register which is made of two forms: Form A1 - Dispensing Register for Antiretroviral drugs (ARVs) and Form A2 - Report and Request for Antiretroviral drugs (ARVs). The built-in inventory control system is designed to ensure that drugs are ordered on a monthly basis using existing stock levels and not morbidity data.

Relevant data on the consumption of antiretroviral medicines must be kept and sent to the Ministry of Health and Social Welfare every quarter as per the MSD indent format.

Orders to the Medical Stores Department (MSD) should be timely and made well in advance to allow supplies to reach the facilities in time.

Collaborating with Clinical Staff

The pharmacist will not be required to re-order ARVs using morbidity data because consumption data will be available. However, the pharmacist will need to work with clinical staff to obtain an estimate of the number of patients expected to be enrolled on therapy.

The pharmacist also needs to keep clinical staff informed of the current stock levels of ARVs, particularly of items nearing stock-out. In the event of nation-wide supply shortage, the pharmacist should communicate this information to clinical staff so that they can pursue the best course of action.

Monitoring of Adverse Drug Events

Monitoring involves continuous reviewing of program performance against its targets. Drug Management system monitoring helps to ensure that

- clients get the health commodities they need when they need them
- planned logistics activities are carried out according to schedule
- records are correctly maintained and reports submitted in a timely manner for re-supply and decision making

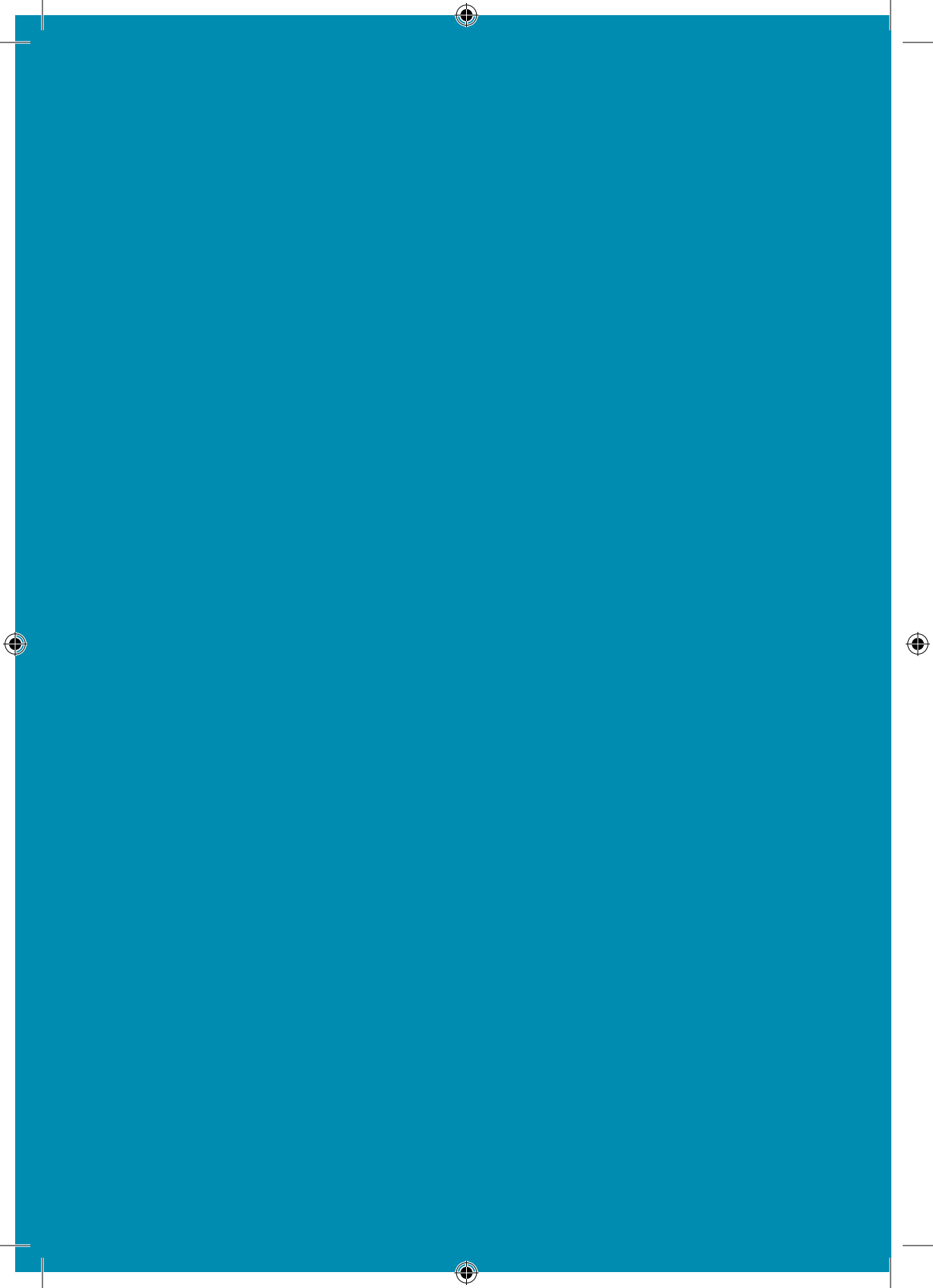
Monitoring and reporting of adverse drug events should be done according to the Tanzania Food and Drug Authority (TFDA) guidelines. Adverse drug reactions reporting forms (yellow forms) will be distributed to facilities that have been certified to deliver ART.

Audit

Procurement, storage, distribution and dispensing procedures and records and stock in hand will be subject to internal and external audit. Given the cost and complexities of handling ARVs, frequent auditing is anticipated.

CHAPTER 3:

HIV and AIDS Prevention



CHAPTER 3: HIV AND AIDS PREVENTION

Introduction

The provision of quality HIV clinical care at the various levels of the health care system in Tanzania offers a unique opportunity to deliver prevention messages and interventions. People in need of care who have established a trusted relationship with health care providers are motivated and hence likely to accept the need for behaviour change and practices necessary to stop further HIV transmission. Abstinence, faithfulness, condom use and early diagnosis and treatment of STIs can be highlighted during clinical care.

Treatment and Prevention of Sexually Transmitted Infections (STIs)

STIs are co-factors for HIV transmission and therefore health care workers should ensure the provision of quality STI services in all health facilities through the use of simple diagnostic procedures and the syndromic approach. This can be achieved through

- Regular training of health care workers
- Supportive supervision
- Regular supply of essential commodities and consumables, including male and female condoms for STI prevention purposes.

Prevention of Mother to Child Transmission (PMTCT) of HIV

PMTCT interventions aim at reducing the risk of HIV transmission from infected mothers to their babies during pregnancy, childbirth and during breast-feeding. Quality PMTCT services should be integrated within Reproductive and Child Health

services in all health care delivery settings in the country, and should include:

- Counselling and Testing at a Reproductive and Child Health services setting
- Provision of ARV prophylaxis to the HIV positive mother and her infant to prevent Mother to Child Transmission (MTCT)
- Infant feeding counselling and support
- Safer delivery practices

Community members, particularly men and other close family members should be educated to play a more active part in supporting mothers to access and use PMTCT services and in reducing stigma, denial and discrimination. In addition, postpartum services including family planning and reproductive health information and services should be offered within PMTCT settings or through referral to all women who wish to prevent future unintended pregnancies.

Condom Programming

Both male and female condoms provide effective protection against sexual transmission of HIV. The key elements to successful condom programming include:

- Easy access to condoms within and outside the health care setting
- Provision of education on consistent and proper condom use by all healthcare staff
- Appropriate social marketing programmes for condoms

Workplace HIV and AIDS Policy and Programme for the Health Sector

The Health Sector has about 60,000 health personnel in different categories. Many of them are in direct contact with infected persons and face the risk of infection through occupational exposure. They are also at risk by virtue of being sexually active members of the population (depending on their sexual behaviour) and other situations that increase their vulnerability to HIV infection.

As highly respected members of their communities who are frequently sought for general advice on healthy lifestyles, health personnel need to be trained, sensitized, and capacitated to be “HIV and AIDS-competent.” This can be done by

- Providing appropriate means of protection including Post Exposure Prophylaxis (PEP) as detailed in Chapter 13
- Ensuring that protective gear and supportive policies/environment for workplace HIV interventions are available on site
- Orientation on basic principles and interventions of HIV prevention, care, treatment and support

Prevention of HIV Transmission Through Blood Transfusion

Transfusion of HIV contaminated blood is the surest way of transmitting HIV infection. An effective and well functioning National Blood Transfusion Service will ensure the regular availability of adequate amounts of safe blood in all transfusing health facilities. The government will ensure regular availability of reagents and supplies for safe blood transfusion through the pull system.

HIV and AIDS Prevention for Sex Workers and Other Vulnerable Groups

Sex workers and their clients, men who have sex with men, and

intravenous drug users, have disproportionately higher HIV prevalence rates compared to the rest of the population. Increasing access to services and interventions for these groups will reduce the transmission of HIV infection not only among these groups, but also within the general population. NGOs, CBOs and other agencies working with these groups need to be supported particularly in ensuring an adequate supply of condoms.

Youth (in and out of school) and HIV and AIDS

Priority health sector interventions for youth comprise the expansion of quality youth-friendly health care services, implementation of youth-focused promotion activities and behaviour tracking through sentinel surveillance. There is also a need to design innovative condom promotion programmes with the full participation and involvement of the youth to ensure an appropriate link between intention and outcomes.

Voluntary Counselling and Testing (VCT)

Voluntary Counselling and Testing has proved to be effective in influencing change in sexual behaviour and practices. However, in order for VCT services to function properly they need to be easily accessible, user-friendly and be linked to a health facility, home based care service and other HIV support services.

Family Planning Services

Family planning and effective use of contraceptives can prevent unintended pregnancies among women who are infected with HIV, thus decreasing the likelihood of HIV infection in children and as well respond to their reproductive rights. Most contraceptive methods, including hormonal contraceptives and Intra-uterine devices (IUDs), are appropriate for the majority of HIV infected women. Service providers should assist women who

want to avoid pregnancy to make informed, voluntary choices of contraceptive methods that are best for them. Condom use should be promoted for dual protection, since other family planning methods that are more effective for the prevention of pregnancy, do not offer protection against STI/HIV. Condoms (both male and female) are the only contraceptive method that provides protection against HIV and other STIs.

Reduction of Stigma and Discrimination

Stigma and discrimination constitute major factors in inhibiting service utilization and a proper response to the HIV and AIDS epidemic. Information Education and Communication/Behaviour Change Communication (IEC/BCC) interventions aimed at stigma reduction need to distinguish between felt and enacted stigma. Felt stigma is a collection of prevalent feelings that individuals harbour about their condition and the likely reactions of others, while enacted stigma refers to actual experiences of stigmatization and discrimination, such as the attitude of health workers, relatives and other members of the community.

Health workers need to be targeted with interventions to reduce stigma and discrimination within the health service delivery setting. As bearers of health-related information and knowledge in their communities, health workers need to be appropriately informed and sensitized on the issues surrounding HIV and AIDS so that they can use this knowledge to reduce stigma within the general population.

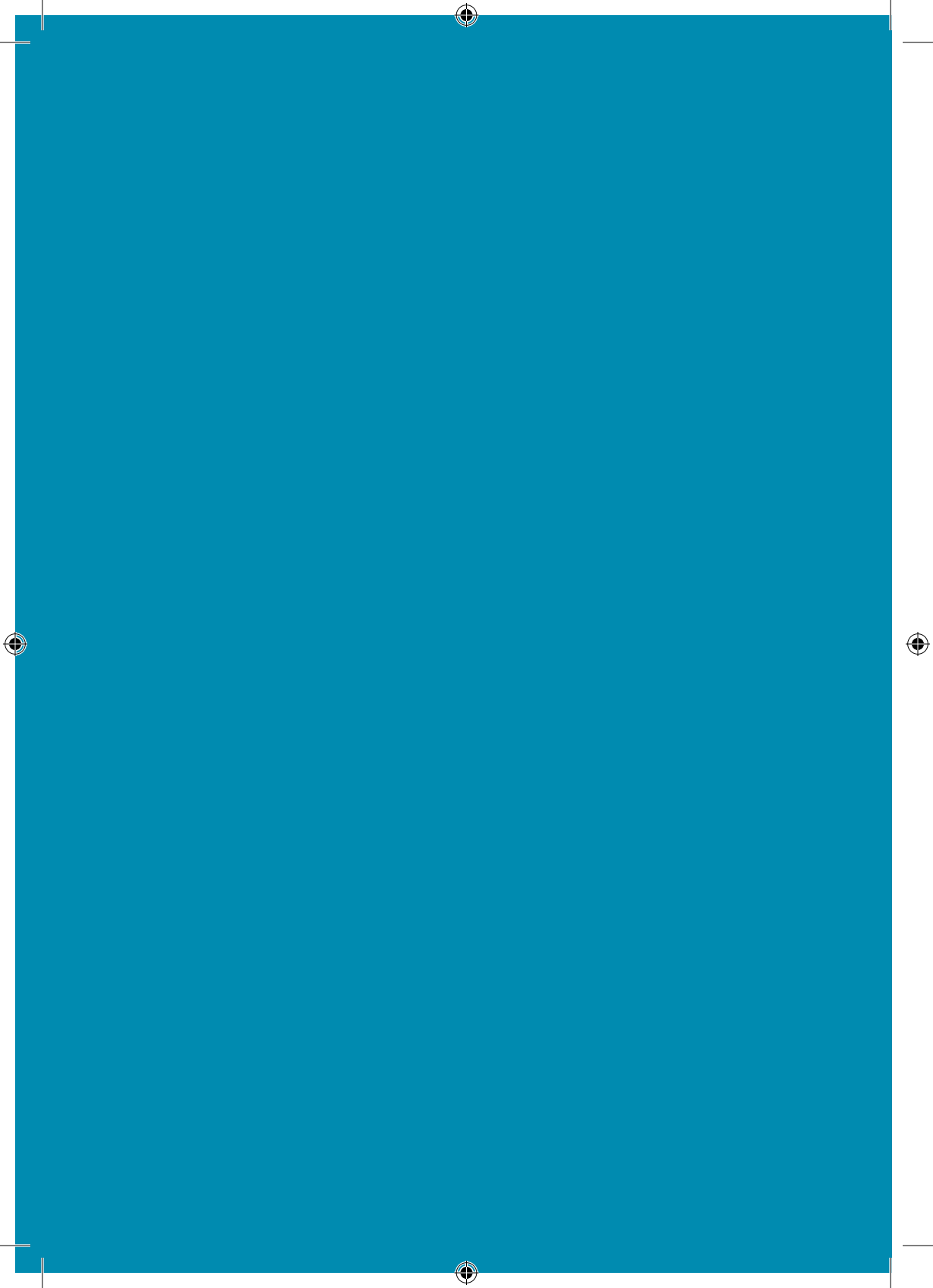
Male Circumcision

There is sufficient evidence on male circumcision (MC) as an HIV prevention strategy. A number of studies in South Africa, Kenya and Uganda, among others, have demonstrated that MC

has a significant protective benefit against HIV infection with reported reduction in HIV incidences ranging from 50-60% among circumcised men. Countries are being encouraged to roll out MC plans in order to prevent new HIV infections especially among its youth population. However, planning for large-scale MC interventions needs to take into account the medical risks and benefits, as well as the social, cultural, economic, sexual, and other risks and benefits. These must be fully addressed and community buy-in assured at all levels. Priority should be given to areas with low MC prevalence and high HIV prevalence for comparison purposes. MC interventions must run concurrently with all other prevention strategies.

CHAPTER 4:

HIV Prevention in a Health Care Setting



CHAPTER 4: HIV PREVENTION IN A HEALTH CARE SETTING

Introduction

HIV and other blood borne pathogens (BBPs) such as Hepatitis B and Hepatitis C may be transmitted in health care settings from a patient to a health care worker, from a health care worker to a patient or from a patient to a patient. The occupational risk of becoming HIV infected from patients in health care settings is mostly associated with injuries from sharps such as needle stick injuries, splashes of blood or other body fluids. Patient to patient transmission usually results from contaminated equipment and other materials, which have been incorrectly or inadequately processed.

This can be prevented by implementing the following infection prevention and control measures: adherence to standard precautions such as hand hygiene; use of Personal Protective Equipment (PPE) such as gloves; proper healthcare waste management; processing of instruments by decontamination; cleaning and sterilization using High-Level Disinfectants (HLDs); and observing safe work practices. The use of such measures will help to minimize the risk of HIV transmission in the health care setting.

Prevention of HIV Transmission through Standard Precautions

Standard precautions are a simple set of effective practice guidelines that create a physical, mechanical and chemical barrier to protect health care workers and patients from infection with a range of pathogens including blood borne pathogens. Standard precautions are used when caring for all patients regardless of diagnosis, (WHO).

Components of Standard Precautions

The key components of standard precautions include:

- Considering every person (patient or staff) as potentially infectious and susceptible to infection
- Hand hygiene practices including hand washing, use of hand antiseptics, alcohol hand rub and surgical hand scrubs
- Use of PPE such as gloves, masks, goggles, caps, gowns, boots and aprons
- Use of antiseptic agents for cleansing skin or mucous membranes prior to surgery, cleaning wounds, or doing hand rubs or surgical hand scrubs
- Safe work practices such as avoiding recapping or bending used needles, proper handling of sharps, linen, patient resuscitation and patient care equipment
- Safe disposal of infectious waste materials and sharp wastes
- Processing of instruments by decontaminating and thoroughly cleaning and sterilizing them with HLDs using recommended procedures

Implementation of Standard precautions

In practice, implementation of standard precautions includes the following interventions:

Hand Hygiene

Hand hygiene techniques significantly reduce the number of disease-causing micro-organisms on hands and minimize cross-contamination of healthcare-related infections, such as those from health care worker to patient. Common hand hygiene procedures include routine hand washing, hand washing with antiseptics, antiseptic hand rubs and surgical hand scrubs.

The need to apply hand hygiene procedures is determined by

- intensity of contact with patients and/or blood and bodily fluids
- likelihood of microbial transmission
- patients' susceptibility to infections
- procedures being performed

Personal Protective Equipment (PPE)

Personal protective equipment safeguards clients and health care staff from being contaminated or infected by disease causing micro-organisms. Examples of PPE include:

- Gloves (surgical, examination, elbow-length or heavy duty)
- Fluid impermeable aprons
- Masks and caps
- Protective eyewear
- Boots

Gloves

The use of a separate pair of gloves for each patient helps prevent the transmission of infection from person-to-person. HCWs should use gloves when:

- they anticipate contact with blood, other bodily fluids, mucous membranes, broken or cut skin
- handling items contaminated with blood, other bodily fluids and/or secretions
- performing housekeeping activities
- handling healthcare waste (should use utility gloves)
- they have skin lesions on their hands
- performing surgical procedures and vaginal examinations in labour (must use sterile gloves)

Gloves are not required for routine care activities during which contact is limited to a patient's intact skin.

Aprons

Rubber or plastic aprons provide a protective waterproof barrier for the healthcare worker while at work.

Protective eyewear

Eye-wear, such as plastic goggles, safety glasses, face shields, or visors that protect the eyes should be used when a splash of blood is anticipated such as during labour and delivery and in surgical or casualty units.

Boots

Rubber boots or leather shoes provide extra protection to feet from injury by sharps or heavy items that may accidentally fall. They must be kept clean. Healthcare workers should avoid wearing sandals or shoes made of soft materials.

Handling and Disposal of Healthcare Waste, Such as Sharp Instruments

The most common mode of transmission of blood borne pathogens in a healthcare setting is through skin puncture with contaminated needles or sharps. Such injuries often occur when sharps are recapped, cleaned, or inappropriately discarded.

The following should be taken into consideration when using sharps:

- Use a sterile syringe (preferably a retractable syringe) and needle for each injection and reconstitution of each unit of medication.
- Never leave a needle inserted in a vial cap when withdrawing multiple doses.

- Minimize handling of injection equipment whenever possible.
- Always keep your fingers behind the needle.
- Do not disassemble needles and syringes after use.
- Do not recap, bend or break needles prior to disposal.
- Do not over-fill sharps containers; filling them more than three-quarters ($3/4$) full may cause needle stick injuries. It is also forbidden to press overflowing waste bins in order to push waste down.
- If it is necessary to recap needles, such as when using a vacutainer in venopuncture, use the single-handed scooping method.

Sharps containers (safety boxes)

Using safety boxes helps to prevent injuries from sharps waste. Safety boxes should be puncture-proof, leak-proof, and tamper-proof. In other words, difficult to open or break.

Safe use of sharps containers (safety boxes)

1. All sharp containers should be clearly marked “SHARPS” and/or have pictorial instructions for the use and disposal of the containers.
2. Place sharp containers away from high-traffic areas and within arm’s reach to where the sharps will be used.
3. Do not place containers near light overhead fan switches, or thermostat controls where people might accidentally touch them.
4. Never reuse or recycle sharps containers for other purposes.
5. Dispose safety boxes when $3/4$ full.
6. Ensure that no sharp items are sticking out of containers.
7. Dispose sharps containers by incineration, burning, encapsulating, or burying.

Safe Disposal of Waste Contaminated with Bodily Fluids

Proper waste management involves the following steps:

- Segregation
- Handling and Storage
- Transport
- Treatment or Destruction
- Final disposal

Segregation

This refers to separation of waste by type at the point and time it is generated. Different types of waste should be placed in containers that are color-coded. In the absence of color-coded containers, other containers may be used but they should be properly and visibly labeled.

Refer to appropriate document(s) for further information.

Note: The segregation of waste at the point and time it is generated will help to achieve proper waste disposal of infectious waste and protect other staff at the workplace and the neighbouring community.

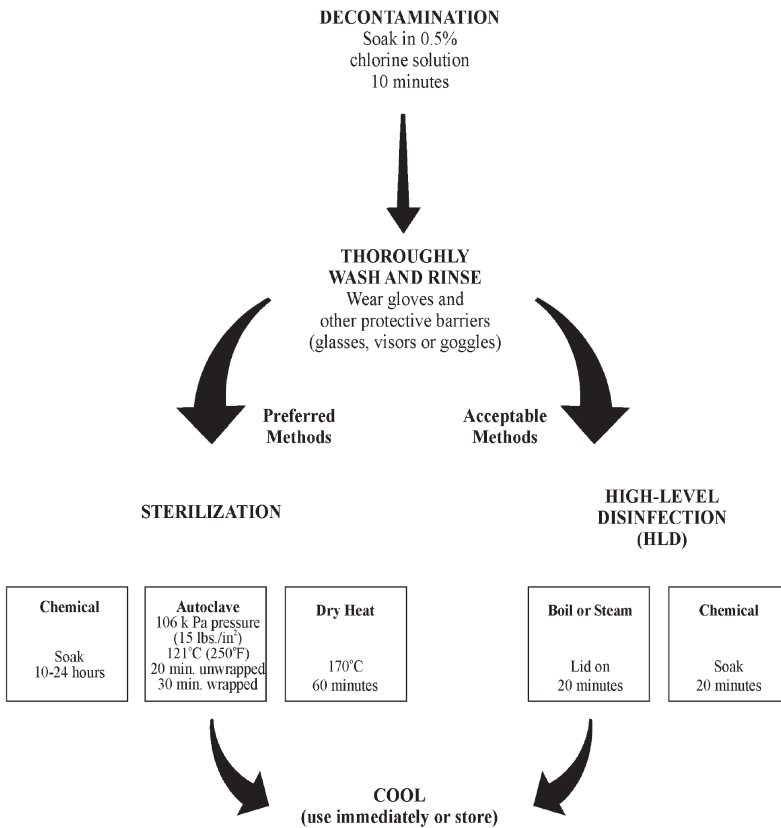
Home-based Healthcare Waste Management

Community Health Nurses and other healthcare service providers providing care in homes and the community should handle and dispose sharps and other infectious waste (such as soiled dressings and supplies) in the same manner it is done in a healthcare setting.

Proper Processing of Instruments and Other Contaminated Equipment

There are three basic infection prevention processes recommended for the reduction of disease transmission from soiled instruments and other reusable items. These are: decontamination, cleaning, and sterilization or high-level disinfection (HLD). Regardless of the operative procedure, the steps in processing surgical instruments and other items are the same.

Figure 4.1: Infection prevention processes for instruments and reusable items



Decontamination is a process that makes inanimate objects safer to be handled by staff before cleaning. It inactivates HBV, HBC and HIV and reduces, but does not eliminate, the number of other contaminating micro-organisms.

Cleaning is the physical removal of all visible dirt, soil, blood or other bodily fluids from inanimate objects. Cleaning also removes a sufficient number of micro-organisms hence reducing risk of infection by those who touch the skin or handle the object. The process entails thoroughly washing with water, soap or detergent, rinsing with clean water and drying.

High-level disinfection (HLD) is a process that eliminates all micro-organisms except some bacterial endospores from inanimate objects. It entails boiling, steaming or the use of chemical disinfectants.

Sterilization is a process that eliminates all micro-organisms (bacteria, viruses, fungi and parasites) including bacterial endospores from inanimate objects through the use of high-pressure steam (autoclave), dry heat (oven), and chemical sterilants or radiation.

Proper Handling of Soiled Linen

Key Steps in Processing Linen

- Housekeeping and laundry personnel should wear utility gloves and other personal protective equipment as indicated when collecting, handling, transporting, sorting and washing soiled linen.
- When collecting and transporting soiled linen, they should handle it with minimum contact to avoid accidental injury and spreading of micro-organisms.
- All cloth items (such as surgical drapes, gowns, wrappers) used during a procedure should be considered as infectious. Even if

- there is no visible contamination the item must be laundered.
- Soiled linen should be carried in covered containers or plastic bags to prevent spills and splashes, and confined to designated areas (interim storage area) until transported to the laundry.
 - All linen in the laundry area should be carefully sorted before washing. **Do not pre-sort or wash linen at the point of use.**
 - When hand-washing soiled linen, soak in hot water with 0.5% sodium hypochlorite solution for thirty (30) minutes, wash separately in hot water and then air dry.
 - Clean linen must be wrapped or covered during transportation to avoid contamination.

Cleaning Floors

Detergents and hot water are adequate for routine cleaning of floors, beds and toilets. In case of spillage of blood or other bodily fluids, the area should be cleaned with a chlorine-based disinfectant followed by thorough cleaning with soap and hot water.

All health care workers must be conversant with standard precautions.

Post Exposure Prophylaxis (PEP)

The most common method of exposure to HIV infection is through unprotected sexual intercourse (sexual exposure) such as during sexual assault. Other potential areas of risk of HIV infection include contact with infectious bodily fluids, such as during accidents or when safety precautions are not followed (occupational exposure).

Post Exposure Prophylaxis (PEP) is the immediate provision of preventive measures and medication following exposure to potentially infected blood or other bodily fluids in order to

minimize the risk of acquiring infection. Several clinical studies have demonstrated that HIV transmission can be significantly reduced by 81% following the immediate administration of antiretroviral agents.

Occupational Exposure

Exposure prevention is the primary strategy for reducing occupational HIV transmission, that is, the chance of acquiring infection following exposure to blood and other bodily fluids (semen, vaginal secretions and breast milk) from an infected person. These bodily fluids should be considered as being infectious.

Effective post-exposure management entails the following elements: Management of Exposure Site, Exposure Reporting, Assessment of Infection Risk, Appropriate Treatment, Follow-up and Counselling

Management of Exposure Site

Wounds and skin sites that have been in contact with blood or bodily fluids should be washed with soap and water and mucous membranes flushed with water. There is no evidence that using antiseptics for wound care or expressing fluid by squeezing the wound reduces the risk of blood-borne pathogen transmission. While the use of antiseptics is not contraindicated, the application of caustic agents (e.g. bleach) or injection of antiseptics or disinfectants into the wound is not recommended.

Exposure Reporting

When an occupational exposure occurs, the circumstances and post exposure management procedure applied should be recorded in the exposed person's confidential form for easy follow up and care. Information to be recorded in the health worker's confidential medical report should include:

- Date and time of exposure
- Details of the procedure being performed and the use of protective equipment at the time of exposure
- Type, severity and amount of fluid that the healthcare worker was exposed to
- Details of the exposure source person
- Medical documentation that provides details about post-exposure management

Risk Assessment for Occupational Exposure

In addition to the type of bodily fluids, the risk of acquiring HIV also depends on the type and severity of exposure and the HIV status of the source person.

Depending on the sero-status of the source person, the following criteria can be used to determine the risk of exposure:

- Percutaneous injury
- Mucus membrane exposure
- Non intact skin exposure
- Bites resulting to blood exposure to either person involved

Table 4.1: Risk of transmission after occupational exposure

BBP	Mode of exposure	Risk of infection/ exposure
HIV	Percutaneous	0.3%
HIV	Mucous membrane	0.03-0.09%
HBV	Percutaneous	10-30%
HCV	Percutaneous	0-10%

Note: Standard precautions should be adhered to when contact with any type of body fluid is anticipated.

Evaluation of the Exposed HCW

Healthcare workers exposed to HIV should be evaluated within hours rather than days. A starter pack should be initiated within 2 hrs after exposure and before testing the exposed person. Thereafter, exposed healthcare workers should be counselled and tested for HIV at baseline in order to establish infection status at the time of exposure. PEP should be discontinued if an exposed healthcare worker refuses to test. To facilitate an effective choice of HIV PEP drugs, the evaluation should include information on the type of medication the exposed person might be taking and any current or underlying medical conditions or circumstances (such as pregnancy, breast feeding, renal or hepatic disease) that might influence drug selection. Vaccination against Hepatitis B should be considered in the case of large volume needle-stick injury.

Evaluation of the Source Person

Evaluation of the source person should be performed when the exposed healthcare worker agrees to take PEP.

If the HIV, HBV and HCV status of the source person is unknown perform these tests after obtaining consent. The exposed healthcare worker should not be involved in obtaining consent from the source person.

If the source person is unknown, evaluation will depend on other risk criteria.

Do not test discarded needles or syringes for viral contamination.

Drugs for HIV PEP

For most cases of exposure to HIV a combination of AZT and 3TC should be used. However, for exposure that poses an increased risk for transmission see the following table.

Table 4.2: Recommended regimen following percutaneous HIV exposure

INFECTION STATUS OF THE SOURCE					
Exposure type	HIV-positive Class 1 ⁺	HIV-positive Class 2 ⁺	Source of unknown HIV status [†]	Unknown source [§]	HIV-Negative
Less severe [¶]	Recommend basic 2-drug PEP ⁺⁺	Recommend expanded 3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP ^{**} for source with HIV risk factors	Generally, no PEP warranted; however, consider basic 2-drug PEP ^{**} in setting where exposure to HIV infected persons is likely	No PEP warranted
Large volume ^{§§}	Recommend expanded 3-drug PEP	Recommend expanded 3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP ^{**} for source with HIV risk factors ⁺⁺	Generally, no PEP warranted; however, consider basic 2-drug PEP ^{**} in setting where exposure to HIV-infected persons is likely	No PEP warranted

Legend:

* - HIV positive

Class 1 – asymptomatic HIV infection or known low viral load (i.e. <1,500 RNA copies / mL)

Class 2 – symptomatic HIV infection, AIDS, acute sero-conversion, or known high viral load. If drug resistance is a concern, obtain expert consultation. Initiation of post exposure prophylaxis (PEP) should not be delayed pending expert consultation, and, because expert consultation alone cannot substitute for face-to-face counselling, resources should be available to provide immediate evaluation and follow-up care for all exposed persons.

† Source of unknown HIV status (e. g. deceased source person with no samples available for HIV testing)

§ Unknown source (e. g. a needle from a sharps disposal container)

¶ Less severe (e. g. solid needle and superficial injury)

** The designation “consider PEP” indicates that PEP is optional and should be based on an individualized decision between the exposed person and the treating clinician. If PEP is offered and taken and the source is later determined to be HIV- negative, PEP should be discontinued.

§§ More severe (e. g. large-bore hollow needle, deep puncture, visible blood on device, or needle used in patient’s artery or vein)

Table 4.3: Recommended regimen following mucous membrane or non-intact skin* exposure

INFECTION STATUS OF THE SOURCE					
Exposure type	HIV-positive Class 1 ⁺	HIV-positive Class 2 ⁺	Source of unknown HIV status [†]	Unknown source [§]	HIV-Negative
Small volume**	Consider basic 2-drug PEP ⁺⁺	Recommend basic 2-drug PEP	Generally, no PEP warranted however, consider basic 2- drug PEP ⁺⁺ for source with HIV risk factors	Generally, no PEP warranted; however, consider basic 2-drug PEP ⁺⁺ in setting where exposure to HIV infected persons is likely	No PEP warranted
Large volume ^{§§}	Recommend basic 2-drug PEP	Recommend expanded 3-drug PEP	Generally, no PEP warranted; however, consider basic 2-drug PEP ⁺⁺ for source with HIV risk factors	Generally, no PEP warranted; however, consider basic 2- drug PEP ⁺⁺ in setting where exposure to HIV-infected persons is likely	No PEP warranted

Legend:

* For skin exposures, follow-up is indicated only if there is evidence of compromised skin integrity (e.g. dermatitis, abrasion, or open wound).

† HIV- Positive:

Class 1 - asymptomatic HIV infection or known low viral load (e. g. <1,500 RNA copies/ mL)

Class 2 - symptomatic HIV infection, AIDS, acute seroconversion, or known high viral load. If drug resistance is a concern, obtain expert consultation. Initiation of post-exposure prophylaxis (PEP) should not be delayed pending expert consultation, and, because expert consultation alone cannot substitute for face-to-face counselling, resources should be available to provide immediate evaluation and follow-up care for all exposures.

§ Source of unknown HIV status (e.g. deceased source person with no samples available for HIV testing).

¶ Unknown source (e.g. splash from inappropriately disposed blood)

** Small volume (i.e. a few drops).

†† The designation, “consider PEP,” indicates that PEP is optional and should be based on an individualized decision between the exposed person and the treating clinician. If PEP is offered and taken and the source is later determined to be HIV- negative, PEP should be discontinued.

§§ Large volume (i.e. major blood splash)

Table 4.4 ARV regimens according to level of risk

Risk category	ARV regimen	Drug regimen
Low risk	Dual therapy(two drugs)	Zidovudine (ZDV)+Lamivudine (3TC)
High risk	Triple therapy (three drugs)	ZDV+3TC+Efavirenz (EFV), or Lopinavir/r

Timing of Post Exposure Prophylaxis (PEP)

PEP should be initiated as soon as possible preferably within 2 hours after exposure. Studies suggest that PEP may be substantially less effective if started more than 24-36 hours post-exposure and not effective after 72 hours.

Follow-up of HIV Exposed Persons

Follow-up is based on clinical examination and laboratory testing to determine the sero-conversion and adverse effects of the ARV drugs.

HIV antibody tests should be performed for at least 6 months post-exposure (i.e. at 6 weeks, 12 weeks and 6 months).

HIV testing should also be performed for any exposed person who has an illness that is compatible with an acute retroviral syndrome, irrespective of the interval since exposure.

If PEP is administered, the exposed person should be monitored for drug toxicity by testing at baseline and 2 weeks after starting PEP. Minimally, it should include a full blood picture (FBP), renal function test (RFT) and hepatic function tests (LFTs).

Exposed persons should be re-evaluated within 72 hours, after ad-

ditional information about the source including serologic status, viral load, current treatment, any resistance test results or information about factors that would modify recommendations is obtained.

Prophylaxis should be continued for four weeks if tolerated.

If ARV prophylaxis fails and the exposed person becomes HIV infected, he/she should be referred to a CTC for proper HIV care and management.

HIV PEP in Sexual Exposure

Sexual exposure comprises an act of unprotected voluntary or forced sexual intercourse (rape/sexual assault), as well as in the case of slipped or broken condom during sex with discordant partner. The consequences of sexual exposure include a potential risk of acquiring sexually transmitted diseases including HIV/ HBV and unwanted/unplanned pregnancy.

Appropriate Management of Exposed Persons

Informed consent (whenever possible) should be obtained before examination and collection of any forensic evidence that might be needed in subsequent investigations. Younger children need to be managed at specialised sites that have the expertise in dealing with traumatized children and the prescription of ART.

Healthcare providers are responsible to provide appropriate comprehensive care for rape survivors, including

- Management of life threatening conditions and sustained injuries
- Immediate detailed history taking, precise documentation of the victim's details and circumstances of the assault as well as confidential reporting to appropriate institutions

- Thorough physical and genital examination as well as collection of specimen (blood/saliva/hair/semen/high vaginal swab/dry and wet mount preparations, etc.) for laboratory investigations for STIs and forensic evidence, as soon as possible (within 24 hours) after the rape incident
- Evaluation and prophylaxis for HIV, HBV, STIs and pregnancy when indicated, i.e. PEP using antiretroviral therapy, presumptive treatment of STIs and emergency contraception
- Counselling, crisis prevention and provision of on-going psychosocial support to rape survivors, so as to reduce/minimize immediate rape trauma disorder and long-term post-traumatic stress disorder
- Provision of mental health care
- Follow-up care to monitor other possible infections and provision of psychological support, regardless of whether PEP prophylaxis has been started or not
- Referral of the survivor to appropriate organs (police/legal services), according to local laws and regulations

Risk of HIV Transmission after Sexual Exposure

Risk of transmission of HIV varies with type of sexual exposure as shown in the table below:

Table 4.5: Risk of HIV transmission after sexual exposure

Types of exposure (from an HIV positive source)	Risk of infection per exposure
Receptive oral sex	0-0.04%
Insertive vaginal sex	0.03-0.09%
Receptive vaginal sex	0.1-0.3%
Insertive anal sex	0.03%
Receptive anal sex	0.5-3%

When deciding whether to offer PEP or not, consider that risk of transmission following sexual exposure is high if any of the following factors were present:

- Blood
- Survivor or assailant with a sexually transmitted disease with inflammation such as gonorrhoea, chlamydia, herpes, syphilis, bacterial vaginosis, trichomoniasis, etc.
- Multiple assailants or multiple penetrations by assailant(s)
- Ejaculation by assailant
- Anal penetration
- Obvious trauma to the genital area
- The assailant(s) is HIV positive

Factors to be Considered before Initiation of PEP

Factors to be considered before initiation of PEP for non-occupational exposure are similar to those for occupational exposure. They include:

- HIV status of potentially exposed person
- HIV status of exposure source person if available. If unknown, PEP can be initiated while the status is being assessed and discontinued if serostatus of exposure source person is confirmed negative

The decision to begin PEP should not be based on the likelihood that the perpetrator is infected or delayed pending the test results of the exposure source (unless immediately available). Rather, it should be based on the perpetrator's transmission risk behaviour and the presence of other sexually transmitted diseases, particularly genital ulcers, which can facilitate HIV transmission.

Note: Exposure to persons who have recently seroconverted may carry a higher risk of transmission because of high HIV viremia.

Basic Steps to be Taken after Sexual Exposure

- Perform counselling and testing at baseline before administering PEP. It is important to establish survivor's baseline HIV status before administering PEP in order to prevent the potential for developing drug resistance, should the individual be HIV positive.
- If the rape survivor is HIV negative administer the initial (first) dose of PEP as early as possible. The efficacy of PEP decreases with the length of time. Offer PEP promptly, preferably within 2 hours but not later than 72 hours of being raped. If the rape survivor is HIV positive, refer the person to CTC for enrolment and further management. Do not offer PEP.
- Rape survivors presenting later than 72 hours after being raped should not be offered PEP.
- If the rape survivor is not psychologically ready, the baseline HIV test can be delayed by up to 3 days after commencement of PEP. If the test result is positive, PEP should be stopped and the patient should be referred to a CTC. It should also be explained to the rape survivor that the HIV infection is not the consequence of the sexual assault but from previous exposure.
- Provide psychosocial support and ensure adherence to PEP regime. The rate of lost to follow-up is high in this group of patients.
- Monitor for ARV drug toxicity and manage the conditions (if present) accordingly.

Drug Regimen

The recommended treatment regimen is

AZT 300 mg 12 hourly+150mg 3TC 12 hourly daily for 4 weeks

A third drug, EFV or Lopinavir/r should be added if:

- There have been multiple perpetrators
- Anal penetration occurred
- There is obvious trauma to the genital areas
- One of the perpetrators is known to be HIV positive

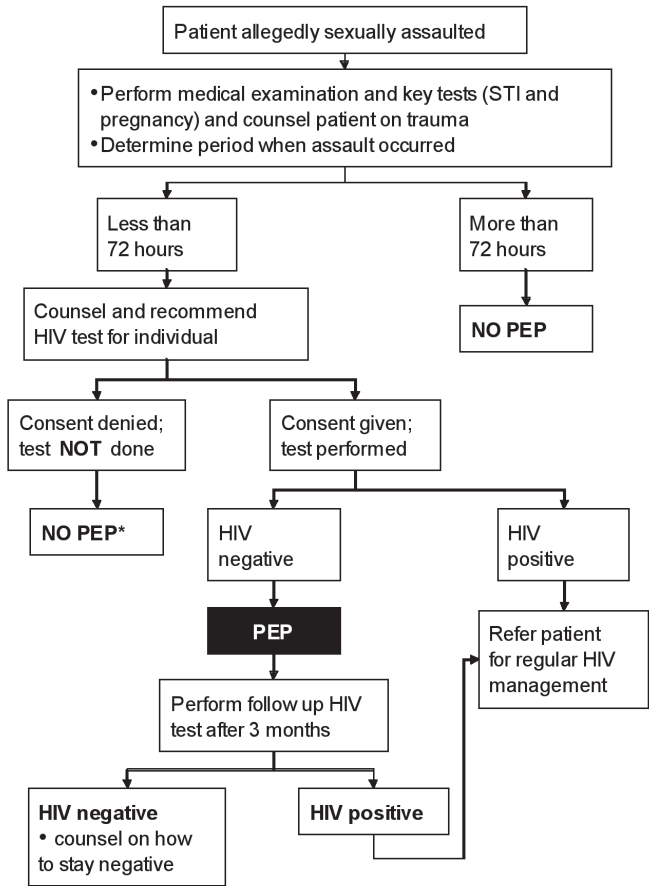
The noted contraindications for each of the listed drugs should be considered as per details in appropriate chapters.

Patient Monitoring

Routine testing with a full blood count and liver enzymes for patients on AZT and 3TC is not recommended due to short duration of therapy. Any blood tests to be performed should be based on patient's condition.

Three months after the PEP period, the individual should return for a confirmatory set of HIV tests to determine whether the treatment was effective. If treatment was not effective and the individual became infected, he/she should be enrolled in the care program at the CTC and monitored appropriately as all HIV positive individuals.

Figure 4.2: Post Exposure Prophylaxis after Sexual Assault

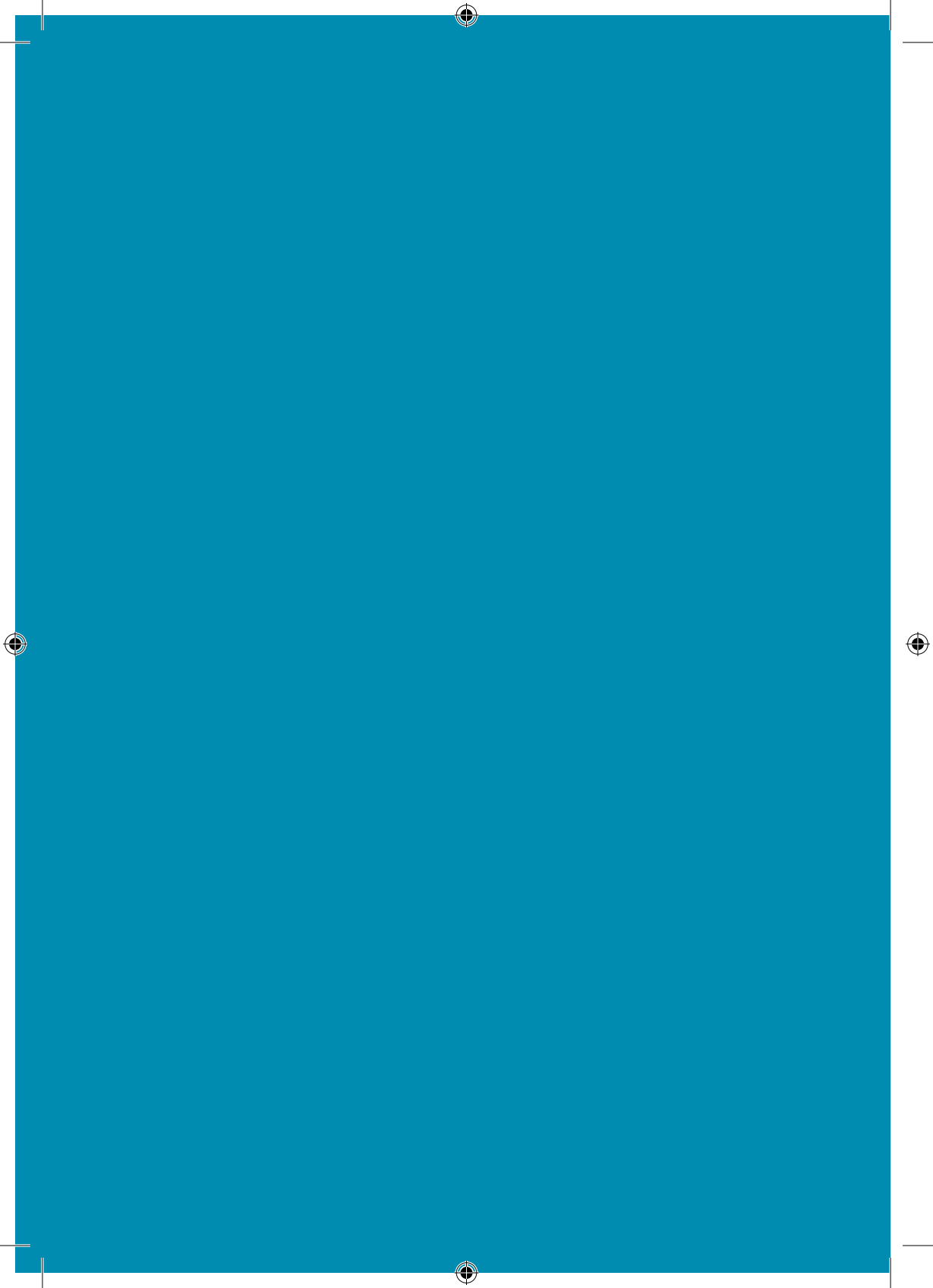


*Administering PEP on a HIV+ individual could lead to resistance development



CHAPTER 5:

Laboratory Tests for HIV and AIDS



CHAPTER 5: LABORATORY TESTS FOR HIV AND AIDS

Introduction

Laboratory testing is an important integral part of HIV and AIDS care and treatment. The tests that are done provide additional information on an individual's HIV status, the level of disease progress, treatment eligibility and response to treatment, and drug adverse reactions.

Tests for HIV Diagnosis

HIV Testing in Adults and Children over 18 Months

Diagnosis of HIV infection in adults and children older than 18 months is commonly done by detecting antibodies to HIV using rapid tests or Enzyme Immunoassays (EIA). According to the national testing algorithm, HIV infection is tested and confirmed based on concordance results of two or three HIV rapid tests done serially. The second test should only be done if the first test is reactive (positive) and the third test only if the two initial tests are discordant.

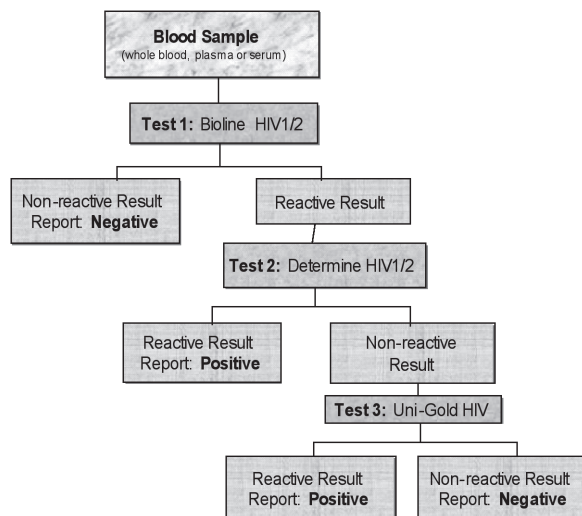
The national HIV rapid testing algorithm is made up of three main HIV rapid tests. These are:

1. *Bioline HIV_{1/2}* for the first test
2. *Determine HIV_{1/2}* for the second test and
3. *Uni-Gold HIV* for the third test

The three rapid tests can be done using whole blood, serum or plasma samples. Whenever possible, rapid testing will be done with a finger prick sample. HIV rapid testing can be performed in the laboratory or in non-laboratory hospital, clinic or com-

munity settings by health care workers trained to performed HIV rapid tests. However, all testing done outside a laboratory setting must be supervised by qualified laboratory personnel to ensure accurate and quality results.

Figure 5.1: The National HIV Rapid Test Algorithm



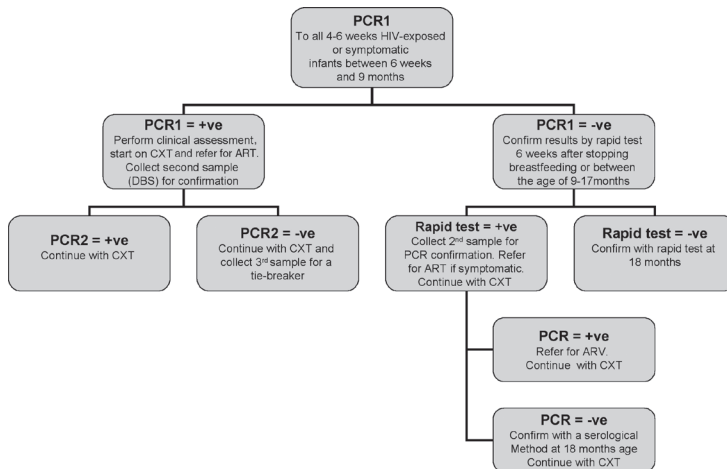
The national testing algorithm for HIV enzyme immuno-assays (EIA) is currently being developed by MOHSW.

Diagnosing HIV Infection in Children under 18 months

A positive antibody test (rapid test or EIA) in infants below 18 months does not confirm HIV infection, rather exposure to HIV (see for details chapter 7). The laboratory diagnosis of HIV infection in infants and children aged <18 months is done by detection of viral nucleic acid (RNA or pro-viral DNA) or viral antigens (p24).

HIV DNA polymerase chain reaction (PCR) method is used to confirm HIV infection in infants and children ≤ 18 months of age. PCR can be used to diagnose HIV infection in most infected infants by the age of 6 weeks. Capacity for PCR testing has been developed at the four zonal consultant hospitals in Tanzania. Samples for PCR testing can be whole blood or dried blood spots (DBS) on special filter paper cards which need to be transported to the zonal hospital laboratories.

Figure 5.2: HIV Testing Algorithm for Children below 18 months



Tests for Monitoring Disease Progress and Treatment Safety

Tests for HIV Disease staging

CD₄ cells progressively decrease as HIV disease advances and immune status deteriorates. Measurements of CD₄ counts will be important immunological markers of disease progression and assist in decision making on when to start antiretroviral treatment. In adolescents and adults, CD₄ counts are reported in absolute numbers (for details see chapter 8) while for children under 6

years CD₄ are reported in %. (For details see chapter 7, table 7.1). Capacities for measuring CD₄ counts have been established at all zonal, regional and district hospital laboratories. However equipment to measure CD₄% is currently only available at all zonal and some regional and hospital laboratories.

Tests for Monitoring Responses to antiretroviral Treatment

Successful antiretroviral therapy results in decrease of viral load, immune recovery and therefore increase in number of CD₄ cells. Periodically every 6 months the CD₄ count is used to monitor the immunological response to antiretroviral therapy.

When available, viral load may be considered in addition to clinical and immunological measurements to diagnose treatment failure earlier or to access discordant clinical and immunologic findings in patients in whom it is suspected that ART has failed. Capacity for viral load measurements is currently limited to zonal consultant hospitals.

Tests for Monitoring antiretroviral Treatment safety (toxicity)

Antiretroviral drugs are known to produce short- and long term side effects in some patients. Clinical follow up is crucial supported by laboratory investigations. Capacity for testing haematology indices and clinical biochemistry has been developed at laboratories of all hospitals with a CTC in the country. The frequency of monitoring depends on the ART regimen used and is summarized in table 8.5 in chapter 8.

Furthermore toxicity ART drug varies in severity which determines the clinical action to take. The following tables show the grading of adverse events as a result of ARV drugs for adults and children.

Table 5.1: Grading adverse reactions in adults

LABORATORY TEST ABNORMALITIES				
Item	Grade I Toxicity	Grade II Toxicity	Grade III Toxicity	Grade IV Toxicity
Haemoglobin	8.0-9.4 g/dL	7.0-7.9 g/dL	6.5-6.9 g/dL	<6.5 g/dL
Absolute Neutrophil Count	1-1.5 x 10 ⁹ /L	0.75-0.99 x 10 ⁹ /L	0.5-0.749 x 10 ⁹ /L	<0.5 x 10 ⁹ /L
ALT	1.25-2.5 x upper normal limit	>2.5-5 x upper normal limit	>5.0-10 x upper normal limit	>10 x upper normal limit
Triglycerides	3-4.51 mmol/L	4.52-8.48 mmol/L	8.49-13.56 mmol/L	>13.56 mmol/L
Cholesterol	>1.0-1.3 upper normal limit	>1.3-1.6 upper normal limit	>1.6-2.0 upper normal limit	>2.0 upper normal limit
MANAGEMENT	Continue ART Repeat test 2 weeks after the initial test and re-assess		Continue ART Repeat test 1 week after initial test and reassess; if ALT still grade 3 consult expert about stopping ART	Consult expert immediately before stopping ART

Table 5.2: Grading the severity of adverse reactions in children

LABORATORY TEST ABNORMALITIES				
Item	Grade I Toxicity	Grade II Toxicity	Grade III Toxicity	Grade IV Toxicity
Haemoglobin > 3 mo. - < 2 y. o.	9.0-9.9 g/dL	7.0-8.9 g/dL	<7.0 g/dL	Cardiac failure secondary to anaemia
Haemoglobin ≥ 2 y.o.	10-10.9 g/dL	7.0-9.9 g/dL	<7.0 g/dL	Cardiac failure secondary to anaemia
Absolute Neutrophil Count	0.75-1.2 x 10 ⁹ /L	0.4-0.749 x 10 ⁹ /L	0.25-0.399 x 10 ⁹ /L	<0.25 x 10 ⁹ /L
ALT (SGPT)	1.25-2.5 x upper normal limit	2.6-5 x upper normal limit	5.1-10 x upper normal limit	>10 x upper normal limit
Triglycerides	—	1.54-8.46 mmol/L	8.47-13.55 mmol/L	>13.56 mmol/L
Cholesterol	—	4.43-12.92 mmol/L	12.93-19.4 mmol/L	>19.4 mmol/L

Tests for diagnosing Opportunistic Infections

Common OIs including the laboratory investigations to confirm diagnosis are discussed in chapter 6. For laboratory diagnosis of common OIs such as TB, upper respiratory tract infections, meningitis, diarrhoeas and septicaemia, diagnostic protocols are available as standard operating procedures and should be used. Laboratory capacity for TB AFB and general microscopy exists at all hospitals and health centres. Culture for bacterial infections can be performed at all zonal and regional hospitals. Close team work between laboratory and clinical staff at the CTC is required to optimize diagnostic capacities.

Laboratory Safety Procedures

Adherence to safety precautions in the laboratory should be done at all steps starting from specimen collection, storage, transportation and disposal of biohazard wastes so as to minimize occupational risks. The risk of transmission of HIV, hepatitis B virus (HBV) and other blood-borne disease agents can be minimized if laboratory workers observe safety precautions /procedures at all times. **All** specimens should be treated as infectious. For more details, see chapter 4.

Sample Storage Procedures

All samples should be stored in tightly closed and labelled tubes and kept in an upright position in racks. Temperature requirements should be observed during specimen storage and records of all samples kept. Always dispose used or old specimens timely by autoclaving and incineration.

Sample Transportation Procedure

Whenever the capacity for a particular test does not exist in the laboratory on-site, efforts should be made by laboratory staff

to prepare samples for transportation to the nearest facility with such capacity. When transporting samples from the clinic to laboratory or from one laboratory to another, the following should be observed:

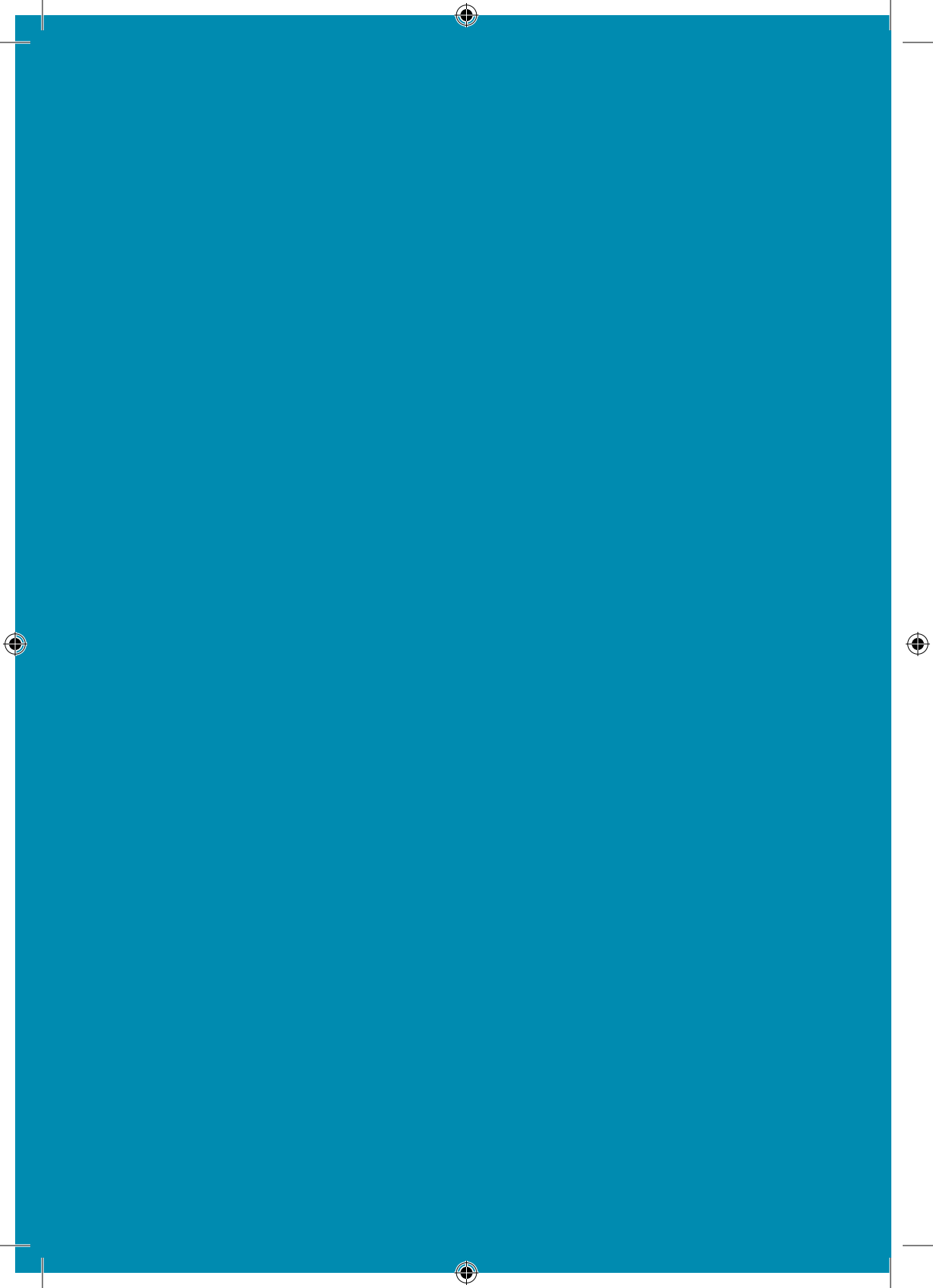
- Specimens should be packaged appropriately according to the Standard Operating Procedures (SOPs) and put in appropriate and safe containers before transporting them by road (bus or vehicle) or air
- Dried blood spots samples (DBS) on blotting paper are considered to be non-infectious and can be put in a letter envelope and transported by mail or courier. Consult courier and receiving laboratory for procedures and timing.
- A specimen delivery checklist should be used to verify that there is a requisition form for all samples transported.
- Dispatch and receipt records of transported samples should be maintained.

(For more details on DBS collection and transportation see EID guidelines)



CHAPTER 6:

Management of Common Symptoms and Opportunistic Infections in HIV and AIDS in Adolescents and Adults



CHAPTER 6: MANAGEMENT OF COMMON SYMPTOMS AND OPPORTUNISTIC INFECTIONS IN HIV AND AIDS IN ADOLESCENTS AND ADULTS

Introduction

Despite the availability of ART, it is important to bear in mind that there is still no cure for HIV infection and AIDS. It is also important to remember that HIV infected patients do not die from HIV infection per se; rather from the various complications resulting from the HIV induced immune deterioration. A sizeable proportion of HIV infected patients yield to opportunistic illnesses. Fortunately, most of these illnesses are amenable to therapy, and their early recognition and prompt treatment can significantly reduce HIV associated morbidity and mortality. And even where such illnesses cannot be cured, a lot can be done to substantially improve the duration and quality of an HIV infected patient's life.

This chapter highlights the following:

- Clinical features and treatment of the common symptoms encountered in persons infected with HIV
- Prevention of common opportunistic infections and offers guidance to their management
- Diagnosis and treatment of some opportunistic illnesses seen in persons infected with HIV

Clinical Features Commonly Encountered in Patients with HIV and AIDS

Fever

Fever in a patient may be due to a variety of causes. However, the associated clinical features may inform the diagnosis. If no pointing features to a diagnosis are present, as a minimum the following should be done:

- Blood slide for malaria parasites
- Sputum for AFB
- Chest X-ray
- Urinalysis
- Hemogram (FBP)

Where facilities are available, and if indicated, the following tests should also be done:

- Urine cultures
- Blood culture for TB and other organisms
- Blood for widal test (Extended widal)

Cough and Dyspnoea

Persistent cough and or dyspnoea can usually be attributed to one of the following:

- Pulmonary TB
- Bacterial pneumonia
- Pleural effusion, commonly due to TB
- Pulmonary Kaposi's sarcoma
- Viral pneumonia or PCP
- Cardiac failure, commonly due to dilated Cardiomyopathy
- Pericardial effusion, commonly due to TB

Sometimes, it may not be possible to determine the underlying cause of cough and dyspnoea on clinical history and physical examination alone. At such times, laboratory tests may be of critical value. The recommended laboratory investigations include:

- Sputum for AFB x 3 (can be done at all levels)
- Sputum for pyogenic culture and sensitivity
- Chest x-ray
- Bronchoscopy (consultant hospitals)
- ECG and Echocardiography (where available)

Oral, Oropharyngeal and Oesophageal Candidiasis

Patients with oropharyngeal and oesophageal candidiasis may complain of pain and/or difficulty in swallowing, which may be due to infection of the esophagus with *Candida*. On examination white painless plaque (“curd like”) on buccal or pharyngeal mucosa or tongue surface that can easily be scrapped off will be seen. Where available, a barium swallow X-ray can be performed. For treatment, any of the following may be used:

- Fluconazole orally
- Miconazole
- Nystatin oral suspension
- 2% sodium benzoate or Gentian violet solution
- Ketoconazole

Vaginal Candidiasis

This is one of the common illnesses presenting with itchy curd-like discharge. The diagnosis is largely clinical, and it can be managed with:

- Clotrimazole pessaries
- Miconazole pessaries

- Fluconazole taken orally (in case of pessaries failure)

Weight Loss

Weight loss in persons with HIV induced illnesses including AIDS may be due to:

- Reduced food intake
- Difficult/painful swallowing
- Diminished gastrointestinal uptake (malabsorption, diarrhoea),
- TB (a frequent cause of rapid weight loss)
- Intestinal worms
- Other concomitant debilitating diseases such as cancer
- Intractable vomiting
- HIV itself

The treatment of weight loss includes

- High calorie and protein feeds
- Treatment of the underlying cause

Diarrhoea

Diarrhoea in persons with HIV induced illnesses including AIDS may have a variety of causes including:

- Common pathogens such as Salmonella or Shigella
- Amoebiasis
- Chronic malabsorption
- Cryptosporidiosis
- Mycobacterium avium complex (MAC) infection
- Isosporidiosis
- Clostridium difficile infection

Investigations:

- Examine stools for treatable causes such as *Salmonella*, *Shigella*, *V. cholerae*, Amoeba, *Mycobacterium avium complex* (MAC) and *Isosporium*

Diarrhoea can be treated in the following ways:

- Rehydration with Oral Rehydration Salts (ORS) or Intravenous (IV) fluids
- Treatment of underlying causes
- Nutritional therapy (see details in chapter 15)
- Anti-diarrhoeal drugs such as Loperamide (in persistent diarrhoea among adults with no obvious treatable causes)

Persistent Generalized Lymphadenopathy (PGL)

Lymphadenopathy may be due to a number of causes including the following:

- HIV itself
- *Mycobacterium tuberculosis* infection
- Kaposi's Sarcoma
- Lymphomas
- Other causes such as pyogenic bacterial infection with regional lymphadenitis

Investigations may include:

- Aspiration of the fluctuant node with a 21G needle and staining the aspirate for acid-fast bacilli (AFB)
- Lymph node biopsy for histological diagnosis
- Chest X-ray
- FBP and ESR

Treatment is mainly of the underlying cause.

Skin Rashes, Sores and Generalized Pruritis

General causes for the above conditions include:

- Generalized Pruritic Papular Eruption (PPE)
- Infestation with external parasites such as scabies
- Fungal skin infections (Dermatomycoses).
- Viral infections herpes zoster, herpes simplex, molluscum, HPV
- Kaposi's sarcoma (KS)
- Bacterial skin infection such as Impetigo
- Seborrheic dermatitis and Sebo-psoriasis

Investigations:

The diagnoses are mostly based on clinical presentation; however, when necessary the following investigations can be performed:

- Skin scrapings (for fungal element and *Sarcoptes scabiei*)
- Pus swab for culture and sensitivity
- Skin biopsy for KS

The following are recommended actions for the management of different causes:

Scabies:

- Benzyl benzoate Emulsion, or 1% lindane lotion
- Cloxacillin or Erythromycin if secondarily infected

Dermatomycoses:

- Whitfield's ointment or Griseofulvin tablets for Tinea
- Clotrimazole or Miconazole cream for Candidiasis

Impetigo:

- Cloxacillin
- Erythromycin

Herpes simplex & Herpes zoster:

- Acyclovir
- Cloxacillin
- Analgesics

Pruritic Papular Eruption (PPE):

- Antihistamine, e.g. Cetirizine
- Antibiotics, e.g. Cloxacillin or erythromycin
- Antiretroviral therapy

Seborrheic dermatitis:

- Antifungal (systemic if severe)
- Steroids (careful if concomitant TB is suspected)
- 3% salicylic acid ointment

Kaposi's sarcoma

This depends on the extent and severity and the options include:

- Surgical excision
- Radiotherapy
- Chemotherapy
- Anti-retroviral therapy (preferably PI-based, especially when extensive)

It should be noted that cancer conditions in HIV infected patients are managed in the same way as when they occur in patients that are not infected.

Altered Mental Status and Persistent Severe Headache

The following are some of the possible causes for altered mental status and severe headaches:

- Fungal meningitis, especially cryptococcal

- Tuberculous Meningitis
- Bacterial Meningitis
- Cerebral malaria
- Severe dehydration
- Septicemia
- Hypoglycemia
- Toxoplasma encephalitis
- HIV-dementia
- Depression
- Psychotic conditions

Recommended investigations include:

- Blood slide for malaria parasites
- Lumbar puncture for CSF examination including Indian ink stain for cryptococcal meningitis
- Salmonella and syphilis serology
- Blood cultures + sensitivity studies.
- Blood sugar
- Serum biochemistry where possible

Prophylactic Treatment of Common Opportunistic Infections in HIV and AIDS with Co-trimoxazole

Many opportunistic infections can be prevented by using cotrimoxazole prophylaxis, particularly in the case of

- Bacterial pneumonias
- *Pneumocystis jiroveci* pneumonia (PCP), and
- Toxoplasmosis

Indications for Prophylactic Treatment using Co-trimoxazole

Prophylactic treatment using co-trimoxazole should be provided for any of the following:

- Adults
 - All HIV infected patients, in WHO Stage 2, 3 and 4 (see Chapter 8 for WHO staging criteria)
 - Asymptomatic HIV infected individuals with CD₄ counts of <350 cells/ml

Pregnancy

- All pregnant women throughout their pregnancy
- HIV exposed children
 - All children born to HIV positive women starting at four weeks of life or as soon as possible thereafter of age and maintained in their first 18 months of life unless proven HIV negative and mother has stopped breastfeeding completely
- HIV infected children
 - Children less than 12 months with confirmed HIV infection regardless of CD₄% or clinical stage
 - Children 1 – 4 years who have symptomatic HIV (WHO stage 2, 3 or 4) regardless of their CD₄ %
 - Children 1 – 4 years and have and have CD₄ <25% regardless of their clinical stage
 - All HIV-infected children >5 years old should start or continue CPT according to adult guidelines

Note:

1. Baseline haematology (FBC) is required before long-term administration of co-trimoxazole.
2. Caution should be exercised when initiating CPT during

the first trimester of pregnancy in women who may not have access to good nutrition, because co-trimoxazole can cause a deficiency in folic acid.

3. Pregnant women who are receiving CPT do not need sulfadoxine pyrimethamine (SP), an additional medication to prevent malaria

Dosage:

For adults: One double strength tablet (160/800 mg) or two single strength tablets once a day on a daily basis.

For children: See Annex 5, Paediatric Antiretroviral Dosing.

Duration:

If treatment with ARV is not available, CPT for adults and children who qualify but are not on ARVs, should continue for life.

For those on ARVs, co-trimoxazole prophylaxis can be stopped if CD₄ count is >350 cells/ml.

Children who are born to HIV infected women can stop prophylaxis when HIV infection has been reasonably ruled out and the risk of exposure, for instance, through breast-feeding has ceased.

Children older than 18 months can continue with prophylaxis only if the diagnosis of HIV infection has been confirmed by serology.

Criteria for stopping:

- Occurrence of severe side effects such as severe cutaneous reactions or fixed drug reactions
- If ART is initiated and CD₄ count is above 350 cells/ml in adults or above 25% in children
- If use of antiretroviral agents causes renal and/or hepatic insufficiency or severe haematological toxicity

Follow up and monitoring:

Regular follow up is recommended, initially every month for the first three months, then every three months if the medication is well tolerated.

It is mandatory to monitor for side effects and adherence. Monitoring includes assessment of skin reactions, measurements of haemoglobin, and white blood counts every six months and when clinically indicated.

Preventive Therapy against TB in PLHAs

There is sufficient evidence on the benefits of preventive therapy against *Mycobacterium tuberculosis* for HIV infected individuals in whom active TB has been excluded. In this category of HIV patients, Isoniazid Preventive Therapy (IPT) can be offered at a dosage of 300 mg daily for 6 months for adults. For children if active TB can be excluded, the dosage is 5mg/kg body weight daily for six months. IPT provides upto 18 months of protection against TB. Further details on this are provided in chapter 10.

Treatment of Opportunistic Infections

It is very important that all efforts are made to deal with such treatable conditions in people with HIV and AIDS, particularly because they are managed at various levels of care in the health care delivery system. Emphasis should be placed on early detection, treatment and proper referral where necessary. What follows are recommendations on how to identify and handle treatable causes of morbidity as a result of selected opportunistic infections in HIV infected individuals.

Viral Infections

Viruses that are commonly associated with HIV and AIDS include:

- Herpes simplex virus
- Varicella zoster virus
- Human papilloma virus

Herpes Simplex Virus Infection (HSV)

The classical presentation of primary HSV infection includes:

- Fever
- Lymph node enlargement
- Small painful vesicles
- Painful ulcers on the mucosa and skin
- Pain along gluteal and upper thigh muscles (Sacral radiculomyelitis) may occur with genital/rectal HSV
- Lesions that usually resolve within 10-21 days after primary infection. The HSV then becomes latent in trigeminal and sacral nuclei and may reactivate

The clinical features in patients with HIV and AIDS may also include persistent/erosive genital/peri-rectal ulcerations which are mainly associated with HSV-2 and more recurrent herpetic lesions.

The diagnosis is usually based on clinical history and physical findings. Laboratory tests include serology, culture, immunofluorescence or immunoassay, but these are not practical in Tanzania.

Treatment

- Acyclovir 400mg orally three times daily for 7 days for mild and moderate cases of HSV
- Acyclovir 800mg orally, five (5) times daily for 5 days for severe and recurrent HSV
- Antibiotics such as Cloxacillin or Erythromycin should be used when there is secondary bacterial infection
- Analgesics when pain is severe

Varicella-zoster Virus (Herpes zoster or shingles)

Clinical features of herpes zoster:

- Early symptoms include pain (often severe and radicular) and fever followed by vesicular rash over involved dermatome(s) 2-4 days later
- Primary varicella-zoster virus (VZV) infection usually results in chicken pox

Herpes zoster in HIV infected individuals may be more severe, with more recurrences and may involve more dermatomes including the following:

- More lesions
- Disseminated disease associated with pneumonitis, hepatitis and hemorrhagic skin lesions
- CNS manifestations including encephalitis and cerebellar ataxia
- Prolonged healing time
- Bacterial super-infection

The diagnosis of herpes zoster is usually based on findings of characteristic painful skin lesions at different stages of evolution (e.g. erythema, papule, vesicles, and crusts) in a dermatomal distribution.

Treatment

- Analgesics to relieve pain even though the pain may sometimes be unmanageable
- Acyclovir 800mg 5 times per day for 7-10 days
- IV/Oral Acyclovir 10 mg/kg/day 8 hourly for 7 days for disseminated VZV or ophthalmic nerve involvement

- Erythromycin or Cloxacillin 500mg three times daily for 7 days for bacterial super-infection
- Paracetamol/Aspirin or Diclofenac, also Amitriptylin 25-50mg nocte for post-herpetic pain (neuralgia)

Note: Use of steroids (prednisolone) in herpes zoster is not recommended.

Bacterial Infections

Bacterial infections that occur with increased frequency in persons with HIV and AIDS include:

- Respiratory infections: *Streptococcus pneumoniae*, *Haemophilus influenzae*
- Septicemia: Non typhoid salmonella, *Pseudomonas aeruginosa*
- Cutaneous infections: Staphylococcus aureus

Note: Treatment of bacterial infections is the same as in non-HIV infected individuals.

Fungal Infections

Fungal infections commonly found in association with HIV and AIDS include: *Cryptococcus neoformans*, *Pneumocystic jiroveci*, *Candida species*, and *Histoplasma capsulatum*.

Cryptococcus neoformans

This is a major cause of meningitis in HIV infected persons. Contrary to bacterial meningitis, the patient may not suffer from fever in this case. However, severe headache with or without meningism or altered level of consciousness is a common presenting feature. Diagnosis depends on demonstration of positive CSF Indian Ink preparation.

Treatment

- The preferred regimen is Amphotericin B 0.7mg/kg/day IV + 5 Flucytosine 100mg/kg/day administered orally for 14 days (induction phase), followed by Fluconazole 400mg/day for 8 weeks or until CSF is sterile (consolidation phase). Thereafter the patient is given maintenance therapy with Fluconazole 200mg per day (suppressive phase).
- If the above is not available, give Fluconazole IV 400mg/day for 10 days or until the drug can be administered orally then continue with the same dose for 10 weeks. Thereafter maintain 200 mg daily on alternate days as secondary chemoprophylaxis.

Candidiasis

Candidiasis is the most common fungal infection in HIV and AIDS. Its diagnosis is mainly based on clinical findings and the clinical manifestations depend on the site of disease, which includes oral mucosa, pharynx, oesophagus, and vagina.

Note: Candidiasis in the oesophagus, trachea, bronchi or lungs is diagnostic of AIDS.

Treatment

The following drugs are recommended for the treatment of Candidiasis:

- Miconazole nitrate
- Clotrimazole
- 2% sodium benzoate solution
- Nystatin oral suspension
- Fluconazole 150mg/day or 200mg/day for 2-3 weeks (for oro-pharyngeal candidiasis and others)

Note: Treatment should be continued until symptoms resolve.

Pneumocystis Jiroveci Pneumonia (PCP)

This condition is quite common in Tanzania especially among HIV infected children. Patients with PCP usually present with non-productive cough, fever, chest tightness and shortness of breath that has evolved over 2-4 weeks. Chest signs may be minimal despite severe shortness of breath.

A chest x-ray may show increased diffuse and symmetrical interstitial markings or diffuse alveolar pattern with infiltrations characterized by asymmetry, nodularity or cavitations. Normally there is a “bat’s wing’s appearance” although the chest radiograph may appear normal in 10-30% of patients.

Diagnosis:

Usually in clinical circumstances diagnosis is based on clinical presentation and exclusion of other common causes of severe dyspnoea.

Treatment of PCP

- Cotrimoxazole 160/800 mg 3 times/day for 21 days and in severe cases give IV cotrimoxazole
- For those allergic to sulphur, and if available, give Trimethoprim 12-15mg/kg/day + Dapsone 100mg/day for 21 days as well as Clindamycin + Primaquine for 21 days
- Adjuvant therapy with steroids may also be beneficial in severe cases. Give Prednisolone 40mg twice daily for days 1 to 5, then 40mg once daily for days 6 to 10, and then 20mg once daily for days 11 to 21
- For prophylaxis therapy give Trimethoprim-sulphamethoxazole (TMP-SMX) as shown above

Protozoa

Toxoplasma encephalitis

Clinical features include:

- Focal paralysis or motor weakness depending on the brain area affected
- Neuro-psychiatric manifestations corresponding to the affected area in the brain
- Altered mental status (forgetfulness etc.)

Diagnosis is predominantly based on clinical findings after exclusion of other common causes of neurological deficit. If available, a CT scan is very useful for confirmation.

Treatment

For acute infection Sulphadiazine tabs 1 gm 6 hourly + Pyrimethamine tabs 100mg loading dose, then 50mg /day + Folic acid tabs 10mg /day for 6 weeks.

After six weeks of treatment give prophylaxis therapy with Sulphadiazine tabs 500mg 6 hourly + Pyrimethamine tabs 25-50mg /day + Folic acid tabs 10mg /day.

For those allergic to sulphur replace Sulphadiazine tabs with Clindamycin capsules 450mg 6 hourly.

Discontinue maintenance therapy when CD₄ count is >200 cells/ml, initial therapy is completed and patient is asymptomatic.

Primary prophylaxis therapy for toxoplasmosis can be accomplished with Trimethoprim–Sulphamethoxazole (TMP-SMX) tabs 160/800mg administered orally/day.

For those allergic to sulphur, give Dapsone tabs 50mg/day +

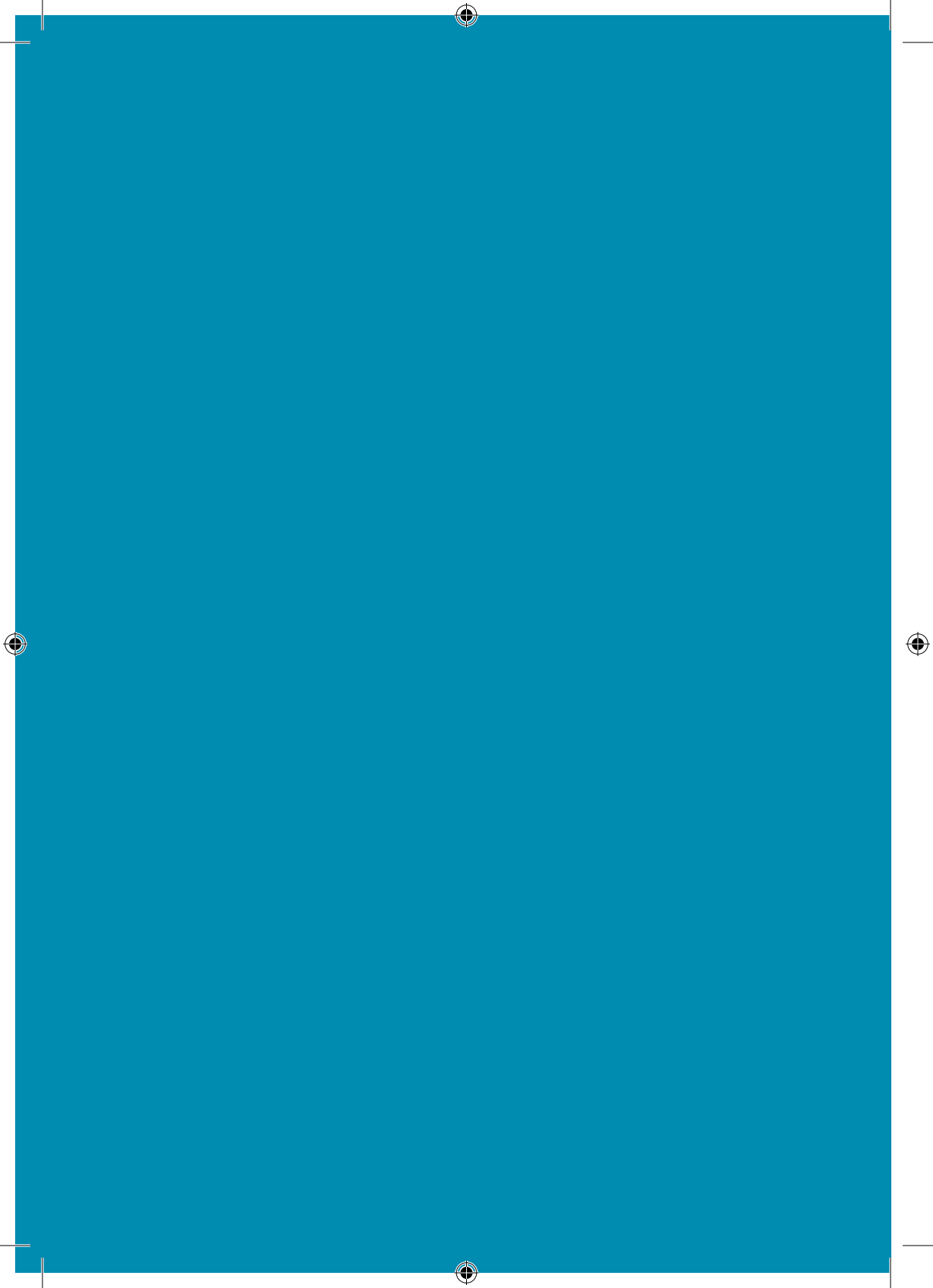
Pyrimethamine tabs 50mg per week + Folinic Acid tabs 10 mg 3 times a week.

Intestinal Protozoa

For intestinal protozoa which is a common cause of diarrhoea and difficult to diagnose, the recommended treatment is Albendazole tabs 800 mg BD (400 mgr twice daily) for one week.

CHAPTER 7:

Pediatric HIV and AIDS-related Conditions



CHAPTER 7: PEDIATRIC HIV AND AIDS-RELATED CONDITIONS

Introduction

The majority of children with HIV acquire the infection from their mothers during pregnancy, labour and delivery or after birth during breastfeeding. The absolute risk of transmission without any intervention is between 5-10% during pregnancy; 10-20% during labour and delivery, and 10-20% during breast feeding. The child of an HIV infected mother acquires HIV antibodies from his/her mother during pregnancy and via breast milk if breastfed.

HIV infected infants may not have any signs or symptoms of infection soon after birth but usually develop features of infection in the early infancy period, although these features may overlap with those of other common childhood diseases. The passively acquired maternal antibodies may persist in the infant for between 9–18 months of age even if the child is not HIV infected. The correct terminology used to describe the infant of an HIV infected mother is “HIV- exposed infant.” Children under 18 months of age with a positive antibody test (rapid test or EIA) born of HIV-infected mothers or whose mother’s HIV status is unknown are also referred to as “HIV-exposed infants.”

The natural history of perinatal HIV infection in infants fits into one of the following three categories:

- Rapid progressors who are likely to have acquired the infection in utero or during early perinatal period. These usually die within the first year of life and constitute from 25-30%;

- Children who develop symptoms early in life then deteriorate and die at the age of between 3-5 years. These constitute about 50-60%;
- Long term survivors who live beyond 8 years who constitute between 5-25%.

There are age specific differences in immunologic markers of disease, virological pattern and clinical manifestation of HIV infection between adults and children. The HIV viral load (VL) is relatively higher in children than in adults, most likely because of the inability of the infant's immature immune system to contain viral replication as well as the presence of a greater number of HIV susceptible cells in the expanding lymphoid mass during infancy. In this regard, the prognosis of HIV infection in children is worse than in adults. In the absence of HAART, one third of children who acquire HIV through vertical transmission die during the first year, another third die during the second and third year, and the remaining third survive for up to 15 years.

Unlike in adults, in children there are age-specific differences in the immunologic markers of disease, virological pattern and clinical manifestation of HIV infection. The basic effect of HIV on the immune system is CD₄ cell depletion and dysfunction. Absolute CD₄ count is higher in healthy children than in adults and the CD₄ count varies with age and slowly declines to adult levels by the age of 6 years. Therefore measurement of the CD₄ percent is the preferred immunologic marker for monitoring disease progression in younger children rather than absolute CD₄ count.

The HIV viral load (VL) is relatively higher in children than in adults, most likely because of the inability of the infant's immature immune system to contain viral replication as well as the presence of a greater

number of HIV susceptible cells in the expanding lymphoid mass during infancy. In that connection, the prognosis of HIV infection in children is worse than in adults. In the absence of ARVs, one third of children who acquire HIV through vertical transmission die in the first year, another third die in the second and third year, and the remaining third survive for between 3 to 15 years.

Diagnosis of HIV Infection in Infants

All infants born of HIV-infected women have passively transferred antibodies that persist until 9 to 18 months of age. These passively transferred maternal HIV antibodies make interpretation of positive antibody tests difficult in children below 18 months of age. Assays that detect the virus or its components (i.e. virologic tests) are required in order to positively diagnose HIV infection in children <18 months of age. The two most commonly used tests for such a diagnosis are DNA PCR or RNA PCR. However, DNA PCR is the preferred method of choice.

PCR tests should be done at 4-6 weeks or at the second MCH visit (i.e. eight weeks after delivery):

- For a child that was **never breastfed**: A single negative PCR test after the age of 4 weeks excludes HIV infection.
- For a child that was **weaned for more than 6 weeks prior to virologic (DNA PCR) testing**, a negative PCR test excludes HIV infection.
- If the child is **being breastfed**, a negative virologic test does not exclude infection. On-going exposure to HIV through breastfeeding continues to put the child at risk of infection. Confirmatory testing should be done 6 weeks after a complete cessation of breastfeeding as described above to determine final infection status.

Children between the ages of 9 and 18 months *at the first health encounter* should have a rapid HIV antibody test since maternal HIV antibodies diminish rapidly between 9-18 months of age. All positive tests should be confirmed with a DNA PCR test. If the antibody test is negative and the infant is still breastfeeding, the antibody test should be repeated at least 6 weeks after complete cessation of breastfeeding. However, if the child is symptomatic, *fulfilling WHO stage 3 or 4 criteria* and virological tests are not available but HIV antibodies are present, a presumptive diagnosis should be made and ART started.

A presumptive diagnosis of severe HIV disease should be made if:

- An infant < 18 months has an HIV antibody test positive **AND:**
- Has diagnosis of any AIDS-indicator condition(s) **OR**
- Symptomatic with **two or more** of the following:
 - Oral thrush
 - Severe pneumonia
 - Severe sepsis
- Other factors that support the diagnosis include:
 - Recent HIV-related maternal death
 - Advanced HIV disease in the mother
 - $CD_4 < 25\%$

The HIV status should be confirmed as soon as possible.

Presumptive diagnosis should NOT be done in children >18 months old. In these infants HIV infection must be confirmed or excluded using widely available antibody tests.

For details see Annex 3 Presumptive and definitive criteria for recognizing HIV/AIDS related clinical events in infants and children with established HIV infection

HIV and AIDS Manifestations in Children

Clinical signs and symptoms of HIV infection are useful parameters in making an HIV diagnosis, but in children, these features sometimes overlap with those of other common childhood diseases and are therefore more reliable in children with severe clinical diseases.

Signs/conditions specific to HIV infection

- Pneumocystis pneumonia
- Oesophageal candidiasis
- Extrapulmonary cryptococcosis
- Invasive salmonella infection
- Lymphoid interstitial pneumonitis
- Herpes zoster (shingles) with multi-dermatomal involvement
- Kaposi's sarcoma
- Lymphoma
- Progressive multifocal encephalopathy

Signs/conditions common in HIV-infected children and uncommon in uninfected children

- Severe bacterial infections, particularly if recurrent
- Persistent or recurrent oral thrush
- Bilateral painless parotid enlargement
- Generalized persistent non-inguinal lymphadenopathy
- Hepatosplenomegaly (in non-malaria endemic areas)
- Persistent and/or recurrent fever
- Neurologic dysfunction
- Herpes zoster (shingles), single dermatome
- Persistent generalized dermatitis unresponsive to treatment

Signs/conditions common in HIV-infected children but also common in uninfected children

- Chronic, recurrent otitis with ear discharge
- Persistent or recurrent diarrhoea
- Severe pneumonia
- Tuberculosis
- Bronchiectasis
- Failure to thrive
- Marasmus

Diagnosis using the Integrated Management of Childhood Illnesses (IMCI) Algorithm

IMCI guidelines are a useful tool at the first level referral facility to screen children with possible HIV infection who need to be referred for HIV testing or that have the test performed and are referred for care and treatment if they test positive.

The IMCI criterion includes symptoms suggestive of HIV in which a child is classified as having symptomatic HIV infection if the IMCI practitioner identifies **any four** of the following symptoms:

- Recurrent pneumonia
- Oral thrush
- Persistent ear discharge
- Persistent diarrhoea
- Very low weight
- Enlarged lymph nodes
- Parotid enlargement

NB: IMCI criteria is not used to consider ARV initiation

WHO Paediatric Clinical Staging (see Annex 2)

The clinical stage is useful for assessment at baseline (first diagnosis of HIV infection), entry into long-term HIV care, and in the follow-up of patients in care and treatment programmes. It should be used to guide decisions on when to start cotrimoxazole prophylaxis and other HIV-related interventions, including when to start antiretroviral therapy. The clinical stages have been shown to be related to survival, prognosis and progression of clinical disease without antiretroviral therapy in adults and children.

Table 7.1: WHO immunological classification for established HIV infection

HIV-associated immunodeficiency	Age-related CD4 values		
	0-11 months (%)	12-59 months (%)	> 5 years (Count & %)
Not significant	> 35	> 30	> 500
Mild	30-35	25-30	349-499
Advanced	25-30	20-25	200-349
Severe	< 25	< 20	< 200 or 15%

Management of Infants Born to HIV Positive Women

The counselling of parents on the care of infants born to HIV positive mothers is an essential component of the management of HIV exposed children. Management strategies include:

- HIV diagnostic testing for both the mother and child
- Scheduled clinic visits for care
- Chemoprophylaxis with Cotrimoxazole, a fixed dose combination of Trimethoprim/Sulfamethoxazole (TMP/SMX) even if HIV status is unconfirmed

- Infants of HIV infected mothers should receive prophylactic treatment against PCP and other opportunistic infections using TMP-SMX from 4–6 weeks of age (or at first encounter with the health care system if the child was not seen within 4–6 weeks of delivery), and continued until HIV infection can be excluded. This should be given orally as per required dosing (see paediatric dosing chart). TMP-SMX may need to continue until 6 weeks after cessation of breastfeeding when infection can be excluded.
- Mothers should be counselled on the advantages and disadvantages of breastfeeding, with particular attention to the risk of breastfeeding for short or long duration, mixed feeding and advantages of exclusive breast-feeding. (Please refer to the *Infant Feeding Guidelines in HIV and AIDS* provided in the PMTCT guidelines of the Ministry of Health and Social Welfare).
- Care of the mother after delivery and during follow up including treatment of opportunistic infections should also be emphasized. Mothers should receive psychosocial support through counselling in the postnatal period.

HIV Diagnostic Protocol for Abandoned Infants

In the absence of a mother, the guardian/care taker needs to be counselled and the child started on co-trimoxazole prophylaxis. In such a case, since the mother's HIV status is unknown, the HIV exposure status of the baby will have to be established by performing a rapid HIV antibody test and then PCR (if available) at 6 weeks and again at 3 months if the antibody test is positive.

1. Immediately: Rapid test
2. At 6 weeks of age: HIV PCR
3. At 3 months of age: Repeat HIV PCR to confirm 6-8 week negative result

Notes:

1. A **clinical examination** to assess for signs and symptoms of HIV infection should be performed during all visits, and especially at 6 weeks and 3 months of age. Thereafter, the infant should be followed up as per recommendations for all children.
2. **Postnatal transmission** of HIV infection is likely to be evident by 6 weeks after breastfeeding has been terminated. Nevertheless, it is recommended that the final qualitative HIV PCR test on abandoned infants be performed 3 months after breastfeeding has ceased.
3. If PCR is unavailable, clinical monitoring and prophylaxis should continue until the child reaches clinical stage III, upon which ART can be started. HIV testing (EIA or rapid) should be performed as soon as the child attains 12 months of age.

Care of HIV infected Children

- All children should be assessed for symptoms related to HIV as well as the need for treatment and prophylaxis for opportunistic infections and other HIV related conditions.
- Baseline laboratory tests should be performed to establish viral and immunological status whenever possible.
- A complete medical and immunization history should be obtained, with particular emphasis on the suspected mode of HIV transmission, history of ARV exposure (pre-, intra-, post-partum, and during breastfeeding) and timing of HIV

diagnosis. Family members who are aware of the diagnosis should also be known.

- HIV-infected children should receive routine paediatric care and be monitored for their HIV disease status. At each visit, a complete physical examination should be done paying particular attention to signs commonly associated with HIV infection (e.g. adenopathy, hepatomegaly and splenomegaly). Infants under the age of 1 year with PCR confirmed HIV infection will need ARV therapy.
- Growth and development should be evaluated and charted at all stages of development right through adolescence.
- The need for medication should be reviewed based on history, physical examination and laboratory findings.
- Doses of prophylactic or treatment medications should be adjusted on the basis of growth and compliance and tolerability should be assessed at every visit.
- Medication plans (OI prophylaxis and ARV therapy) need to be discussed intensively with parents or guardians. It is advisable that one single person in the household is identified as the consistent care provider responsible for dispensing treatment to the child.
- HIV related care needs of parents or guardians themselves need to be discussed and appropriate referrals made accordingly.
- Children exposed to ARVs should be closely monitored at every visit for signs of toxicity (i.e. clinical or laboratory indications) and adverse events should be properly documented and reported to the Ministry of Health and Social Welfare.

Disclosure

Disclosure of the HIV status to the child should be discussed with the parents or guardians. The process of disclosure can be done over

time, beginning when the child starts asking questions about the disease or the medication he/she is taking or acting in a way that suggests that he/she is feeling isolated from other children because of the disease. Close coordination with the guardian/parent of the child in question is crucial. Usually, one can start mentioning to a 4 – 6 years old HIV-infected child that they have a chronic disease that requires regular clinic visits and medicines every day. At about 8 – 10 years it is recommended that the issue of HIV and AIDS be mentioned but in a caring and supportive manner and environment. Before their early teen years HIV-infected children should know that they are infected with HIV, how it is spread and how to stay healthy. It has been shown that children cope better with their HIV status when properly counselled. It is particularly important that adolescents be informed of their HIV status so that they can become active participants in their own care.

Clinical Manifestations of Paediatric HIV Infection ***Respiratory Conditions in Children with HIV Infection***

Pneumonia and chronic lung diseases contribute to the increased morbidity and mortality of HIV-infected children. It is difficult to differentiate between different respiratory conditions that are often fatal in immune compromised children. The most common respiratory conditions include:

Bacterial Pneumonias

Caused by *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, and gram negative bacteria such as *Klebsiella pneumoniae*.

Clinical Presentation

- History of fever, cough and fast breathing (tachypnoea)
- With or without signs of severe pneumonia (chest indrawing,

- cyanosis and lethargy)
- On auscultation of the chest one hears unilateral or bilateral crepitations (crackles), decreased breath sounds or bronchial breathing (lobar pneumonia)

When pulse oximetry is available it will demonstrate hypoxia (O₂ saturation less than 95%).

Diagnosis

- Complete blood counts; raised white blood cells (WBC) with a neutrophilia suggest bacterial pneumonia.
- Because symptoms of pneumonia and malaria often overlap, in malaria endemic areas remember to do a malarial smear and treat for malaria if indicated. Where blood cultures can be done they may assist in identifying the causative agent
- A chest x-ray is not necessary for diagnosis of acute pneumonia but may be useful in ruling out complications or other pulmonary conditions.
- Sputum induction and nasopharyngeal aspirate may assist in the diagnosis of PCP or TB.

Management at outpatient level

- Oral amoxicillin or penicillin is adequate.
- Where the child is already on Cotrimoxazole prophylaxis CTX should not be used to treat pneumonia unless PCP is suspected. If PCP is suspected then high dose CTX should be used.
- If the child is under one year of age the risk of PCP is very high and should be considered.
- Give Paracetamol for fever.

Management of Severe Pneumonia

Severe pneumonia should be managed in hospital and should include both supportive and specific therapy.

Supportive Care

- Pulse oximeter is critical for the assessment of O_2 saturation and the need for supplemental oxygen where the child presents with chest indrawing, cyanosis or hypoxia.
- Ensure adequate hydration (either IV or oral depending on the severity) and monitor.
- Remember to give paracetamol for fever and pain.

Specific therapy:

- Use Chloramphenicol or Ceftriaxone/Cefotaxime (3rd generation) if available.
- Use Ampicillin/Cloxacillin and Gentamicin as alternatives.
- Antibiotic therapy for HIV-infected children needs to be longer 7-14 days.
- If the child is under one year, PCP must be considered as a possible diagnosis and treatment with high dose cotrimoxazole and steroids prescribed.
- If an infant presents with severe pneumonia they should be treated for both bacterial pneumonia and PCP and investigated for possible HIV.
- Children treated for PCP should continue on PCP prophylaxis until the diagnosis of HIV exposure or infection has been excluded.
- If pneumonia is associated with typical Staphylococcal skin lesions, a positive blood culture for staphylococcus aureus, and poor response to 1st line antibiotics, and if the child just had measles, consider staphylococcal pneumonia. A chest x-ray (if available) will show very small cavities (pneumatocoles). For such children, treatment should also include Cloxacillin or Vancomycin.

Lymphocytic Interstitial Pneumonitis (LIP)

LIP usually occurs in children more than two years of age.

Clinical Symptoms

- Chronic cough
- Cyanosis
- Digital clubbing
- Difficulty in breathing and terminal hypoxia
- Associated with parotitis, generalised Lymphadenopathy and hepatosplenomegaly
- Poor response to TB therapy

Radiological Picture

- Diffuse bilateral reticulonodular infiltrates may appear similar to miliary TB
- May develop consolidation, cystic lesions; bilateral hilar or mediastinal lymph node enlargement
- Particularly difficult to differentiate from TB

Management

It is particularly difficult to differentiate from TB management.

- Steroids are needed when children with LIP have significant respiratory distress
- Prednisone 2 mg/kg/day - initially for 4 weeks daily and then alternate day maintenance for 2-3 months and review
- Oxygen therapy during episodes of hypoxia
- Bronchodilators like salbutamol where wheezing is a problem
- Antibiotics are needed during episodes of concurrent super infection with pneumonia
- Chest physiotherapy and postural drainage if there is secondary Bronchiectasis

- Supportive care includes correction of anaemia especially iron supplementation
- Antiretroviral therapy as specific therapy
- Refer for specialist care if resistant to therapy

Pneumocystis Jiroveci Pneumonia (PCP)

PCP is the major cause of severe pneumonia and death in HIV infected infants. Incidence is highest during the first year of life and usually peaks at 3 to 6 months of age. Infants are usually in a good nutrition state and may have no clinical features that indicate the presence of HIV. However, it may be the first AIDS defining illness.

Clinical features

- No fever or low grade
- Marked respiratory distress (chest indrawing, cyanosis, inability to drink)
- On auscultation one hears clear chest or diffuse fine crepitations
- Poor response to standard antibiotic treatment
- With pulse oximetry severe persistent hypoxia ($paO_2 < 90\%$) will be demonstrated
- They may have other signs of HIV including splenomegaly, oral thrush, lymphadenopathy and weight loss

Investigations

- The mainstay of PCP diagnosis in Tanzania is mainly clinical therefore, where there is a high index of suspicion, clinicians should promptly initiate therapy along with treatment for bacterial pneumonia
- A chest x-ray may show hyperinflation, diffuse infiltrates or normal
- Sputum induction with nasopharyngeal aspirate stained

- with Giemsa or Silver stain or Immunofluorescent stain
- Bronchoalveolar lavage where available can also be used to produce a specimen for staining

Management of PCP

Supportive:

- Oxygen therapy
- Maintain and monitor hydration
- Paracetamol for pain
- Continue therapy for bacterial pneumonia
- Nutrition support

Specific:

- High dose Cotrimoxazole (CTX) IV 20mg/kg TMP/day given every 6 hours for 21 days
 - Oral cotrimoxazole at the same dose may also be used if IV not available
 - Prednisone at 2mg/kg/day for 7-14 day (taper if more than 7 days)
 - Secondary prophylaxis using cotrimoxazole after an acute episode of PCP
-
- All children younger than one year of age documented to be living with HIV should receive cotrimoxazole prophylaxis regardless of symptoms or CD₄ percentage.
 - After one year of age, initiation of cotrimoxazole prophylaxis is recommended for symptomatic children (WHO clinical stages 2, 3 or 4 for HIV disease) or children with a CD₄ of <25%.
 - All children who begin cotrimoxazole prophylaxis (irrespective of whether cotrimoxazole was initiated in the first year

of life or after that) should continue until the age of five years when they can be reassessed.

- Adult clinical staging and CD₄ count thresholds for cotrimoxazole initiation or discontinuation apply to children older than five years of age.

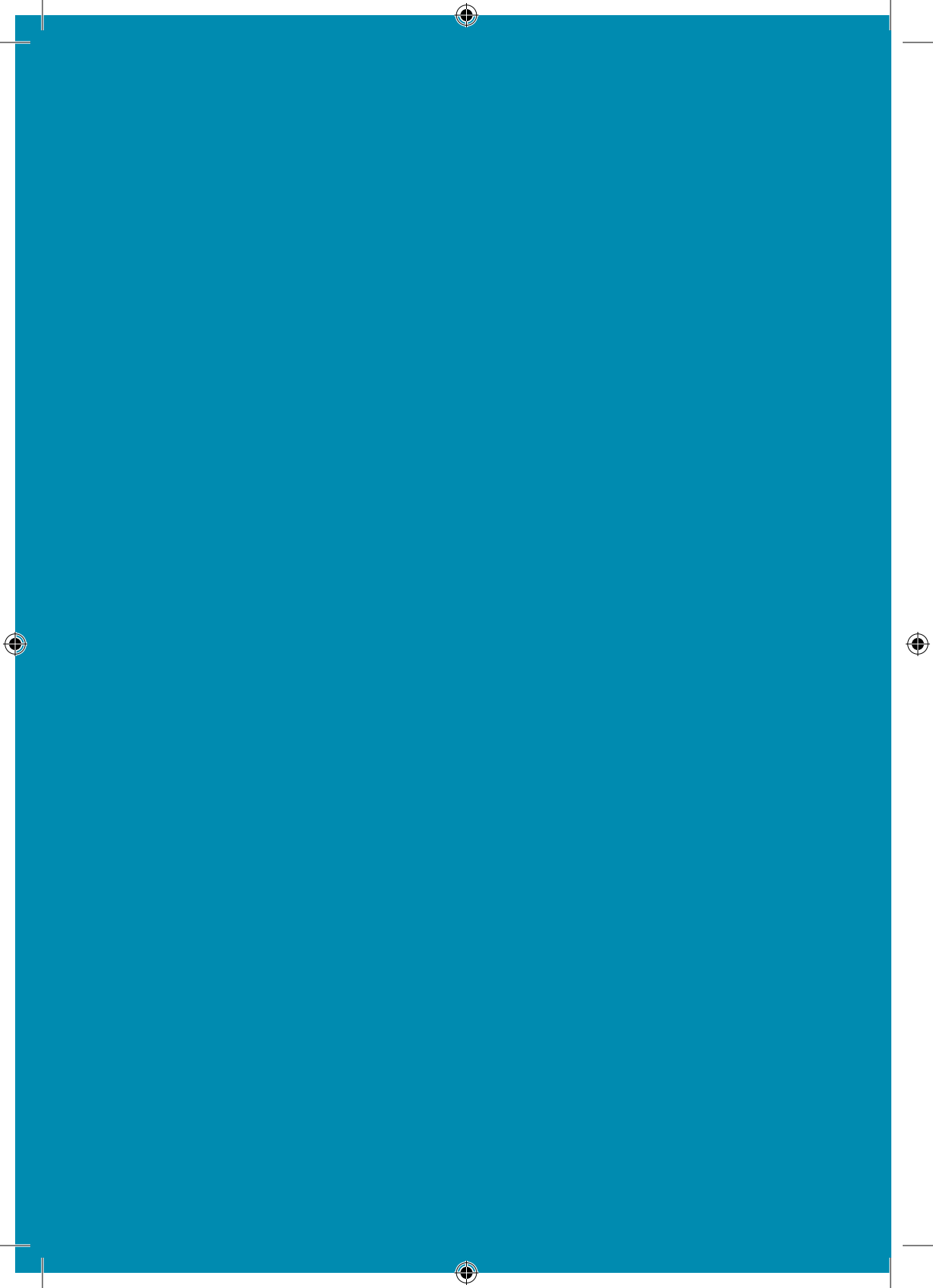
TB in Children

See TB/HIV co infection in chapter 10



CHAPTER 8:

Antiretroviral Therapy in Adults and Adolescents



CHAPTER 8: ANTIRETROVIRAL THERAPY IN ADULTS AND ADOLESCENTS

Introduction

Since 1996, when more extensive use of potent antiretroviral therapy for HIV started, there has been a significant improvement in the safety and tolerability of regimens used for initial treatment. The pill burden and dosing frequency have been reduced and short-term and long-term adverse events minimized; all of which have contributed to the success rates in initial treatment.

The past few years have seen dramatic advances in the development of ARVs, which now offers extended patient survival and improved quality of life. New medications including protease inhibitors (PIs) and non-nucleoside reverse transcriptase inhibitors (NNRTIs) combined with older nucleoside reverse transcriptase inhibitors (NRTIs) have increased the potential to reduce HIV replication.

Therapeutic regimens may be directed at one or several of the replication sites in the life cycle of the virus.

Types of Antiretroviral Drugs

The currently existing and commercially available antiretroviral drugs fall into the following five main categories:

1. Binding and Fusion Inhibitors
2. Nucleoside reverse transcriptase inhibitors (NRTIs)
3. Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
4. Nucleotide reverse transcriptase inhibitors (Nucleotide analogues)
5. Protease inhibitors (PIs)

Binding and Fusion Inhibitors

Fusion inhibitors prevent HIV from entering target cells. Drugs of this class bind to the HIV envelope protein gp41, which is involved in viral entry. These are a new class of antiretroviral drugs (e.g. Enfuvirtide) that are currently not available in Tanzania.

Nucleoside Reverse Transcriptase Inhibitors (NRTIs)

This was the first group of drugs to be used and was the mainstay of antiretroviral therapy in the country. The primary mechanism of action of this class is inhibition of viral RNA-dependent DNA polymerase (reverse transcriptase) enzyme. The drugs that are available in Tanzania under this class include:

- Zidovudine (AZT)
- Stavudine (d4T)
- Lamivudine (3TC)
- Abacavir (ABC)
- Emtricitabine (FTC)
- Didanosine (ddI)

Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)

Similar to the NRTIs, NNRTIs also act by disrupting the reverse transcription of viral RNA into DNA which is then incorporated in the cell's nucleus. However, unlike the NRTIs, they are not directly incorporated into the viral DNA; instead they inhibit replication directly by binding to the enzyme reverse transcriptase. Resistance to these drugs develops rapidly, especially when used alone. Drugs under this class that are available in Tanzania are Nevirapine (NVP) and Efavirenz (EFV).

Nucleotide Reverse Transcriptase Inhibitors (Nucleotide analogues)

Nucleotide analogues resemble monophosphorylated nucleosides, and therefore require only two additional phosphorylations to become active inhibitors of DNA synthesis. An example of this relatively new class of antiretroviral drugs is Tenofovir (TDF).

Protease Inhibitors (PIs)

PIs competitively inhibit the HIV protease enzyme whose activity is critical for the terminal maturation of infectious virions. This inhibition prevents the maturation of virions capable of infecting other cells. Drugs available in Tanzania that fall under this class are Lopinavir (LPV), Ritonavir (RTV) and Atazanavir (ATV).

Treatment Using ARV Drugs in Adults and Adolescents

From the moment a patient tests HIV-positive, he/she should be referred to the CTC. The initial management requires a complete assessment of the patient starting with WHO clinical staging. Thereafter the following tests should be done:

- Complete blood count
- Renal test (through urinalysis)
- Liver function tests
- Urine for pregnancy test (if pregnancy is possible)
- CD₄ T-lymphocytes count
- Viral load (where available and indicated)

Treatment decisions should be based on the extent of clinical disease progression and readiness of the patient. The gold standard for evaluating immune function remains to be CD₄⁺ T lymphocyte counts. The determination of viral load has more of a prognostic value and is routinely used in clinical practice in developed countries.

The tests mentioned above, when available, should be done at baseline and as needed for clinical care (e.g. in cases of toxicity), and at least every six months for patients on treatment.

Criteria of Initiation of ART in Adults and Adolescents Patients

Despite a theoretical benefit to antiretroviral therapy for patients with high CD₄ counts, there are major dilemmas confronting patients and practitioners when ART is initiated too early. The currently available antiretroviral regimens that have the greatest potency in terms of viral suppression and CD₄⁺ T-lymphocytes preservation are medically complex, are associated with a number of specific side effects and drug interactions, and pose a substantial challenge for adherence. Also, the development of mutations associated with drug resistance can make therapy less effective or ineffective in the future. In this regard, decisions regarding treatment of asymptomatic, chronically infected individuals with high CD₄ counts must balance a number of competing factors that influence risk and benefit.

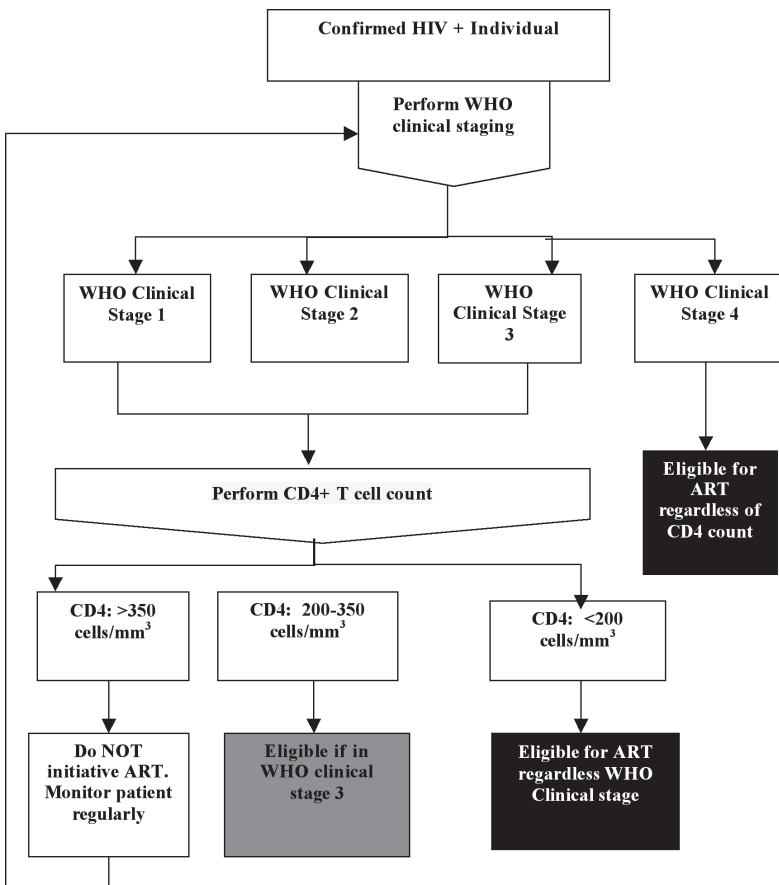
On the other hand, the treatment of patients with WHO Stage 4 disease (clinical AIDS) should not be dependent on their CD₄ cell count. Any individual in Stage 4 should be started on ART immediately. For patients with Stage 3 disease, the upper limit of 350 cells/mm³ has been selected and such patients are eligible for treatment. (See Annex 1: WHO clinical staging for adults and adolescents).

Patients with a CD₄ cell count of <200/mm³ should also be started on treatment, regardless of the clinical stage.

There are therefore 3 classes of patients that are eligible to begin treatment:

- All patients in WHO stage 4 clinical criteria, regardless of CD₄ cell count
- Patients in WHO Stage 3 with a CD₄ cell count $\leq 350/\text{mm}^3$ as an indicator of their progression to AIDS
- All patients with a CD₄ count $\leq 200\text{cells}/\text{mm}^3$, regardless of clinical symptoms

Figure 8.1: Criteria for ART in Adults and Adolescents



Beyond medical eligibility, it is important to adherently assess and address a patient's willingness, readiness and ability to be on ART. Psychosocial considerations (not exclusion criteria) need to be evaluated before initiation of therapy during several (at least more than one) pre-treatment visits, and strengthened in subsequent visits. These include:

- Demonstrated reliability, i.e. has attended three or more scheduled visits to an HIV clinic
- No evidence of active alcohol or other substance abuse that could affect adherence
- No untreated active depression

It is strongly recommended that clients to be initiated on ART should have disclosed their HIV status to at least one friend or family member who will become their adherence assistant (AA) and, if possible, the client should join a support group.

Clients need to have accepted their HIV positive status and be clear on the consequences of HIV infection, the role of ART, and the need to strictly adhere to the treatment plan before commencing therapy.

Clients also need to be able to attend the CTC on a regular basis or have access to services that will enable them to maintain the treatment chain. Transport may need to be arranged for patients in rural areas or for those who live far from the treatment site.

Evaluation to be done before initiating therapy

Before initiating therapy in any patient, a good history of the patient must be taken and a top-to-toe physical examination conducted. Thereafter, the following baseline laboratory tests should be done:

- Urinalysis
- A complete blood count
- Chemistry profile for liver (serum alanine aminotransferase, ALT)
- Tests to rule out active TB where indicated (sputum AFB, CXR)
- CD 4 count

The following could be done if available:

- Serum creatinine and lipids
- Hepatitis B and C serology
- Viral load

The patient and other family members (with patients' consent) should then be educated on HIV/AIDS and the need to adhere to the agreed treatment plan.

General orientation of the patient and family members should include:

- Who to call and where to get refills
- Who to call and where to go when clinical problems arise
- Who to call/where to go for assistance on social, spiritual and legal problems that might interfere with adherence to treatment

Goals of Therapy

The principal aim of antiretroviral therapy is to prevent morbidity and mortality in people with HIV/AIDS by suppressing viremia and thereby restoring immune capacity. The disease upper limit at which the benefits of therapy outweigh the risks has been debated for as long as antiretrovirals have been available.

Benefits of Delaying Therapy

- For PLHAs whose short-term risk of disease progression is low, Highly Activated Anti-retroviral Therapy (HAART) may reduce the quality of life because of potential toxicity and pill burden.
- PLHAs who delay starting treatment may be better prepared to adhere to therapy when they do start.
- Delayed initiation of ART may delay the emergence of drug resistance if treatment fails thereby ensuring that other treatment options remain available for use later in the course of the disease.
- Delaying therapy initiation also postpones the cost of treatment.

Benefits of Earlier Therapy

- Early intervention may allow preservation of immune capacity at a level that may not be fully restored if treatment is started late thus resulting into a prolonged disease-free survival over a longer period of time.
- Virologic failure may be less likely if treatment is started earlier while HIV-1 RNA is relatively low hence less detrimental patterns of viral evolution.
- Transmission of HIV may be prevented through earlier treatment initiation by reducing viremia at the population level.
- Earlier therapy initiation may also be more cost-effective than delayed treatment.

The eradication of HIV infection cannot be achieved with currently available antiretroviral regimens. This is due to the establishment of a pool of latently infected CD₄⁺ T-lymphocyte cells during the very early stages of acute HIV infection, that persists with an extremely long half-life even with prolonged suppression of plasma viraemia to <50 copies/ μ L.

The primary goals of antiretroviral therapy are:

- Maximal and durable suppression of viral load
- Restoration and/or preservation of immunologic function
- Improvement of quality of life
- Reduction of HIV-related morbidity and mortality

Secondary goals are to decrease the incidence of HIV through

- Increased uptake of voluntary testing and counselling with more people knowing their status and practicing safer sex
- The reduction of transmission in discordant couples, and
- Reducing the risks of HIV transmission from mother to child

In order to achieve these goals the following strategies should be used:

- Adequate counselling and creation of a supportive environment for patients to maximize adherence to the antiretroviral regimens
- Rational sequencing of drugs for the preservation of future treatment options
- Monitoring of drug resistance in selected clinical settings
- Monitoring of toxicities and adverse drug reactions

It is important that prescribers are clear about when to start antiretroviral drugs as described above. They also need to know which drugs to use in which order, when to change therapy, and which alternative drugs to use when changing therapy.

Recommended ARV Drugs in Tanzania

Introduction

The use of monotherapy in the treatment of HIV infection is not recommended. Antiretroviral therapy both in naïve patients and those who have received treatment before involves the use

of a combination of drugs. Triple therapy consisting of 2 NRTI + 1 NNRTI or 2 NRTI + 1 PI or 3 NRTI's is recommended. It is important to remember that there is no single combination that is best for every patient and/or that can be tolerated by all patients. Regimens should be recommended on the basis of a patient's clinical condition, lifestyle, and ability to tolerate the regimen.

First Line ARV Combination Regimen for Adults and Adolescent ART Naive Patients

The MoHSW recommends the following drugs for first line treatment:

- Zidovudine (AZT)
- Stavudine (d₄T)
- Lamivudine (3TC)
- Emtricitabine (FTC)
- Tenofovir (TDF)
- Nevirapine (NVP)
- Efavirenz (EFV)

The following drug combinations can be made out of these drugs for adults and adolescents, and should be used according to indications and contraindications that govern the use of ARVs to minimize side effects and drug-drug interactions.

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

Note: The following drugs may appear in fixed drug combinations (FDC):

- AZT+3TC, e.g. Combivir or Duovir
- AZT+3TC+NVP, e.g. Duovir N
- d4T+3TC+NVP, e.g. Triomune
- TDF+FTC+EFV, e.g. Atripla
- TDF+3TC
- TDF+FTC, e.g. Truvada

The default first line regimen in Tanzania is:

Zidovudine (AZT) 300 mg/Lamivudine (3TC) 150 mg twice daily and Efavirenz (EFV) 600 mg once daily at night.

For women in the child bearing age, Nevirapine (NVP) 200 mg twice a day is given instead of Efavirenz.

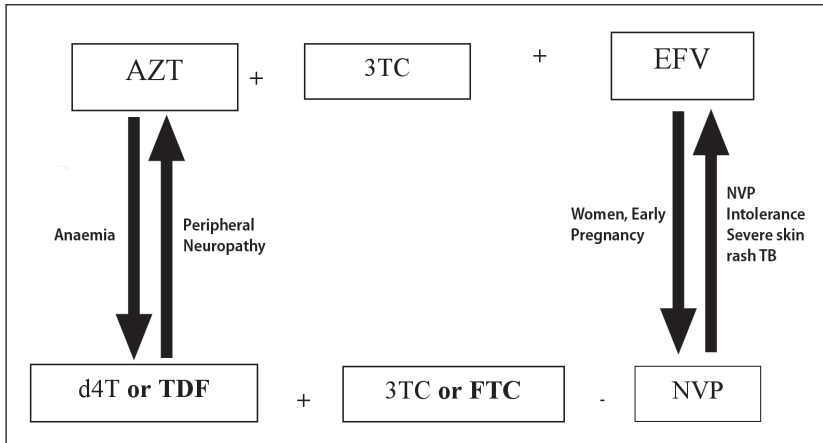
Note:

- For young adolescents, the dose of AZT is 200 mg BD for a body weight of between 20-25 kgs.
- For patients with <40kg, the dose of EFV should be <600 mg.
- Efavirenz has been reported to be associated with teratogenicity in early pregnancy. In this case, Nevirapine should be prescribed instead.
- In women for whom effective contraception can be assured, EFV remains a viable option for the NNRTI component of the regimen.

See also annex 4, Dosages of Antiretroviral drugs for Adults and Adolescents.

The AZT+3TC+EFV combination is the default combination to be prescribed to all patients if there is no contraindication.

Figure 8.2: Recommended First line drug regimen in Tanzania



Under certain circumstances however, the following regimens can be used as first line:

- **Zidovudine (AZT)+Lamivudine(3TC)+Nevirapine (NVP)**
This regimen can be prescribed when Efavirenz is contraindicated, such as in Neuropsychiatric complications of Efavirenz and pregnancy or when stavudine can not be used such as in the presence of peripheral neuropathy.

Note: Nevirapine challenge dosing is required during the beginning of treatment. In the first two weeks of treatment only half of the required daily dose of Nevirapine should be given, and a full dose if there are no side effects such as skin rash or hepatic toxicity. (Repeat ALT at two weeks). In summary, this means:

(Zidovudine 300 mg/Lamivudine 150 mg/Nevirapine 200 mg in the morning + Zidovudine 300 mg/Lamivudine 150 mg. in the evening for the first 2 weeks. And if there are no problems, THEN Zidovudine 300 mg/Lamivudine 150 mg/Nevirapine 200 mg twice daily).

- **Stavudine (d₄T)+Lamivudine (3TC)+Efavirenz (EFV)**
This regimen can be given when Zidovudine is contraindicated, such as in the presence of anaemia, or concomitant use of anti-TB therapy where Nevirapine can not be used.
- **Stavudine (d₄T) +Lamivudine (3TC) + Nevirapine (NVP)**
This regimen can be used when there is significant anaemia and use of Efavirenz is contraindicated (e.g. for a pregnant woman who is also anaemic). Nevirapine challenge dosing is required as above.
- **Tenofovir (TDF) + Emtricitabine (FTC) + Efavirenz (EFV)**
- **Tenofovir (TDF) + Emtricitabine (FTC) + Nevirapine (NVP)**
- **Tenofovir (TDF) + Lamuvidine (3TC) + Efavirenz (EFV)**
- **Tenofovir (TDF) + Lamuvidine (3TC) + Nevirapine (NVP)**

The above 4 regimens which contain TDF are indicated when a patient can not use both Stavudine and Zidovudine, for example in the case of both severe anaemia and severe peripheral neuropathy. However, the major concern with Tenofovir-based treatment is renal safety. Tenofovir-associated nephrotoxicity is especially likely in patients with pre-existing renal dysfunction or those receiving other concomitant nephrotoxins. Otherwise the overall rate of discontinuation for renal events is extremely low. Renal function should be monitored through routine urine testing for the occurrence of proteinuria and if available serum creatinine.

In cases where Nevirapine or Efavirenz cannot be used as a first line drug, a single drug from the second line drugs can be used; for example LPV/r or ABC.

Note: The use of Tenofovir or a second line drug with first line drugs should be decided by clinicians with experience in managing HIV with various regimens. Therefore, patients

whose condition requires such decisions should be referred to hospitals with such expertise.

ART in Women of Childbearing Potential or Pregnant Women

The guiding principle for the treatment of women of childbearing potential or pregnant women is that therapeutic decisions should be based solely on their need and eligibility for ART. The recommended first-line regimen for this patient subgroup is: AZT + ₃TC + NVP. However, special circumstances of pregnancy or breast-feeding raise additional issues concerning toxicity to mothers and children, the choice of ARV drugs, and the prevention of HIV transmission from mothers to infants.

While d4T might be necessary as a substitute for AZT, close monitoring should be done because of the increased risk of the development of lactic acidosis due to d4T use.

Women who are receiving ART and become pregnant should continue their treatment unless they are in the first trimester of pregnancy and EFV has been part of the regimen, in which case, EFV should be discontinued and replaced by NVP.

Note: ARV drugs have the potential to either decrease or increase the bioavailability of steroid hormones in hormonal contraceptives. Thus, if a woman on ARV treatment decides to initiate or continue hormonal contraceptive use, the consistent use of condoms must be recommended for preventing HIV transmission. This may also compensate for any possible reduction in the effectiveness of the hormonal contraceptive.

Antiretroviral Drugs for non-ART Naïve Patients

Treatment for patients who have been previously exposed to

antiretroviral therapy should be discussed with an antiretroviral expert **before** they are enrolled in the CTC and (re)started on treatment. Generally:

- Patients that are controlled on their antiretroviral medication at appropriate doses should continue on the same regimen if possible.
- Those who stopped for reasons other than treatment failure and for whom failure is not suspected, can restart the original regimen.
- Those known or suspected to have failed a previous regimen should be started on drugs they have not been exposed to before as appropriate.

Adherence to Antiretroviral Therapy

Adherence to ART is an essential component of treatment success. Adherence rates of >95% are needed to maximize the benefits of ART. Achieving such high rates over a long period of time is a challenge; therefore different approaches to improving adherence should be sought and tailored to the patient's lifestyle through proper counselling and health education (see chapter 12 on adherence counselling).

Factors That Influence Adherence

The following predictors of good adherence to HIV medications have been identified:

- Availability of emotional and practical life support, including the assigning a treatment assistant at home
- Patients' ability to fit the medications into their daily routine
- Patients' understanding that poor adherence leads to resistance development and may limit future treatment options
- The recognition that taking all medication doses is important

- Patients feeling comfortable to take their medication in a variety of settings including in public
- Availability of a clinic capable of monitoring treatment
- Keeping clinic appointments

Strategies That Enhance Adherence

There are three main categories of strategies that those caring for HIV patients must be aware of to facilitate improvement and sustain adherence to treatment with ARVs. Below are the different strategies and their applicability:

(i) Patient related strategies

- Health care workers should negotiate a treatment plan that the patient understands and to which he/she commits.
- A patient's "readiness" to be on life-long medication should be clearly established.
- Patients must understand that the first ART regimen has the best chance of long-term success.
- Family members should be recruited to become participants in the treatment plan.

(ii) Clinician and health team related strategies should include

- Building a trusting relationship with patients
- Adopting provider attitudes and behaviours that are supportive and non-judgmental to encourage patients to be honest about their adherence and about problems they have with adherence.
- Monitoring and encouraging adherence at every clinical encounter.
- Explaining possible side effects when initiating treatment.

(iii) Regimen-related strategies

- Regimens should be simplified by reducing the number of pills and the frequency of taking drugs
- Drug interactions and side effects should be minimized through rational drug selection
- Differences between medication requirements (e.g. with food, without food, etc.) should be minimized

Changing Antiretroviral Therapy

There are multiple reasons which may prompt the need to change antiretroviral therapy. These can be grouped into two major categories:

Drug adverse events – Toxicities, including:

- Intolerable side effects
- Drug interactions
- During pregnancy if the patient is on EFV

Treatment failure including:

- Clinical failure – occurrence or persistence of HIV related OIs
- Immunological failure
- Virological failure

There are no studies or reliable estimates of the number of days, weeks, or months that represent a clinically important interruption of one or more components of a therapeutic regimen that would increase the likelihood of drug resistance. If there is a need to discontinue any antiretroviral medication for an extended period, clinicians and patients should be advised of the theoretical advantage of stopping all antiretroviral agents simultaneously, rather than continuing one or two agents, to

minimize the emergence of resistant viral strains. However, with regimens containing Nevirapine, dual therapy should continue for a week after stopping Nevirapine.

Changing Antiretroviral Therapy Due to Toxicity

From a clinical perspective, it is generally recommended that when changing a patient's regimen due to toxicity, only the toxic drug(s) should be replaced, if possible. Table 8.3 below provides guidance on ARV drug combinations with some common toxicity switches. It is based on the first line drugs in the National ARV Program.

Table 8.3: Common toxicity switches for first line drugs

First Line	Problem	Substitution
AZT + 3TC + NVP or EFV*	Anaemia due to AZT	d4T + 3TC + NVP or EFV* TDF*** + FTC + NVP or EFV TDF*** + 3TC + NVP or EFV
d4t + 3TC + NVP	Hypersensitivity due to NVP	d4T + 3TC + EFV*
d4t + 3TC + NVP or EFV*	Severe peripheral neuropathy due to d4T	AZT + 3TC + NVP or EFV* TDF*** + FTC + NVP or EFV TDF*** + 3TC + NVP or EFV
d4T + 3TC + NVP or EFV*	Intolerant of NVP and EFV	D4T + 3TC + LPV/RTV** TDF*** + FTC + LPV/RTV**
TDF containing regimen	Nephrotoxicity due to TDF	Replace with AZT or d4T

*Only if the patient is older than 3 years of age or is a woman with no risk of pregnancy.

** Follow liver function tests (LFTs) closely.

***Follow renal functions closely.

Severity of Adverse Events Due to ARVs

Side effects or toxicities caused by ARVs can be classified into three broad categories:

First category: Symptoms are mild and transient and often require patient assurance that these symptoms are common and will decrease over time. These can be mild headaches, mild gastric upset, nausea, fatigue and the CNS disturbances particularly with EFV. ARV interruption is seldom indicated in this situation.

Second category: Symptoms are somewhat more severe and often respond to some medical intervention. They include more severe gastric upset with nausea and vomiting, more severe headaches and mild peripheral neuropathy that does not incapacitate or interfere with a patient's lifestyle. These symptoms can often be successfully treated with anti-emetics, anti-diarrhoea medicines, analgesics, neuroleptics (e.g. Amitriptylin) and other medicines. ARV interruption is usually not indicated in this situation and often symptomatic treatment is only temporary. The mild rash associated with NVP (dealt with under a separate paragraph below) can often be treated with medical intervention.

Third category: Symptoms are severe such that ARV drugs must be stopped and replaced by an alternative drug. These include anaemia (haemoglobin < 7.5 gm/dl or a falling haemoglobin, that often drops by 2 gm/dl) as can occur with the use of AZT. Severe symptoms noted in the first two categories can sometimes lead to the stopping of ARV due to severe toxicities such as nausea with severe discomfort and minimal intake for 3 or more days, vomiting all intake in 24 hours or dehydration due to vomiting, severe headache not responsive to non-narcotic analgesics, or fatigue reducing activity by more than 50%. In these situations, one or more ARVs should be replaced by another.

This also includes the hypersensitivity reaction to NVP which can include a severe rash or liver function test (LFT) elevations to grade III or >5 times the upper limit of normal range.

NVP Hypersensitivity Reactions

NVP hypersensitivity reactions can manifest as a rash and/or elevated LFTs. The rash can occur in up to 20% of patients and usually occurs in the first 6-8 weeks of therapy. NVP will be initiated at a lower dose for the first 2 weeks when only one NVP dose is given per day for 14 days. If there are no clinical signs or symptoms of a NVP hypersensitivity or allergy, the LFT (ALAT) will be checked and the NVP dose will be escalated to 2 doses per day starting at the second week.

There are commonly two levels of severity in NVP-induced rashes.

i) Mild NVP hypersensitivity reaction

A mild rash is defined as erythema, urticaria, intact skin, no blistering or sloughing of skin or desquamation, no involvement of mucous membranes, no angioedema, and no systemic signs (body aches, arthralgias, myalgias, fevers, lymphadenopathy or significantly elevated LFTs). If a mild drug-reaction type rash occurs, patients will continue treatment with caution and careful monitoring. LFTs that are less than grade III (<5 times the upper limit of normal) can usually be followed until it is resolved. This rash will be treated with patient assurance, antihistamines and close follow up until resolved. NVP dose escalation will be delayed for up to one week until symptoms disappear. If symptoms worsen, this may indicate that the patient has severe hypersensitivity reaction and NVP will have to be stopped immediately and other medical interventions considered.

ii) *Severe NVP hypersensitivity reaction (Stevens-Johnson syndrome, SJS):*

A severe rash is defined as severe erythema, urticaria, moistening of skin (desquamation), skin blistering, sloughing of skin, exfoliative dermatitis, erythema multiforme (when severe and involving the mucous membranes known as SJS), anaphylaxis, involvement of mucous membranes, angioedema, cracked/fissured lips, or systemic signs (body aches, arthralgias, myalgias, fevers, lymphadenopathy or significantly elevated LFTs). If a severe drug-reaction type rash occurs, patients will discontinue NVP treatment, begin high dose prednisolone, antihistamines, analgesics, and be admitted to the hospital for IV fluids and careful monitoring. LFTs can be grade III (>5 times the upper limit of normal) or higher. NVP will be stopped immediately and not re-introduced. All ARVs will be stopped. Once the patient recovers, 3 ARV drugs will be started that do not include NVP. The remaining 2 ARVs will be paired with a replacement ARV such as EFV, if not contraindicated.

ABC (Abacavir) Hypersensitivity

ABC hypersensitivity occurs in 3-5% of patients and can be fatal. Hypersensitivity symptoms include: flu symptoms, shortness of breath, cough, fever, aches and pains, a general ill feeling, fatigue/tiredness, swelling, abdominal pain, diarrhoea, nausea, muscle or joint aches, numbness, sore throat or rash. ABC will be stopped immediately and not re-started if this occurs.

Note: If there is a history of ABC hypersensitivity, then ABC is contraindicated.

EFV (Efavirenz) Side Effects

EFV can cause CNS side effects such as vivid dreams, nightmares,

vertigo, or confusion. These symptoms are often mild and transient. Patients may benefit from assurance that these symptoms are common and will decrease over time.

d4T (Stavudine) Side Effects

Peripheral neuropathy is a common side effect with the use of Stavudine and occurrence of lactic acidosis has been reported. These need to be carefully monitored.

Changing Antiretroviral Therapy Due to Treatment Failure

Treatment failure can be virologic, immunologic and/or clinical. It results from failure to suppress viral replication with the development of viral resistance.

Virological Failure is defined as:

- Primary virologic failure if there is a less than 10 fold drop in viral load after 6-8 weeks of therapy, or when the viral load (VL) is persistently above 10,000 copies/ml.
- Secondary virologic failure if there is a 10-fold increase of VL from lowest recorded level.

Immunologic failure is defined as a:

- 50% drop in CD₄ count from peak value within 6 months, or
- return to pre-ART baseline CD₄ count or lower

Clinical failure results in new disease progression which clinically may present with development of clinical stage 4 opportunistic infections or malignancy occurring 6 months or more after initiation of ART.

In Tanzania, immunological and clinical parameters are used to

identify treatment failure. However, in light of declining costs of performing viral load measurements, along with the simplification of processes, where available, viral load parameters should also be applied. Furthermore, clinical failure must be distinguished from the Immune Reconstitution Inflammatory Syndrome (IRIS), in that, while clinical failure is associated with failing CD₄ counts, IRIS is associated with improvements in immune response, i.e. CD₄ counts.

Second-Line ARV Regimen

Before treatment failure is presumed and a particular regimen discarded, every effort should be made to rule out causes other than drug resistance. Patients should be evaluated for correctable factors, such as:

- Inappropriate dosing schedules
- Drug interactions that may reduce the efficacy of some of the ARV
- Non adherence due to side effects
- Evidence of malabsorption

Each of the above scenarios could result in sub-therapeutic drug levels and poor clinical response. In such cases, the regimen in question may be salvaged with palliative medication and/or patient education. If clinical assessment indicates the presence of treatment failure due to confirmed drug resistance, the best approach is to switch to an entirely new regimen, choosing two or more drugs to which the patient is naïve as the second line drug regimen. Before changing to the second line drug regimen, the patient needs to go through the treatment readiness and education process again. This needs to be carefully monitored as some patients might hide their non-adherence.

Second-line Antiretroviral Therapy in Adults and Adolescents

Drugs used as the second line drugs in Tanzania include:

- | | |
|-------|---|
| NRTIs | <ul style="list-style-type: none">• Abacavir (ABC)• Didanosine (ddI)• Tenofovir with lamivudine or emtricitabine (TDF + 3TC or FTC) |
| PIs | <ul style="list-style-type: none">• Lopinavir boosted by Ritonavir (LPV/r)• Atazanavir boosted by Ritonavir (ATV/r) |

The second line NRTI choice for adults and adolescents depends on the first line regimen. For patients on AZT or d4T in first line, the default second line option is to use TDF plus 3TC or FTC combined with a ritonavir-boosted PI, either LPV/r or ATV/r. (**TDF+3TC or FTC +LPV/r or ATV/r**)

For patients who were initiated on TDF in first line because of intolerance to AZT and d4T, the default second line option is to use ABC plus ddI combined with a ritonavir-boosted PI, either LPV/r or ATV/r. (**ABC + ddI + LPV/r or ATV/r**)

Doses for these drugs are given in Appendix 4.

Note that LPV/r , TDF/3TC and TDF/FTC are currently available as FDC formulations which simplify dosing and administration.

Monitoring Patients on ARV Therapy

In Tanzania, CD₄+ T-lymphocyte count is the gold standard method used to determine the time for initiation and change of therapy. Each patient should have had a baseline CD₄+ T-lymphocyte count

(and viral load where possible) done before initiating treatment, and CD₄+ T-lymphocyte count repeated at least every 6 months. In most cases treatment will be associated with weight gain and reduced morbidity from opportunistic infections and improvement in the quality of life. Appearance or persisting opportunistic infections, or lack of weight gain, may indicate treatment failure hence the need to consider changing regimens.

Treatment may be considered successful if the viral load decreases by 1 to 2 logs (10 to 100 folds) from the baseline level. However, in most cases, CD₄ count will be used instead of viral load and so a rise in CD₄+ T-lymphocyte count will indicate treatment success.

On the other hand, treatment failure is indicated with a 10 fold VL increase or a 50% fall in CD₄ count within 6 months.

Clinical and Laboratory Monitoring of Patients on First Line Drug Regimen

i) Scheduled visits

Patients will attend the clinic monthly to collect medication and be seen by a professional nurse, Clinical Officer or Assistant Medical Officer to monitor drug tolerance, adverse events and adherence. Ideally, the clinic nurse, clinician, pharmacist or therapeutic counsellor should count drugs at each scheduled visit. All patients should be seen by a clinician at 2 weeks after initiation of ART to check for adverse events, perform more blood tests (ALT or FBC) and to escalate the NVP dose. Patients should be seen by a clinician at 4, 8 and 12 weeks and 3-monthly thereafter if well. If not well, patients will need to be seen more frequently as determined by the treating clinician or nurse. Safety bloods are to be taken as per schedule. CD₄ count will be done 6-monthly while patients are on the first line regimen.

Table 8.4: Time events schedule

Assessment	Week 0 (baseline)	2nd Week	4th Week	8th Week	12th Week	Every month	Every 3 months	Every 6 months
Education/therapeutic counsellor visit	N,C		N,C	N,C	N,C	N,C	N,C	
Treatment readiness assessment	Whole team							
History	D							
Physical exam	D		D	D	D	N	N	N
Weight	N		N	N	N			N
Complete registers	N,C					N,C	N,C	N,C
Safety blood tests (regiment I and II with NVP ^a)	N	N ^a	N ^a	N ^a				N ^a
Safety blood tests (regiment II and IV with AZT ^b)	N		N	N	N ^b			N ^b
CD4 count	N							N
Adverse events		N,P	D,P	D,P	D,P	N,P		
Adherence check	N,C	P,N,C	P,N,C,D	P,N,C,D	P,N,C,D	P,N,C,D		
TB screening questionnaire	N, D		N	N	N	N		

N= Nurse, C=Counsellor, D=Doctor, P= Pharmacist

- a) For patients on NVP containing regimens, ALT will be taken at baseline, at week 2, 4 and 8 then 6 monthly. Additional safety bloods will be required in pregnancy.
- b) For patients on AZT containing regimens, FBC will be done monthly for 3 months, then 6 monthly.

Table 8.5: Summary of adult ART laboratory monitoring of patients on first line regimen

Regimens	Monitoring Tests	Frequency	Rationale
I. d4T/3TC/NVP	CD4	Staging, 6-monthly	ART monitoring
	ALT	Baseline, week 2, 4 and 8, thereafter 6-monthly	Contains NVP
II. AZT/3TC/NVP	CD4	Staging, 6-monthly	ART monitoring
	ALT	Baseline, week 2, 4 and 8, thereafter 6-monthly and whenever symptomatic	Contains NVP
	FBP	Baseline, week 4 and 8, thereafter, 6 monthly	Contains AZT
III. d4T/3TC/EFV	CD4	Staging, 6-monthly	ART monitoring
IV. AZT/3TC/EFV	CD4	Staging, 6-monthly	ART monitoring
	FBP	Baseline, week 4 and 8, thereafter, 6 monthly	Contains AZT
V. TDF containing regime	Urinalysis Serum Creatinine	Baseline, and 3 monthly Baseline, and once yearly	TDF could be nephrotoxic

Staging = initial testing for all patients when being referred for antiretroviral therapy

Baseline = testing for ART eligible patients at initiation of ART

ii) *Unscheduled visits*

Beyond the scheduled visits, it is also important for the patients to present themselves to the CTC for management should they develop any unexpected symptoms and complications. Clinical judgement will be used to assess whether additional clinical or laboratory interventions are required.

Immune Reconstitution Inflammatory Syndrome (IRIS)

For many opportunistic infections including TB, there can be a transient worsening of the symptoms of infection at between 2-3 weeks, and sometimes up to 8 weeks after commencement of ART. This is referred to as the immune reconstitution inflammatory syndrome. The risk is high in those with advanced HIV disease whose CD₄ count is <50 cells/mm³.

For patients with TB, this syndrome has been reported to occur in as many as 30% of patients in the developing world. The syndrome is characterized by fever, lymphadenopathy, worsening pulmonary lesions and expanding central nervous system (CNS) lesions. These reactions are typically self limiting although they may require the use of a brief course of corticosteroids to reduce inflammation for CNS or severe respiratory symptoms.

Initiation of ART can also unmask previously undiagnosed infections such as hepatitis B or C viral infections as it improves the inflammatory response while repairing the immune system.

In general, ART should not be interrupted for immune reconstitution syndromes. However, where there is doubt, the opinion of a senior HIV physician should be sought. The criteria for making a diagnosis of IRIS are delineated in Table 8.6.

Table 8.6: Immune Reconstitution Inflammatory Syndrome

Diagnosis of infectious IRIS would require:
Both major (A plus B) criteria or Criterion A plus 2 minor criteria
Major criteria <p>A. A typical presentation of “opportunistic infections or tumours” in patients responding to antiretroviral therapy (ART) includes:</p> <ul style="list-style-type: none">• Localised disease such as lymph nodes, liver, spleen• Exaggerated inflammatory reaction, e.g. severe fever, with exclusion of other causes painful lesions• Atypical inflammatory response in affected tissues, such as granulomas, suppuration, necrosis, perivascular lymphocytic inflammatory cell infiltrate• Progression of organ dysfunction or enlargement of pre-existing lesions after definite, clinical improvement with pathogen specific therapy prior to commencement of ART and exclusion of treatment toxicity and new diagnoses• Development of enlargement or cerebral space occupying lesions after treatment for cerebral• Cryptococcus or toxoplasmosis• Progressive pneumonitis or the development of organising pneumonia after treatment for pulmonary• TB or PCP• New onset or worsening of uveitis/vitritis after resolution of CMV retinitis• Fever and cytopenia after treatment for disseminated Mycobacterium avium complex (MAC) disease• Enlargement of Kaposi’s sarcoma lesions and subsequent resolution or partial regression without• Commencement of radiotherapy, systemic chemotherapy or intralesional therapy <p>B. Decrease in plasma HIV-RNA level by $> 1 \log_{10}$ copies/ml</p>
Minor criteria <ul style="list-style-type: none">• Increased blood CD4+ cell count after HAART• Increase in immune response specific to the relevant pathogen, such as delayed type hypersensitivity to mycobacterial antigens• Spontaneous resolution of disease without specific antimicrobial therapy or tumour chemotherapy with continuation of anti-retroviral therapy

Laboratory Monitoring of Patients on Second Line Drugs

When Changing Treatment the Following Should be Observed:

- Never change a single drug in the combination if the reason for changing is treatment failure. Change at least two drugs, preferably all three drugs.
- If changing due to toxicity, change only the drug suspected to be causing the problem.
- Never change to monotherapy (i.e. single drug)
- When selecting drugs, choose drugs that have not been used before, drugs that do not have cross-resistance that have no overlapping toxicities or drug-drug interactions.

Scheduled Visits

Patients started on a second line regimens need to come to the clinic every month for the first 3 months to see the doctor and thereafter every 6 months or as required. Drugs need to be collected every month.

Table 8.7: Summary of adult ART second line drugs

Regimen	Drugs	Monitoring Tests/Frequency
2nd Line	ABC	CD4, Baseline, 6-monthly FBC, Baseline, 3 monthly then 6 monthly
	ddl	
	lopinavir/ritonavir	
	Atazanavir	Liver Function Tests (ALT), baseline, 6monthly
	Tenofovir	Urinalysis, baseline, 3monthly Serum creatinine, baseline , 3monthly

Baseline = testing for 2nd line ART eligible patients at initiation of new ART regimen

Unscheduled Visits

Clinical judgement will be used to assess whether additional clinical or laboratory interventions are required.

Treatment Failure with Second Line Regimens

Patients on second-line therapy who begin to fail on the basis of clinical, immunological, or virological parameters should receive increased adherence support (refer to chapter 12).

If they continue to fail virologically, despite demonstrated increased adherence, their ART regimen should be continued until they cease to derive clinical benefit from the treatment. Where adherence is consistently <80%, ongoing education and counselling should be provided.

If the patient experiences an AIDS defining (WHO stage 4) illness while on second-line therapy, expert opinion should be sought regarding stopping antiretroviral therapy and instituting palliative care.

In Case of Loss to Follow Up

Aggressive follow up is needed by clinic team members in collaboration with home based care providers to follow up patients who do not turn up for their scheduled visits. It is important to institute and maintain system triggers for this throughout follow-up. A good referral mechanism should therefore be established between the clinic and other levels of health care delivery, including home based care teams.

Contraindications (relative) for initiation of ART

Antiretroviral drugs should be avoided or delayed in the following conditions:

- If compliance is not assured
- If the patient refuses to give consent
- If in the first trimester of pregnancy
- If liver or renal failure occurs

Discontinuation of ART

ART should only be discontinued on advice from specialists. The only exceptions are cases where:

- The patient is dying and can no longer comply
- There is repeated failure to comply with treatment
- Severe toxicity occurs

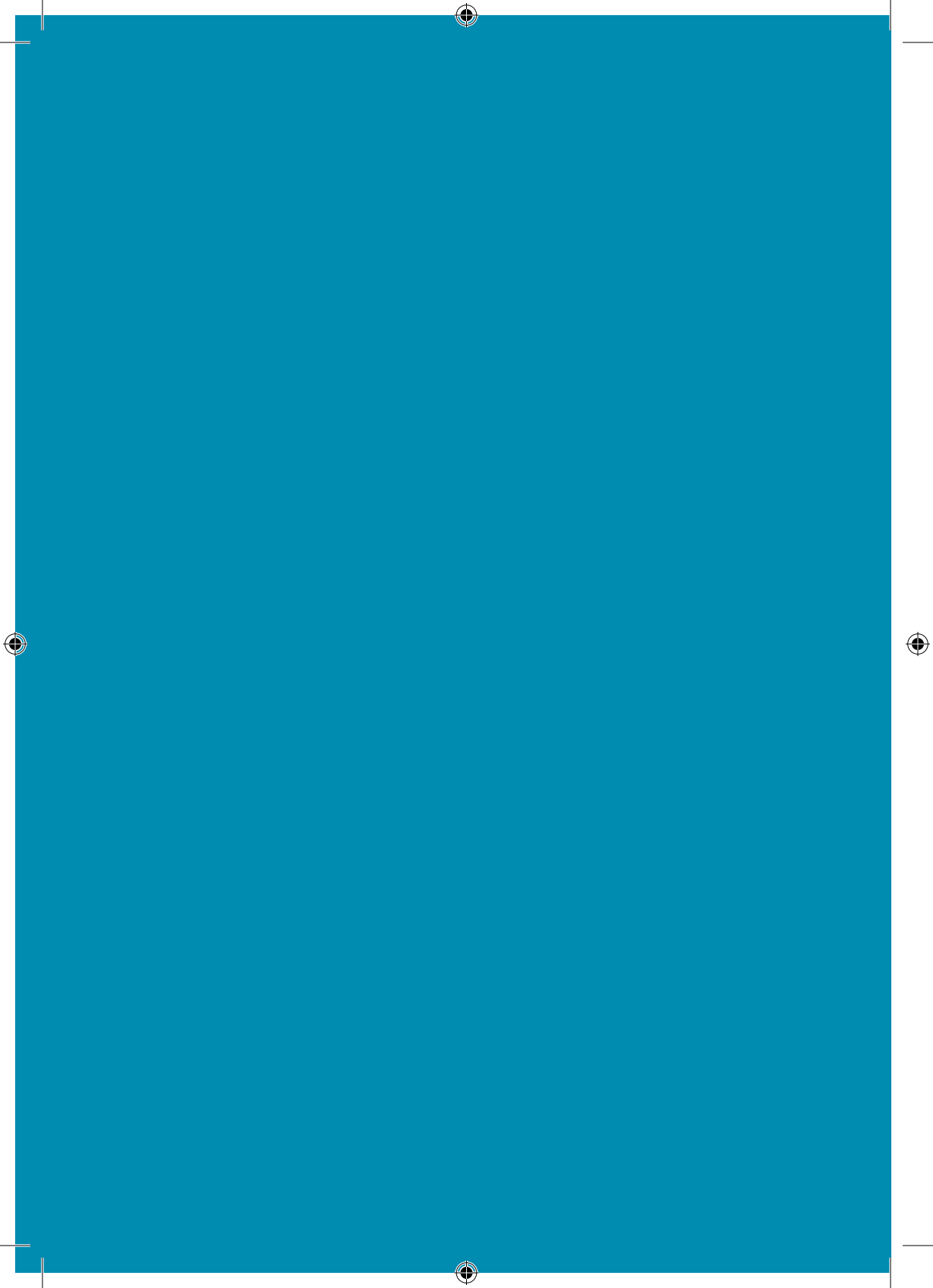
What Happens to Adherence Over Time?

Adherence declines over time, which is an important phenomenon of treatment fatigue. That is why the real challenge to treatment success is not initial adherence, rather long term adherence. In this regard, the regimen to be chosen should be one that patients can adhere to for life.



CHAPTER 9:

ARV Therapy in Infants and Children



CHAPTER 9: ARV THERAPY IN INFANTS AND CHILDREN

Antiretroviral regimens for HIV infected children

All antiretroviral drugs approved for treatment of HIV infection may be used for children. For young children requiring syrup or liquid formulations, however, there may be limitations in ART drugs that are available in these formulations. Moreover, pharmacokinetics parameters in children vary with age and therefore are more complicated than in adults.

Some ARVs available for adults are also available for children with specific child formulations. However, formulations appropriate for use by young children who cannot swallow whole tablets or capsules are only started to become available widely available. Many drugs do not as yet have fixed dose combinations (FDC) in doses appropriate for paediatric use and some fixed dose combinations do not have all drug components evenly distributed in the tablets (e.g., fixed dose AZT/3TC). Therefore, the use of tablets that require cutting in order to use a portion of the drug, particularly unscored tablets, can result in under dosing or overdosing of the drug, which in turn can lead to an increased risk of resistance or toxicity. The national programme shall therefore strive to provide the widest range possible of dosing options for children to mitigate risks of under- and over-dosing. Few paediatric FDCs are now available, see annex 6 and more are expected soon to be registered in Tanzania.

Dosing in children is usually based on either body surface area or weight. Drug doses must be adjusted as the child grows—otherwise there is a risk of under dosage, resistance to drugs and suboptimal response. Standardization is also important so that non-expert personnel can safely dispense correct doses. It is therefore advanta-

geous to provide health care workers with a table of drug doses that can be administered according to weight bands.

Goals of Antiretroviral Therapy in Children

The goals of antiretroviral therapy for children are to

- Prolong the survival of HIV-infected children
- Promote optimal growth and development
- Preserve, enhance, or reconstitute the immune system and therefore reduce opportunistic infections
- Suppress HIV replication and therefore prevent disease progression
- Reduce the morbidity of children and improve their quality of life

Also, while on therapy, the child's CD₄ count and/or CD₄ percentage should rise and remain above the baseline count and undetectable (<50 copies/ μ L) viral loads should be achieved and sustained.

Selection of Patients for Antiretroviral Therapy ***Criteria for Initiating Antiretroviral Therapy in Children (Eligibility for ART)***

(See Annex 2, WHO Paediatric Clinical Staging of HIV/AIDS)

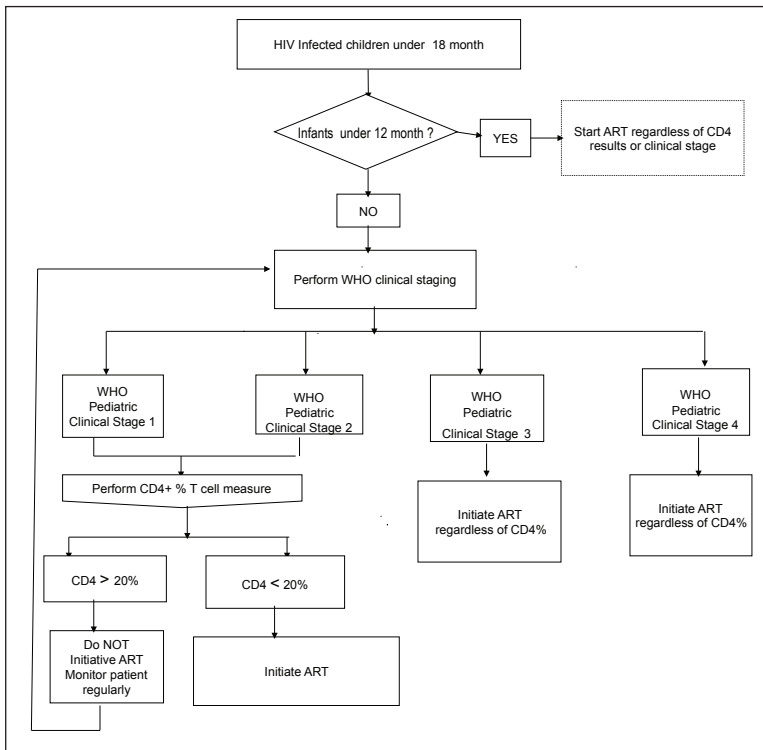
Initiation of ART for Children under 18 Months

For HIV-sero-positive infants aged <18 months, initiation of ARV therapy is recommended in the following cases:

- ART is recommended for all HIV-infected infants below 12 months of age with virologically-proven infection (using HIV DNA PCR, HIV RNA assay, or immune-complex dissociated p24 antigen) irrespective of WHO Paediatric Staging and

- irrespective of CD₄ percentage.
- HIV confirmed infected children between 12 and 18 months in WHO Paediatric disease Stage 1 or 2 with CD₄ <750 or <20% (see table 9.1).
- HIV exposed children aged <18 months with neither virological confirmation nor CD₄ count or % available but meet WHO criteria for HIV severe disease (see page 114). In such cases, HIV antibody testing must be repeated at age 18 months to definitely confirm that the child is HIV infected. Only children with confirmed infection should continue with ARV therapy.

Figure 9.1: Clinical eligibility criteria for ART in HIV confirmed infected Children under 18 months



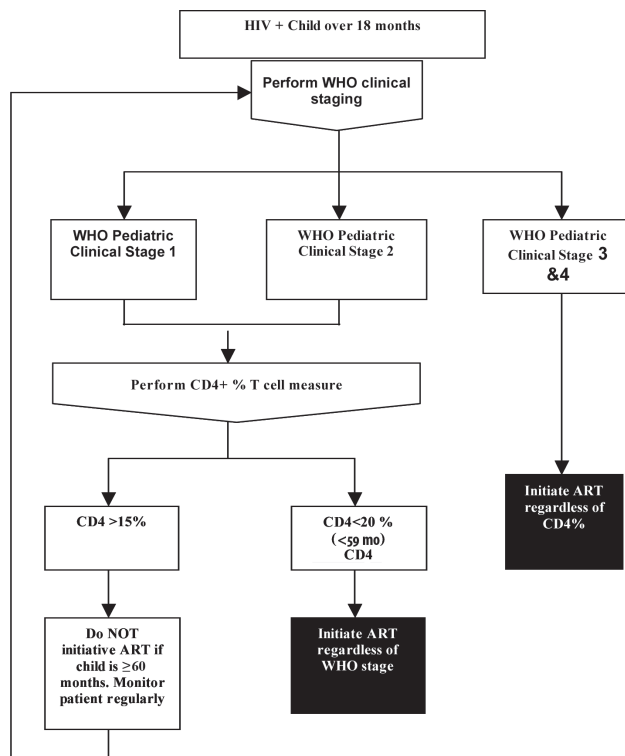
Initiation of ART for Children over 18 months

For children 18 months of age or older, a positive antibody test is an indication of HIV infection since any acquired antibodies from the mother would have degenerated. Initiation of ART is therefore recommended for children in WHO Paediatric Stage 3 or 4 HIV disease irrespective of CD₄ %; or Stage 1 or 2 with:

- CD₄ <20% (<750 cells/mm³) for children between 19–35 months of age
- CD₄ <20% (350 cells/mm³) for children between 36–59 months of age
- CD₄ <15% (200 cells/mm³) for children ≥5 years old

All children in stage 3 and 4 could be started on ARV therapy even if a CD₄ percent is not available, but an attempt should be made to do a CD₄ percent as soon as possible for monitoring purposes. In the interim, the child should be monitored clinically every 6 months for CD₄ % and clinical status with height, weight and developmental stages. When in doubt, the attending clinician should consult or refer the child.

Figure 9.2: Clinical eligibility criteria for ART in children over 18 months



Breastfeeding and ART

The penetration of ARVs into human breast milk in lactating women has not been quantified for most ARVs. Although some ARVs, such as Nevirapine, are known to be present in breast milk, the concentration and quantity of drug that would be ingested by the infant would be less than needed to achieve therapeutic levels. Thus, if a breastfeeding infant is ill and requires ARV treatment, ARVs at standard pediatric doses should be initiated

regardless of whether the mother is receiving ARV therapy or not. As a matter of fact infected breastfeeding infants whose mothers are receiving ARV therapy may end up with sub-therapeutic levels of some ARVs and this could lead to development of drug resistance in the infant's virus.

Recommended First-Line ARV Regimens in Infants and Children

The preferred first line treatment options for children are:

- Zidovudine (AZT)+Lamivudine (3TC)+Nevirapine (NVP) for children under 3 years old
- Zidovudine (AZT)+Lamivudine (3TC)+Efavirenz (EFV) or Nevirapine (NVP) - for children 3 years old or more
- Abacavir (ABC)+Lamivudine (3TC)+Efavirenz (EFV) for children 3 years or more or Nevirapine (NVP) for children under 3 years
- Stavudine (d4T) + Lamuvidine (3TC) + Nevirapine (NVP) available also as FDC for children (annex 6)

Stavudine (d4T) is an alternate for AZT in cases of anaemia (i.e. haemoglobin of <7.5g/dl) available as FDC tablets even for very young children. However, it should be noted that single d4T in liquid formulation needs refrigeration. Potential side effects such as peripheral neuropathy are difficult to recognise in children.

If a mother has received ARVs during pregnancy, to reduce mother to child HIV transmission (MTCT), there is a possibility that she may transmit a resistant virus to her baby if the baby becomes infected. This is particularly the case if NVP or 3TC have been used, either alone or as a component of a two-drug regimen for prophylaxis of MTCT. Children who require ARV therapy and who have previously received either single-dose NVP or 3TC

as MTCT prophylaxis should be given a second line PI based regimen. If second line is unavailable these ART eligible children should be given the first line regimen available. For dosing of ARV regimens see Annex 5, Paediatric Antiretroviral Dosing.

Clinical Assessment of Infants and Children Receiving ARV Therapy

Important clinical signs of response to ARV therapy in children include improvement in growth in children who are failing to grow; improvement in neurological symptoms and development in children who are demonstrating delay in developmental milestones or encephalopathy; and/or decreased frequency of infections (bacterial infections, oral thrush, and/or other opportunistic infections).

Laboratory assessments in children on ARV therapy are the same as recommended in adults. In addition to the clinical assessments recommended in adults, clinical monitoring of ARV treatment in children should include:

- Nutrition and nutritional status
- Weight and height growth, and head circumference for children under 3 years old
- Developmental milestones
- Neurologic symptoms
- Cotrimoxazole prophylaxis daily routine

Reasons for Changing ARV Therapy in Infants and Children

The principles on which to base changes in therapy and the management of drug toxicity in children are similar to those applied to adults. When toxicity is related to an identifiable drug in the regimen, the offending drug can be replaced with

another drug that does not have the same side effects.

Clinical Criteria for Treatment Failure

Clinical conditions indicating that a change to second-line therapy is warranted include:

- Lack of growth response or decline in growth over a 6-months period, after excluding other causes, such as TB
- Not meeting neurodevelopmental milestones
- Development of HIV encephalopathy in a child with no previous manifestations
- Recurrence of infections, such as oral candidiasis, that are refractory to treatment
- Advancement from one clinical stage to another or new evidence of stage 3 disease

Note: Short intercurrent episodes of pneumonia, LRTI and gastroenteritis should not be regarded as clinical failure. TB can present as a progression to stage 3 disease, and must first be excluded. Before an ARV regimen is thought to be failing based on clinical criteria, the child should have had a reasonable trial on the ARV therapy (e.g. have received the regimen for at least 6 months).

Immunological Criteria for Treatment Failure

Immunological conditions indicating that a change to second-line therapy is warranted include:

- Persistent decline in CD₄ percent over 2 months in the absence of TB
- Rapid and substantial decrease in absolute CD₄ count (i.e. $\geq 30\%$ decline in <6 months)
- Return of CD₄ percent to or below pre-therapy baseline

Note:

- CD₄ percent should not be measured during an intercurrent infection; rather, it should be determined 1 month (or more) post-resolution.
- If there is a modest decline in CD₄ percent (< 5%) and if there is no failure to thrive, do not change medication, instead maintain close monitoring.
- Despite a good clinical and immunological response, viral resistance will occur in the absence of complete viral suppression. Many experts will delay changing therapy unless there are signs of clinical or immunological progression.

Virological Criteria for Treatment Failure

Virological conditions indicating that a change to second-line therapy is warranted include persistently elevated viral load in the absence of poor adherence to medication as shown by:

- Progressive increase in viral load after the beginning of treatment (increase in HIV RNA copy number after substantial response i.e. > 3 fold for >2yrs age, >5 fold for < 2 yrs age)
- Less than 1.0 log decrease from baseline after 24 weeks of ART
- Repeated viral load detection in children with earlier undetectable levels

The WHO does not currently recommend the use of routine viral load monitoring to decide on treatment failure. Viral load assessment can only add useful information where CD₄ and clinical criteria for recognizing treatment failure are conflicting. In adults, a viral load greater than 10,000 copies is proposed to reflect viral replication suggestive of treatment failure, upper limits for children are not yet defined and validation is urgently

required. However, levels of HIV-RNA greater than 100,000 copies in children are associated with greater risk of mortality and indicate a need to switch therapy.

While total lymphocyte count (TLC) is useful in the absence of CD₄ measurement to guide when to initiate therapy, it should not be used for the evaluation of response to ARV therapy because a change in TLC is a poor predictor of treatment success.

Recommended Second-Line ARV Therapy for Infants and Children

Second-line therapy for children in the event of first-line regimen failure would include a change in nucleoside backbone, based on the same principles as for adults.

The recommended second line regimen for infants and children who have failed their first line is therefore: Didanosine (ddI) + Abacavir (ABC) + Ritonavir boosted Lopinavir (LPV/r) or + Nelfinavir (NVF). However given the bitter taste of LPV/r, children sometimes refuse it based on taste. New tablet formulation LPV/r can be used for children > 10 kg.

Laboratory Monitoring of Paediatric Patients on ART

The following table summarises the laboratory monitoring of Paediatric patients on ART

Table 9.1: Paediatric ART Regimens and routine monitoring

Regimen	Test	Frequency
d4T/3TC/nevirapine	<ul style="list-style-type: none">• CD4• ALT	<ul style="list-style-type: none">• Staging, 6-monthly• Baseline, week 2, 4 and 8, thereafter 6 monthly
AZT/3TC/nevirapine	<ul style="list-style-type: none">• CD4• FBC• ALT	<ul style="list-style-type: none">• Staging, 6-monthly• Baseline, then monthly for 3 months, then 6 monthly (with CD4) thereafter• Baseline, week 2, 4 and 8, thereafter 6-monthly
d4T/3TC/Lopinavir/ritonavir	<ul style="list-style-type: none">• CD4• Fasting cholesterol• Fasting glucose	<ul style="list-style-type: none">• Staging, 6-monthly• Baseline, 6-monthly• Baseline, 6-monthly
d4T/3TC/EFV	<ul style="list-style-type: none">• CD4	<ul style="list-style-type: none">• Staging, 6-monthly
ABC/3TC/EFV	<ul style="list-style-type: none">• CD4	<ul style="list-style-type: none">• Staging, 6-monthly
ABC/3TC/NVP	<ul style="list-style-type: none">• CD4• ALT	<ul style="list-style-type: none">• Staging, 6-monthly• Baseline, week 2, 4 and 8, thereafter 6-monthly
ddl/ABC/LPV/r	<ul style="list-style-type: none">• CD4• Fasting cholesterol• Fasting glucose	<ul style="list-style-type: none">• Staging, 6-monthly• Baseline, 6-monthly

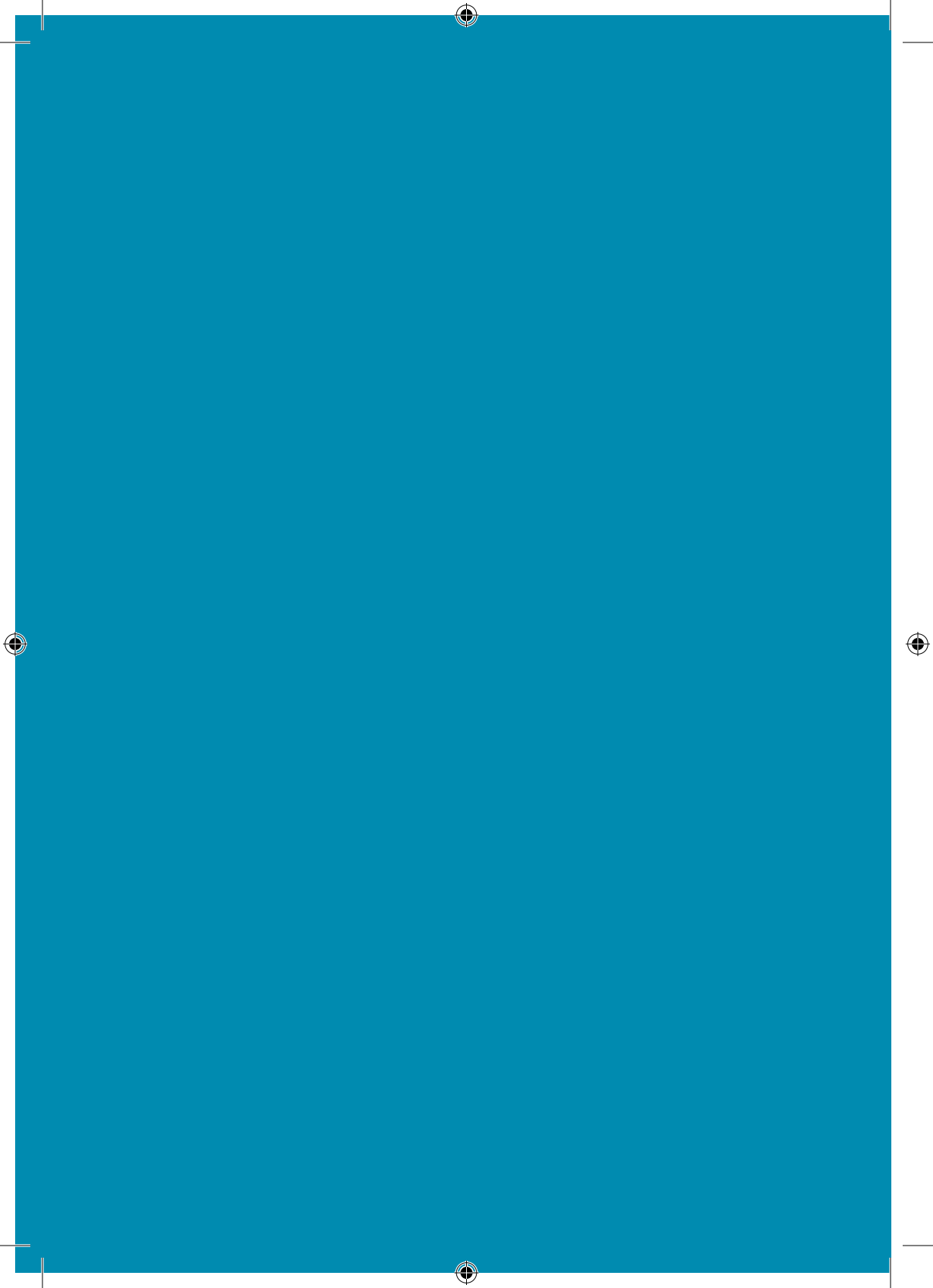
Staging = Initial testing for all patients when being referred for antiretroviral therapy.

Baseline = Testing for ART eligible patients at initiation of ART.



CHAPTER 10:

TB and HIV Co-Infection



CHAPTER 10: TB AND HIV CO-INFECTION

Introduction

TB and HIV are overlapping epidemics. Both have been declared global emergencies demanding global attention. HIV is the strongest risk factor for the development of TB. It increases the progression from TB infection to active disease. While the lifetime risk of developing TB in an individual who is HIV negative is 5-10%, for those who are HIV positive, the risk is 30-50%. HIV also increases the risk of TB reactivation. On the other hand, TB increases the risk of progression from HIV to AIDS and is the most common opportunistic infection and the major cause of death among AIDS patients.

HIV is fuelling the TB epidemic in many countries especially in Sub-Saharan Africa. In Tanzania, TB cases have increased six-fold from 11,843 in 1983 to 62,100 in 2006, mainly due to HIV/AIDS. About 50% of TB patients in Tanzania are co-infected with HIV, accounting for 60-70% of the increase in the number of TB patients.

TB Management in HIV and AIDS Patients *Pattern of HIV-related TB*

HIV not only increases the number of TB cases, but also alters the clinical course of TB disease. As HIV infection progresses, CD₄⁺ T-Lymphocytes that play an important role in the body's defence against tubercle bacilli decline in number and function. Thus, the immune system becomes less able to prevent the growth and local spread of *M. tuberculosis*. The more common types are disseminated and extra-pulmonary TB.

Pulmonary TB

Even in HIV-infected patients, pulmonary TB (PTB) is still

the most common presenting feature. In Tanzania, about 43% of new TB patients present with smear positive pulmonary tuberculosis (PTB+) and 35% with smear negative pulmonary tuberculosis (PTB-).

The WHO defines smear-positive pulmonary tuberculosis in high HIV prevalent settings as a patient with one sputum smear examination positive for acid-fast bacilli (AFB) **and** laboratory confirmation of HIV infection.

Smear-negative pulmonary tuberculosis is defined as the presence of at least two sputum specimens negative for AFB, radiographical abnormalities consistent with active tuberculosis **and** laboratory confirmation of HIV infection. Pulmonary TB is also indicated when a clinician decides to treat with a full course of anti-tuberculosis chemotherapy **or** when a patient has AFB smear-negative sputum which is culture-positive for *Mycobacterium tuberculosis*.

Extra-pulmonary Tuberculosis (EPTB)

About 22% of new TB patients in Tanzania present as EPTB. The most common forms of extra pulmonary TB are pleural effusion, lymphadenopathy, pericardial disease, millary disease, meningitis, spinal TB (Pott's disease) and disseminated TB. EPTB is defined as tuberculosis in organs other than the lungs proven by one specimen from an extra-pulmonary site culture-positive for *Mycobacterium tuberculosis* or smear-positive for AFB; **or** as histological evidence consistent with active extra-pulmonary tuberculosis **and** laboratory confirmation of HIV infection **or** strong clinical evidence of HIV infection **and** a decision by a clinician to treat with a full course of anti-tuberculosis chemotherapy.

Table 10.1: Severe and less severe extra-pulmonary TB cases

Severe extra-pulmonary TB	Less severe extra-pulmonary TB
<ul style="list-style-type: none">• Meningitis• Miliary• Pericarditis• Bilateral or extensive unilateral effusion• Spinal• Intestinal• Genito-urinary tract	<ul style="list-style-type: none">• Lymphnode• Unilateral pleural effusion• Bone (other than spine)• Peripheral joint• Adrenal gland

Combined Treatment of TB and HIV/AIDS

In patients with both tuberculosis and HIV, the priority is to treat tuberculosis. However, patients with HIV-related TB can be given anti-retroviral treatment (ART) and anti-TB treatment at the same time, but this has to be managed carefully.

Careful judgment of when to start ART is necessary. For example in an HIV-positive TB patient on anti-TB treatment who has a high risk of dying (low CD₄ and/or poor clinical condition) the start of ART alongside anti-TB treatment can be life saving. On the other hand, in an HIV positive TB patient with a CD₄ count of 350 or more and/or in relatively good clinical condition, who does not appear to have a high risk of dying, it is safer to postpone ART until the anti-TB treatment has been successfully completed. This decreases the risk of tuberculosis-associated immune reconstitution inflammatory syndrome (IRIS) and avoids the risk of drug interaction between rifampicin with NNRTIs and Protease Inhibitors (PIs). If ART is combined with rifampicin containing anti-TB treatment, the combination of Efavirenz + 2 NRTIs should be used (contraindicated in pregnancy).

Management of Patients Co-infected with HIV and TB

The following two scenarios summarise the management of patients co-infected with HIV and TB:

A patient develops tuberculosis while on antiretroviral therapy

Antiretroviral therapy should be continued throughout TB treatment, with changes as follows:

- **First line drugs:** Substitute Nevirapine for Efavirenz. If this is not possible (e.g. intolerant of Efavirenz or significant risk of falling pregnant) Nevirapine may be substituted with Abacavir or Saquinavir/Ritonavir.
- **Second line drugs:** Lopinavir/Ritonavir should be changed to Saquinavir/Ritonavir (dose: 400/400 mg every 12 hours – 3 extra caps of Ritonavir). This should be continued until 2 weeks after completion of TB treatment when the extra Ritonavir can be stopped.

A patient presents with TB before commencing ART

- If the patient has a CD₄⁺ count of more than 350 cells/mm³, antiretroviral therapy is not needed. However, the need for antiretroviral treatment should be reassessed on completion of TB treatment.
- If the patient has a history of WHO Stage 4 illness and/or a CD₄⁺ count of 200 – 350 cells/mm³, complete 2 months of TB therapy before commencing ART.
- If the patient has a CD₄⁺ count of <200 cells/mm³ or other serious HIV-related illness, make sure that the patient is tolerating TB treatment (after about 2 weeks) before initiating ART. Patients in this group should be started on

first-line therapy consisting of AZT/3TC/EFV, for adults and children of age > 3 years. If the patient is <3 years refer to specialist or paediatrician in HIV clinic.

Table 10.2: Special considerations of ART in TB and HIV co-infected patients

CD4 > 350	Treat TB first, re-asses for ART after completion of TB treatment
CD4 200 – 350	Treat TB first for two month before starting ART
CD4 < 200 or CD4 < 15% or WHO HIV stage 4	Begin ART as early as 2 weeks after TB treatment initiation

Tuberculosis Associated Immune Reconstitution Syndrome

HIV positive patients may experience an occurrence of features of active TB or a temporary exacerbation of signs and symptoms of TB with or without an aggravated radiographic manifestation after the initiation of ART. This paradoxical reaction in HIV infected TB patients is a result of immune reconstitution. Signs and symptoms include fever, lymphadenopathy, central nervous system lesions and worsening of the chest X-ray appearance. This syndrome is known as the Immune Inflammatory Reconstitution Syndrome (IRIS). In such cases, it is crucial that TB treatment failure is excluded before diagnosing IRIS. The management includes continuation of both ART and anti-TB therapies, and if severe, Prednisone 1-2 mg/kg for 1-2 weeks can be given (thereafter gradually decreasing dosage).

Cotrimoxazole Preventive Therapy (CPT) in HIV Positive TB Patients

CPT has proven to be beneficial to patients infected with HIV, including HIV positive TB patients, by preventing several secondary

bacterial, fungal and parasitic OIs. This significantly reduces morbidity and hospital admission for OIs. The 6-8 months TB treatment provides a unique opportunity to provide CPT concurrently since adherence to treatment is a major concern for both TB treatment and CPT. For instructions on dosing of CPT for adults, see chapter 6, Propylactic treatment using co-trimoxazole, pp. 98-100.

HIV-related TB in Children

The natural history of TB in a child infected with HIV is similar to that of an adult as it depends on the stage of HIV disease. During early stages of HIV infection when immunity is good, the signs of TB are similar to those in a child without HIV infection. As HIV infection progresses and immunity declines, dissemination of TB becomes more common and tuberculosis meningitis, miliary TB, and widespread tuberculosis lymphadenopathy occur.

The Diagnosis of Tuberculosis in Children

The diagnosis of TB in children can be very difficult due to the wide range of symptoms. Sputum cannot often be obtained from children and is often negative even on culture. Symptoms in children are not typical. The diagnosis should therefore be based on clinical findings (especially failure to thrive or weight loss), family history of contact with a smear positive case, X-ray examination, culture (if available), and non-response to broad spectrum antibiotic treatment. Older children who are able to cough up sputum should go through the same assessment as adults using smear microscopy as the “gold standard”.

Treatment of TB in children

In principle, TB treatment in children does not differ from that in adults. Nearly all pulmonary TB in children is sputum smear negative (in most cases smear is “not done”) or extra-pulmonary tuberculosis and thus falls into category III. However, severe forms of TB such as

meningitis, miliary TB or TB of the spine should be defined as category I. Treatment can be provided with adult formulation following the dose-body weight relationship presented in tables 4 and 5.

For children with severe forms of TB, Ethambutol is recommended at a dose of 15 mg/kg (2RHZE/4RH). The feared side effect of retro-bulbar neuritis is rarely seen in children taking higher dosages exceeding 20 mg/kg for a long period of time. Nevertheless, if there is any doubt, an alternative regimen (2RHZ/4RH) for young children can be applied. For CPT dosing in children, see Annex 5, Paediatric Antiretroviral Dosing.

BCG Vaccination

BCG (Bacille Calmette-Guerin) is a live attenuated vaccine derived from *M. bovis*. In Tanzania, the BCG vaccination is included in the Expanded Programme of Immunization (EPI). The vaccine is given intra-dermally in the upper part of the right arm at a dose of 0.05 ml to all neonates shortly after birth. The dose increases to 0.1 ml if the vaccine is given to children older than one year.

BCG protects young children against disseminated and severe forms of tuberculosis such as TB meningitis and miliary TB. BCG has little or no protection against the development of TB in adults. However, it gives some protection against the development of leprosy.

In HIV positive neonates, BCG rarely causes disseminated infection of *M. bovis* and if it occurs it should be treated with 2{RH}E/4RH. The WHO recommends that in countries with a high prevalence of tuberculosis like Tanzania, BCG should be given to all neonates immediately after birth, regardless of HIV status. The possible benefits of BCG outweigh the possible disadvantages. However, BCG should not be given to children who present with clear signs and symptoms of HIV-disease or AIDS.

Collaborative TB/HIV Interventions

The Ministry of Health and Social Welfare is implementing collaborative TB/HIV activities with the goal of decreasing the burden of TB and HIV in populations affected by both diseases. The measures being implemented include:

- Establishing mechanisms for collaboration between TB and HIV/AIDS programmes, e.g. by setting up effective coordinating bodies for TB/HIV activities at all levels.
- Instituting measures to decrease the burden of TB in people living with HIV/AIDS.
- Establishing intensified TB case finding by screening PLHAs for TB.

TB screening among people living with HIV/AIDS is an essential strategy for decreasing the burden of tuberculosis and preventing its spread in people with HIV. It is also a strategy for intensified TB case finding.

All patients with HIV infection should undergo routine TB screening. This can be done with the administration of a simple questionnaire as shown on the following page that asks about TB symptoms.

- If a patient screens negative for TB symptoms (i.e. answers no to all symptoms) the screening can be repeated in a subsequent visit.
- If he or she answers positively to any of the questions, the patient may have TB (TB suspect). Further patient evaluation should follow NTLP guidelines.

Table 10.3: Ministry’s recommended TB screening questionnaire

	Yes	No
1 Has the individual had a cough \geq 2weeks?		
2 Has the individual coughed up bloodstained sputum (haemoptysis)?		
3 Has the individual had a fever \geq 2weeks?		
4 Has the individual noticed weight loss (new patients) or a 3 kgs weight loss in a month (in a subsequent visit)?		
5 Has the individual had excessive sweating at night \geq 2weeks?		

- If YES to **one or more** questions, follow NTLP TB diagnostic flow chart.
- If NO **to all** questions: stop TB investigations and repeat screening at the subsequent visit.

Provision of Isoniazid Preventive Therapy (IPT)

TB disease develops in only 10% of all the individuals infected with *M. tuberculosis*. However, in HIV infected individuals this can be up to 50%. TB preventive therapy is an intervention that should be part of the package of care for people living with HIV. IPT is given to individuals with latent infection of *M. tuberculosis* in order to prevent progression to active disease. In these patients, the risk of developing tuberculosis is reduced by about 60% and their survival is also prolonged. The protective effect is expected to last for 18 months. It is however, important to exclude active TB before starting IPT. IPT is given at a dosage of 300 mg daily for 6 months for adults. For children the dosage is 5mg/kg body weight daily for six months, but it should be noted that excluding TB in children is difficult making IPT for children not easily feasible.

IPT should only be offered in the following situations:

- Where quality supportive counselling is available
- After effective screening for active TB

- Where there is capacity for follow up and monitoring of patients to encourage adherence to preventive therapy
- Where there is capacity to manage side effects and exclude active TB during IPT

Eligibility for TB Preventive Therapy among PLHAs

For patients with no history of TB treatment:

- All HIV positive individuals with no signs or symptoms suggestive of active TB are eligible for TB preventive therapy.

For patients with history of TB treatment:

- Patients who had active tuberculosis in the past 2 years should not be considered for preventive therapy.
- Patients who were treated for tuberculosis more than 2 years earlier may be considered because they may have already been re-infected with TB.
- Patients who receive TB preventive therapy and who are eligible for antiretroviral therapy can complete their TB preventive therapy even if ART is started as there is no interaction between Isoniazid and the current ART regimen used.

TB Infection Control in Health Care and Congregate Settings

A TB suspect should be considered infectious until a diagnostic evaluation is completed and this person either has a negative sputum smears result or has completed at least two weeks of anti-TB therapy under DOT.

The TB Infection Control

The control plan should include:

- Screening of all clients to identify persons with a cough of two

- weeks or more as soon as possible after arrival at the facility.
- In outpatient departments, coughing patients should wait outside or in well-ventilated areas.
 - TB suspects need to be examined in a well-ventilated room. Avoid contact between TB patients and HIV positive patients, though this can be difficult as the two patient groups have a large overlap.
 - Have patients turn their heads and cover their mouths when they cough. Provide tissues to persons with symptoms of TB disease (“TB suspects”)

Suggested clinic operating procedure:

Patients who report at CTC to register should be asked about coughing and if so for more than 2 weeks sent immediately to laboratory to provide a sputum sample and return to CTC for registration and care.

This reduces the duration of potential exposure in the facility.

Environmental Control Measures

Environmental control is the second line of defence for preventing the spread of TB in HIV care settings. If the work practice controls are inadequate, environmental control will not eliminate the risk of spread of TB. The common control measures include:

- Open doors and windows to bring in air from the outside.
- Waiting areas and examination rooms designed in a manner that they have maximum natural ventilation. Fans may also assist in the process of air distribution.
- Collection of sputum for TB outside (in an open environment) and away from other people, not in small rooms or

other enclosed areas.

Protection of Health Care Workers

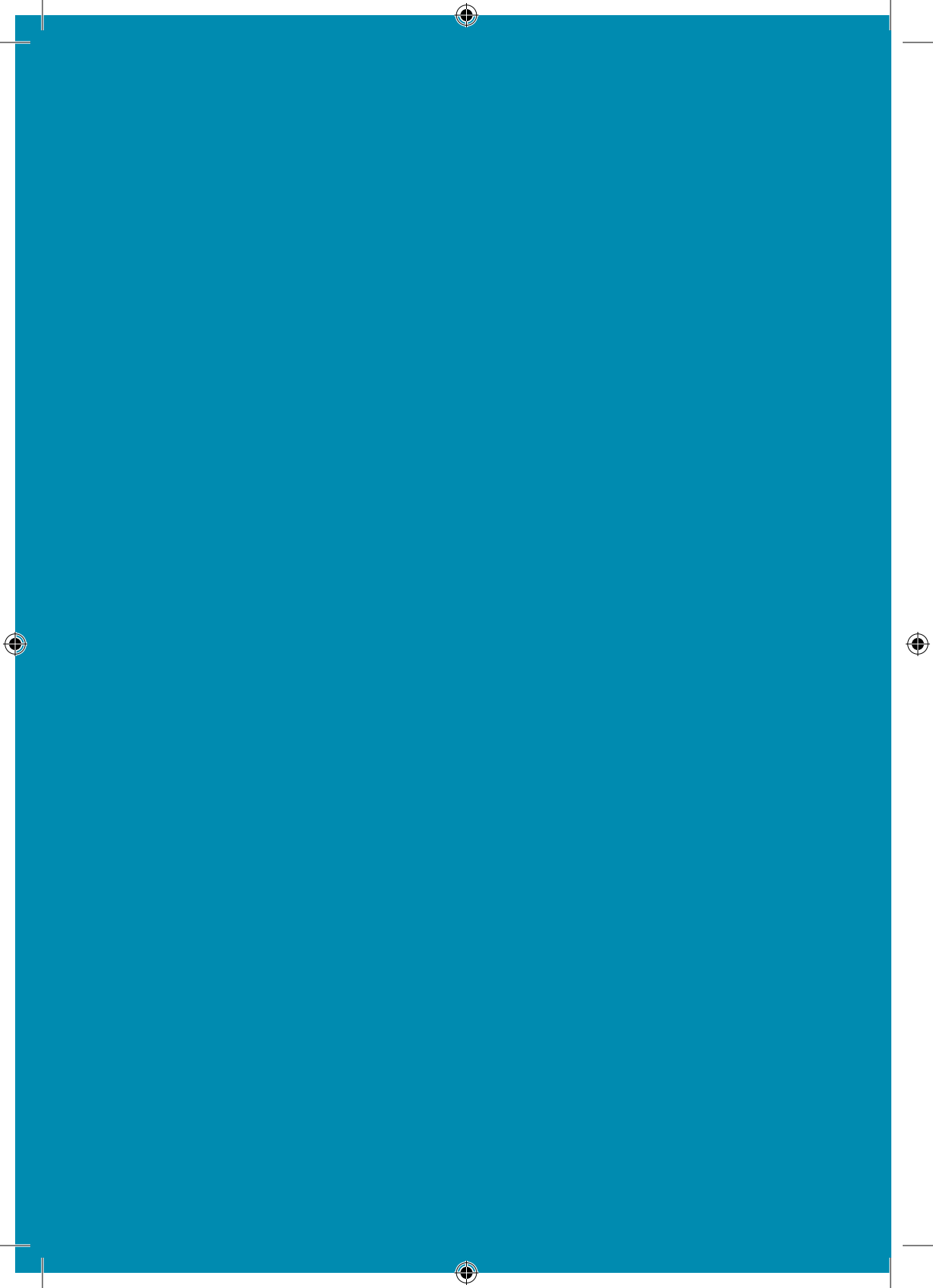
The primary way to prevent transmission of TB to health workers and others at the health facility is for TB patients to take their drugs regularly. By doing so, they will become non-infectious in a week or two. Proper ventilation of the place where treatment is provided is also very important.

In addition:

- All health care workers should be made aware of the increased risk of developing TB when they are HIV positive.
- Those working in hospital departments where TB patients are admitted should be advised to have an HIV test. If they test positive, they should avoid contact with TB suspects and patients.
- Normal masks do not protect medical staff against inhaling infected droplets and are therefore not recommended as a preventive measure for health staff.

CHAPTER 11:

HIV and AIDS in Pregnancy



CHAPTER 11: HIV AND AIDS IN PREGNANCY

Introduction

In Sub-Saharan Africa the majority (61%) of people living with HIV are women. Mother to child transmission is responsible for over 90% of new infections in infants and young children.

In Tanzania HIV prevalence is higher (7.7%) among women compared to men (6.3). Also, HIV prevalence is significantly higher (11%) in urban areas than in rural areas (5%).¹

The recent Global Strategy for Accelerating PMTCT Scale-up is based on the UN recommendation of a comprehensive four-element strategy to prevent HIV in infants and young children² which includes:

- Primary prevention of HIV among women of reproductive age
- Prevention of unintended pregnancies among women living with HIV
- Prevention of HIV transmission during pregnancy, delivery and breastfeeding
- Treatment, care and support for women living with HIV, their children and families.

Primary prevention of HIV among Women and Their Partners

Since there is no cure for HIV infection, primary prevention of

¹ The Second National Multi-Sectoral Strategic Framework on HIV and AIDS (2008-2012), Prime Minister's Office, October 2008

² Strategic Approaches to the Prevention of HIV Infection in Infants: report of a WHO meeting. *Geneva, World Health Organization, 2003*

infection is the most effective means of controlling the spread of HIV and its impact on individuals, families and communities. Preventing HIV infection in women of childbearing age is the best way to prevent MTCT. The following should be taken into consideration:

- Encouraging sexually active women and men to adopt safer sex including the use of barrier methods (condoms) for prevention of HIV infection.
- All national healthcare services should emphasize early diagnosis and treatment of STIs.
- Providing young people with information and services to keep them free of HIV infection and encouraging them to abstain from sex until they can make responsible decisions.
- Encouraging sexually active women and men to be faithful to their regular sexual partners.
- Encouraging and supporting women of childbearing age and their partners to know their HIV status.
- Prevention measures to include the counselling of HIV-negative women on safer sexual practices and getting their partners tested.
- Using similar criteria for sero-negative and sero-positive women and following practices for universal precautions for blood transfusions during pregnancy and labour when indicated. (see chapter 4).

Prevention of Unintended Pregnancies among Women Infected with HIV

Although family planning is part of a comprehensive public health strategy to prevent MTCT, it has been neglected in most programs. Having children or not is every woman's or couple's right. The use of FP should respect and respond to reproductive

rights of a woman and her partner. HIV-infected women should receive information about preventing unintended pregnancies, the risks of MTCT of HIV infection and consequences thereof, thus enabling them to make informed decisions.

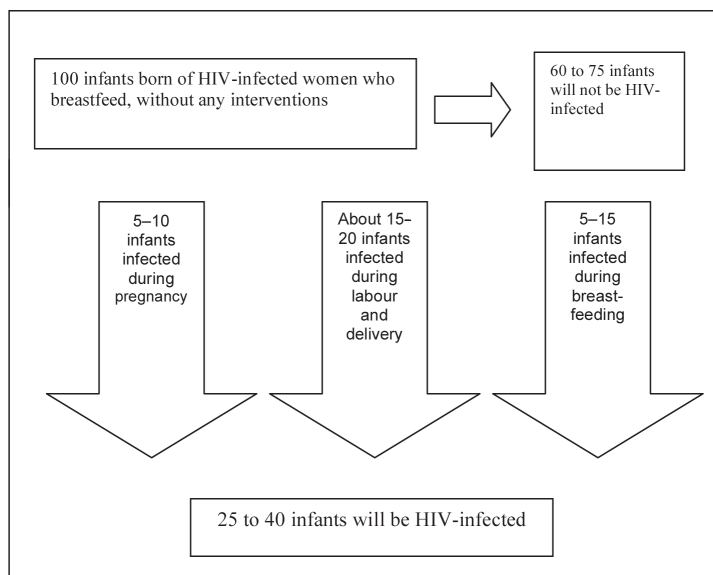
All HIV-infected women and their partners (HIV-infected and uninfected) should be counselled on family planning to enable them choose appropriate and effective contraceptive methods. During pregnancy this should start during the antenatal period. Programs should take advantage of the high attendance of women at child welfare clinics to counsel and provide them with effective contraception during the post partum period. The provision of family planning services during this period will greatly reduce the number of unintended and unplanned pregnancies thus reducing MTCT. Care and Treatment Centres also offer a major opportunity for providing or referring to family planning services.

Note: All contraceptive methods need to be tailored to a woman's health and preference. However, dual protection is recommended for HIV-infected women. Condoms along with a second contraceptive method can prevent both pregnancy and STIs including HIV.

Prevention of HIV Transmission During Pregnancy, Delivery and Breastfeeding *Mother to Child Transmission of HIV (MTCT)*

The risk of MTCT is estimated at 15–40% in the developing world. Transmission of HIV from mother to child accounts for over 90% of all HIV infection in children aged below 15 years.

Figure 11.1: HIV outcomes for infants born of women infected with HIV



There are multiple risk factors that increase the chance of MTCT of HIV. These include viral, maternal, obstetric and neonatal factors.

Viral Factors

- **Viral load:** High maternal viral load and low CD₄ count occurs in new infection with HIV or advanced AIDS
- **Viral strain:** Different strains have different rates of transmission and transmission is higher with HIV-1 than HIV-2. It is also higher with C and E subgroups.
- **Viral resistance:** Pre-existing resistance to available ARV drugs used for prophylaxis

Factors During Pregnancy

- High maternal viral load and low CD₄ count (new infection or advanced AIDS)
- Placental infections, e.g. malaria
- Febrile illnesses
- Genital tract infections
- Behavioural factors (e.g., cigarette smoking, use of hard drugs and unprotected sex)
- Micronutrients and vitamin deficiency
- Antepartum Haemorrhage
- Pre-term rupture of foetal membranes
- Chorioamnionitis

Factors During Labour and Delivery

- High maternal viral load and low CD₄ count (new infection or advanced AIDS)
- Prolonged labour for more than 4 hours before delivery³
- Invasive delivery procedures that increase contact with mother's infected blood or body fluids (e.g., episiotomy, artificial rupture of membranes, vacuum extraction delivery)
- Complicated deliveries (e.g., breech delivery because of the likelihood of manipulation in breech delivery)
- Chorioamnionitis (from untreated STI or other infections)
- Preterm delivery
- Low birth weight
- Intrapartum haemorrhage

³ Studies have found that there is an increased rate of HIV transmission after a mother's membranes have been ruptured for more than 4 hours before delivery. The longer the time gap between membrane rupture and delivery, the higher the risk of HIV transmission.

Breastfeeding Factors

- High maternal viral load and low CD₄ count (new infection or advanced AIDS)
- Duration of breastfeeding
- Mixed feeding (e.g., breastfeeding combined with other foods or fluids)
- Oral disease in the baby (e.g., thrush or mouth sores)
- Poor maternal nutritional status (e.g., micronutrient and vitamin deficiencies)
- Breast disease (abscesses, nipple fissures and mastitis)

Integrating PMTCT into Routine Reproductive and Child Health Services

Antenatal care (ANC) improves the general health and well-being of pregnant mothers and their unborn children. Determining a woman's HIV status is the first step in providing appropriate ANC services. ANC should be provided on a routine basis with proper information to assist the mother to consent. Counselling on the test result is essential to improve maternal health and prevent MTCT of HIV. The second step is to provide cost-effective pregnancy ARTs at the appropriate times during the pregnancy and labour periods to HIV positive women who get pregnant. Adoption of safer practices in the provision of ANC and the carrying out of labour will also contribute to the prevention of MTCT. See discussion that follows.

Comprehensive Antenatal Care for HIV-infected Pregnant Women

ANC for HIV-infected pregnant women includes the same basic services provided for all pregnant women. However, obstetric and medical care should be expanded to address the specific needs of HIV-infected women including

- Provision of prophylactic ARV
- ARV treatment for the mother if indicated
- Provision of appropriate obstetric care
- Infant feeding counselling and support
- Promotion to establish the spouse's (partner) HIV status

Specific actions to be taken:

- Antenatal care for HIV-infected women should take into account the health of the mother as well as the need to reduce the risk of HIV transmission to the infant. Antenatal examinations should therefore include a focus on HIV-related symptoms and opportunistic infections including TB and follow national guidelines for prophylaxis and treatment. Where prenatal diagnostic investigations are indicated, non-invasive screening tests should be considered first, to reduce the risk of MTCT.
- In accordance with national guidelines, routine tests including anaemia, syphilis, urine analysis and full blood picture (FBP). If available, do a CD₄+ T-cell count before referral to CTC.
- Assess for signs and symptoms of common infections in pregnancy, such as urinary tract, respiratory and genital tract infections. Treat promptly according to national guidelines and administer tetanus toxoid immunisations when appropriate.
- Provide counselling on adequate and nutritious food. Give routine iron, folate, and multivitamin supplements according to national guidelines.
- CPT should be provided for all HIV infected pregnant women (see criteria chapter 6) throughout pregnancy.
- As malaria is a major cause of high maternal and infant morbidity and mortality, administer sulfadoxine pyrimethamine (SP) as prophylaxis at 20-24 weeks and again at 28-32 weeks (always

make sure treatment is one month apart). Malaria prevention with SP is not required for women who are on CPT.

- All HIV infected women require infant-feeding counselling and support. Promote and support exclusive breastfeeding for women who do not know their HIV status and consider replacement feeding for HIV-infected women if it is *acceptable, feasible, affordable, accessible, and safe (AFASS)*; otherwise encourage them to practice exclusive breastfeeding for the first 6 months.
- Counsel about consistent use of condoms during pregnancy, as well as throughout postpartum and breastfeeding periods to avoid STIs and HIV re-infection. Discuss family planning options and future fertility and involve partner when possible. Whenever acceptable advise dual protection methods.
- Assess pregnant women's family and social support networks and refer those in need to AIDS support organisations, faith-based organizations and clubs.
- Provide psychological counselling and social support with referrals where indicated.
- Emphasize the importance of keeping all ANC appointments as well as all postpartum and ongoing follow-up care appointments for both mother and infant/child.
- Discuss and plan delivery options and place of delivery with the patient and whenever feasible involve the spouse and/or another key member of the family for possible financial support for transport etc.

Care During Labour and Delivery

Determining women's HIV status

- When feasible, women with unknown HIV status may

receive routine pre-test education and rapid HIV testing so that ARV prophylaxis can be administered before delivery. Women who receive HIV testing during labour and delivery should receive additional HIV post-test counselling during the postnatal period.

- If testing during labour is not possible, women should receive HIV counselling and testing and infant feeding counselling during the immediate postpartum period and before hospital discharge so that the infant can receive ARV prophylaxis.

Administer ARV prophylaxis during labour and delivery

- Continue ARV treatment or implement ARV prophylaxis during labour to reduce maternal viral load and provide protection to the infant.
- Women on ARV treatment should receive all ARV drugs according to their regular dosing schedule.
- All infants born of HIV-infected women should receive ARV prophylaxis regardless of whether the mother has received ARV.

Labour and delivery care

Labour management should follow normal obstetric guidelines.

HCWs should implement the safer obstetric practices to reduce MTCT, whenever practical. This should be individualised as much as possible to avoid increasing risk of maternal and neonatal mortality.

HIV-infected women in labour should be treated with respect and dignity and their confidentiality must be maintained. Observance of infection control is critical for health workers and mothers.

Safer obstetrical practices to reduce MTCT include:

Use Standard Precautions (good infection prevention practices) for all patient care:

- Use protective gear, safely use and dispose of sharps, sterilise equipment and safely dispose of contaminated materials.
- Perform vaginal examinations according to obstetric protocol and avoid unnecessary vaginal examinations.

Avoid unnecessary premature rupture of membranes:

- Use a partogram to measure the progress of labour and indicate medications used during labour including ARV prophylaxis.
- Rupture membranes only when there is an obstetric indication (e.g., when there is an element of prolonged labour and when augmentation with oxytocin is required)

Avoid unnecessary trauma during delivery:

- Avoid routine episiotomy.
- Minimise the use of instrumental vaginal delivery (Use vacuum extraction with caution when one wants to prevent prolonged second stage).

Minimise the risk of postpartum haemorrhage:

- Carefully manage all stages of labour to prevent infection and avoid prolonged labour.
- Actively manage the third stage of labour, by using oxytocic drugs and controlled cord traction.
- Perform uterine massage.

- Repair genital track lacerations promptly.
- Carefully remove all products of conception.

Considerations regarding mode of delivery:

- When caesarean section is performed before the onset of labour or membrane rupture, MTCT will be further reduced. However post partum infection risks are higher among seropositive women after caesarean section. In Tanzania, caesarean section is only indicated for life saving obstetric reasons for pregnant women independent of serostatus

Home Birth Attendants (HBA)

To prevent infection during labour and delivery, HBAs should receive information on

- Mechanisms by which HIV is transmitted from mother to child
- Their own risk of infection and how to protect themselves
- Basic skills to deliver PMTCT interventions, including safer delivery practices
- Standard precautions to prevent infections
- Use of home prepacked Nevirapine where available

Care after a Spontaneous Abortion (Miscarriage)

HCWs should do the following for women who have a spontaneous abortion:

- Provide HIV counselling and testing
- Assess for signs and symptoms of HIV infection/AIDS
- Consider using antibiotics after uterine evacuation
- Counsel on family-planning

Management of Infants During the Early Postpartum Period

Postpartum care

The immediate care of a newly born HIV-exposed infant should follow standard practice. Regardless of the mother's HIV status, all infants should be kept warm after birth and handled with gloved hands until maternal blood and secretions have been washed off.

Safer delivery practices for infants

The following are other practices that can ensure the safety of infants born of HIV-infected women and help to minimize trauma to the infant and reduce the infant's exposure to infected blood and maternal secretions:

- Clamping the cord immediately after birth, and avoiding squeezing the umbilical cord towards the infant. Covering the cord with a gloved hand or gauze before cutting it to avoid splashing of blood from the cord.
- Using suction method only when the baby shows signs of distress or aspiration, and preferably mechanical suction at less than 100 mm Hg pressure or bulb suction.
- Wiping/drying the infant with a towel.
- The baby should be bathed as soon as possible to remove any blood and maternal secretions
- Determining the mother's feeding choice. If replacement feeding is used, place the infant on mother's body for skin-to-skin contact and provide help with the first feeding. If breastfeeding is the preferred choice, place the infant on mother's breast.

- Administering BCG vaccine according to national guidelines.
- For non-breastfed infants, administering vitamin A 50,000 IUs within 6 months while breastfed infants receive Vitamin A starting at 9 months according to national guidelines.

Follow-up Care for HIV-infected Mothers

The postpartum period should provide continuing treatment, care, and support. It is also the final opportunity to connect mothers and their children with follow-up care, treatment and support. HCWs at postpartum clinics should facilitate referrals and linkages to HIV treatment, care and support programmes to ensure that the mother receives ongoing care.

The patient's first postpartum appointment should be within one week (7 days) after delivery. Additional appointments should take place at 28 days and 42 days after birth.

HIV-infected mothers should be referred to a CTC for ongoing HIV treatment, care and support services (if they have not already been referred and assessed at the CTC).

Required postpartum services include the following:

- Physical assessment
- Infant-feeding support
- Sexual and reproductive health care, including family planning
- Screening for cervical and breast cancer
- HIV treatment care and support
- Prevention and treatment of opportunistic infections, including tuberculosis malaria

- Immunisations
- Nutritional counselling and support
- Social and psychosocial support and referral for home-based care as needed

Use of Antiretroviral (ARV) Drugs During Pregnancy

Use of antiretroviral drugs has been shown to reduce the risk of HIV transmission from mother to child.

Prevention of Mother to Child Transmission

The choice of ARV medications to be used to prevent MTCT is based on the resources and expertise available to administer the regimen at the facility level and according to the national policy/programme. PMTCT programmes should deliver combination regimens for PMTCT that include AZT, NVP and 3TC to sites that have the capacity to offer and monitor ARV therapy. PMTCT programmes at sites that do not have the capacity to delivery ARV therapy or where ARV medications are not available, should continue to provide the minimum regimen of a single dose of NVP to mother and child.

Table 11.2: Combination antiretroviral prophylaxis regimens to prevent MTCT

REGIMEN	ANTENATAL	INTRAPARTUM	POSTPARTUM MOTHER	POSTNATAL INFANT
<p>Recommended: AZT + sdNVP AND 7 day maternal AZT + 3TC tail to reduce NVP resistance</p>	<p>AZT 300 mg twice a day starting at 28 weeks or as soon as possible thereafter</p>	<p>AZT 300 mg at onset of labour and every 3 hours until delivery AND sdNVP 200 mg at onset of labour AND 3TC 150 mg at onset of labour and every 12 hours until delivery</p>	<p>AZT 300 mg twice a day for 7 days AND 3TC 150 mg twice a day for 7 days</p>	<p>sdNVP 2 mg/kg oral suspension immediately after birth¹ AND AZT 4 mg/kg twice a day for 7 days²</p>
<p><i>Recommended if mother presents during labour:</i> AZT + sdNVP AND 7-day maternal AZT + 3TC tail beginning with the addition of 3TC at the onset of labour to reduce NVP resistance</p>	<p>None</p>	<p>AZT 300 mg at onset of labour and every 3 hours until delivery AND 3TC 150 mg at onset of labour and every 12 hours until delivery AND sdNVP 200 mg at onset of labour</p>	<p>AZT 300 mg twice a day for 7 days AND 3TC 150 mg twice a day for 7 days</p>	<p>sdNVP 2 mg/kg oral suspension immediately after birth AND AZT 4 mg/kg twice a day for 28 days</p>

REGIMEN	ANTENATAL	INTRAPARTUM	POSTPARTUM MOTHER	POSTNATAL INFANT
<i>Recommended if mother tests positive immediately after delivery:</i> No ART	None	None	Refer to CTC, don't give any ART	sdNVP 2mg/kg oral suspension immediately after birth AND AZT 4mg/kg twice a day for 28 days

Table 11.3: Minimum antiretroviral prophylaxis regimens to prevent MTCT

REGIMEN	ANTENATAL	INTRAPARTUM	POSTPARTUM MOTHER	POSTNATAL INFANT
Minimum regimen: sdNVP to mother and infant	None	sdNVP 200 mg at onset of labour	Maternal: None	Infant: sdNVP 2 mg/kg oral suspension
<i>Minimum regimen when mother presents in late labour:</i> Postnatal infant sdNVP	None	None	Maternal: None	Infant: sdNVP 2mg/kg oral suspension

ARV prophylaxis for infants

The sooner the infant dose is given, the greater the protective effect. It is therefore advisable to administer ARV prophylaxis regimens to the infant immediately after birth.

- If a mother has not received any prophylaxis during pregnancy, labour or delivery, a single dose NVP and AZT should be

given to the infant as soon it can tolerate oral feedings. AZT administered after 48 hours and NVP after 72 hours is unlikely to have any benefit.

- If the minimum PMTCT regimen is used (single dose NVP for mother and infant) the infant dose can be given up to 72 hours after birth.
- If a mother delivers within 2 hours of receiving a single dose of NVP, the infant dose should be given immediately.

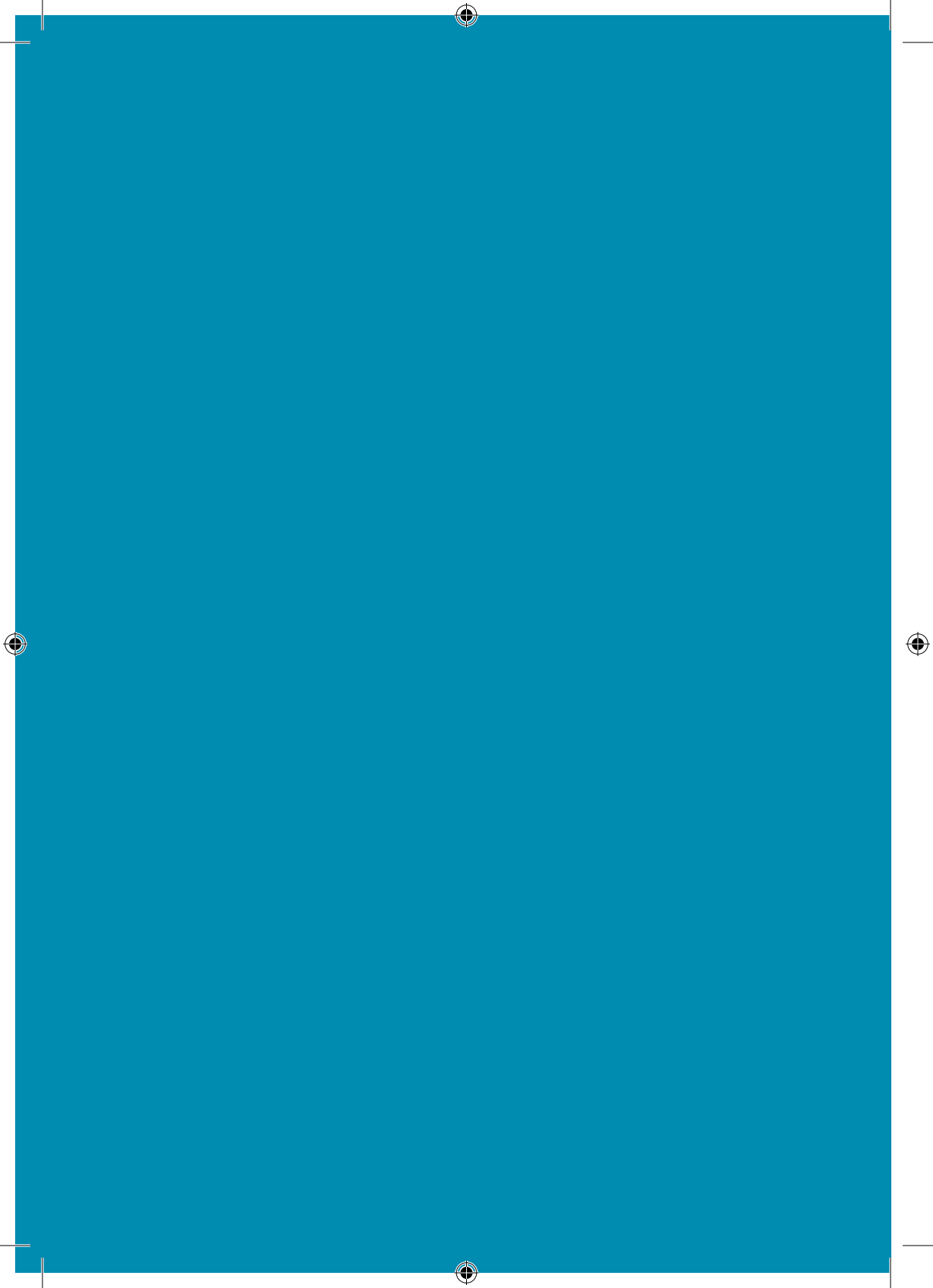
ARV Therapy During Pregnancy

- Women who become pregnant while receiving ARV therapy should continue treatment but may need to change the medications in the ARV regimen to avoid potential birth defects. For example, Efavirenz (EFV) can cause birth defects and therefore it should not be used for pregnant women during the first trimester.
- Women who are diagnosed with HIV during pregnancy and who are eligible for ARV therapy should start ARV therapy as soon as possible according to the guidelines. The recommended first-line regimen for HIV-infected pregnant women is Zidovudine (AZT) + Lamivudine (3TC) + Nevirapine (NVP). Women on ARV treatment should not receive a single-dose of NVP during labour.
- Pregnant women receiving ARV therapy should receive ongoing care and monitoring through the CTC. When co-infected with TB, additional drug therapy and clinical management are required to minimize side effects that may occur with co-administration of HIV and TB therapy.



CHAPTER 12:

Counselling Related to HIV Testing and Treatment Adherence



CHAPTER 12: COUNSELLING RELATED TO HIV TESTING AND TREATMENT ADHERENCE

Introduction

This chapter looks at counselling as it relates to two modes of counselling for HIV testing: Provider Initiated Testing and Counselling (PITC) and the standard Voluntary Counselling and Testing (VCT) that is client-initiated. It also looks at counselling as it relates to ART adherence.

Provider Initiated Testing and Counselling

PITC is currently being used to reinforce expansion of access to HIV testing and increase the number of persons accessing and utilizing HIV/AIDS-related interventions including PMTCT, treatment of OIs, psychosocial support, and ART. In settings where HIV testing is conducted and results are shared between a client and a service provider, the provision of HIV information will normally precede blood testing as the core of HIV testing and counselling services. However, under this new approach, clients can be tested for HIV without having to sign an informed consent form. For minors or comatose clients, informed consent should be obtained from a guardian or close relative.

In PITC the main aim is to provide a clinical decision for the benefit of the client with less focus on prevention counselling and more on ensuring that the HIV positive client receives comprehensive HIV care. Nevertheless, provider-initiated HIV testing and counselling must respect human rights and good clinical practices which include (i) the need for a client's verbal consent to undergo testing; (ii) **confidentiality** of both the

process and the test results; (iii) provision of post test counselling and support to HIV positive clients to help them cope with their status; and (iv) offering testing only if medical services and a link to clinical HIV care are available.

Voluntary Counselling and Testing (client-initiated)

VCT on the other hand uses the client-centred approach to HIV counselling that places less emphasis on education, persuasion and test results and more on personalised risk assessment. The approach encourages the development of a personalised risk reduction plan for each client, which takes into account (i) the client's emotional reactions, (ii) their own situation, (iii) their social/cultural context (iv) the targeted risk behaviour and (v) the client's readiness to change the targeted behaviour. The content of the counselling sessions and the amount of counselling that each client receives is determined by the client's level of knowledge and their specific personal concerns about HIV and/or AIDS. Rather than providing standardised information about HIV and AIDS, the counsellor solicits information about what the client already knows, or has heard, and corrects misperceptions by providing additional information through discussion.

In VCT, the counsellor assists the client to cope with emotional reactions and the consequences of their HIV risk behaviour. The counsellor also assists the client to weigh whether taking the HIV antibody test at that particular time is consistent with the client's personal risk reduction goals.

ART Adherence Counselling

When clients/clients test positive for HIV they are referred to a CTC. Due to the special characteristics of HIV/AIDS care and treatment, access to care and treatment services signifies the

start of a life-long relationship between the CTC client and the CTC facility staff. Emphasis is on a strict need for 95% or greater adherence to prescribed ARV drugs, for life. There is also more emphasis on viral suppression rather than on curing AIDS. As such, attaining the required level of ARV drug adherence is important because viral suppression cannot be achieved when ARV drugs are not used as prescribed, and for life. This is because viral replication results in the rapid development of mutations of the virus which then becomes resistant to the ARV drug. The consequences of this include a lack of response to treatment by the client; transmission of a drug resistant HIV virus to the client's (sexual) contacts and consequently, the presence of a larger number of people with drug resistant HIV virus in the community. The resulting programmatic implication of this is the loss of effectiveness of the first line regimen that will have wide public health implications for the entire country. Adherence is therefore a major requirement for successful care and treatment of HIV/AIDS.

Counselling Skills

Relationship Building Skills

Relationship building skills are essential for building rapport and “joining in” with clients. Skills involved in **rapport building** include common courtesy (greetings and introductions appropriate to culture and context), emotional presence, and appropriate vocal tone and speech rate. The relationship building process requires counselling staff to show **empathy** by putting themselves in their clients' shoes in order to better understand the client's perspective and communicate this understanding to the client. Empathy is the ability to tune into the client's feelings and respond in a way that the client knows that he/she has been heard. Empathy is not the same as sympathy, which is feeling

sorry for another. The ability to demonstrate empathy is a key skill in promoting rapport between a counsellor and client such that the client opens up, even to the extent of disclosing very personal information.

Empathy is evidenced when one:

- Listens to all the feelings and not selectively
- Responds with understanding without trying to minimize or change the client's feelings
- Does not try to judge, solve, advise, tell or question.

Information Gathering Skills

In counselling, information-gathering skills are the most important tool that a counsellor uses to encourage the client to tell their story. The process of information gathering involves listening to the client's own words, focusing not only on the factual information but also on details such as choice and emphasis of words, and/or word misuse. It also involves gauging the client's mood, feelings and underlying messages that are being conveyed through verbal cues (actual words) and non-verbal cues including:

- Body language such as body movements, posture and gestures
- Facial expression such as twisted lips, twinkles and smiles
- Voice tones such as pitch of voice, level and intensity, pauses and fluency and
- The client's general appearance such as type of dress and walking mannerism

Non-verbal cues and messages can be interpreted differently in different cultures so one needs to develop a working knowledge of the meaning of the different non-verbal cues in the environment in which one works.

Listening on the other hand involves knowing what to listen for, suspending judgment, recalling expressions, looking for themes, resisting distractions and reflecting on what is being said. Effective listening also involves complete focus on the client and not doing other tasks while listening to him/her, encouraging the client to speak out and acknowledging their feelings. A counsellor needs to use paraphrasing to check whether they have understood the client and refrain from interrupting the client unnecessarily. Listening also involves asking questions if you do not understand.

Attending skills are a very important aspect of listening skills and involve:

- Establishing good eye contact
- Having a relaxed body posture
- Ensuring good body language
- Listening to feelings
- Eliciting concerns

To apply attending skills one needs to face the client squarely in the face by adopting a posture that indicates involvement with the client, and adopt an open posture such as leaning towards the client with a slight inclination towards him or her which says “I am interested in what you are saying.” The counsellor should maintain good eye contact but not stare at the client as this may be seen as threatening and the client may feel they are under scrutiny. Eye contact must be used in moderation, the counsellor needs to be relaxed and should not be fidgeting or nervously engaging in distractive facial expressions.

Counsellors or health care providers need to realize that effective communication is a two way process and should therefore be mindful of the cues and messages that are expressed in the communication feedback loop, at both the verbal and non-verbal levels.

Information gathering is facilitated when one:

- Asks one question at a time
- Looks at the client and
- Communicates briefly and clearly

DO NOT ask questions to satisfy curiosity; instead use paraphrasing to get more clarity. A paraphrase is a verbal statement that when interchanged with that of the client still retains the meaning or thought that is synonymous with what the client said. In other words, the counsellor/health care provider repeats back to the client the essence of what the client has said to him/her. Paraphrasing is intended to promote discussion, show understanding of the verbal content of the client's story and check ones understanding of the story.

Counselling for HIV Testing

Provider initiated Testing and Counselling (PITC)

- It is offered by a health care provider when the client seeking medical care is ill and is likely to have an AIDS-related illness.
- It can be provided by healthcare providers who are not necessarily trained as counsellors.
- The primary focus is on diagnosing HIV for medical management.
- Counselling for psychosocial issues is addressed by ancillary providers (e.g., social workers).
- The client is not necessarily expecting to get tested for HIV and the first user of the test result is the health provider who uses the HIV test to make the diagnosis and provide appropriate treatment and/or referral.
- Counselling is conducted in a health care setting using a

blend of both open and closed questions. This is because the session may not be as long as it is during standard VCT so the counsellor will be more focused in her/his approach.

- The counsellor focuses on coping with the HIV positive test result and positive prevention with little time spent on those who are HIV negative.
- Care of HIV positive clients is coordinated between TB and HIV providers who are referred to other support services, some of which are provided in the community.
- Services provided are confidential and documented in medical records to ensure continuity of care.
- The most common method is one-on-one information/counselling with a provider or through group information sessions in high volume settings (high client load).
- Clients retain the right to decline the HIV test without being denied any services to which they are entitled to at the health facility.
- Services provided include basic prevention, treatment and care and support within the facility or in the vicinity of the facility.

Client-initiated Voluntary HIV Counselling and Testing

- The individual voluntarily chooses to seek HIV counselling and testing.
- The individual expects to be tested and is the primary user of the HIV test result aimed at making personal life decisions.
- The counselling gives focus predominantly on addressing risk behavior and risk reduction as it aims to prevent HIV transmission through risk reduction.

- The services offered are either anonymous or confidential services and may be offered by a health care provider.
- Client-centered counselling is often offered as a one-on-one session lasting between 45 minutes to one and a half hour. Group sessions are very rare.
- In client initiated VCT, counsellors often use open-ended rather than close-ended questions during their counselling sessions.
- Post testing counselling is equally important for clients who test HIV negative as it is for those who test HIV positive because of the focus on preventing acquisition of infection.
- HIV positive clients are referred to medical care services and other support services, some of which are in the community.

Adherence Counselling

For a summary of core areas in adherence management and lifestyle counselling please refer to Chapter 2.

When a client accesses the CTC for the first time it is important that information be provided that will encourage a life-long partnership between the client and CTC staff. Clients need to be informed about what to expect when they visit the CTC, including whom they will see and when, and if possible the average time they should expect to spend at the CTC for each visit. This will allow them to adequately prepare for clinic appointments. During these meetings the triage nurse should:

- Review the CTC₁ form with the client and ensure that the client's information is filled out completely and accurately.
- **Consent for HIV/AIDS care and treatment for adults:** Where it is the policy of the CTC to have prior consent, the triage nurse should start the informed consent process

by providing information on what to expect from the CTC services, the risks and benefits of ART as well as the voluntary and life-long nature of ART care and treatment. An informed consent form should then be filled out and signed including for home visiting. The former consent is compulsory while the latter is optional.

- **Consent for HIV/AIDS care and treatment for minors:** Consent for children below the age of 18 years should be provided by a guardian. Consent is compulsory for minors below the age of 16 years. Where the care provider is also living with HIV or AIDS, such a provider should be encouraged to provide the name and contact of an alternative care provider that can bring the child for care in the event that the primary care provider is unable to do so. Older adolescents aged 16-17 years who have attended the CTC on their own and have already tested for HIV can be considered as emancipated minors, and assessment of their maturity and readiness to start ARV drugs can be initiated. However, they should be encouraged to inform an adult relative or guardian about their HIV serostatus and their decision to access CTC services.
- Where there is no guardian or parent or where a child is an emancipated minor, initial treatment may be initiated while looking for a treatment assistant to support ART therapy.
- **Consent for HIV/AIDS care and treatment for vulnerable persons that are mentally challenged:** Issues of consent for care and treatment for persons with a mental disorder and/or mentally handicapped persons that are acutely ill and/or unable to provide informed consent for ART care and treatment will be addressed when these persons are mentally stable or by an identified relative overseeing the person's

health care. Where such a relative does not exist, social welfare officers should be contacted to address available legal frameworks that will allow for supervised access to care and treatment for such persons (the power of attorney to make decisions on behalf of the client). The identified relative or person with the power of attorney will also need to commit to attending all clinic visits with the client; to the client's readiness to start ART using existing clinical, immunological and psychosocial criteria; to being on hand to monitor adherence in the home; and to work with mental health services to this effect using a case management approach.

- For children above the age of 7 years, health care providers should work with the primary care provider in the home to develop strategies for disclosing to the child his/her HIV serostatus. Evidence shows it is feasible to do so after the age of 7 years as it gives the child the ability to participate in his/her care early and also helps to ensure good adherence.
- Where informed consent is provided for home visiting, the triage nurse should complete a detailed locating information form (map cue) that has the client's unique CTC identification number derived from the pre-numbered CTC 1 form.

Counselling for treatment adherence

Formal treatment adherence support can be either clinic based or community home-based.

Formal Clinic Adherence Support

This kind of support entails:

- The provision of consistent messages to client regarding ARV drug adherence. This is done by triage nurses, counsellors, doctors and pharmacists.

- Repeating messages regarding adherence at every clinic visit.
- Working in partnership with clients to develop plans for using ARV drugs as prescribed that fit in their lifestyle and a system to monitor the implementation of these plans.
- Working with clients and their treatment assistants by supporting a process of disclosure and identifying a treatment assistant if one has not been identified. It should be noted that the presence of an identified treatment assistant is not a criteria for initiating ARV drugs. This means that clients with no treatment assistant who have been assessed and are ready to start should be provided access to ARV drugs.
- Learning from clients about the potential drug, clinical, environmental and individual barriers to adherence and using problem-solving approaches to either help clients to overcome the barriers or advocate for changes that will remove external barriers that are not under the client's control. This requires a certain level of flexibility in the service and the ability of health care providers to move beyond the traditional hospital-based focus of health care that HIV demands.
- Adherence monitoring systems at facility level, including pill counts, assessment of the level of adherence at every visit, and periodic operational research for objective evaluation of adherence such as unannounced pill counts.

Formal Community Home-based Support

Formal community home-based support requires:

- The presence of an active home-based care programme.
- Active linkages with community-based programmes for the care and support of persons living with HIV/AIDS as evidenced by negotiated and written referral systems and/or the contract-

ing out of clinical and other support activities that cannot be conducted in the setting of the CTC. These services include among other things to and fro referral links to HIV/AIDS voluntary counselling and testing services, PMTCT services, mental health services, as well as links to psychosocial services that support positive living for PLHAs in the form of post-test support groups, adherence support groups, legal aid, transport support, food aid and income generating support.

Given the importance of adherence counselling, all CTC staff providing direct services to clients (doctors/prescriber, nurses, counsellors, pharmacists, phlebotomists, laboratory technicians, and home-based care providers) should receive training using recommended national curricula. The training should cover among other things, ART care and treatment, advanced adherence counselling (supported by provision of adherence tool kits) and HIV/AIDS home-based care training.

Specific guidelines for counsellors who are the first contact for adherence counselling for CTC clients are noted below. The guidelines are organized to address issues that should be done at each of the visits prior to the initiation of ARV drugs and at each subsequent follow-up visit.

The counsellor's role during the first CTC visit will include:

- A review of a client's basic knowledge on HIV infection and development of AIDS and correction of misconceptions.
- A review of a client's understanding on how HIV is transmitted and how ARV drugs affect HIV transmission risk and provision of information where gaps in understanding are evident.
- The provision of information on the monitoring of the HIV disease with particular focus on the implication of CD₄

lymphocyte counts and viral load levels, to make sure that these are well understood by the client. Adherence counselling aids/brochures should be used for demonstration.

- A discussion of ART as a lifelong treatment.
- The provision of information on the strictness of treatment adherence in ART while emphasizing that adherence to recommended treatment regimens should be greater than 95%. Reviewing with client their previous adherence practices to medical recommendations and providing practical examples of what adherence greater than 95% would mean for the client.
- Establishing whether a client has identified a treatment assistant, documenting such information in the counselling log book, and encouraging the client to attend his or her next clinic session with the identified treatment assistant.
- For clients who have not disclosed their HIV serostatus to anyone outside health care-providing staff, exploring with the client the advantages and disadvantages of sharing their test results; addressing barriers to disclosure and developing with the client a disclosure plan that should be documented in the counselling log book for supportive follow-up visits.
- During lifestyle assessment, discussing HIV transmission risks and helping the clients to assess their own risk and develop risk reduction strategies which should be documented in the counselling log book for supportive follow-up visits.
- Discussing other aspects of the client's lifestyle focusing on how this might influence current and continued life-long use of ARV drugs.
- The provision of brief counselling interventions for clients that use alcohol in moderate to high amounts and documenting the average amount of alcohol used per week in standard units for supportive follow-up visits. Encouraging clients to consider the

viability of abstinence from alcohol and using a similar approach for other substances of abuse. Average amounts used per week using measures provided by the client (e.g. sticks of cannabis, portions of heroin) should be documented. A “stages of change approach” to risk reduction counselling for alcohol and drug use should be used as a standard of care.

- Providing time for questions from the client and responding accordingly.

During the second CTC visit, the adherence Counselling session prepares the client for the assessment of readiness to start ART. This visit will also be a rapid start initiation visit for adult clients clinically assessed to be at WHO AIDS Stage 4 or who have a CD4 count < 200 copies// μl at baseline regardless of HIV clinical staging; and for children older than one year if CD4 count at baseline is $\leq 15\%$ and $\leq 20\%$ for those that are younger. Whether a rapid start occurs or not will also be determined by the outcome of the assessment of readiness to start and confirmation of the same. For rapid start clients follow the bulleted steps to complete preparedness and initiation of ARV drugs outlined at the end of this section.

The role of the adherence counsellor will be as follows:

- To review risk reduction and life style change plans and their implementation. Address barriers to implementation and help the client to revise their plan if necessary. Document the process focusing on successful implementation and barriers and revise plans where appropriate.
- To assess the mood state of the client, document it and alert a physician if depression or anxiety disorder is suspected. Document and provide supportive counselling using a problem-solving approach if adjustment disorder is identified.

- To review the client's implementation of disclosure plans and plans for identification of a treatment assistant and if a client has not yet disclosed his or her HIV serostatus/identified a treatment assistant, to address barriers to disclosing/identifying a treatment assistant and review the developed plans with the client or work with the client to revise the plan.
- To document successes in implementation of plans and/or revisions in disclosure and treatment assistant identification plans in the counselling log book.
- To review the client's understanding of how ARV drugs work to prevent HIV transmission and correct misconceptions
- To provide information on first line ARV drugs and potential positive effects and side effects and criteria used to initiate clients on ARVs; to review ART as a lifelong treatment and discuss ARV drugs as a treatment and not a cure for AIDS; to provide education on reasons for the need to take every dose as prescribed using pamphlets where available to illustrate the relationship between missing doses and the development of ARV drug resistance.
- To develop with the client a treatment adherence plan that explores potential barriers and facilitators of adherence to ART including potential solutions to identified barriers and then document the plan. For details see the NACP Adherence Toolkit, section 2.1, as a reminder of issues to address in developing an adherence plan with the client.
- To provide time for questions from the client and respond accordingly.

The third CTC visit confirms readiness to start ARV drugs and initiates the client on ARV drugs. In adults, when baseline CD₄ counts are <350 copies/ μ l and in children below one year of age with CD₄% >20% and older children with CD₄% >15%.

The role of the counsellor will include:

- To review the implementation of risk reduction and lifestyle change plans with the client, and document successes, barriers and revisions in plans where these occur.
- To assess the client's mood state, document it and alert a physician if depression or anxiety disorder is suspected, and to document and provide supportive counselling using a problem-solving approach if adjustment disorder is identified.
- To review the client's understanding of ART and ARV first line drugs including that of the first line ART regimen, potential positive effects and side effects, and the criteria used to initiate clients on ARVs; the client's understanding of ART as a lifelong treatment and ARV drugs as a treatment and not a cure for AIDS; the client's understanding of reasons for the need to take every dose as prescribed using pamphlets where available to illustrate the relationship between missing doses and the development of ARV drug resistance.
- To review the client's implementation of disclosure and treatment assistant identification plans, revising where necessary and documenting successes, barriers and revisions to plans
- To review the outcome of implementing solutions previously agreed on to the barriers to regular use of ARV drugs that the client identified (to be done only for regular start up clients); to review with the client their treatment adherence plan and explore potential solutions for accessing ARV drugs when unexpected travel occurs, and to document any changes in adherence plans in the counselling log book.
- To discuss with the client results of the readiness to start assessment and confirm readiness to start ART.
- To provide time for questions from the client and respond accordingly.

Guidelines under this section will address follow-up visits after initiating ARV drugs. The nurse counsellor will:

- Review and document the client's understanding of the ARV drugs prescribed and the dosing. Some tips to assess adherence from self report include:
 - Using a model (of all ARV drugs available at a clinic) to help the care provider or adolescent client to identify types of drugs used, number used each time and timing of use rather than referring to the last prescription.
 - Checking prescribed medication to see if it matches the client's reported drug use.
 - Discussing and correcting any misunderstanding of how drugs should be taken, the timing, the number of pills and whether they should be taken with or without meals.
- Explore missed doses with the care provider or adolescent client and document the number of missed doses since the last visit.
 - Explore the number of missed doses of each drug in the past week and the past month. Establish % of total drugs prescribed taken in the past month and document if level of adherence at >95% or not.
 - Review the client's understanding of ART as a lifelong treatment and ARV drugs as treatment and not a cure for AIDS.
 - Review knowledge of reasons for the need to take every dose as prescribed using pamphlets where available to illustrate the relationship between missing doses and the development of ARV drug resistance.
- Explore and document side effects from ARVs and other drugs.
 - Review information on first line ART regimen and ex-

- o Explore experiences with positive effects and side effects.
 - o Discuss with the care provider or adolescent client strategies to minimize drug side effects.
- Explore factors that may prevent and those that may facilitate correct use of drugs in the care provider or adolescent client's environment and discuss with the care provider or adolescent client possible solutions to barriers he/she identifies.
 - o Discuss drug storage in the home.
 - o Review with the care provider or adolescent client their plan to take their ARV drugs as prescribed. Document if any changes occur to previously agreed on plan.
 - o Discuss what the care provider or adolescent client will do to ensure they have sufficient drugs in the event of unexpected travel before their next clinic visit.
- Review disclosure and treatment assistants and document the items that follow
 - o The outcome of the disclosure plan while encouraging or formulating a new plan if disclosure has not occurred.
 - o The presence of a treatment assistant. Encourage the care provider or adolescent client to identify a treatment assistant if none has been identified.
- Preventive counselling including risk reduction and lifestyle change counselling.
 - o Review implementation of risk reduction strategies and encourage change or help care provider or client to plan new strategies.
 - o Review implementation of agreed lifestyle changes and encourage change or help care provider or adolescent client to plan new strategies for change.
 - o Assess the mood state of the care provider or adolescent client.

- Provide time for questions from care provider or adolescent client and respond accordingly.

Checklists can and should be used in the CTCs to structure adherence counselling sessions and for documentation of counselling sessions. Using checklists and documenting counselling sessions helps to improve the quality of counselling delivered as it informs on areas that need to be strengthened through supportive supervision and continued in service training. Counselling checklists for children with their care providers and for adolescents' counselling visits can be found in NACP Adherence Toolkit, section 1.2.

Adherence Monitoring and Evaluation: The Role of the Care and Treatment Team

Evidence indicates that adherence diminishes as time progresses and therefore monitoring and support of adherence is essential. Developing a trusting relationship between the client and members of the health care team is also important. Optimal adherence requires full participation by the health-care team as every client's interaction represents an opportunity for reinforcement. The need to stick to appointment dates needs particular emphasis as this practice is not common everywhere. It is also important to have close linkages between CTC-based and home-based care and support activities to ensure a strong client tracking system that will help to understand reasons for missed visits, loss to follow-up for both clients on ARV drugs and those that are not yet eligible to start ARV drugs. Supportive and non-judgmental attitudes by care providers can foster client adherence practices.

The following are important considerations for care and treatment team members:

- All care and treatment team members should show commitment in dealing with their clients during clinic visits and provide ongoing adherence monitoring and timely response to adverse events or interim illnesses. Interim management during clinician's absences must be clarified with the client.
- Adherence support must be intensified when problems arise. This can be realized by investigating new barriers, scheduling more frequent visits, involving home care programs, enlisting the support of family/friends, reviewing teaching or increasing the frequency of home visits.
- There is a need to work closely and in a supportive team relationship with the rest of the staff (other clinicians at the facility who are not primarily based in the CTC, adherence counsellors, triage nurses, home-based care providers and community based organizations providing care ad support) to ensure all team members provide consistent messages related to adherence to clients and their adherence assistants. Adherence issues must be addressed at all visits and client's and/or treatment assistants or care providers reminded to come with their drug stocks at every visit.
- Pharmacy staff should include pill counts in their data base to enhance the monitoring of adherence using self reporting. Pill return counts (i.e., number of doses not taken during the period) are particularly important to capture clients who may not have understood clearly their adherence instructions, such as not stopping treatment even when they feel better or not taking medication in correct dosages or frequency . Pill counts should therefore be done at each client visit, but this should depend on the clinic load and capacity to undertake this activity. At the very least, it should be done for the first three visits after initiation of ARV drugs and thereafter at random. Pill counts may be done

before the client sees the doctor, and reviewed by the doctor during the early/initial visits to evaluate adherence.

- Specific training regarding ART and adherence should be offered and updated periodically for all health care team members
- All health care team members should have in place systems for adequate documentation of indicators for levels of ARV drug adherence for individual clients under their care as well as structures for using collected information to assess performance at site level and feed-back for site-based supportive supervision, refresher training as well as for centralized quarterly reporting to district and regional levels as required.

Ideal adherence means a client must take more than 95% of his or her pill doses (i.e. missing less than 3 doses in a month). If a client is taking less than 95% of their pill doses, he or she are at risk for developing viral resistance and ultimately treatment failure. Client who take < 80% of their pill doses are unlikely to have any durable viral suppression and should be targeted urgently for adherence improvement, and 6 month follow-up.

All health care team members should adhere to the following strategies:

- Spend time and have multiple encounters to explain goals of therapy and need for adherence.
- Consider monitoring of medications such as Cotrimoxazole or other surrogate medicines prior to ART initiation.
- Negotiate a treatment plan that clients can understand and

Pill counts are sometimes criticized because they are viewed as encouraging pill dumping from clients who have not been adherent. While this is true, it is a crucial way of discovering whether clients have understood their medication directions and the critical need for proper adherence. For those clients who throw away their pills right before their clinic visit, it is an indication that they do understand the directions and counselling given.

- to which they commit.
- Encourage disclosure to identified adherence assistant(s) among family or friends who can support the treatment plan.
 - Inform the client beforehand of potential side effects including their severity, duration and coping mechanisms.
 - Establish “readiness” to take medications before ART initiation.
 - Provide adherence tools where available such as a written calendar of medications, pill boxes, etc.
 - Encourage use of alarms, pagers or other available mechanical aids for adherence.
 - Prevent adverse drug interactions by advising clients against over-the-counter drugs and traditional medicines.
 - Anticipate, monitor and treat side effects.
 - Include adherence discussions in support groups.
 - Develop links with community-based and home-based care organizations to support adherence.
 - Encourage participation in peer adherence support groups.

An ideal (basic) adherence package at each visit should contain or consider the following:

- Routine adherence discussion or education between the client and the counsellor in form of an open-ended discussion with time for questions and repetition. Missed/late clinic visits should trigger concern about adherence.
- Feedback from treatment counsellors to the rest of the team to get a better profile of the client and their environment.
- Encourage client participation in a support group.
- Continue monthly visit with treatment counsellors.
- Develop and document an individual adherence plan by

identifying daily activities that act as triggers such as fixed broadcast programs or praying hours, to remind clients to take their medication.

- When the adherence assessment is <80% at any visit, with or without viral or clinical failure, the treatment counsellor needs to re-educate the client and their adherence assistant (close friends or family) about the importance of adherence. The long-term benefits need to be re-emphasized.
- Evaluate the support structures in place. Are they appropriate? How can they be improved? What alternatives are there?
- Consider the use of pillboxes and/or a daily dosing diary.
- Insist on participation in a support group.
- Consider doing a psychological profile.
- Check the family situation through a social worker and treatment counsellor.
- Assess effects of alcohol intake on adherence
- Assess use of traditional medicines and their potential effect on ART adherence.
- Increase home visits by treatment counsellors to daily or weekly at a minimum (conduct spot pill counts at home), and consider directly observed therapy for an agreed period of time.

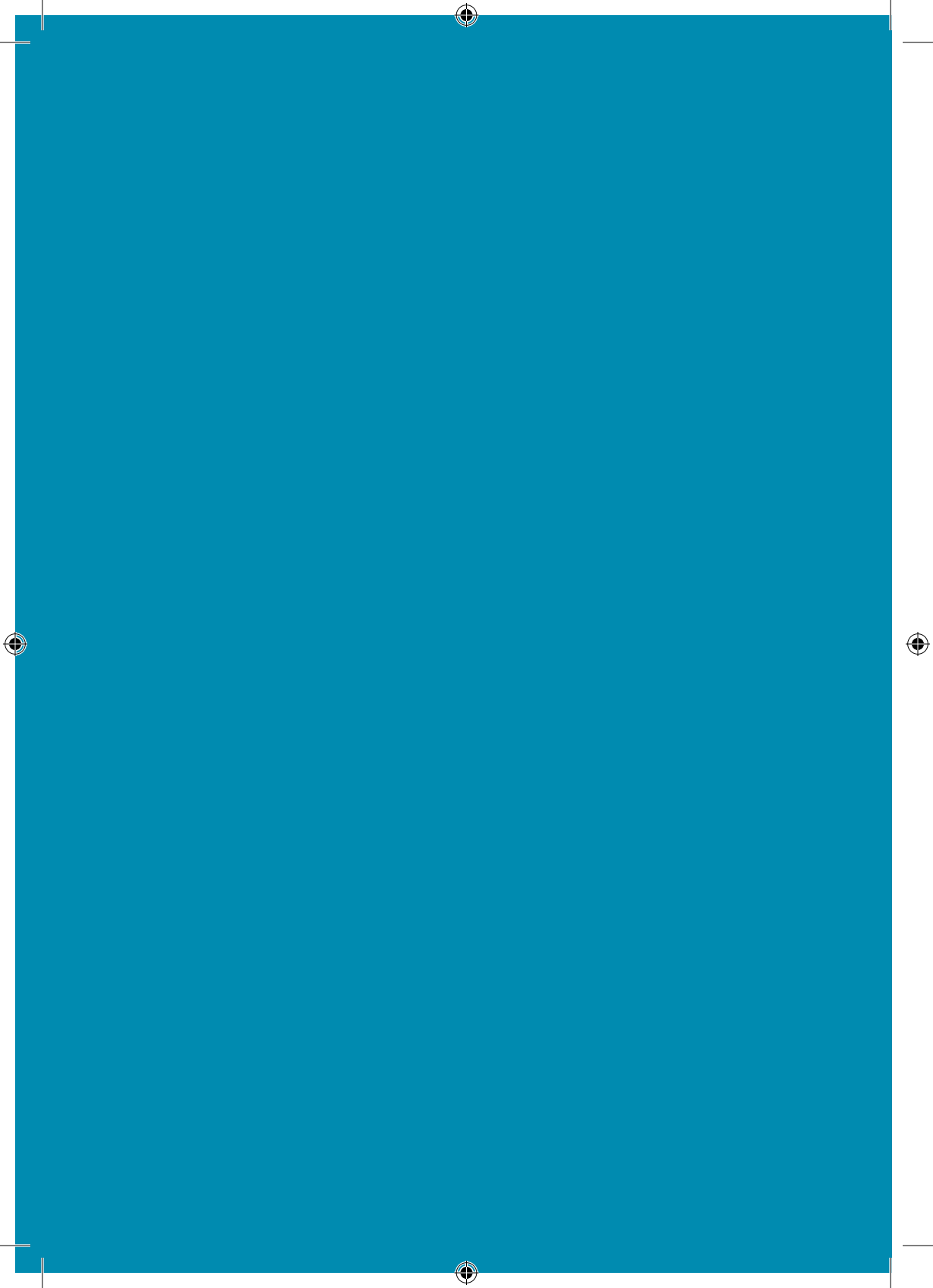
For further information on counselling, refer to the following documents developed by the National AIDS Control Programme, Ministry of Health:

1. Guidelines and Standards for Counselling and Supervision (June 1999), NACP
2. Adherence Counselling Toolkit, draft 2007, NACP
3. Advanced Adherence Counselling training module, draft 2007, NACP

4. National Guidelines for VCT, 2005, NACP
5. National Guidelines for PMTCT, December 2007, NACP
6. Guidelines for HIV Testing and Counselling in Clinical Settings, april 2008, NACP
7. HIV and AIDS VCT Trainers Package, modules 5 and 6, February 2008, NACPt

CHAPTER 13:

Management of Mental Health Problems in HIV and AIDS



CHAPTER 13: MANAGEMENT OF MENTAL HEALTH PROBLEMS IN HIV AND AIDS

Introduction

Mental disorders are more common in HIV-infected than in non-infected people. In some instances, this is due to mental conditions existing prior to the HIV infection (which increases the risk of infection) while in other instances mental problems are a direct or indirect consequence of the disease itself.

Some of the mental health symptoms of AIDS are:

- Depression, anxiety and abuse of alcohol and other substances
- Delirium, dementia and psychosis associated with viral and opportunistic infections of the brain
- Psychiatric side effects of ARVs
- Social difficulties faced as a result of stigma and discrimination
- Exacerbation of a pre-existing mental disorders

Depression, anxiety disorders and substance abuse may be related to the stress of living with HIV and AIDS. Other mental disorders may be secondary to neurological complications of HIV, opportunistic infections or side effects of ARV drugs. They include delirium with or without focal neurological signs or with signs of meningeal irritation and HIV-associated dementia. Pre-existing mental disorders are associated with increased risk of acquiring HIV. This group of patients often comes to ART services with special management needs.

Primary Neurological Complications That Have Secondary Mental Health Manifestations

Delirium

Definition

Delirium is a state of altered consciousness marked by anxiety, incoherent or disorganized speech, disorientation and hallucinations. The distinguishing features include drowsiness, lethargy and a changing level of alertness. The person has difficulties with attention, focus and judgement, and there may be perceptual disturbance such as seeing things that are not there. Children and adolescents may present with disruptive or altered behaviours and may be less able to describe their experiences. All these symptoms usually develop over hours or days and the presentation fluctuates. Delirium is generally a direct physiologic consequence of a medical condition.

Importance

The diagnosis of delirium should be considered first when one meets with acute onset of disturbed consciousness. Delirium may be life-threatening and requires immediate medical attention. It often occurs in patients with severe medical illness, pre-existing dementia, substance intoxication/withdrawal and acute head injury. Delayed diagnosis and management of delirium can be fatal. When assessing children and adolescents, family members can be very helpful in alerting the clinical staff to the unusual nature of their child's behaviours.

Epidemiology

As many as 30%-40% of hospitalized AIDS patients develop delirium and up to 80% of patients with terminal illnesses including AIDS patients develop delirium near death. The rate is higher in elderly persons with AIDS. Most critically, the mortality rate of patients with delirium can be high.

Risk Factors

Risk factors for developing delirium include:

- Advanced stages of immunosuppression
- Substance use/intoxication
- Head/brain injuries
- Previous episodes of delirium
- HIV-associated dementia or infections and malignancies of the CNS
- Drug interactions in AIDS patients taking multiple medications
- Drug overdose (accidental or deliberate)
- High fever from any cause
- Intoxication from any cause

Among children and adolescents, delirium caused by medications may be more common, especially when there is a lack of paediatric formulations of medications.

Diagnostic Features

Onset is usually acute, over hours or days. The patient appears disoriented and struggles to understand surroundings because of clouded thinking and diminished awareness. The disturbance tends to fluctuate during the course of the day. Delirium in HIV-infected patients can present with a spectrum that includes: labile affect; impairments of memory, attention, and orientation; difficulty with logical thinking; and impaired judgment. Thinking and language may be affected by decreased verbal fluency. Patients may also be over talkative. Characteristic perceptual disturbances are visual hallucinations and illusions (misinterpretation of visual cues, such as mistaking shadows for people). The HIV-infected patient may present with impaired

psychomotor functions, which may be in the form of decreased activity, increased activity or a mixture of both. The patient may show daytime lethargy and night-time agitation with an altered sleep cycle. When delusions are present they are often paranoid and episodic. Neurological abnormalities that have been reported in these patients include tremors, ataxia, myoclonus, cranial nerve palsies, asterixis, cerebellar signs and nystagmus.

Differential Diagnosis

Delirium is often misdiagnosed as a primary psychiatric disorder. When patients appear hypoactive, depression is a frequent misdiagnosis for delirium. Clinicians should maintain a high level of suspicion for delirium related to CNS infections, substance including alcohol use, and among HIV-infected patients, multiple medication interactions and/or toxicity.

Acute Management

The appropriate treatment of delirium involves interventions to search for and correct underlying causes of delirium, as well as relieve current symptoms. Joint and coordinated management of the patient with delirium by the doctor, medical assistants, other primary care or specialty clinicians will frequently help ensure appropriate comprehensive evaluation and care.

Identifying the Aetiology

An essential principle in the psychiatric management of delirium is the identification and correction of the aetiological factors. Careful review of the patient's medical history and interview of family members or others close to the patient may provide some direction.

Appropriate laboratory and radiological investigations may be necessary to determine the underlying cause(s) of delirium. The

choice of specific tests to be undertaken will depend on the results of the clinical evaluation. Common differentials for new onset seizures include cryptococcal meningitis, toxoplasmosis, and a cerebral lymphoma. Central nervous system causes include space occupying lesions, cerebral tuberculosis, brain abscess, cryptococcal infection, toxoplasmosis, bacterial and fungal meningitis. If excessive alcohol use with features suggestive of dependence on alcohol has been reported to be a problem, the possibility of alcohol withdrawal syndrome due to relative or total reduction in alcohol use should also be ruled out.

HIV Associated Dementia (HAD)

Definition

HAD is an acquired impairment of intellectual/cognitive abilities in a sufficient degree of severity to interfere with social or occupational functioning where memory impairment is a predominant feature. Other cognitive functions (such as attention, learning, information processing, language, reasoning, judgment) are also often affected with behavioural and personality changes that significantly affect the individuals quality of life. There is no clouding of consciousness in HAD.

Epidemiology

In the United States, before highly active antiretroviral therapy (HAART) came into existence, 40-60 percent of HIV-infected people used to develop HAD. Now, it is estimated that only 7-27% of people infected with HIV develop HAD. However, cognitive impairment is still the most common CNS complication of HIV infection. Contrary to earlier beliefs, recent reports indicate that HAART does not seem to decrease the prevalence of HAD, however when viral suppression occurs, cognitive performance improves. HAD is also said to be more serious in

people above 60 years of age and takes a more fluctuating course in older people than in younger age groups.

Risk Factors

It is well known that not all patients infected with HIV develop HAD. Older age and increased level of immunodeficiency are known risk factors for the development of HAD. In the pre HAART era, HAD almost always occurred in cases whose CD₄ count was less than 200 cells/ μ l, whose viral load was significantly elevated. However, recent observations indicate that cases with low CD₄ count and very low viral load also develop HAD. There seems to be growing evidence that HAART does not prevent neuropsychological impairment but may alter the type of impairment experienced and delay the onset of dementia.

Diagnosis of HAD

HAD can produce different combinations of progressive cognitive decline, motor dysfunction, affective changes and behavioural abnormalities. Generally, cognitive and motor symptoms occur early and include word-finding difficulty, forgetfulness, psychomotor slowing and diminished writing or visual/motor skills. But, HAD shows a highly variable clinical course and spectrum of signs and symptoms, ranging from subtle cognitive, affective behavioural and motor impairments to profound dementia. Seizures, global cognitive deterioration, mutism, incontinence, and severe confusion are other common clinical features of late-stage HAD.

Clinical Manifestations of HIV-associated Dementia (HAD)

Affective impairment is usually in the form of apathy, irritability and sometimes manic symptoms (new onset psychosis).

Behavioural changes include psychomotor retardation (slowed speech and response time), personality change and social withdrawal. Common cognitive changes include lack of visuo-spatial memory (misplacing things), poor visuo-motor coordination, and difficulty with complex sequencing (difficulty in performing previously learned complex tasks), impaired verbal memory (word-finding ability), impaired concentration and attention. Patients will often show motor changes such as unsteady steps, loss of balance due to leg weakness, dropping things, tremors, poor handwriting and decline in motor skills.

Differential Diagnosis

The early stage of HAD may be subtle in its presentation causing difficulty to distinguish it from other primary psychiatric disorders including substance use disorders, intoxication and alcohol withdrawal. In contrast to Alzheimer's disease, which is a cortical dementia, HAD is a sub-cortical dementia. Clinicians should exclude other treatable, reversible causes of change in mental status such as CNS opportunistic infections and malignancies before a diagnosis of HAD can be made. Cognitive impairment may occur as an accompanying feature of a depressive episode. The term pseudo dementia is used to describe this clinical presentation, which resolves with appropriate treatment of the depressive disorder.

Investigations

Take a thorough history, inquiring about medications, time of onset and course of symptoms, drug and alcohol use, opportunistic infection symptoms, HIV history, including duration, opportunistic infections, and CD4 levels. Physical/neurological examination should include checking temperature and other vital signs, thorough physical and neurological examination

to determine potential reversible causes such as opportunistic infections. MRI/CT scans can exclude other CNS disorders (where available).

Diagnostic Tests

Commonly requested tests are: FBC with differential, serum analysis, serological tests for syphilis, serum B₁₂ and folate (where available), and CD₄ count. A lumbar puncture may be necessary to rule out acute infection, such as bacterial meningitis, cryptococcal meningitis, and toxoplasmosis.

Acute Treatment

ARV medication should be continued. In addition to treatment of the existing opportunistic infections, use antipsychotic medications to treat agitation and hallucinations. Because patients with HAD are sensitive to anticholinergic side effects and extrapyramidal symptoms, antipsychotic medications should be given in low dose and increased slowly while carefully monitoring side effects and treatment response. Giving haloperidol 1-2 mg per day with slow increase in the dosage depending on the response would control agitation and some delusional beliefs.

If available, atypical antipsychotic agents such as olanzapine and risperidone can be used starting with low doses. For patients on ritonavir, use with caution as increased or decreased levels of psychotropics may occur. Avoid benzodiazepines, which tend to increase confusion and decrease concentration.

Long-term Treatment

Involve family members/treatment assistants in both medication management and attending clinics and educate them about HAD. Assess independent functioning in the home and refer to home-based care when assistance in care is indicated. Advance attention

should be paid to living wills, health care proxies and durable power of attorney to allow patients to make decisions about their treatment and lives before they become too ill to do so.

AIDS-Related Mania

Definition and Characteristic Features

AIDS-related mania is thought to be secondary to HIV CNS involvement and affects about 4% of clinic patients. It is characterized by loss of the ability to control mood, and presents with elated or irritable moods (either occurring acutely or sub-acutely), increased activity and energy regardless of physical status, decreased need for sleep and an exaggerated sense of self-importance. Behavioural changes centre around increased activity, perceived increased energy, intrusiveness and uninhibition. The condition occurs with more advanced immunosuppression and is often associated with HIV related cognitive impairments.

Management

ART treatment relieves the symptoms of AIDS-related mania. In the Tanzanian context, mood stabilizing drugs such as sodium valporate (used at doses for treatment of epilepsy) have been noted to be useful for the control of acute symptoms in patients that are on ARV.

Other antiepileptic drugs such as carbamazepine and lamotrigine are also powerful mood stabilizers. When carbamazepine is prescribed, drug doses should be adjusted within one-two weeks of treatment as carbamazepine induces liver enzymes and increases its own metabolism as well as that of other drugs metabolised in the liver such as ART drugs. If possible, they should be avoided in patients on ART.

Primary Mental Health Complications

In the absence of focal neurological deficits or meningitis, primary mental health complications should be considered when changes in mental status occur. The most common primary mental health complications that can occur at any CD₄ level are adjustment disorder, depression, mixed depression and anxiety, and anxiety disorders. A syndromal diagnosis should be made for all these conditions.

Adjustment Disorder

This condition occurs predominantly at the time of HIVD (HIV disease) diagnosis and the disorder includes acute and chronic adaptation responses to HIVD diagnosis. These responses include fear of discrimination and imminent death, guilt over infecting others, exacerbation of existing mental health conditions and acute suicidal ideation. With HIVD progression, patients also need to adapt to changes in their lives brought about by each new symptom and loss event such as death of an intimate partner or child as a result of an AIDS-related condition. The nature of the adaptation response will influence the patient's ability to

- Disclose his or her sero-status to others. HIV-related self stigmatization has been noted to be a major barrier to sharing test results and hence prohibiting access to social support that may protect patients from many other mental health consequences of HIVD
- Adopt safer sexual practices
- Adopt safer infant feeding options for postnatal mothers
- Access medical and mental health care
- Define those involved in his or her care.

Management

Supportive medical/clinical counselling is the mainstay of more positive adaptive responses to HIVD diagnosis. Issues to consider during counselling following loss and crisis are noted below.

Addressing Loss and Crisis Amongst PLHAs

Definition

Bereavement is defined as the state of perceived loss that often results from knowing that one has HIV. Adjusting to the new status of living with HIV is often very stressful.

Assessing for Loss, Bereavement and Crisis

This involves exploring the losses that the PLHA has experienced. There are six stages of bereavement. These are: shock, denial, anger, bargaining, depression and acceptance. Among PLHAs the spectrum of loss often begins with the knowledge of their HIV positive diagnosis and consequent loss of their health, certainty, future hopes, relationships, lifestyles, and loss of hopes for children. PLHAs are also more likely to experience the loss of loved ones such as partners and their own children from AIDS defining conditions.

A crisis may be generated by a person's response to rapid disruption of personal affairs. Examples can include the break up of an intimate relationship, the aftermath of an earthquake, rape or other forms of assault. A crisis situation is a critical situation in which a person is unable to use his/her normal problem solving techniques to resolve a problem. When a crisis occurs it is overwhelming for the individual both emotionally and cognitively, and in the case of HIV and AIDS, the triggers that lead to crisis might be death of another PLHA, emergence of a new symptom, treatment failure or anything that is perceived by the patient as a severe life event.

Management

Management is through bereavement counselling. This is a form of supportive counselling with the objective of identifying with the patient, loss events and responses to these events as well as aiding the process of acceptance and constructive adaptation.

A crisis situation takes the form of a blow, withdrawal and acceptance, and as with loss events, is best managed through counselling. **Note:** Health care workers are encouraged to refer to a manual on HIV and AIDS counselling for issues related to different aspects of counselling.

Anxiety Disorders

The initial fear accompanying an HIV diagnosis tends to subside and then persist at a lower level. When anxiety symptoms are severe or persistent, patients may have any of the following anxiety disorders: panic disorder, generalized anxiety disorder, obsessive-compulsive disorder and post-traumatic stress disorder. Symptoms of anxiety disorders are both psychological and physical due to physiological arousal. The wide range of physiological manifestations include: shortness of breath, chest pain, racing/pounding heart, dizziness and gastrointestinal disturbances, which may overlap with symptoms of other common medical disorders. In addition, patients present with fear, worry, insomnia, impaired concentration and memory, diminished appetite, compulsive rituals and avoidance of situations that make them anxious.

Diagnosis

An anxiety disorder occurs when symptoms interfere with a patient's daily functions, personal relationships and cause marked subjective distress. Even brief episodes of anxiety, such as those occurring during a panic attack may interfere markedly with a

patient's life and warrant diagnosis of an anxiety disorder. Anxiety disorders are differentiated from adjustment disorders by the lack of a clear precipitant, and from major depression by the absence of somatic features of depression. CNS pathologies, metabolic illnesses (e.g., hypoxia), endocrinopathies, and respiratory and cardiovascular conditions may also mimic (resemble) anxiety disorders and should be ruled out.

Management

General measures that help in the treatment of persons with anxiety disorders include reassurance, psycho education and supportive counselling when the level of anxiety does not interfere significantly with social or occupational functioning.

Medications are used when anxiety interferes significantly with sleep or daily functioning. In such cases, the patient's fears should be discussed in an empathic manner in subsequent sessions and the patient informed that medication will be provided for a short time to help decrease the intensity of symptoms until they can cope better. Amitriptyline 25 mg daily may alleviate the symptoms.

Persons with anxiety disorders should be encouraged to join psychosocial support groups—i.e., support groups where people with common concerns and needs can share their experiences and help each other through difficult periods and therefore achieve better health and well being.

Major Depressive Disorder

Definition and Importance

Depression is a common mood disorder characterised by low or sad mood, loss of interest or pleasure, feelings of guilt, suicidal thoughts, disturbed sleep, appetite and weight changes, poor

attention and concentration, changes in energy level/fatigue and psychomotor disturbances. Behavioural changes may alert a physician about possible depression including; change in treatment adherence, inability to make life/medical care choices, preoccupation with minor problems, change in functioning, social isolation, interpersonal problems, difficult behaviours in the medical setting, or initiation/return to substance use. Patients may be reluctant or unable to recognize their depressed mood that should be recognized by the attending health care provider and reflected back to the patient.

Importance

Major depression is a mental disorder that affects the mind and body and therefore presents with both psychological and physical symptoms. If untreated depression undermines adherence to medical recommendations and physical survival. About 15% of people that are depressed for more than a year commit suicide. Suicide risk must be assessed and if moderate or high it should be addressed accordingly.

Epidemiology

About 20% of PLHAs accessing medical services suffer from depression. PLHAs have at least twice the rate of depression in the general population. Depression is associated with more rapid progression of HIV and AIDS disease and is generally more common among women compared to men.

Risk Factors

Risk factors of depression include:

- Past/Family history of depression
- Female gender
- Adverse life events

- Chronic medical illness including HIV/AIDS
- Lack of social support

Note: An adverse social environment is damaging while positive social support is protective.

Diagnosis

Depressed mood and/or loss of the ability to experience pleasure or interest in normal activities (anhedonia) must be present for more than two weeks and cause significant difficulties in normal functioning (inability to attend to schooling, work or household chores).

Any four of the following also need to be present for a diagnosis of depression:

- Excessive worry, with or without physiological symptoms of anxiety
- Fatigue or loss of energy experienced more on waking up in the morning; psychomotor retardation (taking a longer time than usual to accomplish tasks or make decisions)
- Unexplained pain (headaches, backache, chest tightness or pain when swallowing, generalized body malaise/aches and pains often reported as “homa”)
- Sleep disturbances characterized by being unable to maintain sleep or a terminal insomnia and/or disturbing dreams
- Decrease in sexual desire
- Decrease in attention and concentration
- Constipation and decreased appetite and weight loss

Psychotic symptoms (hallucinations and delusions) may occur with more severe forms of depression.

Diagnostic Challenges

- Misconception that depression in HIV is normal
- Overlapping symptoms such as fatigue, weight loss and insomnia may be due to depression or physical illness, such as HIV
- Chronic pain and chronic physical syndromes co-morbid with mood disorders
- Medication related depression and anxiety
- Substance abuse (may be associated with depression)

Management

Antidepressants should be started in low doses, about 50% of dosage for healthy individual of similar profile. PLHAs tend to be more sensitive to the side effects of psychotropic medicines. Always initiate treatment with low doses to minimize risk of serious side effects. Tricyclic antidepressants can be used but selective serotonin reuptake inhibitors such as fluoxetine that have fewer side effects are recommended. It is important to ensure adequate doses and for adequate duration (maintenance drug treatment provided at therapeutic dose for 6 months after resolution of symptoms), combined with supportive counselling. Referral to mental health services is advisable should depressive symptoms not resolve within four weeks of initiating drug treatment. Antidepressants do not treat psychotic symptoms and when present they should be treated with an antipsychotic drug. Care should be taken for possible interactions between antidepressants and ARVs as shown in the following table.

Table 13.1. Antidepressants dosage and possible ART interactions

Drug groups of antidepressants (AD)	Specific drugs/ registered Tanzania	Dose range (mg)	Interactions with ARVs
1. Tricyclics	Amitriptyline Imipramine	25–75 per day	Lopinavir/r & ritonavir increase antidepressant (AD) levels in serum
2. SSRIs (serotonin specific re-uptake inhibitors) (Recommended in patients on ART)	Fluoxetine	10–20 per day	Nevirapine decreases AD level; AD increases levels of Amprenavir, Delavirdine, Efavirenz, Indinavir, LPV/r, Ritonavir, Saquinavir

Alcohol and Substance Use Disorders

Definition and Importance (*binge drinking, alcohol abuse, and dependence*)

The term “alcoholism” refers to a disease known as alcohol dependence syndrome, the most severe stage of a group of drinking problems which begins with social drinking, binge drinking and alcohol misuse (hazardous use). Alcohol problems occur at different levels of severity, from mild and annoying to life threatening. Although alcohol dependence (alcoholism) is the most severe stage, less severe drinking problems can also be dangerous.

Social drinking refers to casual collateral drinking, usually without the intent to get drunk. It is variable depending on the social or cultural group in question. Binge drinking means having five or more drinks in one session for men and four or more for women, or simply drinking to get drunk. This turns into alcohol misuse when someone’s regular drinking begins to cause problems and the drinking becomes habitual. In spite of continued social, interpersonal or legal difficulties the person continues to drink.

Alcohol Dependence

Alcohol misuse becomes alcohol dependence when drinkers begin to experience a craving for alcohol, a loss of control of their drinking, an increased tolerance to alcohol so that they have to drink more to achieve the same effect and withdrawal symptoms when they are not drinking. Alcohol dependence is a chronic and often progressive disease that includes a strong need to drink despite repeated problems.

Alcohol Use and HIV

Drug abusers have special clinical needs which require mental health skills and sensitivity in terms of assessing patients' risk behaviours and preparedness of HIV counseling and testing.

People who misuse alcohol are more likely to engage in HIV transmission risk behaviours. For example, rates of injection drug use are high among alcoholics in treatment, and increasing levels of alcohol use are associated with greater injection drug-related risk behaviours, including needle sharing. A history of heavy alcohol use has been correlated with a lifetime tendency toward high-risk sexual behaviours, including multiple sex partners, unprotected intercourse, sex with high-risk partners (e.g., injection drug users, prostitutes), and exchanging sex for money to finance addiction. Bars and drinking parties serve as convenient social settings for meeting potential sexual partners. Alcohol misuse also occurs frequently among people whose lifestyle or personality predisposes them to high-risk behaviours in general.

Studies show that decreasing alcohol use among HIV patients not only reduces the medical and psychiatric consequences associated with alcohol consumption but also decreases other drug use/abuse and HIV transmission. Thus, alcohol and other

drug abuse treatment can also be considered primary HIV prevention.

Diagnosis

Look for signs of alcohol dependence (alcoholism or addiction). Does the patient's pattern of alcohol use lead to distress to self? To others? Are there evidences of tolerance (reports of needing to use larger amounts to become intoxicated) to alcohol and/or avoidance of withdrawal symptoms by drinking in the mornings? If yes to two of any of these questions, establish signs of strong desire or compulsion to use alcohol and difficulty controlling alcohol use.

Do you see withdrawal features? There is a history of recently stopping or decreasing alcohol use after prolonged heavy drinking, with two or more of the following a few hours or days after stopping heavy use: tremor, sweating, increased pulse rate (<100), insomnia, nausea and vomiting, anxiety, transient visual or auditory hallucinations, psychomotor agitation and grand mal seizures.

The above symptoms create distress and impair general functioning. Make sure the changes are not due to a physical illness or another mental disorder.

Do you see hazardous alcohol use patterns and complications? Hazardous alcohol use means repeated binge drinking or regular alcohol abuse that leads to physical, psychological and social complications.

Physical complications: They include peptic ulcer, gastritis, pancreatitis, liver disease, ascites, hypertension, cancer, skin changes, seizures, CNS degeneration, neuropathy, and malnu-

trition, proximal muscle wasting, impaired sexual functioning, and lowered immunity, thrombosis, anaemia and cardiac complications. Alcohol abusers are prone to accidents or injuries. Dangerous drinking during pregnancy can lead to foetal alcohol syndrome (babies are born with characteristic facial and brain abnormalities).

Psychological complications: Look for signs of blackouts (retrograde amnesia - inability to recall actions that occurred when intoxicated), sleep fragmentation, personality change, poor memory or concentration, delirium, Wernicke-Korsakoff syndrome, evidence of self-neglect (e.g., poor hygiene), failed treatment for depressed mood, nervousness and insomnia. Sometimes hazardous use of alcohol can lead to psychosis. Signs of alcohol withdrawal are often overshadowed by psychological symptoms such as sweating, tremors, and morning sickness coupled with intense agitation and hallucinations.

Social complications: These include marital problems, domestic violence, child abuse or neglect, missed work, various forms of irresponsibility.

Differential Diagnosis

Symptoms of anxiety or depression may occur with heavy alcohol use. Re-assess and manage symptoms of depression or anxiety if symptoms continue after patient stops drinking. This means the anxiety/depression could be a primary disorder.

Lowered immunity and other physical complications of HIV can be associated with alcohol use. Alcohol increases susceptibility to some infections that can occur as complications of AIDS. Infections associated with both alcohol and AIDS include tuberculosis; pneumonia caused by the bacterium *Streptococcus pneumoniae*;

and the viral disease Hepatitis C, a leading cause of death among people with HIV. Alcohol may also increase the severity of AIDS-related brain damage, which is characterized in its severest form by profound dementia (see AIDS associated dementia).

Management

Information for patient and family: Alcohol dependence is an illness with serious consequences. It complicates the management of HIV and AIDS. In assessing readiness to start ARV drugs the risk of non adherence related to alcohol use has to be discussed with all patients. Stopping alcohol use will bring mental and physical benefits, and make one eligible for ART but since abrupt stopping when a patient is dependent can cause withdrawal symptoms, medical supervision is necessary.

Treatment of alcohol withdrawal symptoms and dependence:

Thiamine (150 mg per day in divided doses) should be given, if available, orally for one month. Use diazepam for three days (day 1 20 mg, day 2 10 mg, day 3 5 mg) in case of severe withdrawal symptoms.

Other Drugs

Reports from Zanzibar and Dar es Salaam show HIV rates of around 30% among injection drug users. Rates among cannabis and alcohol abusers are also above national average. Overall there are more male drug users than females (about 4:1 respectively). Even though this fact is less well appreciated, drug-using behaviors may be a significant HIV transmission risk factor for many men who do not inject drugs. A US study of homosexual men revealed that up to 16% may have drug use as a risk factor for acquiring HIV. The high degree of association between injection and non-injection drug use underscores the importance of primary care providers' being able to diagnose drug using behaviors.

Diagnosing drug dependence or addiction is not an easy task. Many people who are addicted to drugs attempt to conceal or deny that they have an addiction. In addition, diagnostic tests for drug dependence and addiction lack specificity and sensitivity. Although blood and urine tests are usually quite reliable at detecting recent drug use, individuals can be adept at avoiding being tested or at manipulating test results.

Management

Assessment and support should be similar to what you do with alcohol dependent persons. It is best to involve a mental health expert in the management of the patient.

Primary Psychosis

Psychosis can be a manifestation of delirium, affective disorders, or schizophrenia, but it can occur in the absence of these conditions. Estimates of the prevalence of new-onset psychosis in patients with HIV range from 0.5%-15%, which is higher than in the general population. New-onset psychosis may also be a manifestation of HIV-associated encephalopathy and a history of substance abuse is also more common among patients with psychosis.

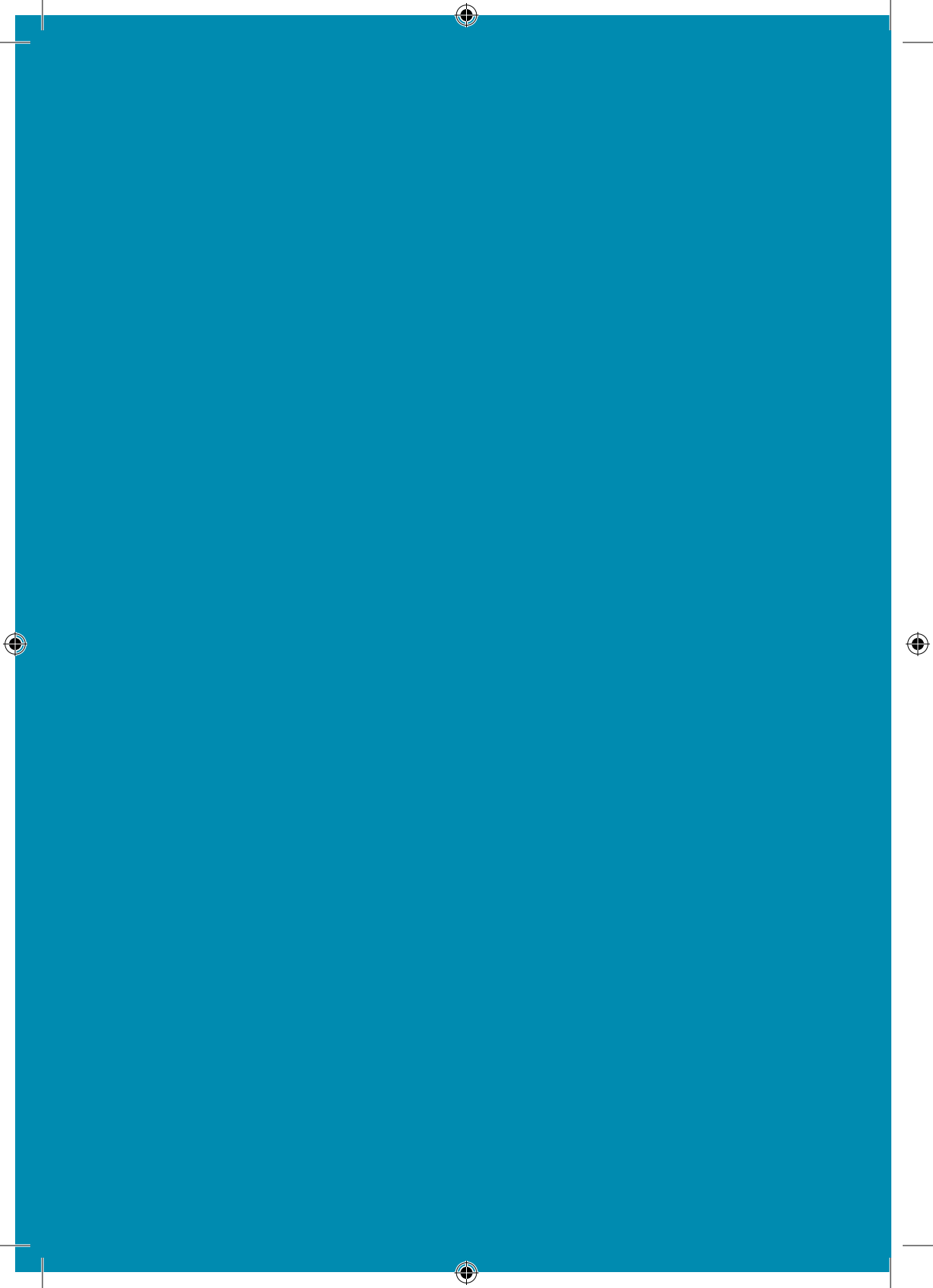
Treatment for HIV-infected patients with psychosis follows the same basic principles as for any other patient with schizophrenia, namely, control of symptoms with medications and psychosocial support and rehabilitation. Quite often, patients require long-term treatment and require various antipsychotic medications to control the delusions, hallucinations, and overall level of disorganization. Because of the high sensitivity to antipsychotic side effects, always start with low doses and if possible maintain patients on half the required dosage for age and weight.

Counselling for HIV testing should be avoided when persons with mental illness are acutely ill and too disorganized to take in what they are being told. Given the importance of the partnership required for risk reduction and other preventive interventions in persons with HIVD, issues related to screening for HIV and AIDS should be postponed until the person is mentally stable. For persons with previous mental illness that are currently in remission of acute symptoms, as with other clients seen at clinics, risk reduction counselling and strategies should be addressed at each counselling session. Monitoring drug treatments for schizophrenia and bipolar disorder should prevent or decrease relapse of episodes. When episodes do occur they should be treated (Refer to Management of Mental Health Conditions in Primary Care Settings (MEHATA publications) for treatment guidelines). Referral to mental health services at the district level should be made and a case management approach used with such services.



CHAPTER 14:

Community and Home Based Care for People Living with HIV and AIDS



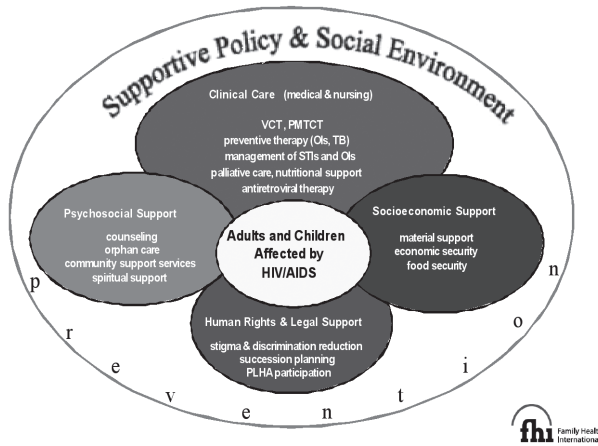
CHAPTER 14: COMMUNITY AND HOME-BASED CARE FOR PEOPLE LIVING WITH HIV AND AIDS

Introduction

The Health Sector HIV and AIDS Strategic Plan (HSHSP) 2008-2012 calls for comprehensive quality HIV care services at three levels, namely: facility, community and household. Patients should have access to care at all three levels and an effective referral system needs to be put in place to link all the levels with each other. The availability and use of antiretroviral treatment has reinforced and added new perspectives to this concept of comprehensive care across a continuum. The importance of compliance with treatment regimes and adherence to treatment has resulted in new roles for Community Home Based Care programmes (CHBC). CHBC has a key role in treatment advocacy, information and literacy as well as monitoring and support to patients on antiretroviral drugs. Efforts towards universal access to HIV prevention, care, treatment and support for PLHAs provide critical opportunities to scale up and strengthen CHBC. CHBC services also enhance HIV and AIDS awareness, reduce stigma, and mobilize communities to use HIV testing and counselling services.

PLHAs and their affected families and households have a variety of needs beyond the mere clinical needs. Such needs include psychological, spiritual, nutritional, educational, economic and legal care and support. This is illustrated in Figure 14.1 on the following page.

Figure 14.1: Comprehensive HIV and AIDS Care and Support



The care provided to PLHAs in their homes and communities must therefore address the needs of not only the patients but also their care givers and household and community members. In order to effectively ensure networking and link patients across a continuum of care services, an inventory or directory of service providing organisations in the local community or district needs to be available at all clinics and programmes. In addition, regular coordination is needed between the CHBC programmes, community and district health authorities and CTC staff.

Definitions

Continuum of care is defined as care throughout all stages of HIV and AIDS and is provided through a care delivery approach that links health, medical and social support services within a defined geographical area to comprehensively meet a wide and evolving range of needs over time.

Home-based care is a form of assistance given to a sick person/

patient, within the home environment. Home-based care services involve prevention and care and support provided beyond the health institution that aims at meeting the overall needs of people suffering from chronic illnesses and their family members, including those taking life-long medications such as ARV drugs. Palliative care is usually provided by the patient's family, friends, volunteers and members of the community that are trained and supported by skilled health care workers. The care given may include physical, psycho-social, spiritual and material support and should adapt to the patient's needs.

Palliative care contains a set of supportive interventions that improve the quality of life of patients and their families who face problems associated with a chronic disease or life-threatening illness. This can be done through the prevention and relief of the broad spectrum of suffering which could either be physical, psychological or spiritual.

Coordination at the CTC

The main role of the HBC coordinator at the CTC of the facility is to link patients attending the CTC to HBC services within their community. The HBC coordinator maintains and updates the HBC directory of services and keeps record of referrals.

The HBC coordinator liaises with community home-based care (CHBC) programs and performs supervisory and monitoring duties. She/he forms the secretariat of the district-based community home-based team (CHBT) or continuum of care committee which should keep the council health management team (CHMT) informed of its activities on a regular basis.

Functions of CHBC Committee

- To facilitate training of home- and community-based care

providers or volunteers and support them through regular supportive supervision to ensure provision of quality palliative care within homes.

- To mobilize resources (human and material through partner organizations and individuals) and coordinate them towards providing care for PLHAs and their families.
- To ensure that local community organizations and families are involved before the patient is discharged in order to link them with care in the community/home and to encourage referral back to health institutions where indicated.
- To ensure networking of local stakeholders in order to provide coordinated palliative care services.
- To promote treatment linked activities within HBC services such as adherence and referrals.

Benefits of Home-based Care

Home-based care has the following important benefits to PLHAs, their families and the community.

To PLHAs:

- Helps them to stay healthier longer
- Permits them to receive care and treatment in a familiar and supportive environment
- Enhances adherence to ART
- Allows them to continue participating in family life matters
- Maintains a sense of belonging in social groups
- Maximizes their emotional health and thus keeps a positive attitude
- Makes it easier for them to accept their condition
- Is cost saving
- Reduces stigma and discrimination

- Enables them to help others prevent new HIV infections
- They die at home amongst loved ones

To the family:

- Strengthens family ties/attachment
- Helps the family to accept the patient's condition
- Provides opportunity to learn about HIV and AIDS
- Can reduce medical and other care-related costs
- Makes it easier for family members who provide care to PLHAs to attend to other responsibilities
- Makes it easier for the family to support the patient in taking life long ART treatment as well as other medications
- Involvement of the family in care enables the grieving process to be easier

To the community

- Promotes awareness about prevention of infection, care, treatment and support of HIV and AIDS and thus helps to reduce stigma
- Helps the community understand the disease and helps to correct myths and misconceptions about HIV and AIDS prevention and treatment
- Promotes ART preparedness and support
- Encourages sustainability of care services
- Makes it easier for the community to provide support by tapping all possible resources in the community
- Helps to set up long-term care and other services in the community

Components of Home-based Care

Home-based care is a mechanism of palliative care provision that includes various components as elaborated below.

Physical Care

For this kind of care, providers should always

- Assess for TB: chronic cough, weight loss and night sweats. Refer if needed
- Ensure that the patient gets treated for opportunistic infections and appropriate nursing care at all times
- Maintain preventive therapies such as CPT and IPT
- Provide ART monitoring for early side effects and continuous adherence
- Administer pain relief with appropriate medication (such as use of NSAID's, codeine and other opioids such as liquid morphine)
- Support the prevention of malaria through use of insecticide treated bednets (ITN)
- Offer reproductive health care such as family planning advice, and referral and care for pregnant mothers (MTCT interventions including during delivery at home).

Nutritional Care and Support

Patients should be educated on appropriate nutrition using locally available foods, and guided on feeding patterns and preparation of foods to suit the condition of the patient (for details see Chapter 15, Nutrition, and Annex 7, The Role and Sources of Selected Micronutrients).

Hygiene

Practical ways of encouraging hygiene, particularly personal hygiene (e.g. mouth, skin and hair care) and environmental care within the household and outside including garbage disposal should be promoted. Patients should be encouraged as much as possible to do their own hygiene care as far as possible so as to maintain their self respect and hope. Nursing care should be

reserved for only what is necessary for the patient in order to maintain the dignity and comfort of the patient.

Exercises

Patients need to exercise regularly and if they are too weak the HBC providers or family members should assist them in doing passive exercises for body movement and to enhance blood circulation thus reducing the risks of complications such as bed sores and pulmonary problems.

Caring for chronically ill persons and PLHAs must always consider prevention of spread of infection to protect the patients and those around them. Hand washing, care of the nails, keeping the body, clothing and bed linen clean, care of sores and broken skin, proper storage of food and observing cleanliness in handling food are some of the ways in which infection can be prevented. Gloves should be worn when the care giver is handling any type of body fluids or waste or when the patient or care giver has an open wound that will come in contact with the other person.

Emotional Support

Persons suffering from any chronic or terminal illness usually have a lot of fear and worries. Care givers should therefore help them to ventilate and talk about their condition and concerns. Emotional support helps to reduce stress and anxiety and promotes positive living including adherence to treatment.

Social Support

Patients may suffer from loneliness and neglect aggravated by stigma and even discrimination within the household or community. Care givers should interact with patients and household members to promote their involvement in social interactive and recreational activities. Patients should be encouraged to form

and or join PLHA groups for social support.

Spiritual Support

Addressing spiritual needs is an important aspect in any type of palliative care. Chronically ill patients often lose hope and reason to continue living which is often relieved through reassurance and spiritual care. Faith-based organizations and religious leaders in the community should be involved in HBC programs.

Legal Support

Patients should be informed about how and where to get legal aid that they may need especially for matters concerning inheritance, writing of wills and human rights-related issues.

Economic Support

When a person is diagnosed with HIV or has AIDS, the financial burden to the family increases given the resulting additional transport and medical expenses. If the affected party is the main bread earner, this further constrains the limited family resources available. It is therefore necessary for home-based care givers to be aware of economic support networks and income generating projects and link PLHAs to them.

Palliative Care

Palliative care aims at:

- Providing comfort and enhancing quality of life
- Providing relief from pain and other distressing symptoms
- Integrating psychological and spiritual aspects of patient care
- Enhancing the quality of life, and may also positively influence the course of illness
- Offering a support system to help patients live as actively as possible

- Offering a support system to help the family cope during the patient's illness
- Using a team approach to address the needs of patients and their families, including bereavement counselling, if indicated
- Affirming life as it regards dying as a normal process
- Neither hastening nor postponing death

Palliative care can be provided to in-patients in a hospital, at clinics or health centres, or within a home care program.

Many aspects of palliative care, such as pain management, symptom control and psychological support are applicable early in the course of the illness and therefore the palliative care needs of persons with AIDS vary from person to person and from illness to illness. When patients choose to be cared for at home, care givers can be trained to effectively provide the prescribed palliative medications and other physical and psychological support.

Symptom Management

Pain

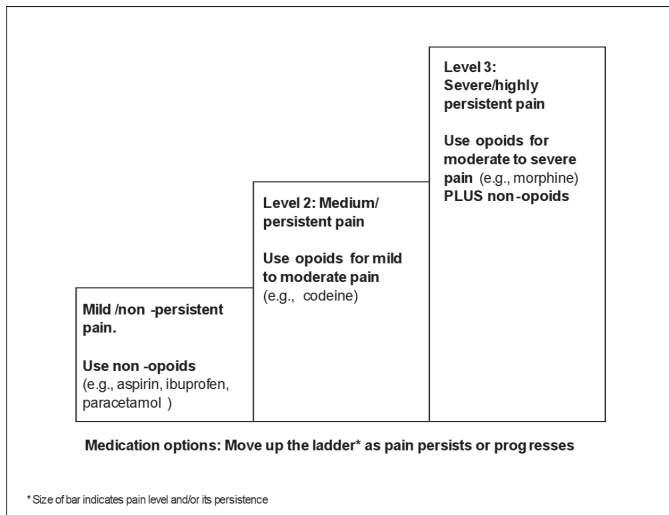
Determine the site of the pain and grade the severity of the pain. Pain control in adults should be achieved as follows:

Initially use non-opioids such as aspirin 600 mg every 4 hours, increasing to 1,000 mg every 6 hours, or paracetamol 500 mg every 4 to 6 hours, or ibuprofen 400 mg every 6 hours.

The next level of treatment for pain control is with a mild opioid such as codeine given in a dose of 30mg every 4 hours. If this still does not control pain then a strong opioid such as oral morphine may be used initially in a dose of 5mg every 4 hours. This dose should be increased to levels that control pain.

Chronic pain should be treated on a regular basis. It is advisable to start with mild analgesia and progress in a step-wise to more potent analgesics and opioids if necessary. The pain control “ladder” is shown in Figure 14.2

Figure 14.2: Achieving pain control in persons with chronic pain



Breathlessness

Persons with AIDS often develop severe breathlessness that can be terminal. This may be the result of a severe non-responding lung infection or cancer such as Kaposi’s sarcoma or lymphoma affecting the lungs and pleura. In such patients alleviate dyspnoea by propping up the patient and then refer for further management.

Vomiting

Vomiting may lead to poor fluid intake and hence dehydration and it may be necessary to correct dehydration. Patients should be encouraged to take small amounts of fluids frequently. Vomiting

may be relieved by administering promethazine 25 mg PO TID or metoclopramide 10mg PO TID.

Oral Care

Good oral care should always be practiced. This includes regular teeth brushing with a soft toothbrush and gargling with mouth wash solutions or weak salt solutions after food. Oral care helps for persons with mouth sores. If the sores are painful the patient will not be able to eat or swallow and should be given soft foods and liquid diets. If a specific cause for the ulcers is found they should be treated as described.

Itching

To relieve itching, bath oils or other emollients such as emulsifying ointment may be used. If a rash is present then antifungal creams will help if the rash is due to a fungal infection or topical steroids to relieve inflamed areas of the skin if a bacterial or viral infection is not present. Orally administered antihistamines, such as, chlorpheniramine (piriton) 2 mg PO given at night may reduce the pruritus and allow a relatively more comfortable sleep.

Comfort

Prevent the development of bedsores by changing the position of the patient every 4 hours and arrange for the patient to lie on an extra soft material. Avoid pressure on any one part of the body for prolonged periods of time. Protect areas that have become inflamed because of pressure by avoiding any pressure at all on the area and by applying soothing lotions. Change soiled bed sheets immediately. Massage pressure points such as the heels, elbows, ankles, back and hips frequently. Cover all open sores with a gauze bandage after applying an antiseptic cream.

Terminal Care

The main aim of terminal care providers should be to improve the quality of life by removing or alleviating unpleasant symptoms and helping to prevent the patient from suffering, fear or loneliness. Quality care must be provided wherever the patient is, be it at home or in the hospital. Nowadays, because of the home-based care approach for HIV and AIDS, many patients are dying at home. As part of the continuum of care, health care providers are expected to extend their services by training and supporting family members to ensure that terminally ill patients at home are well cared for.

All persons with terminal illnesses need end-of-life care. Towards the end of their life it is essential that patients and their families have access to social, emotional and spiritual support. Palliative care in terminal illness allows the patient to die with dignity and relieve him/her of distressing symptoms. Palliation also offers support to help the patient live as actively as possible until death and enables the family to cope with their loved-one's illness and with their own bereavement. The care provider needs to listen with empathy and should encourage communication within the family. Issues such as family and child support, schooling and welfare should be discussed. The patient should be constantly told that they are loved and will be missed by family members. Spiritual support and discussion with a religious leader may help to relieve feelings of guilt. The care provider should be available and should visit regularly and bereavement counselling be made available to family members including children.

Care of the Deceased

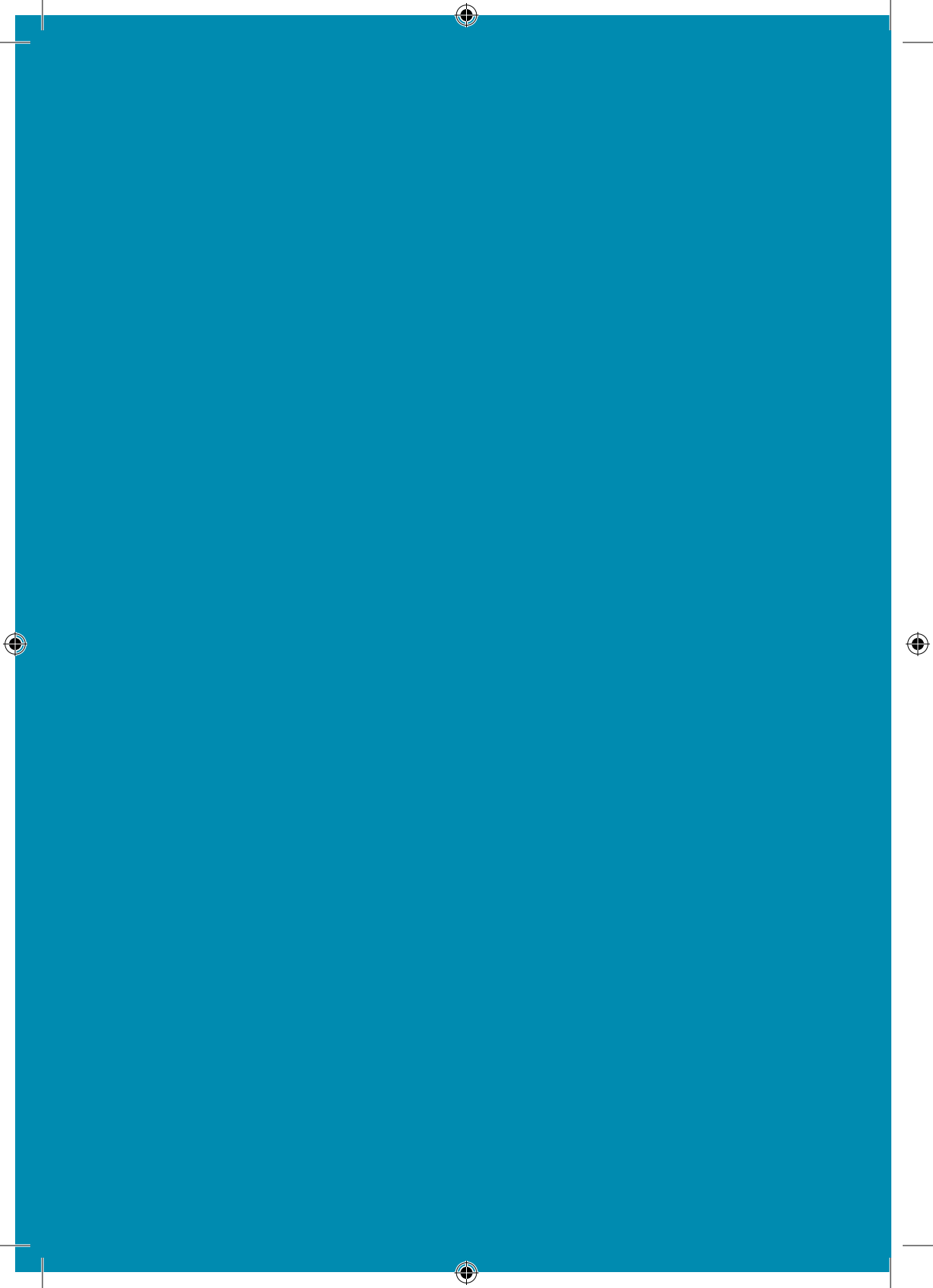
Care after death is part and parcel of comprehensive HIV and AIDS care. Standard precautions stipulate that all people, no matter what they have died from, should be treated in the same

manner. These precautions should be applied also to people who have died of AIDS. People preparing the bodies should be instructed to put on gloves and follow the hand washing procedure. Bleach powder should be used if the body is oozing fluids; the bleach will immediately kill the virus. However, it is not necessary to cover the body with plastic. Disposal and care of linen, instruments, and other materials should follow the same procedure of disinfection, sterilization and disposal as discussed in Chapter 4.



CHAPTER 15:

Nutrition in HIV and AIDS



CHAPTER 15: NUTRITION IN HIV AND AIDS

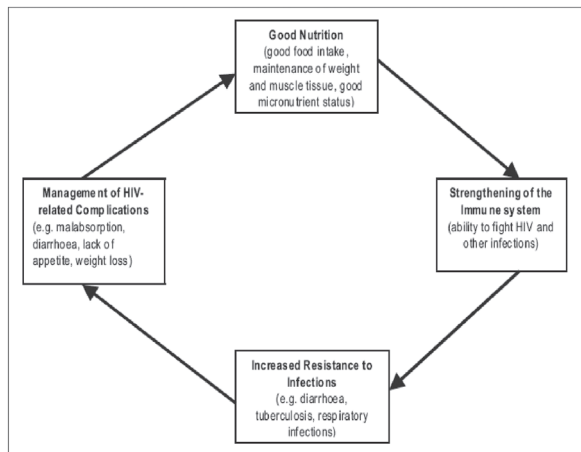
The following symptoms and illnesses commonly caused by HIV infection, that can either be caused by the disease itself or the side effects of some of the medications, can lead to malnutrition:

- Anorexia
- Diarrhoea, fever
- Nausea and frequent vomiting
- Thrush
- Anemia

Nutrition Requirements and HIV Disease Progression

Good nutrition helps persons with HIV and those who are suffering from AIDS to fight infection, strengthen their immune system, and manage HIV-related complications. The specific benefits of good nutrition in developing resistance to infection are illustrated in the figure below.

Figure 15.1 The cycle of good nutrition and resistance to infection in the context of HIV and AIDS



Nutrition, Care and Support Priorities by Stage

Nutrition requirements vary according to underlying nutritional status and HIV disease progression (early stage, middle stage and last stage) as shown in the table below.

Table 15.1 Nutrition requirements and HIV disease progression

HIV stage	Features	Nutritional advice
Early stage	<ul style="list-style-type: none">• No symptoms• Stable weight loss	<ul style="list-style-type: none">• Counsel to stay healthy
Middle stage	<ul style="list-style-type: none">• Weight loss• Opportunistic infections associated effects	<ul style="list-style-type: none">• Counsel to minimise consequences• Counsel to maintain dietary intake during acute illness• Advise increased nutrient intake to recover and gain weight• Encourage continued physical activity
Late stage	<ul style="list-style-type: none">• Symptomatic AIDS	<ul style="list-style-type: none">• Advise on treating opportunistic infections• Counsel to modify diet according to symptoms• Encourage eating and physical activity

Nutrient Requirements for People Living with HIV and AIDS

Energy requirements: HIV-infected persons have additional energy needs because of:

- Energy used for HIV infection and opportunistic infections
- Nutrient malabsorption
- Altered metabolism

Protein requirements: HIV-infected persons do not require more protein than the level recommended for healthy non-

HIV infected persons of the same age, sex and physical activity level.

Micronutrient requirements: The role of micronutrients in immune function and infectious diseases is well established and it is important to ensure micronutrient intake at recommended daily allowance (RDA) levels. HIV infected individuals are encouraged to achieve this by consuming a variety of foods to prevent deficiency. There is evidence that some micronutrient supplements such as vitamin A, zinc and iron at higher doses may produce adverse outcomes in HIV-infected persons (see also Annex 7, The Role and Sources of Selected Micronutrients).

Good Dietary Practices

A Balanced Meal

Since there is no single food that contains all the nutrients that the body needs, except breast milk for infants up to six months of age, a recommended balanced meal for an HIV infected patient should contain at least one food from each of the following food groups.

- **Cereals, roots and tubers:** should include maize, millet, rice, sorghum, cassava, yams, potatoes and bananas.
- **Pulses, nuts and foods of animal origin:** should include groundnuts, cashew nuts, beans, peas, meat, fish, milk, eggs and edible insects such as caterpillars of those that are locally known as senene and kumbikumbi.
- **Fruits:** should include all types of fruits such as mangoes, oranges, guava, tangerines, bananas, baobab fruits (ubuyu) and tamarind (ukwaju).
- **Vegetables:** all types including exotic and indigenous vegetables such as sweet potato leaves, pumpkin leaves, tomatoes, amaranth, okra, carrots, pumpkins and other locally available

- ones such as mlenda, figiri and mnavu.
- **Sugar and fats:** These are needed in moderation and should include ghee, lard, butter, margarine, coconut oil, oil seeds such as sunflower and groundnuts and sugars like honey.
 - **Water:** It is recommended that an HIV-infected person should drink at least eight glasses (1.5 to 2 litres) a day.

Nutrient requirements for HIV positive individuals (WHO 2003)

- **Energy:** is increased by 10% asymptomatic stage and 20-30% during symptomatic HIV
- **Protein:** No evidence of additional need
- **Multiple Micronutrient Supplements**
 - Best achieved through adequate diet. Where intakes cannot be achieved, micronutrient supplements may be needed (at RDA levels)
 - There is evidence that some micronutrient high dose supplements eg. Vit. A, Zinc and Iron can produce adverse outcomes in PLHA
 - Iron-folate supplementation for pregnant and lactating women: There is no change on the usual recommendation (499 ug folate and 90 mg iron daily for prevention and twice per day for treatment)
 - The usual additional nutritional requirements for pregnant and lactating women apply

Tips for Healthy and Nutritious Lifestyles for PLHAs

It is recommended that PLHAs should:

- Eat a **variety** of foods
- Eat **small** meals frequently (especially for a very sick person)
- Be physically active, avoid alcohol and avoid smoking

- Add **nutrient-dense** foods (nuts, oil, fat, milk, oil seeds)
- Use **spices** for appetite and absorption: ginger, garlic, cardamom, lemon
- Observe food safety, improve cooking methods and hygiene principles

Note: Germination and sprouting; fermentation (increases nutrient content and improves digestions and absorption.

Further information on role and source of selected micronutrients for maintaining a healthy body is presented in Annex 6.

Dietary Practices and Nutrition for AIDS Related Symptoms

Dietary management of AIDS-related symptoms refers to the strategy of using food and dietary practices to alleviate the effects of AIDS-related symptoms on food intake and nutrient absorption. It is therefore important to

- Ensure adequate food intake by adding more flavour, encouraging PLHAs to take small but frequent quantities of meals and by presenting foods with a texture that can be easily eaten by a PLHA. This means:
 - Eliminating foods and practices that worsen infection, such as
 - Raw eggs and unpasteurised dairy products
 - Foods not thoroughly cooked, and
 - Unboiled water or juices made from unboiled water
 - Avoiding foods that may affect food intake, such as
 - Alcohol and coffee
 - “Junk” foods with little nutritional value, and
 - Foods that worsen symptoms related to diarrhoea, nausea and vomiting, bloating, loss of appetite and mouth sores (e.g., expired and fatty foods)

Nutritional Issues Associated with ARVs and Other Modern Medicines

People infected with HIV may take various modern medications including antibiotics to treat opportunistic infections, ARVs to treat HIV and AIDS, anti-malarial medicines to treat malaria, anti-helminthes, and anti-fungal medications.

Some side effects of these medications can be similar to certain AIDS-related symptoms and call for similar dietary management. Proper dietary management can help to manage some of these side effects. The table below shows some simple nutritional actions that can be taken to combat some of the side effects of ARVs.

Table 15.2: Simple nutritional actions to combat side effects of ARVs

Side effect	What a person can do
Nausea	Eat small meals and drink plenty of fluids to help food go down.
Diarrhoea	Drink plenty of fluids, and use anti-diarrhoeals when necessary.
Bad taste	Try other foods. Avoid bad tasting foods.
Dry mouth	Prefer meals which are liquid in consistency such as soups that are also easier to swallow. Chew gum as this can increase the amount of saliva in the mouth.
Sore mouth or difficulty chewing	Prefer meals that are of liquid nature as they are easier to swallow.

Nutritional Advice in Relation to Multiple Medications

Treatment of AIDS may require taking many pills on a daily basis, which can make it difficult to maintain adequate food intake. On the other hand, if medications make it difficult for a patient to eat, strict adherence to drug regimens is less likely.

This can create drug resistance especially in the case of ARVs. It is therefore important that health workers emphasize the importance of eating a variety of foods, while at the same time adhering to the drug regimen.

Multiple medications may also have multiple food-drug interactions and side effects. This may necessitate the setting of specific timings for eating, identifying specific foods and/or avoiding certain foods for each drug. Health workers need to spend enough time with PLHAs, to list all the drugs taken and counsel on the dietary management of the possible side effects and interactions with food.

The following table lists the commonly used ARVs in Tanzania as they relate to the need for dietary modification as well as their side effects where necessary.

Table 15.3: Modern medications and recommended food intakes and side effects of ARVs

Medication (ARV)	Nutrition Recommendations	Foods/ Beverages/ Herbs to Avoid	Potential Side Effects
Abacavir (ABC) NRTI	Can be taken without regard to food		Nausea, vomiting, fever, allergic reaction, anorexia, abdominal pain, diarrhoea, anaemia, rash, hypotension, pancreatitis, dyspnea, weakness and insomnia, cough, headache
Didanosine (ddl) NRTI	Take one hour before or two hours after eating with water only	Alcohol, Juice	Anorexia, diarrhoea, nausea, vomiting, pain, headache, weakness, insomnia, rash, dry mouth, loss of taste, constipation, stomatitis, anaemia, fever, dizziness, pancreatitis; do not take with antacid containing aluminium or magnesium
Lamivudine (3TC) NRTI	Can be taken without regard to food	Alcohol	Nausea, vomiting, headache, dizziness, diarrhoea, abdominal pain, nasal symptoms, cough, fatigue, pancreatitis, anaemia, insomnia, muscle pain, and rash
Stavudine (d4T) NRTI	Can be taken without regard to food	Limit alcohol	Nausea, vomiting, diarrhea, peripheral neuropathy, chills and fever, anorexia, stomatitis, diarrhoea, anaemia, headaches, rash, bone marrow, and pancreatitis
Zidovudine (AZT) NRTI	Can be taken with food, but do not take with a high fat meal	Alcohol	Anorexia, anaemia, nausea, vomiting, bone marrow suppression, headache, fatigue, constipation, fever dizziness, dyspnea, insomnia, muscle pain, rash

Medication (ARV)	Nutrition Recommendations	Foods/ Beverages/ Herbs to Avoid	Potential Side Effects
Efavirenz NNRTI	Can be taken with food, but do not take with a high fat meal	Alcohol	Elevated blood cholesterol levels, elevated triglycerides levels, rash, dizziness, anorexia, nausea, vomiting, diarrhoea, dyspepsia, abdominal pain, flatulence
Nevirapine (NVP) NNRTI	Can be taken without regard to food	St John's wort	Nausea, vomiting rash, fever, headache, skin reactions, fatigue, stomatitis, abdominal pain, drowsiness, paresthesia; high hepatotoxicity
Lopinavir PI	Can be taken without regard to food	St John's wort	Abdominal pain, diarrhoea, headaches, headache, regard to food weakness nausea; may increase the risk of lipodystrophy and /or diabetes
Nelfinavir PI	Take with meal or light snack	St John's wort	Diarrhoea, flatulence, nausea, abdominal pain, rash; may increase the risk of lipodystrophy
Ritonavir PI	Take with meal if possible	St John's wort	Nausea, vomiting, diarrhoea, hepatitis, jaundice, weakness, anorexia, abdominal pain, fever, diabetes, headache, dizziness; may increase the risk of lipodystrophy
Saquinavir PI	Take with meal or light snack; take within two hours of a high fat meal and high calcium meal Garlic supplements	St John's wort	Mouth ulceration, taste changes nausea, vomiting, abdominal pain, diarrhoea, constipation, flatulence, weakness rash, headache; may increase the risk of lipodystrophy
Atazanavir	Take with food		Gastrointestinal complaints, renal toxicity in particular when renal function is already reduced
Tenofovir	Can be taken without regard to food		Gastrointestinal complaints, renal toxicity in particular when renal function is already reduced

Nutrition and Antiretroviral Therapy

The following are guidelines for health workers that can help promote effective nutrition and medication management for ART.

- Counsel on the effects of food on the efficacy of medication, on nutrient absorption and metabolism, and the side effects of the medications.
- Counsel on the timing for taking medications and food/meals. Explain the necessity of accurate timing for meals and drugs. Involve PLHAs and family members in constructing a meal and drug-taking timetable and in selecting foods that can address the negative effects of medications and food interactions.
- Assess any difficulties that PLHAs may be having in following the planned diet and timetable due to food access or availability, taste or other reasons, and whether there have been positive or negative changes in symptoms, side effects, or drug adherence. Consult with PLHAs and suggest other options when recommended foods are not available.

Assessment of Nutritional Needs in Relation to ARVs

Assessment helps to identify the most effective communication channels for disseminating updated recommendations on dietary management of food and medication interactions to program planners, health workers, caregivers, and PLHAs. Below are a series of questions that can guide health workers in carrying out an assessment:

- What ARVs and other medications are used?
- What are the specific ARVs and medication-food interactions in the local context?
- What are the common side effects of these ARVs and medications? What known foods aggravate or alleviate the symp-

- toms? What are the dietary responses?
- What medications, including modern and traditional, are taken for the treatment of opportunistic infections and the diseases common to the area? What are their drug-drug interactions? What are the drug-food interactions?
 - What are the nutritional implications and the food recommendations to manage the side effects (e.g., nausea, loss of taste, poor nutrient absorption)? What is the effect of the medication on nutrients?

AIDS-wasting Syndrome

AIDS-wasting syndrome is defined as a 10 percent weight loss of baseline body weight together with either chronic diarrhoea or weakness and fever for one month or more in the absence of a concurrent illness other than HIV infection.

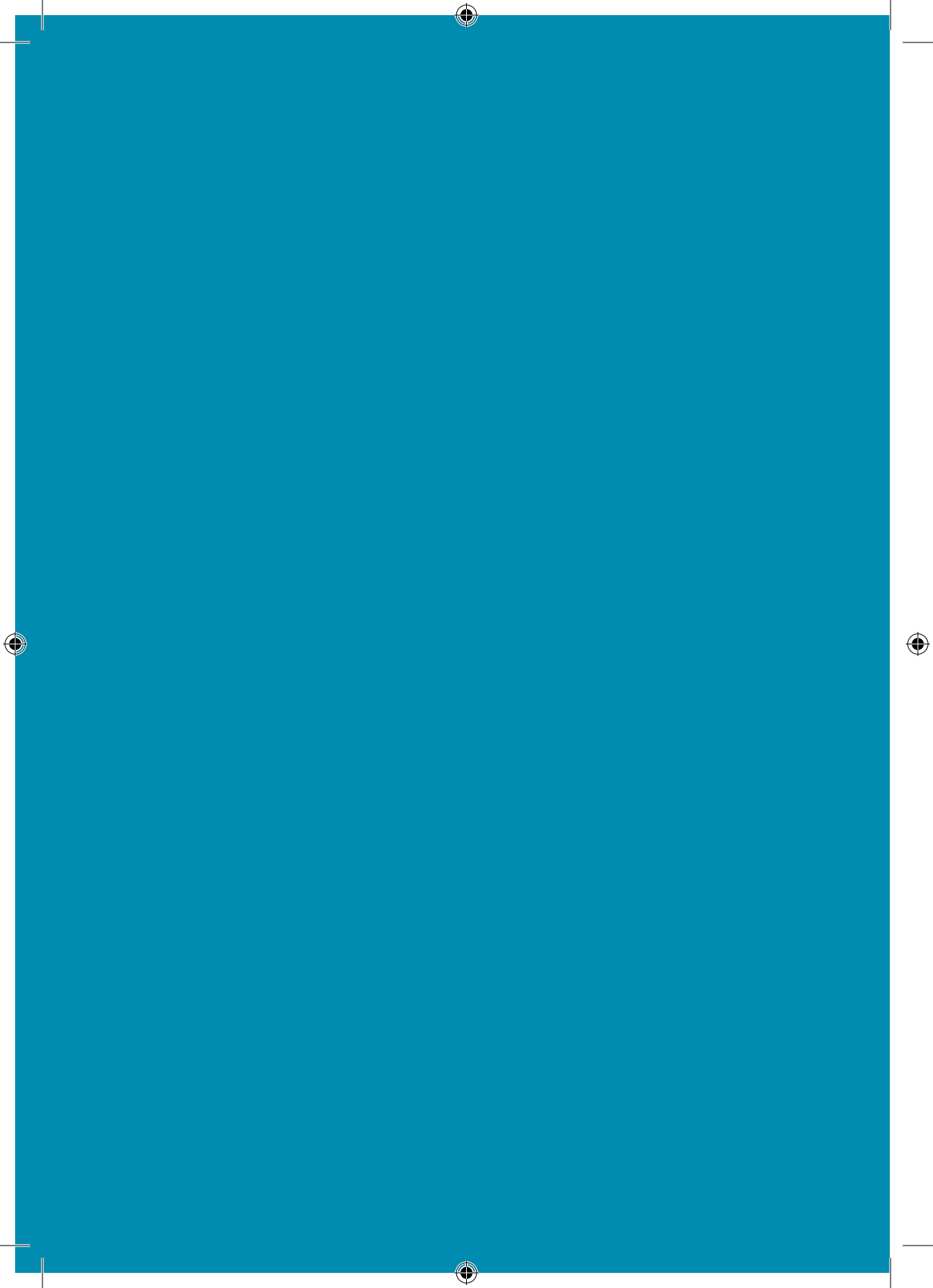
Body Mass Index (BMI)

Wasting is characterized by a loss of lean tissues. Lean tissues in the body are responsible for most of the body's metabolic functions including processing medications. The body starts to lose its major functions as damage to the immune system and weight loss progress. One can monitor weight loss in adults by using body mass index (BMI) calculated as $\text{Weight (Kg)} / \text{height (m}^2\text{)}$. A normal BMI is 18.5 – 24.9 kg/m². A BMI <18.5 denotes underweight; that between 25.0 and 29.9 kg/m² is overweight, and > 30.0 kg/m² is obesity. For patients with BMI <18.5 nutritional education is required and food supplementation to be recommended.

It should be noted though that even without using BMI, unintended weight loss of between 6-7 kg in one month is not a good sign. Therefore the weight of PLHAs needs to be closely

monitored to ensure they don't lose a lot of weight due to disease progression and that appropriate nutritional intervention is made and in a timely manner.

Annexes



Annex 1: WHO Clinical Staging of HIV Disease in Adults and Adolescents

CLINICAL STAGE 1
Asymptomatic Persistent generalized lymphadenopathy
CLINICAL STAGE 2
Moderate unexplained weight loss ($<10\%$ of presumed or measured body weight) ^a Recurrent respiratory tract infections: sinusitis, tonsillitis, otitis media and pharyngitis) Herpes zoster Angular cheilitis Recurrent oral ulceration Papular pruritic eruptions Seborrhoeic dermatitis Fungal nail infections
CLINICAL STAGE 3
Unexplained ^b severe weight loss ($>10\%$ of presumed or measured body weight) Unexplained chronic diarrhoea for longer than one month Unexplained persistent fever (above 37.6°C intermittent or constant, for longer than one month) Persistent oral candidiasis Oral hairy leukoplakia Pulmonary tuberculosis (current) Severe bacterial infections (such as pneumonia, empyema, pyomyositis, bone or joint infection, meningitis or bacteraemia) Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis Unexplained anaemia (<8 g/dl), neutropaenia ($<0.5 \times 10^9$ per litre) or chronic thrombocytopaenia ($<50 \times 10^9$ per litre)

CLINICAL STAGE 4^a

HIV wasting syndrome
Pneumocystis pneumonia
Recurrent severe bacterial pneumonia
Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month's duration or visceral at any site)
Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)
Extrapulmonary tuberculosis
Kaposi's sarcoma
Cytomegalovirus infection (retinitis or infection of other organs)
Central nervous system toxoplasmosis
HIV encephalopathy
Extrapulmonary cryptococcosis including meningitis
Disseminated non-tuberculous mycobacterial infection
Progressive multifocal leukoencephalopathy
Chronic cryptosporidiosis (with diarrhoea)
Chronic isosporiasis
Disseminated mycosis (coccidiomycosis or histoplasmosis)
Recurrent non-typhoidal Salmonella bacteraemia
Lymphoma (cerebral or B-cell non-Hodgkin) or other solid HIV-associated tumours
Invasive cervical carcinoma
Atypical disseminated leishmaniasis
Symptomatic HIV-associated nephropathy or symptomatic HIV-associated cardiomyopathy

- a Assessment of body weight in pregnant woman needs to consider the expected weight gain of pregnancy.
- b Unexplained refers to where the condition is not explained by other causes.
- c Some additional specific conditions can also be included in regional classifications (such as reactivation of American trypanosomiasis [meningoencephalitis and/or myocarditis]) in the WHO Region of the Americas and disseminated penicilliosis in Asia).

Source: Revised WHO 2007 Case Definitions of HIV for Surveillance and Revised Clinical Staging available on line <http://www.who.int/hiv/pub/>

Annex 2: WHO Paediatric Clinical Staging

For use in those 14 years or under with confirmed laboratory evidence of HIV infection by HIV Antibody where age > 18 months, DNA or RNA virological testing for those age < 18 months.

STAGE 1

Asymptomatic
Persistent generalized lymphadenopathy

STAGE 2

Unexplained persistent hepatosplenomegaly
Papular pruritic eruptions
Fungal nail infection
Angular cheilitis
Lineal gingival erythema
Extensive wart virus infection
Extensive molluscum contagiosum
Recurrent oral ulcerations
Unexplained persistent parotid enlargement
Herpes zoster
Recurrent or chronic upper respiratory tract infections (otitis media, otorrhoea, sinusitis or tonsillitis)

STAGE 3

Unexplained moderate malnutrition or wasting not adequately responding to standard therapy
Unexplained persistent diarrhoea (14 days or more)
Unexplained persistent fever (above 37.5°C intermittent or constant, for longer than one month)
Persistent oral candidiasis (after first 6–8 weeks of life)
Oral hairy leukoplakia
Acute necrotizing ulcerative gingivitis or periodontitis
Lymph node tuberculosis
Pulmonary tuberculosis
Severe recurrent bacterial pneumonia
Symptomatic lymphoid interstitial pneumonitis
Chronic HIV-associated lung disease including bronchiectasis
Unexplained anaemia (<8 g/dl), neutropaenia (<0.5 × 10⁹ per litre) and or chronic thrombocytopaenia (<50 × 10⁹ per litre)

STAGE 4

Unexplained severe wasting, stunting or severe malnutrition not responding to standard therapy

Pneumocystis pneumonia

Recurrent severe bacterial infections (such as empyema, pyomyositis, bone or joint infection or meningitis but excluding pneumonia)

Chronic herpes simplex infection (orolabial or cutaneous of more than one month's duration or visceral at any site)

Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)

Extrapulmonary tuberculosis

Kaposi sarcoma

Cytomegalovirus infection: retinitis or cytomegalovirus infection affecting another organ, with onset at age older than one month

Central nervous system toxoplasmosis (after one month of life)

Extrapulmonary cryptococcosis (including meningitis)

HIV encephalopathy

Disseminated endemic mycosis (coccidiomycosis or histoplasmosis)

Disseminated non-tuberculous mycobacterial infection

Chronic cryptosporidiosis (with diarrhoea)

Chronic isosporiasis

Cerebral or B-cell non-Hodgkin lymphoma

Progressive multifocal leukoencephalopathy

Symptomatic HIV-associated nephropathy or HIV-associated cardiomyopathy

WHO Paediatric Clinical Stage 4 (Age <18 months)

Presumptive diagnosis of HIV severe disease in children less than 18 months old where virological confirmation of infection is not available

A presumptive diagnosis of severe HIV disease should be made if:

- An infant < 18 months has an HIV antibody test positive AND:
- Has diagnosis of any AIDS-indicator condition(s) OR
- Symptomatic with two or more of the following:
 - Oral thrush
 - Severe pneumonia
 - Severe sepsis
- Other factors that support the diagnosis include:
 - Recent HIV-related maternal death
 - Advanced HIV disease in the mother
 - CD4 < 25%

Annex 3: Presumptive and definitive criteria for recognizing HIV/AIDS-related clinical events in infants and children with established HIV infection^a

Clinical event	Clinical diagnosis	Definitive diagnosis
Primary HIV infection		
Acute retroviral syndrome	Acute febrile illness 2-4 weeks post-exposure, often with lymphadenopathy, pharyngitis and skin rashes.	In children 18 months or over seroconversion from HIV antibody negative to antibody-positive. A positive virological test for HIV virus or its components (RNA or DNA or ICD HIV p 24 antigen) confirmed by a second virological test obtained from a separate determination. Profound temporary lymphopaenia and other transient blood abnormalities may occur.
Clinical Stage 1		
Asymptomatic	No HIV related symptoms reported and no signs on examination.	Not required
Persistent generalized lymphadenopathy (PGL)	Swollen or enlarged lymph nodes > 1 cm at two or more non-contiguous sites, without known cause.	Not required
Clinical Stage 2		
Asymptomatic	No HIV related symptoms reported and no signs on examination.	Not required
Persistent generalized lymphadenopathy (PGL)	Swollen or enlarged lymph nodes > 1 cm at two or more non-contiguous sites without known causes.	Not required

Clinical event	Clinical diagnosis	Definitive diagnosis
Clinical stage 2 (cont'd)		
Unexplained persistent	Hepatosplenomegaly. Enlarged liver and spleen without obvious cause.	Not required
Papular pruritic eruptions	Papular pruritic vesicular lesion. Also common in uninfected children scabies and insect bites should be excluded.	Not required
Fungal nail infections	Fungal paronychia (painful, red and swollen nail bed) or onycholysis (painless separation of the nail from the nail bed). Proximal white subungual onychomycosis is uncommon without immunodeficiency.	Not required
Angular cheilitis	Splits or cracks on lips at the angle of the mouth with depigmentation, usually respond to antifungal treatment but may recur.	Not required
Lineal gingival Erythema (LGE)	Erythematous band that follows the contour or the free gingival line; may be associated with spontaneous bleeding.	Not required
Extensive wart virus	Characteristic warty skin lesions; small fleshy grainy bumps, often rough, flat on sole of feet (plantar warts); facial, more than 5% or body area or disfiguring.	Not required
Extensive molluscum contagiosum infection	Characteristic skin lesions: small flesh-coloured, pearly or pink, dome-shaped or umbilicated growths, may be inflamed or red; facial, more than 5% body area or disfiguring.	Not required

Clinical event	Clinical diagnosis	Definitive diagnosis
Clinical stage 2 (cont'd)		
Recurrent oral ulcerations (two or more in six months)	Aphthous ulceration, typical with a halo or inflammation & yellow-grey pseudomembrane.	Not required
Unexplained parotid enlargement	Asymptomatic bilateral swelling that may spontaneously resolve and recur, in absence of other known cause, usually painless.	Not required
Herpes zoster	Painful rash with fluid-filled blisters, dermatomal distribution, can be haemorrhagic on cythematous background, and become large and confluent. Does not cross the midlines.	Not required
Recurrent upper respiratory tract infection (URTI)	Current event with at least one episode in past 6 months. Symptom complex, fever with unilateral face pain and nasal discharge (sinusitis) or painful swollen eardrum otitis media, sore throat with productive cough (bronchitis, sore throat, pharyngitis), and barking croup-like cough (LTB). Persistent or recurrent ear discharge.	Not required
Clinical stage 3		
Unexplained moderate malnutrition	Weight-for-age, up to -2 standard deviations (SDs) not explained by poor or inadequate feeding and or other infections, and not adequately responding standard management.	Confirmed by documented loss of body weight of – 2SD, failure to gain weight on standard management and no other cause identified during investigation.
Unexplained diarrhea	Unexplained persistent (14 days or more) diarrhea (loose or watery stool, three or more times daily, not responding to standard management.	Confirmed by stools observed and documented as unformed. Culture and microscopy reveal no pathogens.

Clinical event	Clinical diagnosis	Definitive diagnosis
Clinical stage 3 (cont'd)		
Unexplained persistent fever (intermittent or constant, for longer than one month)	Reports of fever or night sweats for longer than one month, either intermittent or constant, with reported lack of response to antibiotics or antimalarials. No other obvious foci of disease reported or found on examination. Malaria must be excluded in malarious areas.	Confirmed by documented fever of > 37.5°C with negative blood culture, negative malaria slide and normal or unchanged CXR, and other obvious foci of disease
Oral candida (outside first 6-9 weeks of life)	Persistent or recurring creamy white to yellow soft small plaques which can be scrapped off (psedomembranous), or red patches on tongue, palate or lining of mouth, usually painful or tender (erythematous form).	Confirmed by microscopy or culture
Oral hairy leukoplakia	Fine small linear patches on lateral borders of tongue, generally, which do not scrape off.	None
Lymph node TB	Non acute, painless, e.g. chronic cough, fever, night sweats, anorexia and weight loss. In the older child also productive cough and haemoptysis. Abnormal CXR. Response to standard anti-TB in one month.	Confirmed by histology or fine needle aspirate for Ziehl Neelsen stain; Culture
Pulmonary TB	Nonspecific symptoms, e.g. chronic cough, fever night sweats, anorexia and weight loss. In the older child also productive cough and haemoptysis. Abnormal CXR. Response to standard ant-TB treatment in one month.	Confirmed by positive sputum smear or culture

Clinical event	Clinical diagnosis	Definitive diagnosis
Clinical stage 3 (cont'd)		
Severe recurrent presumed bacterial pneumonia	Cough with fast breathing chest indrawing, nasal flaring, wheezing, and grunting. Crackles or consolidation on auscultation. Responds to course of antibiotics. Current episode plus one or more in previous 6 months.	Confirmed by isolation of bacteria from appropriate clinical specimens (induced sputum, BAL, lung aspirate).
Acute necrotizing ulcerative gingivitis or stomatitis, or acute necrotizing ulcerative periodontitis	Severe pain, ulcerated gingival papillae, loosening of teeth, spontaneous bleeding, bad odour, and rapid loss of bone and/or soft tissue.	None
Symptomatic LIP	No presumptive diagnosis.	Diagnosed by CXR: bilateral reticulonodular interstitial pulmonary infiltrates present for more than two months with no response to antibiotic treatment and no other pathogen found. Oxygen saturation persistently <90%. May present with cor pulmonale and may have increased exercise-induced fatigue. Characteristic histology.
Chronic HIV-associated lung disease (including bronchiectasis)	History of cough productive of copious amounts of purulent sputum (bronchiectasis only), with or without clubbing, halitosis, and crepitations and/or wheezes on auscultations.	Confirmed by CXR may show honey comb appearance (small cysts) and/or persistent areas of opacification and/or widespread lung destruction, with fibrosis and loss of volume.

Clinical event	Clinical diagnosis	Definitive diagnosis
Unexplained anaemia (<8g/dl), or neutropenia (<1000/mm ³) or chronic thrombocytopenia (<50000/mm ³)	No presumptive diagnosis.	Diagnosed on laboratory testing, not explained by other non-HIV conditions, or not responding to standard therapy with harmatinics, antimalarials or anthelmintics as outlined in IMCI.
Clinical stage 4		
Unexplained severe wasting, stunting or severe malnutrition not adequately responding to standard therapy	Persistent weight loss not explained by poor or inadequate feeding, other infections and not adequately responding in two weeks to standard therapy. Characterized by: visible severe wasting of muscles, with or without oedema of both feet, and/or weight-for-height of -3 SDs, as defined by WHO IMCI guidelines.	Confirmed by documented weight loss of > -3 SD +/- oedema
Pneumocystis pneumonia (PCP)	Dry cough progressive difficulty in breathing, cyanosis, tachypnoea and fever; chest indrawing or stridor. (severe or very severe pneumonia as in IMCI). Usually of rapid onset especially in infants under six months of age. Response to high-dose co-trimoxazole +/- prednisolone.	Confirmed by: CXR typical bilateral perihilar diffuse infiltrates; microscopy of induced sputum or BAL or NPA or histology of lung tissue
Recurrent severe presumed bacterial infection, eg. empyema, pyomyositis, bone or joint infection, meningitis but excluding pneumonia	Fever accompanied by specific symptoms or signs that localize infection. Responds to antibiotics. Current episode plus one or more in previous 6 months.	Confirmed by culture of appropriate clinical specimen

Clinical event	Clinical diagnosis	Definitive diagnosis
Chronic herpes simplex infection; (orolabial or cutaneous of more than one month duration or visceral at any site)	Severe and progressive painful orolabial, genital, or anorectal lesions caused by HSV infection present for more than one month.	Confirmed by culture and/or histology
Clinical stage 4 (cont'd)		
Oesophageal candida (or candida of trachea, bronchi or lungs)	Chest pain and dysphagia (difficulty in swallowing), odynophagia (pain on swallowing food and fluids), or retrosternal pain worse on swallowing (food and fluids) responds to specific treatment. In young children, suspect particularly if oral candida observed and food refusal occurs and/or difficulties/crying when feeding.	Confirmed by macroscopic appearance at endoscopy, microscopy of specimen from tissue or macroscopic appearance at bronchoscopy or histology.
Extra-pulmonary/ disseminated TB Kaposi's sarcoma	Systemic illness usually with prolonged fever, night sweats, weight loss. Clinical features of organs involved, e.g sterile pyuria, pericarditis, ascites, pleural effusion, meningitis, arthritis, orchitis. Responds to standard anti-TB therapy. Typical appearance in skin or oropharynx of persistent, initially flat, patches with a pink or blood-bruise color, skin lesions that usually develop into nodules.	Confirmed by positive microscopy showing AFB or culture of Mycobacterium TB from blood or other relevant specimen except sputum or BAL. Biopsy and histology. Not required but may be confirmed by: <ul style="list-style-type: none"> • Typical red-purple lesions seen on bronchoscopy or endoscopy; • Dense masses in lymph nodes, viscera or lungs by palpation or radiology; • Histology.

Clinical event	Clinical diagnosis	Definitive diagnosis
CMV retinitis or CMV infection affecting another organ, with onset at age over 1 month	Retinitis only. CMV retinitis may be diagnosed by experienced clinicians: progressive floaters in field of vision, light flashes and scotoma; typical eye lesions on serial fundoscopic examination; discrete patches of retinal whitening with distinct borders, spreading centrifugally, often following blood vessels, associated with retinal vasculitis, haemorrhage and necrosis.	Definitive diagnosis required for other sites. Histology. CSF polymerase chain reaction (PCR).
Clinical stage 4 (cont'd)		
CNS toxoplasmosis with onset at age over 1 month HIV encephalopathy	Fever, headache, focal neurological signs, convulsions. Usually responds within 10 days to specific therapy.	Not required but confirmed by computed tomography (CT) scan showing single/multiple lesions with mass effect/enhancing with contrast.
Extra-pulmonary Cryptococcus including meningitis	Meningitis: usually sub acute, fever with increasing severe headache, meninges, confusion, behavioral changes that responds to cryptococcal therapy.	Confirmed by CSF microscopy (India ink or Gram stain) serum or CSF CRAG or culture.

Clinical event	Clinical diagnosis	Definitive diagnosis
HIV encephalopathy	At least one of the following, progressing over at least two months in the absence of another illness: <ul style="list-style-type: none"> - failure to attain, or loss of, developmental milestones, loss of intellectual ability; or - progressive impaired brain growth demonstrated by stagnation of head circumference; or - Acquired symmetric motor deficit accompanied by two or more of the following: paresis, pathological reflexes, ataxia, gait disturbances. 	Confirmed by brain CT scan or MRI demonstrating atrophy and basal ganglia calcification and excluding other causes.
Disseminated mycosis (coccidiomycosis, histoplasmosis, penicilliosis)	No presumptive diagnosis.	Diagnosed by: Histology: usually granuloma formation. Isolation: antigen detection from affected tissues; culture or microscopy from clinical specimen or blood culture.
Clinical stage 4 (cont'd)		
Disseminated mycobacteriosis, other than TB	No presumptive diagnosis	Nonspecific clinical symptoms including progressive weight loss, fever, anaemia, night sweats, fatigue or diarrhoea, plus culture of atypical mycobacteria species from stool, blood, body fluid or other body tissues, excluding lung
Chronic cryptosporidiosis Chronic Isospora	No presumptive diagnosis	Confirmed in children with chronic diarrhoea lasting longer than one month by microscopic examination. Confirmed in children with chronic diarrhoea by microscopic examination.

Clinical event	Clinical diagnosis	Definitive diagnosis
Cerebral or B cell non-Hodgkin's lymphoma	No presumptive diagnosis	Diagnosed by CNS imaging: at least one lesion with mass effect on brain scan; histology of relevant specimen
Progressive multi focal leukoencephalopathy (PML)	No presumptive diagnosis	Diagnosed by MRI or CT scan, and biopsy. Viral PCR for Jacob Creutzfeldt virus.

Annex 4. Dosages of Antiretroviral Drugs for Adults and Adolescents

Generic Name		Dose
NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS		
Abacavir (ABC)		300 mg twice daily or 600 mg once daily
Zidovudine (AZT)		250-300 mg twice daily
Emtricitabine (FTC)		200mg once daily
Didanosine (ddl) Buffered tablets or enteric coated (EC) capsules ^a		>60 kg: 400mg once daily <60 kg: 250 mg once daily
Lamivudine (3TC)		150 gm twice daily or 300 mg once daily
Stavudine (d4T)		30 mg twice daily
NUCLEOTIDE REVERSE TRANSCRIPTASE INHIBITORS		
Tenofovir		300 mg once daily
NON – NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS		
Efavirenz (NVP)		600 mg once daily
Nevirapine (NVP)		200 mg once daily for 14 days, followed by 200 mg twice daily
PROTEASES INHIBITORS		
Atazanavir + ritonavir(ATV/r)		300 mg + 100 mg once daily
PROTEASE INHIBITORS		
Lopinavir/ritonavir (LPV/r)	Tablets (heat-stable formulation) Lopinavir 200 mg /ritonavir 50 mg	Treatment-naïve patients Two tablets twice daily irrespective of coadministration with EFV or NVP (400/100 mg twice daily) Treatment-experienced patients Three tablets twice daily when combined with EFV or NVP (600/150 mg twice daily)

Annex 5: Paediatric Antiretroviral Dosing

Weight range (kg)	Abacavir (Ziagen®, ABC)		Didanosine (Videx®, DDI)		
	8 mg/kg/dose TWICE daily		90-120 mg/m ² / dose TWICE daily	120 mg/m ² /dose TWICE daily	180-240 mg/m ² / dose ONCE daily
	20 mg/ml solu- tion	300 mg tablets	10 mg/ml suspension	25, 50, 100 mg chewable tablets	125, 200, 250, 400 mg EC capsules
5-5.9	2 ml		4 ml	25 mg + 25 mg tabs	
6-6.9	3 ml		5 ml	25 mg + 25 mg tabs	
7-7.9	4 ml		6 ml	25 mg + 25 mg tabs	
8-8.9	4 ml		6 ml	25 mg + 25 mg tabs	
9-9.9	4 ml		6 ml	25 mg + 25 mg tabs	
10-10.9	5 ml		6 ml	50 mg + 25 mg tabs in a.m. 25 mg + 25 mg tabs in p.m.	125 mg EC cap
11-11.9	5 ml	0.5 tab	7 ml	50 mg + 25 mg tabs	125 mg EC cap
12-13.9	6 ml	0.5 tab	7 ml	50 mg + 25 mg tabs	125 mg EC cap
14-16.9		0.5 tab	8 ml	50 mg + 50 mg tabs in a.m. 50 mg + 25 mg tabs in p.m.	200 mg EC cap
17-19.9		0.5 tab	9 ml	50 mg + 50 mg tabs	200 mg EC cap
20-24.9		1 tab in a.m., 0.5 tab in p.m.		100 mg + 25 mg tabs	250 mg EC cap
25-29.9		1 tab		100 mg + 25 mg tabs	250 mg EC cap
30-34.9		1 tab		100 mg + 25 mg tabs	250 mg EC cap
35- 39.9		1 tab		100 mg + 25 mg tabs	250 mg EC cap

Continued

Annex 5: Paediatric Antiretroviral Dosing (cont'd)

Weight range (kg)	Lamivudine (Epvir®, 3TC)		Stavudine (Zerit®, d4T)		Zidovudine (Retrovir®, ZDV, AZT)		
	4 mg/kg/dose TWICE daily		1 mg/kg/dose TWICE daily		180-240 mg/m ² /dose TWICE daily		
	10 mg/ml solution	150 MG tablets	1 mg/ml solution	15, 20, 30 mg capsules	10 mg/ml syrup	100 mg capsules	300 mg tablets
5-5.9	3 ml		6 ml	10 mg (as 0.5 x 20 mg)	6 ml		
6-6.9	3 ml		7 ml	10 mg (as 0.5 x 20 mg)	7 ml		
7-7.9	4 ml		8 ml	10 mg (as 0.5 x 20 mg)	8 ml		
8-8.9	4 ml		9 ml	10 mg (as 0.5 x 20 mg)	9 ml	1 cap	
9-9.9	4 ml		10 ml	10 mg (as 0.5 x 20 mg)	10 ml	1 cap	
10-10.9	5 ml			15 mg cap	10 ml	1 cap	
11-11.9	5 ml			15 mg cap	10 ml	1 cap	
12-13.9	6 ml	0.5 tab		15 mg cap	11 ml	1 cap	
14-16.9		0.5 tab		20 mg cap		2 caps in a.m. 1 cap in p.m.	0.5 tab
17-19.9		0.5 tab		20 mg cap		2 caps in a.m. 1 cap in p.m.	0.5 tab
20-24.9		1 tab in a.m. 0.5 tab in p.m.		20 mg cap		2 caps	0.5 tab
25-29.9		1 tab		30 mg cap		2 caps	1 tab in a.m. 0.5 tab in p.m.
30-34.9		1 tab		30 mg cap		3 caps	1 tab
35- 39.9		1 tab		30 mg cap		3 caps	1 tab

Weight range (kg)	Efavirenz (Stocrin®, Sustiva®, EFV)	Nevirapine (Viramune®, NVP)			
		Dose as shown ONCE daily for children 3 YEARS AND OLDER	INDUCTION DOSE: 160-200 mg/m ² /dose ONCE daily		MAINTENANCE DOSE: 160-200 mg/m ² /dose TWICE daily
	50, 100, 200 mg capsules, 600 mg tablets	10 mg/ml suspension	200 mg tablets	10 mg/ml suspension	200 mg tablets
5-5.9		6 ml		6 ml	
6-6.9		7 ml		7 ml	
7-7.9		8 ml		8 ml	
8-8.9		9 ml		9 ml	
9-9.9		9 ml	0.5 tab	9 ml	0.5 tab
10-10.9	200 mg cap	10 ml	0.5 tab	10 ml	0.5 tab
11-11.9	200 mg cap	10 ml	0.5 tab	10 ml	0.5 tab
12-13.9	200 mg cap	11 ml	0.5 tab	11 ml	0.5 tab
14-16.9	200 mg + 50 mg caps		0.5 tab		1 tab in a.m. 0.5 tab in p.m.
17-19.9	200 mg + 50 mg caps		1 tab		1 tab in a.m. 0.5 tab in p.m.
20-24.9	200 mg + 100 mg caps		1 tab		1 tab in a.m. 0.5 tab in p.m.
25-29.9	200 mg + 100 mg + 50 mg caps		1 tab		1 tab
30-34.9	200 mg cap (x2)		1 tab		1 tab
35- 39.9	200 mg cap (x2)		1 tab		1 tab

Continued

Annex 5: Paediatric Antiretroviral Dosing (cont'd)

Weight range (kg)	Lopinavir/ritonavir (Kaletra®, LPV/r)			Nelfinavir (Viracept®, NFV)	
	10-16 mg/kg/dose TWICE daily			Target dosing <10 kg: 75 mg/kg/dose >10 kg to 19.9kg: 60 mg/kg/dose >20 kg: max dose of 1250 mg TWICE daily	
	80 mg lopinavir/ 20 mg ritonavir per ml solution	133 mg lopinavir/ 33 mg ritonavir capsules	200 mg lopinavir/ 50 mg ritonavir tablets	250 mg tablets	625 mg tablets
5-5.9	1 ml			2 tabs	
6-6.9	1.5 ml			2 tabs	
7-7.9	1.5 ml	1 cap		3 tabs in a.m. 2 tabs in p.m.	
8-8.9	2 ml	1 cap		3 tabs	
9-9.9	2 ml	1 cap		3 tabs	
10-10.9	2 ml	1 cap		3 tabs	
11-11.9	2 ml	1 cap		3 tabs	
12-13.9	2 ml	2 caps in a.m. 1 cap in p.m.	1 tab	4 tabs	
14-16.9	2 ml	2 caps in a.m. 1 cap in p.m.	1 tab	4 tabs	
17-19.9	2.5 ml	2 caps in a.m. 1 cap in p.m.	1 tab	5 tabs	2 tabs
20-24.9	3 ml	2 caps	1 tab	5 tabs	2 tabs
25-29.9	3.5 ml	2 caps	2 tabs in a.m. 1 tab in p.m.	5 tabs	2 tabs
30-34.9	4 ml	3 caps	2 tabs	5 tabs	2 tabs
35- 39.9	5 ml	3 caps	2 tabs	5 tabs	2 tabs

Weight range (kg)	Ritonavir (Norvir®, RTV)		Satvodine + Lamivudine	Satvodine + Lamivudine + Nevirapine	Zidovudine + Lamivudine (Combivir®)	Zidovudine + Lamivudine + Abacavir (Trizivir®)
	STARTING DOSE: 250 mg/m ² /dose TWICE daily	MAINTENANCE DOSE: 400 mg/m ² /dose TWICE daily	Does shown TWICE daily	Does shown TWICE daily	Does shown TWICE daily	Does shown TWICE daily
	80 mg/ml solution	80 mg/ml solution	30 mg d4T/ 150 mg 3TC tablets	30 mg d4T/ 150 mg 3TC/ 200 mg NVP tablets	300 mg ZDV / 150 mg 3TC tablets	300 mg ZDV/ 150 mg 3TC/ 300 mg ABC tablets
5-5.9	1 ml	1.5 ml				
6-6.9	1 ml	2 ml				
7-7.9	1 ml	2 ml				
8-8.9	1.5 ml	2 ml				
9-9.9	1.5 ml	2.5 ml				
10-10.9	1.5 ml	2.5 ml	0.5 tab	0.5 tab		
11-11.9	1.5 ml	2.5 ml	0.5 tab	0.5 tab		
12-13.9	1.5 ml	3 ml	0.5 tab	0.5 tab		
14-16.9	2 ml	3 ml	1 tab in a.m. 0.5 tab in p.m.	1 tab in a.m. 0.5 tab in p.m.	0.5 tab	0.5 tab
17-19.9			1 tab in a.m. 0.5 tab in p.m.	1 tab in a.m. 0.5 tab in p.m.	0.5 tab	0.5 tab
20-24.9			1 tab in a.m. 0.5 tab in p.m.	1 tab in a.m. 0.5 tab in p.m.	1 tab in a.m. 0.5 tab in p.m.	1 tab in a.m. 0.5 tab in p.m.
25-29.9			1 tab	1 tab	1 tab in a.m. 0.5 tab in p.m.	1 tab in a.m. 0.5 tab in p.m.
30-34.9			1 tab	1 tab	1 tab	1 tab
35-39.9			1 tab	1 tab	1 tab	1 tab

Continued

Annex 5: Paediatric Antiretroviral Dosing (cont'd)

Weight range (kg)	Trimethoprim/ sulfamethoxazole TMP/SMZ (Septrin®, Bactrim®, various)	
	~4 mg/KG once daily (For prophylaxis against opportunistic illnesses. Doses for treatment of bacterial and protozoal infections are higher than listed here)	
	Liquid 8 mg/ml	Single-strength (SS) Tablet 80mg TMP/ 400mg SMZ
5-6.9	3 ml	
7-9.9	4 ml	½ SS tab
10-11.9	5 ml	½ SS tab
12-14.9	7 ml	1 SS tab
15-16.9	8 ml	1 SS tab
17-19.9	9 ml	1 SS tab
20-24.9	11 ml	1 SS tab
25-29.9	14 ml	2 SS tab
30-34.9	17 ml	2 SS tab
35-40	20 ml	2 SS tab

Annex 6. New WHO dosing recommendations for existing paediatrics FDCs

FDC 6 and 12 dosing schedules:

Triomune Baby tablet (FDC 6): NVP/D₄T/3TC (50 mg/6mg/30mg)

Triomune Junior tablet (FDC 12): NVP/D₄T/3TC (100 mg/12mg/60mg)

Weight range (kg)	< 5.9 kg	6-9.9 kg	10-13.9 kg	14-19.9 kg	20-24.9 kg	25 kg and above
FDC 6 DOSE (tablets)	1 BD	1.5 BD	2 BD	2.5 BD	3 BD	4 BD OR 1 tab BD of 200/30/150mg
FDC 12 DOSE (tablets)	0.5 BD	1 in a.m. 0.5 in p.m.	1 BD	1.5 in a.m. 1 in p.m.	1.5 BD	2 BD OR 1 tab BD of 200/30/150mg (adult formulation)

Annex 7. The Role and Sources of Selected Micronutrients

Micronutrient	Role	Food sources
Vitamin A	Growth and function of T and B cells for immunity, maintenance of mucosal epithelial cells, including the lining of the respiratory, gastrointestinal and gastro-urinary tracts; vitamin A deficiency is associated with increased adult mortality, higher infant mortality and child growth failure	Liver and dairy products, kidney, egg, some fish, yellow sweet potato, pumpkin, palm oil, carrot, dark green leafy vegetables, fruits, such as papaya and mango
Thiamine Vitamin B1	Important for energy metabolism; supports appetite and nervous system functions	Whole-grain cereals, beans, meat, fish, chicken, egg
Riboflavin Vitamin B2	Important for energy metabolism; support normal vision, health, and integrity of skin	Milk, egg, liver, yoghurt, meat, dark green leafy vegetables, whole grain cereals, fish and beans
Niacin Vitamin B3	Essential for energy metabolism, support health and integrity of the skin and nervous and digestive systems	Milk, egg, meat, poultry, peanuts, groundnuts, whole-grain cereals, fish
Pyridoxine Vitamin B6	Facilitates metabolism and absorption of fats and protein; helps make red blood cells	Sweet potato, white beans, avocado, cabbage, broccoli, meat, fish, green leafy vegetables
Cobalamin Vitamin B12	Important for new cell development and maintenance of the nerve cells	Red meat, fish, chicken, shellfish, cheese, eggs, milk, fermented products
Ascorbic Acid Vitamin C	Important for protein metabolism, immune function and iron absorption; increases resistance to infections	Citrus fruits, such as orange, lemon, tangerine, guava, baobab, tomato

Continued

Micronutrient	Role	Food sources
Vitamin E	Protects cell structures and facilitates resistance against diseases	Leafy vegetables, vegetable oils, peanut, egg yolk, vegetables, nuts, seeds, and liver
Calcium	Builds strong bones and teeth; important for functioning of heart and muscle functions, blood clotting and pressure and immune defenses	Milk, dark green leafy vegetables, shrimp, dried fish, beans, lentils, peas, whole grain millet, oil seeds, okra
Iodine	Ensures the development and proper functioning of the brain and the nervous system; important for growth development and metabolism	Fish and other seafood, salt with iodine
Iron	Transports oxygen to the blood, eliminates old red blood cells and builds new cells; required for utilization of energy and metabolism by cells	Red meat, poultry, shellfish egg, peanut, groundnuts, leafy vegetables, lentils, beans, some cereals, dried fruits
Magnesium	Strengthens the muscles; important for nervous system function, involved in bone development, maintenance of teeth	Cereals, dark green vegetables, seafood, nuts, legumes, groundnuts
Selenium	Prevents impairment of the heart muscle; enhances the body's antibacterial and antiviral defenses	Seafood, liver, meat, nuts, unrefined grains, brown rice, wheat germ, whole grain cereals, carrot, onion, milk, egg

