



# **NATIONAL GUIDELINES FOR HIV AND AIDS TREATMENT AND CARE IN ADOLESCENTS AND ADULTS**

**FEDERAL MINISTRY OF HEALTH**

**ABUJA - NIGERIA**

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## ACRONYMS

AIDS

Acquired Immune Deficiency Syndrome

ART	Antiretroviral Therapy
ARV	Antiretroviral drugs
CBO	Community Based Organization
CHEW	Community Health Extension Worker
CHO	Community Health Officer
ELISA	Enzyme Linked Immuno-sorbent Assay
FBC	Full Blood Count
FBO	Faith-Based Organization
FMOH	Federal Ministry of Health
FGN	Federal Government of Nigeria
GON	Government of Nigeria
HAART	Highly Active Antiretroviral Therapy
HBC	Home-Based Care
HCT	HIV Counselling and Testing
HIV	Human Immunodeficiency Virus
IEC	Information Education and Communication
IMAI	Integrated Management of Adolescent and Adult Illness
IMCI	Integrated Management of Childhood Illness
M & E	Monitoring and Evaluation
NACA	National Agency for the Control of AIDS
NASCP	National AIDS/STI Control Program
NGO	Non-governmental Organization
OIs	Opportunistic Infections
PCR	Polymerase Chain Reaction
PEP	Post Exposure Prophylaxis
PHC	Primary Health Care
PLHIV	People Living With HIV
PMBC	Peripheral Blood Mononuclear Cells
PMTCT	Prevention of Mother-to-Child Transmission
STIs	Sexually Transmitted Infections
RAD	Return after Default
TB	Tuberculosis
USAID	United States Agency for International Development
WHO	World Health Organization

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## **FOREWORD**

The Government of Nigeria is deeply committed to providing high quality and comprehensive care for its population of people living with HIV/AIDS. This commitment is evident in the steps government has taken to combat HIV/AIDS since the virus was discovered in the country in 1986.

In response to the discovery of HIV, Government took immediate steps to establish the National Expert Committee on AIDS and the National AIDS Control Programme in 1986. Thereafter, the National Action Committee on AIDS which is now the National Agency for the Control of AIDs was established to oversee the multisectoral response to HIV/AIDS and jointly these organs of government have managed a well coordinated effort to contain the HIV epidemic in Nigeria.

Today we have the largest ART programme in the Sub-Saharan Africa, with over 300,000 persons on treatment. This figure represents an astronomical increase in access to ART especially when compared to the position in 2002 when there were less than 10,000 PLHIVs on treatment.

To avoid the pitfalls that are often associated with large and poorly regulated treatment programmes, Government has consistently taken steps to ensure that the use of ART is guided by clear guidelines for safe and effective administration of the life saving drugs to avoid abuse and maximize the benefits inherent in them.

It developed National Guidelines for HIV/AIDS Treatment and Care very early in the Programme and these guidelines are reviewed periodically every two years to accommodate new developments in HIV/AIDS Treatment and Care and ensure that practice of ART in Nigeria remain modern and compatible with global best practice.

The 2010 National Guidelines for HIV/AIDS Treatment and Care is a revision of the 2007 guidelines and it makes far reaching recommendations for the treatment and care of persons living with HIV/AIDS. The review was undertaken by local and international experts in the care of the PLHIV under the leadership and guidance of the National HIV/AIDS Division and in due deference to the recommendations of WHO.

In undertaking this task, we were guided primarily by considerations for the safety and well-being of the patient and efficacy of therapy and I am confident that proper application of the recommendations of these guidelines will enhance the quality of HIV/AIDS Treatment and Care across the country

I therefore ratify this document as the principal guide for the provision of HIV/AIDS Treatment and Care in adults and adolescents in Nigeria and advise that all providers of HIV/AIDS Treatment and Care should be guided by its recommendations.

**Dr. Onyebuchi Chukwu**  
**Hon Minister of Health**  
**October 2010**

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**Dr. Michael Anibueze**  
**Director Public Health**  
**Federal Ministry of Health**  
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## SECTION 1

### INTRODUCTION

Since the revision of the 2007 National Guidelines for HIV/AIDS Treatment and Care in Adults and Adolescents, there have been remarkable new developments in the management of HIV and AIDS. National experience and expertise in the treatment and care of PLHIV have improved substantially and the number of persons receiving ART has doubled from slightly fewer than 160,000 to over 300,000 persons in the period 2007 to 2010. This rapid increase in the number of clients on treatment has led to an equally rapid rate of devolution of ART service delivery from tertiary level to secondary level health facilities.

However, in the past couple of years, it has been observed that several recommendations in the 2007 Guidelines have become obsolete because of new findings and global consensus especially on subjects related to ART initiation criteria and preferred ARV regimens for the management of HIV/AIDS.

The Government of Nigeria through the National HIV/AIDS Division commissioned the revision of the National Guidelines for HIV/AIDS Treatment and Care with the intent on ensuring that the document and its recommendations provide the basic framework for the delivery of high quality HIV/AIDS Treatment and Care.

To achieve this, experts, including clinicians, public health physicians and CSOs with considerable experience in the treatment and care of PLHIVs commenced work on the revision of the guidelines in March 2009. The process involved extensive literature reviews and consultative meetings that culminated in a meeting in January 2010, at which the final draft of the guidelines was developed. Following this, the guidelines were presented to the State AIDS Control Programme for inputs and endorsement.

The 2010 guidelines have retained the basic concepts of the 2007 revision; in addition to making fundamental changes in the criteria for initiation of ART, it has strengthened the basic framework for supportive HIV/AIDS services. The new guidelines recommend a radical increase in the threshold for initiation of therapy to CD4 counts of  $\leq 350$  cells/mm<sup>3</sup> for all HIV positive individuals irrespective of gender as against CD4 counts of 200 cells/mm<sup>3</sup> as contained in the previous edition.

There has been no major change in recommendations for first line ARV regimen as ZDV or TDF + 3TC or FTC +NVP or EFV remain the preferred first line regimens. However, Stavudine has been dropped from the list of preferred regimen due to the unacceptably high incidence of lipodystrophy associated with its use. Our second-line therapy remains the PI class supported by an NRTI backbone.

The 2010 revised guidelines is eight-section document which effectively provides the framework for the delivery of safe and effective ART backed by a comprehensive care and support package.

## SECTION 2

### DIAGNOSIS OF HIV/AIDS

#### 2.1 HIV Counselling and Testing (HCT)

The introduction of effective ART and its demonstrated medical benefits has shown the usefulness and importance of expanding HCT services to facilitate early diagnosis and treatment of HIV-infected persons. It has also been shown that early knowledge of HIV infection can result in tremendous public health benefits through decreasing risk behaviours that could transmit HIV to uninfected persons. Furthermore, uninfected persons may benefit from HIV testing if knowing their HIV status assists them in modifying or reducing risk behaviours.

All patients undergoing HIV testing should receive pre- and post-test counselling, and give their consent before the test is performed on their specimens. Post-test counselling should be done irrespective of the test result. Testing may be performed without consent if the patient is unable to give his/her consent and the test result is needed in an emergency to provide medical care.

A high level of confidentiality must be maintained during testing. Careful record keeping should be enforced at all times to ensure confidentiality.

HCT includes counselling and testing in a variety of settings. Traditional Voluntary Counselling and Testing (VCT), provider-initiated counselling and testing, and opt-out counselling and testing are examples of HCT methods. VCT is a client-initiated approach in which case an individual actively seeks to ascertain his/her HIV status. Provider-initiated counselling and testing is done based on the recommendation of the care provider to the client. With the opt-out approach, HCT is routinely offered with the patient having the option to decline testing and is utilized in the health care setting to capture all patients presenting for other health care services. HCT should be considered whenever there is care provider/patient contact.

##### 2.1.1 Benefits of HCT for the individual include:

- Improved health through educational and nutritional advice;
- Early access to care (including ART) and prevention of HIV-related illnesses
- Emotional support and better ability to cope with HIV-related anxiety
- Awareness of safer options for reproduction and infant-feeding
- Motivation to initiate or maintain reduced risk behaviours

### **2.1.2 The benefits of HCT for the public health of the nation include:**

- Reduced transmission following increased knowledge of HIV status
- Reduced stigmatization as a result of widespread counselling services
- Improved health and productivity of PLHIV as a result of utilization of care, support, and ART services.

All seropositive individuals from free-standing, mobile, and primary facilities, should be referred to appropriate health facilities for enrolment into care and assessment for ART.

## **2.2 Laboratory Diagnosis of HIV Infection**

Laboratory diagnosis of HIV infection is based on the demonstration of antibodies in plasma or serum, and of virus in the blood. The virus can be demonstrated in the blood with nucleic acid-based tests (PCR for proviral DNA and RT-PCR for plasma viral RNA), culture and p24 antigen assay. With the technology that is available at present, HIV antibodies are detectable within four to six weeks of infection, and within 24 weeks in virtually all infected individuals..

### **2.2.1 Antibody Assays**

The antibody assays that are used for HIV diagnosis consist of screening tests: rapid tests or ELISA, and confirmatory tests: Western blot and Indirect immunofluorescent assay. Routine antibody testing is performed with the serial or parallel testing algorithm using Rapid or ELISA test kits.

### **HIV Rapid Testing Algorithm**

There are two HIV Testing algorithms that have been used by government in recent times; the serial and the parallel testing algorithms. However, the current algorithm recommended for routine use is the serial HIV testing algorithm.

Rapid Test Kits currently recommended for use in Nigeria include; Determine, Unigold and Stat Pak.

### **Serial testing**

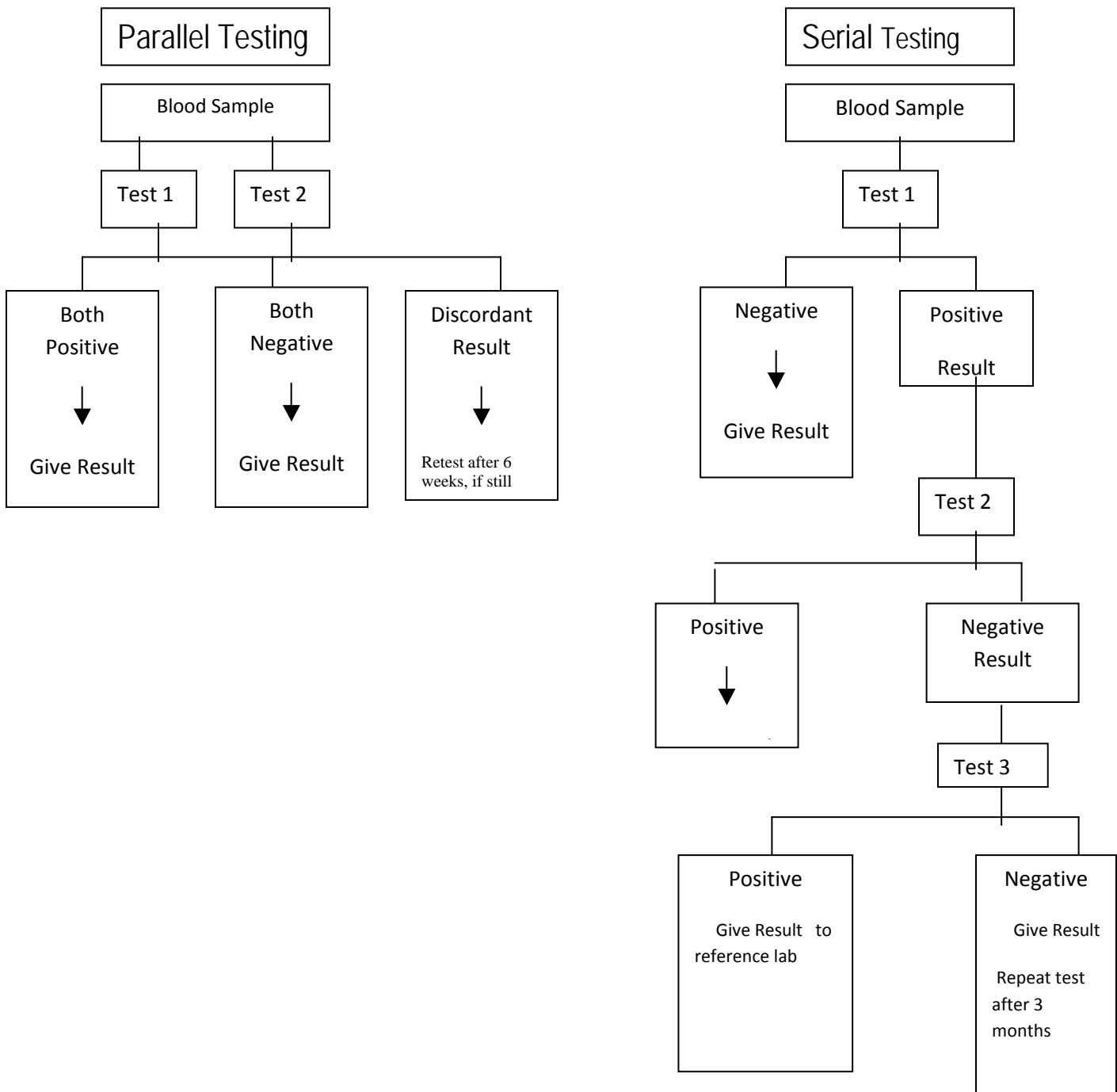
This refers to the use of 2 screening tests employed sequentially to test for HIV antibody. If the initial screening is negative, no further testing is required. If the initial test is positive, it is followed by one more test. The first test should be the most sensitive test and the second test should be very specific, and be based on an antigen source different from that of the first test. Samples that produce discordant results in the two tests are subjected to further testing.

## Parallel testing

This involves the use of two screening tests performed simultaneously. Samples reactive to both tests are regarded as positive. However, those with discordant results require further testing. Parallel testing is performed to minimize the chances of false negative results and to guard against technical errors. It is often used when a very sensitive test is not available for the initial screening, and when the concordance of two tests is to be evaluated.

The serial and parallel testing algorithms are illustrated below:

**Figure 2.1 Parallel vs. Serial Testing Algorithm**



### **2.2.2. Nucleic Acid-based Tests**

These consist of DNA Polymerase Chain Reaction ( DNA PCR) and Reverse Transcriptase Polymerase Chain Reaction (RT-PCR). These tests are not routinely used for laboratory diagnosis of HIV infection in adults and adolescents.

- **HIV DNA Polymerase Chain Reaction**

The DNA PCR involves the amplification of specific DNA sequences in the proviral DNA that has been integrated in the host cell. This test is the preferred procedure for diagnosing HIV infection in infants less than 18 months of age. Because of the high sensitivity of the test, false positive results may occur as a result of contamination by minute quantities of extraneous DNA.

- **RT- PCR**

RT-PCR is used to detect and quantify the amount of HIV RNA in plasma. The assay requires the conversion of viral RNA to DNA and amplification of specific sequences in the DNA produced by a process known as reverse transcriptase polymerase chain reaction (RT-PCR).

### **2.2.3. Other Tests**

These tests are not routinely used for laboratory diagnosis of HIV infection.

- **Antigen detection:** Detection of p24 antigen is an ELISA-based test. The reliability of the test is in doubt because of specificity and sensitivity problems.
- **Virus isolation:** HIV is usually isolated in PBMCs. The procedure involves co-cultivating the Peripheral Blood Mononuclear Cells (PBMCs) from an HIV+ patient with those obtained from a healthy donor. HIV isolation in PBMC is quite sensitive and is comparable to DNA PCR in sensitivity.

## **2.3 Clinical Staging of HIV/AIDS Disease**

The WHO clinical staging of HIV/AIDS for adult and adolescents is shown in tables 2.1 and 2.2..Staging is based on the patient's clinical presentations at the time of initial consultation with the healthcare provider ,this implies that the most advanced symptoms at time of evaluation represents the clinical stage of HIV/AIDS infection. Before undertaking clinical staging, the patient's positive serostatus must have already been determined. Clinical staging guides the decision on when to start co-trimoxazole prophylaxis and when to start ART.

**Table 2.1 WHO Clinical Classification of Established HIV Infection**

HIV-Associated Symptomatology	WHO Clinical Stage
Asymptomatic	1
Mild Symptoms	2
Advanced Symptoms	3
Severe Symptoms	4

The revised staging systems include:

- Presumptive clinical diagnoses that can be made in the absence of sophisticated laboratory tests
- Definitive clinical criteria that require confirmatory laboratory tests

**Table 2.2: WHO Clinical Staging of HIV/AIDS for Adults and Adolescents with confirmed HIV Infection**

<b>Clinical Stage 1</b>
Asymptomatic Generalized lymphadenopathy Performance scale 1: asymptomatic, normal activity
<b>Clinical Stage 2</b>
Weight loss, <10% of body weight Minor mucocutaneous manifestations (seborrheic dermatitis, fungal nail infections, recurrent oral ulcerations and angular cheilitis) Herpes zoster within the last five years Recurrent upper respiratory tract infection (i.e. bacterial sinusitis) And/or performance scale 2: symptomatic, normal activity
<b>Clinical Stage 3</b>
Weight loss > 10% of body weight Unexplained chronic diarrhoea > 1 month Unexplained persistent fever (Continuous or intermittent for longer than 1 month) Oral candidiasis (thrush) Oral hairy leukoplakia Pulmonary tuberculosis within the past year Severe bacterial infections (i.e. pneumonia, pyomyositis) And/or performance scale 3: bedridden <50% of the day during last month Acute necrotizing ulcerative stomatitis, gingivitis, or periodontitis  Unexplained anaemia (below 8 g per dl), neutropaenia and chronic thrombocytopaenia.
<b>Clinical Stage 4</b>
HIV wasting syndrome Pneumocystis Jiroveci Pneumonia Toxoplasmosis of the Central Nervous System Cryptococcus, extrapulmonary Cytomegalovirus disease of an organ other than liver, spleen or lymph node e.g retinitis Herpes simplex virus infection, mucocutaneous (>1 month) or visceral Progressive multifocal leucoencephalopathy Any disseminated endemic mycosis Candidiasis of esophagus, trachea and bronchi Lymphoma Kaposi's sarcoma HIV encephalopathy

Extrapulmonary tuberculosis and/or performance scale 4: bedridden >50% of the day during last month

- Atypical disseminated leishmaniasis
- Disseminated non-tuberculous mycobacterial infection
- Chronic cryptosporidiosis
- Chronic isosporiasis
- Recurrent septicaemia
- Invasive cervical carcinoma.

\*Assessment of body weight in pregnant women need to consider expected weight gain of pregnancy  
Unexpected refer to those conditions whose presence is not explained by other conditions

## SECTION 3

### ANTIRETROVIRAL THERAPY IN ADULTS AND ADOLESCENTS

#### 3.1 GOALS OF ANTIRETROVIRAL THERAPY

Highly Active Antiretroviral Therapy (HAART) is the gold standard in the management of HIV/AIDS and all persons who are eligible to ART should be commenced on HAART as soon as possible. ART should be offered to all persons who are eligible in a comprehensive manner, which means that the persons should have access to ongoing HIV adherence counseling, baseline and routine periodic laboratory investigation, management of OIs, routine treatment monitoring and follow-up.

When properly administered, ART should achieve the following goals;

#### **1. Reduce morbidity (includes morbidity from OIs) and Prolong life of HIV infected individuals**

Optimal ART leads to rapid improvement of clinical indices, pre-existing OIs are more amenable to antimicrobial agents and patients become less susceptible to new infections. Prior to the advent of ARVs, mortality rates due to advanced HIV disease was unacceptably high nearing 100% in most cases. However, following the introduction of HAART, many more people live long and productive lives.

#### **2. Improve quality of life of infected persons**

The absence of symptomatic HIV and HIV-related illness means that persons infected with HIV are able to carry on a normal existence and fend for themselves and their families unlike in the past when they were largely bedridden and dependent on others for support.

#### **3. Achieve rapid and sustained suppression of viral load**

Under optimal conditions, administration of ART should lead to rapid and sustained suppression of viral load. Usually by week 24 following initiation of treatment, patient's viral load should be at the least  $\leq 400$  copies /ml. Rapid and sustained viral load suppression is necessary to prevent or delay the development of ARV drug resistance and allow for restoration of CD4 cells. The ideal is sustained viral suppression at 50c/ml for as long as possible to halt, prevent or delay disease progression.

#### **4. Enhance immunity by increasing CD4+ cell count**

Potent and effective ART leads to an increase in CD4 cells and recovery of the immune functions. Under optimal conditions patients should be able to achieve a CD4 cell count increase of 50 to 100 cells/ $\mu$ l /year.

#### **5. Reduce risk of transmission of HIV to infants (mother to child transmission) and sexual partners**

ART is effective in reducing transmission of HIV from a positive person to an uninfected person. When used as prophylaxis in an infected pregnant woman, it leads to a markedly significant reduction in mother to child transmission of the virus.



## 3.2 PRE-ART EVALUATION

### 3.2.1 Baseline Assessment

The baseline assessment should include:

- Documentary evidence of a positive HIV result
- Complete history and physical examination (always think of renal diseases, cardiovascular diseases, pregnancy, anaemia, Hepatitis B and C, TB, STI, prior ART use including single dose Nevirapine (sd NVP), use of tobacco, recreational drugs and alcohol)
- Immunization status
- Physical examination should include rectal and vaginal examination (PAP smear/ Visual Inspection with Acetic Acid (VIA))
- Staging of disease with clinically and Immunological classification of the patient
- Check Laboratory results (See Table 4.1 )
- Evaluation of nutritional and psychosocial status
- Assessment of readiness for therapy
- Development of patient-specific adherence strategy
- Weight assessment

### 3.2.2 Pre-ART Care

This should include,

Periodic ongoing counseling

Health education

Periodic CD4+ estimation (periodicity to be determined by baseline CD4 and rate of decline)

## 3.3 CRITERIA FOR INITIATING ART

- Start ART in all patients with HIV infection who have a CD4+cell count  $\leq 350$  cells/mm<sup>3</sup> including pregnant women irrespective of clinical symptom
- Start ART in all patients with WHO clinical stage 3 or 4 irrespective of CD4 count
- Start ART as soon as possible in all HIV infected individuals with active tuberculosis (TB) irrespective of CD4 cell count. (within 8 weeks after the start of TB Treatment)
- Start ART in all patients with HIV infection who require treatment for HBV infection irrespective of CD4 cell count or WHO clinical staging.
- For all HIV positive pregnant women with a CD4 count > 350, ARV prophylaxis should be provided to prevent mother-to-child transmission of HIV. It should be initiated with adequate reference to the National Guidelines for PMTCT.

Consider ART in persons with CD4+>350cell/mm<sup>3</sup> in the following situations;

- HIV-associated nephropathy since this may occur at high CD4 counts and there is benefit in use of HAART.
- Discordant relationships based on evidence suggesting decreased risk of transmission in patients with treated HIV infection.

### 3.4 FIRST LINE ART REGIMEN

It is recommended that combinations of drugs from at least two different classes of ARV be used so that the drugs can act on at least two different points or by different mechanisms at one point in the HIV life cycle.

A minimum of three drugs including a NNRTI or a PI is typically used. The recommendations are based on availability, accessibility, affordability, efficacy and ease of administration.

Monotherapy or dual therapy is not recommended for treatment because of the increased risks of developing resistance

This guideline recommends the phasing out of Stavudine (d4t) and service providers should adopt a realistic plan for achieving this as soon as possible.

#### 3.4.1. In ART naïve adults

The following are the preferred first line regimens for ART naïve adults

1. AZT + 3TC + EFV
2. AZT + 3TC + NVP
3. TDF +3TC (or FTC) + EFV
4. TDF +3TC (or FTC) + NVP

- All women receiving NVP containing ART regimens should be closely monitored for symptoms and signs of hepatic toxicity such as skin rash and elevations in serum transaminases.
- Women of child bearing age who develop signs of NVP induced hypersensitivity should have NVP substituted with a potent PI.
- Efavirenz can cause congenital fetal abnormalities and is not recommended in pregnant women (especially during the first trimester) or in women of child bearing age who are not using effective and consistent contraception.

#### 3.4.2. In HIV/TB Co-infection

1. Start TB treatment first, followed by ART as soon as possible, (usually within 8 weeks of start of TB Treatment)
2. For dually infected persons on Rifampicin-containing regimen use:

ZDV or TDF
Plus
3TC (or FTC)
Plus
EFV (800 mg daily, in patients who weigh <60kg, use 600mg)

**Table 3.1: Recommendations for individuals with TB Disease and HIV Co-Infection:**

CD cell count	Recommended regimen
CD4 <350 /mm <sup>3</sup>	Start TB treatment. Start ART as soon as TB treatment is tolerated (between 2 weeks and 8 weeks)
*CD4 ≥350/mm <sup>3</sup>	Start TB treatment. Start ART as soon as TB treatment is tolerated after intensive phase.

- In patients on Rifampicin based anti-TB combinations avoid the use of Nevirapine and most PIs. Nevirapine containing regimen should be substituted with EFV containing regimen.
- Patients on ART who develop TB should have the ARVs reviewed to accommodate the use of Rifampicin in the anti-TB regimen.
- In patients on a PI based initial or subsequent ART regimen, Rifabutin should be substituted for Rifampin.
- In patients whose initial indication for a PI based 1<sup>st</sup> line regimen was temporary, consider switching to Efavirenz when such patients develop TB and require Rifampin based therapy.

### 3.4.3. In HIV/HBV Co-infection

- Start TDF and 3TC (or FTC) containing ARV regimens in all HIV/HBV co-infected individuals who require treatment for HBV.
- The combination of TDF and 3TC (or FTC) is active against HIV and HBV and reduces the development of HBV resistance to therapy. Dosage of 3TC is as prescribed for treatment of HIV.
- HBV in an HIV-positive patient should NOT be treated with TDF or 3TC alone or in combination in the absence of HAART. If TDF and/or 3TC are stopped in an HIV and HBV co infected individual, there may be a hepatitis flare.

### 3.4.4. In HIV-infected women

As in the general population all women with CD4+cells ≤ 350 cells/mm<sup>3</sup> should be placed on ART, however, the ARV regimen to be used will vary depending on several variables;

**In ART naïve women, the recommended combination is**

AZT+3TC (or FTC) +NVP or TDF+3TC (or FTC) +NVP

- Efavirenz can cause congenital fetal abnormalities and is not recommended in pregnant women (especially during the first trimester) or in women of child bearing age who are not using effective and consistent contraception.

**In women previously exposed to ARVs for PMTCT the recommendations are;**

- Initiate a non-NNRTI-based ART in women who have received single-dose Nevirapine (sdNVP) alone or in combination with other drugs without a NRTI tail within 12 months of initiating chronic ART. If a NNRTI-based regimen is started, perform viral load testing at 6 months and, if there are >5000 copies/ml, switch to a boosted PI-based regimen.
- Initiate a standard NNRTI-based ART regimen in women who have received sdNVP alone or in combination with other drugs with a NRTI tail within 12 months of initiating chronic

ART and perform viral load-testing at 6 months. If the viral load is >5000 copies/ml, changing to a boosted PI is recommended.

- c. Initiate a standard NNRTI-based ART regimen in women who have received sdNVP (alone or in combination with other drugs) more than 12 months before starting therapy (with or without a NRTI tail) if possible. The viral load should be evaluated at 6 months and if it is >5000 copies/ml, a change in the boosted PI-based regimen is required.
- d. Initiate a standard NNRTI regimen in women who have received ARV drugs such as AZT alone, without sdNVP, for PMTCT.

### **3.4.5 In Renal Failure:**

Dosage modifications are recommended for many ARV drugs:

- If calculated Creatinine Clearance (CrCl) is elevated at baseline
- If at any time CrCl above baseline,

Patients with elevations in CrCl should:

- Undergo an evaluation for potential causes of decreased renal function.
- Have serum creatinine monitored more frequently until resolution of renal insufficiency or failure.

The administration of ART in the presence of renal failure should be done in consultation with a qualified physician. Adjustments to drug dosages should be based on recommendations by drug manufacturers.

### **3.4.6 Alternate first line ARVs**

In special situations such as intolerance or contraindications to both NNRTI regimens, particularly in

- HIV/TB coinfection;
- pregnant women;
- chronic viral hepatitis B;
- HIV-2 infection

Triple NRTIs such as those listed below are accepted as alternative first line ARVs

- a. AZT + 3TC + ABC
- b. AZT + 3TC + TDF

### 3.5 SECOND LINE ART REGIMEN

1. A boosted protease inhibitor (bPI) plus two nucleoside analogues (NRTIs) are recommended for second-line ART.
2. ATV/r and LPV/r are the preferred bPIs for second-line ART.
3. Simplification of second NRTI options is recommended.
  - If d4T or AZT has been used in first-line therapy, use TDF + (3TC or FTC) as the NRTI backbone in second-line therapy.
  - If TDF has been used in first-line therapy, use AZT + 3TC as the NRTI backbone in second-line therapy.

**Table 3.2: Preferred Second line ART regimen**

Target Population		Preferred Options
Adults and adolescents (including pregnant women)	If d4T or AZT used in first-line therapy	TDF + 3TC or FTC + ATV/r or LPVr
	If TDF used in first-line therapy	AZT + 3TC + ATV/r or LPVr
TB/HIV coinfection	If *rifabutin available	Same regimens as recommended above for adults and adolescents
	If rifabutin not available	Same NRTI backbones as recommended for adults and adolescents plus LPVr or SQV/r with superboosted dosing of RTV (LPV/r 400 mg/400 mg twice daily or LPV/r 800 mg/200 mg twice daily or SQV/r 400 mg/400 mg twice daily)
Hepatitis B coinfection		AZT + TDF + 3TC or FTC + ATV/r or LPVr

\*When used with ATV/r or LPVr, Rifabutin should be dosed at 150mg qod or 3x/week

### 3.6 SWITCH OR SUBSTITUTION OF ANTIRETROVIRAL DRUGS

Substitution is the replacement of one or two ARV drugs in a regimen with another drug within the same class usually because of the following;

1. Toxicity
2. Co-morbidity
3. Pregnancy
4. Drug interaction
5. Treatment Failure

Switching is the replacement of two or more ARV drugs in a regimen with other drugs, including drugs of a different class due to treatment failure. Switching can also be referred to as changing a patient from a first line regimen to a second line regimen or from a second line regimen to third line or salvage regimen.

### **3.6.1 Situations requiring substitution of ARVs**

#### **Drug toxicity / Adverse drug reactions**

Toxicity is related to inability to tolerate medication side effects and the development of significant organ dysfunction resulting from drug use. This can be detected clinically (history and clinical examination) and/or through laboratory testing.

In the event of drug toxicity and adverse drug reactions, the offending drug(s) must be discontinued and changed to other drugs from within first line ARV options. Second line drugs are preserved for treatment failures.

#### **In pregnancy**

Concern is usually with the 1<sup>st</sup> trimester of pregnancy where substitution of Efavirenz with Nevirapine is necessary to avoid the occurrence of drug induced teratogenicity.

#### **Treatment failure**

ARV treatment failure may be defined as sub-optimal treatment outcomes following initiation of ART. It can be classified as;

- Virologic failure
- Immunologic failure
- Clinical failure

#### **Causes of Treatment Failure**

- Viral factors
  1. Presence of drug resistance mutations
- Acquired drug resistance. Patients may develop drug resistance mutations while on ART if maximal adherence (>95%) is not maintained.
- Transmitted drug resistance. Patients may be infected with drug resistance virus during their initial exposure or be re-infected with drug resistant virus from risky exposures while on ART.
- Non-viral Factors

Treatment failure may result from ARV drug levels to reach effective levels. This may be due to:

1. Host factors -poor adherence, malnutrition, malabsorption,
2. Choice of initial ART regimen – poor potency or improper dosing
3. Drug Interactions

#### **Virologic Failure**

Ideally, in the treatment-naive patient viral suppression to <50 copies/ml should be achieved and sustained by 16-24 weeks following commencement of ART. Virologic failure is described as:

- Viral load not suppressed to undetectable levels (<400 copies/ml) after 6 months on ART.
- Viral load not suppressed to undetectable levels (<50 copies/ml) after 12 months on ART

- A persistent increase in viral load following a period of adequate suppression.

An individual should be on ART for at least six months before it can be determined that the regimen has failed. Blips (transient increase in viral load) can occur during periods of inter-current infections. When possible, viral load testing should be repeated after adherence interventions to confirm virological failure before switching.

### **Immunologic Failure**

- Return of CD4 cell count to or below pre-therapy baseline level
- 50% decline from on-therapy CD4 cell peak level
- Persistent CD4 levels below 100 cells/ $\mu$ L

NB: Observed drop of CD4 cell count should not coincide with other concomitant infections, since infections could lead to a drop in CD4 count.

### **Clinical Failure**

- Occurrence or reoccurrence of opportunistic infection or malignancy signifying clinical disease progression.
- Onset or recurrence of WHO Stage III and IV defining conditions. .
- Before making an assessment of clinical failure, a reasonable trial of first line therapy lasting at least six to twelve months is recommended. Also, adherence should be assessed and optimized, inter-current opportunistic infections treated and resolved and Immune Reconstitution Inflammatory Syndrome (IRIS) excluded.

## **3.7 SALVAGE THERAPY**

Salvage Therapy refers to the ART offered to PLWHA in response to failure of second line treatment and the non response to available regimens. The choice of salvage therapy is more difficult if genotype or phenotype resistance testing is not readily available. In the event of treatment failure, a comprehensive evaluation (including adherence assessment) to ascertain the cause of failure should be conducted.

It is important to note that patients failing a PI/r based regimen may have no PI resistance mutations in which case failure is usually secondary to non adherence. Effort must be made to assess and optimize adherence and rule out any significant drug interactions. When this has been done and there is still evidence of failure, patients should have a regimen change that will include at least two active agents.

Recommended salvage therapy; DRV/r + RAL with an optimized background of NRTIs which should include 3TC/FTC are considered. In situations where third and salvage regimen are unavailable, patients should be continued on optimized second-line regimen.

### 3.8. ANTIRETROVIRAL DRUGS

#### 3.8.1 Classes of ARVs and their mechanisms of action

There are 6 classes currently available for treatment based on the site and mechanism of action. Other classes are at various stages of development but are not yet widely available for clinical use.

- 1. Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs)** such as nevirapine and efavirenz stop HIV production by binding directly onto the reverse transcriptase enzyme thus preventing the transcription of viral RNA to DNA. A recent addition to this class is etravirine.
- 2. Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTIs/NtRTIs)** incorporate themselves into the DNA of the virus, thereby stopping the building process. The resulting DNA is incomplete and cannot create a new virus.
- 3. Protease Inhibitors (PIs)** work later in the virus reproduction cycle. They prevent HIV from being successfully assembled and released from the infected CD4+ cell.
- 4. The chemokine receptors antagonists which** bind to CCR5 or CXCR4 on the T cell surface and thereby prevent viral attachment to these co-receptors. This class includes Maraviroc
- 5. Fusion inhibitors** which bind to viral gp41 and prevent the virus from penetrating the T-cell membrane such as enfuvirtide.
- 6. Integrase Inhibitors** prevent the integration of viral DNA into the T-cell DNA and as such permanent infection of the cell is aborted and reproduction of viral RNA genome cannot occur neither can transcription of viral mRNA occur. An integrase inhibitor now available for clinical use is raltegravir.

**Table 3.3: Classes of ARV drugs**

		Integrase Inhibitor	Fusion Inhibitors	CCR5 Inhibitor	Protease Inhibitors (PIs)
NRTI)	NNRTIs)				
Zidovudine (ZDV)	Nevirapine (NVP)	Raltegravir	Enfuvirtide (T-20)	Maraviroc	Saquinavir (SQV)
Didanosine (ddI)	Efavirenz (EFV)				Ritonavir (RTV)
Stavudine (d4T)	Etravirine				pharmacoenhancer}
Lamivudine (3TC)	Delavirdine				Indinavir (IDV)



Abacavir (ABC) Emtricitabine (FTC) Tenofovir (TDF)					Nelfinavir (NFV) Amprenavir (APV) Lopinavir-ritonavir (LPV/r) Atazanavir (AZV) Tipranavir Fosamprenavir (FPV) Darunavir
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### 3.8.2 Strength and dosing of ARVs

**Table 3.4 Nucleoside Reverse Transcriptase Inhibitors (NRTIs)**

Drug	Strength/Preparation for adults	Adult dosing	Comments
Didanosine (ddl)	25mg, 50mg, 100mg, 150mg, 200mg, 250mg, 400mg tablets	400mg OD, if weight is <60kg then 250mg OD	Antacid containing tablets to be chewed thoroughly, crushed or dispersed in water; tablets should be taken at least 1 hour before food or on an empty stomach
Lamivudine (3TC)	100mg, 150mg tablets	150 mg BD or 300mg OD	May be taken 300mg OD as prescribed by physician
Emtricitabine (FTC)	200mg tablets	200mg OD	Closely related to 3TC and should not be co-administered with it
Stavudine (d4T)	30mg tablets	30 mg BD,	Not to be used with ZDV. Syrup/suspension needs to be refrigerated and shaken well before use.
Zidovudine (ZDV)	100mg capsule, 300mg tablets	250 - 300 mg BD	Use with caution in the setting of anaemia.  Increased toxicity possible when used with other drugs that are associated with bone marrow suppression.  Should not be administered in combination

			with d4T.
Abacavir (ABC)	300 mg tablets	300 mg BD or 600mg OD	Causes hypersensitivity reaction (HSR), which can be fatal; never re-challenge the patient. Educate patient on HSR
Tenofovir (TDF)	300 mg tablets	300mg OD	Caution should be taken in renal impairment and renal function (in particular plasma creatinine) should be monitored.

**Table 3.5 Non Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)**

Drug	Strength/ Preparation for adults	Adult dosing	Comments
Efavirenz (EFV)	200mg, 600mg capsules	600mg OD or 800mg OD when co-administered with rifampicin in a patient weighing > 60kg	Contraindicated below 3 years of age and in early pregnancy
Nevirapine (NVP)	200mg tablets	200mg BD, always initiate 200mg OD for 2 weeks before giving full dose.	Increase incidence of severe hepatotoxicity in women with CD4 count > 250cells/mm <sup>3</sup> and men with CD4 count > 400cells/mm <sup>3</sup> . Other common reactions include skin rash.

**Table 3.6 Protease Inhibitors**

Drug	Strength/Preparation for adults	Adult dosing	Comments
Atazanavir (ATV)	100, 150 and 200 mg capsules	300mg boosted with 100mg ritonavir OD	Asymptomatic hyperbilirubinaemia is common. May present with mild jaundice
Darunavir (DRV)	600 mg tabs	600mg with 100mg ritonavir BD	A newer PI effective against many PI resistant mutants
Indinavir (IDV)	200mg capsule	800mg + 100mg RTV BD	Administer 1 hour before or 2 hours after a meal; may be administered with low-fat, light meal; when given with Didanosine, allow 1 hour between the drugs (antacids in Didanosine reduce absorption of Indinavir)
Lopinavir/ritonavir (LPV/r)	Capsules: 133.3 mg lopinavir and 33.3 mg ritonavir [Heat stable formulation: 200mg LPV/50 mg r]	400mg LPV/100mg r BD	Lopinavir/ritonavir is extensively metabolized by hepatic cytochrome P450 3A. There could potentially be multiple drug interactions. Storage: Oral solution and capsules should be refrigerated, but can be kept at room temperature (up to 25° C) if used within two months. Heat stable formulation that can be stored at room temp. is

			now available.
Nelfinavir (NFV)	250mg tablets 625mg tablets	1250 mg BD or 750mg TDS	Administer with or after food; powder may be mixed with water, milk, formula feeds or pudding; it should not be mixed with acidic foods or juices owing to its taste
Ritonavir (r, RTV) (with other PIs)	100mg capsules	100mg BD in most cases	Used only to boost other PIs except NFV. Cold chain must be secured for its transportation and storage
Saquinavir (SQV)	200mg gel filled capsule	1000mg + RTV 100mg BD	Administer with or after food
Tipranavir (TPV)	250mg caps	500mg +200mg ritonavir BD	Active against PI resistant HIV and has established efficacy in salvage regimen

## SECTION 4

### ART MONITORING AND FOLLOW UP

#### 4.1 MONITORING AND FOLLOW-UP

The clinician and patient must agree on the schedule for monitoring the progress of disease, and associated care prior to starting ART (baseline assessment) and during ART. Patients who are not yet eligible for ART should undergo clinical assessments and CD4 cell counts every three to six months. As the clinical or immunological threshold for initiating therapy approaches, these assessments will become more frequent.

Follow-up of patients on antiretroviral therapy continues through-out the patient's lifetime. These visits should be scheduled at a minimum interval of 3-6 months. At treatment initiation (see Table 4.1) or in the event of any treatment change, monitoring should be more frequent.

#### 4.2 BASELINE ASSESSMENT

(See Section 3.2)

#### 4.3 ASSESSMENT DURING FOLLOW-UP

Once therapy has begun, assessment should cover:

- Signs/symptoms of HIV related conditions and potential drug toxicities.
- Adherence
- Response to therapy.
- Weight
- Laboratory monitoring;

Laboratory monitoring tests may differ according to the level of the health care facility (see Table 11.1 for recommended tiered laboratory capabilities) and should be done according to the following schedule.

**Table 4.1 Suggested Monitoring Schedule for Patients Starting HAART**

	Pre-Treatment (Baseline)	Week 2	Week 4	Week 8	Week 12	Every 12 Weeks	Every 24 Weeks
Physical Exam	X	‡	X	X	X	X	

Adherence Counselling	X	X	X	X	X	*	
HIV-1 RNA	‡						‡
CD4+	X				‡		X
Hb/PCV	X		X <sup>1</sup>		X		X
WBC, Platelets	X	As clinically indicated					
ALT	X		X <sup>2</sup>				X
Creatinine (Calc CrCl)	X						X
HbsAg and HCV	X						
Clinical Screening for TB	X	X	X	X	X	X	X
Urinalysis	X						
Syphilis test	X						
VIA/Pap Smear	X	As clinically indicated					
AST, ALP, FBS, Amylase, Preg test, Lipid profile, U/E, Sputum AFB, Chest X-Ray	As clinically indicated						

X Essential

‡ Desirable

<sup>1</sup> For patients on AZT

<sup>2</sup> Patients on NVP

\* Those that are not yet ARV-eligible would require the initial CD4 count and subsequent CD4 at 6 monthly intervals, or more frequently as desirable, in addition to other symptomatically indicated investigations.

## SECTION 5

### MANAGEMENT OF ADVERSE DRUG REACTIONS (ADR) AND COMPLICATIONS OF ARVS

#### 5.1 CLASSIFICATION OF ADR

An adverse drug reaction is a response (mild, moderate or severe) to a drug that is noxious and unintended and occurs at doses normally used in humans for the prophylaxis, diagnosis and treatment of disease or for modification of physiological function (WHO).

Adverse drug reactions are classified in grades and there are four main grades of ADR which define the degree of severity of the drug reaction and determine the interventions necessary to address them. They are:

##### Grade 1 - Mild ADR

- Transient or mild discomfort
- No limitation of activity
- No medical intervention or therapy required
- 

##### Grade 2 - Moderate ADR

- Mild to moderate limitation of activity
- Some assistance may be needed
- No or minimal medical intervention required
- 

##### Grade 3 - Severe ADR

- Marked limitation in activity
- Assistance usually required
- Medical intervention or hospitalization required
- 

##### Grade 4 - Life Threatening ADR

- Extreme limitation in activity
- Significant assistance required
- Significant medical intervention or therapy required, including hospitalization.

**Table 5.1 Laboratory Grading of ADR**

#### Severity Grading of Laboratory Adverse Events in Adults and Adolescents

ITEM	REFERENCE RANGE	LABORATORY TEST ABNORMALITIES			
		GRADE I TOXICITY	GRADE II TOXICITY	GRADE III TOXICITY	GRADE IV TOXICITY
<b>HAEMATOLOGY</b>					
Hemoglobin	10.5 - 18.0g/dl	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 or Granulocyte count	2.0 - 7.5 x10 <sup>9</sup> /L	1 - 1.5 x 10 <sup>9</sup> /L	0.75 - 0.99 x10 <sup>9</sup> /L	0.5 - 0.749x10 <sup>9</sup> /L	<0.5 x 10 <sup>9</sup> /L
Platelet count	100 - 450 x 10 <sup>9</sup> /L	70 - 99 x 10 <sup>9</sup> /L	50 - 69 x 10 <sup>9</sup> /L	30 - 49 X10 <sup>9</sup> /L	< 29 x 10 <sup>9</sup> /L

Total WBC	4.0 – 11.0 10 <sup>9</sup> /l	2.0 – 4.9 x 10 <sup>9</sup> /L	1.0 – 1.9 x 10 <sup>9</sup> /L	> 1.0 x 10 <sup>9</sup> /L	-
<b>CHEMISTRY</b>					
ALT	5.0 – 38U/L	1.25 - 2.5 x Upper limit of normal	>2.5 - 5 x Upper limit of normal	>5.0 - 10 x upper normal limit	>10 x Upper limit of normal
Triglycerides	< 1.69 mmol/L	1.69 – 2.25 mmol/L	2.26 – 5.63 mmol/L	5.64 - 13.56 mmol/L	>13.56 mmol/L
Cholesterol	3.0 – 4.42mmol/L	>1.0 - 1.3 x Upper limit of normal	4.52 - 8.48 mmol/L	8.49 - 13.56 mmol/L	>13.56 mmol/L
Lactate	< 2 mmol/l	-	2 – 5 mmol/l	5 – 10 mmol/l	>10mmol/l
Glucose (hyperglycemia)	4 – 6 mmol/l	> 6 – 8.90 mmol/l	8.91 – 13.88 mmol/l	13.89 – 27.76 mmol/l	> 27.76 mmol/l
Glucose (hypoglycemia)	4 – 6 mmol/l	3.01 – 3.55 mmol/l	2.19 – 3.00 mmol/l	1.67 – 2.18 mmol/l	<1.67 mmol/l
Amylase	28 - 100U/L	> 1.0 – 1.5 x Upper limit of normal	> 1.5 – 2.0 x Upper limit of normal	> 2.0 – 5.0 x Upper limit of normal	> 5.0 x Upper limit of normal
Bilirubin	2 – 21µmol/L	1.1 – 1.5 x Upper limit of normal	1.6 – 2.5 x Upper limit of normal	2.6 – 5.0 x Upper limit of normal	> 5.0 x Upper limit of normal
Lipase	< 1.5 U/mL	> 1.0 – 1.5 x Upper limit of normal	> 1.5 – 2.0 x Upper limit of normal	> 2.0 – 5.0 x Upper limit of normal	> 5.0 x Upper limit of normal
Creatinine	0.7 – 1.5mg/dl or 62 – 133 µmol/L	> 1.0 -1.5 x Upper limit of normal	> 1.5 – 3.0 x Upper limit of normal	> 3.0 – 6.0 x Upper limit of normal	> 6.0 x Upper limit of normal
Sodium Hyponatraemia	- 136 – 145 mmol/L	130 - 135 mmol/l	123 - 129 mmol/l	116 - 122 mmol/l	<116 mmol/l
Sodium Hypernatraemia	- 136 – 145 mmol/L	146 - 150 mmol/l	151 - 157 mmol/l	158 - 165 mmol/l	>165 mmol/l
Potassium Hyperkalaemia	- 3.5 – 5.0 mmol/L	5.6 – 6.0 mmol/l	6.1 – 6.5 mmol/l	6.6 – 7.0 mmol/l	>7.0 mmol/l
Potassium Hypokalaemia	- 3.5 – 5.0 mmol/L	3.0 – 3.4 mmol/l	2.5 – 2.9 mmol/l	2.0 – 2.4 mmol/l	<2.0 mmol/l
Management	Continue ART Repeat test after 2 weeks and re-assess		Continue ART, Repeat test after 1 wk and re-assess; if ALT still grade III consult expert about stopping ART		Stop ART and consult expert
Lipid imbalances could be managed with exercise, diet and pharmacologically using fibrates					

## 5.2 Management of Specific Adverse ARV Drug Reactions

Reactions and side effects associated with ARV drugs usually have a class similarity; however certain drugs in each of the classes present more severe forms of adverse reactions than others, thus requiring that in the management of adverse events special attention should be paid to drug specific adverse reactions.

For example Zidovudine is implicated in ARV-induced anaemia more than any other ARV in use, just as Nevirapine is more likely than the others to cause liver toxicity.



### a) Nucleoside Reverse Transcriptase Inhibitors (NRTIs)

All NRTIs are capable of inhibiting mitochondria DNA [(mtDNA) polymerase gamma] polymerase enzyme. Mitochondrial toxicity is the result of the cumulative effect of antiretroviral therapy on functioning mitochondria. The nucleosides most often responsible for mitochondrial toxicity are the so-called “d-drugs” specifically ddI and d4T. Each differs in the mechanism, potency, and tissue specificity of its mitochondrial toxicity and the toxicity can be life-threatening, as in the case of lactic acidosis with hepatic steatosis.

Because they inhibit DNA polymerase, therefore all tissues that have DNA can be affected. Depending on the organ involved, there can be myopathy presenting with muscle weakness, bone disorders causing depression of haemopoiesis leading to anaemia, leucopenia and thrombocytopenia, On the fat cells, it causes lipolysis resulting in fat atrophy (lipoatrophy). It can cause myelotoxicity and neuropathy when it affects peripheral neurones, thus precipitating peripheral neuropathy. Though rare, prolonged usage may also affect myocardial cells resulting in cardiomyopathy. Others include hepatitis, pancreatitis and lactic acidosis.

### b) Non Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)

They are contraindicated in patients below 3 years of age and in early pregnancy. They increase the incidence of severe hepatotoxicity in women with CD4 count > 250cells/mm<sup>3</sup> and men with CD4 count > 400cells/mm<sup>3</sup>. Other common reactions include skin rash, and CNS disorders.

### c) Protease Inhibitors (PIs)

PIs are potent CYP3A4 inhibitor hence many drug-drug interactions can occur on co-administration with other drugs. Apart from the costs and pill burden, ADRs due to PIs can be severe. These include acute effects of diarrhea, vomiting and hepatotoxicity; and long term toxicity which includes peripheral loss of subcutaneous fat (lipoatrophy), fat accumulation within the abdominal cavity (protease paunch or crix-belly), fat accumulation in the upper back (dorsocervical pad or buffalo hump), gynaecomastia in males, fat accumulation in the breast in females and fat accumulation in subcutaneous tissue (peripheral lipomatosis). Management of acute ADRs includes assurance and symptomatic as it clears within 4-6 weeks of therapy.

The table below lists the adverse drug reactions associated with the use of specific ARVs and their management.

**Table 5.2 ART Adverse Drug Reactions and Safety Monitoring**

Antiretroviral Drug	Primary toxicities	Minor toxicities	Monitoring/Management
Zidovudine (ZDV)	Haematological (Anaemia, Neutropenia, thrombocytopenia), myopathy, GI intolerance: Hypersalivation, Nausea and abdominal discomfort	Blue to black discoloration of nails, nausea and headache	For anaemia: <ul style="list-style-type: none"> <li>• Change to TDF or transfuse</li> <li>• Do not use if Hb &lt; 8.0 g/dl(PCV &lt;24%)</li> </ul> For myopathy: Discontinue if CPK rises

Lamivudine (3TC)	Pancreatitis, Liver toxicity Mild peripheral neuropathy	Skin rash, headache	Discontinue if serum amylase elevated. Restart when resolved or change to ABC
Stavudine (d4T)	<ul style="list-style-type: none"> <li>- Peripheral neuropathy presenting with painful and peripheral sensations in the lower more than in the upper limb</li> <li>- Lactic acidosis with hepatic steatosis. This is worse when d4T is used in combination with ddI.</li> <li>- Peripheral fat atrophy</li> </ul> <p>Ascending motor weakness resembling Guillain-Barre syndrome may occur</p>	Insomnia, anxiety, panic attacks	Periodic serum triglycerides should be monitored. Suspicion of lactic acidosis - measure serum lactate and/or anion gap and serum bicarbonate. At first signs of mitochondrial toxicity stavudine should be substituted
Emitricitabine (FTC)	Similar to lamivudine	Occasional hyperpigmentation	
Tenofovir (TDF)	Nephrotoxicity	Bone demineralisation Occasional GI intolerance	If creatinine clearance declines substitute with a non nephrotoxic drugs such as ABC or adjust dosage. (See section on co-morbidities)
Didanosine (ddI)	Dose-related pancreatitis. Effect is worse when combined with hydroxyurea.  Painful Peripheral neuropathy. Effect is worse if combined with d4T.	Abdominal cramps, diarrhoea	Discontinue if neuropathy severe, raised serum amylase and transaminases

	Lactic acidosis (a class adverse effect) may occur.		
Abacavir (ABC)	Life-threatening hypersensitivity may occur in 3-9% of patients  Lactic acidosis may also occur with/without hepatic steatosis		Discontinue therapy if hypersensitivity develops. Rechallenge of patient may be fatal - Abacavir should never be used in that individual again
Nevirapine (NVP)	Life-threatening skin rash (Stevens-Johnson syndrome) which occurs in less than 5% of patients and usually within 8 weeks of treatment  DRESS syndrome (drug rash, eosinophilia and systemic symptoms) manifesting as fever, arthralgia, etc.		Low-dose over first 2 weeks minimizes rash occurrence. If mild or moderate (Grade 1/2) continue cautiously or substitute with EFV. If severe discontinue NVP and permanently if hepatitis confirmed.
Efavirenz (EFV)	- Mobiliform rash may appear but usually not life-threatening - CNS side effects occur in about 50% of patients (usually self-limiting) include: H-hallucinations I-insomnia A-abnormal dreams S-somnolence A-amnesia A-abnormal thinking	Dizziness,	- Rash in 10% but rarely severe in <1%; CNS symptoms often resolve 2-4 weeks. Potentially teratogenic in primates and humans hence efavirenz should not be used in pregnant women or women who might become pregnant while on therapy.

	<p>C-confusion</p> <p>E-euphoria</p> <p>For these reasons, EFV is contraindicated in patients who already have psychiatric manifestations, nightmares, rash.</p>		
Etravirine	<ul style="list-style-type: none"> <li>- Steven-johnson's syndrome, Erythema multiforme, hepatotoxicity, lipid abnormality and psychiatric</li> </ul>	GI Intolerance, rash	<ul style="list-style-type: none"> <li>- Monitor liver enzymes and lipids. Rarely discontinued (&lt;2%) due to Adverse reaction.</li> </ul>
Lopinavir/Ritonavir (LPV/r)	Diarrhoea, nausea, vomiting and skin rash	Headache, weakness	Diarrhoea rarely severe should be managed with antispasmodics - usually resolves after weeks to months of therapy
Nelfinavir (NFV)	<p>Diarrhoea (seen in 10-30% of patients). Should be managed with agents as Loperamide</p> <p>Fat accumulation</p> <p>Hyperlipidemia and other class effects</p>		<ul style="list-style-type: none"> <li>- Diarrhoea occurs 10-30% at start of therapy but often resolves on its own. It should be managed with anti-spasmodic agents such as Loperamide.</li> </ul>
Indinavir (IDV)	<p>Class specific effects</p> <p>Nephrolithiasis ± haematuria - occurs in 10-28% of patients.</p> <ul style="list-style-type: none"> <li>- Alopecia in hair-bearing areas</li> </ul>	Headache, rash, retinoid-like effects, alopecia	Ensure adequate rehydration (1.5 L/day). Monitor liver enzymes

Saquinavir(SQV)	Class adverse effects	GI Intolerance, headache, increased transaminases	Antiemetic, monitor LFT
Amprenavir (APV)	<ul style="list-style-type: none"> <li>- Class adverse effects</li> <li>- GIT intolerance (oral paraesthesia in 28% of patients)</li> <li>- Oral solution contains propylene glycol which may precipitate: <ul style="list-style-type: none"> <li>- Seizures</li> <li>- Stupor</li> <li>- Tachycardia</li> <li>- Hyperosmolality</li> <li>- Lactic acidosis</li> <li>- Renal failure</li> <li>- Haemolysis</li> </ul> </li> <li>- Oral solution is contraindicated in children below 4 years</li> <li>- Oral solution should be changed to capsules as soon as possible</li> </ul>		Fosamprenavir is related to it and is used as its replacement.
Fosamprenavir (fAPV)	Class adverse effects	GI Intolerance, Skin rash 19%, increased transaminases	Antiemetic, monitor LFT
Tipranavir (TRV)	increased transaminases, (grade3), Class adverse reactions	GI Intolerance, nausea vomiting and diarrhoea	Antiemetic, monitor LFT
Darunavir(DRV)		GI Intolerance	Dyslipidaemia and raised transaminases.

Ritonavir (RTV)	<ul style="list-style-type: none"> <li>- Class side effects</li> <li>- Perversion of taste</li> <li>- Circum-oral and peripheral paraesthesia</li> <li>- Hepatotoxicity</li> </ul> <p>Asthenia</p>		Booster dose rarely causes these problems. With therapeutic dose the drug may have to be withdrawn
Enfuvirtide(T20)	<ul style="list-style-type: none"> <li>- Injection site reaction</li> </ul>	Hypersensitivity with rash ,nausea , vomiting, chills,fever, hypotension and elevated transaminases etc	Discontinue with severe reaction. Rotate injection site and massage the area after injection.
Raltegravir	<ul style="list-style-type: none"> <li>- rare</li> </ul>	Myopathy	
Maraviroc	<ul style="list-style-type: none"> <li>- Postural hypotension, hepatotoxicity and GI intolerance.</li> </ul>	Fatigue, headache and nausea.	Monitor renal function prior to initiation, monitor liver enzymes.

### 5.3 Principles of management of ADRs

**a) Ensure routine screening of all ART patients for signs/symptoms indicating possible adverse reactions using ADR Screening Form.**

- If there are no new signs and/or symptoms indicating possible adverse drug reactions, continue case management of patients.
- If there are any new signs and/or symptoms indicating possible adverse drug reactions:
  - i. Determine the severity of the adverse event(s) using WHO Severity Grading of ADRs
  - ii. If the suspected adverse event(s) is *mild* (ADR severity grade 1), counsel on how to manage the adverse event(s), document intervention and then manage patients as appropriate.
  - iii. If the suspected adverse event(s) is *moderate, severe or life-threatening* (ADR severity grade II – IV), report the adverse events using the Individual Case Safety Report Form (NAFDAC Pharmacovigilance Form), manage the patients' ADRs as appropriate and then document intervention.

**b) ART may be continued in cases of the grade I or II adverse event**

**c) If the adverse drug reaction is severe (grade III), consider stopping ART or implement the following:**

- De-challenge the patient of the 'suspected drug(s). Discontinue the least critical drug(s) to the patient's health one at a time, institute appropriate substitute drugs/regimen for the patient (in the case of ARVs) and observe response to the change.

- Monitor the patient closely as much as possible on the new medications
  - Continue the usual case management of the patient
  - Follow up and document properly the suspected adverse reactions, intervention and outcome of the intervention in the NAFDAC Pharmacovigilance Form (*provide details using additional paper if necessary*).
- d) ART must be stopped immediately if there is life threatening (grade IV) adverse drug reaction using approved guidelines.**
- Never stop only one antiretroviral drug (patient should always be on three drugs or stopped the three drugs). Individual drugs can also be substituted as appropriate.
  - If there is need to stop ARVs, all drugs must be stopped together (cover for NNRTI tail , where applicable)
- e) Dealing with multiple drugs suspected to be associated with an ADR:**
- Consider the possibility of a drug-drug interaction; do a label and literature search (consult the *pharmacovigilance and drug information focal person* as necessary).
  - Consider discontinuing only one drug at a time to observe de-challenge.
  - Discontinue the drug least critical to short-term health, e.g. can the individual tolerate a period off drug to evaluate change in event? Institute appropriate substitute drugs/regimen for the patient (in the case of ARVs) and observe response to the change.
  - Follow up and document properly the observed adverse reactions, intervention and outcome of the intervention in the NAFDAC Pharmacovigilance Form (*provide details using additional paper if necessary*).
- f) After the De-challenge; If the symptoms (and signs) were abated:**
- ADR is probably due to the initially suspected drug(s)
  - Follow up and document properly the observed adverse reactions, intervention and outcome of the intervention in the NAFDAC Pharmacovigilance Form (*provide details using additional paper if necessary*).
- g) After the De-challenge; If the symptoms (and signs) were not abated:**
- Re-evaluate the patient for the severity of the adverse drug reaction
  - Consider stopping all medications using approved guidelines.
  - Stabilize and manage the patient as appropriate.
  - Continue to monitor the patient condition
  - Follow up and document properly the observed adverse reactions, intervention and outcome of the intervention in the NAFDAC Pharmacovigilance Form (*provide details using additional paper if necessary*).
- h) If there are no new ADR(s)**
- Continue case management of the patient
- i) Ensure strict adherence to the standard operating procedures (SOPs) for detecting, evaluating and reporting Adverse Drug Reactions in ART Clinical Settings**
- j) Establish a functional hospital - based pharmacovigilance committee (with a term of reference) in all ART centers to coordinate ARV clinical pharmacovigilance. This committee is very vital to the success of pharmacovigilance and management of ADRs in a clinical setting.**
- Discontinue the drug least critical to short-term health, e.g. can the individual tolerate a period off drug to evaluate change in event? Institute appropriate substitute drugs/regimen for the patient (in the case of ARVs) and observe response to the change.

- Follow up and document properly the observed adverse reactions, intervention and outcome of the intervention in the NAFDAC Pharmacovigilance Form (*provide details using additional paper if necessary*).
- k) After the De-challenge; If the symptoms (and signs) were abated:**
- ADR is probably due to the initially suspected drug(s)
  - Follow up and document properly the observed adverse reactions, intervention and outcome of the intervention in the NAFDAC Pharmacovigilance Form (*provide details using additional paper if necessary*).
- l) After the De-challenge; If the symptoms (and signs) were not abated:**
- Re-evaluate the patient for the severity of the adverse drug reaction
  - Consider stopping all medications using approved guidelines.
  - Stabilize and manage the patient as appropriate.
  - Continue to monitor the patient condition
  - Follow up and document properly the observed adverse reactions, intervention and outcome of the intervention in the NAFDAC Pharmacovigilance Form (*provide details using additional paper if necessary*).
- m) If there are no new ADR(s)**
- Continue case management of the patient
- n) Ensure strict adherence to the standard operating procedures (SOPs) for detecting, evaluating and reporting Adverse Drug Reactions in ART Clinical Settings**
- o) Establish a functional hospital - based pharmacovigilance committee (with a term of reference) in all ART centers to coordinate ARV clinical pharmacovigilance. This committee is very vital to the success of pharmacovigilance and management of ADRs in a clinical setting.**

## 5.4 PREVENTION OF ADR

Some ADRs cannot be prevented but most

- ADRs can be prevented by following the principles of rational use of medicines:
- Use of few drugs, whenever possible
- Use drugs that you know well
- Do not change therapy from known drugs to unfamiliar ones without good reason
- All patients commencing ARV should be properly counseled on the ADRs related to medication and what to do when it occurs or suspected. The healthcare provider should be very knowledgeable on this and pass the following information to the patients:
  - ✓ Adverse effects of antiretroviral agents can occur and may be a cause of therapy change, non-adherence, and treatment failure.
  - ✓ The mild to moderate adverse effects of ARVs are those that resolved with time, or may be managed with symptomatic therapy.
  - ✓ Serious or disabling adverse effects may occur and may necessitate discontinuation of the suspected drug.

### **Manifestations of the known ADRs and what to do when the adverse effects occur:**

- Be vigilant (look for) to these adverse effects when initiating therapy and also during follow-up.



- Perform careful, comprehensive evaluations at baseline to set baseline for laboratory monitoring of adverse effects.
- Use text books and other reference materials providing information on drugs
- Strict adherence to the standard operating procedures (SOPs) for detecting, evaluating and reporting Adverse Drug Reactions in ART Clinical Settings
- Establishment of a functional hospital - based pharmacovigilance committee (with a term of reference) in all ART centers

## **5.5 PHARMACOVIGILANCE**

Pharmacovigilance is the science and activities relating to the detection, assessment, understanding and prevention of adverse effects of drugs or any other drug related problem. It is a continual monitoring or surveillance for unwanted effects and other safety related aspects of drugs that are already on the market and in clinical use. There are two methods of pharmacovigilance namely: active and passive pharmacovigilance methods. Active method involves the routine screening of all patients on treatment at every visit for signs and symptoms indicating possible adverse reactions, follow-up and documentation of all suspected adverse reactions observed after commencement of treatment. Passive method involves an unplanned voluntary communication of adverse reactions/ events in a patient on therapy with one or more drug products and depends on the discretion of the health care provider. It is pertinent for the health care professional to understand or be knowledgeable about the steps in recognizing adverse drug reactions and appropriate actions thereafter.

### **Steps to Recognize ADRs**

1. Take a proper history and do a proper examination of patient
2. Establish time relationships, as the time from the start of therapy to the time of onset of the suspected reaction must be logical
3. Carry out a thorough physical examination with appropriate laboratory investigations (if necessary)
4. Check the known pharmacology of the medicine

### **What Should Be Reported About ADRs?**

1. All serious or unexpected (unusual) ADRs that one suspects for established or well-known drugs
2. All suspected reactions, including minor ones for new drugs
3. If an increased frequency of a given reaction is observed
4. All suspected ADRs associated with drug-drug, drug-food or drug-food supplement interactions
5. ADRs in special fields of interest such as drug abuse
6. Drug use in pregnancy and during lactation

7. ADRs occurring from overdose or medication error
8. Lack of efficacy of a medication, or when suspected pharmaceutical defects are observed
9. Reactions suspected of causing death, danger to life, admission to hospital, prolongation of hospitalization, or birth defects.

All ADRs should be reported to the pharmacovigilance committee of the facility, using the pharmacovigilance form.

## 5.6 ARV DRUG INTERACTIONS

There are two groups of interactions:

- Non-ARV vs. ARV Drug Interactions
- ARV vs. ARV Drug Interactions

As a rule of thumb, most ARVs are metabolized by the Cytochrome P450 3A4 isoenzyme in the liver. Many other drugs are also metabolized by this enzyme and ARVs will either raise or lower these other drug levels and either be increased or decreased themselves by these interactions

**Table 5.3 Non-ARV vs. ARV Drug Interactions**

SN	Drug	Interaction	Action
1	<b>Rifampicin</b>	Decreases plasma level of all PIs by at least 75% (except ritonavir, which it decreases by 35%). Rifampicin also decreases plasma levels of EFV (25%), and NVP (37%) and DLV (96%).	Contraindicated with all PIs in general. Rifampicin can be used with EFV but the dose of EFV should be increased from 600 mg daily to 800 mg daily. It is not recommended that Rifampicin be used with NVP.
	<b>Rifabutin</b>	It reduces levels of all PIs and NNRTIs by 15 to 35%, except DLV that is reduced by 80%  Indinavir also increases Rifabutin and so rifabutin dose should be lowered	It should not be used with DLV  Rifabutin dosage should be reduced to 150 mg qod or 3x/week when

		<p>by up to 150 mg daily.</p> <p>LPV/r increases Rifabutin level by 300%</p> <p>ATV increases Rifabutin level by 250%</p> <p>EFV reduces Rifabutin level by 35%.</p>	<p>used with LPV/r, ATV or ATV/r</p> <p>Rifabutin dose should be increased to 450 mg daily when used with EFV</p>
	<b>Ketoconazole</b>	<p>It increases IDV level by 68%</p> <p>It increases SQV by 30%</p> <p>RTV increases its level by 300%</p> <p>APV increases ketoconazole level by 44% and ketoconazole also increases APV level by 31%.</p>	<p>IDV dosage has to be reduced from 800 mg to 600 mg T.I.D. if used concomitantly</p> <p>No dose adjustment needed when used concomitantly</p> <p>Dose of Ketoconazole must not exceed 200 mg daily if it must be used.</p> <p>No recommendations for dose adjustment yet.</p>
	<b>Fluconazole</b> can be used with PIs and NNRTIs without dose adjustments unlike Ketoconazole).	NVP levels increased by 110%	<p>Risk of hepatotoxicity. Monitor for NVP toxicity</p>

**Table 5.4 Important ARV vs. ARV drug interactions**

<b>Drug</b>	<b>Action</b>
<b>Ritonavir</b>	<p>It potentiates or increases plasma levels of NFV by 1.5 times and IDV by up to 5 times. Recommended booster combinations with ritonavir are:</p> <p>SQV 1000 mg / RTV 100 mg BD APV 600 mg / RTV 100 mg BD LPV/r - Co-formulated IDV 800 mg /RTV 100 mg BD</p> <p>It has no effects on plasma levels of NVP, DLV but increases EFV levels by 21% EFV increases RTV levels by 18%</p>
<b>Indinavir</b>	<p>It increases SQV up to 7 times, NFV levels by 80% and APV by 33%.</p>
<b>Amprenavir</b>	<p>APV decreases IDV by 38% and IDV also increases APV by 33%. There is no dose adjustment when both drugs are used together.</p>
<b>Nelfinavir</b>	<p>NFV increases IDV by 50%.</p>

## SECTION 6

### ANTIRETROVIRAL TREATMENT ADHERENCE

#### 6.1 INTRODUCTION

Adherence is a term used to describe the patients' behaviour of taking drugs correctly based on mutual agreement between the patient and health care provider: it involves taking

- the right drugs
- the right dose,
- the right frequency
- the right time

Adherence also means a patient attending all scheduled clinic visits. Adherence to ART is an essential component of individual and programmatic treatment success. Higher levels of drug adherence are associated with improved virological, immunological and clinical outcomes. Adherence rates exceeding 95% are necessary in order to maximize the benefits of ART. Adherence is crucial for delaying or avoiding the development of drug resistance and ensuring maximum durability of the first-line ARV regimen. The measures to ensure optimal adherence should be taken before commencement of therapy, at initiation and during therapy.

#### 6.2 ADHERENCE PRIOR TO INITIATING ART

The success of any adherence strategy depends on the education of patients before the initiation of ART, an assessment of their understanding of the therapy, and their readiness for treatment. Adherence counselling includes giving basic information on HIV, its manifestations, the benefits and side-effects of ARV medications, how the medications should be taken and the importance of not missing any dose. Peer counsellors and visual materials can be particularly useful in this process. Family support has also been shown to be beneficial in maintaining adherence

#### 6.3. ADHERENCE AT INITIATION OF ART

Consideration should be given to minimizing the number of pills, frequency of dosing, food restrictions, adjusting ARVs to the patient's lifestyle, and involving relatives, friends and/or community members, in adherence support.

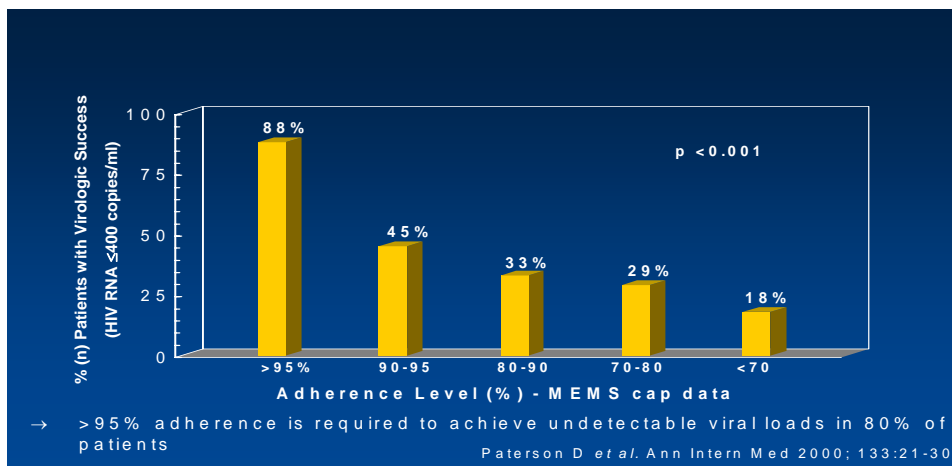
## 6.4 ADHERENCE DURING THERAPY

It is essential to continue with adherence counselling. This should involve adherence assessments during every visit, emphasis on importance of adherence and continuous involvement of relatives, friends, peers and/or community support personnel.

## 6.5 MEASUREMENT OF ADHERENCE

Virologic success of therapy is strongly dependent on adherence to therapy (Figure 6.1). Adherence in many studies is measured by expressing the number of doses taken as a percentage of the number of doses prescribed. For example if 20 doses are prescribed and 19 doses are taken adherence is 95%. This translates to missing one dose in ten days on a twice daily regimen. Other measurement methods include; patient self report, pharmacy drug pick-up and electronic methods (e.g. the MEMS cap)

**Figure 6.1 Correlations between Adherence and Virologic Success**



**Table 6.1 Factors known to improve Adherence**

The following factors have been associated with high adherence rates:

- Medications provided at no cost to the patient.
- Family, community members, or treatment-supporter engagement in adherence education.
- Family-based care if more than one family member is infected with HIV
- Continuous and effective adherence counselling.
- Knowledge and understanding of the disease.
- Drug regimen simplicity e.g. Fixed drug combination ( low pill burden)
- Less adverse effects

**Table 6.2 Factors Associated With Poor Adherence**

Poor patient-caregiver relationship

- High pill burden
- Forgetfulness
- AIDS Dementia Complex
- Depression
- Lack of patient education
- Inability of patients to identify their medications
- Drug toxicity
- Severe illness.
- Duration of treatment
- Complexity of the treatment
- Perceived benefits versus barriers
- Lack of social support
- Substance abuse
- Self-efficacy regarding adherence
- Cost of treatment
- Distance to facility

**Table 6.3 Strategies for Improving Adherence**

- Treatment education for patients and treatment partners
- Treatment-supporter involvement.
- Peer health education.
- Routine assessment and reinforcement of adherence during follow up
- Directly Observed Therapy -where possible
- Fixed dose combination
- Reminders (e.g. a cell phone, alarm clock)
- Convenient monthly packs (Using pill storage boxes.)
- Follow up before supplies are exhausted
- Positive feedback on health improvements
- Address adverse events
- Address life-style factors e.g. alcohol abuse
- Adapting therapy to the client's lifestyle.
- Support groups
- Improved social support.

## SECTION 7

### PREVENTIVE MANAGEMENT OF HIV/AIDS

There are five major strategies for prophylactic management of HIV/AIDS, one of which is PMTCT and discussed in greater detail in another document. The other four include ; Post-Exposure Propylaxis, Isoniazid Prophylactic Treatment of TB, Cotrimoxazole Prophylactic Treatment of OIs and Treatment of STIs.

#### 7.1 POST-EXPOSURE PROPHYLAXIS

##### 7.1.1 Introduction

Post-Exposure Prophylaxis (PEP) refers to the use of ARVs to prevent HIV infection in persons exposed to potential risk of acquiring HIV infection. This applies usually to unexpected or accidental exposure to HIV either in the course of legitimate work as could occur among health workers who are vulnerable to needle stick injuries or contact with infectious body fluids. It also applies to sexual assault victims especially in cases where the HIV status of the perpetrator cannot be readily determined. Post-exposure prophylaxis is not recommended as prevention for HIV following casual consensual sexual intercourse due largely to the toxicity of the drugs.

Populations such as healthcare workers (HCWs), injection drug users (IDUs), and people engaging in unprotected sex are all at risk of being infected with HIV. Animal models show that after initial exposure, HIV replicates within dendritic cells of the skin and mucosa before spreading through lymphatic vessels and developing into a systemic infection. This delay in systemic spread leaves a "window of opportunity" for PEP using antiretroviral drugs designed to block replication of HIV. PEP aims to inhibit the replication of the initial inoculum of virus and thereby prevent establishment of chronic HIV infection.

Steps for effective PEP will usually include first aid, counselling, assessment of risk of exposure to the infection, HIV testing, and depending on the outcome of the exposure assessment, the prescription of a 28-day course of antiretroviral drugs, with appropriate support and follow-up.

##### 7.1.2 Post Exposure Prophylaxis for Occupational HIV exposure

There is evidence that, in the occupational setting, HIV transmission is significantly associated with deep injury, visible blood on the sharp instrument, procedures involving a needle placed in the source patient's blood vessel, and terminal illness in the source patient.

The following types of exposures may pose the risk of HIV transmission for health workers and should be considered for PEP:



- Needle-stick injury or injury with a sharp object that has been used on a HIV positive patient
- Mucosal exposure of the mouth, eye or nose by splashing body fluids
- Broken skin exposed to blood, blood stained body fluids or other infectious body fluids

### **Steps to take following a needle-stick injury or mucosal exposure**

In the event of an injury with a sharp object such as a needle or scalpel that has been used on a patient or in the event of a mucous surface being contaminated with blood or secretions from a patient the following steps should be followed:

- Do not squeeze or rub the injury site
- Allow blood or secretion to flow freely
- Wash exposed area immediately with soap and running water or antiseptic solutions such as 2% polyhexidine or 70% glutaraldehyde.
- After a splash to the eye or any other mucous surface, irrigate/rinse the exposed area immediately with water (preferably running water) or normal saline
- Report the exposure to a senior member of staff, supervisor or the PEP officer
- Evaluate the exposed person's eligibility for PEP
- If eligible, give antiretroviral drugs recommended for post-exposure prophylaxis immediately - possibly within 1 hour and at the latest within 72 hours of the exposure (persons presenting after 72 hours of the exposure should also be considered for PEP).

### **Evaluation for Post-Exposure Prophylaxis**

Evaluating exposed person's eligibility for HIV post-exposure prophylaxis involves assessing the following:

- timing of the potential exposure
- HIV status of exposed person
- the nature and risk of the exposure
- HIV status of the source of the potential exposure

### **Determination of Risk and ARV drugs for PEP**

The exposure should be classified as "low risk" or "high risk" for HIV infection as below:

#### **Low risk:**

- Solid needle - superficial exposure on intact skin
- Small volume (drops of blood) on mucous membrane or non-intact skin exposures
- Source is asymptomatic or viral load <1500 copies/ml

## High Risk:

- Large bore needle, deep injury, visible blood on device, needle in patient artery/vein
- Large volume (major blood splash on mucous membrane or non-intact skin exposures)
- Source patient is symptomatic, in acute sero-conversion and has high viral load

Immediately after exposure all exposed individuals should take PEP according to the assumed risk. Those of low risk should take 2-drug combination and those with high risk should take a 3-drug combination. Where the risk cannot be ascertained, a 2-drug combination should be used. If the preferred regimen is not available, it is better to administer an alternative regimen than to wait.

## Actions following HIV testing in PEP

Depending on the results of the HIV tests the following actions should be taken:

- If the source person is HIV negative:
  - no PEP is necessary for the exposed health worker UNLESS there is suspicion that the source is newly infected, and in the “window period” of sero-negativity.
- If the exposed health worker is HIV positive
  - no PEP is necessary
  - the health worker should be referred for further counselling and long-term management
- If the health worker is HIV negative and the source patient is HIV positive,
  - give ARV for a period of four weeks;
  - repeat health worker’s HIV test at 3 and 6 months after the initial test.
  - should the health worker seroconvert during this period, provide appropriate care and counselling, refer for expert opinion and long term management.
- If it is not possible to determine the HIV status of the source patient
  - assume that the source patient is positive and proceed according to guidelines above

**Table 7.1 Recommended Drug Combinations for PEP**

Recommended 2-Drug Combinations	Recommended 3-Drug Combinations
ZDV (300 mg twice daily) plus 3TC (150 mg twice daily) or ABC 450 mg twice daily.  TDF (300mg once daily) plus 3TC or FTC (300mg once daily)	Preferred combination is: 2 NRTI plus LPV/RTV (400 mg/100 mg twice daily) or EFV (600 mg once daily) may be used as an alternative if NNRTI resistance is not suspected in source patient.

	<p>Nevirapine should never be used for PEP as the risks of fatal hepatotoxicity outweigh the risk of HIV infection.</p> <p>Any of the 2-drug combinations plus Protease Inhibitor or EFV (EFV should be avoided if pregnancy is suspected)</p>
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The chosen regimen is continued for 28 days or until the results of HIV tests for the source patient is known to be negative. In areas of high HIV incidence, a significant number of HIV positive individuals may be in the “window period” of acute infection and test antibody negative. A high level of suspicion for acute HIV infection should therefore be maintained and PEP continued if the source patient is suspected to have been recently infected with HIV even if the HIV rapid test is negative.

Guidance should be given on risk reduction measures until the exposed person is known to be HIV negative.

It is important to consider the risk of exposure to Viral Hepatitis when evaluating persons for post exposure management.

**Table 7.2 Recommended Schedules of Investigations Following Exposure**

Period	Recommended Investigations
Baseline	<ul style="list-style-type: none"> <li>- HIV screening</li> <li>- Full blood count</li> <li>- Liver function test</li> <li>- Renal function test</li> </ul>
Two weeks	<ul style="list-style-type: none"> <li>- Full blood count</li> <li>- Liver function test</li> <li>- Renal function test</li> </ul>
Six weeks	<ul style="list-style-type: none"> <li>- HIV screening</li> </ul>
Three months	<ul style="list-style-type: none"> <li>- HIV screening</li> </ul>
Six months	<ul style="list-style-type: none"> <li>- HIV screening</li> </ul>

### 7.1.3 Post-sexual exposure prophylaxis

These findings related to the benefits of PEP following occupational exposure to HIV have been extrapolated to other types of HIV exposure, including sexual assault. If HIV exposure has occurred, initiation of PEP as soon as possible after the exposure likely increases benefit. Although a definitive statement of benefit cannot be made regarding PEP after sexual assault, the possibility of HIV exposure from the assault should be assessed at the time of the post-assault examination. The possible benefit of PEP in preventing HIV infection also should be discussed with the assault survivor if risk exists for HIV exposure from the assault.

The likelihood of the assailant having HIV, any exposure characteristics that might increase the risk for HIV transmission, the time elapsed after the event, as well as potential benefits and risks are all factors that will impact the medical recommendation for PEP and the assault survivor's acceptance of that recommendation. Determination of assailant's HIV status at the time of the assault examination will usually be impossible. Therefore, the health-care provider should assess any available information concerning HIV-risk behaviors of the assailant(s) (e.g. a man who has sex with other men and injecting-drug or crack cocaine use), local epidemiology of HIV/AIDS, and exposure characteristics of the assault.

When an assailant's HIV status is unknown, factors that should be considered in determining whether an increased risk for HIV transmission exists include

- whether vaginal or anal penetration occurred
- whether ejaculation occurred on mucous membranes
- whether multiple assailants were involved
- whether mucosal lesions are present in the assailant or survivor
- other characteristics of the assault, survivor, or assailant that might increase risk for HIV transmission

If PEP is offered, the following information should be discussed with the patient:

- the proven benefit and known toxicities of ARV;
- the close follow-up that will be necessary
- the benefit of adherence to recommended dosing
- the necessity of early initiation of PEP to optimize potential benefits (as soon as possible after and up to 72 hours after the assault)

In post-sexual assault PEP, ARVs should be administered as in the case of occupational exposure to HIV. In this circumstance, a three-drug regimen should be used. As with all cases of sexual assault, it is important to arrange for continuous counselling and support for the victim.

## 7.2 ISONIAZID PREVENTIVE THERAPY (IPT).

Isoniazid Preventive therapy (IPT) is the use of isoniazid in HIV positive individuals with latent TB infection in order to prevent the development of active TB disease. Available evidence shows that TB is the most common opportunistic infection and cause of death among PLHIVs and that IPT is effective in preventing it.

IPT is not the treatment for active TB. It is therefore necessary to exclude active TB before commencing a patient on IPT.

For a patient to benefit from IPT, he/she must:

1. Be HIV positive.
2. Not have active TB.
3. Be motivated to adhere to treatment.

### Steps to Initiating IPT

4. Verify/Confirm HIV Status.
5. Counsel on TB/HIV interactions.
6. Exclude active TB.
  - Ask the patient about Cough, Chest Pain, Fever and Night Sweats.
  - Check for Lymph Node enlargement
  - Those with above symptoms/signs should not be considered for IPT.
  - Do sputum examination
  - If smear positive refer/commence short course chemotherapy for TB (DOTS, preferably).
  - Those with negative sputum results should be referred to medical officers for confirmation of diagnosis.
  - If signs and symptoms absent, do chest X-ray,
  - If no active TB confirmed commence IPT.

Dosage of INH for IPT is 5mg/kg/day to a maximum of 300mg/day for 6 months. Dispense on monthly basis.

7. Counsel patient on:
  - Treatment adherence
  - Side effects of INH - peripheral neuropathy
  - Immediate recognition and reporting of signs and symptoms of active TB

If patient develops active TB during the course of IPT, discontinue IPT and refer/commence Anti -TB (DOTS).

8. During the monthly visit, monitor the patients for:
  - Signs and symptoms of active TB.
  - Side effects. The most common side effect is peripheral neuropathy (numbness/tingling sensation of extremities). In addition allergic skin eruptions and Jaundice can occur.

If numbness/tingling/burning sensation is present give Pyridoxine 100mg daily.

If jaundice develops, discontinue IPT and refer to Medical Doctor for assessment.

9. Complete necessary INH prophylaxis register and INH appointment Card.:

10. Review after 2 years.

### 7.3 COTRIMOXAZOLE PREVENTIVE THERAPY (CPT)

Cotrimoxazole preventive therapy (CPT) is use of Cotrimoxazole for the prevention of several secondary bacterial and parasitic infections in HIV infected individuals. It helps to improve the quality of life and reduce the rate of death among HIV infected patients.

For a patient to benefit from CPT, he/she must be:

- A PLWA with symptomatic HIV.
- Asymptomatic PLHIV with CD4 count  $<350$  cells/mm<sup>3</sup>
- Be motivated to adhere to treatment.
- A PLHIV with active TB at any CD4 count .
- A Pregnant PLHIV after the first trimester.
- Any child born to an HIV-infected woman should be offered CPT from 6 weeks of age.
- Any child identified as HIV-Positive within the first year of life.

#### Steps to initiating CPT.

- Verify HIV status.
- Take medical history
- Conduct physical examination.
- Counsel on OIs in HIV infection.
- Treat pre-existing OIs. (Refer to guideline on management of opportunistic infections)
- Screen for contraindications to CPT.
- ✓ Known allergy to sulphur-containing drugs (which includes cotrimoxazole and sulphadoxine-pyrimethamine) First trimester Pregnancy.
- ✓ Kidney or Liver disease.
- ✓ Seriously ill patients. (Refer for specialized medical care).

Counsel patient on:

- Drug adherence,
- Side effects of Cotrimoxazole include:
  1. Skin eruptions, which may be severe (Stevens Johnson syndrome)
  2. Nephritis
  3. Hepatitis.
  4. Anaemia and other signs of bone-marrow suppression

## 5. Hyperkalaemia

### Commence CPT

#### **Dose of Cotrimoxazole (CPT) in the Adult**

Cotrimoxazole 960mg daily (two single strength tablets) until CD4 count  $>350$  cells/mm<sup>3</sup> for 6 months

### Monitoring and follow-up

- Adults should be reviewed monthly initially, and then three monthly thereafter if the medications are tolerated.
- Laboratory monitoring of adults should take place every six months or when clinically indicated. This should include haemoglobin and white cell count.
- Replenish patient's drug during review.
- Assess for ART

### When to discontinue CPT:

- Occurrence of side effects.
- When patient attains CD4 count  $>350$  cells/mm<sup>3</sup> for at least 6 months

## SECTION 8

### CARE AND SUPPORT

#### 8.1 KEY ELEMENTS OF CARE AND SUPPORT

The key elements of a strong care and support program are interventions that lead to:

**1. Early identification of HIV-infected persons, linkage, and retention in care:**

Most HIV-infected persons enter HIV treatment and care programs with advanced disease. There is a need to identify persons earlier in their illness and to create effective linkage and retention mechanisms to maximize the benefits of HIV treatment and care.

**2. Reduction in HIV-related morbidity and mortality:**

There is an array of important interventions that reduce morbidity and mortality for persons with HIV. Because of proven effectiveness and cost-effectiveness for reducing mortality, provision of cotrimoxazole prophylaxis (CPT) in accordance with WHO recommendations and TB identification and treatment are very high priority interventions. Other services (prevention of malaria, safe water and hygiene, food and nutrition, and others) that can reduce early morbidity or mortality outcomes are discussed in this document.

**3. Improved quality of life:**

The assessment and management of pain and other symptoms and provision of appropriate psychological, social, and spiritual support are important elements in improving the quality of life for HIV-infected persons, their family members and other contacts affected by HIV disease. In addition to reducing morbidity/mortality, the interventions listed in bullet (2) above also contribute to improved quality of life.

**4. Reduction in transmission of HIV infection from HIV-infected to uninfected persons:**

Prevention with positives (PwP) programming integrated into HIV care services, is critical for reducing the risk of ongoing HIV transmission.

#### 8.2 NUTRITION

Good nutrition contributes to the well-being of the person with HIV/AIDS at all stages of the disease and may even prolong life. It is important to have nutritional counselling as soon as the diagnosis of HIV is made and at subsequent contacts with care providers. On one hand, HIV/AIDS increases the energy requirement while on the other hand, it causes a reduction in food intake. The combination of the two effects increase the demand for balanced nutrition in patients with HIV/AIDS in order to stabilise weight, prevent muscle loss, replace lost nutrients, and allow patients to better deal with medications.



## **Nutritional Guide for People Living With HIV/AIDS**

- Eat a variety of foods
- Make carbohydrates which are high in energy the basis for each meal
- Eat a lot of fresh fruits and vegetables to supply vitamins
- Daily protein intake e.g. eggs, meat, fish, milk, beans, groundnuts and soya beans
- Include fats and oils in meals to provide energy
- Use salt sparingly
- Drink lots of water
- Do not drink alcohol
- Food, drinking water and beverages should be hygienically prepared

### **Strategies for improving and monitoring nutritional status**

- Close weight monitoring
- Nutrition education and counselling
- Prompt treatment of OIs (mouth disorders, diarrhoeas etc)
- Nutritional Support (macro- and micronutrients)
- Economic empowerment

### **Indications for therapeutic nutritional support**

- Patients with malnutrition (body mass index <18%, micronutrient deficiency etc)
- Inability to eat

## **8.3 IMMUNIZATION**

Immunization is an effective way of preventing diseases.

- Patients with HIV infection are at increased risk for a variety of infections that can be prevented by using available vaccine preparations.
- Immunizations should be given as early as possible in the course of HIV infection for optimal effect. Patients with relatively preserved immune function are more likely to have a favourable response to vaccine challenge than those who are significantly immunocompromised.
- Initiation of combination ART in patients with advanced HIV infection may improve the immunologic response to vaccine preparations.

- In general, live attenuated vaccines, such as yellow fever, mumps, rubella (MMR) and varicella-zoster virus are avoided in HIV-infected adults with low CD4 cell counts. However, killed or inactivated vaccines are considered safe in all patients.
- Influenza and other vaccine preparations have been shown to transiently stimulate HIV replication and increase the viral load. This phenomenon does not appear to have an impact on overall disease progression.

**Suggestions on immunization for adults/adolescents infected with HIV**

- Pneumococcal vaccine may be administered to all HIV-infected patients with CD4 cell count > 200 cells/mm<sup>3</sup>. A booster dose is recommended five years after immunization.
- Hepatitis B immunization could be given to patients who have a negative screening serological test for this infection.
- Hepatitis A vaccine could be administered to people who practice anal sex, their partners and to patients with chronic hepatitis C infection.
- Influenza vaccine is important in individuals with historical risk factors for exposure to the virus and the presence of conditions associated with increased morbidity from influenza infection.
- Routine use of hemophilus B vaccine is not recommended, but it should be administered in asplenic patients and to those with history of recurrent hemophilus influenza infection.

**Table 8.1 Recommended Immunization Schedule in HIV infected Adults**

Immunizations in HIV-infected Adults			
Vaccine	Status	Dose/Regimen	Comments
Pneumococcal vaccine	Recommended	0.5 ml IM	Consider re-vaccination five years after initial dose.
Hepatitis B vaccine	Recommended in selected settings; see comments	Engerix B 20 ug or Recombivax HB 10 ug IM given at 0, 1, and 6 months	Administer to patients without serologic evidence of past or present hepatitis B infection. Vaccinated patients should be tested for HBsAb response after the third dose; non-responders should receive booster

			injections.
Hepatitis A vaccine	Recommended in selected settings	1 ml IM with re-vaccination in 6 to 12 months	Administer to homosexual or bisexual men and to women who practice receptive anal intercourse. Serologic testing prior to vaccination is not necessary.
Hemophilus influenzae type B vaccine	Consider in selected settings	0.5 ml IM	Administer to asplenic patients and those with history of recurrent hemophilus influenza infection.
Influenza vaccine	Recommended in selected settings	0.5 ml IM annually	Administer to patients at high risk for exposure to or morbidity from influenza. There is evidence that the vaccine may transiently promote HIV replication.
Tetanus toxoid	Same as for patient without HIV infection	0.5 ml IM	TT booster is recommended every 10 years.
Meningococcal Vaccine	Recommended	0.5ml IM	Revaccinate after 3- 5 years

#### 8.4 HIV/AIDS PALLIATIVE CARE

HIV/AIDS Palliative Care is patient and family-centered care. It optimizes the quality of life of adults and children living with HIV through the active anticipation, prevention, and treatment of pain, symptoms and suffering from the onset of HIV diagnosis through death. It also provides the routine monitoring that is essential to determining the optimal time to initiate ART—but palliative care continues during and after the initiation of treatment. Palliative care includes and goes beyond the medical management of infectious, neurological or oncological complications of HIV/AIDS to comprehensive management of symptoms and suffering throughout the continuum of HIV disease.

## **Objectives of Palliative Care:**

- Provides relief from pain and other distressing symptoms
- Affirms life and regards dying as a normal process
- Integrates psychological and spiritual aspects of patient care
- Enhances the quality of life, and may also positively influence the course of illness
- Offers a support system to help the patients live as actively as possible until death
- Offers a support system to help the family cope during the patient's illness and in their own bereavement

Palliative care is applicable early in the course of illness, in conjunction with other therapies that are intended to prolong life, such as ART, cancer chemotherapy or radiation therapy, and includes those investigations needed to better understand and manage distressing clinical complications.

## **Dimensions of Palliative Care**

Effective HIV/AIDS palliative care for the patient and family consists of the following dimensions:

- Medical/physical aspect: includes pain and symptoms management, OI treatment and prevention, ART including monitoring for toxicity, end-of-life care, basic nursing care, and nutritional support
- Psychological aspect: includes counselling for HCT, different mental health conditions, emotions, OI treatment and prevention, ART adherence and coping with stigma and discrimination; support for status disclosure; ; bereavement and grief support ; psychiatric manifestations of HIV; and care for caregivers
- Social/legal/ethics/Human Rights aspect: Includes support for material sustenance such as food; linkage to appropriate community resources; stigma and discrimination reduction schemes; issues of inheritance; poverty alleviation and income generating activities; right to care, treatment and support; ensuring confidentiality; informed consent; autonomy; disclosure issues; documentation and management of medical records and decision to forgo therapy
- Spiritual: entails life review and assessment; and spiritual counselling to address hopes, fears, doubts, guilt and other negative feelings; dealing with issues of forgiveness and life-completion tasks; spiritual counselling for end-of-life support including life review and life closure and grief and bereavement.

The care required by any individual and family depends on the phase of illness and its manifestations.

Palliative care is concerned with anticipating and identifying problems, needs and issues confronting a PLHIV and the family, assessing the scope and impact, and instituting appropriate interventions. Services are needed to deliver care in various settings along the illness continuum.

## **8.5 CARE OF THE CAREGIVER**

In addition to challenging the structures of communities and existing health services, the HIV/AIDS epidemic has also placed significant emotional and psychological burden on health care providers and family members. It is pertinent to enhance care of the care givers to promote their quality of life. These can be achieved through provision of adequate attention to the individuals and groups. Emphasis should be on the provision of education, advocacy, community support services and referral services. In addition, information on type and sources of care available should be widely disseminated.

Commensurate motivation is needed for health workers, community workers and volunteers. This will help personnel to deliver care effectively and efficiently and prevent stress and burnout. In addition, more personnel will be attracted to the service.

## **8.6 UNIVERSAL SAFETY PRECAUTIONS**

All health facilities in the private and public sector should adopt a policy for the prevention of accidental occupational exposure to blood borne pathogens. Since it is not possible for a health worker to know when a patient's body fluids are infectious, standard precautions should be used with all patients in the health care setting, regardless of their infection status. This will also eliminate the contentious issue of some health workers insisting on knowing their clients' HIV status before providing them much needed care, especially when such care is of a surgical nature.

Minimum Standards of Universal Safety Precautions to be observed by health workers include:

- Routine hand washing with soap and water before and after contact with any patient
  - This simple procedure eliminates micro-organisms from the skin
  - Should be carried out as routinely performed by surgeons and theatre nurses, i.e. washing and rinsing each arm in turn from the hand to the elbow and preventing flow of water in reverse direction

- Dry each arm with single-use paper/cloth towel or let hand drip dry from hand to elbow
- Use of barrier precautions
- ✓ Wear disposable gloves to empty bedpans or urinals, clean up spills of blood, vomit, urine, or bowel movements, and to do any invasive procedure such as drawing blood or setting an IV line.
- ✓ Health workers to cover cuts, bruises, and rashes on their bodies with adhesive plaster or bandages
- Safe handling and disposal of sharp instruments and equipment, including needles and syringes
- ✓ Disposable needles and syringes should be used only once
- ✓ Do not recap needles after use
- ✓ Discard used disposable needles and syringes in a puncture-resistant container (this could be improvised). This container must be clearly marked as sharps disposal container, even if improvised
- ✓ Burn the container in an incinerator or pit.

Health facilities owe their employees the responsibility of providing materials for universal precautions. The minimum materials/equipment that each health facility should provide includes:

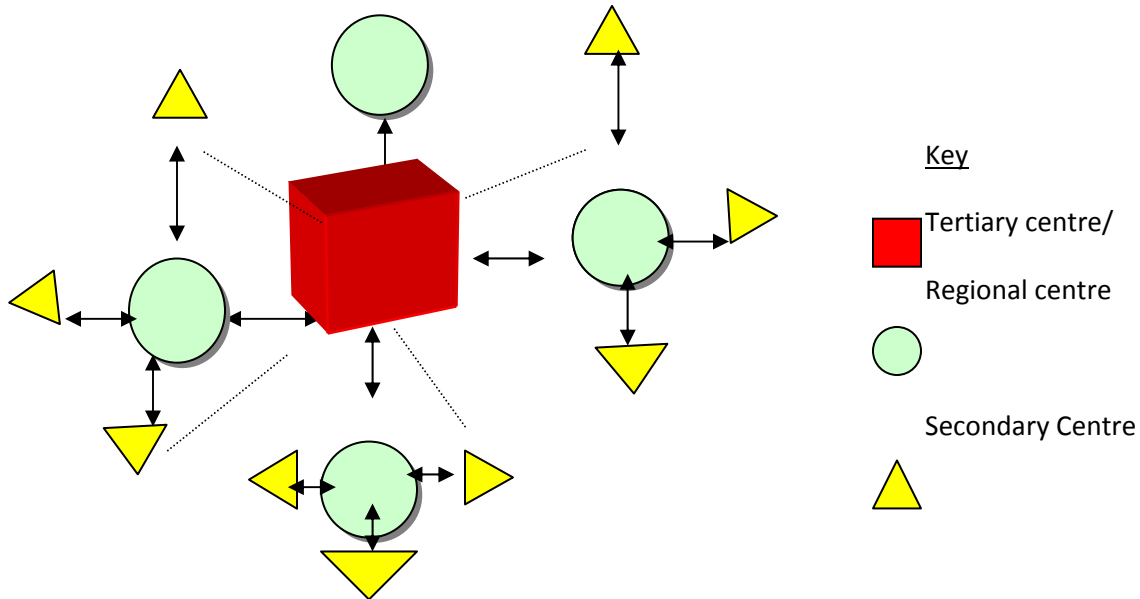
- **Liquid soap from a dispenser or container**
- **Running water or a bucket with tap kept full with clean water or a ladle for dipping, if running water is not available**
- Single-use towels (paper towels, or cloth towels that will be used once and laundered). If not available, hands should be air-dried.
- Materials to educate personnel on susceptibility to HIV infection and means of preventing such.

## **8.7 LINKAGES, NETWORKS AND REFERRAL SERVICES**

### **Definition**

Referral is the process by which client needs for treatment, care and supportive services are assessed and prioritized, and clients are provided with assistance in accessing such services. Referral should also include proactive actions necessary to facilitate initial contact with treatment, care and support service providers. Clients should be referred to services that are responsive to their priority needs.

**Figure 8.1 Hub and Spoke Network Model Care**



### **The Hub and Spoke Model of ART Service Delivery**

This describes the relationship between different levels of the health care delivery system in the delivery of HIV/AIDS services especially ART.

The Tertiary Health centres will usually serve as the hubs in the model (Fig 8.1). These centres of excellence currently serve as domicile points for specialized services such as laboratory (discordant screening confirmation, hepatitis B and C screening, viral load testing, DNA PCR etc) and care and treatment associated with complications of HIV infection. In the model, the centres will continue to provide these specialized services but will have established linkages with several secondary facilities within a network where patients and or laboratory samples can be referred to for specialized testing and services when the indications for such arise.

### **The Spokes**

In the model the secondary facilities serve as spokes from the tertiary facilities and at the same time serve as hubs for the primary level of care. They will provide a different level of specialized services like blood chemistries, haematology, microbiology, and chest X-rays. They will also have clearly defined pathways to tertiary centres when further treatment, care and laboratory support is indicated.

With the scale up of HIV services to the primary health care level and private health institutions/faith-based facilities in communities, basic treatment, care and laboratory support will be available to patients and families in their communities. Services that may be provided at this level include HCT, ARV re-fill, adherence counselling, treatment of simple opportunistic infections (OIs) and appropriate linkages back to secondary and/or tertiary care services as needed.

The routine referral channel is primary to secondary and secondary to tertiary and vice versa. There may be situations, however, where the primary may refer directly to the tertiary, or the tertiary may refer directly to the primary. This may be the case in certain geographical situations (e.g. closer proximity of primary to tertiary), certain staffing situations (e.g.

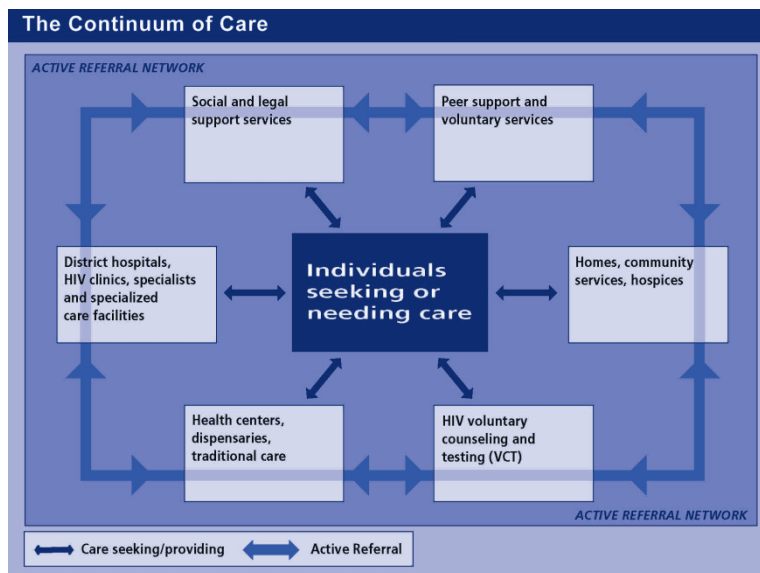
manpower limitations and clinic capacity), and special laboratory needs (e.g. indeterminate screening results). This is depicted with the broken lines in the figure above.

To ensure easy movement of patients and samples along this pathway, strong linkages must be developed between the various levels of care. Clearly defined procedures for referral up or down the levels of care are to be developed to ensure appropriate patient access to services and decreased loss to follow up. There must be standardized patient referral and tracking tools for proper management.

### Patient Linkages to Support Services within and Outside of the Health Care Setting

The following diagram depicts the variety of services provided to PLHIV and their families by the different caregivers and service providers. The recognition of needed services offers prompt access by PLHIV and their families to these services. It is premised on a functional referral system at all levels of care as described above with linkages and partnerships, requiring the care-providers to have a working knowledge of the locations of other needed resources and services.

Figure 8.2



Source: National Guideline on Palliative Care, Federal Ministry of Health (2006)

### Typical Referral Needs

Clients should be referred for services that are:

- responsive to their priority needs
- appropriate to their
  1. culture,
  2. language,
  3. spirituality,
  4. gender,



5. sexual orientation,
6. age,
7. developmental level

### **Clinical services.**

This will include provision of medical services for HIV-infected clients for the purposes of:

- Clinical evaluation for client management
- Prevention and treatment for opportunistic infections and HIV related conditions
- Early identification of communicable diseases such as TB, STIs, and hepatitis and appropriate referral of such clients for treatment. This will be handled by the primary, secondary and tertiary levels of care.

### **Partner counseling and referral services (PCRS).**

Persons with HIV-positive test results should receive or be referred to services to help them notify their partner(s) regarding their HIV sero-status and how to encourage their spouse to access counseling, testing and referral (CTR) services.

### **Reproductive health services**

Female clients who are pregnant or of childbearing age should receive or be referred for reproductive health services. HIV-infected pregnant women will require the provision of education, prevention counselling and PMTCT services according to national guidelines.

### **Prevention and treatment of drug or alcohol abuse**

Clients who abuse drugs or alcohol should receive or be referred to substance or alcohol abuse prevention and treatment services.

### **Mental health services**

Clients who have mental illness, developmental disability, or difficulty coping with HIV diagnosis or HIV-related conditions should receive or be referred to appropriate mental health services.

### **Social/Legal support services**

Clients who test positive may require legal and/or social services for counseling on how to prevent or deal with discrimination in employment, housing, and public accommodation.

## **Other HIV prevention and support services**

Other client needs may be addressed through other HIV prevention and support services such as education materials, support with housing, food, employment, transportation, child care, domestic violence, and legal services. Peer support and voluntary services are essential in this regard. Addressing these needs can help clients access, accept and adhere to medical services offered. It also helps them in the adoption and maintenance of positive attitudinal and behavioural change with a view to reducing the risk for HIV acquisition and transmission.

## **Prevention with Positives (PwP)**

- This provides prevention counselling, follow up and subsequent referral where necessary for clients with needs that affect their ability to adopt and sustain positive behavioural change with a view to reducing their risk for acquiring and/or transmitting HIV infection. PwP activities include short term and ongoing behavioural counseling to reduce high-risk behaviours, provision of condoms, attention to risks imposed by alcoholism and use of other drugs, and screening and treatment of sexually transmitted infections at every contact with the care provider.

## **Private Sector Involvement**

### **Definition and scope of private sector involvement**

The private sector is a dominant stakeholder and includes private health practitioners, FBOs, NGOs, corporations/industries, and individuals. Private sector collaboration is essential because patients access care in both private and public facilities. Services provided by the private sector will cover HCT, PMTCT, ART, Palliative care, training, income-generating activities, provision of micro finance, food security, etc. Private sector participants should display the type of services provided within the facility

### **Criteria for Private Sector participation**

Private sector participants should fulfill the following criteria:

- Register service with appropriate government agency
- Adopt a unified M & E plan including use of standardized tools for data collection and data obtained must be reported to the national M & E body regularly as requested by the coordinating body.

- Promote and display government regulations on exemption from fees relevant to HIV/AIDS
- Be open to regular inspection and visitation by appropriate bodies
- Ensure training and re-training of staff
- Have a minimum package of available services

**Table 8.2 Minimum Package of Care by Health Facility**

*This summarizes the minimum package of care services that should be available at the various levels of care*

Primary level	Secondary level	Tertiary level
<ul style="list-style-type: none"> <li>• HCT</li> <li>• Routine ARV-re-fill</li> <li>• ARV Prophylaxis for PMTCT</li> <li>• Haemoglobin (Hb) /PCV</li> <li>• Prevention and treatment of OIs</li> <li>• Prevention and treatment of malaria</li> <li>• DOIS</li> <li>• Adherence counselling</li> <li>• Psycho-social counselling</li> <li>• Home-based care services</li> <li>• Nutritional support</li> <li>• Palliative care</li> <li>• HIV care (pre-ART)</li> <li>• M &amp; E</li> <li>• Linkage to secondary level</li> </ul>	<ul style="list-style-type: none"> <li>• HCT</li> <li>• Hb/PCV</li> <li>• E &amp; U, Creatinine, LFT</li> <li>• Hepatitis screening</li> <li>• CD 4 count estimation</li> <li>• X-ray,</li> <li>• ART</li> <li>• Prevention and treatment of OIs including TB</li> <li>• Prevention and treatment of malaria</li> <li>• Nutritional management</li> <li>• Adherence counselling</li> <li>• M &amp; E</li> <li>• Linkage to tertiary level</li> </ul>	<ul style="list-style-type: none"> <li>• HCT</li> <li>• Hb/PCV</li> <li>• E &amp; U, Creatinine, LFT</li> <li>• Hepatitis screening</li> <li>• CD 4 count estimation</li> <li>• X-ray</li> <li>• LFT</li> <li>• ART</li> <li>• Prevention and treatment of OIs including TB</li> <li>• Prevention and treatment of malaria</li> <li>• Nutritional management</li> <li>• Adherence counselling</li> <li>• M &amp; E Viral load</li> </ul>