# ACKNOWLEDGEMENTS

## SIXTH EDITION (UPDATED)

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# PREFACE

The first edition of the Guidelines for Antiretroviral Therapy (ART) was produced in 2002 to guide the provision of Antiretroviral Therapy to Persons Living with HIV (PLHIV) in Ghana.

It was revised by various technical teams in 2005, 2008, 2011 and 2014 to provide HIV care providers with the second, third, fourth and fifth editions respectively, in keeping with current evidence for best practice within a resource limited setting.

This sixth edition has been necessitated by the November, 2015 update of guidelines on the use of ART by the World Health Organisation (WHO). It reflects the new policy for every PLHIV to be put on ART irrespective of clinical stage or CD4+ count within the context of good clinical practice. Another important addition is the inclusion of second and third line regimen for clients who fail on therapy. The adolescent group (10-19 years) have been separated as a group with their treatment guidelines. A chapter has also been created to guide prophylaxis for opportunistic infections (OIs).

It is hoped that this document will serve as a clear guide for all who manage PLHIVs in Ghana.

Dr. Stephen Ayisi Addo
Programme Manager

## FOREWORD

HIV prevalence in Antenatal care clients in 2015 is 1.8% (Ranging from 1.2% in the Northern to 3.2% in Greater Accra region), compared to 2% amongst 15-49year olds (DHS 2014) and 1.6% in the general population. This prevalence reflects a 50% decline from 2003 (3.6%). In 2015 there were an estimated 274,562 Persons Living with HIV, nearly 60% of whom are women and 15% are children below 15 years (2015 Estimates). The provision of comprehensive care for Persons Living with HIV (PLHIV) using Antiretroviral Therapy (ART) in Ghana over a decade now has impacted greatly on the lives of many particularly those infected and affected by HIV.

As at end of 2015 there were 197 ART sites in the ten regions across the country and approximately 120,000 clients had ever been initiated since the inception of ART delivery in 2003. There are currently about 90,000 clients on ART. The unmet need for ART however is approximately 60% with low paediatric ART coverage (~30%).

With emerging new evidence in therapeutic outcomes world-wide and changing trends in the management of PLHIV, Ghana has made a major shift from ART initiation at WHO clinical stage 3&4 and or CD4 count of <500cells/$mm^3$ for all clients in line with the November 2015 World Health Organisation Treat All recommendations. Ghana has also adopted the global UNAIDS 90/90/90 aspirational targets in order to sustain the progress being made in the area of care for PLHIV towards ending the AIDS epidemic by 2030. This has necessitated the current review and revision of these national *Guidelines for Antiretroviral Therapy in Ghana*. This sixth edition is therefore in keeping with current global trends to fast track quality HIV prevention, treatment, care and support.

The edition focuses on the need for early initiation of ART for adults irrespective of WHO clinical staging and CD4 criteria, improvement in regimen choice for both adults and children including the introduction of a new third line regimen, increasing opportunities for early

HIV Sentinel Survey 2015 Report, NACP- Ghana Health Service
Demographic and Health Service 2014 Report
National HIV Prevalence and AIDS Estimation and Projections 2015 Report
National AIDS/STI Control Programme, Ghana Health Service data 2015
National Acceleration Plan for Paediatric HIV Services- Ghana (2016-2020)

identification and treatment of infected infants, emphasis on differentiated care and retention in care, emphasis on viral load monitoring, further guidance on managing treatment failure and HIV drug resistance monitoring.

These guidelines have been updated within the context of the health sector HIV Strategic Framework 2016-2020 and the National HIV and AIDS Strategic Plan 2016-2020. The guidelines are expected to ensure a rapid enrolment of currently existing and future clients in clinical care who continue to remain in the queue for ART due to limitations imposed by previous criteria and commodity unavailability. I have no doubt that with the needed resourcing of the health delivery system, implementing these guidelines fully will make positive impact on the lives of many who live with HIV, avert death in both adults and children, and certainly reduce the occurrence of new infections in accordance with national targets.

I wish to admonish healthcare providers to utilize the differentiated care mechanisms, service delivery innovations and task sharing opportunities to minimize the anticipated increased workload occasioned by these new guidelines. The overall benefit of the new initiatives must provide the needed satisfaction and motivation to all ART service providers to maintain their hard work in seeing the impact made in the lives of the citizens of Ghana towards a future generation free of AIDS.

**Kwaku Agyemang Manu**
**Hon. Minister of Health**
**Republic of Ghana**

## LIST OF ACRONYMS

| | |
|---|---|
| ABC | Abacavir |
| AFB | Acid Fast Bacilli |
| AFP | Alpha Fetoprotein |
| AIDS | Acquired Immune Deficiency Syndrome |
| ALT | Alanine Aminotransferase |
| ANC | Antenatal Care |
| ART | Antiretroviral Therapy |
| ARVS | Antiretroviral |
| ATV | Atazanavir |
| ATV/r | Atazanavir boosted with ritonavir |
| AZT | Zidovudine |
| BUE | Blood Urea and Electrolytes |
| $CD_4$ | $CD_4$ cells- $T_4$ helper cells |
| DRV | Darunavir |
| DRV/r | Darunavir boosted with ritonavir |
| DNA | Deoxyribonucleic Acid |
| DTG | Dolutegravir |
| FBC | Full Blood Count |
| FHI | Family Health International |
| FTC | Emtricitabine |
| GAC | Ghana AIDS Commission |
| GFATM | Global Fund for AIDS Tuberculosis and Malaria |
| GHS | Ghana Health Service |
| HAART | Highly Active Antiretroviral Therapy |
| HB | Haemoglobin |
| HBsAb | Hepatitis B surface Antibody |
| HBsAg | Hepatitis B surface antigen |
| HBIg | Hepatitis B Immunoglobulin |
| HBV | Hepatitis B virus |
| HCC | Hepatocellular Carcinoma |
| HBCIgG | Hepatitis B core antibody |
| HEI | HIV-Exposed Infant |
| HIV | Human Immunodeficiency Virus |
| HTC | HIV Testing and Counselling |
| HTS | HIV Testing Services |
| IRS | Immune Reconstitution Syndrome |

## LIST OF ACRONYMS

| | |
|---|---|
| LFT | Liver Function Test |
| LIP | Lymphoid Interstitial Pneumonitis |
| LMIS | Logistics Management Information System |
| LPV | Lopinavir |
| LPV/r | Lopinavir boosted with ritonavir |
| MOH | Ministry of Health |
| NACP | National HIV/AIDS/ STI Control Programme |
| NFV | Nelfinavir |
| NGO | Non-Governmental Organisation |
| NNRTI | Non-Nucleoside Reverse Transcriptase nhibitor |
| NtRTI | Nucleotide Reverse Transcriptase Inhibitor |
| NRTI | Nucleoside Reverse Transcriptase Inhibitor |
| NTCA | National Technical Committee on AIDS |
| PCR | Polymerase Chain Reaction |
| PEG IFN α2a | Pegylated Interferon alfa-2a |
| PEP | Post-Exposure Prophylaxis |
| PI | Protease Inhibitor |
| PLHIV | People Living with HIV |
| PMTCT | Prevention of Mother- to- Child- Transmission |
| RAL | Raltegravir |
| RFT | Renal Function Test |
| RTV | Ritonavir |
| SOP | Standard Operating Procedures |
| STD | Sexually Transmitted Disease |
| STI | Sexually Transmitted Infection |
| TB | Tuberculosis |
| TDF | Tenofovir Disoproxil Fumarate |
| TC | Testing and Counselling |
| WHO | World Health Organisation |
| USAID | United States Agency for International Development |
| START | Support Treatment and Antiretroviral Therapy |
| 3TC | Lamivudine |

# CHAPTER 1

## PREAMBLE

### 1.1 INTRODUCTION

The first case of AIDS was reported in Ghana in 1986, since then there was a rise in prevalence till 2009 when it started declining. Between 2009 and 2012, Ghana tripled its coverage of antiretroviral medicines for pregnant women living with HIV, resulting in a 76% reduction in the number of new HIV infections among children – the highest reduction observed among the countries with a high burden of pregnant women living with HIV.

The linear trend analysis for the ANC prevalence since then shows a declining epidemic stabilizing below 2%. HIV prevalence in Antenatal care clients in 2015 was 1.8%. This ranges from 1.2% in the Northern region to 3.2% in the Greater Accra region. The Ghana Demographic and Health Survey (GDHS 2014) estimates prevalence among the general population as 2.0%. The overall national prevalence for 2015 is estimated at 1.6%[6]. In 2015 there was an estimated 274,562 Persons Living with HIV, 6.8% are children below 15 years and 56.3% are women.

Based on the 2015 National HIV Prevalence and AIDS Estimates & Projections Report, HIV population is projected to decline from 274,562 in 2015 to 264,660 in 2020.

Antiretroviral Therapy (ART) has been available in Ghana since 2003.The response to the epidemic included priority interventions which initially focused on promotion of safe sex, condom use, improved management of STIs, safe blood transfusion, infection prevention and control, nursing/clinical care and counselling, home based care and Prevention of Mother-To-Child Transmission (PMTCT). These interventions were geared towards reducing the number of new infections and improving the quality of life of Persons Living with HIV (PLHIV). The provision of Antiretroviral

[6] 2015 National HIV Prevalence and AIDS Estimates & Projections Report

Therapy in the health care system started in 2003 at two pilot sites in the Manya Krobo district. The number of treatment sites has increased from 2 in 2003 to 175 in 2013 and 197 as at end of 2015. The cumulative number of people with HIV infection initiated on ART as at December 2013 was 75,762 and 119,600 by end of 2015. The expansion of ART services has contributed significantly to the reduction of HIV-related morbidity and mortality. Ghana has adopted newly published 2015 WHO guidelines on ART with specific strategy to test and treat all HIV positive clients irrespective of $CD_4$ count and WHO clinical stage criteria and monitor clients with viral load testing.

The current National HIV Strategic Plan and Health Sector Strategic framework 2016-2020 has a goal of enrolling at least 90% of persons living with HIV on ART and achieve viral load suppression in 90% by 2020 in accordance with new UNAIDS 90/90/90 targets.

Antiretroviral therapy is a lifelong activity and distinctive strategies are necessary to ensure its effectiveness and prevent development of drug resistance.

## 1.2 HIV CARE SERVICES IN GHANA

HIV care services is a comprehensive care package that includes the provision of HIV Testing Services, Prevention of Mother to Child Transmission (HTS/PMTCT), ART, treatment of Opportunistic Infections (OI) and management of Sexually Transmitted Infections (STI). The package also provides the opportunity for Post-Exposure Prophylaxis (PEP). These services are available at all levels of the health delivery system and are supported by Community-based and civil society organisations who provide community mobilisation, risk communication, linkage to care and psychosocial support services.

To ensure the standardisation and quality of care for PLHIV, guidelines and manuals have been developed to guide service delivery. The following documents for HIV treatment, care and support are to be used as complementary documents to this one: National HIV and AIDS Strategic Plan 2016-2020, Ghana AIDS Commission, 2016.

Health Sector Strategic Framework for HIV and AIDS, MOH/GHS, 2016.
National Guidelines for Prevention of Mother To Child Transmission of HIV in Ghana', MOH/GHS, 2015
HIV Drug Resistance Plan 2014-2018.
National HIV/AIDS and STI Policy. Ghana AIDS Commission. February 2013.
Sexually transmitted Infections, Guidelines for Management. MOH/GHS, February 2013.
Guidelines for the Management of Opportunistic Infections and other Related HIV Diseases'. MOH/GHS
National Guidelines for the Development and implementation of HIV Counselling and Testing in Ghana, MOH
Antiretroviral (ARVS) Drugs Logistics Management Information System Guidelines. MOH/GHS, 2009.
NACP Logistics Management Information System, E-LMIS version 1.0 Manual, Ghana Health Service January 2009.
Logistics Management of Public Sector Health Commodities in Ghana, SOPs, MOH/GHS, 2010.
Manual on Nursing Care for People Living with HIV/AIDS, MOH/GHS
Implementation of TB/HIV Collaborative Activities in Ghana: Joint Programme Planning Policy and guidelines'. Ghana Health Service, March 2014.
Guidelines on Nutritional Care and support for People living with HIV and AIDS, Ghana Health Service, 2006.
Accreditation for Antiretroviral Therapy in Ghana: National Guidelines and Site Assessment Ghana Health Service. 2006.

In addition, requisite procedures and structures are in place to provide an enabling environment for the effective management of ART. There are also polices governing ARVS procurement and administration. These include:

- The Supply Chain Master Plan
- The National Quantification Guidelines for Health Commodities
- National accreditation criteria for ART to ensure all sites and staff providing ART are accredited

- A Policy directive on importation, sale and distribution of Antiretroviral Drugs
- Technical Working Group on ART to provide technical advice on ART and provide direction for the scale up of ART in Ghana

The establishment of ART sites in Ghana has followed the following process:

- Assessment and accreditation of sites
- Provision of guidelines and protocols to standardise treatment
- Training of all cadres of staff in ART and other support services
- Provision of adequate basic equipment and infrastructure
- Strengthening monitoring and evaluation systems (Logistics Management and Health Information System)
- Procurement of Logistics and Consumables

The current ART regimen outlined in this document is recommended for the treatment of all PLHIV in Ghana. Ghana uses triple combination of Antiretrovirals (Highly Active Antiretroviral Therapy). No mono or dual therapy shall be used in the treatment of PLHIV. ART in Ghana is free to all clients with valid National Health Insurance cover (NHIS), however absence of an NHIS card shall not be a barrier to treatment.

The National AIDS/STI Control programme is funded by the Government of Ghana with support from the Global Fund, US Government, Joint UN Team on AIDS and other development and corporate partners. This support is in the form of technical assistance, capacity building, and procurement of medicines, equipment, diagnostics and other logistics.

In order to ensure continuity of supply, assure the quality of formulations and minimise wastage, leakage, abuse and the development of drug resistance, the Ministry of Health has been mandated as the sole agency for the importation, and distribution of HIV and AIDS medicines and other related commodities in Ghana.

## 1.3 PURPOSE

The purpose of this document is to provide guidelines for use by care providers within the continuum of HIV prevention, treatment and care for all age groups and populations in Ghana.

## 1.4 OBJECTIVES

The objectives of this document are:

- To provide updated guidelines for ART based on current evidence.
- To standardize the provision of ART in-country
- To provide guidance on monitoring of ART – clinical, laboratory and adherence.
- To provide guidance on provision of comprehensive care and counselling in ART.
- To provide direction on procurement, logistics management and information on HIV and AIDS Commodities.
- To provide guidance on the documentation and reporting of key ART indicators.

# CHAPTER 2

## ANTIRETROVIRAL THERAPY IN ADULTS

### 2.1 INTRODUCTION

The proven effectiveness of Antiretroviral medications (ARVS),the simplicity or complexity of the regimen, the need for careful monitoring and adherence to therapy were considered in the formulation of ART regimen outlined in this guideline.

It is essential that specific services and facilities be in place before considering the introduction of ART into any health care setting. Sites shall undergo assessment, and be assisted to meet a set national criteria before accreditation to provide ART is given. However, accreditation may be suspended or withdrawn if a facility consistently fails to adhere to national standards.

The management of PLHIV is best achieved using a multidisciplinary team approach. The team should ideally comprise the following categories of individuals;

- Clinician/Prescriber
- Nurse
- Pharmacy staff
- Counsellor
- Nutritionist/dietician
- Social worker
- Laboratory staff
- Psychosocial support provider

The provision of comprehensive HIV care and the administering of ART aim at attaining the following goals:

a. The suppression of HIV replication, as reflected in plasma HIV concentration, to as low as possible and for as long as possible

[7]See National Assessment and Accreditation guidelines for Antiretroviral Therapy delivery

b. The enhancement or preservation of the immune function ($CD_4$ restoration), thereby preventing or delaying the clinical progression of HIV disease
c. Improvement in quality of life
d. Reduction in HIV related morbidity and mortality
e. Promotion of growth and neurological development in children.

## 2.2 INITIATION OF ANTIRETROVIRAL THERAPY

HIV infection is a chronic condition that requires lifelong therapy. It is therefore important that the team should ascertain that the client is willing, ready and able to sustain therapy as interruption of treatment will be detrimental to the health of the client. Interruption could lead to development of drug resistance and increase the likelihood of transmission of a resistant virus which would have further public health implications (see Counselling in chapter 7).

A comprehensive medical and social history, a complete physical examination and laboratory evaluation are required before ART can be initiated. This is aimed at:

- Confirming HIV infection
- Identifying past HIV related illnesses
- Identifying current HIV related illnesses requiring treatment
- Identifying co-existing medical conditions and pregnancy. This may influence the choice of therapy
- Assessing nutritional status
- Assessing capacity to adhere to treatment.
- Assessing clinical stage and $CD_4$ count for decisions on Co-trimoxazole prophylaxis

Where a client is found to have any opportunistic infection, it should be treated and ART initiated when the client is stabilised.

## 2.3 INITIATION CRITERIA

### 2.3.1 INCLUSION CRITERIA

**ART should be given to all confirmed HIV positive clients regardless of WHO clinical stage and at any $CD_4$ cell count.** As a priority, ART should be initiated in all adults with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and adults with $CD_4$ count ≤ 350 cells/mm3

### 2.3.2 CRITICAL ISSUES TO ADDRESS PRIOR TO INITIATION

For Antiretroviral therapy to be successfully initiated and client maintained on therapy, the following critical issues must be addressed:

1. Client motivation. - the client must show real interest and commitment before starting treatment. A client who is not motivated to start treatment must go through counselling until motivation is established.
2. Non-completion of at least 2 sessions of pre-treatment adherence counselling.

   **NB:** Discretion must be exercised in the case of pregnant women and children to enable early initiation.
3. Client presents with severe hepatic (Liver Function Tests (LFT) > 5 times the upper limit of normal) or end stage renal disease. Defer ART and refer to physician/specialist to manage and then re-evaluate for ART initiation when client improves.
4. Client cannot tolerate ART under any circumstance.

## 2.4 CLINICAL EVALUATION

A detailed clinical evaluation of the HIV-infected client is essential prior to initiating ART.

The aims of the evaluation are to:

- Identify past HIV related illnesses
- Identify current HIV related illnesses that will require treatment
- Identify co-existing medical conditions and pregnancy that may influence the choice of therapy
- Assess the clinical stage of HIV infection.

These can be achieved by:

- Taking a detailed medical and social history
- Carrying out a complete physical examination
- Conducting appropriate laboratory investigations.

The Medical History should include:

- Date of initial HIV diagnosis and type of HIV infection
- Current symptoms and concerns including a symptom screen for tuberculosis (See Appendix 4 for TB screening algorithm) and Hepatitis B and C
- Past Medical History including diagnosis of tuberculosis
- Drug history including treatment for TB and Hepatitis B
- Previous ARVS exposure
- Sexual history and past symptoms of STI
- Obstetrics and Gynaecological history including family planning
- Social history including family support systems and income.
- History of drug use.

The physical examination should have the following components:

- Client's weight and height
- Skin- looking out for the following
    - *Herpes Zoster* (old scars and new lesions)
    - *Herpes simplex*
    - *Molluscum contangiosum*
    - Kaposi's sarcoma
    - Pruritic Papular Dermatitis or Eruptions or Prurigo
    - Plane warts
- Oropharyngeal mucosa
    - Candidiasis
    - Oral hairy Leukoplakia
    - Mouth ulcers
    - Kaposi sarcoma
- Lymphadenitis/lymphadenopathy
- Respiratory and Cardiovascular system
- Genito-urinary system
- Gastrointestinal system
- Anorectal area for discharge, ulcers, enlarged glands and growths

- Nervous and musculo-skeletal systems including mental status, motor and sensory deficits
- Fundoscopy whenever possible for retinitis or papilloedema
- Detailed examination of Genital Tract for discharge, ulcers, enlarged glands and growths.

## 2.5 LABORATORY EVALUATION

The reasons for investigations are:

- Confirmation of HIV infection and type
  Initial laboratory evaluation should provide:

1. Confirmation of HIV infection and type
   ✓ Confirmatory HIV test (HIV1, HIV2, HIV1 and 2)
2. Viral load.
   ✓ This test should be done at six months after initiation of ART, one year and every year thereafter if client is virally suppressed at less than 1000 viral copies/ml.
3. Whether female clients are pregnant
4. The presence of opportunistic infections
5. The presence of co-morbid diseases

Further information on the client's baseline laboratory tests are as in the Table 2.1 below. Within the context of Good Clinical Practice, these baseline tests should not be a barrier to ART initiation. ART can be initiated while the lab tests are done after ART. Where a lab test is essential to guide decision for ART initiation, it must be secured by all means prior to ART initiation in line with Good Clinical Practice Principles.

Table 2.1 Baseline Laboratory Investigations

| | |
|---|---|
| Haematological test | Full blood count |
| Biochemical test | ▪ Blood Urea<br>▪ Electrolytes and Creatinine<br>▪ Liver Function tests<br>▪ Fasting Blood Sugar<br>▪ Cholesterol and lipid profile |
| Routine examinations | ▪ Urinalysis (Urine R/E)<br>▪ Stool R/E |
| Respiratory examinations | ▪ TB screening<br>▪ Gene Xpert<br>▪ Chest X-ray |
| Serological Test | ▪ Hepatitis B Surface antigen |
| Immunological test | ▪ $CD_4$ |
| *These tests are performed depending on signs and symptoms* | ▪ Histology on skin and lymph node biopsy<br>▪ Kidney biopsy<br>▪ Screening for STIs<br>▪ Pap smear, HPV DNA<br>▪ Abdominal Ultrasound |

## 2.6 RECOMMENDED ARVS AND ART REGIMEN

Table 2.2 below shows the recommended ARVS in Ghana.

**TABLE 2.2: RECOMMENDED ARVS IN GHANA**

| Nucleoside Reverse Transcriptase Inhibitors (NRTI) | Nucleotide Reverse Transcriptase Inhibitor (NtRTI) | Non - Nucleoside Reverse Transcriptase Inhibitors (NNRTI ) | Protease Inhibitors (PI) | Integrase Integrase Strand Transfer Inhibitors (INSTI) |
|---|---|---|---|---|
| Zidovudine (AZT/ZDV) | Tenofovir (TDF) | Nevirapine (NVP) | Ritonavir boosted Lopinavir (LPV/r) | Dolutegravir (DTG ) |
| Lamivudine (3TC) | | Efavirenz (EFV) | Ritonavir boosted Atazanavir (ATV/r) | Raltegravir (RAL) |
| Abacavir (ABC) | | | Ritonavir Boosted Darunavir (DRV/r) | |
| Emtricitabine (FTC) | | | | |

Fixed dose combinations of these drugs are preferred to single dose preparations because they improve adherence to treatment. In Ghana the preferred formulations shall be the triple fixed dose forms. (See details in Appendix 4)

Once daily regimen comprising a non-thymidine NRTI backbone (TDF+FTC or TDF+3TC) and one NNRTI (EFV) shall remain the preferred choice in adults and adolescents.

Mono-therapy or dual-therapy (treatment with one or two drugs only) is contraindicated for treatment of PLHIV.

Table 2.3 below shows the recommended drug combinations used in Ghana. The second line regimen is used when there is evidence of treatment failure with the first line regimen. This should be confirmed by viral load monitoring. Dosages of the regimen will be found in drug information attached in Appendix 4. A third line therapy is recommended for those who have failed second line treatment. Baseline investigation for such clients should include viral load and drug resistance testing. (Refer to Section 2.9.2)

### 2.6.1: FIRST LINE DRUGS

**TABLE 2.3: FIRST LINE ART REGIMEN**

| Drugs | Caution | Comments |
|---|---|---|
| **Preferred Regimen** | | |
| **Tenofovir + Lamivudine (or Emtricitabine) + Efavirenz** | Caution with Tenofovir in renal dysfunction | Monitor renal function including urinalysis |
| **Alternative Regimen** | | |
| **Tenofovir + Lamivudine (or Emtricitabine) + Nevirapine** | Caution with Tenofovir in renal dysfunction<br><br>Nevirapine (NVP) is contraindicated in liver dysfunction and NVP hypersensitivity | Monitor renal function including urinalysis<br>ABC can replace TDF in renal impairment.<br>Stop NVP if client develops jaundice or severe rashes and call for advice or refer for further management. |

| | | |
|---|---|---|
| | | Stop Nevirapine if client develops jaundice or severe rashes and call for advice or refer for further management. |
| **Zidovudine + Lamivudine (or Emtricitabine) + Efavirenz** | Zidovudine is contraindicated in severe anaemia | Tenofovir to be used where Hb is < 8g/dl or drops > 25% from the baseline value in a client on Zidovudine<br>Use ABC if client not eligible for TDF or ZDV |
| **Zidovudine + Lamivudine (or Emtricitabine) + Nevirapine** | Zidovudine is contraindicated in severe anaemia<br><br>Nevirapine is contraindicated in liver dysfunction and NVP hypersensitivity | Tenofovir to be used where Hb is < 8g/dl or drops > 25% from the baseline value in a client on Zidovudine<br><br>Use ABC if client not eligible for TDF or ZDV |

### 2.6.2: SECOND LINE DRUGS

**TABLE 2.4 SECOND LINE ART REGIMEN**

| | Drugs | Comments |
|---|---|---|
| **First Alternative** | Zidovudine+ **+** Lamivudine (or Emtricitabine) **+** Lopinavir/r (or Atazanavir/r) | If Tenofovir-based first line.<br><br>If Lopinavir/r was used for HIV-2 in first line, use Atazanavir/r |
| **Second Alternative** | Tenofovir **+** Lamivudine (or Emtricitabine) **+** Lopinavir/r (or Atazanavir/r) | If Zidovudine-based first line.<br>Consider Abacavir if client has used both Tenofovir and Zidovudine |

### 2.6.3: THIRD LINE REGIMEN

**Table 2.5 THIRD LINE ART REGIMEN**

| | Drugs | Comments |
|---|---|---|
| **First Alternative** | Darunavir/r +Dolutegravir (or **Raltegravir ± 1 or 2 NRTI** | Darunavir/r (DRV/r) must be taken with food Dolutegravir (DTG) & Raltegravir (RAL) can be taken with or without food. |
| **Second Alternative** | DRV/r +2NRTIs ±NNRTI | Darunavir/r must be taken with food In PI-experienced patients DRV/r should be given BID. |

## 2.7: SPECIAL CONDITIONS

The recommended regimen shall be amended in the conditions listed in Table 2.6 below.

**TABLE 2.6: RECOMMENDATIONS FOR SPECIAL CONDITIONS**

| Condition | Recommendation | Comments |
|---|---|---|
| Dual HIV-1 and HIV -2 or HIV-2 infections | Tenofovir (TDF (or Zidovudine (AZT) + Lamivudine (3TC) (or Emtricitabine ( FTC)) + Lopinavir/ritonavir (LPV/r) or Atazanavir/ritonavir (ATV/r) | Due to the ineffectiveness of non-nucleoside drugs (Nevirapine and Efavirenz) in HIV-2 infection, combination of nucleosides and protease inhibitors such as LPV/r or ATV/r should be used. |
| Patient co-infected with Hepatitis B and failing 1st line | AZT+TDF+3TC+LPV/r | TDF and 3TC needed for HBV treatment. |

### 2.7.1: RECOMMENDATIONS FOR ANTIRETROVIRAL THERAPY IN CLIENTS WITH TUBERCULOSIS

All HIV positive clients with TB shall be treated in accordance with the National Tuberculosis Programme Guidelines. (See Guidelines for Clinical Management of TB and HIV co-infection in Ghana). The regimen consists of initiation phase of Rifampicin, Isoniazid, Pyrazinamide and Ethambutol for 2 months and a continuation phase of Rifampicin and Isoniazid for 4 months. In the treatment of tuberculosis some important interactions should be considered. Rifampicin, PIs and NNRTIs are metabolised by the same liver enzyme system (cytochrome P450). Thus, Rifampicin, which stimulates the enzyme, can lead to a reduction in the blood levels of the PIs and NNRTIs. PIs and NNRTIs may also inhibit or enhance this enzyme system to different extents and can lead to altered blood levels of Rifampicin. These drug-drug interactions may result in ineffective antiretroviral or anti-tuberculous therapy or drug toxicity.

To reduce the effect of drug-drug interactions, the following options must be followed in the treatment of HIV positive clients with TB coinfection:

### 2.7.2 CLIENTS NOT ON ART

1. Start ART in all HIV/TB co-infected individuals. The ART must be started as soon as practicable within two weeks but not later than 8 weeks of starting TB treatment.
2. In clients with MDR TB and HIV co-infection ART is the same as above.

### 2.7.3 CLIENTS ALREADY ON ART

1. Maintain client on ART, but replace Nevirapine with Efavirenz if client was on Nevirapine.
2. Start TB treatment as soon as possible.

**NB:** Where EFV is contraindicated or not tolerated, use AZT+3TC+ABC or AZT+3TC+TDF (triple nukes) for the duration of TB treatment and revert to standard first line after completion.

## 2.8 DRUG INTERACTIONS

Drug interactions may occur between any medications an individual takes. For a PLHIV, drugs may be taken for prophylaxis and treatment of opportunistic infections, and diseases. Drug interactions may occur between:

- Different antiretroviral drugs.
- Medicines used for the management of Opportunistic Infections and Antiretroviral drugs
- Prescription and non-prescription medication or alternative medicine
- Between medicines and food
- Certain recreational drugs and prescribed medications

***Some important drug interactions:***

- Trimethoprim-sulfamethoxazole, ganciclovir, acyclovir and hydroxyurea can have potentially additive haematologic toxicity when given together with Zidovudine. Careful haematologic monitoring is necessary.

- Dapsone may lead to additive neurotoxicity with Zidovudine

- Ketoconazole and Fluconazole may inhibit the metabolism of Protease Inhibitors and may result in PI toxicity.

## 2.9 MANAGEMENT OF OPPORTUNISTIC INFECTIONS

This should follow established protocols for the management of opportunistic infections. (See Guidelines for Management of Opportunistic infections and other related diseases). Opportunistic infections need to be treated as much as possible before the initiation of ART.

## 2.10 MONITORING

### 2.10.1 CLINICAL MONITORING

Clients on ART should be closely followed-up to assess adherence to therapy as well as tolerance and efficacy of the treatment. Regular laboratory monitoring after start of ART is necessary to identify side effects, toxicity, viral suppression and drug resistance. Intensive follow up should be done in the first few weeks of management. Management of the PLHIV should be a team approach between the clinician, nurse, counsellor, pharmacist, laboratory personnel, any other service provider and confidante who will support the client with his/her management. The client should be seen a few days (not more than 14 days) after initiation of therapy. After the first few weeks, follow up can be at monthly intervals for the first 3 months, then at intervals of 2 – 3 months as necessary and later adjusted to fit a differentiated care approach.

#### 2.10.1.1 MONITORING OF ADHERENCE

Adherence to ART is essential and more than 95% adherence is required for effectiveness of therapy. To improve adherence, the initial counselling sessions should be comprehensive and should result in well informed decisions and commitment by the client. Disclosure to and the use of adherence monitors has been found to

be effective in improving adherence. In addition, there should be available information and a committed supporting medical team. Adherence to treatment should be discussed in-depth at each follow-up visit.

##### 2.10.1.1.1 MEASUREMENT OF ADHERENCE

Adherence should be monitored using one of the following methods:

- Self-reports
- Pill counts
- Pharmacy records

### 2.10.1.2 MONITORING OF ADVERSE EFFECTS

Causes of any new symptoms and signs should be identified after initiation of ART. New symptoms may be due to,

- Intercurrent illnesses
- Adverse reactions to antiretroviral drugs and other drugs
- Opportunistic infections becoming clinically apparent as a result of immune reconstitution.

Where opportunistic infections become clinically apparent as a result of immune reconstitution syndrome, these need to be diagnosed and treated. Clients should be observed at each clinic visit for opportunistic infections and screened for TB at every visit.

Where opportunistic infections become clinically apparent as a result of immune reconstitution syndrome (IRS), these need to be diagnosed and treated. Clients should be observed at each clinic visit for opportunistic infections and screened for TB at every visit.

Adverse effects of drugs should be explained to clients and appropriate measures taken. Antiretroviral agents are responsible for a broad range of adverse effects from low grade self-limiting to life-threatening side-effects. Differentiating between complications of HIV disease and ART toxicity is sometimes difficult. Alternative explanations for a client's presenting symptoms should be considered before it is concluded that toxicity is ART-related. Regardless of their severity, adverse events may affect adherence to therapy. Drug toxicity refers to the inability of the client to tolerate the side effects of the medication and/or significant organ dysfunction as in Tables 2.6 and 2.7 above .

A proactive approach to managing toxicity is recommended. Ancillary laboratory tests should be done to confirm adverse effects such as anaemia, neutropenia among others (see laboratory monitoring).

**TABLE 2.6 COMMON ARV TOXICITIES**

| | |
|---|---|
| HAEMATOLOGICAL TOXICITY | Drug-induced bone marrow suppression, most commonly seen with AZT (anaemia, neutropenia). |
| MITOCHONDRIAL DYSFUNCTION | Primarily seen with the NRTI drugs, including lactic acidosis, hepatic toxicity, pancreatitis, peripheral neuropathy, lipoatrophy, myopathy. |
| RENAL TOXICITY | Renal tubular dysfunction is associated with Tenofovir (TDF). ATV/r can also cause nephrolithiasis. |
| OTHER METABOLIC ABNORMALITIES | More common with PIs. Include hyperlipidaemia, fat accumulation, insulin resistance, diabetes and osteopenia. Lipodystrophy is also associated with Zidovudine. The risk of cardiovascular events with Abacavir (ABC) is still debatable. |
| ALLERGIC REACTIONS | Skin rashes and hypersensitivity reactions, more common with the NNRTI drugs but also seen with certain NRTI drugs, such as ABC and some PIs. |
| HEPATIC TOXICITY | Liver enzyme elevation with DTG especially in patients with HBV or HCV co-infection. DRV/r also causes liver enzyme elevation |
| MUSCULAR TOXICITY | Muscle weakness and sometimes rhabdomyolysis seen with RAL |

[8] See Appendix 3 for table on drug interactions

| GRADE | SEVERITY | ACTION |
|---|---|---|
| 1 | Mild | Transient or mild discomfort: no limitation in activity; no medical intervention/therapy required |
| 2 | Moderate | Limitation in activity- some assistance may be needed; minimal or no medical intervention required |
| 3 | Severe | Marked limitation in activity- some assistance usually required; medical intervention/therapy required- Hospitalization possible |
| 4 | Severe Life-Threatening | Extreme limitation in activity - significant assistance required; significant medical intervention/ therapy required; hospitalization and home-based care |

#### 2.10.1.2.1 GUIDING PRINCIPLES IN THE MANAGEMENT OF ARVS ADVERSE EVENTS.

1. Evaluate concurrent medications and establish whether the toxicity is attributable to an ARVS drug or to a non-ARVS medication taken at the same time.

2. Consider other disease processes (e.g. viral hepatitis in an individual on ARVS drugs who develops jaundice) because not all problems that arise during treatment are caused by ARVS drugs.

3. Manage the adverse event according to severity:

o Grade 4 (severe life-threatening reactions): Immediately discontinue all ARVS drugs, manage the medical event (i.e. symptomatic and supportive therapy) and reintroduce ARVS drugs using a modified regimen (i.e. with an ARVS substitution for the offending drug) when the client is stabilized.

- Grade 3 (severe reactions): Substitute the offending drug without stopping ART.
- Grade 2 (moderate reactions): Consider continuation of ART as long as feasible. If the client does not improve on symptomatic therapy, consider single-drug substitutions.
- Grade1 (mild reactions) are bothersome but do not require changes in therapy.

4. Stress the maintenance of adherence despite toxicity for mild and moderate reactions.
5. If there is a need to discontinue ART because of life threatening toxicity, all ARVS drugs should be stopped until the client is stabilized.

### 2.10.1.3 MONITORING OF EFFICACY

Indicators for improvement in the client's condition are:

- Gain in body weight
- Decrease in frequency or severity of opportunistic infections
- Increase in $CD_4$ count
- Improvement in full blood counts
- Sustained suppression of viral load

### 2.10.2 LABORATORY MONITORING

Regular laboratory monitoring after start of ART is necessary to identify side effects, toxicity, viral suppression and drug resistance of the client. HIV viral load testing and $CD_4$ counts shall be done at 6 months, at 12 months after initiation, and every 12 months thereafter. It provides evidence of the virological response to therapy. In a case of suspected failure, viral load must be done earlier. TB screening should be done at each visit to the clinic using the TB screening algorithm (appendix 7). Clients with a positive screening test must be evaluated for active TB disease.

The following ancillary tests should be done at 6 month intervals at least:

- Full blood count (clients on Zidovudine may require frequent Hb monitoring)

- Urine R/E
- Fasting Blood Sugar and Lipid profile (if the client is on PIs)
- BUE and Creatinine
- Liver function tests (ALT, AST)

(See Guidelines for Viral Load Monitoring at Appendix 8)

## 2.11 INTERRUPTION OF THERAPY

Interruption of therapy refers to the temporary or permanent discontinuation of all drugs at the same time. The administration of one or two drugs only should not be done for any reason as this may result in the development of resistant viruses. Interruption oftherapy should be done by the clinician in consultation with the client under the following circumstances:

- Intolerable side effects
- Severe drug interactions
- Poor adherence

## 2.12 CRITERIA FOR CHANGING THERAPY

The physician in consultation with the other team members and the client may change antiretroviral therapy under the following circumstances:

- Drug toxicity
- Treatment Failure

### 2.12.1 TREATMENT FAILURE

This can be defined clinically by disease progression, immunologically by a decrease in $CD_4$ count or virologically by an increase in viral load. Treatment failure may occur soon after initiation as may be in a case of transmitted resistance viruses or may occur sometime after treatment.

- ***Virologic failure*** is defined as plasma HIV RNA >1000 copies/ml 6 months after initiating therapy in persons that are adherent to ART. This should be confirmed with a repeat test at 3 to 6 months before a switch to second line. For details on management of failure see Viral Load Monitoring guidelines (Appendix 8).

- ***Clinical failure*** is the occurrence of new opportunistic infection or malignancy signifying clinical disease progression, the recurrence of prior opportunistic infection or onset/ recurrence of WHO stage 3 or 4 conditions. Note: under no circumstances should a client be switched to second line based solely on clinical failure.

The main reasons for treatment failure are;

1. Poor prescribing practices
2. Poor adherence
3. Pre-existing viral drug resistance
4. Insufficient drug levels (serum and cellular)
5. Insufficient ARVS potency
6. Unreliable drug supply.

## 2.13 REFERRALS AND LINKAGES

ART is only a part of the continuum of care in the comprehensive care package for PLHIV. Strong linkages within and outside the health system with other providers of care and support will further strengthen the effective management of clients. ART sites should have linkages with other comprehensive care services such as HTC, eMTCT, DOTS Centres, Management of Opportunistic Infections, Nutritional Support, Home Based Care and Care for Orphans Vulnerable Children and, Psychosocial Support and STI services.

Referrals should follow the normal health system channels and in addition there should be networking with other stakeholders such as those in the community e.g. PLHIV associations, Models of Hope, Home Based Care providers, Social workers and Legal Workers.

ART sites should form linkages with one another to facilitate referral and exchange of information and resources.

# CHAPTER 3

## ARVS IN CHILDREN (<10 YEARS) AND ADOLESCENTS (10-19 YEARS)

### 3.1 INTRODUCTION

There are peculiar considerations regarding the pathogenesis of Human Immunodeficiency Virus (HIV) infection, as well as the virologic and immunologic principles underlying the use of antiretroviral therapy in infants and children infected with HIV. These considerations include:

- Mother-to-child transmission of HIV to the infant with or without maternal exposure to ARVS
- In-utero and perinatal exposure to antiretroviral medication in some infected children either through maternal ART or infant ARVS prophylaxis
- Differences in diagnostic evaluation in perinatal infection
- Differences in immunologic markers (i.e. $CD_4$+ T cell count) in young children
- Changes in pharmacokinetic parameters with age due to the continuing development and maturation of organ systems involved in drug metabolism and clearance
- Differences in the clinical and virologic manifestations of perinatal HIV infection in growing, immunologically immature persons resulting in rapid progression of disease in some children
- Special considerations associated with adherence to treatment
- Infant feeding and nutritional challenges.

### 3.2 DIAGNOSIS OF HIV INFECTION

High mortality in the first year of life among untreated infants infected with HIV makes it imperative for the prioritization of early infant diagnosis (EID), as this would make it possible for early identification and rapid initiation of ART. This would significantly enhance survival.

HIV infection in infants is only definitively confirmed with nucleic acid testing (NAT) technologies to confirm presence of the virus due to the persistence of maternal HIV antibody up to 18 months of age. Using HIV NAT for EID should facilitate early detection of HIV infected infants among all exposed babies for treatment initiation. NAT should be offered at the 3rd or 7th day routine post-partum visit. Routine virologic testing of all HIV exposed infants should be conducted at 6 weeks post-partum.

In case virologic tests are not available , exposed children must be tested serologically at 18 months. Serological assays can be used to diagnose HIV in children older than 18 months.

Infants who are still breastfeeding and therefore remain at risk for HIV acquisition will require an age-appropriate testing strategy at the end of the breastfeeding period to definitively exclude HIV infection and determine final HIV status. In all cases, it is important for clinicians to have high index of suspicion to clinically detect children who have HIV and initiate early management to improve survival.

All infants and children with signs or symptoms suggestive of HIV infection and with other severe illness needing admission (including all cases of failure to thrive, severe malnutrition and TB diagnosis) should undergo HIV testing according to national guidelines. In addition all siblings of children diagnosed as being HIV positive and all children of HIV positive parents should be tested.

It should be noted that breastfed infants are at risk of HIV infection from an HIV infected mother during the entire period of breastfeeding, and a negative virologic or antibody test at a single point in time does not preclude the child from becoming infected at a later time if breastfeeding is continued. Maintaining mothers on ART during the period of breast feeding is effective in significantly decreasing the risk of HIV transmission.

The guidelines for HIV diagnosis in children using clinical and testing criteria, specifically including AIDS defining conditions are shown in Table 3.1 below:

**TABLE 3.1: CRITERIA FOR DIAGNOSING HIV INFECTION IN CHILDREN**

A child is said to be HIV positive if the following criteria are met:

| |
|---|
| **1.** A child < 18 months who is HIV antibody-positive or born to HIV positive mother:<br>And<br>·HIV DNA positive by PCR (done at 6 weeks of age or 6 weeks after cessation of breastfeeding) |
| **2**. A child < 18 months who is HIV antibody-positive:<br>and<br>·who meets the clinical criteria for AIDS diagnosis based on the WHO staging system for a presumptive diagnosis of AIDS (see appendix 2) and/or<br>·CD4% < 25% (CD4 750 cells/$mm^3$)<br><br>Note: Confirm HIV infection with DNA PCR as soon as practicable or at 18 months with HIV antibody test. |
| **3**. A child ≥18 months who is HIV antibody-positive |

***NB:*** Always record the HIV type (HIV 1, HIV 2 or HIV 1& 2) for treatment decision making.

## 3.3 INITIATION CRITERIA

### 3.3.1 INCLUSION CRITERIA

1. **All children who have been confirmed HIV positive are eligible for ART initiation provided all critical issues listed below have been addressed.** A child with an acute opportunistic infection must be stabilized in accordance with good medical practice before the initiation of ART. **The table below shows the initiation criteria.**

**TABLE 3.2 INCLUSION CRITERIA FOR ART**

| Age | HIV Diagnostic Testing | Treatment Recommendation |
|---|---|---|
| <18 months | DNA PCR not available HIV antibody sero-positive | Treat if WHO Paediatric Presumptive Stage 4 disease. (Refer Appendix 2B). However, repeat HIV antibody test at 18 months or request a virologic test as soon as it becomes available to confirm infection |
| | Positive HIV DNA PCR | Treat |
| 18 months to 18 years | HIV antibody positive | Treat |

### 3.3.2 CRITICAL ISSUES TO ADDRESS PRIOR TO INITIATION

For Antiretroviral therapy to be successfully initiated and child maintained on therapy, the following critical issues must be addressed:

1. Opportunistic infections identified and treated.
2. Lack of parental or guardian motivation or when they are in denial
3. Treatment potentially not sustainable
4. Caregiver or guardian not completed pre-treatment adherence counselling
5. Lack of a reliable caregiver
6. Patient presents with end stage hepatic or renal insufficiency (ART deferred and child referred for specialist care)

## 3.4 CLINICAL EVALUATION

A detailed clinical evaluation is essential prior to initiating ART.

The aims of evaluation of the HIV-infected child are to:

- Confirm HIV infection
- Assess the clinical staging of HIV infection

- Identify past HIV related illnesses
- Identify current HIV related illnesses that will require treatment
- Identify co-existing medical conditions that may influence the choice of therapy
- Documents past ARVS treatment/prophylaxis experiance as it may influence choice of therapy

These can be achieved by:

- Taking a detailed medical and social history
- Carrying out a complete physical examination and
- Appropriate laboratory investigations.

The Medical History should include:

- Date of initial HIV diagnosis and type of testing done
- Current symptoms and concerns
- Immunization history
- Birth and neuro-developmental history
- Nutritional history
- Child's drug (including ARVS for PMTCT) history
- History of TB or contact with a TB patient (mother especially)
- Mother's pregnancy and drug (including ARVS) history
- HIV status siblings

Examination should include:

- Weight
- Height
- Weight for height Z-score
- Head circumference
- Mid-Upper Arm Circumference in children 6 months to 5 years of age

(For further details of the clinical evaluation see chapter 2)

## 3.5 LABORATORY EVALUATION

The reasons for investigation are to:

- Determine patient's general state of health
- Determine the presence or absence of opportunistic infections
- Determine the immunological Stage of HIV infection
- Viral load monitoring

(For details of the laboratory evaluation see chapter 2)

## 3.6 RECOMMENDED TREATMENT REGIMEN

Treatment regimen in children shall be similar to adult regimen. Only triple therapy shall be utilized and shall consist of:

- 2 NRTI plus 1 NNRTI
- 2NRTI plus 1 boosted PI
- 2NRTI plus 1 INSTI

### 3.6.1 FIRST LINE REGIMEN

The first line drugs for Ghana are indicated in the table below.

**TABLE 3.3: RECOMMENDED FIRST LINE COMBINATIONS**

**(a) ART REGIMEN FOR CHILDREN LESS THAN 3 YEARS**

| Drugs | Contra-indications/ Caution | Comments |
|---|---|---|
| Zidovudine + Lamivudine (or Emtricitabine) + Nevirapine | Zidovudine is contraindicated in: severe anaemia (Hb < 8gm/dl)<br><br>Nevirapine is contraindicated in: Liver dysfunction Hypersensitivity | Replace Zidovudine with Abacavir<br><br>Replace Nevirapine with Lopinavir/r |

| Alternative Regimen | | |
|---|---|---|
| Abacavir<br>+<br>Lamivudine (or Emtricitabine)<br>+<br>Nevirapine | Abacavir is contraindicated in Abacavir hypersensitivity<br><br>Nevirapine is contraindicated in: Liver dysfunction Hypersensitivity | Replace Abacavir with Zidovudine<br><br>Replace Nevirapine with Lopinavir/r |

### (b) ART REGIMEN FOR CHILDREN 3 YEARS TO LESS THAN 10 YEARS

| Drugs | Contra-indications/ Caution | Comments |
|---|---|---|
| **Preferred Regimen** | | |
| Tenofovir<br>+<br>Lamivudine (or Emtricitabine)<br>+<br>Efavirenz | Tenofovir is contraindicated in renal impairment<br><br>Efavirenz is contraindicated in Efavirenz-related persistent CNS toxicity | Give Tenofovir every 48 hours if Creatinine Clearance is less than 50ml/min<br><br>If Efavirenz-related toxicity, replace with Nevirapine |
| **Alternative Regimen**<br>Abacavir<br>+<br>Lamivudine (or Emtricitabine)<br>+<br>Efavirenz | Abacavir is contraindicated in Abacavir hypersensitivity<br><br>Efavirenz is contraindicated in EFV related Persistent CNS toxicity | Replace Abacavir with Zidovudine<br><br>Replace Efavirenz with Nevirapine |

| | | |
|---|---|---|
| Abacavir<br>+<br>Lamivudine (or Emtricitabine)<br>+<br>Nevirapine | Abacavir is contraindicated in Abacavir hypersensitivity<br><br>Nevirapine is contraindicated in: Liver dysfunction Hypersensitivity | Replace Abacavir with Zidovudine<br><br>Replace Nevirapine with Lopinavir/r |
| Zidovudine<br>+<br>Lamivudine (Emtricitabine)<br>+<br>Efavirenz | Zidovudine is contraindicated in: severe anaemia (Hb < 8gm/dl)<br><br>Efavirenz is contraindicated in EFV related Persistent CNS toxicity | Replace Zidovudine with Abacavir<br><br>Replace Efavirenz with Nevirapine |
| Zidovudine<br>+<br>Lamivudine (or Emtricitabine)<br>+<br>Nevirapine | Zidovudine is contraindicated in: severe anaemia (Hb < 8gm/dl)<br><br>Nevirapine is contraindicated in: Liver dysfunction Hypersensitivity | Replace Zidovudine with Tenofovir. If Tenofovir is contraindicated, replace with Abacavir<br><br>Replace Nevirapine with Efavirenz |

## (c ) ART REGIMEN FOR ADOLESCENTS (10 TO 18 YEARS)

| Drugs | Contra-indications/ Caution | Comments |
|---|---|---|
| **Preferred Regimen** | | |
| Tenofovir + Lamivudine (or Emtricitabine) + Efavirenz<br><br>TDF + FTC + EFV Fixed-dose combination | Tenofovir is contra-indicated in renal impairment<br><br>Efavirenz is contraindicated in EFV related Persistent CNS toxicity | Give Tenofovir every 48 hours if Creatinine Clearance is less than 50ml/min. To be used as preferred regimen if HIV/HBV co-infection If Tenofovir is contraindicated replace with Abacavir.<br><br>If EFV related CNS toxicity occurs, replace with Nevirapine |
| **Alternative Regimen** | | |
| Zidovudine + Lamivudine (or Emtricitabine) + Efavirenz | Zidovudine is contraindicated in severe anaemia (Hb < 8gm/dl)<br><br>Efavirenz is contraindicated in EFV related Persistent CNS toxicity | : Replace Zidovudine with Abacavir<br><br>Replace Efavirenz with Nevirapine |

| | | |
|---|---|---|
| Zidovudine<br>+<br>Lamivudine<br>(or<br>Emtricitabine)<br>+<br>Nevirapine | Nevirapine is contraindicated in:<br>Liver dysfunction<br>Hypersensitivity | Replace Nevirapine with Efavirenz |
| Tenofovir<br>+<br>Lamivudine<br>(or<br>Emtricitabine)<br>+<br>Nevirapine | Tenofovir is contra-indicated in renal impairment<br><br>Nevirapine is contraindicated in:<br>Liver dysfunction<br>Hypersensitivity | Give Tenofovir every 48 hours if Creatinine Clearance is less than 50ml/min. To be used as preferred regimen if HIV/HBV co-infection If Tenofovir is contraindicated replace with Abacavir.<br><br>Replace Nevirapine with Efavirenz |
| Abacavir<br>+<br>Lamivudine (or Emtricitabine)<br>+<br>Efavirenz | Abacavir is contraindicated in Abacavir hypersensitivity<br><br>Efavirenz is contraindicated in EFV related Persistent CNS toxicity | Replace with Zidovudine<br><br>If EFV related CNS toxicity replace with Nevirapine |

### 3.6.2 SECOND LINE REGIMEN

Second line regimen for Ghana are indicated in the table below.

**TABLE 3.4: SECOND LINE REGIMEN**

**(a) SECOND LINE ART REGIMEN FOR CHILDREN LESS THAN 3 YEARS**

| Initial First Line regimen | Preferred second line regimen | Contraindications/ caution | Comments |
|---|---|---|---|
| Zidovudine + Lamivudine (or Emtricitabine) + Nevirapine | Abacavir + Lamivudine (or Emtricitabine) + Lopinavir/r | Abacavir is contraindicated in Abacavir hypersensitivity | Replace Abacavir with Zidovudine |
| Abacavir + Lamivudine (or Emtricitabine) + Nevirapine | Zidovudine + Lamivudine (or Emtricitabine) + Lopinavir/r | Zidovudine is contraindicated in severe anaemia (Hb<8g/dL) | Maintain Abacavir if Zidovudine is contraindicated |

### (b) SECOND-LINE ART REGIMEN FOR CHILDREN 3 YEARS TO LESS THAN 10 YEARS

| Initial First Line regimen | Preferred second line regimen | Contraindications/ caution | Comments |
|---|---|---|---|
| Tenofovir + Lamivudine (or Emtricitabine) + Efavirenz | Zidovudine + Lamivudine (or Emtricitabine) + Lopinavir/r | Zidovudine is contraindicated in severe anaemia (Hb <8g/dL) | Replace Zidovudine with Abacavir |
| Abacavir + Lamivudine(or Emtricitabine) + Efavirenz (or Nevirapine) | Zidovudine + Lamivudine(or Emtricitabine) + Atazanavir/r | Abacavir is contraindicated in Abacavir hypersensitivity | Maintain Zidovudine if patient has Abacavir hypersensitivity |
| Zidovudine + Lamivudine (or Emtricitabine) + Efavirenz (or Nevirapine) | Abacavir + Lamivudine (or Emtricitabine) + Lopinavir/r | Abacavir is contraindicated in Abacavir hypersensitivity. Replace Abacavir with Tenofovir | Maintain Zidovudine if patient has Abacavir hypersensitivity |

(c ) **SECOND-LINE ART REGIMEN FOR ADOLESCENTS (10 TO 18 YEARS)**

| Initial First Line regimen | Preferred second line regimen | Contraindications/ caution | Comments |
|---|---|---|---|
| Tenofovir + Lamivudine (or Emtricitabine) + Efavirenz | Zidovudine + Lamivudine (or Emtricitabine) + Atazanavir/r (or Lopinavir/r) | Zidovudine is contraindicated in: severe anaemia (Hb < 8gm/dl)<br><br>Atazanavir may cause hyperbilirubinemia which is reversible. | Replace Zidovudine with Abacavir |

NB: Efavirenz is contraindicated in children less than 3 years or less than 10Kg.

### 3.6.3 RECOMMENDED THIRD LINE REGIMEN

With the introduction of newer ARVS, the regimen in the Table below is recommended as third line regimen for patients who failed the standard second line regimen. Ideally it should be important to do mutational analysis (genotyping) to know the type of mutations involved to be able to construct a suitable third-line regimen.

**TABLE 3.4: THIRD-LINE REGIMEN**

| Age | Recommended Third-line regimen | Contraindications/ caution | Comments |
|---|---|---|---|
| <3 years | Zidovudine (or Abacavir) + Lamivudine (or Emtricitabine) + Raltegravir | Raltegravir has potential for rare systemic allergic reaction or hepatitis | Maintain Abacavir from previous regimen if patient has severe anaemia |

| | | | |
|---|---|---|---|
| 3 to 18 years | Darunavir/r<br>+<br>Lamivudine<br>+<br>Tenofovir | Tenofovir is contra-indicated in renal impairment | Darunavir should be given with food.<br>In PI - experienced patients DRV/r should be given BID.<br>In case of renal impairment, Tenofovir may be replaced with Zidovudine |

NB: Darunavir is not recommended for children less three years old.

## 3.7 SPECIAL CONSIDERATIONS

### 3.7.1 PREVIOUS EXPOSURE TO ANTIRETOVIRAL

In initiating a child on ART, it is important to consider issues relating to drug resistance in a child who has gone through PMTCT or born to a mother who is on ART if there are indications of treatment failure or poor response to therapy.

### 3.7.2 TREATMENT OF TB/HIV CO-INFECTION

Any child with active TB disease should begin TB treatment immediately, and start ART, as soon as tolerated, but not later than 8 weeks of after starting TB therapy. .

- The preferred first-line ARVS regimen for infants and children less than 3 years of age is the recommended regimen when the child is taking a rifampicin-containing regimen for TB. That is:
  · 2NRTIs + Lopinavir/r

- The recommended first-line ARVS regimen for children more than 3 years of age and adolescents who are taking a rifampicin containing regimen for TB is:
  . 2 NRTIs + EFV.

### 3.7.3 DEVELOPING TB WHILE ON

- In all HIV-infected children on ART who develop TB, anti-TB therapy should be started immediately while continuing ART;

- Make adjustments to ART regimen as needed to decrease the potential for toxicities and drug interactions:

  · If on a regimen of 2 NRTIs + NVP, substitute EFV for NVP if the child is 3 years or older, and substitute LPV/r for NVP if child is less than 3 years.

  · If on a regimen of 2 NRTIs + NVP and substitution with EFV or LPV/r is not possible, ensure NVP is dosed at the maximum of 200 mg/m$^2$ per dose twice daily or substitute NVP with Abacavir for duration of TB treatment.

**NOTE:** Refer Appendix 2(D) for algorithm on diagnosis of tuberculosis in children.

### 3.7.4 TREATMENT OF HIV AND HEPATITIS B CO-INFECTION

- **For children born after 2002, it is anticipated that PENTAVALENT vaccine in Ghana will cover all immunized children.**
- **For children above 3 years** of age with hepatitis B, the preferred regimen is Tenofovir (TDF) + (Emtricitabine (FTC) or Lamivudine (3TC) + Efavirenz

### 3.7.5 Patients with HIV-2 or HIV 1&2 DUAL Infection

- **Use a PI –based regimen (i.e. LPV/r) in place of NNRTI**

**Note:** Tenofovir levels are slightly increased when dosed with LPV/r or ATV/r which can worsen the effect of TDF on the kidney.

## 3.8 ARV PROPHYLAXIS FOR THE HIV-EXPOSED INFANT (HEI)

All HIV-exposed infants (HEIs) irrespective of feeding options are to be provided within 48hrs of birth with:

**Zidovudine (AZT or ZDV) 12 hourly for six weeks**

Where AZT is contraindicated (e.g. anaemia or bleeding disorder), NVP daily for six weeks should be given.

### 3.8.1 ENHANCED INFANT PROPHYLAXIS

- **HEI who are at high risk of acquiring HIV should receive dual prophylaxis with daily AZT and NVP for the first 12 weeks of life, whether they are breastfed or formula-fed.**

**High risk** infants are defined as those born to women who are not virally suppressed. These are:

- Women with established HIV infection who have received less than four weeks of ART at the time of delivery, OR
- Women with established HIV infection and VL >1000 copies/mL in the four weeks before delivery, if VL available, OR
- Born to women who were identified as HIV positive for the first time during the post-partum period, with or without a negative HIV test prenatally.

## 3.9 TREATMENT CHANGES

Therapy changes are similar for adults and children (see adult section Chapter 2 for interruption of therapy and criteria for changing therapy). In children, (in addition to the clinical signs stated for adults in Chapter 2) important clinical signs of treatment failure include:

- A lack of growth among children who show an initial growth response to therapy;
- A loss of neurodevelopment milestones
- Development of encephalopathy
- Recurrence of infections, such as oral candidiasis refractory to treatment.

Before an ARV regimen is thought to be failing, based on clinical criteria, the child should have had a reasonable time on the ART (i.e. must have received the ART for at least 6months). A switch to a second line regimen is recommended when virological failure is recognized.

- ✓ Virological failure is recognized as a persistent VL above 1,000 RNA copies/ml, after at least 6 months on ART, in a treatment-adherent child. However viral load results in the first 6 months after initiating ART must be interpreted carefully as infants and young children may take longer to achieve viral suppression because of high baseline viral load.

- ✓ **Immunological failure** is defined as persistent CD4+ levels below 200 cells/mm$^3$ or <10% in children younger than 5 years and CD4+ levels below 100 cells/mm3 in children older than 5 years.

- ✓ **Clinical failure** is defined as the appearance or reappearance of WHO clinical stage 3 or stage 4 events after at least 6 months on ART in a treatment-adherent child.

**Note:** If clinical failure is evident, do viral load for confirmation

**TABLE 3.5 WHO CLINICAL STAGING OF EVENTS TO GUIDE DECISION MAKING ON SWITCHING TO SECOND-LINE THERAPY FOR TREATMENT FAILURE**

| New or recurrent clinical event develops after at least 6 months on ART | Management options |
|---|---|
| No new events or<br>Stage 1 events | •Do not switch to new regimen<br>•Maintain regular follow-up |
| Stage 2 events | •Treat and manage event<br>•Do not switch to a new regimen<br>•Assess adherence and offer support<br>•Assess nutritional status and offer support<br>•Schedule earlier visit for clinical review and viral load measurement |
| Stage 3 events | •Treat and manage event and monitor response<br>•Check if on treatment 6 months or more<br>•Assess adherence and offer support<br>•Assess nutritional status and offer support<br>•Check viral load<br>•Institute early follow-up |

| | |
|---|---|
| Stage 4 events | •Treat and manage event<br>•Check if on treatment 6 months or more<br>•Assess adherence and offer support<br>•Assess nutritional status and offer support<br>•Check viral load<br>•Consider switching regimen |

## 3.10 DECISION-MAKING ON SWITCHING ART USING VIRAL LOAD MEASUREMENT

Viral load is the most sensitive marker for determining treatment failure. A delay in switching therapy in a child with high levels of viral replication may lead to greater development of resistance and compromise the virological activity of standard second-line regimen. **Therefore, in the context of accurately identifying treatment failure, measurement of viral load is mandatory.** When treatment failure is suspected in a child who has been on ART for more 6 months the viral load must be repeated 3-6 months later. If the viral load is still1000 copies/ml then confirm treatment failure and consider switching to second line.

**Note:** However viral load results in the first 6 months after initiating ART must be interpreted carefully as infants and young children may take longer to achieve viral suppression because of high baseline viral load.

## 3.11 DRUG ISSUES

Drug interactions for children are similar to those of adults.

(See chapter 2 and Appendix 3 for further information).

Drug dosing in children is dependent on weight, age and surface area. Therefore, it is necessary to calculate the dosage at each clinical review if the weight and height varies significantly. (See Appendix 4 for further information)

## 3.12 MONITORING

### 3.12.1 CLINICAL MONITORING

Clinical monitoring of children on ARVS is similar to the monitoring in adults (See Chapter 2). Specifically, follow up visits for infants are to be done at weeks 2, 6 and then every four weeks for the whole year ofinfancy.

Important clinical signs of response to ARV therapy in children include:

- Improvement in growth of children previously failing to grow;
- Improvement in neurological symptoms
- Development in children with delayed developmental milestones or encephalopathy
- Decreased frequency of infections (oral thrush, bacterial and other opportunistic infections).

In addition to the clinical assessment recommended in adults, clinical monitoring of treatment in children should include:

- Nutritional status: mid-upper arm circumference (children 6months -5years),
- Height, weight and head circumference
- Weight for height Z-score
- Developmental milestones
- Neurological symptoms and signs

### 3.12.2 LABORATORY MONITORING

Laboratory tests are essentially the same in adults and children except in $CD_4$ assay where the $CD_4$% is the preferred parameter for children up to five years of age. See Chapter 2.
$CD_4$ count or % should be done at baseline for all children and every 6 months thereafter.
Viral load measurement should be done every 6 months thereafter.

### 3.12.3 MONITORING OF ADHERENCE

Adherence counselling must involve the child, parents and/or guardian who will be administering the medication. See Chapter 2.

### 3.12.4 MONITORING OF EFFICACY

See Chapter 2.

# CHAPTER 4

## MANAGEMENT OF HEPATITIS B VIRUS CO-INFECTION WITH HIV

### 4.1 INTRODUCTION

The routes of transmission of HIV, HBV, and HCV are very similar, hence the occurrence of HIV co-infection with HBV or HCV. Globally, chronic HBV infection affects about 240 million people and 2.6 million PLHIV are co-infected with HBV. Between 5-10% of adults in sub-Saharan Africa are infected with HBV. In Ghana, the infection is hyper endemic with a national prevalence of about 12.3%, while hepatitis C virus (HCV) infections seem to be low at 0.9%. The prevalence of HBV co-infection in PLHIV in Ghana has been estimated to have a pooled average of about 17%.[10]

There is significant morbidity and mortality due to liver diseases as a result of HIV and HBV co-infections. HBV reactivation seems to be high in co-infection. In HIV and HBV or HCV co-infection there is rapid progression to liver fibrosis especially with clients who have CD4+ < 200 counts/mm3, and even when HIV is suppressed the risk of hepatic decompensation is high[11].

Although HBV co-infection does not seem to affect the natural history of HIV infection, there is increased rate of liver side effects in PLHIV on ART. For patients on ART, pre-ART CD4+ and CD4+ recovery during ART are also suppressed[11,12].

[9]WHO 2013 [10]Agyeman & Ofori-Asenso 2016 [11]Ampofo 2002 [12]Sagoe 2012 [13]Chadwick 2013 [14]Benhamou 1999 [15]Di MARTino 2001 [16]Graham 2001 [17]Mohsen 2003

These guidelines will focus mainly on treating HIV and HBV co-infections but will comment briefly on HIV and HCV co-infections.

## 4.2 ASSESSMENT OF ALL HIV+ PATIENTS FOR HEPATITIS B INFECTION

- All PLHIV should be tested for Hepatitis B surface antigen (HBsAg) as part of baseline tests within the context of Good Clinical Practice.
- If HBsAg negative, vaccination against HBV is recommended.
    - Start ART before vaccination to ensure good response.
    - In children if CD4% (<15%) indicates severe immune suppression, start ART before vaccination (Refer to immunological table under appendix 2, page 115, 2014 guidelines).

## 4.2 GENERAL MANAGEMENT OF HEPATITIS B VIRUS INFECTION IN PLHIV

A positive HBsAg test indicates acute or chronic infection of HBV.

### 4.3.1 ACUTE HBV INFECTION

- The management of acute HBV infection in HIV follows the symptomatic approach as there is no specific treatment of acute HBV infection.
    - Repeat HBsAg after 6 months.
        - If negative, acute infection is over
        - If positive, chronic infection indicated. Refer 4.3.2 below.

### 4.3.2 CHRONIC HBV INFECTION

Chronic HBV infection is defined as a positive HBsAg test result for six months or more. Patients with chronic HBV infection should be evaluated as follows.

**1. Assess for liver damage**

- All HIV/HBV co-infected patients should be assessed for liver disease status and risk of progression. This should include a clinical history, examination and blood tests including Liver Function Test (LFT) and clotting studies and HBV infection specific markers if available.
- Blood Alanine transferase (ALT) level is the most cost effective indicator of liver damage. Patients with normal ALT levels generally do not need treatment or further investigation.
- If the ALT is increased the HBV viral load should be done, if available. This will help determine whether the liver damage is due to HBV.

**2. Screen for liver cancer every 6 months**

- Perform ultrasound
- Take blood for alpha-fetoprotein (AFP) where testing is available
- Both tests are needed as AFP is raised in only 60% of cases of liver cancer and ultrasound alone may miss 20% of liver cancers. These tests should be performed regularly and indefinitely. Liver cancer usually develops between 35 and 65 years.

**3. Prevent liver damage from other causes**

- Counsel patient to abstain from alcohol and smoking
- Drugs, food supplements and herbal preparations that may injure the liver should be avoided

**4.Prevent transmission to others**

- Have family members and sexual contacts screened for HBVinfection and vaccinated as appropriate.
- Counsel patient to prevent transmission of HBV to other others.
- New born babies should receive hepatitis B Immunoglobulin (HBIG) and hepatitis B vaccine as per national EPI guidelines.

It should be noted that Liver biopsy and HBV viral load are not currently widely available in the country.

## 4.4 TREATMENT OF HEPATITIS B VIRUS INFECTION IN HIV/HBV CO-INFECTION

ART should be started in all PLHIV with chronic HBV infection (HIV/HBV co-infected) irrespective of the $CD4^+$ cell count or the WHO clinical stage.

Important considerations for management of the patient include-

- The extent of liver damage
- Extent of HBV replication
- Whether or not patient has already been started on ART

This guideline categorizes treatment for three groups; adults and adolescents, children who are 3 years old, and children < 3 years (WHO, 2013).

- **Adults and adolescents including pregnant women,** The preferred first line regimen for the treatment of both HIV and HBV
  - **Tenofovir + Lamivudine (or Emtricitabine) + Efavirenz**
    (TDF + 3TC (or FTC) + EFV)
  - The combination of 3TC and TDF **should be continued if there i**s good HBV response when HIV resistance to the first line ART occurs. In such a situation, the second line regimen should be:

- **Children 3 years or more**
  - Abacavir (Or Tenofovir) + Lamivudine + Efavirenz ABC (Or TDF) + 3TC + EFV

- For children less than 3 years:
  The recommended first line regimen is
  - **Abacavir (or Zidovudine) + Lamivudine + Lopinavir/ Ritonavir**
    ABC (or AZT) + 3TC + LPV/r

The management algorithm for HIV/HBV Co-infection is shown in Appendix 5.

### 4.4.1 MONITORING OF HIV/HBV TREATMENT

- Liver function should be assessed at initiation and monitored every 6 months especially ALT levels while on treatment.

- Where facilities are available, viral load for HBV, should be determined at initiation and monitored every 6 months.

- All patients who have an unexpected rise in ALT should be screened again for HBV and anti-HCV (plus HCV RNA if reactive).

- Screen for liver cancer every 6 months
    - Perform ultrasound
    - Take blood for alpha-fetoprotein (AFP) where testing is available

# CHAPTER 5

## POST EXPOSURE PROPHYLAXIS (PEP) FOR HIV

### 5.1 INTRODUCTION

The use of Antiretroviral drugs for post-exposure prevention of HIV infection following occupational exposure to HIV for health workers has been ongoing since the early 1990s. The provision of HIV post-exposure prophylaxis has in recent years been extended to other non-occupational exposures, including unprotected sexual exposure, injecting drug use and exposure following sexual assault.

The clinical management guidance outlined in this section provides current evidence-based recommendations for providing post-exposure prophylaxis for all individuals (adults, adolescents and children) exposed to a potential HIV source.

Sub-section 1 focuses on health care workers whilst Sub-section 2 gives additional guidance for victims of sexual assault.

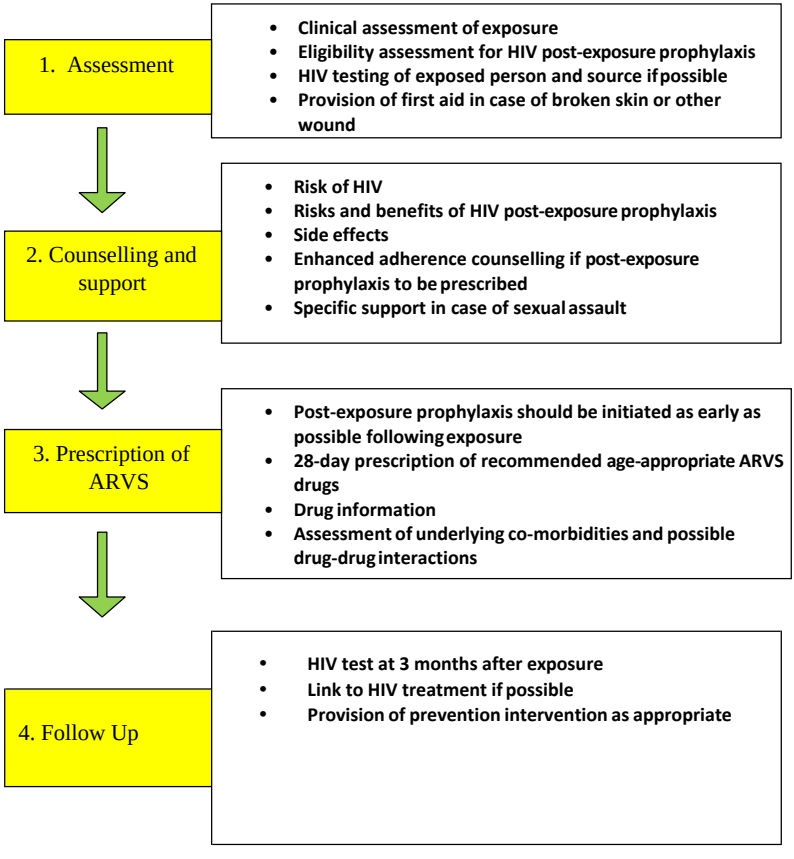
### 5.2 STANDARD OF CARE FOR INDIVIDUALS EXPOSED TO HIV

Every individual exposed to potential HIV source should be assessed by a trained health-care worker. Essential components of post exposure care should include assessing the mechanism of exposure and eligibility for post-exposure prophylaxis, examination of any wound and initial first-aid treatment. Baseline and post prophylaxis treatment testing for HIV should be offered however denial of consent or lack of access to test should not delay initiating post-exposure prophylaxis where warranted.

Any prescription of post-exposure prophylaxis should follow consent based on an understanding of the risks and benefits, including

discussion of possible side effects and the importance of full adherence to post-exposure prophylaxis. In cases that do not require post-exposure prophylaxis, the exposed person should still be counselled about limiting future exposure risk. HIV testing may be provided to such individuals if desired.

## 5.3 CARE PATHWAY FOR PEOPLE EXPOSED



## 5.4 ELIGIBILITY FOR POST-EXPOSURE PROPHYLAXIS: RISK

Post-exposure prophylaxis should be offered, and initiated as early as possible, to all individuals with exposure that has the potential for HIV transmission, and ideally within 72 hours.

Assessment for eligibility should be based on the HIV status of the source whenever possible and may include consideration of local population and risk group prevalence.

Exposures that may warrant post-exposure prophylaxis include:
Parenteral or mucous membrane exposure (sexual exposure and splashes to the eye, nose or oral cavity);
Contact with the following bodily fluids: blood, blood-stained saliva, breast-milk, genital secretions and cerebrospinal, amniotic, rectal, peritoneal, synovial, pericardial or pleural fluids.

**The risk of infection appears higher after:**

- Exposure to a large quantity of blood or to other infectious fluids
- Exposure to the blood of a patient in an advanced HIV disease stage
- A deep percutaneous injury
- An injury with a hollow bore, blood filled needle.

Exposure to HIV may be classified in **three categories** as described below:

### 5.4.1 VERY LOW RISK EXPOSURE

- Exposure of potentially infectious material to intact skin.

### 5.4.2 LOW RISK EXPOSURE

- Exposure to a small volume of blood or body fluids contaminated with blood from asymptomatic HIV-positive patients.
- An injury with a solid needle.
- Any superficial injury or mucocutaneous exposure.

### 5.4.3 HIGH-RISK EXPOSURE

- Exposure to a large volume of blood or potentially infectious fluids
- Exposure to blood or body fluids contaminated with blood from a patient with a high viral load. i.e. patients in the AIDS phase or early sero-conversion phase of HIV infection.
- Injury with a hollow bore needle
- Deep and extensive injury from a contaminated sharp instrument.
- Exposure to blood from an HIV Drug resistant patient.

### 5.4.4 EXPOSURES THAT DO NOT REQUIRE POST-EXPOSURE PROPHYLAXIS INCLUDE:

- Exposure of potentially infectious material to intact skin
- when the exposed individual is already HIV positive
- when the source is established to be HIV negative; and
- exposure to bodily fluids that does not pose a significant risk: tears, non-blood-stained saliva, urine and sweat.

## 5.5 COUNSELLING, TESTING AND SUPPORT

The exposed individual accessing PEP must be offered counselling and testing immediately from a trained counsellor. The risks and benefits of testing should be sufficiently explained to the individual so that an informed decision can be made. Testing must also be repeated after the PEP treatment period. Where an exposed individual declines testing for HIV infection after counselling, this must be documented. He or she must not be denied access to PEP on account of refusal to test or lack of access to testing services.

All known source-patients shall also be counselled and tested for HIV infection if this is not known. Where the source tests negative, they should be encouraged to repeat the test after 3 months.

Counselling and support should continue throughout the PEP period and thereafter if necessary. Counsellor must emphasize safe sex including condom use.

## 5.6 PRESCRIBING AND DISPENSING POST-EXPOSURE PROPHYLAXIS

If therapy is necessary, it should be initiated promptly, preferably within 1-2 hours post–exposure and not more than 72 hours after exposure. A 28-day course of ARVS drugs should be offered and prescribed. (See Table 5.1)

All Individuals receiving PEP should be educated about risks and benefits of post-exposure prophylaxis, and consent should be obtained. They should be informed of potential drug–drug interactions and possible side effects and toxicity. The importance of adherence to treatment must be stressed upon as critical for optimum outcome.

### 5.6.1 BASELINE LABORATORY TESTS INCLUDING

Full blood count, Liver and renal function tests, Hepatitis B Surface Antigen, HIV serology or PCR should be done if available

**TABLE 5.1: RECOMMENDED ARVS for PEP**

| Age Group | RECOMMENDED PROPHYLAXIS |
|---|---|
| **Children (<10 years old)** | AZT) + 3TC (or FTC) + LPV/r<br>OR<br>ABC + 3TC(or FTC) + LPV/r or TDF + 3TC (or FTC) + LPV/r can be considered as alternative regimen. |
| Adults and Adolescents<br><br>(including pregnant and lactating mothers) | TDF + 3TC+ LPV/r |

## 5.7 FOLLOW UP

A follow-up appointment for people prescribed post-exposure prophylaxis should be scheduled for a repeat HIV test 3 months following HIV exposure. Review of an individual during the 28-day period is not essential, but individuals should be encouraged to seek assistance if they experience side effects that interfere with taking ARVS drugs or adherence problems.

Any further contact with a person prescribed post-exposure prophylaxis should emphasize the importance of completing the full 28-day course, and reducing future risk of HIV infection.

If the source is established to be HIV negative during the course of post-exposure prophylaxis, ARVS drugs may be discontinued.

During the period of prophylaxis a number of base-line and follow-up investigations may need to be done to determine HIV sero-status, and to monitor the level of drug toxicity.

**TABLE 5.2: Recommended monitoring of drug toxicity and HIV serology of exposed individuals**

| | |
|---|---|
| **Baseline tests:** | Full blood count<br>Liver and renal function tests,<br>Hepatitis B Surface Antigen<br>HIV serology or PCR if available |
| **Two weeks:** | Full blood count<br>Liver and renal function tests |
| **Six weeks:** | HIV serology |
| **Three months:** | HIV serology |
| **Six months:** | HIV serology |

Individuals who sero-convert should be linked to comprehensive care and ART services. For further information, refer to Chapter 2.

## 5.8 PEP FOR HEALTH CARE WORKERS

The risk of exposure to blood and blood borne pathogens is slightly greater for health care personnel than people who do not work in health care settings. Workplace accidents or injuries that expose the health worker to body fluids of a patient may occur. Post Exposure Prophylaxis (PEP) reduces the likelihood of HIV infection after exposure. PEP may either prevent the establishment of infection or prevent new infection while allowing clearance of already infected cells. PEP is particularly effective within 1–2 hours and not more than 72 hours after exposure.

Exposures that create risk for health workers include may be defined as an exposure from infected blood, tissue or other body fluids through:

- A percutaneous injury (e.g. a needle stick or cut with a sharp object),
  or
- A mucocutaneous membrane or non-intact skin (e.g. skin that is chapped, abraded, or affected by dermatitis) contact

The risk of infection for HIV after a percutaneous injury is approximately 0.3%. Transmission rates after exposures of mucous membrane or non-intact skin are lower (0.1%) than from percutaneous injuries.

## 5.9 REDUCING RISKS

Infection prevention programmes should be in place in all health care settings and health workers should follow Standard Infection Prevention and Control Precautions at all times to prevent exposure.

- Hands should be washed properly and frequently before and after handling all patients.
- Gloves must be worn before any kind of invasive procedure or when venous or arterial access is being performed.
- Personal Protective Equipment (Gloves, gowns, boots eye wear and masks) should be used appropriately for patient care.

· Sharps should be used with caution with all patients
Sharps should be disposed of in a puncture proof receptacle immediately after use. These should be available nearby.

In the event of possible exposure to HIV the incident should be documented and the following actions taken:

### 1: Treatment of exposure site

- The wound site should be cleaned with soap and water
- In the case of mucous membranes, exposed area should be flushed with plenty of water.
- Eyes should be flushed with water or saline.

### 2: Assess the level of risk

The risk of exposure should be assessed in terms of possible transmission of HIV infection as described above.

### 3: Counsel and Test

The health care workers accessing PEP must receive counselling and testing immediately from a trained counsellor. This should continue throughout the PEP period and thereafter if necessary. Where an exposed individual declines to test for HIV infection after counselling, this must be documented.

### 4. Prescribe PEP (See guidelines for ARVS in Table 5.1)

**Note** however that in the health care settings, in addition to risks for HIV transmission the risks for HBV and HCV transmission are even higher. Measures to address these risks should also be considered. They include routine vaccination against HBV and HBV immunoglobulin where appropriate following exposure.

The health worker should be counselled and supported to complete his/her PEP as according to the above stated guidelines. Health workers who sero-convert should have access to comprehensive care and ART services as spelt out in the "Workplace HIV and AIDS Policy and Technical Guidelines for the Health Sector" .

## 5.10 REPORTING AND DOCUMENTING OCCUPATIONAL EXPOSURE TO HIV

All occupational exposures should be reported immediately to the supervisor; circumstances of the exposure and PEP management should be recorded. Details should include:

- Date and time of exposure
- Where and how the exposure occurred, exposure site on the body and type of sharp device. Type and estimated amount of exposure fluid, severity (depth/extent) of the exposure
- Source of exposure and whether the source material contained HIV or blood.
- Clinical status of source patient.
- Relevant information about exposed health care worker( medical conditions, vaccination including Hepatitis B, and medications, pregnancy or breast-feeding)
- Document counselling, post exposure management and follow up

Note that the health workers privacy should be respected and confidentiality maintained. Reporting and recordkeeping should be in accordance with the national occupational health policies.

## 5.11 PEP FOR SURVIVORS OF SEXUAL VIOLENCE

Ghana has in recent times seen an upsurge of violent crime including sexual violence of various forms such as rape and defilement. Rape and defilement are violent traumatic experiences for the survivors who are affected physically, emotionally and socially. Survivors may react in different ways to such traumatic experiences and they may have to be handled and managed cautiously in order not to aggravate their psychological trauma. Survivors could be women or men, boys or girls; but most often, women and girls are the victims and the perpetrators are usually men.

It is important to recognize that rape and defilement are criminal offences in Ghana. Survivors and the general public should be encouraged to report such occurrences to law enforcement agencies.

The healthcare provider must therefore be abreast with the legal requirements regarding the management of the survivor. This includes documentation and reporting as well as the provision of emergency contraception, abortion, counselling, testing and prevention of STIs such as HIV infection.

Healthcare workers must understand that their duty is to provide basic medical and psychological intervention to survivors and referral to relevant agencies for other needed services.

- These guidelines are to be used in the context of the clinical

management of survivors of sexual assault within the regular health care setting. This includes:

- Screening for prevention/management of pregnancy
- Screening for and treatment of Sexually Transmitted Infections (STIs),
- Provision of PEP for HIV
- Collection of evidence for possible future prosecution
- Rendering of psychological support.

- These guidelines focus on female victims of sexual assault but the principles are the same in the management of male victims as well as for minors.
- There are no conclusive data on the effectiveness of PEP in preventing transmission of HIV after the occurrence of rape.

Experience with prophylaxis relating to occupational exposure and prevention of mother-to-child transmission (PMTCT) however suggest that starting PEP as soon as possible and indeed within 72 hours after the rape is most beneficial.

[18]Workplace HIV.AIDS Policy and Technical Guidelines for the Health Sector, Ministry of Health, August 2004
19See Appendix 6.3 and 6.4 for PEP recording and monthly reporting forms

## 5.12 MEDICO-LEGAL CONSIDERATIONS*

- Healthcare providers must appreciate that the establishment of the case of rape is a legal matter to be determined by a court of competent jurisdiction and not a decision for the healthcare worker to make. The healthcare worker is providing a service with the presumption that there has been an alleged case of rape or defilement which may or may not be proven.

- For the purpose of these guidelines, the term "rape" means "rape, defilement or non-consensual carnal knowledge".

- This document should not to be used as an absolute guide for a forensic examination and the collection of specimens for prosecution. Such a requirement will need a referral to a gynaecologist, a clinician trained in forensic medicine, or other specialist.

- Although only a small percentage of alleged rape cases actually go on trial, it is important that the healthcare worker keeps detailed and accurate documentation in the event of the need to testify in court.

## 5.13 SURVIVOR CARE AND REFERRAL

- Care of survivors of sexual violence must be undertaken by a team of care providers including clinicians, obstetrician gynaecologist, PEP focal person psychologist and forensic pathologist .

- Survivors reporting for care may include individuals who report directly following the alleged incident, client referred later with resulting complications such as pregnancy or STI. Occasionally clients may be referred by the courts after criminal procedures have been initiated.

- Where a client is referred from another service provider for PEP or the courts, the attending PEP care provider must be satisfied the client has already received or receives all other relevant care components for such survivors of sexual assault as described above.

- All Clients reporting directly to a facility following an alleged incident of rape should be assessed comprehensively by a clinician and counselled appropriately for the administration of needed interventions. The client should be referred for further care and action as needed with the relevant experts.

- Survivors/families should be counselled to also report the matter to the police if not already done. In cases of minors the care provider is required by law to notify law enforcement agencies and social welfare offices of the incident.

### 5.13.1 CLINICAL ASSESSMENT OF SURVIVOR

I. Take accurate and detailed history, considering the fact that this could be very sensitive and emotionally traumatic for the client.

ii. Ensure right to privacy, confidentiality, information and non-discrimination.

iii. Clarify the kind of sexual assault and orifices involved in the assault. iv. Determine whether the perpetrator constitutes a high risk or otherwise

v. Find out the sexual history of the client both before and after the assault

vi. Assess the overall risk of client

vii. Perform all relevant physical and genital examinations, and collect forensic evidence as may be required by law if you are the clinician primarily responsible for the case. (See Appendix 6.1)

viii Offer counselling and testing for HIV and screen for other STIs including Syphilis, Hepatitis B where screening tests are available.

a. Where client is found to be HIV positive, she/he must be counselled and referred to an ART centre for comprehensive HIV care and support services.

b. Treat any STIs found or suspected on screening.

ix. In the case of a child survivor:

a. History should be taken from both the minor and the parent or legal guardian.

b. It is preferable to have the parent or guardian wait outside during the interview and have an independent trusted person/chaperone present. Avoid asking leading questions.
c. For the examination either a parent and/or chaperone must be present.
d. Document all findings of the assessment and interventions including the outcome of the HIV test, STI and Hepatitis B screening.
x. Where the client declines to undertake the HIV test, document this refusal and make client fill and sign the National PEP and Management Record Form for Rape Survivors indicating the refusal.

### 5.13.2 ASSESSMENT OF EXPOSURE RISK

The following factors must be considered in the assessment of risk:

a. Perpetrator is unknown or HIV status of perpetrator is unknown.
b. Perpetrator's HIV status is known to be positive.
c. Perpetrator is an injection drug user or armed robber.
d. Whether the alleged sexual violation involved anal penetration.
e. Whether the survivor was allegedly raped by more than one person.
f. Vaginal penetration with associated genital injuries.
g. Whether survivor is a minor.

### 5.13.3 PROTOCOL FOR PEP AND PREVENTIVE TREATMENT OF STI

**I. If survivor presents within 72 Hours of the Incident**

a. Prevent HIV Transmission through the provision of PEP using three ARVS according to national protocol and as spelt out under Appendix 6.
b. Treat STIs according to national guidelines.

[20] Appendix 6.3

c. If HBsAg result is negative prevent Hepatitis B infection by initiating the appropriate vaccination protocol.
d. Pregnancy can be prevented by providing emergency contraception in accordance with the National Reproductive Health Service Policy. Pregnancy test must be done to first exclude an existing pregnancy.
e. Clean and treat any tears, cuts, abrasions and other injuries. If there are major contaminated wounds consider giving antibiotic cover.
f. Tetanus prophylaxis (tetanus toxoid – TT) may also be indicated where there are wounds or break in mucosa.

**ii. If survivor presents more than 72 Hours after the Incident**

a. PEP may not be beneficial when started after 72 hours but decision to start should be made on case by case basis. Client should be offered CT and appropriate follow up instituted.
b. Assess and examine for STIs and provide treatment according to national STI treatment guidelines.
c. If HBsAg test result is negative recommend vaccination against Hepatitis B infection, using the appropriate protocol.
d. If the survivor presents after 72 hours but within 120 hours (5 days) provide emergency contraception in accordance with the National Reproductive Health Service Policy and Standards.
e. Pregnancy test must be done to exclude an existing pregnancy.
f. Treat or refer all wounds, abscesses and other injuries and complications. Vaccinate against tetanus if client has not been fully vaccinated.

## 5.14 FOLLOW-UP CARE

**i. For Survivors who received PEP.**
a. One-week follow-up visit:
i. Evaluate PEP, STI and other treatment.
ii. Evaluate for STI and provide treatment as appropriate.
iii. Discuss CT for future HIV testing.
b. Six-week and three-month follow-up visits:

i. Offer CT for HIV
ii. Evaluate for STIs and treat as appropriate Evaluate for
iii. pregnancy and provide counselling

**ii. For Survivors who do not receive PEP.**

a. Two-week follow-up visit:
i. Check if STI and/or other treatment have been adhered to.
ii. Evaluate for pregnancy and provide counselling
iii. Discuss TC for future HIV testing
b. Three-month follow-up visit:
i. Offer TC for HIV
ii. Evaluate for STIs and treat as appropriate
iii. Assess pregnancy status

In all cases evaluate mental and emotional status at every visit, and refer or manage as needed. For minors assess the safety of their environment (Place of residence and school etc.) for possible re-location.

## 5.15 DOCUMENTATIONS AND OTHER POTENTIAL FORENSIC

i. All information gathered from history, referral notes, assessments, and from physical and genital examination must be clearly documented, dated, signed and appropriately filed under strict confidentiality.
ii. All laboratory test results must be acknowledged and stored with patient records.
iii. Document all referrals to and from or within your facility

iv. Fill all forms required under these guidelines and according to national policies and guidelines.

v. Note that proper documentation will facilitate testimony in a court of law.

[21] Appendix 6.3 and 6.4

# CHAPTER 6

## OPPORTUNISTIC INFECTION PROPHYLAXIS FOR HIV-RELATED INFECTIONS AMONG ADULTS, ADOLESCENTS AND CHILDREN

### 6.1 CO -TRIMOXAZOLE

Co-trimoxazole is a fixed-dose combination of two anti-microbial drugs (sulfamethoxazole and trimethoprim) that covers a variety of bacterial, fungal and protozoan infections. It has advantages of being an off-patent drug that is widely available everywhere. Since 2006 WHO has recommended the use of Co-trimoxazole as a preventive therapy for people living with HIV to reduce HIV-related morbidity and mortality particularly those associated with *Pneumocystis jirovecii* pneumonia, toxoplasmosis, malaria, pneumonia and diarrhoea.

Its use has proven to be an effective, well tolerated and inexpensive intervention particularly in low resource settings where HIV related morbidity and mortality from infections are high. The use of Cotrimoxazole prophylaxis should therefore be considered an integral component of HIV and AIDS patient care.

#### 6.1.1 ELIGIBLE PATIENTS

Co-trimoxazole prophylaxis is recommended for:

- Adults (including pregnant women) with severe or advanced HIV clinical disease (WHO stage 3 or 4) and/or with a $CD_4$+ count of $\leq$350 cells/$mm^3$.
- Co-trimoxazole prophylaxis is also recommended for PLHIV in countries where malaria and severe bacterial infections are endemic.

- HIV-infected people with active TB disease regardless of $CD_4$+ cell counts.
- Infants, children and adolescents with HIV, irrespective of clinical and immune conditions.
  Priority should be given to all children younger than 5 years old regardless of $CD_4$ cell count or clinical stage and children with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and/or those with a $CD_4$ count of $\leq$350 cells/$mm^3$.
- HIV-exposed infants 4–6 weeks of age and should be continued until HIV infection has been excluded by an age-appropriate HIV test to establish final diagnosis after complete cessation of breastfeeding.

### 6.1.2 NON ELIGIBLE PATIENTS

- Patients with partial or complete G6PD defects
- Patients with blood dyscrasias such as Porphyria
- With known allergies to Sulphur

  * It should also be used with caution in patients with severe liver and renal disease.

## 6.2 INITIATING TREATMENT

· Screen patient for any contraindications to Co-Trimoxazole use e.g. known allergies to Sulphur or history of Haemolytic blood diseases e.g G6PD.

· Initiate treatment if client meets criteria for prophylaxis as described below in Table 6.1.

**Table 6.1: Recommended criteria for initiating and discontinuing Co-trimoxazole Prophylaxis**

**Table 6.1: Recommended criteria for initiating and discontinuing Co-trimoxazole Prophylaxis**

| HIV Population group | Recommendation | |
|---|---|---|
| | Criteria for initiation | Criteria for discontinuing |
| **Adults (including pregnant mothers)** | Severe or advanced HIV clinical disease (WHO stage 3 or 4) and/or with a CD4 count of ≤350 cells/mm$^3$. | Adults (including pregnant women) with HIV infection who are clinically stable* on ART, with evidence of immune recovery and viral suppression. |
| **Children and Adolescents** | Infants, children and adolescents with HIV, irrespective of clinical and immune conditions. Priority should be given to all children younger than 5 years old regardless of CD4 cell count or clinical stage and children with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and/or those with a CD4 count of ≤350 cells/mm$^3$. | |
| **HIV-exposed but uninfected infants** | HIV-exposed infants 4–6 weeks of age. | When risk of transmission ends (e.g. complete cessation of breastfeeding) or HIV infection is excluded by an age-appropriate HIV test to establish final diagnosis. |

| | | |
|---|---|---|
| **TB infected** | HIV-infected people with active TB disease. | |

**Source: ART Guidelines 2015**

*Clinically stable adults are defined as individuals receiving ART for at least 1 year without any new WHO clinical stage 2, 3 or 4 events, CD4 count >350 cells/mm3, with viral load suppression, are considered to have immune recovery. Parameter for immune recovery among children >5 years old: CD4 count >350 cells/mm3, with viral load suppression.

## 6.3 DOSAGE

### 6.3.1 ADULTS AND ADOLESCENTS:

The recommended dose of Co-trimoxazole for adults living with HIV is:- 960 mg daily (800 mg sulfamethoxazole + 160 mg trimethoprim, either as a 960-mg double-strength tablet or two 480-mg single-strength tablets

**NOTE**: Intermittent preventive treatment of malaria (SP/IPT) should not be provided in addition to Co-trimoxazole prophylaxis for pregnant women with HIV.

### 6.3.2 INFANTS AND CHILDREN

- The dosing of Co-trimoxazole prophylaxis for children is optimized based on body weight. See table below

**Table 6.2 Optimal Co-trimoxazole dosing for children**

| Strength of Co-trimoxazole Tablet (mg) or Suspension mg/5ml | Number of tablets or ml/wt (Kg) | | | | | |
|---|---|---|---|---|---|---|
| | 3.0 -8.9 | 6.0 -9.9 | 10.0 0-13.9 | 14.0-19.9 | 20.0 -24.9 | 25.0 -34.9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Suspension 200/40 mg/ml | 2.5 ml | 5.0 ml | 5.0 ml | 10.0 ml | 10.0 ml | - |
| Dispersible tablets 100/20 mg | 1 | 2 | 2 | 3 | 4 | - |
| Tablets (scored) 400/80 mg | - | 0.5 | 0.5 | 1 | 1 | 2 |
| Tablets (scored) 800/160 mg | - | - | - | 0.5 | 0.5 | 1 |

## 6.4 CLIENT FOLLOW UP AND MONITORING

All clients on Co-trimoxazole treatment must be counselled about the medication and followed up closely.

All patients must be advised:

· To take adequate amounts of fluid daily.

· To discontinue medication and report back immediately if the develop any adverse effects such as skin rashes, jaundice, mental confusion, vomiting etc.

· To include folate rich foods ( e.g. green leafy vegetables like cocoyam leaves 'nkontonmire', cassava leaves, jute leaves 'adɛmɛ') in their diets as Trimethoprim is a folate antagonist. If pregnant, she must also be encouraged to take her daily folic acid 5mg supplement.

· Micronutrient supplementation which includes Selenium has been found to suppress disease progression and provide direct improvement of $CD_4$+ count.
(*The country will explore complementary immune boosters)*

Monitor via Laboratory tests

· Full blood counts 6 monthly if feasible.

· Liver function tests 3 - 6 monthly especially for patients with concurrent Hepatitis B or C infection.

Discontinue Co-trimoxazole if:

- Patients develop severe adverse side effects such as Stevens Johnson's Syndrome
- When risk of HIV-related infectious morbidities no longer exist as spelled out in the criteria above (Table 6.1)

## 6.5 FLUCONAZOLE

Fluconazole is an azole antifungal that stops growth of certain types of fungus and yeast infections like oral and oesophageal candidiasis, vaginal candidiasis, Cryptococcal meningitis and *Coccidioidomycosis*. After appropriate treatment for Cryptococcal and Coccidioidomycosis infections, secondary prophylaxis with fluconazole is given to prevent relapse.

### 6.5.1 PRECAUTION

Use with caution in:

- Liver disease,
- Kidney disease and
- Heart Disease.

### 6.5.2 CONTRAINDICATIONS

- Pregnancy
- Concurrent use with QT-prolonging drugs
- Infants less than 6 months old

## 6.6 DOSAGE

### 6.6.1 ADULTS

The recommended dose of Fluconazole for secondary prophylaxis in adults and adolescents living with HIV is: 150 to 200mg daily

### 6.6.2 CHILDREN AND ADOLESCENTS

The dose is optimized based on body weight: 6 to 12mg/kg bodyweight daily

Discontinue if rash develops or when viral suppression is achieved.

# CHAPTER 7

## GUIDELINES ON ART COUNSELLING

### 7.1 INTRODUCTION

Counselling for ART complements all on-going counselling for HIV testing services (HTC, PMTCT, EID) and follow up counselling for psychosocial support. The following guidelines are available to support general counselling and counselling of clients on ART:

- National Guidelines for the Development and implementation of HIV Testing and Counselling in Ghana
- National Guidelines for Prevention of Mother-to-Child Transmission of HIV
- Early Infant HIV Diagnosis in Ghana, Guidelines and Protocol

### 7.2 GOAL OF COUNSELLING IN ART

The goal of counselling is to help the client make an informed decision to start and to adhere to a life-long treatment. Clients need to be counselled prior to initiation of ART, during therapy and counselling should be continued throughout treatment.

The client should understand the following:

- The goals of therapy.
- ART is not a cure.
- The virus can still be transmitted while on ART and so preventive measures should still be applied.
- ART is a life-long commitment.
- Possibility of acquiring other infections
- Drug information.
- Adherence to drug therapy.
- Disclosure.
- Emotional and Social Support.
- Nutrition
- Sexual and reproductive life.

Counselling sessions for ART should also complement the general counselling for HIV and AIDS. ART should not be initiated until the client has had at least 2 adherence counselling sessions on ART and he/she fully understands the implications of starting treatment.
Clients who are not motivated and/or who do not complete pretreatment adherence counselling should be supported by the adherence counselling team to become motivated and committed to the lifelong therapy.

ARVS should not be dispensed to any client unless he/she has had adequate adherence counselling.

### 7.2.1 THE GOALS OF THERAPY

The patient should understand that the goals of therapy are to:

- make the patient clinically better,
- produce sustained and durable suppression of viral load
- reduce HIV-related morbidity and mortality,
- restore and preserve immune function and to prevent opportunistic infections.

All these lead to an improved quality of life for HIV infected individuals.

## 7.3 ANTIRETROVIRAL THERAPY

The approach to antiretroviral treatment and the design of therapeutic regimen have been influenced by the following key findings from studies on the pathogenesis of HIV infection.

- Demonstration that a continuous high-level of replication of HIV is present from the early stages of infection.
- Demonstration that the measured concentration of plasma viral load is predictive of the subsequent risk of infection progression to AIDS and death.
- Proof that combination antiretroviral treatment is able to consistently suppress HIV replication and also able to significantly delay infection progression to AIDS.

- Since on-going replication of HIV drives the disease process, the ideal target of antiretroviral treatment is to obtain timely and sustained suppression of viral replication.
- It should be made known to the client that ART is not a cure.
- It only suppresses viral replication and makes the client clinically better.
- Transmission of HIV can occur while on ART and so preventive measures should still be applied including safe sex such as male and female condom use.

### 7.3.1 A LIFE-LONG COMMITMENT

Once the client starts ART, treatment should continue for the lifetime of the client. Stopping treatment leads to a sudden increase in the viral load and increases the emergence of resistant strains of the virus. The client who interrupts treatment needs to be reassessed before the reintroduction of ART. (Refer chapter 2, Special considerations)

### 7.3.2 DRUG INFORMATION

The following consist of the minimum information that every client must have before starting ART:

- How ARVS work.
- Type of drug(s).
- Dose of drug(s).
- Frequency of administration of drugs (dosing regimen).
- Dosing in relation to meal times, fluid intake, timing with other drugs (i.e. drug timetable).
- Drug interaction with other drugs (e.g. anti-TB, antifungals).
- Storage of the drugs.
- Possible unrealistic expectations of therapy.
- Consequences of non-compliance to the treatment regimen.
- Clinical and laboratory monitoring of the effect of ART on client and the viruses.

[22]Ministry of Health/Ghana Health Service/Ghana AIDS Commission, National Guidelines for the Development and implementation of HIV Voluntary counselling And Testing in Ghana
[23]Ministry of Health/ Ghana Health Service, Prevention of Mother-to-Child Transmission of HIV in Ghana Manual for Health Workers, Ghana 2001

- Side-effects of the medication.
- Management of side-effects.
- Possibility of treatment failure and the need to change the medication.
- Criteria for cessation or changing of therapy.
- Life-style considerations (e.g. poor nutrition, alcohol abuse etc.).
- The need for the client to keep all drugs for him/herself and not to share his/her ART medication with others

### 7.3.3 UNDERSTANDING ADHERENCE

There is the need to communicate to clients that it is important to adhere and to take medications exactly as prescribed i.e. the right dose at the right time and under the right conditions. Missing just a single dose can lead to development of resistant strains of the virus and reduce the effectiveness of treatment.

Some main reasons for non-adherence to therapy are

- Forgetfulness
- The number and timing of doses
- Number and size of pills (pill burden)
- Food restrictions
- Perceived or actual side effects
- Missed appointments for drug refills.

Strategies used to overcome the problem of non-adherence, include use of drug time-tables, reminders by phone, alerts by clocks, adherence monitors, pill boxes and continued adherence counselling. The client should be reassured about side-effects and an alternate regimen should be discussed if side-effects are intolerable.

### 7.3.4 DISCLOSURE

Disclosure and use of adherence monitors have been found to be effective in improving adherence. The counsellors should strongly encourage the disclosure of the HIV-positive status to a confidant (the partner, a close relative or friend of the client) so that this person (as an adherence monitor) can be involved in the issues relating to treatment and offer support to the client.

### 7.3.5 EMOTIONAL AND SOCIAL SUPPORT

All groups involved in HIV/AIDS prevention activities and the provision of treatment and care for clients should be identified and linkages established to offer social support systems to enhance adherence. Examples of these groups are given below:

- Family
- Friends
- Religious groups
- Healthcare workers
- Networks of PLHIV
- Other Civil Society Organizations
- NGOs in AIDS care
- Social Welfare Department
- District Assemblies

### 7.3.6 NUTRITION

Good nutrition plays a key role in the management of the patient. Malnutrition may lead to an increased susceptibility to infections. The client must be educated to have a diet of clean nutritious food, adequate fruits and vegetables and adequate water intake every day.

(Refer to the 'Guidelines on Nutritional Care and Support of PLHIV'; Check updated 2015 Nutrition policy and reference)

### 7.3.7 SEXUAL AND REPRODUCTIVE LIFE

The clients must be counselled with regards to their sexual and reproductive rights. The female clients who wish to bear children should be assessed and given appropriate counselling in order to reduce the risk of MTCT.

It is important for their HIV viral load to be monitored per the existing schedule.

### 7.3.8 OTHER INFECTIONS

Clients should be counselled on the possibility of acquiring other infections and report them. Drugs given for such infections should also be adhered to.

# CHAPTER 8

## DATA MANAGEMENT SYSTEM

### 8.1 INTRODUCTION

Data management forms an important component of the entire clinical care programme. Good data management practices ensure availability of information for patient care, programming, quantification and forecasting of ARVS and other consumables.

Forms to be utilised for management of data include:

- Monthly facility report of number of people tested for HIV
- Monthly log book report for HIV Rapid test kit usage
- Monthly LMIS report
- Monthly Assessment of stock status and order calculation worksheet (Adult and Paediatric) Monthly summary report of ART patients
- Monthly PMTCT and HTC report
- Monthly report of EID tests performed
- ART client booklet (Includes patient register, initial and follow-up assessment forms for adults and children and HIV exposed baby follow-up form)
- ART, PEP, ANC and HTC registers.
- Monthly report of VL tests performed
- Monthly report of number and percentage of virally suppressed clients

### 8.2 HEALTH INFORMATION MANAGEMENT SYSTEM (HMIS)

This information is collected using client booklet for adults and paediatric; and captured electronically. Where applicable, information collated on monthly summary forms must be transmitted on a timely basis from each facility to the District/Regional Health Directorate for onward transmission to the NACP.

The following information should be obtained from each patient:

- Demographic data
- Medical History (including a diagnosis of, Hepatitis and TB)
- Obstetrics and Gynaecological history including family planning
- Sexual infection history including STI
- HIV status of pARTner and children
- Social History
- Physical Examination
- Psychosocial Evaluation
- Laboratory Evaluation
- Drug Treatment
- Adherence to ARVS
- Side Effects of ARVS

The information received at the national level shall be processed for programming purposes and in support of the decision making process. Feedback will be provided by NACP to the facilities, health administrators and all relevant stakeholders

## 8.3 DATA SYSTEMS

The Ministry of Health's Information Exchange (MoH/HIE) reflects the current concrete reality of "ground-up approach" of health service data flow; and systems delivering valid data for use. The two main existing functional components are the DHIMS II and the E-tracker. This reduces the burden of duplicating data gathering efforts and enhances the value of information otherwise not possible when viewed in isolation.

**8.3.1 DHIMS II**: DHIMS II is a comprehensive web-based Health Management Information System (HMIS) supporting data reporting and analytical needs of health facilities and district health administrations. It is used by health facilities and district health directorates to collect, collate, transmit and analyze routine health service data (i.e. aggregated or transactional).

**8.3.2 HIV/AIDS E-TRACKER MODULE:** The E-Tracker is an extension of the DHIMS II platform and supports data management and analysis of transactional or disaggregated data at the facility level. It enables the NACP to manage case-based records of clients and track clients over time using a flexible set of identifiers to assure data confidentiality and integrity. The system has the added functionality of capturing information about anonymous events and cases. The HIV/AIDS E-tracker module includes a logistic management component (referred as the Logistics Management Information System [LMIS]) which ensures that all logistics related data are appropriately collected and managed from the facility level.

### 8.3.3 LOGISTIC MANAGEMENT INFORMATION SYSTEM (LMIS)

The LMIS is a compilation of manual and/or electronic forms and procedures for logistics data collection and management. LMIS provides the basis for quantifying products to be procured, adjusting stock position, monitoring losses and wastage rates, quantifying the amount to be dispensed to users, identifying irrational use and assuring accountability and transparency in commodities management. This data enables health managers to make critical decisions to ensure the reliable and secure delivery of supplies at all levels of the health system.

#### 8.3.3.1 ESSENTIAL DATA FOR LMIS

Three essential data sets to be collected to run any supply chain management system are:

a) **Stock on hand**: quantities of usable stock available at all levels of the delivery system at a point in time.
b) **Consumption**: the average quantity of commodities dispensed to users during a particular time period.
c) **Losses and adjustments**: Losses are the quantities of commodities removed from the distribution system for reasons other than consumption by client (e.g. expiry, damage, theft etc). Losses and adjustments may be a negative or a positive value on stock inventory respectively.
    - § Adjustments may include receipt or issue of supplies from one facility to another irrespective of the level of service delivery
    - § A correction for an error in counting.

### 8.3.3.2 LMIS FORMS FOR ADMINISTERING ART IN GHANA

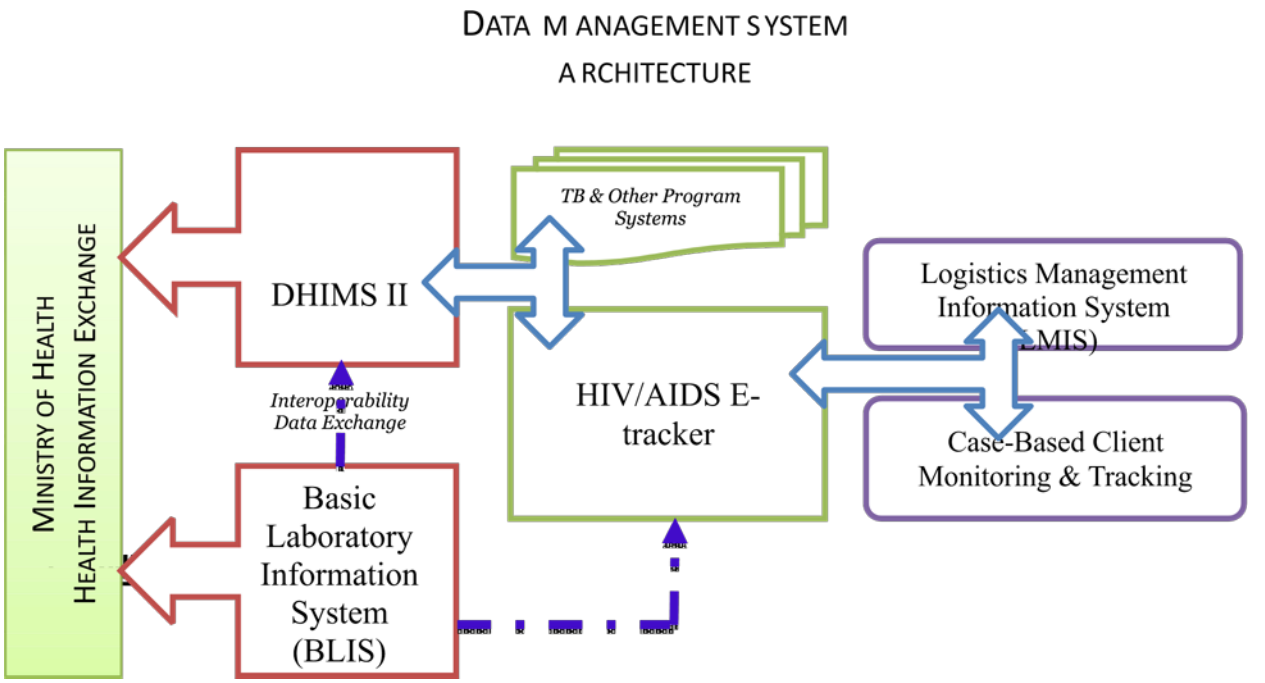
The following manuals and electronic LMIS forms and systems have being designed for use at all facilities administering ART:

- ART Patient Register
- Bin Card
- ARVS Drug Dispensing Log Book
- Monthly Summary Report of ART patients
- Monthly LMIS Report for ARVS drugs Adult Regimen
- Monthly LMIS report for ARVS drugs Paediatric Regimen
- Monthly Assessment of Stock status and order calculation worksheet for Adult and Paediatric ARVS drugs

### 8.3.4 BASIC LABORATORY INFORMATION SYSTEM (BLIS)

The basic laboratory information system (BLIS) currently operates as a standalone web enabled application interoperable with DHIMS II.

BLIS has harmonized data entry forms and configured to include enhanced features for registration of unique clients; tracking of laboratory supplies; aggregate customized reporting including client results; automatic alerts for out-of-range data values; daily logs for review and data verification.


DATA MANAGEMENT SYSTEM
ARCHITECTURE
MINISTRY OF HEALTH
HEALTH INFORMATION EXCHANGE
DHIMS II
TB & Other Program Systems
Logistics Management Information System (LMIS)
Interoperability Data Exchange
HIV/AIDS E-tracker
Case-Based Client Monitoring & Tracking
Basic Laboratory Information System (BLIS)

# CHAPTER 9

## PROCUREMENT, STORAGE AND DISTRIBUTION OF HIV AND AIDS COMMODITIES

### 9.1 PROCUREMENT

#### 9.1.1 GOALS FOR PROCUREMENT OF ARVS AND OTHER HIV COMMODITIES

A critical role of procurement and supply management systems is to ensure the provision of quality and affordable ARVS, drugs for treatment of opportunistic infections, diagnostics and other consumables at service delivery sites.

The strategies and methods by which anti-retroviral drugs are procured shall aim at achieving the following goals:

- Obtain safe, efficacious and quality products in adequate quantities.
- Minimize loss of resources through mis-procurement and product expiry.
- Obtain the lowest possible price
- Cost-effective use of personnel, time and other resources.

#### 9.1.2 CRITERIA FOR SELECTION OF MEDICATIONS

The World Health Organisation has defined the criteria, which are suggested as guidelines for the selection of essential drugs. In the preparation of this protocol the same criteria have been adopted. The selection of ARVS and drugs for treating opportunistic infections shall be guided by the following:

- Current scientific evidence on efficacy and safety.

- The ability of the drug and the pharmaceutical form to provide the most convenient benefit/risk ratio.
- The cost/benefit ratio of the drug and the pharmaceutical form.
- The familiarity of health workers with the drug and pharmaceutical form.
- Availability of an economically convenient manufacturing of the drug in the country.
- Stability of the drug and pharmaceutical form at the available storage conditions.

A fixed dose combination shall be accepted when it provides a proven advantage over single compounds administered separately in therapeutic effect, safety, patients' adherence, or cost.

### 9.1.3 SPECIFICATION

Generic (international non-specific nomenclature) names shall be employed, as the standard means of reference and selected medicines shall conform to the British and United States Pharmacopoeia and or any other officially accepted pharmacopoeial standards.

### 9.1.4 QUANTIFICATION

Quantification of needs at all levels i.e. national and selected treatment centres etc. shall be based on the expected number of manageable cases and the agreed treatment schedules defined for each health problem.

| | | | | |
|---|---|---|---|---|
| Quantity of a drug specified for a standard course of treatment | **X** | Number of treatment episodes of a given health problem | **=** | Total quantity of drug required for the given health problem |

This calculation is repeated for each health problem and its corresponding drug. Where a drug is used for more than one health problem, the respective totals are added together to obtain the total quantity required.

Logistic (consumption) data and service data shall inform the estimation of medications.

### 9.1.5 QUALITY ASSURANCE

Antiretroviral medicines procured by MOH shall be of acceptable quality which shall be demonstrated by:

- Certification of compliance with good manufacturing practice, issued by a competent regulatory authority.
- Certification of quality following testing by an independent quality control laboratory.
- Compliance with the Food and Drugs regulations in Ghana's Public Health Law, which makes it mandatory for all medicines to be registered and to have a system of post registration surveillance.

### 9.1.6 PROCUREMENT

ARVS shall be procured centrally by the Ministry of Health in accordance with the provisions of the Public Procurement Act; (Act 663).

Procurement shall be based on competitive and transparent procurement methods in order to achieve the lowest price possible for quality-assured products, except in the case of emergency orders. In addition procurement should be effected in the largest possible quantities reasonable under the requirements of the programme in order to achieve economies of scale. A framework for awarding a three-year contract with scheduled delivery may be established to ensure uninterrupted supply.

ARVS shall be classified as Programme medicines and shall be by prescription only and not for sale in the open market.

## 9.2 STORAGE AND DISTRIBUTION

ARVS shall be stored at the Central Medical Store (CMS) using a scheduled delivery system to send commodities to the Regional medical stores. Treatment centres shall collect their respective

consignments on a stock rotation basis (first expiry first out basis). Tertiary institutions shall shall also collect their medications through the scheduled delivery system. Collection by facilities using a requisition shall also be complemented by the last mile delivery to the facilities to ensure availability at all times. The audit trail shall be transparent to prevent possible leakages.
At all levels ARVS shall be stored at appropriate temperature under lock and key.

The following Logistics Management Information System (LMIS) forms shall be used at the various levels of the distribution chain.

- ART Patient Register
- Monthly Summary Report of ART Patients
- Bin/Tally Cards
- ARVS Dispensing Log
- Monthly LMIS Report For Anti-Retroviral medicines

### 9.2.1 DISPENSING OF ARVS

Persons specifically trained in communication skills and adherence counselling for People Living with HIV shall dispense ARVS. Task sharing policy has also been developed to ensure task sharing in the management and dispensing of ARVS

All patients shall be provided with clear and simple instructions on the use of ARVS and their side effects.

[24]Refer Ministry of Health/Ghana Health Service, July 2004. Antiretroviral (ARVS) Drugs Logistics Management Information System (LMIS) Guidelines

## APPENDIX 1

### WHO CLINICAL STAGING OF HIV/AIDS FOR ADULTS AND ADOLESCENTS (≥ 15YRS)

| Stages | |
|---|---|
| **Clinical Stage I** | • Asymptomatic.<br>• Persistent generalized lymphadenopathy |
| **Clinical Stage 2** | • Moderate unexplained weight loss (<10% of presumed or measured body weight)<br>• Recurrent respiratory tract infections (RTIs, Sinusitis, bronchitis, otitis media, pharyngitis)<br>• Herpes zoster<br>• Angular cheilitis<br>• Recurrent oral ulcerations<br>• Papular pruritic eruptions<br>• Seborrhoeic dermatitis<br>• Fungal nail infections of fingers. |
| **Clinical Stage 3** | • Unexplained severe weight loss (>10% of presumed or measured body weight)<br>• Unexplained chronic diarrhoea for longer than one month<br>• Unexplained persistent fever (intermittent or constant for longer than one month)<br>• Persistent oral candidiasis<br>• Oral hairy leukoplakia<br>• Pulmonary tuberculosis<br>• Severe bacterial infections (e.g. pneumonia, empyema, meningitis, pyomyositis, bone or joint infection, bacteraemia, severe pelvic inflammatory disease)<br>• Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis<br>• Unexplained anaemia (<8g/dl), neutropenia (<0.5x $10^9$/l) and/orchronic thrombocytopenia (<50 x $10^9$/l). |
| **Clinical Stage 4** | • HIV wasting syndrome<br>• Pneumocystis (jiroveci) pneumonia<br>• Recurrent severe bacterial pneumonia<br>• Chronic herpes simplex infection (orolabial, genital or anorectal of more than 1 month's duration or visceral at any site)<br>• Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)<br>• Extrapulmonary tuberculosis<br>• Kaposi sarcoma<br>• Cytomegalovirus infection (retinitis or infection of other organs) |

| | |
|---|---|
| **Clinical Stage 4** | • Central nervous system toxoplasmosis<br>• HIV wasting syndrome<br>• *Pneumocystis (jiroveci) pneumonia*<br>• Recurrent severe bacterial pneumonia<br>• Chronic herpes simplex infection (orolabial, genital or anorectal of more than 1 month's duration or visceral at any site)<br>• Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)<br>• Extrapulmonary tuberculosis<br>• Kaposi sarcoma<br>• Cytomegalovirus infection (retinitis or infection of other organs)<br>• Central nervous system toxoplasmosis<br>• HIV encephalopathy<br>• Extrapulmonary Cryptococcosis, including meningitis<br>• Disseminated non-tuberculous mycobacterial infection<br>• Progressive multifocal leukoencephalopathy<br>• Chronic cryptosporidiosis<br>• Chronic Isosporiasis<br>• Disseminated mycosis ( Extrapulmonary<br>• histoplasmosis, coccidioidomycosis)<br>• Lymphoma (cerebral or B-cell non-Hodgkin)<br>• Symptomatic HIV-associated nephropathy or cardiomyopathy<br>• Recurrent septicaemia (including non-typhoidal *Salmonella)*<br>• Invasive cervical carcinoma<br>• Atypical disseminated leishmaniasis |

## APPENDIX 2

## A. WHO CLINICAL STAGING OF HIV AND AIDS FOR INFANTS AND CHILDREN

### PERSONS AGED UNDER 15 YEARS WITH CONFIRMED LABORATORY EVIDENCE OF HIV INFECTION

| Stage | |
|---|---|
| **Clinical Stage 1** | • Asymptomatic<br>• Persistent Generalized Lymphadenopathy |
| **Clinical Stage 2** | • Unexplained persistent hepato-splenomegaly<br>• Recurrent or chronic upper respiratory tract infections (otitis media, otorrhoea, sinusitis, tonsillitis)<br>• Herpes zoster<br>• Lineal gingival erythema<br>• Recurrent oral ulceration<br>• Papular pruritic eruption<br>• Fungal nail infections<br>• Extensive wART virus infection<br>• Extensive Molluscum contangiosum<br>• Unexplained persistent parotid enlargement |
| **Clinical Stage 3** | • Unexplained moderate malnutrition a not adequately responding to standard therapy<br>• Unexplained persistent diarrhoea (14 days or more)<br>• Unexplained persistent fever (above 37.5°C, intermittent or constant, for longer than one 1 month)<br>• Persistent oral candidiasis (after first 6 weeks of life)<br>• Oral hairy leukoplakia<br>• Lymph node tuberculosis<br>• Pulmonary tuberculosis<br>• Severe recurrent bacterial pneumonia<br>• Acute necrotizing ulcerative gingivitis or periodontitis<br>• Unexplained anaemia (<8g/dl), neutropenia (<0.5x $10^9$/l) and/or chronic thrombocytopenia (<50 x $10^9$/l).<br>• Symptomatic lymphoid interstitial pneumonitis<br>• Chronic HIV-associated lung disease, including bronchiectasis |

| | |
|---|---|
| **Clinical Stage 4** | • Unexplained severe wasting, stunting or severe malnutrition b not responding to standard therapy<br>• Pneumocystis *(jiroveci)* pneumonia<br>• Recurrent severe bacterial infections (such as empyema, pyomyositis, bone or joint infection, meningitis, but excluding pneumonia)<br>• Chronic herpes simplex infection (orolabial or cutaneous of more than 1 month's duration or visceral at any site)<br>• Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs)<br>• Extrapulmonary tuberculosis<br>• Kaposi sarcoma<br>• Cytomegalovirus infection (retinitis or infection of other organs with onset at age more than 1 month)<br>• Central nervous system toxoplasmosis (after the neonatal period)<br>• HIV encephalopathy<br>• Extrapulmonary Cryptococcosis, including meningitis<br>• Disseminated non-tuberculous mycobacterial infection<br>• Progressive multifocal leukoencephalopathy<br>• Chronic cryptosporidiosis (with diarrhoea)<br>• Disseminated endemic mycosis<br>• (Extrapulmonary histoplasmosis, coccidioidomycosis, penicilliosis)<br>• Cerebral or B -cell non-Hodgkin lymphoma<br>• HIV-associated nephropathy or cardiomyopathy |

a. For children younger than 5 years, moderate malnutrition is defined as weight-for-height <–2 z-score or mid-upper arm

b. For children younger than 5 years of age, severe wasting is defined as weight-for-height <–3 z-score; stunting is defined as length-forage/height-for-age <–2 z-score; and severe acute malnutrition is either weight for height <–3 z-score or mid-upper arm circumference <115 mm or the presence of oedema.

**NB: 1.** Some additional specific conditions can be included in regional classifications, such as penicilliosis in Asia, HIV-associated rectovaginal fistula in southern Africa and reactivation of Trypanosomiasis in Latin America

**1. For WHO Clinical Staging of children 15 years or older use The Adult WHO Clinical Staging Criteria.**

## B. PRESUMPTIVE DIAGNOSIS OF CLINICAL STAGE 4 HIV IN CHILDREN AGED UNDER 18 MONTHS

The presumptive diagnosis is designed for use where access to confirmatory diagnostic testing for HIV infection by means of virological testing for infants and children aged less than 18 months is not readily available. **It is not recommended for use by clinical care providers who are not trained in ART or experienced in HIV care**. It should be accompanied by immediate efforts to confirm the HIV diagnosis with HIV DNA PCR. Presumptive diagnosis of clinical stage 4 disease suggests severe immunosuppression, and ART is indicated.

## PRESUMPTIVE CLINICAL STAGE 4 IN INFANTS AND CHILDREN AGED UNDER 18 MONTHS WHERE VIROLOGICAL CONFIRMATION OF HIV INFECTION IS NOT AVAILABLE

A presumptive diagnosis of stage 4 clinical disease should be made if

An infant is HIV-antibody positive (ELISA or rapid test), aged under 18 months and symptomatic with two or more of the following:

- oral thrush
- severe pneumonia
- severe wasting/malnutrition
- severe sepsis

Other factors that support the diagnosis of clinical stage 4 HIV infection in an HIV-Seropositive infant are:

- recent HIV related maternal death
- advanced HIV disease in the mother
- CD4% < 20%

Confirmation of the diagnosis of HIV infection should be sought as soon as possible.

## C. IMMUNOLOGICAL CATEGORIES FOR PAEDIATRIC HIV INFECTION

Immunological staging for children is also possible. The absolute CD4 count and the percentage values in healthy infants who are not infected with HIV are considerably higher than those observed in uninfected adults, and slowly decline to adult values by the age of 5 years. In considering absolute counts or percentages, therefore, age must be taken into account as a variable. The absolute CD4 count associated with a specific level of immunosuppression tend to change with age, whereas the CD4 percentage related to immunological damage does not vary as much. Currently, therefore, the measurement of the CD4 percentage is recommended in children less than 5 years of age. Just as in adults, immunological staging assists clinical decision making for children more than 5 years of age.

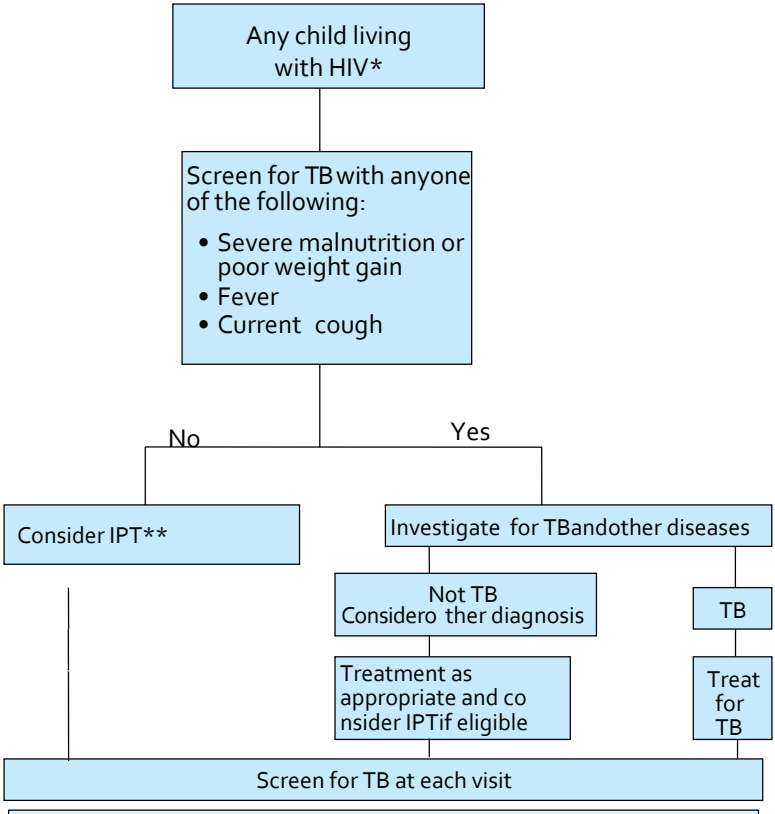
## $CD_4$ LEVEL IN RELATION TO THE SEVERITY OF IMMUNOSUPPRESSION

| Classification of HIV associated immune deficiency | Age-related CD4 values | | | |
|---|---|---|---|---|
| | <11 months (%) | 12-35 months (%) | 36-59 months (%) | ≥5yrs (cells/$mm^3$) |
| Not Significant | >35 | >30 | >25 | >500 |
| Mild | 30-35 | 25-30 | 22-25 | 350-499 |
| Advanced | 25-30 | 20-25 | 15-20 | 200 - 349 |
| Severe | <25 | <20 | <15 | <200<br><15% |

$CD_4\%$

$$CD_4\% = \frac{\text{ABSOLUTE } CD_4 \text{ COUNT}}{\text{TOTAL LYMPHOCYTE COUNT}} \times 100$$

## D. ALGORITHM FOR DIAGNOSIS OF TUBERCULOSIS IN CHILDREN




****NOTE:** Isoniazid Prophylaxis (IPT) to be given only to HIV-exposed infants born to mothers with TB disease who stARTed treatment < 2 months before delivery or to infants and children with exposure to an adult with active TB disease.

***Diagnosis of TB in children is difficult. Include all available evidence in assessment, e.g.**

- careful history
- clinical exam (including growth assessment)

**And, as available:**

- tuberculin skin test
- chest x-ray
- sputum smear microscopy, per expectoration and/or sputum induction, for Gene Xpert and/or AFB
- lymph node biopsy
- gastric aspirate for Gene Xpert and/or AFB

# APPENDIX 3

**DRUG-DRUG INTERACTIONS**

| DRUG | DRUG-DRUG INTERACTIONS |
|---|---|
| Abacavir | Methadone, Phenobarbital, Phenytoin, Rifampicin |
| Atazanavir/ritonavir (ATZ/r) | **As part of the ARVS regimen:**<br>Efavirenz<br>Nevirapine (may increase risk of NVP toxicity)<br>Tipranavir<br>**Other Drugs**<br>Alfuzosin, alprazolam, astemizole, bepridil, cisapride, ergot derivatives, garlic supplements, irinotecan, lovastatin, midazolam, pimozide, pitavastatin, proton pump inhibitors, ranolazine, rifampin, rifapentine, high -dose sildenafil, simvastatin, St. John's wort, terfenadine, triazolam |
| Efavirenz (EFV) | Nevirapine, Antiarrhythmics (Lidocaine, amiodarone), Antiepileptics(Phenytoin, Carbamazepine, Primidone), Antihistamines (Astemizole, Terfenadine, Loratidine), Benzodiazepine, Ergometrine, Grapefruit juice, Indinavir, Lopinavir, Methadone, Nevirapine, Phenobarbital, Rifampicin, Ritonavir, Oral Contraceptives (oestrogen based),Phenobarbital, Benzodiazepine, Saquinavir, St. John's Worts (Herbal) |
| Emtricitabine (FTC) | Lamivudine |
| Lamivudine (3TC) | Emtricitabine, |
| Lopinavir/ Ritonavir (LPV/r) | ARTemether+Lumefantrine, Alprazolam, Amiodarone , Astemizole,<br>Carbamazipine, Chlorpheniramine, C larithromycin,<br>Dexamethasone, D iazepam, Efavirenz, E rythromycin,<br>Itraconazole, Ketaconazole, Lidocaine, Loratidine, Metronidazole, Nelfinavir, O ral contraceptives, Phenobarbitalone, Phenytoin, Rifabutin, Rifampicin, Quinidine, Saquinavir, Simvastatin, St.<br>John's worts, Tenofovir, Terfenadine, Tricyclic antidepressants, |
| Nevirapine (NVP) | Carbamazepine, Cocaine, Efavirenz, Fluconazole, Indinavir,<br>Levonorgestrol, Medroxyprogesterone, Methadone, Norethisterone, Oral contraceptives (oestrogens and progestogens), Phenytoin, Pro tease Inhibitors, Rifabutin, Rifampicin, Indinavir, Efavirenz, Saquinavir, St. John's worts, Warfarin, Carbamazepine, Phenytoin, Cocaine. |

| DRUG | DRUG-DRUG INTERACTIONS |
|---|---|
| Tenofovir (TDF) | Acyclovir, Aminoglycosides, Amphotericin B, Didanosine, Lopinavir, Pentamidine, Probenecid, Salicylates, Vancomycin |
| Zidovudine (AZT) | Cytotoxics (Doxorubicin etc) Fluconazole, Ganciclovir, Ibuprofen, Interferon, Methadone, Phenytoin, Pyrimethamine, Ribavirin, Rifampicin, Stavudine, Valproic Acid |
| Dolutegravir (DTG) | Alumin ium -based medicines, Carbamazepine, Efavirenz, or magnesium hydroxide/magnesium carbonate, calcium Nevirapine, Ferrous compounds, Magnesium compounds, Multivitamins, Phenobarbital, Phenytoin, Rifampin, Sucralfate, Tipranavir, Metformin |
| Raltegravir (RAL) | Aluminium hydroxide and magnesium hydroxide/carbonate/trisilicate, Rifampin |
| Darunavir/r (DRV/r) | Carbamazepine, Lovastatin, Phenobarbital, Phenytoin, Rifampin, Simvastatin, Atorvastatin, Clarithromycin, Erythromycin, Diazepam, Ketoconazole, Fluconazole, Lopinavir, Mefloquine, ABC, AT V, EFV, TDF, AZT, Metformin, Metronidazole, Prednisolone |

| Drug | Adult Dosage | Formula ons | Adverse effects Minor, frequent | Adverse effects serious, dose limi g | Special Instruc ons |
|---|---|---|---|---|---|
| Abacavir (ABC) | 300 mg bid | Tablet | Nausea, Poor Appetite, Vomiting Fatigue Sleep disturbance | Hypersensitivity reaction Lactic acidosis | Caution in liver or renal disease Discontinue use in symptoms of hypersensitivity |
| Atazanavir/ ritonavir (ATV/r) | 300mg/100mg daily | Capsule | Nausea, Diarrhoea, Fever, Rash, Cough, | Hypersensitivity reactions, Severe rash | Caution in liver or renal disease. Discontinue use if severe rash develops or in end stage kidney disease |
| Darunavir/ ritonavir (DRV/r) | 600mg/100mg daily | Tablet | Diarrhoea, Rash, Nausea, Vomiting, Abdominal pain | Stevens-Johnson syndrome, Toxic epidermal necrolysis, | Monitor Liver enzymes before and during treatment |
| Dolutegravir (DTG) | 50mg daily | Tablet | Minor and manageable side effects- headache, tiredness, insomnia | Allergic reactions and liver problems | When given with Efavirenz give 50mg bid |
| Efavirenz (EFV) | 600 mg daily | Capsule/ Tablet | Elevated Liver enzyme Skin rash CNS disturbances | Suicidal ideations, Mania Teratogenicity | Caution in liver disease |

| Drug | Adult Dosage | Formulations | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Emtricitabine (FTC) | 200mg daily | Capsule | Few side effects, rash, peripheral neuropathy reported | Lactic acidosis Hepatomegaly with steatosis | Caution in liver or renal disease Discontinue use in symptoms of hypersensitivity |
| Lamivudine (3TC) | 150 mg bid | Tablet | Few side effects, neutropenia, peripheral neuropathy reported | Lactic acidosis (Rare) | |
| Lopinavir/ ritonavir (LPV/r) | 400 mg /100 mg bid | Tablet | Diarrhoea, nausea, dyslipidemia, lipodystrophy, headache | Hypersensitivity Pancreatitis Diabetes Mellitus | |
| Nevirapine (NVP) | 200 mg daily for 14 to 28 days then 200 mg bid | Tablet | Skin rash | Hypersensitivity Hepatotoxicity | Caution in liver disease |
| Raltegravir (RAL) | 400mg bid | Tablet | Nausea, Vomiting, Diarrhoea, Headache, Abdominal pain | Stevens-Johnson Syndrome, elevated liver enzymes | Can be taken with or without food |
| Tenofovir (TDF) | 300mg bid | Tablet | | Nephrotoxicity (Rare) | To be taken with a meal |
| Zidovudine ( AZT) | 400mg bid | Tablet | Nausea Headache, Fatigue Muscle pains | Anaemia, Neutropenia, gastrointestinal intolerance, Lactic acidosis | Can be taken with or without food |

## Paediatric Drugs and their characteristics

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Abacavir (ABC) | Oral Solution 100/5ml (vol. 240ml)<br><br>Tablet: 60m (dispersible, scored); 120mg (dispersible, scored); 300mg | • 3kg-<6kg: 1 tablet (60mg) twice daily<br>• ≥6kg-<10kg: 1.5 tablets (90mg) twice daily<br>• ≥10kg-<14kg: 2 tablets (120mg) twice daily<br>• ≥14kg-<20kg: 2.5 tablets (150mg) twice daily<br>• v≥20kg-<25kg: 3 tablets (180mg) twice daily (maximum daily dose:<br><16years or weight less than 37.5kg: 300mg/dose twice daily | Fever<br>Rash<br>Nausea<br>Poor<br>Appetite<br>Vomitng<br>Fatigue<br>Sleep disturbance | Hypersensitivity reaction Lactic acidosis | Caution in liver o renal disease.<br><br>Discontinue use if symptoms of hypersensitivity ae suspected. Parent/caregivers must be warned about potential hypersensitivity reaction.<br><br>No food restrictions. Store tablets at controlled room temperature of 20-250C |

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Atazanavir/ ritonavir (ATV/r) | Oral powder 50mg/satchet | ≥3 months to <6years:<br>• 5 to <15Kg, 200mg/80mg daily;<br>• 15-<25K , 250mg/80mg daily;<br>≥6 to18years:<br>• 15 to <20Kg, 150mg/100mg<br>• 20 o <40kg, 200mg/100m<br>• ≥40k , 300mg/100mg | Headache, Nausea, Diarrhoea, Vomiting | Hypersensitivity reaction<br>Lactic acidosis | Taken with food |

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Daruavir/ Ritonavir (DRV/r) | Oral suspension 100mg/ml | • ≥3 years to <10 years:10-<11Kg; 200mg/32mg bd<br>• 11-<12Kg, 220mg/32mg;<br>• 12- <13Kg, 240mg/40mg;<br>• 13-<14kg, 260mg/40mg;<br>• 14-<15Kg, 280mg/48mg; | Headache, Rash, Nausea, Diarrhoea, Vomiting | | Not for children weighing 10Kg or less or aged less than 3 years.<br>Must be administered with food. Administer with caution in patient with known sulphonamide allergy |

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Efavirenz (EFV) | Capsules: 50mg, Tablets: 100mg (dispersible), 200mg (dispersible, scored), 600mg<br><br>Oral solution: 30mg/ml note syrup requires higher dosing than capsules) | • 40 kg and over, 600 mg once daily;<br>• over 3 years/10–14 kg, 200 mg once daily;<br>• 15–19 kg , 250 mg once daily;<br>• 20–24 kg , 300 mg once daily;<br>• 25–32 kg , 350 mg once daily;<br>• 33–39 kg , 400 mg once daily<br>As oral solution<br>• 40 kg and over, 720 mg once daily;<br>• over 3 years/10–15 kg, 270 mg once daily;<br>• 15–20 kg ,300 mg once daily;<br>• 20–24 kg , 360 mg once daily;<br>• 25–32 kg ,450 mg once daily;<br>• 33–39 kg , 510 mg once daily | Elevated Liver enzyme<br>Skin rash<br>CNS disturbances | | Only for children over 3 years<br>Can be taken with food but if taken with food, especially high fat meals, absorption is increased by an average of 50%.<br><br>Administer on an empty stomach.<br>Best given at bed one to reduce CNS side effects.<br><br>Tablets can be split or broken. Capsules may be opened and added to a small amount of food or liquid; they have a very peppery taste but can be mixed with sweet foods to disguise the taste.<br>It is not recommended to take Amodiaquine with EFV. |

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Emtricitabine (FTC) | Oral solution: 10mg/ml | • Over 33 kg, 1 capsule (200 mg) or 24 ml (240 mg) oral solution once daily<br>• 4 months–18 years, under 33 kg, 6 mg/kg oral solution once daily | Few side effects, rash, peripheral neuropathy reported | Lactic acidosis Hepatomegaly with steatosis | Caution in liver or renal Disease Exacerbation of hepatitis in patients with chronic hepatitis B may occur on discontinuation of Emtricitabine |
| Lamivudine (3TC) | Oral Solution 50/5ml (vol: 240ml) | • 3kg-<6kg:30mg orally twice a day<br>• ≥6kg-<10kg:40mg orally twice a day<br>• ≥10kg-<14kg: 60m orally twice a day<br>• ≥14kg-<20kg: 75m orally twice a day<br>• ≥20kg-<25kg: 150m orally in the morning and 75mg in the evening<br>• ≥25kg: 150mg orally twice in a day (Maximum daily dose should not exceed 300mg) | Few side effects, neutropenia, peripheral neuropathy reported | Lactic acidosis | Store at room temperature 150C-300C. Can be administered with food. Decreased dosage with renal impairment |

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Lopinavir/ Ritonavir (LPV/r) | Tablets: 100mg/25mg; 200mg/50mg<br><br>Oral solution: 80/20mg per ml (vol:60ml/ 160ml) | **Body Surface area**<br>•0.4m2-<0.5$m^2$: 1 tablet (100mg/25mg) twice a day<br>•0.5m2-<0.9$m^2$: 2 tablets (200mg/50mg) twice a day<br>•0.9m2-<1.4$m^2$: 3 tablets (300mg/75mg) twice daily<br>•≥1.4$m^2$: 4 tablets (400mg/100mg) twice daily<br><br>**Weight based**<br>•≥7kg–<10kg: 1 tablet (100mg/25mg) twice a day<br>•≥10kg–<14kg: 2 tablets (200mg/50mg) twice a day<br>•≥14kg-<25kg: 2 tablets (200mg/50mg) twice daily<br>•≥25kg-<35kg: 3 tablets (300mg/75mg) twice a day<br>•≥35kg-<40kg: 4 tablets (400mg/100mg) twice a day<br>•>40kg: adult dose (maximum dose: LPV /r 400mg/100mg twice a day) | Diarrhoea, nausea, dyslipidemia, lipodystrophy, headache | Hypersensitivity<br>Pancreatitis<br>Diabetes Mellitus | Reconstituted solution should be refrigerated immediately. All powders must be reconstituted in water, milk, formula, pudding, etc and kept in fridge immediately.<br><br>Do not use acidic food or juices as they Increase the bitter taste. Solution is stable for up to 6 hours<br><br>Because of difficulties with use of powder, tablets preferred.<br><br>Powder for reconstitution and tablets can be stored at room temperatures up to 25$^0$C for 2 months.<br><br>Oral solution must be taken with food. Tablet may be taken with or without food.<br>Tablet must be taken whole and cannot be split or crushed<br><br>It has many drug-drug interactions because Ritonavir inhibits Cytochrome P450 |

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Nevirapine (NVP) | Oral suspension: 50mg/5ml (vol:100ml/ 240ml)<br><br>Tablet: 50 mg (dispersible, scored); 150mg | For prophylaxis against mother to child transmission,<br>• weight less than 2.5kg: 10mg daily for 6 weeks in low risk infant<br>• weight more than 2.5kg: 15mg daily for 6 weeks in low risk infants<br><br>**Induction Dose**<br>• Birth to 6 weeks of age, weight less than 2.5kg: 10mg per day<br>• Birth to 6 weeks of age, weight more than 2.5kg: 15mg per day<br>• 6 weeks of age to 6 months: 20mg per day<br>• 6 months to 9 months: 30mg per day<br>• 9 months to end of breastfeeding: 40mg per day (induction: 160-200mg/m2/dose once daily<br><br>**Maintenance Dose**<br>•3kg-<6kg: 1 tablet (50mg) twice a day<br>•≥6kg-<10kg:1.5tablets (75mg) twice a day<br>•≥10kg-<14kg: 2 tablets (100mg) twice a day<br>•≥14kg-<20kg: 2.5 tablets (125mg) twice a day<br>•≥20kg-<25kg: 3 tablets (150mg) twice a day<br>•≥25-<35kg:1 tablet (200mg) twice a day.<br>(Maintenance: 160-200mg/m2/dose taken twice daily. Maximum dose is 200mg) | Skin rash | Hypersensitivity<br>Hepatotoxicity<br>Stevens-Johnson syndrome | Avoid use if Rifampicin is co-administered.<br><br>Store suspension at room temperature; must be shaken well before dispensing<br><br>Can be given without regard to food<br><br>Tablet can be crushed and combined with small amount of water or food and immediately administered.<br><br>Parents must be warned about a potential life-threatening rash during the 14-day lead-in period. The once-daily induction dose is used to reduce the frequency of the rash.<br>NVP syrup should be used in babies with low Hb. |

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Raltegravir (RAL) | 25mg & 100mg chewable tablets, 100mg/packet of powder for suspension | • 1 month to <12 years, 6mg/kg/dose bid.<br>• ≥12years, 400mg bid | Nausea, Diarrhoea, Headache, Dizziness, Fatigue Abdominal pain Insomnia Fever | Stevens-Johnson syndrome Hypersensitivity reactions Toxic epidermal necrolysis Elevated liver enzymes | Not for neonates Formulations not interchangeable Can be taken with or without food Monitor liver enzymes |
| Tenofovir (TDF) | Powder (40mg/gm) 1 scoop = 1gm= 40mg)<br>Tablet (150mg, 200mg, 250mg, 300mg) | • 2 to less than 12 years: 8 mg/kg orally once a day (Maximum dose: 300 mg/dose)<br>• 12 years or older and at least 35 kg: 300 mg orally once a day | Diarrhoea Nausea Vomiting Flatulence Dyspepsia Rash Headache | Lactic acidosis, Severe hepatomegaly with steatosis, Hypersensitivity, | Avoid use in CrCl <30ml/min Take with or without food. |

| Drug | Preparations | Dosage for Children | Adverse effects Minor, frequent | Adverse effects serious, dose limiting | Special Instructions |
|---|---|---|---|---|---|
| Zidovudine (AZT) | Syrup: 50mg/5ml (vol:100ml/240ml)<br><br>Tablets:60mg (dispersible, scored); 100mg (dispersible) 300mg | For prophylaxis against mother to child transmission<br>• 4mg/kg body weight 12hrly starting within 12hours to 72hours after birth and continuing up to 6 weeks of age for low risk infants, (Total daily dose:360-480mg/m2). For children with suspected nervous involvement, it may be beneficial to use a dose at the higher end of the range.<br><br>**Paediatric dose**<br>• 3kg-<6kg:1 tablet (60mg) twice a day<br>• ≥6kg-<10kg: 1.5 tablets (90mg)<br>• ≥10kg-<14kg: 2 tablets (120mg) twice a day<br>• ≥14kg-<20kg: 2.5 tablets (150mg) twice a day<br>• ≥20kg-<25kg: 3 tablets (180mg) twice a day<br>• ≥25kg-<35kg: 1 tablet (300mg) twice daily (Maximum dose of 300mg every 12 hours) | Nausea<br>Headache<br>Fatigue<br>Muscle pains | Anaemia, Neutropenia, gastrointestinal intolerance, Lactic acidosis | Caution in:<br>pre-existing anaemia liver and renal insufficiency.<br><br>Tablet may be crushed and combined with a small amount of food or water and immediately ingested.<br><br>Stored at room temperature in a tightly closed container to protect from moisture.<br><br>Liquid is stable at room temperature but needs storage in a glass jar and is light sensitive.<br><br>Measuring haemoglobin is recommended before initiating ART and during treatment |

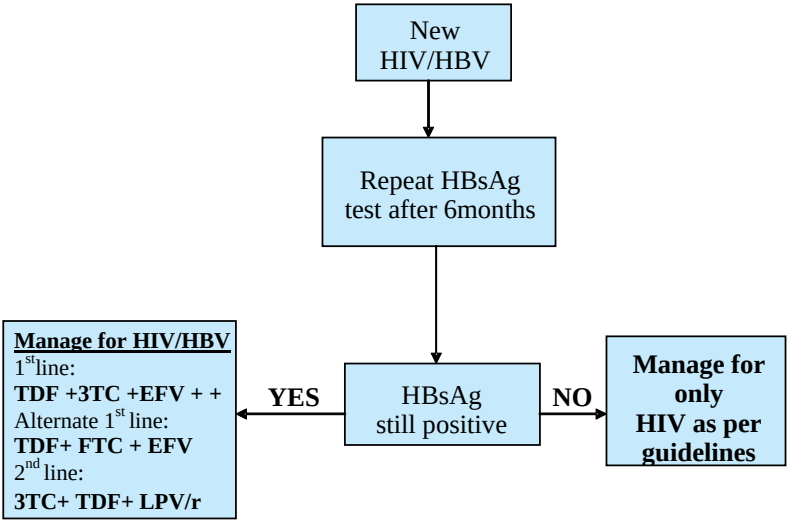
* Adolescent dose is same as adult dosage see adult section

| Adult Fixed dose combinations available in Ghana | | |
|---|---|---|
| Abacavir + Lamivudine + Zidovudine | 300mg + 150mg + 300mg;<br>60mg + 30mg + 60mg | Side effects of fixed dose preparations are as for the individual components |
| | 60mg + 30mg; 120mg + 60mg;<br>600mg + 300mg | |
| Atazanavir + ritonavir + Lamivudine + Zidovudine | 300mg + 100mg + 150mg + 300mg | |
| Atazanavir + ritonavir + Lamivudine + Tenofovir | 300mg + 100mg + 300mg + 300mg | |
| Tenofovir + Lamivudine + Nevirapine | (300mg + 300mg) + 200mg | |
| Tenofovir + Emtricitabine | 300mg + 200mg, 24 hourly | |
| Tenofovir + Lamivudine | 300mg + 300mg, 24 hourly | |
| Tenofovir + Emtricitabine + Efavirenz | 300mg + 200mg + 600mg, 24 hourly | |
| Tenofovir + Lamivudine + Efavirenz | 300mg + 300mg + 600mg, 24 hourly | |
| Zidovudine + Lamivudine | 30mg + 60mg;<br>300mg+150mg,12hourly | |
| Zidovudine + Lamivudine + Nevirapine | 30mg + 50mg + 60mg; 150mg + 200mg + 300mg | |

| Paediatric Fixed dose combination available in Ghana | | | |
|---|---|---|---|
| **Product** | **Formulation** | **Dosing** | |
| Zidouvudine / lamivudine Tablet (Dispersible scored) | 60mg/30mg/ fixed dose | • 3kg - < 6kg: 1 tablet twice daily<br>• 6kg - < 10kg: 1.5 tablets twice daily<br>• ≥ 10kg - <14kg: 2 tablets twic daily<br>• ≥ 14kg - < 20kg: 2.5 tablets twic daily<br>• ≥ 20kg - < 25kg: 3 tablets twic daily | Side effects of fixed dose preparations are as for the individual components |
| Zidouvudine / lamivudine Tablet (Dispersible scored) | 60mg/30mg/50mg fixed dose | • 3kg - < 6kg: 1 tablet twice daily<br>• 6kg - < 10kg: 1.5 tablets twice daily<br>• ≥ 10kg - <14kg: 2 tablets twic daily<br>• ≥ 14kg - < 20kg: 2.5 tablets twic daily<br>• ≥ 20kg - < 25kg: 3 tablets twic daily | |
| Abacavir/ Lamivudine Tablet (Dispersible, scored) | 60mg/30mg/ fixed dose | • 3kg - < 6kg: 1 tablet twice daily<br>• 6kg - < 10kg: 1.5 tablets twice daily<br>• ≥ 10kg - <14kg: 2 tablets twic daily<br>• ≥ 14kg - < 20kg: 2.5 tablets twic daily<br>• ≥ 20kg - < 25kg: 3 tablets twic daily | |

## APPENDIX 5

### ALGORITHM FOR THE MANAGEMENT OF HEPATITIS B VIRUS CO-INFECTION WITH HIV



## APPENDIX 6

## PEP FOR RAPE SURVIVORS

### APPENDIX 6.1:

### FORENSIC EVIDENCE COLLECTION

It is ideal to document injuries and collect samples, such as blood, hair, saliva and sperm within 72 hours of the incident. Whenever possible, this should be done during the medical examination following the order below:

**a. Inspection of the Body**

i. Examine the survivor's clothing under good light before undresses

ii. Collect any foreign debris on clothes, body or in hair

iii. Let survivor undress while standing on a broad sheet of paper to collect any debris that fall

iv. Examine the upper part of body first followed by the lower half

v. Collect torn and stained items of clothing if possibleDocument all injuries in as much detail as possible

vii. Take samples on body or from the mouth for semen analysis in the event of ejaculation into survivor's mouth

viii. Collect samples for DNA analysis from where there could be the assailants saliva or semen on the skin, using cotton tipped-swab moistened with sterile water

ix. Take blood and urine for toxicology testing if survivor was drugged

**b. Inspection of the Perineum and Vulva**

Inspect and collect samples for DNA analysis from around the anus, perineum and vulva using separate cotton-tipped swabs moistened with sterile water

**c. Examination of the Vagina and/or Rectum (depending on the site of penetration or attempted penetration**

i. Lubricate speculum with normal saline or clean water

ii. Using a cotton-tipped swab, collect fluid from the posterior fornix for examination of sperm

a. Use a wet mount to examine and take note of any motile sperms

b. In addition to the first slide a second slide could be made and both air-dried for future examinations

iii. Take specimen from the posterior fornix and the endocervical canal for DNA analysis. Let them dry at room temperature

iv. Collect separate samples from the cervix and the vagina for acid phosphatase analysis

v. Obtain samples from the rectum for similar examinations, if indicated

**d. Maintaining the Chain of Evidence**

i. All evidence collected must be well processed, labelled, stored and transported properly; and documentation must include a signature of everyone who has possession of the evidence at any time, from the person who collects it to the one who takes it to the courtroom.
ii. Evidence should be kept in a safe, secured place, and should be released to the relevant authority at the request of the survivor, the police with the consent of the survivor or at the request of a court of competentjurisdiction.

## APPENDIX 6.2:

### DRUG RECOMMENDATION FOR HIV PEP IN ADULTS AND ADOLESCENTS (>40KG) INCLUDING PREGNANT AND LACTATING WOMEN

| DRUG RECOMMENDATION |
| --- |
| TDF 300mg daily for 28 days +<br>FTC 200mg daily (OR 3TC 150mg 12 hourly ) for 28 days +<br>LPV/r 400mg/100mg 12hourly (OR ATV/r<br><br>300mg/100mg once daily) x 28days<br><br>OR<br><br>AZT 300mg 12hourly x 28 days +<br>3TC 150mg 12 hourly x 28 days<br>+<br>LPV /r 400mg/100mg 12hourly x 28days |

## APPENDIX 6.3: PEP AND MANAGEMENT RECORD FORM FOR RAPE SURVIVORS

Facility:_____Date:_____

Name of Survivor:_____

Age:_____ Sex: _____

Date of Incident: / /_____Time of Incident: _____
dd mm yy

Location of Incident: _____

Brief Background and circumstances of the rape incident:_____

_____

_____

_____

_____

Survivor referred from another facility for the purpose of PEP only:

1. Details of Sexual Violence:
   Raped by more than one person Yes □No□
   Sustained physical bodily injury Yes □No□
   Injuries in the genital area Yes □No□
   Assailant is not known to the Survivor Yes □No□ Assailant is a regular sexual pARTner of Survivor Yes □No□ Other (specify): _____

2. Action taken:
   Attended to by a doctor Yes□ No□
   Other healthcare worker (specify): _____
   Client Reported incident to police Yes□ No□

3. Assailant Information:
   Assailant identified? Yes □No □
   Serological status: HIV +ve □ HIV –ve □ Unknown □

4. Survivor's Health Screen Information:
   Pre-PEP HIV test done Yes □ No□
   Pregnancy Test done Yes □ No□
   Screening for STI done Yes □ No □

5. Outcome of Survivor's Health Screen:
   HIV Positive – Referred to ART Clinic Yes □ No □
   Survivor Pregnant – Referred Yes □ No □
   STIs treatment given Yes □ No □
   Hepatitis vaccination given Yes □ No □
   For client who was not pregnant was emergency Contraception given? Yes □ No□
   If Yes, specify type _____

6. PEP for HIV (even when Survivor refuses to undertake HIV test)
   PEP Started Yes □ No □
   If Yes Start date ____/____/____ Start time _____
   dd mm yy

Stop date_____/_____/_____
dd mm yy

Reasons for stopping: End of course□ Adverse reaction □
Other_____

Medications administered
Combivir (AZT/3TC) □ Lopinavir/r □ Atazanavir/r
Others _____

7. Follow-up of a Survivor on PEP
   HIV test at 6 weeks done Yes □ No □
   HIV test at 3 months done Yes □ No □
   HIV test at 6 months done Yes □ No □

   Outcome of follow-up _____

8. If PEP started but HIV test refused by Survivor she/he must sign below

By signing I acknowledge that I have refused HIV testing prior to taking PEP, contrary to medical advice.

Name:_____Signature:_____

Date: _____

**Name of Provider:**_____**Signature:**_____

**Date:** _____

## APPENDIX 6.4: POST EXPOSURE PROPHYLAXIS OF HIV MONTHLY RETURNS FORM

Name of facility:_____Date:_____
Month:_____
Name of Person Filing
Report:_____
Sign:_____

| INDICATOR | Very low Risk | Low Risk | High Risk |
|---|---|---|---|
| **Total Number of Healthcare Workers (HCW) Reporting after Occupational Exposure** | | | |
| Number Counselled for HIV | | | |
| Number tested for before PEP | | | |
| Number HIV Positive | | | |
| Number starting PEP | | | |
| Number completing PEP | | | |

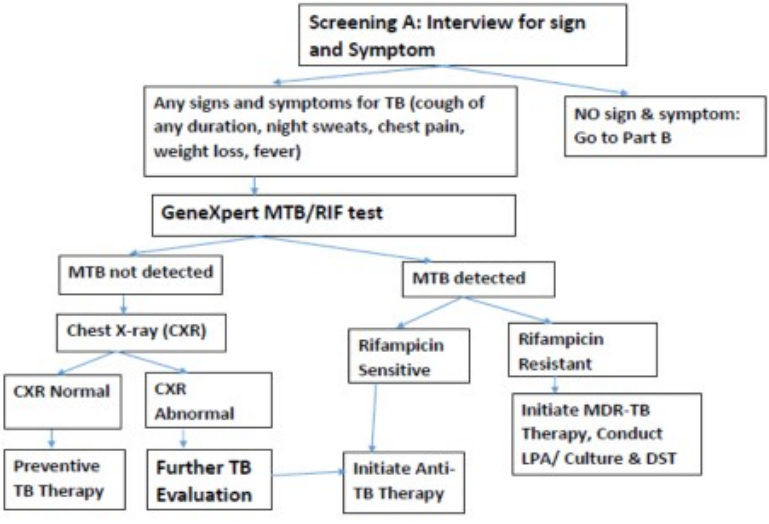
| **Number of Rape Survivors Reporting** | |
|---|---|
| Number Counselled and Tested for HIV before PEP | |
| Number HIV positive | |
| Number starting PEP | |
| Number completing PEP | |

| **Follow-up Testing for HIV at 6 weeks, 3 months and 6 months** | | | | |
|---|---|---|---|---|
| | **Exposed HCW** | | **Rape Survivors** | |
| | positive | negative | positive | negative |
| Number Testing at 6 weeks | | | | |
| Number Testing at 3 months | | | | |
| Number Testing at 6 months | | | | |

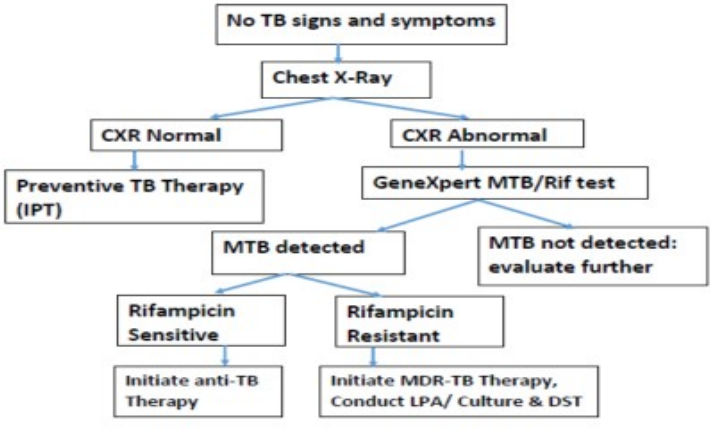
## APPENDIX 7 ALGORITHM FOR

## TB SCREENING IN PLHIV

### Algorithm for Screening and Diagnosis of TB in PLHIV, Part A




### Algorithms for Screening and Diagnosis of TB in PLHIV, Part B

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## APPENDIX 8 HIV VIRAL LOAD AND RESISTANCE TESTING GUIDE

### 1. WHAT IS VIRAL LOAD (VL)?

HIV Viral Load is the quantity of HIV (specific HIV RNA) present in the blood (plasma) at a given time. This does not include HIV outside the bloodstream such as those in the brain and other tissues. The levels of Viral Load can be a predictor of disease progression to AIDS and for those on Anti Retrovirals (ARVS) an indicator of response to antiretroviral therapy (ART).

### 2. MEASUREMENT OF VIRAL LOAD

Viral Load measurement is done using the Polymerase Chain Reaction (PCR) method which allows for measuring viral RNA. The results are reported as copies of HIV RNA per milliliter of plasma (copies/ml), as for example 270,000 copies/ml or 100copies/ml or 50 copies/ml or <50 copies/ml (which is usually reported as undetectable).

### 3. INTERPRETATION OF HIV VIRAL LOAD TESTING RESULTS

Viral loads measurements must always be interpreted bearing in mind that results are affected by laboratory variation and assay fluctuations that may lead to 10-30 percent variation in a test result if the same sample is repeated on the same assay in the same laboratory. For example, 100,000copies/ml is not significantly different from 130,000copies/ml, and 1,100copies/ml is not significantly different from 990copies/ml.The results are also affected by patient variables such as acute illness, and recent vaccinations which may require deferral of viral load testing for at least 4 weeks, or a repeat after 4 weeks for proper appreciation of results.In patients who have been on ART for more than 6 months, there is said to be treatment failure, where viral loads of more than 1,000 copies/ml are obtained for 2 viral loads at least 3 months apart indicating a need to change in antiretroviral regimen.

### 4. INDICATIONS FOR VIRAL LOAD TESTING (WHEN TO REQUEST FOR VIRAL LOAD)

Monitoring of HIV treatment (ART)

a. Routine viral load testing should be conducted at 6months after ART initiation and repeated at 12 months and every 12 months thereafter
b. Diagnosis of Treatment Failure

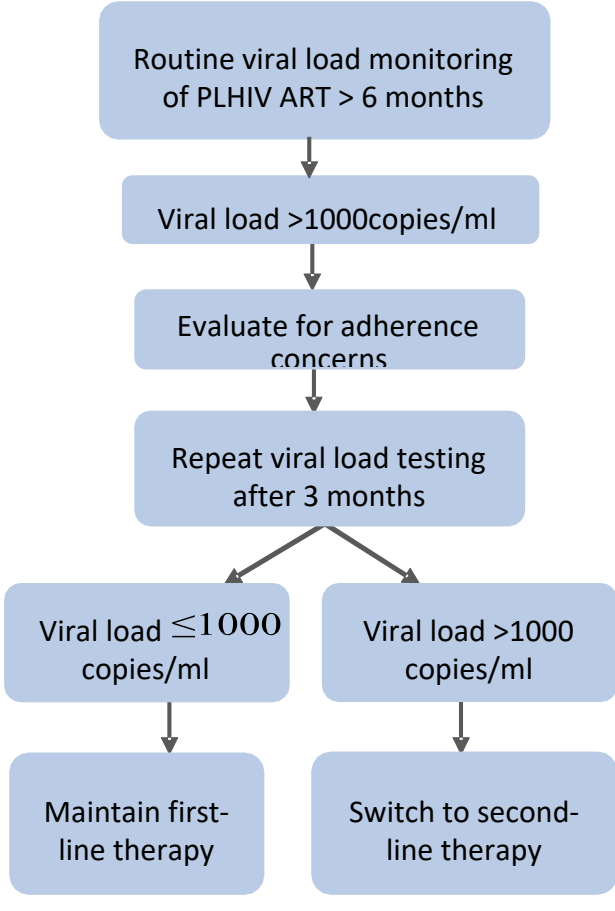
c. Prior to HIV Drug Resistance Testing

## 5. USE OF VIRAL LOAD TESTING RESULTS

a. To determine the efficacy of Treatment Regimen
b. To determine adherence to treatment
c. To diagnose Treatment Failure

## 6. DIAGNOSIS OF VIROLOGICAL FAILURE

Virologic failure is defined as the situation where a PLHIV having been on ART for more than 6 months is found to have persistently detectable viral load exceeding 1000 copies/ml on two consecutive viral load measurements conducted at least 3 months apART with the patient being on same ART regimen with adherence support or virological rebound after a formerly successful regimen without complicating factors such as vaccination or opportunistic infection A person has to have been on ART for at least 6 to 9 months before it can be determined by successive viral loads that the ART regimen has failed.




Note: Switching to second line must be done after consultation

## 7. HIV DRUG-RESISTANCE TESTING

HIV Drug-resistance testing is used to determine changes in the virus (mutations) that will make the virus not responsive to particular anti-retrovirals. In Ghana, our standard resistance test is the genotypic test which enables detections of mutations in the different drug classes, e.g. NRTI, NNRTI and PI. Phenotypic tests can also be applied but these are not routine in Ghana.

## 8. INDICATIONS FOR HIV DRUG RESISTANCE TESTING

a. Virological failure in patients on treatment
b. Monitoring of emergence of HIV Drug-resistance (usually as a survey or follow-up in a cohort of patients on treatment)
c. Establishment of threshold of resistance in PLHIV population at initiation of ART (usually done as a study)
d. Assessment of efficacy of new ARVS about to be introduced or those which have been in use for some time.

## 9. INTERPRETATION OF HIV DRUG RESISTANCE RESULTS

Interpretation is dependent on the purpose for which the test was conducted. As a sequel to virologic failure, the resistance test will give an indication as to which class of ARVS and which particular ARVS the virus had become resistant to in that particular patient.

In the case of emergence and threshold study type resistance testing, the result would give an indication of the levels emergence of resistance in the population on treatment over time and the levels of resistance amongst population of PLHIV at the initiation of treatment respectively

Resistance testing for assessing the efficacy of ARVS provides that baseline information required for decision making.

## 10. REQUESTING DRUG-RESISTANCE TESTING IN GHANA

HIV Drug-resistance testing is conducted in Ghana by the Noguchi Memorial Institute for Medical Research at the University of Ghana, Legon. The information to be provided on blood samples for resistance testing are as follows:

### HIV VIRAL LOAD REQUEST FORM

Name of Client: .....

Age: ..... Sex: .....

ID: .....

Facility: .....

District: ..... Region: .....

Date of Request: ..... Date Sample Taken: .....

---

**Reason for VL Request:**

Treatment Monitoring Diagnosis of Treatment Failure

**Treatment History:**

Date ART initiated: .....

| Regimen | Date Initiated | Duration |
|---|---|---|
| AZT/3TC/EFV | ..... | ..... |
| AZT/3TC/NVP | ..... | ..... |
| TDF/3TC/EFV | ..... | ..... |
| TDF/3TC/NVP | ..... | ..... 2nd Line |
| (Specify PIs: .....) | ..... | ..... |

---

Name of Clinician: .....Date: .....

Signature: ..... Contact: .....

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