

Ministry of Health

REPUBLIC OF SOUTH SUDAN



CONSOLIDATED GUIDELINES FOR PREVENTION AND TREATMENT OF HIV IN SOUTH SUDAN

September 2021

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FOREWORD

HIV and AIDS continue to be a public health priority in the Republic of South Sudan, with a prevalence of 2.5% among adults aged 15-49 years. The country has made some progress with 24% of the estimated 190,000 people living with HIV knowing their status and 67% of those who know their status initiated on life-saving antiretroviral therapy. However, there is concern about the increasing trend in the number of new HIV infections and AIDS-related deaths. In partnership with development partners, the Ministry of Health continues to scale up comprehensive HIV prevention, care, treatment, and support services through a multisectoral and public health approach. Currently, there are more than 90 functional health facilities providing ART in the country.

The review of the ***CONSOLIDATED GUIDELINES FOR PREVENTION AND TREATMENT OF HIV IN SOUTH SUDAN*** has been necessitated by new guidelines by WHO on diagnosis and management of advanced HIV disease, diagnosis, and prevention of TB and cryptococcal disease among PLHIVs, use of optimized regimen including transition to DTG in children 3 – 19.9kg, pre- and post-exposure prophylaxis and differentiated services delivery for PLHIV. It provides an opportunity for the country to strengthen the national response towards the 95-95-95 targets through innovative approaches to HIV prevention, care and treatment and the use of more efficacious and optimized treatment regimens for all population groups. The strategies and recommendations in this updated edition of the guidelines reflect current science and evidence regarding HIV treatment and care, the current epidemiology of HIV in South Sudan, and the need to expand HTS and ART service coverage especially for key populations and those at high risk of HIV infection.

The consolidated guidelines have been revised to provide up-to-date guidance to all those involved in providing HIV services in different settings in South Sudan. I strongly recommend the use of the consolidated guidelines by all stakeholders as we aim to provide quality, client-centred HIV prevention, care, and treatment services.

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ACRONYMS AND ABBREVIATIONS

3TC	Lamivudine	DOTS	Directly Observed Treatment Short Course (for TB)
AAFB	Alcohol acid-fast bacilli	EHRZ	Anti-TB regimen: Ethambutol, Isoniazid, Rifampicin, Pyrazinamide
ABC	Abacavir		
AIDS	Acquired Immune Deficiency Syndrome		
ANC	Antenatal care	EFV	Efavirenz
ART	Antiretroviral Therapy	EIA	Enzyme immune assay
ARVs	Antiretroviral Drugs	EID	Early Infant Diagnosis (of HIV)
ATV	Atazanavir		
AZT	Zidovudine	ELISA	Enzyme-Linked Immunosorbent Assay
BCG	Bacille Calmette Guerin (vaccine for TB)		
BF	Breastfeeding	eMTCT	elimination of Mother to Child Transmission (of HIV)
BMI	Body Mass Index	EPI	Expanded Programme for Immunization
CD4	CD4+ T cell (T lymphocyte bearing CD4 receptor)	EPTB	Extra-pulmonary tuberculosis
CDR	Case Detection Rate (for TB)	FDC	Fixed-Dose Combination
CO	Clinical Officer	FP	Family Planning
CPT	Cotrimoxazole Preventive Therapy	FTC	Emtricitabine
CSF	Cerebrospinal fluid	GOSS	Government of South Sudan
CTX	Cotrimoxazole	HAART	Highly active Antiretroviral Therapy
CXR	Chest X-Ray		
DBS	Dried Blood Spot	HB	Haemoglobin
DNA-PCR	Deoxyribonucleic acid polymerase chain reaction (for EID)	HBC	Home-Based Care
DTG	Dolutegravir	HBV	Hepatitis B Virus
		HCT	HIV Counselling and Testing

HCV	Hepatitis C Virus	NNRTIs	Non-Nucleoside Reverse Transcriptase Inhibitors
HEI	HIV-Exposed Infants	NRTIs	Nucleoside Reverse Transcriptase Inhibitors
HIV	Human immunodeficiency virus	NSP	National Strategic Plan (for HIV&AIDS)
HIVDR	HIV Drug Resistance	NVP	Nevirapine
HSV	Herpes Simplex Virus	OI	Opportunistic Infection
HTS	HIV testing and counselling	ORS	Oral Rehydration Solution
IC	Infection Control (for TB)	PC	Palliative Care
ICF	Intensified Case Finding	PJP	Pneumocystis Jiroveci Pneumonia
IM	Intramuscular	PCR	Polymerase Chain Reaction
INH	Isoniazid	PEP	Post-Exposure Prophylaxis
IPT	Isoniazid Preventive Treatment	PGL	Persistent Generalised Lymphadenopathy
IRIS	Immune Reconstitution Inflammatory Syndrome	PHDP	Positive Health Dignity and Prevention
ITN	Insecticide Treated (mosquito bed) Net	PI	Protease Inhibitor
IV	Intravenous	PITC	Provider Initiated HIV Testing & Counselling
KS	Kaposi sarcoma	PLHIV	People Living with HIV&AIDS
LFTs	Liver Function Tests	PML	Progressive multi-focal Leucoencephalopathy
LPV/r	Lopinavir /ritonavir	PMTCT	Prevention of Mother to Child Transmission
LT FU	Lost to Follow Up	POC	Point of Care (technology)
M&E	Monitoring and Evaluation	PrEP	Pre-exposure Prophylaxis
MCH	Maternal and child health	PTB	Pulmonary tuberculosis
MDR-TB	Multiple Drug Resistant tuberculosis		
MMD	Multi-month dispensing		
MTCT	Mother to child transmission (of HIV)		
NAT	Nucleic Acid Test		

PNC	Postnatal Care	TLD	Tenofovir, Lamivudine and Dolutegravir
RH	Reproductive Health	TB	Tuberculosis
RSS	Republic of South Sudan	TSR	Treatment Success Rate (for TB)
RTV	Ritonavir (as PI booster)	VCT	Voluntary Counselling and Testing
SCM	Supply Chain Management	VIA	Visual inspection (of the cervix) with acetic acid
SGBV	Sexual & Gender-Based Violence	VL	Viral Load
sdNVP	single-dose Nevirapine	VMMC	Voluntary Medical Male Circumcision
SOP	Standard Operating Procedure	WBC	White Blood Cells
SRH	Sexual and Reproductive Health	WHO	World Health Organisation
STD	Sexually Transmitted Disease	ZDV	Zidovudine (or AZT)
STI	Sexually Transmitted Infection		
TEN	Toxic Epidermal Necrolysis		
TDF	Tenofovir (Disoproxil Fumarate)		

1. INTRODUCTION

1.1 CONTEXT

South Sudan has a generalised HIV epidemic with a prevalence of 2.3% among adults aged 15-49 years (1.8 – 2.9), 2.9% (2.2 – 3.6) in women 15 – 49 and 1.7% (1.3 – 2.2) in men of the same age group and an estimated 180,000 (140,000 – 230,000) adults and children living with HIV (UNAIDS, 2020). The number of new HIV infections per year has been on an upward trend, increasing from 14,000 in 2010 to 17,000 in 2020 while the annual AIDS-related deaths have declined from 10,000 to 8,900 over the same period. The country has geographic areas (Eastern, Central, and Western Equatoria) with high HIV concentration accounting for 60% of new HIV infections in the country. By the end of 2020, 29% of the estimated people living with HIV knew their status, 79% of those who knew their status were on antiretroviral therapy (ART) and 80% of those on ART had achieved viral load suppression.

The HIV response in South Sudan has been adapted to the country's context which is characterised by recovery from protracted conflict, the high number of returnees and internally displaced persons (IDPs) facing humanitarian crises and refugees. These guidelines provide context-specific recommendations for the use of antiretroviral drugs for HIV treatment and prevention services using a public health approach in a resource-constrained, conflict and emergency humanitarian settings. A large population including PLHIV face food insecurity and its potential impact on adherence to ARVs and Opportunistic Infections (OIs) medications. Access to lifesaving ARVs could be challenging particularly among hard-to-reach population groups including highly mobile refugees residing in the neighbouring countries and among the internally displaced communities.

The national ART guideline and scope of the HIV response in South Sudan has evolved over time. The first national guideline for the use of antiretroviral drugs in South Sudan was launched in 2008. At that time, the CD4 threshold for antiretroviral therapy (ART) initiation in adults was 200 cells/mm³, and for pregnant women not eligible for ART, a short course of ARV prophylaxis during pregnancy until shortly after delivery (option A) was recommended. In 2012, an addendum to these guidelines expanded ART eligibility to include all adult People Living with HIV (PLHIV) with CD4 below 350 cells/mm³. The number of sites accredited to provide ART services in the country has increased from 35 in 2016 to 82 at the end of 2020. nationally. The number of HIV positive individuals (adults, adolescents, pregnant and breastfeeding women, and children) receiving ART has also increased from 20,000 to 42,000 within the same time period. by the end of 2016. Currently treatment coverage across all populations is approximately 23%.

In July 2021, the World Health Organisation (WHO) released a consolidated HIV prevention, testing, treatment, service delivery and monitoring guideline ARV Guidelines for the Treatment and Prevention of HIV Infection. The recommendations were aimed at increasing equitable access to quality ART and reducing HIV transmission. The ‘consolidated’ guidance on HIV treatment and prevention addresses all the various population groups (adults, adolescents, children, and pregnant women), in different clinical care settings, including tuberculosis (TB) clinics, Mother & Child Health (MCH) clinics, ART clinics, and HIV testing sites.

1.2 OBJECTIVES OF THE GUIDELINES

The objectives of this consolidated guidelines are:

- To provide an updated, standardised, and simplified guide for the use of antiretroviral drugs in comprehensive HIV and AIDS service delivery setting for different age groups.
- To provide guidance on key service delivery and operational matters needed to deliver an efficient, effectiveness and client-centred HIV prevention, care, and treatment program
- To strengthen the health system for the delivery of quality prevention and treatment services across the continuum of care for people living with HIV
- To serve as a reference material for health service providers, programme managers, researchers, and people living with HIV.

1.3 SPECIFIC NATIONAL PROGRAMME OBJECTIVES

- i. To scale-up HIV Testing Services (including PITC) using specific and targeted HTS approaches, including HIV self-testing and index testing and promote linkage to prevention, care, and treatment
- ii. To initiate ART for all HIV positive adults, including pregnant women, adolescents, and children irrespective of CD4 count or WHO clinical stage using optimized treatment regimens
- iii. To decentralise and scale-up comprehensive client-centred HIV prevention, care, and treatment services through capacity building and accreditation of more health facilities to provide HTS, initiate ART, manage, monitor, and refer clients for further management
- iv. To introduce and rollout Pre-exposure Prophylaxis (PrEP) among HIV negative individuals at substantial risk of HIV infection
- v. To develop a national policy on task shifting and sharing to address the shortage of human resources for health, enhance staff retention and recruitment of staff
- vi. To strengthen the supply chain management system to support the scale-up of the HIV program
- vii. Strengthen the HIV programme monitoring and evaluation system

- viii. Rollout early infant diagnosis testing services and use of viral load for monitoring HIV treatment response and for the diagnosis of treatment failure
- ix. To strengthen the health system through service integration and linkages for different population groups and clinical settings

1.4 TARGET AUDIENCE

These guidelines are targeted to reach the following audiences:

- Clinicians and other health service providers in both public and private sectors
- Programme managers at different levels and across related sectors such as the TB programme, laboratory services, MNCH and reproductive health programmes and commodity supply chain management
- Health facility administrators
- Training institutions and researchers
- Development partner agencies that support the national programme and civil society
- Regulatory authorities

1.5 PROCESS OF UPDATING THE GUIDELINES

A widely consultative process to update the consolidated guidelines was conducted through the leadership of the Ministry of Health, with technical support from WHO. The process included a systematic review of the latest WHO global guidance published since the last edition of the national guidelines were updated across HIV prevention, care, and treatment. In addition, interventions that were in older WHO global guidance that was not included in the last edition of the national guidelines due to resource or capacity limitations were revisited. Consultations were made with key stakeholders including the MOH policymakers and programme managers, funding, and technical partners as well as service providers and civil society through in-depth interviews. All recommendations for the updates were consolidated by the consultants and presented to members of the National HIV and AIDS Technical Working Group and other stakeholders during a Stakeholders Consultative and Consensus Building Workshop. During the workshop, teams reviewed the draft updated guidelines using the Appraisal of Guidelines for Research & Evaluation (AGREE) Instrument which is a framework for a methodological development of guidelines. The AGREE II Instrument consists of 23 key items organized within 6 domains and also includes 2

global rating items: overall quality of the guideline and whether the guideline is recommended for use in practice.

Feedback from the Consensus Building Workshop was consolidated by the consultant and presented as draft updated guidelines to the MOH for approval and final sign off.

1.6 KEY HIGHLIGHTS OF THE UPDATED CONSOLIDATED GUIDELINES

These recommendations provide an opportunity for improved quality of life for people living with HIV (PLHIV) and a reduction in new HIV infections in South Sudan. The following table highlights the key updates that have been included in this edition of the consolidated guidelines:

Table 1 Key summary of recommendations of the updated guidelines

HIV testing services	<p>South Sudan has adopted algorithm for HIV test using two consecutive reactive tests as basis for HIV-positive diagnosis (See chapter 3 and Annex xx: National Algorithm).</p> <p>HIV self-testing (HIVST) is recommended as an additional strategy for increasing HIV testing coverage. A positive HIV self-test result always requires further testing and confirmation from a trained tester using the standard national testing algorithm before initiation of antiretroviral therapy in an approved setting (community or facility). See details on HIVST in chapter 3).</p> <p>Oral testing kits are now approved for use in children ≥ 2 years of age, when assisted by a caregiver, lay worker or healthcare professional. A pilot implementation will inform the national rollout.</p>
Management of clients presenting	<p>All new PLHIVs and those returning to care should have a CD4 cell count done to diagnose advanced HIV disease (AHD). However, this should not stop initiation of ART where CD4+ cell count is not</p>

with advanced disease	immediately available. Where CD4+ cell count is not available diagnosis of AHD should be based on WHO clinical staging. PLHIVs presenting or returning to care with symptoms suggestive of stage 3 and 4 are considered to have AHD. See details of components of package of care for patients presenting with ADH in chapter xxx.
Preferred first-line ART	<p>Tenofovir/Lamivudine/Dolutegravir (TLD) is the preferred first-line antiretroviral therapy (ART) regimen for adults (including women of childbearing potential), adolescents and children living with HIV including those weighing above 3kg.</p> <p>LPV/r and RAL are recommended alternatives to DTG in children. RAL should be used in special circumstances when DTG and LPV/r is unavailable or cannot be used (poor tolerability of administration with LPV/r).</p> <p>In children >3 years and >15kg, Efavirenz can be used in special circumstances when DTG, LPV/r and RAL is unavailable or cannot be used. It can also be used in low dose of 400mg with an AZT/3TC NRTI backbone.</p>
Second-line regimens	<p>DTG containing regimens are recommended as preferred second-line options for PLHIV for whom non-DTG-based regimens are failing</p> <p>Boosted protease inhibitor (ATV/r or LPV/r) containing regimens are recommended as preferred second-line regimen for PLHIVs for whom DTG-based regimens are failing</p>
TB preventive treatment Options	<p>Daily Isoniazid monotherapy for 6 months (6H) is recommended for the treatment of latent TB infection (LTBI) in both adults and children.</p> <p>Daily Rifampicin plus isoniazid for 3 months (3HR) for adults, adolescents, and children</p> <p>Weekly Rifapentine and Isoniazid for 3 months 3(HP)</p> <p>Daily Isoniazid and Rifapentine for 1 month (for PLHIVs \geq13 years</p>
	Eligibility criteria for PrEP should be based on the standard risk assessment tool included in this guideline

Pre-exposure prophylaxis (See details in Chapter 2)	Daily Tenofovir + Lamivudine (TDF/3TC) is recommended as an additional HIV prevention option for HIV negative individuals, including pregnant and breastfeeding women at substantial risk of HIV infection throughout the period of HIV risk
	PrEP can be delivered through a vaginal ring containing Dapivirine ring. It is an option for women who are unable to or do not want to take oral PrEP
	Event-Driven Dosing for MSM (ED-PrEP) when an isolated act of sex is involved
Post-exposure prophylaxis	TDF + 3TC + DTG is recommended as the preferred regimen for HIV post-exposure prophylaxis (PEP) for adolescents and adults
Service delivery	Clients stable on ART should be given refills lasting 3-6 months through fast-track platforms or decentralised refill points

The implementation of these recommendations is supported by the national scale-up plan that aimed to achieve universal access since 2017. This guideline supports expansion of HIV testing services (HTS) especially through provider-initiated testing and counselling (PITC), community-based HIV testing and early infant diagnosis (EID), further decentralising ART to match PMTCT and TB care delivery. It also supports the adoption of a task shifting and sharing approach to address the human resource gaps that exists in the HIV care and treatment program in South Sudan.

2. PREVENTION OF HIV

HIV PREVENTION APPROACHES

Prevention of new HIV infections remains the cornerstone of HIV control in the absence of a cure. This will be achieved through the implementation of combination HIV prevention which UNAIDS defines as a rights-, evidence-, and community-based program that promotes a combination of biomedical, behavioural, and structural interventions designed to meet the HIV prevention needs of specific people and communities. **Figure 2.1 below** highlights the 3 pillars and interventions for combination HIV prevention.

In South Sudan, the HIV epidemic is driven by multiple behavioral, biomedical, and structural factors. There is therefore no single HIV prevention intervention that is sufficient to prevent all HIV transmissions. The country has therefore, adopted the combination HIV prevention approach as described above to meet the HIV prevention needs of the population and to have the greatest possible impact on reducing new infections.

This chapter will provide guidance on how to implement interventions that reduce the acquisition of new infections among HIV-uninfected individuals especially those at substantial risk of HIV infection. Substantial risk of HIV infection is defined as HIV incidence greater than 3 per 100 person-years in the absence of PrEP.

Figure 2.1 Components of combination HIV prevention

Behavioural Interventions

- Reduce the frequency of potential HIV transmission events
- Behavioural change communication
- Safer sexual behaviour
- Delay in sexual debut
- Reduction in number of sexual partners
- Knowledge of HIV status

Biomedical Interventions

- Tools, commodities, or procedures that lower infectiousness of HIV infected persons and/or susceptibility of HIV negative persons to HIV
- Includes: HTS, VMMC, Condoms, PMTCT, PEP, PrEP and treatment as prevention

Structural Interventions

- That affects access to, uptake of and adherence to behavioural and biomedical interventions
- That addresses the critical social, legal, political, economic and environmental enablers that contribute to HIV transmission
- That reduces stigma and discrimination
- That promotes gender equality and prevention of gender-based violence
- Designed to enhance referrals, adherence, retention and community mobilisation

2.1 BEHAVIORAL CHANGE AND RISK REDUCTION INTERVENTIONS

Behavioral interventions include a range of behavior change communication activities designed to promote HIV risk-reducing and protective behaviors. These activities span, and often combine mass media, community mobilization, advocacy, and interpersonal communications (IPC). Social media and mobile technology are important tools that should be integrated into HIV prevention programs. **Table 2.1 below** shows services for behavioral change and risk reduction.

Table 2.1: Services for behavioral change and risk reduction

Area	Guidance
Service delivery	<ul style="list-style-type: none"><input type="checkbox"/> Each health facility or program should have a focal person for HIV prevention<input type="checkbox"/> All staff offering prevention services need to be trained and retrained<input type="checkbox"/> Establish peer-led HIV prevention model for priority and key populations<input type="checkbox"/> Support outreach for key and priority populations<input type="checkbox"/> Develop job aids for quality assurance and standardization of HIV prevention services<input type="checkbox"/> Ensure linkage and follow-up between facility and community service delivery points
Risk assessment for client	<ul style="list-style-type: none"><input type="checkbox"/> Offer HTS to sexually active clients who have not been tested for HIV in the past or have had exposure risk to HIV within the last three months<input type="checkbox"/> Assess sexual behavior of the client<ul style="list-style-type: none">▪ History of unprotected sex<ul style="list-style-type: none">○ with casual partners in last 3 months○ with regular partner of unknown HIV status in last 3 months○ with multiple partners▪ Ask for correct and consistent use of condoms,▪ Involved in transactional sex/sex work<input type="checkbox"/> Discuss knowledge of partner's HIV status and sexual behavior<input type="checkbox"/> Assess for STIs in the last 3 months<input type="checkbox"/> Check for history of blood transfusion<input type="checkbox"/> Check for history of needle sharing or scaring/cutting for cultural or social reasons
	<ul style="list-style-type: none"><input type="checkbox"/> Discuss delay of sexual debut in children and adolescents (abstinence)<input type="checkbox"/> Discuss correct (where possible demonstrate with job aids) and consistent condom use and offer condoms as appropriate

Provide socio-behavioral change communication (SBCC) and link to services as appropriate	<ul style="list-style-type: none"> <input type="checkbox"/> Discourage multiple, concurrent sexual partnerships to promote faithfulness with a partner of known HIV status <input type="checkbox"/> Discourage cross-generational and transactional sex <input type="checkbox"/> Counsel on reducing HIV risk in the context of widow inheritance, wife replacement and childhood marriages <input type="checkbox"/> Identify, refer, and link clients to other available facility and community services <input type="checkbox"/> Assess for physical, emotional, or sexual violence; if client discloses sexual violence, assess if the client was raped and act immediately (see Section 2.3.1xx for GBV case management and Section 2.2.3 for PEP)
Condom promotion and provision	<p>Discuss and demonstrate correct and consistent use of condom as an effective prevention method of HIV</p> <ul style="list-style-type: none"> <input type="checkbox"/> Discuss barriers to condom use <input type="checkbox"/> Clarify any questions and dispel myths around condoms <input type="checkbox"/> Allow the client to role play <input type="checkbox"/> Practice how to introduce condoms in relationship <input type="checkbox"/> Provide condoms and lubricants to client (lubricants prevent pain and irritation during sex and can help keep the condom from breaking)

2.2 BIOMEDICAL PREVENTION INTERVENTIONS

Biomedical interventions include several medical interventions that can prevent HIV infection, reduce transmission, and/or reduce the risk of infection. They directly influence the biological system through which the virus infects a new host. They include correct and consistent use of male and female condoms and lubricants, HIV testing and counselling, PMTCT, STI diagnosis and treatment, ART as prevention (PrEP and PEP), microbicides and vaccines. This section will focus on VMMC, PEP and PrEP. The other interventions will be discussed in other chapters (eMTCT ([Chapter xxx](#)), ART ([Chapter xxx](#)) and STI screening and treatment ([Section xxx](#)))

2.2.1 Voluntary Medical Male circumcision

Medical male circumcision is the surgical removal of the foreskin of the penis. This intervention has been recommended as an important strategy, alongside other behavioral and biomedical HIV prevention interventions, for the prevention of heterosexually acquired HIV in men in settings where heterosexually transmitted HIV is high (WHO 2020). Several studies have shown that VMMC reduces HIV transmission from women with HIV to men by up to 60% in countries with high HIV prevalence in the general population. **Table 2.2** below describes the process involved in providing VMMC.

Key Considerations for Implementing VMMC

1. VMMC for younger adolescent boys

The decision to offer VMMC to younger adolescents 10-14 years old must consider the following:

- The public health burden of HIV and the incidence of HIV among boys 10-14 years old
- Consent - consider postponing non-emergency invasive and irreversible interventions such as VMMC until the child is sufficiently matured to provide informed consent
- Capacity of health care workers to facilitate a rights-based guidance on informed consent, assent, and confidentiality
- Safety of VMMC due to increased risk of serious adverse event among adolescents with immature genitalia. Consider deferral until they are more physically developed

2. Sustaining VMMC with a focus on adolescent boys - to sustain high VMMC coverage and its benefits in HIV prevention

- Services should focus on older adolescents, adult men and men at high risk of contracting HIV
- VMMC should be embedded within routine high quality health service that are people-centered and widely accessible

3. Use of device-based methods for male circumcision has the potential to

- Make the procedure simpler and can be performed by non-physician health care workers

- Make VMMC more acceptable thereby expanding coverage and increasing program impact

Table 2.2: Process of providing safe male circumcision

Process	Description
Priority groups for SMC	<input type="checkbox"/> All males in reproductive age group (including adolescent boys)
Recommended methods for SMC	<input type="checkbox"/> Conventional surgery using the dorsal slit method <input type="checkbox"/> WHO pre-qualified devices
Eligibility Screening for SMC	<input type="checkbox"/> Screen for STIs: If STIs are present defer the circumcision and treat the STIs (see Section xxx) <input type="checkbox"/> Tetanus Immunization Status: All persons undergoing circumcision should have at least one documented TT dose if undergoing the dorsal slit method and two doses given at least 28 days apart and not more than 6 months apart if WHO pre-qualified devices are used. If there is no evidence of TT defer VMMC and refer for TT <input type="checkbox"/> Penile abnormalities: If there are any penile abnormalities, refer for specialist care <input type="checkbox"/> Bleeding disorders: If there is a history of bleeding disorders, defer VMMC and refer <input type="checkbox"/> Existence of chronic disease conditions such as diabetes or hypertension: Defer VMMC and refer
Consent/assent	<input type="checkbox"/> All clients should receive information regarding VMMC and understand the benefits and risks of VMMC <input type="checkbox"/> The client should provide consent/assent prior to the procedure
HIV testing	<input type="checkbox"/> All VMMC clients should be offered HTS using an opt out approach <ul style="list-style-type: none"> • A positive HIV test is not a contraindication to circumcision • Initiate ART in men and adolescents who test HIV positive

Follow up after SMC	<input type="checkbox"/> Following conventional surgery: at 48 hours, seven days and at six weeks <input type="checkbox"/> Following device circumcision: follow the manufacturer guidance for the device used
--------------------------------	---

2.2.2 Post-Exposure Prophylaxis

Definition: Post-exposure prophylaxis (PEP) is the short-term use of ARVs to prevent HIV infection in persons accidentally exposed to potential risk of acquiring HIV infection. Exposure refers to both occupational (e.g., needle stick injuries among health workers or contact with infectious body fluids) or non-occupational exposure (e.g., sexual assault or rape). The biological rationale for prophylaxis with antiretroviral therapy is that initial virus uptake and antigen processing after inoculation may take several hours or even days. This presents a window for therapeutic intervention before virus propagation occurs. It is recommended that PEP for HIV infection should be offered and initiated as early as possible in all individuals with an exposure that has the potential for HIV transmission as soon as possible within 72 hours.

Types of exposure:

1. **Occupational exposures** occur in the health care or laboratory setting and include sharps and needle stick injuries or splashes of body fluids to the skin and mucous membranes. The risk of transmission is greatly increased if associated with deep injury, visible blood on the sharp instrument, procedure involving a needle placed in the source patient's blood vessel, virally unsuppressed patients, and terminal illness in the source patient. Other types of occupational exposure that require consideration for PEP include mucosal exposure of the mouth, eye, or nose by splashing infectious body fluids and broken skin exposure to blood, blood-stained body fluids, or other infectious body fluids (breast milk, genital secretions, cerebrospinal, amniotic, synovial, pericardial, and pleural fluids).

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

- do not squeeze, suck, or rub the injury site
- Allow blood or secretion to flow freely
- Wash exposed area immediately with soap and running water or antiseptic solution such as 2% polyhexidine or 70% glutaraldehyde

- After a splash to the eye or any other mucous surface, irrigate/rinse the exposed area immediately with water (preferably running water) or normal saline
 - Report the exposure to senior member of staff, supervisor, or PEP officer
 - Assess for PEP eligibility and provide PEP if eligible
2. **Non-occupational exposures include** exposure following sexual assault like in rape especially where the HIV status of the perpetrator cannot be readily determined, or perpetrator belongs to a high risk or priority population.

Steps in assessing need for Post-Exposure Prophylaxis

Health facilities providing PEP must have health care workers who have been trained on infection prevention and control, and management of PEP. The health care workers should use the steps in **Table 2.3** to assess clients for PEP eligibility and provide PEP if eligible.

Table 2.3: Steps for providing post-exposure prophylaxis (PEP)

Step	Description											
Step 1: Clinical assessment and providing first aid	Conduct a rapid assessment of the client to assess exposure and risk and provide immediate care. <ul style="list-style-type: none"> <input type="checkbox"/> Timing of the potential exposure <input type="checkbox"/> HIV Status of the exposed person <input type="checkbox"/> The Nature and risk of the exposure <input type="checkbox"/> The HIV status of the source of the potential exposure 											
	<u>Determination of Risk in occupational exposure</u>											
	<table border="1"> <thead> <tr> <th></th> <th><u>Low Risk</u></th> <th><u>High Risk</u></th> </tr> </thead> <tbody> <tr> <td>1</td><td><u>Solid needle or superficial exposure on intact skin</u></td><td><u>Large bore needle, deep injury, visible blood on device, needle in patient artery or vein</u></td></tr> <tr> <td>2</td><td><u>Small volume (drops of blood) on mucous membrane or non-intact skin exposure</u></td><td><u>Large volume (major blood splash on mucous membrane or non-intact skin exposure)</u></td></tr> <tr> <td>3</td><td><u>Source is asymptomatic, or viral load <1000 copies/ml</u></td><td><u>Source patient is symptomatic, in acute seroconversion and has high viral load (>1000 copies/ml)</u></td></tr> </tbody> </table>		<u>Low Risk</u>	<u>High Risk</u>	1	<u>Solid needle or superficial exposure on intact skin</u>	<u>Large bore needle, deep injury, visible blood on device, needle in patient artery or vein</u>	2	<u>Small volume (drops of blood) on mucous membrane or non-intact skin exposure</u>	<u>Large volume (major blood splash on mucous membrane or non-intact skin exposure)</u>	3	<u>Source is asymptomatic, or viral load <1000 copies/ml</u>
	<u>Low Risk</u>	<u>High Risk</u>										
1	<u>Solid needle or superficial exposure on intact skin</u>	<u>Large bore needle, deep injury, visible blood on device, needle in patient artery or vein</u>										
2	<u>Small volume (drops of blood) on mucous membrane or non-intact skin exposure</u>	<u>Large volume (major blood splash on mucous membrane or non-intact skin exposure)</u>										
3	<u>Source is asymptomatic, or viral load <1000 copies/ml</u>	<u>Source patient is symptomatic, in acute seroconversion and has high viral load (>1000 copies/ml)</u>										
Provide PEP when: <ul style="list-style-type: none"> <input type="checkbox"/> Exposure occurred within the past 72 hours; and <input type="checkbox"/> The exposed individual is not infected with HIV; and 												
Step 2: Eligibility assessment												

	<ul style="list-style-type: none"> <input type="checkbox"/> The ‘source’ is HIV-infected, has unknown HIV status and is a high-risk individual <p>Do not provide PEP when:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The exposed individual is already HIV-positive <input type="checkbox"/> The source is established to be HIV-negative <input type="checkbox"/> Individual was exposed to bodily fluids that do not pose a significant risk (e.g., tears, non-blood-stained saliva, urine, sweat) <input type="checkbox"/> Exposed individual declines an HIV test
Step 3: Counseling and support	<p>Counsel on:</p> <ul style="list-style-type: none"> <input type="checkbox"/> The risk of HIV from the exposure <input type="checkbox"/> Risks and benefits of PEP <input type="checkbox"/> Side effects of ARVs (see Table xxx) <input type="checkbox"/> Enhanced adherence if PEP is prescribed <input type="checkbox"/> Importance of linkage for further support for sexual assault cases <input type="checkbox"/> Discuss the benefits of PrEP for prolonged protection if PEP is required repeatedly within the last 6 months
Step 4: Prescription	<p>Recommended regimens include:</p> <p>Preferred in Adults: TDF+3TC+DTG</p> <ul style="list-style-type: none"> <input type="radio"/> Alternatively, where DTG cannot be used, EFV can be used <input type="radio"/> Where DTG and EFV cannot be used LPV/r, RAL or DRV/r can be considered as alternatives <p>Children >30kg: TDF+3TC+DTG</p> <ul style="list-style-type: none"> <input type="radio"/> EFV can be used as an alternative to DTG <p>Children <10 years or <30kg: the preferred NRTI backbone for PEP is ABC + 3TC</p> <ul style="list-style-type: none"> <input type="radio"/> DTG is the preferred third drug <input type="radio"/> Alternative NRTI backbone include AZT + 3TC or TDF + 3TC <input type="radio"/> Age-appropriate alternatives to DTG for PEP in this group are LPV/r, ATV/r, RAL, DRV/r <ul style="list-style-type: none"> <input type="checkbox"/> NVP should never be used for PEP as the risk of fatal hepatotoxicity outweighs the risk of HIV infection <input type="checkbox"/> A complete course of PEP should run for 28 days <input type="checkbox"/> Document the event and patient management in the PEP register (ensure confidentiality of patient data) <p>If the source patient is on 2nd line ART or has failed 1st line ART</p> <ul style="list-style-type: none"> <input type="radio"/> The preferred PEP regimen should be a 2nd line regimen <p>If the source patient has failed 2nd line</p> <ul style="list-style-type: none"> <input type="radio"/> 3rd line ART should be used for PEP
Step 5: Provide follow-up	<ul style="list-style-type: none"> <input type="checkbox"/> Discontinue PEP after 28 days <input type="checkbox"/> Perform follow-up HIV testing three months after exposure <input type="checkbox"/> Counsel and link to HIV clinic for care and treatment if HIV-positive <input type="checkbox"/> Provide prevention and education/risk reduction counseling if HIV-negative

Post-Sexual Assault Exposure Prophylaxis

When the assailant's HIV status is unknown, the following factors should be considered during risk assessment:

- Occurrence of vaginal or anal penetration
- Occurrence of ejaculation on mucous membrane
- Involvement of multiple assailants
- Presence of mucosal lesion on the assailant or survivor (e.g., STI)
- Other characteristics of the assault, assailant or survivor that might increase risk of HIV transmission

2.2.3 Oral Pre-Exposure Prophylaxis (PrEP)

Definition

PrEP (pre-exposure prophylaxis) is the pre-emptive use of ARVs to reduce the probability of HIV negative individuals acquiring HIV infection, especially in persons who are deemed at substantial risk of HIV transmission. Substantial risk is provisionally defined as an incidence of HIV higher than 3 per 100 person years or higher in the absence of PrEP.

PrEP should be offered as part of the biomedical component of 'Combination Prevention' package that includes HIV Testing Services (HTS), correct and consistent use of male and female condoms and lubricants, PEP, voluntary medical male circumcision (VMMC) and STI prevention and treatment.

Rationale: A systematic review and meta-analysis of PrEP trials using TDF has demonstrated its effectiveness in reducing the risk of contracting HIV infection. The level of protection did not differ by age, sex, regimen, and mode of contracting HIV and was strongly correlated with adherence. PrEP can be more effective when combined with other prevention methods such as condom use and drug abuse treatment.

Indications for PrEP

Oral PrEP should be provided to individuals who are HIV negative and are at substantial risk of HIV infection. PrEP should be targeted at sub-populations considered high risk for HIV such as key and priority populations and people in serodiscordant relationships

Category of individuals prioritized for PrEP include:

1. Key Population

- Sex workers
- Men who have sex with men (MSM)
- People who inject drugs
- Transgender persons
- People in prisons and other closed settings

2. Priority Population

- Clients of sex workers
- Migrant workers
- Fisher folks
- Adolescent girls and young women (AGYM)

Criteria for initiating PrEP

The criteria for initiating PrEP are as follows

- Substantial risk of HIV infection exists
- HIV seronegative
- No suspicion of Acute HIV infection
 - Acute HIV infection is the early phase of HIV disease characterized by an initial burst of viraemia ([Section xxx](#))
- Urinalysis to rule out proteinuria
- Willingness to use PrEP as prescribed

PrEP minimum package

The PrEP minimum Package of services include:

- HIV testing and counselling, including index testing, self-testing and couple testing
- eGFR, or urinalysis if eGFR is not available. However, this should not delay initiation of PrEP
- Hepatitis screening
- Comprehensive HIV prevention including risk-reduction counselling and condom and lubricant distribution

- Assessment of need for contraceptive and/or pregnancy testing
- STI screening and diagnosis
- Screening for NCDs such as diabetes mellitus and hypertension
- Referral services for GBV, legal aid services, or mental health issues identified during counselling
- Adherence assessment and counselling to identify barriers to good adherence

Contraindications for PrEP

PrEP should not be given to people with:

- HIV positive test on the day PrEP initiation is scheduled
- Known exposure to HIV in the past 72hours (requires PEP)
- Signs and/or symptoms of Acute HIV infection. These are non-specific symptoms that can be seen in other viral infections. They include:
 - Fever 38°C or 101°F
 - Swollen Lymph nodes
 - Fatigue/Malaise
 - Skin Rash
 - Headaches
 - Sore throat
 - Muscle or Joint Pains
 - Nausea or vomiting
 - Diarrhoea
 - Sweats
- Unknown HIV status
- Allergy to any TDF or 3TC
- Unwilling/unable to commit to PrEP adherence and to attend scheduled PrEP visits
- Known renal impairment
- Estimated Glomerular Filtration Rate <60 ml/min
- Concurrent nephrotoxic medication

Recommended Oral ARV Regimen for Pre-exposure Prophylaxis

Daily oral Tenofovir/lamivudine (TDF/3TC 300mg/300mg) as FDC is the preferred dosing.

It should be used throughout the period of HIV risk for as long as the substantial risk is ongoing

Event-Driven PrEP

Event-Driven Dosing for MSM (ED-PrEP) can be used when an isolated act of sex is involved. The first dose of 2 pills (TDF/3TC), called the loading dose, should be taken within 2 and 24 hours prior to exposure. The second dose (after sex) is a single pill taken 24 hours after the first dose. The third dose is a single pill taken 24 hours after the second dose. If more sex acts take place over the following days a single daily PrEP pill can be continued for as long as sex continues and for next two days after the last sex act

When administering PrEP, it is important to take note of the following:

- PrEP may be used intermittently during periods of perceived HIV acquisition risk, rather than continually and lifelong, as is the case with antiretroviral treatment.
- PrEP medications should be continued for 28 days after the last potential HIV exposure in those wanting to stop taking PrEP.
- It is important to bear in mind that it takes about 7 days of daily dosing for PrEP to be effective. During this period, other protective precautions must be used, such as abstinence or condoms.
- Some individuals may experience some mild side-effects that usually do not persist beyond the first month. These side effects may include gastrointestinal symptoms such as nausea, vomiting, and abdominal pains reversible creatinine elevation and loss of bone mineral density that recovers after stopping PrEP.

Prep For Serodiscordant Couples

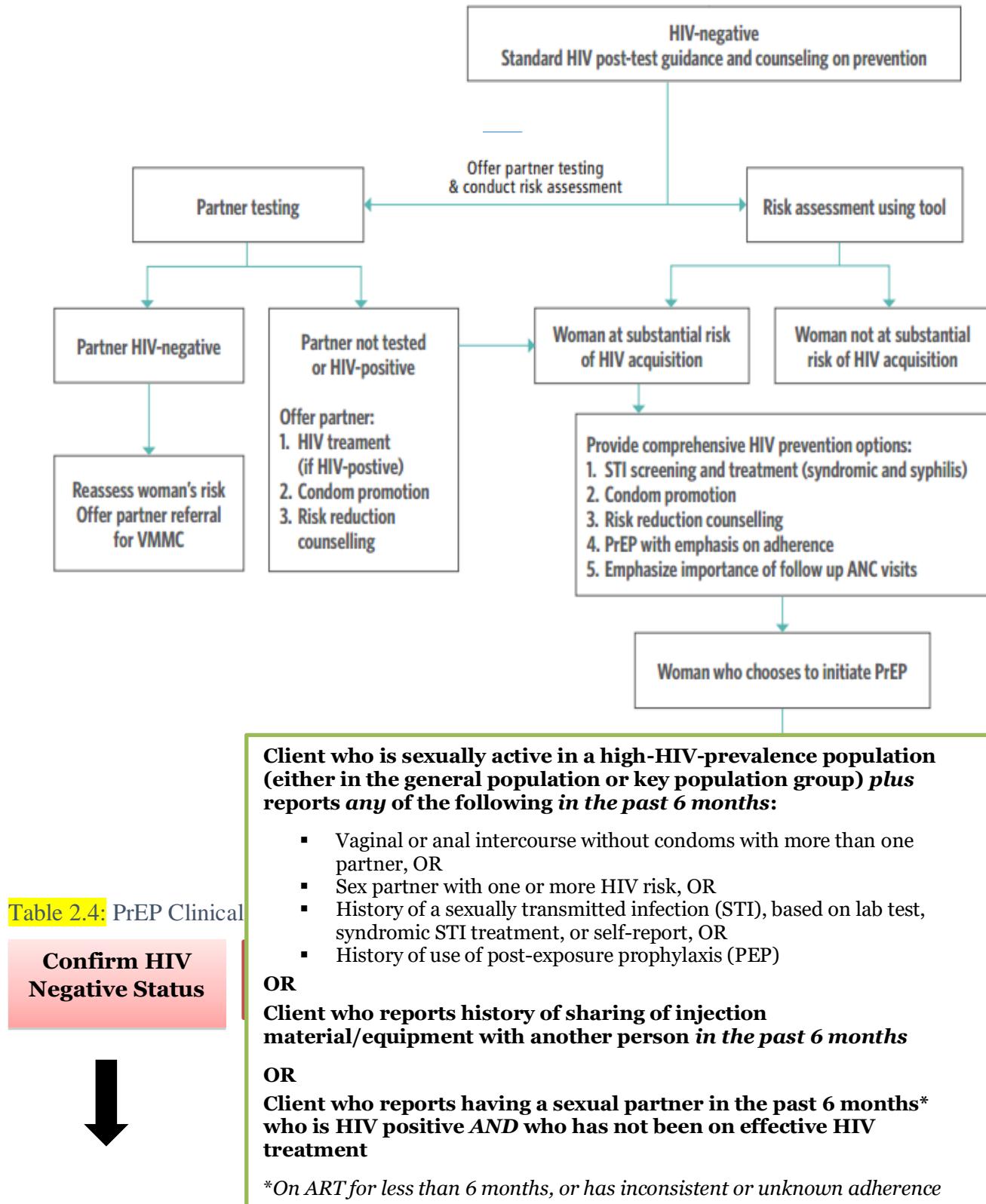
- Use of PrEP by HIV negative partner in a serodiscordant relationship is effective in reducing the risk of contracting HIV infection especially if the positive partner has achieved and sustained viral load suppression as implied by the U = U concept. PrEP should be offered to the HIV negative partner in a serodiscordant relationship as part of a combination prevention package.
- The negative partner can stop PrEP when the positive partner has achieved and sustained undetectable levels of VL (undetectable <50 cp/ml)
- Test HIV negative partner every 3 months to detect seroconversion early and link to ART

Oral PrEP for Pregnant and Breastfeeding Women

- PrEP provision to pregnant and breastfeeding women at risk of HIV acquisition is safe and has the benefit of both improving maternal health and reducing risk of HIV transmission to the infant.
- PrEP should be offered as an additional prevention choice for women at substantial risk of HIV infection as part of combination prevention approaches during pregnancy, labour, delivery, and breastfeeding period.
- PrEP should be offered as part of a safer conception package for women at substantial risk of acquiring HIV and is safe for both the mother and the baby throughout the pregnancy and breastfeeding period.
- The choice to start, continue or discontinue PrEP when a woman becomes pregnant should be made by the woman, following discussion of the risks and benefits with her healthcare provider.
- Maternal, birth and infant outcomes should be monitored among women using PrEP

Figure 9.2 Algorithm for PrEP among pregnant and breastfeeding women

*Women are at high risk of HIV infection when they engage in condomless sex, have 2 or sexual more partners, have a history of STI, in a sexual relationship with an HIV positive partner or a partner of unknown HIV status (**See risk assessment and screening tool section 11.3.1**)



**Screen for
Substantial Risk
for HIV**



**Establish
Eligibility**



PrEP Initiation



**PrEP Follow-Up
Visits**

Clients are eligible if they fulfill **ALL** the criteria below:

- HIV negative.
- Are at substantial risk for HIV.
- Have no signs or symptoms of acute HIV infection.
- Have creatinine clearance (eGFR) >60 ml/min.*

**Absence of creatinine results should not delay PrEP initiation. Providers should do same-day initiation of PrEP, then discontinue PrEP later if the patient's eGFR is not within the appropriate range.*

- Provide information on PrEP, the importance of adherence, the potential side effects, and a follow-up schedule.
- Screen and manage for STIs.
- Do risk-reduction counseling and provide condoms and lubricants.
- Do PrEP adherence counseling.
- Plan follow-up visits 1 month after starting PrEP and every 3 months thereafter.

At follow-up visits:

- Repeat the HIV test.
- Ask about side effects.
- Support and monitor adherence.
- Do risk-reduction counseling.
- Do family planning counseling and provide condoms and lubricants.
- Screen for STIs.
- Repeat eGFR after 6 months on PrEP.
- Prescribe PrEP.
- Schedule a follow-up visit and provide appointment card with the date.

2.2.4 Dapivirine Vaginal Ring

Expanding PrEP options to include long-acting, woman-controlled options such as the dapivirine vaginal ring will help to meet unmet HIV prevention needs for women. PrEP can be delivered

through a vaginal ring containing dapivirine, a Non-Nucleoside Reverse transcriptase inhibitor. This could provide an option for women who are unable to or do not want to take oral PrEP. It is made of silicone and contains dapivirine 25 mg which is released from the ring into the vagina slowly over one month and replaced with a new one after 28 days. It should be used in combination with safer sex practices when oral PrEP cannot be used or is not available.

It has been recommended by WHO because the benefits outweigh the harm based on the overall moderate-certainty evidence from systematic reviews and meta-analysis, cost-effectiveness, widespread acceptability, demonstrated feasibility and potential to increase equity as an additional prevention choice. Additional guidance on the use of dapivirine vaginal ring in South Sudan will be provided when this becomes available.

2.2.5 STI Management

There is substantial evidence that sexually transmitted infections increase HIV transmissibility and the risk of acquiring HIV by as much as 2–3 times in some populations (WHO 2021). For example, genital herpes (HSV-2) almost triples the risk of acquiring HIV for both men and women. To reduce HIV transmission and optimize sexual and reproductive health, sexually transmitted infections need to be diagnosed and treated as a priority. Efforts should therefore be taken to strengthen sexually transmitted infection prevention, screening, diagnosis, and treatment.

Symptomatic cases should either be managed syndromically, and where feasible, etiological diagnosis obtained. To prevent future sexually transmitted infections, the promotion and provision of safer sex practices, including condom use, should be reenforced. Appropriate sexually transmitted infection treatment, including partner management, should be ensured. For people who have urethral discharge, vaginal discharge, lower abdominal pain, anorectal discharge, or genital ulcer, WHO recommends management based on the results of quality assured molecular assays. However, in settings with limited or no molecular tests or laboratory capacity, WHO recommend syndromic treatment to ensure treatment on the same day of the visit.

This approach to the management of STIs/RTIs makes treatment accessible and affordable to a majority of the population because trained workers at all levels can use it as this approach does not

require the use of sophisticated equipment, but a flow chart of symptoms presented by the patient and signs elicited by the health care provider is used for treatment.

The goal of STIs/RTIs syndromic management is not only to cure the patient but also to break the chain of transmission, avoid complications, patient education, partner treatment, provision of condoms, diagnosis, and prescription. WHO's training modules on Syndromic management of STI's: <https://www.who.int/publications/i/item/training-modules-for-the-syndromic-management-of-sexually-transmitted-infections>

Approach to Sexually Transmitted Infections

- Screening for syphilis using VDRL, TPHA, or RPR should be performed as a baseline investigation for all adolescent and adult PLHIV.
- All PLHIV should be assessed for symptoms of STIs using the National Algorithms for Treating Common STI Syndromes. Sexual partners should be treated as well.
- Risk reduction counselling and provision of condoms is an integral part of STI treatment.
- Patients who have persistent signs and symptoms of STIs after syndromic treatment should undergo diagnostic evaluation for definitive diagnosis and treatment.
- At initial diagnosis of HIV, all sex workers should be treated for presumptive gonorrhoea and chlamydia (following treatment recommendations of vaginal/urethral discharge syndrome as per national STI guidelines), with on-going assessment for STIs at least quarterly.

Table 2.5 Management of common sexually transmitted infections -STD

STI	HIV Co-infection Considerations	Treatment
Genital ulcer syndrome	<p>Treatment for genital ulcer syndrome in HIV-positive clients is the same as for HIV-negative clients.</p> <p>Clients with HIV are more likely to experience extensive and more severe forms of ulceration and treatment failure; additionally, ulcers heal more slowly.</p> <p>Increased doses and a more prolonged duration of therapy may be necessary.</p> <p>Weekly follow-up should occur until there are no lesions.</p>	<p>For chancroid ulcers in HIV-infected persons: erythromycin 500 mg orally 4 times daily for 7 days.</p> <p>For HIV clients with donovanosis: gentamicin 1 mg/kg IV 3 times a day should be added if improvement is not evident within the first few days of therapy</p>
Genital herpes	<p>Persistent and/or severe mucocutaneous ulcerations involving large areas of peri-anal, scrotal, or penile skin is indicative of HIV coinfection.</p> <p>Doses and duration of treatment with acyclovir should be increased</p>	Acyclovir 400 - 800 mg orally 3 times daily until complete clinical healing of lesions
Urethral discharge	•Gonococcal, chlamydial and other non-gonococcal urethritis may facilitate HIV transmission, and clients should be made aware of this fact during counseling	Treatment is the same for HIV-negative and HIV-positive clients.
Candidiasis	<p>Candidiasis affecting multiple sites, including vulva and vagina, glans, and prepuce, often occurs in HIV disease.</p> <p>Relapses of candidiasis are frequent</p>	<p>Ketoconazole 400 mg orally BD for 14 days</p> <p>Clotrimazole, 500 mg intravaginally, weekly for 6 months.</p> <p>Fluconazole 150 mg orally as a single dose, weekly</p>
Genital warts	<p>There is a high prevalence of genital warts in persons with HIV.</p> <p>The warts may be multifocal, extensive, and poorly responsive to treatment.</p> <p>There is a greater likelihood of malignant transformation in HIV positive clients</p>	Screen for cervical cancer using VIA

2.3 STRUCTURAL INTERVENTIONS

Structural interventions are the prevention interventions that reduce vulnerability to HIV infection. These could be social, political, cultural, and organizational interventions. Gender based violence is one of the most common structural predispositions to HIV.

2.3.1 Prevention, Identification and Management of Gender-Based Violence

Gender-based violence (GBV) has the potential to increase the risk of acquiring HIV. GBV can negatively affect early HIV diagnosis, retention in treatment and ART adherence of clients leading to poor treatment outcomes.

Screening for, preventing and responding to GBV promptly will reduce the risk of HIV infection and may improve treatment outcomes of those at risk for GBV. Clients should therefore be assessed for GBV at least once every six months as part of the HIV program. Service delivery points recommended for GBV screening include OPD, ART clinic, ANC/MCH and IPD. Every site providing GBV services and post-violence care should have the following:

- A written algorithm with steps for active case identification and follow-up
- At least one staff member trained to provide post-violence care
- A focal point for GBV services at each facility
- PEP Services

Table xx describes the minimum package of post-rape care services and child protection after GBV.

Health facilities should provide the following clinical services as part of post-rape care:
Initial assessment of the client <ul style="list-style-type: none"><input type="checkbox"/> Rapid HIV testing and referral to care and treatment if HIV-positive<input type="checkbox"/> Post-exposure prophylaxis (PEP) for HIV if tested negative (see Section xxx)<input type="checkbox"/> STI screening/testing and treatment (see Section xxx)<input type="checkbox"/> Forensic interviews and examinations<input type="checkbox"/> Emergency contraception, where legal and according to national guidelines, if person reached within the first 72 hours<input type="checkbox"/> Counseling
The health facility should also identify, refer and link clients to non-clinical services:
Some of the services include the following: <ul style="list-style-type: none"><input type="checkbox"/> Long-term psychosocial support<input type="checkbox"/> Legal counseling<input type="checkbox"/> Police (investigations, restraining orders)

- Child protection services (e.g., emergency out-of-family care, reintegration into family care when possible, permanent options when reintegration into family impossible)
- Economic empowerment
- Emergency shelters
- Long-term case management

Reporting:

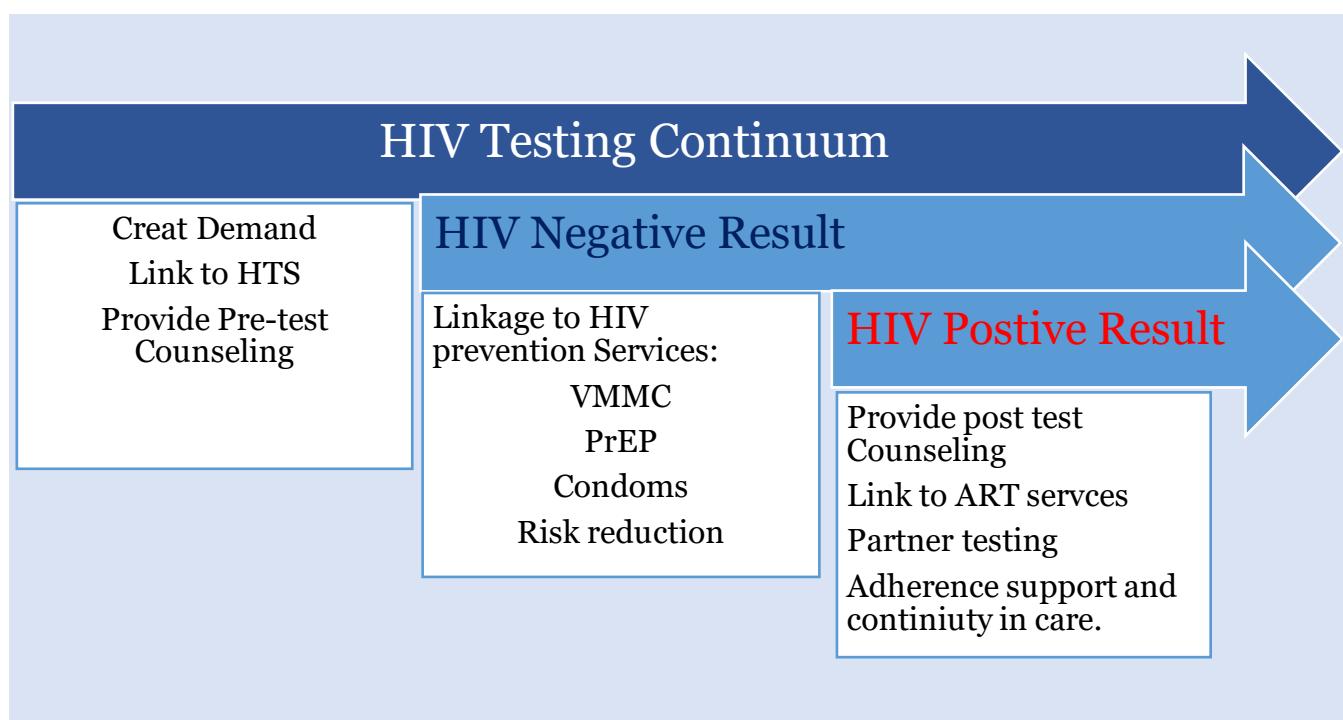
Health facilities should use HMIS 105 to report GBV

3. HIV TESTING SERVICES AND LINKAGE TO CARE AND PREVENTION

INTRODUCTION

HIV testing is the entry point to HIV prevention, care, treatment, and support services. The aim of HIV testing services (HTS) is to accurately diagnose HIV early and correctly to ensure early linkage to prevention, treatment, and support services.

Figure xx:



HIV testing should be voluntary, conducted ethically and should adhere to the WHO five Cs: Consent, Confidentiality, Counselling, Correct results, and Connection (linkage) can be assured.

Available HIV tests include antibody, antigen, and nucleic acid-based (NAT) tests. The diagnosis of HIV should not be made without a positive result from any of the tests mentioned above. The antibody tests are used to diagnose HIV in adults and children > 18 months. The diagnosis of HIV in infants and children < 18 months should be based on the results of NAT test.

3.1 HIV TESTING SERVICE PROTOCOLS

HTS service provision should follow the steps described in **Table 3.1** below.

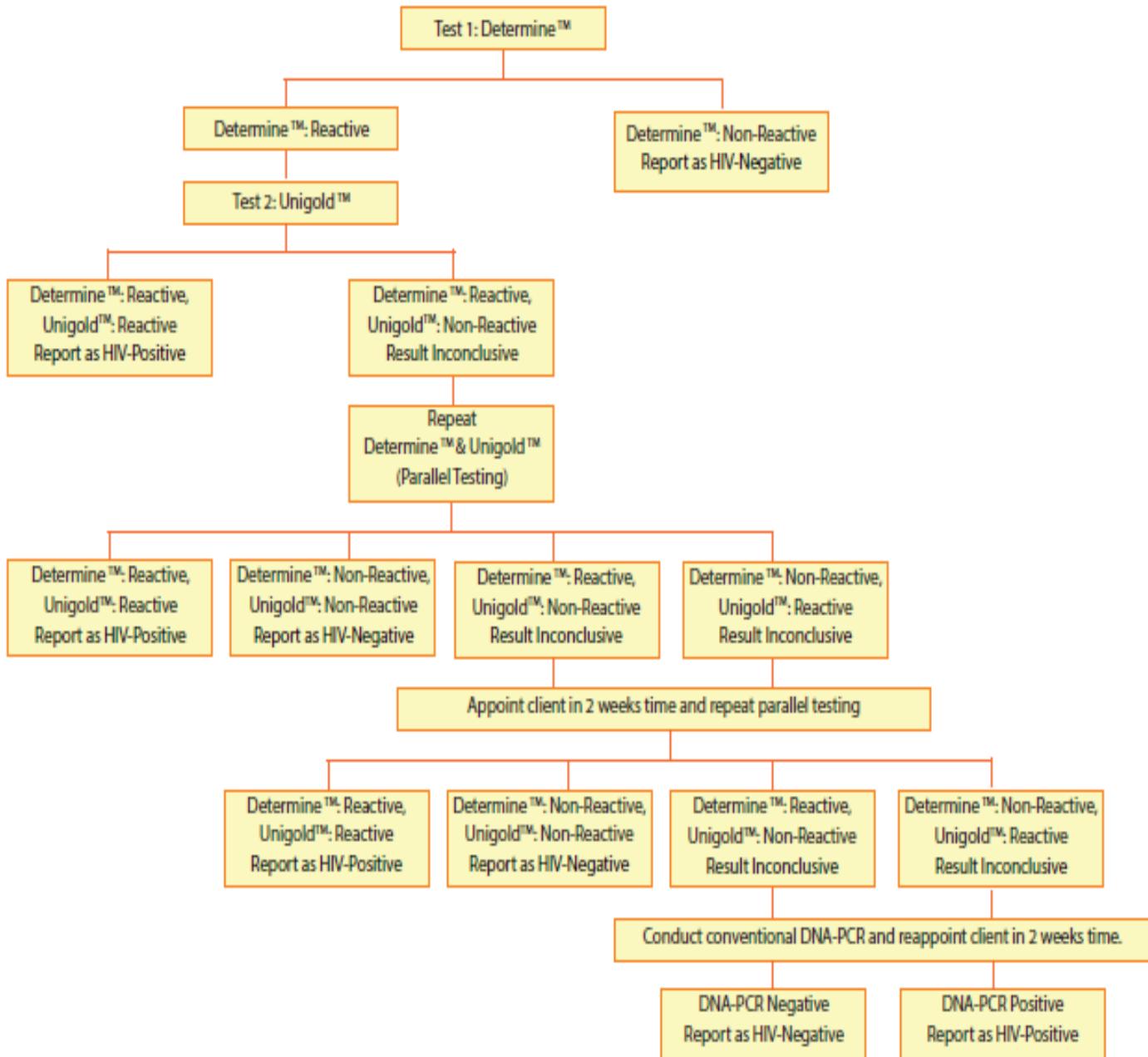
Table 3.1: HIV Testing Protocol

Step	Activity	Description
1	Pre-test information and counseling	Pre-test counselling is a key component of HTS. It should be provided through individual or group sessions. Media such as posters, brochures and short video clips in the waiting room can be used to facilitate this process. It should provide clear and concise information on benefits of HIV testing, potential risks, the HIV testing procedure, possible test results and their explanation, and services available. It also provides an opportunity for the client to ask questions.
2	HIV testing	Will be done using blood or other sample type depending on recommendation for the test used. For those below 18 months, a NAT test should be done and for those above 18 months an antibody test will be done. Refer to the HIV testing algorithms for the different age groups (Section xxx and Section xxx).
3	Post-test counseling (individual/couple)	Assess readiness to receive results. Give results simply. Address concerns, disclosure, partner testing and risk reduction. Provide information about basic HIV care and ART care; complete the HTS card and HTS register.
4	Linkage to other Services	Provide information about services; fill the triplicate referral form. When the patient is enrolled, enter the pre-ART enrolment number into the HTS register and subsequently into the ART register when the patient is initiated on ART.

3.1.1 HIV Testing Algorithm in Adults And Children Above 18 Months of Age

The HIV testing algorithm for persons aged 18 months and above is in [Figure 3.1](#) below. Note: if the child is still breastfeeding at 18 months or above and the HIV test is negative, a final test should be done twelve weeks after complete cessation of breastfeeding.

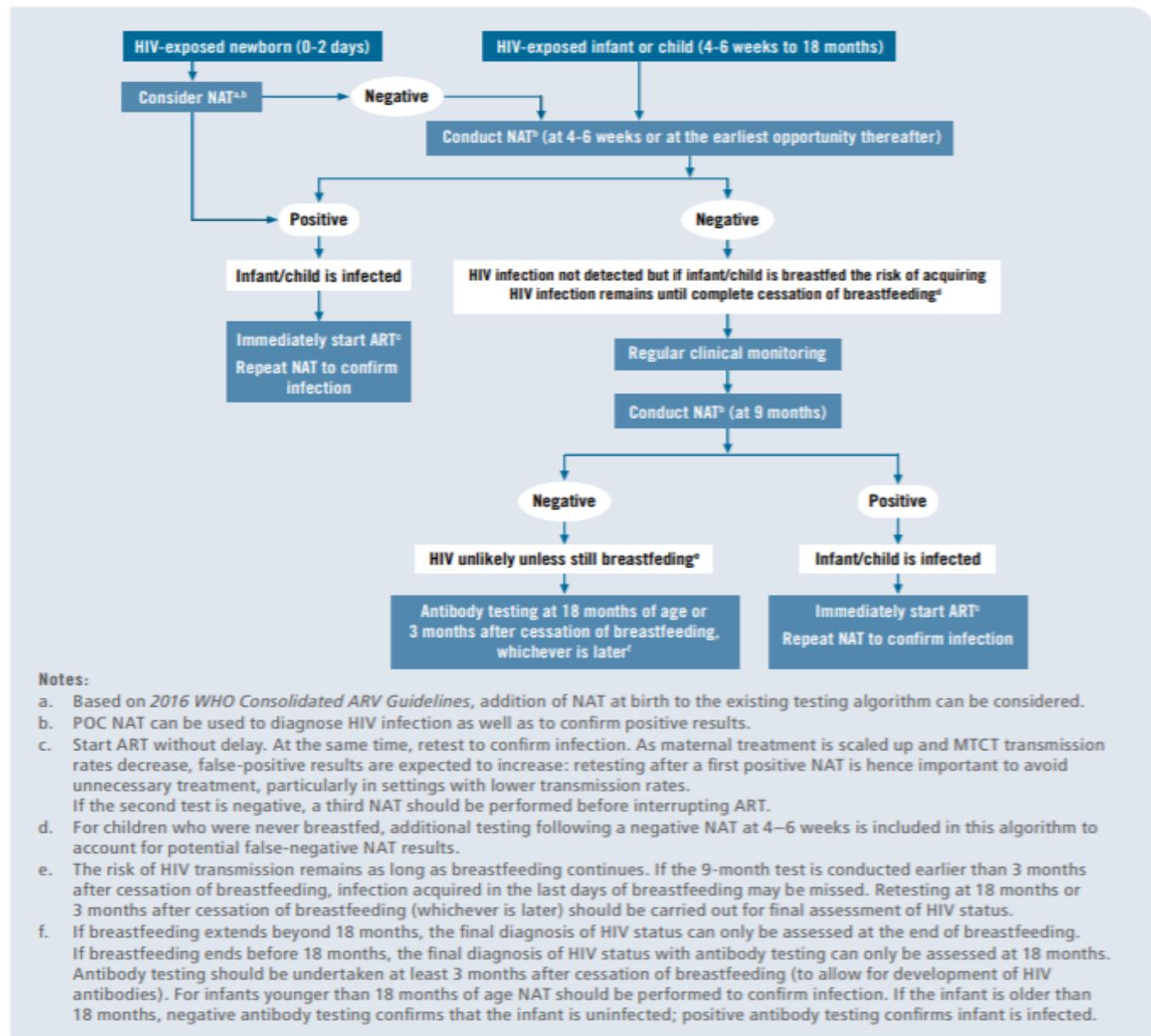
Figure 3.1: South Sudan HIV Testing Algorithm for Children >18 months, Adolescents, and Adults



3.1.2 HIV Diagnosis in Children and Infants < 18 Months

All HIV-exposed infants 18 months and below old should be diagnosed for HIV with NAT testing. The sample for testing should be collected using dried blood spot (DBS) specimens. The first NAT test should be done at six weeks of age or the earliest opportunity thereafter. A virological test is preferred to an antibody-based test because maternal HIV antibodies may remain in their bloodstream until 18 months of age, making test results from antibodies tests unreliable. Figure 3.2 below shows a simplified algorithm for this subpopulation.

Figure 3.2: Simplified Infant HIV Diagnosis Algorithm



These guidelines recommend the following HIV testing strategy.

- First, the health worker should determine whether the infant or child is HIV exposed. This should be done by checking the mother's ANC card or Child's Health card for HIV status.
- If the mother is infected with HIV, this means the infant is HIV exposed but not necessarily infected. In this situation, the health worker should collect appropriate specimen suitable for NAT test or POC testing at 6weeks of age or at the earliest time thereafter.
- Secondly, if there is no documentation of the mother's status, a rapid HIV testing of the mother should be performed to determine her HIV status and exposure status of the infant.
- If the health worker is unable to test the mother, the health worker should perform a rapid test on the infant or child. If the results are positive, this means the infant has been exposed but this does not confirm HIV infection. In this case, the health worker should plan to collect DBS for a NAT when the infant is 6-8 weeks old.

A **POSITIVE first NAT test** result indicates that the child is **HIV-infected**. All infants with a positive NAT test result should be initiated on ART without delay and another blood sample should be collected on the day of ART initiation to confirm the positive NAT HIV test result.

A **NEGATIVE 1st NAT test** result means that child is **not infected** but could become infected if they are still breastfeeding. Infants testing HIV negative on 1st NAT should be retested using a second NAT at 9 months if being breast fed. If 2nd NAT is negative another HIV test should be performed using rapid antibody test kit 12 weeks after complete cessation of breastfeeding.

Provider initiated testing and counselling should be implemented in all infant care setting to identify HIV infected children and infants early and link them to ART.

3.1.3 HIV Retesting

Re-testing for HIV-positive people before ART initiation

The existing WHO prequalified HIV rapid diagnostic tests all have sensitivities of >99% and specificity >98%. However, given the large volume of tests conducted worldwide, it is inevitable that a number of test results will be false negative or false positive due to technical or clerical errors, including mix-up of specimen through mislabeling and transcription errors, as well as random error either by the provider or of the test device. Any incorrect diagnosis has severe consequences at the individual and public health level and should be prevent.

It is for this reason that the WHO has recommended that all individuals with a HIV positive test result be retested to verify their HIV status before or at the time of ART initiation. Retesting ensures that individuals are not needlessly placed on life-long ART (with its potential side effects, waste of resources and psychological impact of misdiagnosis).

Re-testing for verification of HIV positive result before ART initiation

- Different provider /testing counsellor
- Different specimen/bleed
- Same national HIV test algorithm
- At the ART initiation site/care point

Retesting people on ART is not recommended. Antiretroviral therapy suppresses HIV viral replication which may extend to suppression of the immune response and, thus, of antibody production. Therefore, when on ART, the risk of false negative results is high whilst the risk of false positive results is very low. Individuals undergoing HIV testing must be made aware of the risk of incorrect diagnosis if they do not disclose that they are on ART. All individuals receiving HIV testing should be asked if they have been tested previously and told they are HIV-infected and/or if they are now on ART or have ever received ART.

Re-testing all individuals with inconclusive results after 14 days

For individuals with repeatedly inconclusive results, specimen to be referred to NPHL for confirmation.

Re-testing for HIV-positive infants (See details above in section 3.1.2)

All babies testing HIV-positive at the first or second DNA/PCR HIV testing should be re-tested for HIV at the time of commencing ART using DBS sample.

3.1.4 Repeat Testing for HIV-Negative Individuals

Repeat testing for HIV negative individuals should be based on their risk profile.

Table 3.2 below shows recommended schedule for different sub-populations and risk profile

Table 3.2: Retesting Schedule for HIV Negative Individuals

Population category	When to re-test
Individuals exposed to HIV within four weeks before HIV testing	Four weeks after the 1st test
Key populations	Bi-annually unless increased individual risk during assessment
HIV-negative partners in discordant couples	Every three months
Pregnant women	1st trimester/1st ANC visit, then in the 3rd trimester/during labor and delivery
Individuals involved in high-risk sexual behaviors <ul style="list-style-type: none"> • Sex without condoms with multiple sexual partners • Sex with partner of unknown HIV status 	Individuals at high ongoing risk for HIV infection should test at intervals appropriate for their level of risk (Refer to the risk stratification tool)
Breastfeeding women	<ul style="list-style-type: none"> • In late pregnancy or at time of delivery • One additional test at postpartum
Confirmed and presumptive TB Patients	Twelve weeks after the 1st test
PEP clients	At completion of PEP and three months later
Individuals on PrEP	Every 3 months
STI patients	Twelve weeks after initial test
HIV-exposed infants (HEIs)	At 9 months if breastfeeding, and Three month (12 weeks) after complete cessation of breastfeeding or at 18 months of age (whichever comes first)
Children >18 months still breastfeeding	Three months after complete cessation of breastfeeding using RTK
INCONCLUSIVE results	14 days after the last test
General Population	Every 6 Months

3.2 SETTINGS FOR HIV TESTING

3.2.1 Facility-Based Testing

Routine opt-out provider-initiated HIV testing and counselling (PITC) should be offered to ALL clients (including infants, children, adolescents, and adults) visiting health facilities regardless of the reasons for contact with the health facility.

3.2.2 Community-Based Testing

In South Sudan 24% of PLHIV know their status and to achieve the UNAIDs target of 95% it is important to employ strategies that reach a broad set of people in non-clinical settings who are at risk of HIV infection but less likely to visit a health facility. Community-based HTS (CBHTS) services promotes access to HIV testing and prevention services, raises awareness on HIV and the benefits of testing and early diagnosis, facilitates linkage to care and treatment services and can contribute to reduction in stigma and discrimination by removing social barriers to HTS. Other HTS approaches such as index and social network testing (and other forms of targeted testing) and HIVST can be integrated into HTS testing in community.

All community-based HIV testing services should be complementary to facility-based services and focused on efficiently and effectively reaching those in greatest need of HIV testing services.

Community-based HIV testing services are recommended for key populations in addition to facility-based testing options in all settings. South Sudan is considered a low HIV burden setting hence community-based HIV testing should be targeted to reach specific populations such as key populations, men, contacts of index cases (index testing).

Considerations for Implementation

1. Quality Assurance

Establishing and implementing Quality assurance can help ensure that implementers are delivering accurate test results in an efficient and culturally acceptable manner. This can be achieved through

- Training and retraining of community testers
- Running or test kit controls routinely
- Performing direct observation of HIV testing sessions
- Review of client information material to ensure cultural appropriateness and accuracy

2. Establish and review referral and linkage resources and establish partnerships

3. Confidentiality

Stigma associated with HIV can be a major barrier to HIV testing in community settings as such confidentiality in testing becomes very important. This challenge can be addressed by equipping community HIV testing services with capacity to screen for other conditions such as hypertension.

4. Testing environment

HIV testing should be conducted in an environment that promotes confidentiality and meets certain criteria. These criteria include:

- Testing Space/room should make client feel comfortable and confident of their HIV testing experience.
- Lighting – the testing space or room should be well lit to allow the provider to perform the test and read the result accurately
- Temperature – RTK used in community testing points should be stored and transported at temperature range specified by manufacturer. Controls must be stored and transported in temperature-controlled refrigerators and carriers
- The surface area where rapid HIV test is performed must be clean and level
- Prevention materials such as condoms and lubricants, IEC materials should be made available at community testing points
- Supplies – an inventory of testing supplies, including lot number, date of receipt, storage temperature, expiration date and date of use should be kept

5. Policies and legal considerations: Providers of HIV at community testing points must be familiar with local policies and law related to:

- Who can give consent
- Confidentiality
- HIV testing algorithm
- Facilitated linkage to HIV services
- Reporting HIV test results
- Provision of partner elicitation and notification services

6. Provider safety

Examples of Community Settings for HIV Testing Include

- Community Based Organizations (CBO's)
- Mobile testing Units
- Campaigns
- Churches
- Outreach
- Workplace
- Parks
- Drug stores/pharmacies
- Prisons and other closed settings
- Educational Institutions
- Home-based testing points
- Places where population of interest gather and can be accessed.

Community based HTS models

Home-based HTS including index clients

Should be provided using the door-to-door approach. It facilitates access to hard-to-reach, rural and underserved populations. Known HIV-positive or TB clients can act as index clients and consent to provision of HTS services in their homes.

Workplace HTS services

Usually provided as part of comprehensive workplace HIV programmes. Reaches both men and women in formal and informal employment through their workplaces. Services can be provided either as a static service or as an outreach from facilities providing HTS services. Men who do not want or do not have time to access public health facilities for HTS can benefit from this model.

Outreach & Mobile HTS

Should be provided from health facilities and stand-alone sites. Mobile teams can provide outreach HTS services in such premises as churches, community halls, school halls, and youth facilities. They target the general population, people living in remote rural areas, and key, priority, and vulnerable populations. It is essential to establish community partnerships, strong support systems and referral mechanisms at community level before initiating outreach HTS.

3.3 HIV TESTING APPROACHES

Several approaches to HTS can apply in both the facility and community-based settings. The most common approaches to HIV testing services include:

3.3.1 Provider Initiated Testing and Counselling

PITC refers to HIV testing and counseling that is recommended by health care providers to persons attending health care facilities as a standard component of medical care for early HIV diagnosis using an opt-out approach. This includes patients accessing care in various clinical settings such as the inpatient and outpatient departments. A risk stratification tool should be used by providers in settings like the outpatient department by providers to identify individuals most at risk for contracting HIV and offer them a HIV test using an opt-out approach. Health workers should prioritize PITC for patients at maternal and child health clinics, adult and pediatric in-patient wards, TB clinics, family planning clinics, STI clinics, nutrition units, clinics managing survivors of sexual abuse, key, and priority population. and in HIV care clinics partners and biological children (<19 yrs. of age) of PLHIV should also be offered HTS through index-case testing.

3.3.2 Client Initiated Testing and Counselling (CITC)

CITC formerly known as voluntary counseling and testing (VCT) is where individuals and couples seek HIV testing services on their own. These clients should receive HIV testing and counseling from any trained and certified HTS providers including lay providers, counselors, laboratory personnel and medical workers at any entry point in the facility.

3.3.3 HIV Self-Testing (HIVST)

This option refers to a process in which individuals who want to know their HIV status collects his/her own specimen (blood or oral fluid), performs the test and interprets the result, often in private or with someone he or she trusts. HIVST can improve access to testing services among people who otherwise would not get an HIV test. HIVST kits can be used in children down to ≥ 2 years of age, assisted by a caregiver, community health worker or healthcare professional. HIVST kits should be used to improve HIV case finding in OVC settings, as part of strategies to reach sexual and needle sharing partners and biological children (2 - 19 years) of index HIV cases and key population.

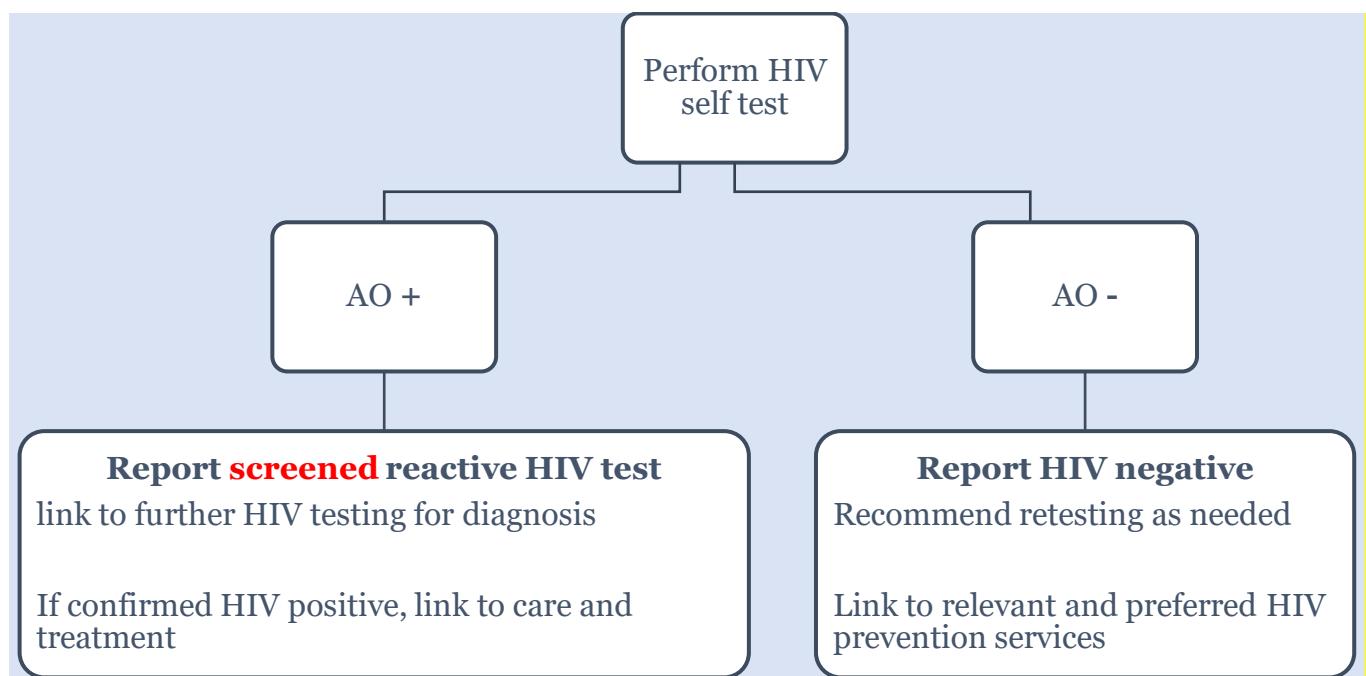
HIVST Process:

HIVST can be distributed directly to the end user or indirectly through an intermediary (e.g., index HIV positive individual for testing partner or biological children). Types of HIVST include:

- Directly assisted HIVST – here a trained provider or peer gives an in-person demonstration of how to perform the test and read result
- Unassisted HIVST – here the individual relies on the manufacturer-provided instructions for use to perform HIVST

A positive HIV self-test result always requires further testing and confirmation from a trained tester using the standard national testing algorithm at a health facility before initiation of antiretroviral therapy. In addition, a follow-up confirmation test is required for those at high risk with unreactive HIVST before initiation of oral pre-exposure prophylaxis (PrEP). Self-testing clients should not be pressured to disclose their results and confidentiality must not be compromised.

Figure 3.3: HIV Self-Testing Algorithm



- Strategies to facilitate linkage to prevention, treatment and care following HIVST include
 - Client counselling on what to do following a reactive HIVST
 - Proactive, community-based follow-up by peer and/or outreach workers
 - Home based follow up, assessment and initiation of ART
 - Use of mobile platforms including messages and phone calls
 - Use of vouchers and coupons

HIVST Linkage to Prevention and Treatment Services

Linking self-testing clients who test in the community can be quite challenging so innovative follow-up strategies such as phone calls, SMS, WhatsApp, use of vouchers and coupons or community/home-based follow-up (verification of status and possibly ART initiation) may be required. Tools that support linkage to counselling, prevention and treatment services needs to be provided to the tester. These tools should:

- Allow the tester to opt-in
- Leverage on the most appropriate technology available (phone, internet, smart phone)
- Provide option of speaking to a human or direct community follow-up
- Protect the privacy and confidentiality of the self-testing experience

Provide clear instructions on next steps if result is positive or negative

3.3.4 Couples' HIV Testing and Counseling:

Couple HTS enhances safer sexual behavior, increases services uptake and treatment adherence, and identifies couples that would benefit from ART for prevention of HIV transmission (the serodiscordant 5couples) or ART for their own health (sero-concordant positive). Both partners must consent to HIV tests and agree to learn the results together.

Couple HIV testing and counselling (with support for mutual disclosure) should be offered in all HTS settings (including ANC), to married and cohabiting couples, premarital couples, polygamous marriages, and any other partnerships.

All PLHIV should be supported to encourage partner testing and disclosure of HIV status. HIV-negative partners in a serodiscordant relationship should be offered PrEP.

3.3.5 Targeted Testing

Index testing

Offering voluntary HTS to sexual and/or needle sharing partners of people with HIV – is recommended as part of a comprehensive package of testing and care. Options include: (1) provider-assisted referral, in which a trained provider directly assists people who have tested HIV-positive by contacting their

partner(s) and offering them HTS and (2) patient referral, in which a trained provider encourages the client to disclose their HIV status to their partner(s).

It is important for HIV partner services to offer HIV testing for untested biological children of HIV-positive clients.

Programmes should consider offering social network-based approaches, which offer HIV testing to social contacts of key populations in addition to sexual and/ or needle sharing partners.

People with HIV should be provided options on how their partners can be contacted, as well as time to consider the best options, based on their needs. People who do not want their partners to be contacted or need time to consider should be supported in their decision. Where feasible and acceptable to the client, provider-assisted referral should be prioritized, as it is highly effective and provides the opportunity to offer comprehensive prevention interventions to partners who are HIV-negative but remain vulnerable to HIV acquisition.

3.3.6 HTS in Specific Population Groups

Adolescents

Adolescent risk factors include ≥ 3 sexual partners/year, ≥ 8 alcoholic drinks/week or ≥ 4 alcoholic drinks/occasion, transactional sex, partner concurrency, AGYW with a partner who is ≥ 5 years older, no or low school attendance, experiences of GBV/IPV, presentation with signs/symptoms of an STI and diagnosis with a STI.

Younger adolescents (10-14 years old) should be screened using validated pediatric HIV risk screening tools.

Reaching Men

HTS for male circumcision:

- HTS is part of the minimum service package for Voluntary Medical Male Circumcision (VMMC), thus providing an opportunity to reach men with HIV prevention and care services.
- Screen boys (10-14 years of age) presenting for VMMC services with an HIV risk screening tool. For this age group, boys do not require HIV testing unless the screening tool indicates the child necessitates HIV testing due to risk.

- VMMC may be implemented using a mixed-service delivery model including fixed-facility sites, outreach, mobile services, and campaign events.
- The Ministry of Health will provide guidance on the introduction and rollout of the VMMC programme

HTS for Key and Priority Populations

- Key populations are defined groups who, due to specific higher-risk behaviours, are at increased risk of HIV irrespective of the epidemic type or local context. They also often have legal and social issues related to their behaviours that increase their vulnerability to HIV. They include men who have sex with men, people who inject drugs, people in prisons and other closed settings, sex workers, and transgender people.
- Priority populations are made up of people who are at an increased risk of HIV transmission because of their circumstances. In the context of South Sudan, these include clients of sex workers (and their biological children), fishermen, long-distance truck drivers, uniformed forces, adolescents, and young women engaged in transactional sex.
- It is important to design HIV testing services strategies that targets the different key and priority populations. Examples of these include:
 - Moonlight testing for female sex workers
 - Testing at border points and trucking stops for long distance drivers
 - Use of trained peers for mobilizing beneficiaries and performing HIV testing services
 - Social network testing
 - Each group should also have specific additional services such as condom and lubricant provision, STI diagnosis and treatment and ART for prevention (PrEP/PEP) incorporated into an integrated screening approach.
- Other considerations include:
 - Linking HIV-negative key populations to prevention services, including PrEP, is a priority
 - Like all HTS, programmes for key populations need to adhere to the WHO “5 Cs” – particularly consent, confidentiality and connection to comprehensive prevention, treatment and care.
 - HIV Self-Testing can increase access to HIV testing among key populations and, hence, to prevention, treatment, and care services

- Intensified TB case finding, along with HTS, is important among key populations. These populations are highly vulnerable to TB, particularly in countries with high burdens of both TB and HIV

Retesting at least every three months is recommended for all people from key populations

3.4 HIV 1 RECENCY TESTING

Recency testing can be integrated into the HIV testing algorithm once approved and available. WHO has prequalified rapid test kits that are able to determine if an individual acquired HIV infection within the last twelve months.

This will help South Sudan focus limited resources to hot spot areas and individuals at high risk of ongoing HIV transmission to break the circle of transmission and reach epidemic control.

3.5 LINKAGE FROM HTS TO HIV PREVENTION, TREATMENT, AND CARE

Linkage refers to the process of connecting individuals who have tested positive for HIV from one service point to another. Linkage to care and treatment is successful if the patient/client receives the services they have been referred to receive including ART initiation. For all clients who test HIV-positive, linkage to ART should occur on the same day or within seven days of the diagnosis. It is recommended to use lay providers (community- and facility-based) as linkage facilitators.

Recommended strategies for improving linkage in South Sudan include:

- Integration of HTS with other services and use of rapid HIV testing kits at Point-of-Care: such as the provision of PITC in the ANC, the TB clinic or OPD enhance linkage
- Decentralisation of ART services to peripheral health facilities
- Use of triplicate referral forms; one form is given to the client; one remains at the referring site and the third form is sent to the client-receiving site. The referring site should proactively communicate with the client AND the receiving site through short messages, voice calls and patient escorts to ensure successful linkage. At regular intervals, monitoring is carried out and clients that did not initiate ART on the same day or are lost-to-follow-up (LTFU) are actively tracked by providers through a mix of methods including mobile platforms and physical follow up
- Use of linkage facilitators and other community support groups /workers; immediately an individual is identified as HIV-infected, s/he is physically escorted to the referral site from HTS site

- Client reminder and follow-up using mobile phone short message service (SMS) reminders or telephone calls
- Promoting partner testing may improve the uptake of HIV testing and linkage to care
- ART initiation ideally on the same day of HIV diagnosis, and where not possible, within 1 week

3.5.1 Linkage Within the Same Facility

The process of linkage within the same health facility is described in table 3.3 below

Table 3.3: Process of Linkage within the same facility.

Post-test counseling	<ul style="list-style-type: none"> ▪ Provide accurate results ▪ Ensure client understands the meaning and implication of results ▪ Allay fears, address misconceptions ▪ Provide information about care available at facility and elsewhere in catchment area ▪ Describe the next care and treatment steps ▪ Discuss the benefits of early treatment initiation and cons of delayed treatment ▪ Identify and address any barriers to linkage ▪ Involve the patient in the decision-making process regarding care and treatment ▪ Commence discuss around the importance of disclosure and positive living ▪ Fill in client card and include referral notes ▪ Fill in the triplicate referral form ▪ Introduce and hand the patient to a linkage facilitator
Patient to the HIV clinic	<ul style="list-style-type: none"> ▪ Linkage Facilitator escorts client to ART clinic with the linkage forms ▪ Hand over client to responsible staff at that clinic
Enrolling at HIV clinic	<ul style="list-style-type: none"> ▪ Register the patient in the pre-ART register ▪ Open an HIV/ART card/ file for the patient ▪ Offer ART preparatory counseling ▪ Conduct baseline investigations ▪ If the patient is ready to start ART, initiate ART and continue with counseling support (disclosure, psychosocial) ▪ Coordinate integrated care if require (e.g TB/HIV treatment, PMTCT) ▪ Discuss and make an appropriate appointment with the patient

- Client attrition after an HIV diagnosis is one of the major factors that contribute to delayed ART initiation, sub-optimal treatment outcomes, and preventable HIV transmission
- Successful linkage to care ensures access to support and information and enables early assessment and preparation for timely initiation of HIV care and treatment leading to improved health and quality of life.
- HTS services are required to be linked to local HIV treatment, care, and support services and to other units of the respective health facilities. The linkage may be within the same facility (intra-facility), from one facility to another (inter-facility), or between community and facility.

Key barriers to linkage include:

- Psycho-social factors: related to knowledge, beliefs, and motivation within a given social context
 - Lack of understanding of why it is important to enroll in care
 - Stigma/discrimination and fear of disclosure of HIV status
 - Use of herbal and other medicine
 - Myths and misconceptions
- Structural factors, such as related to underlying economic conditions of daily life
 - Accessibility of care and treatment services
 - Lack of transportation
 - Work responsibilities
 - Food insecurity
- Health care delivery factors:
 - Poor quality of Pre-test counselling
 - Quality of care at the point of service delivery (long waiting time, commodity stock-outs, conflict with staff, coordination of care, stigma)
 - Service inaccessibility (distance from home)

3.5.2 Inter-Facility Linkages

Inter-facility linkage refers to connecting a newly diagnosed patient at one facility to another facility for HIV treatment, care, and support services. The referring facility should track (follow-up) all HIV-positive patients referred to other facilities and ensure they are enrolled in care and on ART within 7 days, using the follow-up/tracking schedule described in [Table 3.4](#) below.

Table 3.4: Schedule for follow-up/tracking inter-facility linkages

Timeline	Action
Day 1 (Referral day)	A client diagnosed HIV positive and referred to the preferred facility. Linkage facilitator documents clients' contacts. Linkage facilitator obtains client's consent for home visiting. Linkage facilitator introduces the client to community health worker.
Week 1	Linkage facilitator calls a client or the contact in the health facility where the client was referred to. If client reached the new facility, document complete linkage.
Week 2	If the client didn't reach the new facility by week 1, the community outreach volunteer (COV) visits client's home to remind about the referral.
Week 3	Linkage facilitator calls client or new facility to confirm if the VHT visit to client's home made any impact. If client reached the new facility, document complete linkage. If the client didn't reach the new facility, the linkage facilitator visits client's home to discuss reasons for the client's failure to reach the referral point.
Week 4	Linkage facilitator calls client or facility to confirm if client reached. If yes, document linkage as complete. If no, document as lost.

3.5.3 Community-Facility-Community Linkages

Community-facility linkage refers to connecting a client who tests HIV-positive in the community to a health facility for HIV treatment, care, and support services and connection of HIV positives identified in the facility to care and support services available in the community such as OVC program for clients <19 years, and PLHIV peer support groups. HTS programs should establish functional community health systems with linkage systems including Peer Leaders, Expert Clients, VHTs and CHEWs. These should be involved in the mobilization for the targeted outreaches and follow up to link all who testing positive. Linkage from community to facility should be done within seven days after diagnosis. The process of community-facility linkage is described in [Table 3.5](#) below.

Table 3.5: Schedule for follow-up/tracking community-facility-community linkages

Timeline	Action
Day 1 (Referral day)	A client is diagnosed HIV positive and referred to the preferred facility using a triplicate referral form. A copy of the referral form is given to CHW who documents the address and contact information into the follow-up register, schedules an appointment for facility visit and obtains client's consent for home visiting. Triplicate referral form copy should be delivered to the facility where the client has been referred.
Week 1	The organization doing community testing should call the client or the contact in the health facility where the client was referred. If client reached the facility, document complete linkage. The health facility linkage facilitator identifies referred clients who have come to the facility and documents those referrals as linked/complete. The facilitator notifies the CHW of all clients who have not yet been linked.
Week 2	The CHW visits client's home to ascertain reasons for failure to reach the facility and makes a new appointment for facility visit. The CHW documents the outcome of the visit and notifies the health facility team.
Week 3	The health facility linkage facilitator ascertains if the client was linked and notifies CHW of the pending clients
Week 4	The CHW makes a final visit to client's home; discusses reasons for failure to reach the facility; makes a final appointment if the client is willing or documents outcome (refused, not ready, relocated, etc.). If the client has not yet decided to enroll in care, the CHW will continue to make contact and encourage them to seek care.

3.6 QUALITY ASSURANCE FOR HIV TESTING SERVICES

Quality assurance (QA) refers to planned, step-by-step activities that let one know that testing is being carried out correctly, results are accurate/reliable, and mistakes are found and corrected to avoid adverse outcomes. Facilities should therefore ensure the following mandatory activities are in place during the entire testing process, from the time a person agrees to be tested until after the test results are provided.

1. **Training of staff:** Nurses, midwives, laboratory technicians or counsellors conducting HIV testing should be well trained and certified before being allowed to perform HIV rapid testing. Comprehensive training should make use of standardized curriculum that include theoretical basis of HIV diagnosis, HIV testing procedure (specimen collection, test procedure, results interpretation), the national testing algorithm and hands-on training with known or coded specimens.
2. **Testing practices:** HIV rapid tests should be performed correctly and consistently in accordance with documented standard operating procedures and the manufacturer's protocols developed for each assay of the testing algorithm. Critical elements include (a) only using unexpired test kits; (b) application of right volume of specimen; (c) correct use of buffer(s); (d) reading the results within the designated time period; (e) reading procedural or inbuilt control line before the sample test line and (f) following the national testing algorithm. Agreement between the individual tests in the algorithm and invalid results should be routinely monitored and investigated.
3. **Standardized record keeping:** Personnel conducting HIV testing should record and track the product names of test kits, lot numbers, expiration dates and individual test results in a standardized national HTS register as part of routine practice. Personnel should also double-check the report of the test results before issuing to the clients.
4. **Participation in external quality assessment (EQA) programmes:** Testing sites and ALL personnel (Testers) performing HIV testing should participate in EQA programmes. The EQA involve: (a) periodic (biannual) testing of a standard coded specimens with known HIV status by site staff (“proficiency testing”) and (b) site visits by experienced laboratory technicians for review of testing and data management practices using a standardized checklist.
5. **Routine use of quality control specimens:** Testing personnel should routinely test known HIV-positive and negative specimens as quality control specimens. The frequency should be (a) once per week; (b) when a new kit is opened; and (c) any new operator or trained staff members who have not conducted testing for some time. If quality controls do not give the expected results, patient specimens should not be tested until the problem is identified and corrected.
6. **Test kit stock management:** Inventory management is an essential element of a quality management system to ensure that (a) test kits are used within their manufacturer defined shelf lives; (b) test kits are not compromised by inappropriate storage or handling; and (c) the correct testing algorithm is not compromised by stock-outs of any of the tests in the algorithm. Facilities

should therefore check and update inventory monthly to ensure enough reagents and supplies are on hand for testing

4. CARE AND SUPPORT FOR PEOPLE LIVING WITH HIV

INTRODUCTION

The Ministry of Health developed a minimum healthcare services package for PLHIV to standardize programming, implementation, and delivery of integrated HIV services in South Sudan.

4.1 BASIC HIV CHRONIC CARE PACKAGE

The minimum care package should be offered to all people living with HIV upon enrollment and during their entire time in HIV care. The package should be tailored to their individual need. The package is summarized in **Table 4.1**.

Table 4.1 Summary of the Minimum Package of Care for PLHIV

Service Area	Service Description
Clinical evaluation and monitoring of HIV disease	Provide clinical evaluation routinely (at least twice in a year) and monitoring to all PLHIV to ascertain the WHO clinical stage of disease and identify comorbidities and opportunistic infections in a timely manner.
Antiretroviral therapy	Initiate ART at the earliest opportunity in all people with confirmed HIV infection; regardless of clinical stage or CD4 cell count (see Chapter 6).
Nutrition services	Conduct nutrition assessment, counseling, and support (NACS)
Opportunistic infection screening, prevention, and management	Provide cotrimoxazole prophylaxis to every infected HIV patient for life <ul style="list-style-type: none">• Screen for TB at every clinic visit• Provide TB Preventive Therapy as per national guideline if eligible• Screen and manage for other OIs like cryptococcal infection (see Section xxx)
	Screen and manage NCDs including: <ul style="list-style-type: none">• Hypertension• Diabetes

Screening and treatment of comorbidities	<ul style="list-style-type: none"> • Dyslipidemias • Mental health (especially depression) <p>See Section xxx for detailed guidance on screening and managing NCDs.</p>
Sexual and reproductive health Services	<ul style="list-style-type: none"> • Screen and manage sexually transmitted infections at every contact with health care worker • Provide family planning and pre-conception services (see Table xx) • Ensure resources for early identification of pregnant mothers and linking them to ANC • Promote facility delivery and postnatal care (see Chapter xxx) • Provide cervical and breast cancer screening (see Section xxx)
Adherence counseling	Do adherence preparation before ART initiation and monitoring at every contact with health care worker (see chapter 5)
Psychosocial support and palliative care	<ul style="list-style-type: none"> • Assess family and community support to the client • Assess for stigma and discrimination • Link client to a peer-led psychosocial support group • Assess for any social challenges the client might have • Refer for palliative care when required.
Orphans and vulnerable children (OVC)	<p>Conduct basic assessment for vulnerability (less than three meals/day, inconsistent or no school attendance, the existence of HIV infected or affected person in the household, child abuse, widowed, elderly or child-headed household)</p> <ul style="list-style-type: none"> • Provide HIV testing for family members either at facility or community level as appropriate • Refer and link to a CBO/CDO • Conduct nutrition assessment, counseling and support • Initiate ART for HIV-positive children and their caretakers • For details of OVC care, refer to the SPPI, Ministry of Labor, Gender, and Social Development
	<ul style="list-style-type: none"> • Support client to disclose HIV status to family and significant others

Positive health, dignity, and prevention	<ul style="list-style-type: none"> • Emphasize U=U • Provide active partner and family tracing for HIV testing • Educate, provide, and promote correct and consistent use of condoms • Provide family planning counseling and services with consent of the patient • Provide STI screening, prevention, and treatment services • Provide routine adherence counseling to patients on ART • Provide gender-based violence screening and support
Other prevention services	<p>Provide childhood immunizations according to the national immunization schedule</p> <ul style="list-style-type: none"> • Educate and promote use of long-lasting insecticide-treated mosquito nets (LLINs) • Educate and promote use of safe water, sanitation and hygiene practices

4.2 CLINICAL EVALUATION FOR PLHIV

4.2.1 Clinical Staging of HIV Infection

The WHO clinical staging of HIV for adults and adolescents that are HIV positive is as shown in **Tables 4.1 and 4.2**. Staging is based on the patient's clinical presentation at the time of initial assessment with the healthcare provider. The most advanced symptoms at the time of evaluation represent the initial clinical stage of HIV infection.

Table 4.1 WHO Clinical Staging of Confirmed HIV Infection

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

Table 4.2 WHO Clinical Staging of HIV/AIDS for Adults, Adolescents and Children with confirmed HIV Infection

Adults and Adolescents	Children
WHO Clinical Stage 1	
<ul style="list-style-type: none"> • Asymptomatic • Persistent generalized lymphadenopathy 	<ul style="list-style-type: none"> • Asymptomatic • Persistent generalized lymphadenopathy
WHO Clinical Stage 2	
<ul style="list-style-type: none"> • Moderate unexplained weight loss (<10% of presumed or measured body weight) • Recurrent respiratory tract infections (sinusitis, tonsillitis, otitis media, pharyngitis) • Herpes zoster Angular cheilitis • Recurrent oral ulceration Papular pruritic eruption Fungal nail infections Seborrhoeic dermatitis 	<ul style="list-style-type: none"> • Unexplained persistent hepatosplenomegaly • Recurrent or chronic upper respiratory tract infections (otitis media, otorrhoea, sinusitis, tonsillitis) • Herpes zoster • Lineal gingival erythema Recurrent oral ulceration Papular pruritic eruption Fungal nail infections Extensive wart virus infection • Extensive molluscum contagiosum • Unexplained persistent parotid enlargement
<ul style="list-style-type: none"> • WHO Clinical Stage 3Unexplained severe weight loss (>10% of presumed or measured body weight) • Unexplained chronic diarrhoea for longer than 1 month • Unexplained persistent fever (intermittent or constant for longer than 1 month) • Persistent oral candidiasis Oral hairy leukoplakia • Pulmonary tuberculosis • Severe bacterial infections (such as pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteraemia) 	<ul style="list-style-type: none"> • Unexplained moderate malnutrition not adequately responding to standard therapy • Unexplained persistent diarrhoea (14 days or more) • Unexplained persistent fever (above 37.5°C, intermittent or constant, for longer than one 1 month) • Persistent oral candidiasis (after first six weeks of life) • Oral hairy leucoplakia • Lymph node tuberculosis. • Pulmonary tuberculosis • Severe recurrent bacterial pneumonia

<ul style="list-style-type: none"> • Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis • Unexplained anaemia (<8g/dl), or neutropenia (<500/mm³) for more than one month 	<ul style="list-style-type: none"> • Acute necrotizing ulcerative gingivitis or periodontitis • Unexplained anaemia (<8g/dl), or neutropenia (<500/mm³) for more than one month • Symptomatic lymphoid interstitial pneumonitis • Chronic HIV-associated lung disease, including bronchiectasis
WHO Clinical Stage 4	
<ul style="list-style-type: none"> • HIV wasting syndrome • Pneumocystis (jirovecii) pneumonia Recurrent severe bacterial pneumonia • Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month duration or visceral at any site) • Oesophageal candidiasis (or candidiasis of trachea, bronchi, or lungs) • Extrapulmonary tuberculosis • Kaposi sarcoma • Cytomegalovirus infection (retinitis or infection of other organs) • Central nervous system toxoplasmosis HIV encephalopathy • Extrapulmonary cryptococcosis, including meningitis • Disseminated nontuberculous mycobacterial infection • Progressive multifocal leukoencephalopathy • Chronic cryptosporidiosis Chronic isosporiasis 	<ul style="list-style-type: none"> • Unexplained severe wasting, stunting or severe malnutrition not responding to standard therapy • Pneumocystis (jirovecii) pneumonia • Recurrent severe bacterial infections (such as empyema, pyomyositis, bone or joint infection, meningitis, but excluding pneumonia) • Chronic herpes simplex infection (orolabial or cutaneous of more than 1 month's duration or visceral at any site) • Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs) • Extrapulmonary tuberculosis • Kaposi sarcoma • Cytomegalovirus infection (retinitis or infection of other organs with onset at age older than one month) • Central nervous system toxoplasmosis (after the neonatal period)

<ul style="list-style-type: none"> • Disseminated mycosis (extrapulmonary histoplasmosis, coccidioidomycosis) • Lymphoma (cerebral or B-cell non-Hodgkin) • Symptomatic HIV-associated nephropathy or cardiomyopathy • Recurrent septicaemia (including nontyphoidal) • Salmonella • Invasive cervical carcinoma • Atypical disseminated leishmaniasis 	<ul style="list-style-type: none"> • HIV encephalopathy • Extrapulmonary cryptococcosis, including meningitis • Disseminated nontuberculous mycobacterial infection • Progressive multifocal leukoencephalopathy • Chronic cryptosporidiosis (with diarrhoea) • Chronic isosporiasis • Disseminated endemic mycosis (extrapulmonary histoplasmosis, coccidioidomycosis, penicilliosis) • Cerebral or B-cell non-Hodgkin lymphoma • HIV-associated nephropathy or cardiomyopathy
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4.3 ADVANCED HIV DISEASE

The morbidity and mortality associated with HIV continues to decrease since the last decade due to improved access to globally (Nigeria guideline). Despite this progress up to half individuals living with HIV continue to present to care with advanced HIV disease (WHO 2021).

CD4 cell count is the best indicator of disease stage and immediate risk of death and should be used to identify people with advanced HIV disease. If access to CD4 count is limited or unavailable, WHO staging should be used.

Advanced HIV disease is defined in adults, adolescents and children above 5 years of age as having a CD4+ cell count of less than 200 cells/mm³ or WHO clinical stage 3 or 4 disease.

All children less than 5 years old living with HIV are considered as having advanced HIV disease.

Advance HIV disease includes people presenting to care for the first time following a diagnosis and people who have treatment failure with decline in CD4+ cell count. PLHIVs who had previously initiated ART but re-engaging with care after a period of treatment interruption should also be assessed for advanced HIV disease and should be offered the advanced HIV disease package of care as appropriate.

People with advanced HIV disease are at risk of death, even after starting ART. This risk increases with decreasing CD4+ cell count, especially with CD4+ cell count < 100 cells/mm³. It is also associated with increased healthcare costs, increased risk of opportunistic infection, immune reconstitution inflammatory syndrome, incomplete immune reconstitution, high viral reservoir, higher inflammation, increased risk of AIDS-related and non-AIDS related co-morbidities, use of more healthcare services and more frequent monitoring needs.

Table 4.2: Components of the package of care for people with advanced HIV disease

	Intervention	CD4 Cell Count	Adults	Adolescents	Children<10 years
Screening and Diagnosis	Screening for TB disease in adults and adolescents: four symptoms screen	Any	Yes	Yes	Yes
	Screening for TB disease among children: symptom screening for children living with HIV				
	Xpert MTB/Rif assay among those who screen positive for TB and investigation for extrapulmonary TB as applicable; chest X-ray may also be used to support diagnosis	Any	Yes	Yes	Yes
	LF-LAM to assist TB diagnosis among people	≤200 cells/mm ³	Yes	Yes	Yes

	with symptoms and signs of TB	Or any CD4 count with symptoms or if seriously ill			
	Cryptococcal Antigen Screening	< 200 cells/mm ³	Yes	Yes	No
Prophylaxis and Pre-emptive treatment	Cotrimoxazole Prophylaxis	All PLHIV regardless of CD4 count or clinical stage	Yes	Yes	Yes
	TB preventive Treatment	Any	Yes	Yes	Yes
	Fluconazole pre-emptive therapy for cryptococcal antigen-positive people without evidence of meningitis	< 200 cells/mm ³	Yes	Yes	Not applicable (screening not advised)
ART Initiation	Rapid ART ^b Initiation	Any	Yes	Yes	Yes
	Defer initiation of clinical symptom is suggestive of meningitis (TB or cryptococcal)	Any	Yes	Yes	Yes
Adapted Adherence Support	Tailored counselling to ensure optimal adherence to the advanced HIV disease package, including home visits	<200 cells/mm ³	Yes	Yes	Yes

^aTB preventive therapy should be provided in line with recommended national guideline (see section xxx)

^bPeople receiving a positive four-symptom screen should initiate ART while being evaluated for TB if clinical signs and symptoms of meningitis are absent

Specific AHD considerations among children

AHD screening should include nutritional assessment using weight-for-height, height for age, and mid-upper arm circumference in children 2 – 5 years. Other routine interventions should include deworming, malaria prophylaxis, iron and vitamin A supplementation, and growth monitoring.

Providing vaccination to children living with HIV disease does not accelerate HIV disease progression and is recommended as an important part of the HIV package of care. However, people with severe immunosuppression may be at higher risk of complications from live attenuated vaccines such as BCG and measles and the response to other inactivated vaccines may be less effective because of their degree

of immunosuppression. Additional doses of revaccination after immune reconstitution due to ART may therefore be required.

- Human Papillomavirus: Due to increased risk of cervical cancer, the recommended vaccine schedule for HPV is
 - A three-dose schedule (0, 1–2 and 6 months) should be used if HPV vaccination is initiated between the ages of 9 to 13 year and up to 26 years if not sexually exposed
- Measles:
 - Children and adults with HIV infection are at increased risk of measles. However, live vaccine should not be used for those with severe immunosuppression (CD4+ cell count <50 cell/mm³)
 - Vaccination should be routinely administered to potentially susceptible, asymptomatic children and adults living with HIV and should be considered for those with symptomatic HIV infection if they are not severely immunosuppressed
- Meningococcal Vaccination:
 - Meningococcal vaccination should be offered to everyone with immunodeficiency, including those patients with AHD
- Polio Vaccine: Polio vaccine is live attenuated and its use in patients with AHD should be in line with WHO recommendation as indicated below.
 - Inactivated polio vaccine or bivalent OPV may be administered safely to asymptomatic infants living with HIV. HIV testing is not a prerequisite for vaccination.
 - Bivalent OPV is contraindicated among severely immunocompromised people with known underlying conditions such as primary immunodeficiencies, thymus disorders, symptomatic HIV infection or low CD4+ cell count; these populations can safely receive inactivated polio vaccine. Vaccines not currently recommended for people with AHD include BCG, Rotavirus, Yellow Fever. This is because the safety and immunogenicity of these vaccines in individuals with CD4+ cell count 3 less than 200 cell/mm³; is not certain.

See annex xxx for vaccination schedule for people living with HIV

4.3.1 Common Causes of Morbidity and Mortality among Adults with Advanced HIV disease

The leading causes of mortality and morbidity among adults with advanced HIV disease includes the following

- Tuberculosis
- Severe bacterial infections
- Invasive fungal infections such as
 - Cryptococcal disease
 - Histoplasmosis
 - Pneumocystis jirovecii pneumonia
- Toxoplasmosis
- Cytomegalovirus disease

4.3.2 Common Causes of Morbidity and Mortality among Adolescents and Children with Advanced HIV Disease

The common causes of morbidity and mortality among children with advanced HIV disease include:

- Tuberculosis
- Severe bacterial infections
- Diarrheal disease
- Acute malnutrition

4.4 PREVENTION AND MANAGEMENT OF COMMON OPPORTUNISTIC INFECTIONS IN PEOPLE LIVING WITH HIV

4.4.1 Screening and Diagnosis of Tuberculosis in people living with HIV

People living with HIV are approximately 19 times more likely to develop TB disease than those without HIV. Many PLHIV who also have TB disease do not access care leading to mortality due to TB therefore it is crucial to ensure early detection and treatment of TB among all PLHIV to reduce morbidity and mortality in this population.

TB Screening among PLHIV

WHO-Recommended Four-symptom Screen (W4SS)

People living with HIV should be screened for symptoms of TB at every clinic visit or when contact with the healthcare provider is made in the community. The table below shows the symptoms screened for among adults and children living with HIV.

Table 4.3 WHO-Recommended Four-Symptom Screen in Adult, Adolescents and children

S/N	Adults and Adolescents	Children <10 years
1	Current Cough	Current cough
2	Fever	Fever
3	Weight Loss	Poor weight gain
4	Night Sweats	Close contact with TB patient

While the W4SS may have its limitations, it remains the simplest non-invasive tool to implement in any setting and it requires no infrastructure.

TB Diagnosis among PLHIV

Xpert MTB/RIF assay and TB-LF LAM are the recommended diagnostic tests for PLHIV presenting with AHD. Where these are not available onsite, appropriate samples should be referred to sites where Xpert MTB/RIF assay or TB-LF LAM is available. The use of LF-LAM to assist in diagnosing active TB among children, adolescents, and adults living with HIV should be carried out among those:

- with signs and symptoms of TB (pulmonary and/or extrapulmonary)
- with advanced HIV disease or who are seriously ill, regardless of signs and symptoms of TB and with a CD4+ count of <200 cells/mm³
- All children less than 5 years old living with HIV with presumptive TB

Chest radiography is another useful investigation for patients with presumptive TB who are not able to produce sputum, especially children.

4.4.2 TB Preventive Treatment among PLHIV

TB preventive treatment (TPT), previously referred to as Isoniazid Preventive Therapy (IPT), is the treatment offered to individuals who are at risk for TB disease in order to reduce that risk. TPT provides

treatment of latent TB infection (LTBI) or LTBI treatment. It is not a treatment for active TB and therefore, TB disease should be excluded before commencing a patient on TPT.

TPT is effective in preventing the development of active TB in HIV positive individuals. However, it is not a treatment for active TB, therefore TB disease should be ruled out before commencing a patient on TPT. For a patient to benefit from TPT, he/she must:

- Be HIV positive
- Not have active TB
- Be counselled and motivated to adhere to treatment

Recommendations for TPT

- Adults and adolescents living with HIV
 - Adults and adolescents living with HIV should be screened with a clinical algorithm; those who do not report any one of the symptoms of current cough, fever, weight loss or night sweats are unlikely to have active TB and should be offered TPT
 - Adults and adolescents living with HIV who are unlikely to have active TB or in whom active TB has been safely ruled out should receive TPT as part of a comprehensive package of HIV care. TPT should be given to such individuals regardless of the degree of immunosuppression, and to those on ART, those who have previously been treated for TB and pregnant women
- Children
 - Children living with HIV who do not have poor weight gain, fever or current cough are unlikely to have active TB. Children living with HIV who have poor weight gain, fever or current cough or contact history with a TB case may have TB and should be evaluated for TB and other conditions. If the evaluation shows no TB, they should be offered TPT regardless of their age
 - Children living with HIV who are ≥ 12 months of age and who are unlikely to have active TB on symptom-based screening and have no contact with a TB case should receive six months of TPT (Isoniazid 10 mg/kg/day) but not more than 300mg/day as part of a comprehensive package of HIV prevention and care if they live in a setting with high TB transmission, regardless of contact with TB

- In children living with HIV who are < 12 months of age, only those who have contact with a TB case and who are evaluated for TB (using standard lab investigations) should receive 6 months of TPT if the evaluation shows no TB disease
- All children living with HIV, after successful completion of treatment for TB, should receive TPT for an additional 6 months
- Children aged < 5 years who are household contacts of people with confirmed pulmonary TB and who are found not to have active TB on an appropriate clinical evaluation or according to national guidelines should be given TPT even if LTBI testing is unavailable
- Children aged ≥ 5 years, adolescents and adults who are household contacts of people with confirmed pulmonary TB who are found not to have active TB by an appropriate clinical evaluation or according to national guidelines may be given TPT

Commencing TPT

Healthcare workers should undertake the following actions before initiating patients on TPT:

1. Verify/Confirm HIV Status
2. Counsel clients on the interaction between TB disease and HIV infection
3. Exclude active TB (**Refer to Section xxx**)
4. Counsel patient/caregiver on:
 - a) Importance of Treatment adherence
 - b) Side effects of INH: peripheral neuropathy, jaundice, rash and what is expected in such circumstances
 - c) Immediate recognition and reporting of signs and symptoms of active TB If a patient develops active TB during the course of TPT, discontinue TPT and refer/ commence anti-TB treatment (DOTS)
5. During the monthly visit, monitor the patients for:
 - a) Signs and symptoms of active TB
 - b) Side effects. The most common side effect is peripheral neuropathy (numbness/tingling sensation of extremities). In addition, allergic skin eruptions and jaundice can occur. Since INH is co formulated with Pyridoxine, Complications such as numbness/tingling/burning sensation are not expected. However, if jaundice develops, discontinue TPT and refer to the clinician for assessment

TPT Regimen

The following options are recommended for the treatment of LTBI regardless of HIV status:

- 6 months of daily Isoniazid
- 3 months regimen of daily Isoniazid plus Rifampicin (3HR)

WHO recommends other regimen e.g., three months regimen of weekly Rifapentine plus Isoniazid (3HP) and one month of daily isoniazid and Rifapentine (1HP) and guidance on using these will be provided once these are available in-country.

It is important to harmonize TPT and ARV dispensing schedule and emphasize the importance of adhering to both drugs at every visit. Complete necessary TPT prophylaxis register and appointment card

Table 4.4 INH Dosing for TPT in adults and children

Weight bands (kg)	Dose given (mg)	Number of 100mg tablets per dose
>5	50	½ tablet
5.1-9.9	100	1 tablet
10-13.9	150	1 ½ tablet [or ½ adult 300mg tablet]
14-19.9	200	2 tablets
20-24.9	250	2 ½ tablets
≥25	300	3 tablets (or 1 adult 300mg tablet)
Isoniazid is taken once daily for 6 months. Best absorbed when taken on an empty stomach (1 hour before or 2 hours after a meal).		

Table 4.5 Dosing or 3-months of daily Isoniazid and Rifampicin

Children Strength: RH* 75mg/50mg FDC**		Adult Strength RH 150mg/75mg FDC	
Weight Band	RH Tablets	Weight Band	RH Tablets
4 – 7 kg	1	25 – 37kg	2
8 – 11 Kg	2		
12 – 15kg	3	38 – 54kg	3
16 – 24kg	4		

≥ 25	Use adult Regimen	$\geq 55\text{kg}$	4
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*IHH and 3HR are available in child friendly and dispersible forms

**FDC – Fixed Dose Combination

Contraindications to TPT

- Active TB
- Children <12 months with no history of TB contact
- Acute/ chronic liver disease
- History of poor adherence to treatment
- Excessive consumption of alcohol (defined as alcohol intake of >21 units per week for men/boys or 14 units per week for women/girls)

Monitoring of Patients on TPT

During drug refills or contact with a health worker, monitor patient on TPT for

- Development of active TB using clinical signs and symptom. If active TB is suspected:
 - Discontinue TPT
 - Refer (patient or sample) for TB diagnostic evaluation
 - Commence DOTS if TB is confirmed or refer to medical officer
 - Assess for ART/re-assess for ART failure
- Development of side-effects; most commonly peripheral neuropathy and if present give Pyridoxine 50-75mg daily
- Check signs and symptoms of liver disease such as yellowish eyes (jaundice), abdominal pain, nausea, vomiting and yellow urine. If any of these is present stop TPT and refer to medical officer to rule out active liver disease
- Check for allergic skin eruptions. If present stop TPT and refer to medical officer
- Evaluate adherence and counsel appropriately
- Track if client on TPT misses drug refill appointment

Management of TPT Treatment interruption in Children and Adults

Table 4.8

Regimen	Length of Interruption	Action/Next Step
3HR, 6H	Less than 2 weeks	<ul style="list-style-type: none"> • Screen for active TB • If symptoms are absent, resume TPT immediately upon return
	More than 2 weeks	<ul style="list-style-type: none"> • IF treatment interruption occurred after more than 80% of the doses expected in the regimen were taken <ul style="list-style-type: none"> ○ No action is required ○ Continue and complete the remaining treatment as per original plan • If less than 80% of doses expected in the regimen were taken, and the treatment course can still be completed within the expected time for completion (i.e., treatment duration + 33% additional time) <ul style="list-style-type: none"> ○ No action is required ○ Continue and complete the remaining treatment as per original plan • If less than 80% of doses expected in the regimen were taken, and the treatment course cannot be completed within the expected time for completion <ul style="list-style-type: none"> ○ Restart the full TPT course

Outcomes of TPT

Healthcare workers (HCW) should ensure that all PLHIV started on TPT are evaluated after completing their treatment and assigned a treatment outcome which should be documented in the recording and reporting tools. The following are the possible treatment outcomes:

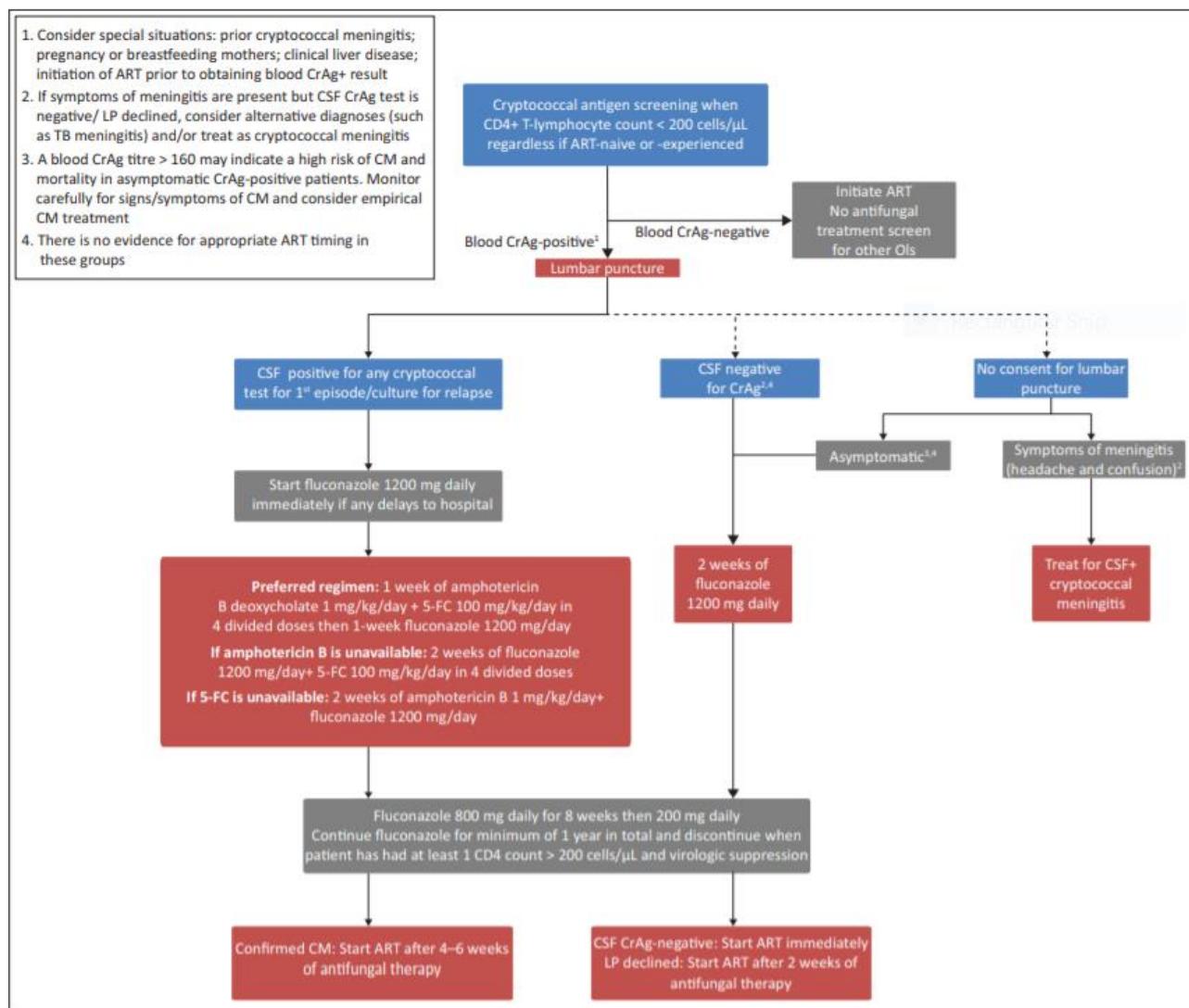
1. Completed treatment
2. Loss to follow-up
3. Not evaluated

4. Died
5. Developed active TB

4.4.3 Diagnosis, Prevention and Management of Cryptococcal Disease

Cryptococcal meningitis is a serious opportunistic infection and a major cause of morbidity and mortality in PLHIV with advanced HIV disease accounting for up to 15% of all HIV-related deaths globally. Delays in diagnosis, because of limited access to rapid diagnostic assays and lumbar puncture and the limited availability and high cost of the first-line antifungal drugs are major contributors to this high mortality. In addition, there is limited ability in low-income countries to monitor and manage treatment-limiting toxicities as well as complications of raised intracranial pressure, and immune reconstitution syndrome.

Figure xx: [Place holder – to be revised] Cryptococcal Antigen screening and treatment algorithm



Prevention and screening

Screening for cryptococcal antigen is the preferred approach for identifying infection when managing people presenting with advanced HIV disease, followed by pre-emptive antifungal therapy among cryptococcal antigen-positive people to prevent the development of invasive cryptococcal disease is recommended before starting ART for adults and adolescents living with HIV who have CD4 cell count of <200 cells/mm³

Patients with cryptococcal disease may be symptomatic or asymptomatic. CNS symptoms include headache, fever, neck pain, nausea and vomiting, sensitivity to light, and confusion or change in behavior. Screening and primary prophylaxis are not recommended for children, given the low incidence of cryptococcal meningitis in this age group.

Primary Prophylaxis

Where test kits for CrAg screening are not available, fluconazole primary prophylaxis (100mg daily for 8 weeks) should be given to adults and adolescents living with HIV who have a CD4 cell count <200 cells/mm³.

CrAg-positive adults should be treated with pre-emptive antifungal therapy. Treatment of asymptomatic CrAg positive infection is by Fluconazole 800 mg/day (or 12 mg/kg/day if below 19 years) for two weeks, then 400 mg/day (or 6 mg/kg/day up to 400–800 mg/day if below 19 years) for eight weeks, and continued maintenance with fluconazole 200 mg/day is recommended for pre-emptive antifungal therapy which should be discontinued when the patient is stable on and adherent to ART and has had antifungal treatment for at least one year, CD4 cell count is ≥200 cells/mm³ and fully suppressed VL.

Screening and primary prophylaxis are not recommended for children given the low incidence of cryptococcal meningitis in this age group.

Diagnosis of Cryptococcal meningitis

For adults, adolescents living with HIV with suspected first episode of cryptococcal meningitis prompt lumbar puncture with measurement of cerebrospinal fluid pressure and rapid cryptococcal antigen assay is recommended as the preferred diagnostic approach. Indian ink can be used if CrAg testing is unavailable

Table 4.9 Diagnosis of Cryptococcal Meningitis

Diagnostic Tests for Cryptococcal Meningitis
Adults and adolescents living with HIV suspected of having a first episode of cryptococcal meningitis, prompt lumbar puncture with measurement of cerebrospinal fluid (CSF) opening pressure and rapid cryptococcal antigen assay is recommended as the preferred diagnostic approach.
Depending on the health facility:
1. In health facilities with ready access to and no contraindication to lumbar puncture: <ol style="list-style-type: none">If both access to a CrAg assay (either lateral flow assay or latex agglutination assay) and rapid results (<24hours) is readily available, proceed with lumbar puncture for a rapid CSF cryptococcal antigen assay as the preferred diagnostic approachIf access to CrAg assay is not available and/or rapid results are not available proceed with LP and Indian ink test as the preferred diagnostic approach
2. In health facilities without immediate access to LP or when LP is clinically contraindicated <ol style="list-style-type: none">If both access to CrAg assay and rapid results are available within <24 hours proceed with rapid serum, plasma, or whole blood cryptococcal antigen assays as the preferred diagnostic approachIf a CrAg assay is not available and/or rapid access to results is not ensured, promptly refer for further investigation and treatment
Contraindications to lumbar puncture include: <ul style="list-style-type: none">Significant coagulopathySuspected space-occupying lesion based on focal central nervous system signs (excluding cranial nerve V1 palsy)Recurrent seizuresMajor spinal deformityPatient refusal despite adequate counselling
Note: Raised intracranial pressure is not a contraindication to lumbar puncture in suspected cryptococcal meningitis

Treatment of Cryptococcal Meningitis

Treatment of cryptococcal meningitis occurs in three phases namely:

Induction Phase – (duration 2 weeks)

For Adults, adolescents, and children: a short course (one week) induction regimen with Amphotericin B deoxycholate and flucytosine is currently recommended.

- Dosage
 - Amphotericin B deoxycholate regimen: One week
 - Amphotericin B deoxycholate (1.0 mg/kg/day); plus
 - Flucytosine 100mg/kg/day. Divided into four doses per day
 - This is followed by one week of
 - Fluconazole 1200mg/day for adults
 - Fluconazole 12mg/kg/day for children and adolescents, up to a maximum of 800mg daily

Alternative drugs in the induction phases

- Two weeks of:
 - Fluconazole 1200mg/day; plus
 - Flucytosine: 100mg/kg/day. Divided into four doses per day
- Two weeks of:
 - Amphotericin B deoxycholate: 0.7 - 1mg/kg/day; plus
 - Fluconazole: 1200mg/day.

To minimize toxicity due to Amphotericin B and flucytosine pre-emptive hydration, electrolyte replacement and toxicity monitoring should be provided.

Consolidation Phase (duration 8 weeks)

- Fluconazole
 - Adults: 800mg daily
 - Children and adolescents: 6-12mg/kg/day up to maximum of 800mg daily

Maintenance Phase (or Secondary Prophylaxis)

- Fluconazole
 - Adults: 200mg daily
 - Children and adolescents: 6mg/kg/day

The maintenance phase should be discontinued when the patient is stable on and adherent to ART and has had antifungal treatment for at least one year, CD4 cell count is ≥ 200 cells/mm³ and fully suppressed VL.

Therapeutic Lumbar Puncture

Increased intracranial pressure is common and a severe sign of cryptococcal meningitis among PLHIV. Initial measurement of intracranial pressure, where feasible, is an essential part of cryptococcal meningitis management to prevent serious nervous system complications and even death. Available evidence has shown that routine use of adjunct corticosteroid therapy during the induction phase may be harmful and therefore not recommended.

Draining of sufficient volume of cerebrospinal fluid (CSF) to <20cm H₂O or half the baseline pressure, if extremely high, is associated with clinical improvement and survival. CSF drainage should only be performed if a manometer is available.

4.5 COTRIMOXAZOLE PREVENTIVE THERAPY

Cotrimoxazole preventive therapy (CPT) is a fixed dose combination of two antimicrobial agents, sulfamethoxazole and trimethoprim. It is used for the prevention of some common HIV-associated OIs among PLHIV such as *Pneumocystis jirovecii* pneumonia (PJP) and toxoplasmosis. CPT is also can also be used to treat a variety of other bacterial, fungal, and protozoan infections. Use of CPT as part of standard of care in PLHIV helps to reduce HIV associated mortality.

All PLHIV regardless of age including pregnant and breastfeeding mothers irrespective of gestation age should receive CPT for life regardless of CD4+ cell count unless they have allergy to sulphur-containing drugs or toxicity to cotrimoxazole. If, however, there is need to prioritize, the following groups should be given priority:

- All PLHIVs with clinically evident severe or advanced HIV disease
- All PLHIVs with CD4+ cell count <500cells/mm³
- All PLHIVs with active TB disease
- CLHIV who are <5 years old
- HIV exposed infants 4 to 6 weeks after birth until the risk of contracting HIV is over or HIV infection has been excluded by an age-appropriate HIV test to establish a final diagnosis after complete cessation of breastfeeding

Additional intermittent preventive treatment for malaria using sulfadoxine-pyrimethamine (SP) is **not required** for pregnant women on CPT since CPT is also effective in malaria prophylaxis.

Where CPT is contraindicated, give dapsone 100 mg OD or 50 mg BID in adults. Paediatric dose is 1 mg/kg of body weight per day

4.5.1 Starting Patients on CPT

Before commencing a client on CPT it is important that the healthcare worker takes the following actions:

- Verify HIV Status
- Take a medical history to rule out contraindications to CPT such as known allergy to sulphur containing drugs, liver or kidney disease
- Conduct physical examination
- Counsel on OIs in HIV infection and the role of CPT in their management
- Treat pre-existing OIs

Table 4.10 Cotrimoxazole dosing table

Weight	<5kg	5-14.9kg	15-29.9kg	≥30kg
Dose (once daily)	120mg	240mg	480mg	960mg

4.5.2 Cotrimoxazole toxicity

Adverse effects of cotrimoxazole are rare but include skin rash, Stevens-Johnson Syndrome, anemia, neutropenia, and jaundice. In the event of skin reaction to cotrimoxazole, see guidance on management in table below:

Table 4.11 Guidance on how to manage cotrimoxazole hypersensitivity manifested as skin reactions

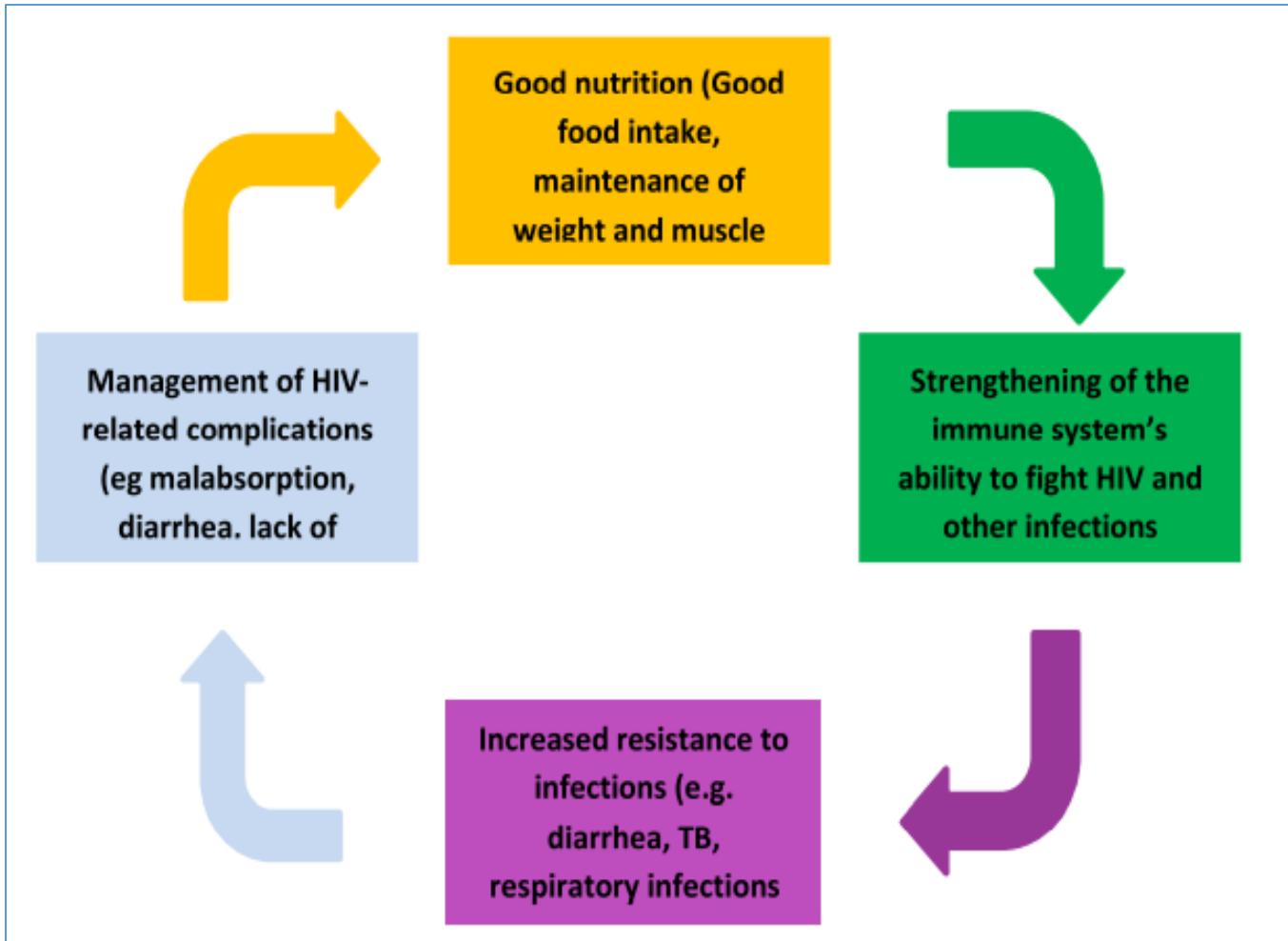
Severity	Description	Management
Mild	Dry skin, erythema +/- fine papules, or itching affecting <50% of body surface area	Continue CTX, monitor closely, consider symptomatic treatment with antihistamines +/- topical steroids (NOT oral steroids)
Moderate	Dry skin, erythema +/- fine papules, or itching affecting >50% of body surface area	Stop CTX, consider symptomatic treatment with antihistamines +/- topical steroids (NOT oral steroids), consider trial of desensitization after symptoms completely resolved
Severe	Mucosal involvement or blistering with associated fever affecting any % of body surface area (Steven-Johnsons syndrome)	Stop CTX, admit to hospital for supportive management (IV fluids, wound care, pain control, infection control, monitoring for superinfection), patient should NEVER be re-challenged with CTX or other sulfa-containing drugs

4.6 NUTRITION CARE AND SUPPORT FOR PLHIV

INTRODUCTION

Low energy intake combined with increased energy demands from HIV infection and related opportunistic and other infections may lead to HIV-related weight loss and wasting. In addition, an altered metabolism, reduced appetite, and higher incidence of diarrhoea may lower nutrient intake and absorption and lead to nutrient losses. These effects may all be compounded in low-income, food-insecure contexts. Low body mass (BMI less than 18.5 kg/m² for adults), and weight loss and wasting in children are all independent risk factors for HIV disease progression and mortality. Nutritional assessment (anthropometry, clinical and dietary assessment), counselling and support should be an integral component of HIV care and conducted at enrolment in care and monitored across the care continuum. Malnourished people with HIV, especially in food-insecure contexts, may require food supplements in addition to ART to support nutritional recovery. Weight loss or failure to regain or maintain a healthy weight at any stage of HIV infection, including while receiving ART, should trigger further assessment and appropriate interventions. Nutritional interventions, both food-based approaches and micronutrient supplementation, are therefore an essential component of comprehensive HIV care.

Figure 4.1 Relationship between nutrition and HIV



4.6.1 Nutrition for Infants and Young Children Living with HIV

Within the context of HIV infection, ensuring optimal feeding for infants and young children, including exclusive breastfeeding for the first six months of life, followed by complementary feeding, and breastfeeding through at least 24 months, is important in all settings where the prevalence of diarrhoea, pneumonia, and undernutrition is high and are common causes of infant and child mortality.

Breastfeeding should then only stop once a nutritionally adequate and safe diet without breast milk can be provided. It is not advisable to stop breastfeeding abruptly, mothers known to be living with HIV who decide to stop breastfeeding at any time should stop gradually within 1 month.

- When mothers known to be living with HIV decide to stop breastfeeding at any time, their infants should be provided with safe and adequate replacement feeds, to enable normal growth and development.

- Mothers known to be living with HIV should only give commercial infant formula milk as a replacement feed to their HIV-uninfected infants or infants who are of unknown HIV status when specific conditions are met.
- Mothers known to be living with HIV may consider expressing and heat-treating breast milk as an interim feeding strategy.

National and local health authorities should actively coordinate and implement services in health facilities and activities in workplaces, communities, and homes, to protect, promote and support breastfeeding among women living with HIV.

Mothers or infants who have been receiving antiretroviral prophylaxis should continue prophylaxis for 1 week after breastfeeding is fully stopped.

4.6.2 Nutritional Care for Children 6 Months to 14 Years Living with HIV

Nutritional assessment is essential to identify malnutrition and growth faltering early. Infants and children should undergo initial nutritional assessment (evaluation of nutritional status, diet and symptoms) and then be weighed and have height measured at each visit and monitored with reference to WHO or national growth curves. Growth monitoring should also be integrated into the assessment of response to ART. If poor growth is identified, then further assessment should be performed to determine the cause and appropriate response planned. Refer to the WHO Guidelines for an Integrated Approach to the Nutritional care of HIV-infected children (6 months-14 years). [Microsoft Word - Adaptation guide Nutrition Children HIV Final 09.11.09.doc \(who.int\)](#)

4.6.3 Nutrition in the HIV-infected Pregnant and Lactating Woman

The nutritional status of an HIV positive woman before, during and after pregnancy affects not just her health but also the outcome of the pregnancy and survival of the new-born. Anaemia may be more severe in HIV positive pregnant women, and severe anaemia ($Hb < 7\text{ g/dL}$) is associated with poor pregnancy outcomes and increased maternal and perinatal mortality. Extra nutrients are required during pregnancy to support the growth and development of the baby in utero.

4.6.4 Nutritional Assessment, Counselling and Support (NACS)

The nutrition assessment, counselling, and support (NACS) approach aims to improve the nutritional status of individuals and populations by integrating nutrition into policies, programs, and the health service delivery infrastructure. This approach strengthens the capacity of facility- and community-based health

care providers to deliver nutrition-specific services while linking clients to nutrition-sensitive interventions provided by the health, agriculture, food security, social protection, education, and rural development sectors. NACS should be implemented in HIV care settings using the “The Seven Steps” approach as shown in table 4.12 below.

Table 4.12 Seven Step NACS implementation approach

Step	Activities
Step 1 Nutrition and health education	Create awareness on benefits of proper nutrition Sensitize clients on the benefits of proper nutrition and monitoring of nutritional status
Step 2: Nutrition assessment	Anthropometry Record weight, length/height, MUAC, and age Routinely monitor and promote growth for children <5 years (see table 4.13)
	Biochemical analysis Monitor micronutrient deficiencies such as haemoglobin level
	Clinical assessment Check for signs of undernutrition including bilateral pitting oedema, wasting, hair changes, anemia (pale conjunctiva, gums, nails, skin), breathlessness, and rapid pulse
	Dietary assessment Collect information about the types and amounts of food consumed, appetite, and eating behaviors
Step 3: Nutrition classification	Classify nutritional status and decide on care plan, see Figure xx
Step 4: Nutrition counselling	Encourage clients to consume a variety of locally available, high-energy and nutrient dense foods; increased feeding frequency and intake per meal; high protein

	intake (especially animal); frequent hydration; intake of fats and sugar in moderation; exercise, hygiene, and sanitation.
Step 5: Nutrition therapy	<p>Severe acute malnutrition (SAM) with complications Manage in inpatient therapeutic care (ITC) using F75, F100</p> <p>Severe acute malnutrition (SAM) without complications Counsel and manage in outpatient therapeutic care (OTC) using ready to use therapeutic food (RUTF) (See Annex xxx)</p> <p>Moderate acute malnutrition (MAM) Counsel and refer to supplementary feeding program or livelihood programs</p> <p>Micronutrient deficiencies Provide appropriate micronutrient (iron, folate, vitamin A, zinc) supplements, see The Micronutrient Guidelines for Uganda, Ministry of Health 2013</p> <p>Food and drug interactions Manage complications that affect food intake/utilization, drug adherence, and efficacy, Integrated Nutrition Assessment, Counselling and Support into Health Service Delivery, Reference Manual, 2016</p>
Step 6: Follow-up for nutrition care and support	Follow-up all clients with acute malnutrition Routine and scheduled follow-up for clients on nutrition treatment: where appropriate, synchronize with other services
Step 7: Community linkage	Link malnourished patients to livelihood and/or supplementary feeding programs where possible

Table 4.13: Anthropometric measurements

Anthropometric measurements include weight, height, and mid-upper arm circumference (MUAC). Body mass index (BMI) and weight-for-height are anthropometric measurements presented as indexes. Each of these indexes is recorded as a z-score. Z-scores are measured in standard deviations (SD), which describe how far and in what direction an individual's anthropometric measurement deviates from the mean (for a healthy person of the same age and sex).

Weight:	Essential to help determine weight-for-height z-score (WHZ) for children and BMI for adults. Record weight in kg to the nearest 100gm at every visit (children and adults).
Length and height:	Record length/height to the nearest cm at every visit for children, and once at enrolment for adults.
Weight-for-height:	WHZ is an index to assess the nutritional status of children from birth to 59 months of age. WHZ compares a child's weight to the weight of a child of the same length/height and sex in the WHO Child Growth Standards to classify the child's nutritional status. There are separate standards for boys and girls.
Mid-upper arm circumference (MUAC):	The circumference of the left upper arm measured at the mid-point between the tip of the shoulder and the tip of the elbow, using a measuring tape. MUAC is a proxy measure of nutrient reserves in muscle and fat that is unaffected by pregnancy and independent of height. MUAC is quicker and simpler than WHZ to assess nutritional status in children less than 5 years.
Body mass index (BMI):	BMI is an anthropometric indicator based on a weight-to-height ratio. It is the preferred indicator of body thinness to classify malnutrition in adults and adolescents 15 years and older who are not pregnant or postpartum. Calculate BMI by dividing a person's weight in kg by the square of the person's height in meters (m).

4.6.5 Nutrition Counselling and Support:

Based on each individual's assessment (using BMI in adults and MUAC in children below 14 years of age), specific nutritional support should be provided – education, counselling, therapeutic feeding (TF), supplemental feeding (SF), or other.

Counselling: Nutrition counseling utilizes information from nutrition assessment (above) to enable the PLHIV and affected household members to work with health staff to prioritize actions based on the nutritional assessment to improve nutritional status. Counseling can allow the identification of challenges and discussion of possible locally available solutions to problems. Nutrition counseling can be provided by nurses, nutritionists, or designated counselors. If facility-based health care providers have limited time or training in counseling, task shifting should be considered to train mid-level health workers or community health workers to provide nutrition counseling.

- At the clinic level, clients should be provided with group education on key nutrition topics
- At the community level clients and their household members can receive this information through support groups facilitated by community health care workers/expert clients or HCWs

Support: Nutritional support should be provided based on information from the assessment and existing facility and community resources. Nutrition support can include specialized food products to treat malnutrition, micronutrient supplements to prevent or treat micronutrient deficiencies, point-of-use water purification products, and referral to economic strengthening and livelihood support.

- **For adult PLHIV**, watch out for any weight loss or lack of weight gain (in those with low BMI) over time. Review documented previous weight whenever available as reported weight loss can be unreliable. Investigate any weight loss for TB. Refer to Fig 12.3 (Algorithm for Classification of Malnutrition in Children 6 months-14 years).
- **For children**, Plot the weight on a child health card and look out for flattening of the growth curve (weight for age). Refer to National Nutrition Guidelines for South Sudan for further guidance on the management of malnutrition among PLHIV.

Food and/or micronutrient supplementation should be provided where necessary and where available. Adults PLHIV should be advised to consume diversified diets from locally available foods. PLHIV (and their families) who are food insecure should be referred to existing ‘Food Security and Sustainable Livelihood’ programmes that will help them achieve household food-security and benefit from livelihood assessment and support.

4.7 MALARIA AND HIV

PLHIV in malaria-endemic regions are at high risk of complications of malaria. Infants, children under five years of age, and pregnant women are at particular risk of severe and complicated malaria.

Key malaria control interventions include prompt and effective treatment, use of insecticide-treated mosquito nets (ITNs), indoor residual spraying (IRS) to control the vector mosquitoes, and intermittent preventive treatment during pregnancy.

PLHIV (as for the general population) should routinely use insecticide-treated bed nets or have access to indoor residual spraying to reduce their risk of exposure to malaria. Treatment or intermittent preventive

treatment with sulfadoxine-pyrimethamine should not be given to clients with HIV receiving cotrimoxazole prophylaxis.

PLHIV who develop malaria should receive prompt and effective anti-malaria treatment using artemisinin-based combination therapies (ACTs). Refer to *National Malaria Treatment Guidelines* for more details.

4.8 HEPATITIS B AND C

Viral hepatitis is an increasing cause of morbidity and mortality among PLHIV including those on ART. The sero-prevalence of hepatitis B virus infection in South Sudan is estimated at 12.8% in the general population. Among the PLHIV, 11.8% are co-infected with HBV (programme data 2012).

Clients on ART are at risk for hepatotoxicity due to ART regimens in addition to the liver damage caused by chronic HBV co-infection. Clients may also experience accelerated liver damage following immune reconstitution (HBV-associated IRIS).

All PLHIV should be assessed at enrolment to care for hepatitis B surface antigen. All clients in whom HBsAg is positive shall have ALT at ART initiation, 2, 6, and 12 weeks, 6 months and 6-monthly thereafter if the repeat HBsAg result remains positive at 6 months. Elevated ALT arising during therapy may have many causes and needs to be carefully evaluated for each client.

Clients co-infected with HIV and HBV (requiring treatment for their HBV infection) should be initiated on ART immediately irrespective of CD4 count or clinical stage using a TDF/3TC (or FTC) containing regimen. Lamivudine (3TC) and tenofovir (TDF) have antiviral effects on HBV and should be used together to effectively suppress HBV replication.

Clients with HIV and HBV coinfection on ART require close monitoring for clinical signs and symptoms of hepatotoxicity and laboratory monitoring for ALT. Clients needing second line should be screened for HBsAg and if positive, TDF should be continued as part of the second line regimen. Initiating ART among PLHIV and hepatitis C should follow the same principles as for the general population of people living with HIV.

4.9 SCREENING AND MANAGEMENT OF NON-COMMUNICABLE DISEASES

PLHIV are at increased risk of developing a range of non-communicable diseases (NCDs), including cardiovascular disease, diabetes, chronic lung disease and some types of cancer such as Kaposi's sarcoma, cervical cancer, and non-Hodgkin's lymphoma. Therefore, at each clinic visit, PLHIV should be screened for these non-communicable diseases.

4.9.1 Cervical Cancer

Cervical cancer, a preventable and treatable malignancy, is the fourth most detected cancer among women worldwide. Women living with HIV have a six-fold higher risk of cervical cancer than women without HIV, and cervical cancer is classified as an AIDS-defining condition. This higher risk is due to an increased risk of acquiring HPV infection, lower chances of regression of pre-cancer lesions, more rapid progression to cancer and higher rates of recurrence following treatment. Scale-up of ART has also led to steep declines in AIDS-related mortality and has increased life expectancy.

Prevention of Cervical Cancer

Cervical cancer is preventable and curable if diagnosed and treated early. The most effective strategy available for primary prevention of cervical cancer is the vaccination against the HPV aetiological agent of cervical cancer. HPV vaccines are indicated for pre-pubertal girls and offer most hope to effectively stop cervical cancer epidemic among women living with HIV.

HPV vaccines should be introduced as part of a coordinated strategy to prevent cervical cancer. Recommended target population for preventing cervical cancer: girls aged 9–14 years, before they become sexually active. A three-dose schedule (0, 1–2 and 6 months) should be used for all vaccinations initiated at 15 years and older, including those younger than 15 years known to be immunocompromised and/or living with HIV (regardless of whether they are receiving ART). Screening for HPV infection or HIV infection before HPV vaccination is not necessary.

Cervical Cancer Screening

Screening aims to detect precancerous lesions that can be treated before they progress to cancer. Women living with HIV with access to care have clinical appointments at least every six months, which provides an opportunity for delivering cervical cancer screening and treatment interventions, alongside appropriate follow-up.

Cervical cancer screening among women living with HIV should begin at 25 years and stop at 50 years after two consecutive negative screening results. Women 50 -65 years old who have never been screened before should also be given priority. Screening should be done every 3-5 years.

HPV DNA detection, where available, with triage (after a positive HPV DNA testing using partial genotyping, colposcopy, VIA, or cytology) is the recommended primary screening test rather than VIA or cytology. Samples for HPV DNA testing can be collected by a health worker or by the patient. In South Sudan, annual screening for cancer of the cervix among pregnant women should continue with VIA until HPV DNA becomes available.

Women living with HIV who have screened positive on an HPV DNA primary screening test and then negative on a triage test should be retested with HPV DNA testing after 12 months. If negative return to the recommended screening schedule.

HIV positive women who have screened positive on cytology primary screening test and then have normal results on colposcopy should be retested with HPV DNA testing after 12 months. If negative return to recommended screening schedule.

HIV positive women who have been treated for histologically confirmed CIN2/3 or adenocarcinoma in situ or treated because of positive screening test should be retested after 12 months with HPV DNA testing if available rather than cytology or VIA or colposcopy. If negative retest again after 12 months. If negative again return to recommended screening interval.

Clinical Signs

No early symptoms therefore active screening is needed.

Management

Once a decision has been made to treat a woman with cancer of the cervix treatment should be commenced within six months. For women who are pregnant treatment should be deferred until after pregnancy. Large loop excision of the transformation zone or cold-knife conization is recommended for women who have histologically confirmed adenocarcinoma in situ. Loop excision may be preferred for women of reproductive age, in settings with greater availability of large loop excision of the transformation zone and

by providers with greater expertise performing large loop excision of the transformation zone. Cold-knife conization may be preferred when interpretation of the margins of the histological specimen is imperative.

4.9.2 Mental Health

The prevalence of mental illnesses, such as depression, in people living with HIV is substantially higher than in the general population. PLHIV and their caregivers may have a wide range of mental health needs. The most common mental health comorbidities among PLHIV include depression, anxiety, dementia and other cognitive disorders and substance use disorders. Mental health disorders such as depression in PLHIV can affect general health, lead to suboptimal treatment adherence and poor retention in care. Although chronic HIV care settings provide an opportunity to detect and manage depression among people living with HIV, it is often overlooked and unrecognized by healthcare providers.

HIV care providers should routinely assess the mental health status of PLHIVs, including screening for common mental disorders and suicide risk as part of comprehensive HIV care services for all individuals living with HIV. A stepwise approach should be used for diagnosis, management and follow-up of people living with HIV with mental health disorder. Refer to the WHO's Mental Health Gap Action Programme (mhGAP) toolkit for use in non-specialized settings:

<https://apps.who.int/iris/bitstream/handle/10665/250239/9789241549790-eng.pdf>

4.9.3 COVID-19 Vaccine

Many of the COVID-19 vaccine studies have included a few people living with HIV in their trials. Despite limited data, the available information suggests that current WHO-recommended COVID-19 vaccines are safe for people living with HIV. No interactions have been reported between COVID-19 vaccines and ARV drugs, which people living with HIV should continue to take following COVID-19 vaccination.

4.9.4 Palliative care and other co-morbidities

Palliative care- symptom management and end-of-life care: PLHIV may experience various forms of pain and other discomfort. Care providers should identify and treat the underlying cause, when possible, while controlling the pain using the WHO analgesic ladder.

Step 1: Mild pain: non-opioid (e.g., paracetamol) +/- adjuvant

Step 2: Moderate pain: Weak opioid (codeine phosphate) +/- non-opioid +/- adjuvant

Step 3: Severe pain: Strong opioid (e.g., morphine) +/- non-opioid +/- adjuvant

Adjutants include:

- **NSAIDs** (non-steroidal anti-inflammatory drugs): can be used as co-analgesics and are useful in reducing inflammation
- **Tricyclic anti-depressants** - e.g., Amitriptyline, useful in treatment of burning nerve pain e.g., that due to post herpetic neuralgia
- **Anticonvulsant medications** – e.g. Carbamazepine, phenytoin useful in treatment of stabbing type nerve pain

See <http://www.who.int/cancer/palliative/painladder/en/> for more details

5. ADHERENCE PREPARATION, MONITORING, AND SUPPORT

BACKGROUND

Good adherence to ART is key for achieving and sustaining HIV viral suppression, reduced risk for emergence of HIV drug resistance, improved overall health, quality of life, and survival, as well as decreased risk of HIV transmission. Conversely, poor adherence is the major cause of mutation/s of the virus and subsequent ART treatment failure. Adherence should be routinely assessed and reinforced by every member of the clinical team (physicians, counselors, nurses, pharmacists, peer educators, etc.) at each of the patient's visits to the clinic. This section will cover how to prepare patients for ART, and monitor and support them to adhere to ART.

5.1 ADHERENCE PREPARATION

Preparing people to start antiretroviral therapy (ART) is an important step to achieving ART success. Health care providers should initiate a detailed discussion and provide adequate information about the benefits and risks of ARTs and lifelong treatment followed by assessment of the willingness and readiness of patients to initiate ART.

5.1.1 Psychosocial Assessment and Adherence Counselling

The goal of the psychosocial assessment is to identify problems which may negatively impact adherence to ART and hence on the client's health or treatment outcomes that will demand appropriate intervention. The preparation of the client for ART should start with baseline counselling to address the following issues:

- Clients' basic knowledge on the use of ART to help them make an informed decision.
- Clients' willingness and readiness to start ART
- Expected benefits of ART
- Importance of adherence to ART, potential barriers and how to improve adherence.
- Potential side effects of ART and what to do as they happen.
- Possible drug interactions
- ART monitoring schedule
- The importance of food hygiene and proper nutrition.
- Sexual and Reproductive Health (RH) issues

- Prevention of sexually transmitted infections (STI)
- Disclosure of HIV status for the sexual partner or treatment supporter including how to disclose HIV status to older children and adolescents.

The health care team should use the 5 As principles for chronic care as a guide to offer pre-ART adherence counseling and psychosocial support. These are **Assess, Advise, Agree, Assist and Arrange** (**Table 5.1**).

Table 5.1: 5As for adherence preparation support

Guide	Components
Assess	<p>Goal: To assess patients' knowledge of HIV, ARVs and potential barriers to adherence</p> <ul style="list-style-type: none"> <input type="checkbox"/> Knowledge about HIV and ARVs <input type="checkbox"/> Myths and misconceptions about HIV and ARVs <input type="checkbox"/> Potential barriers to adherence (see Table 5.3) <input type="checkbox"/> Client's psychosocial concerns and needs that may hinder adherence to ART <input type="checkbox"/> Client's willingness and commitment to take medicines correctly <input type="checkbox"/> Client's readiness to honor subsequent appointment for treatment support <input type="checkbox"/> Client's support systems at family and community level <input type="checkbox"/> Disclosure of ones HIV positive status and its implications
Advise (Provide information)	<p>Goal: To provide the patient with knowledge about HIV/ARVs to enable them to</p> <p>enroll for treatment (see annex xxx)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Give information about HIV and ARVs <input type="checkbox"/> Provide information on adherence to ART. Include information on the 5 Rs (taking the right medicine, at the right time, right dose, right way, and right frequency) <input type="checkbox"/> Demonstrate how the ARVs are taken including preparations for children <input type="checkbox"/> Provide information about side effects of ARVs, improved quality of life while on ART, changes that may occur in a person's life once on treatment <input type="checkbox"/> Explain the benefits of disclosure and support systems to adherence

	<ul style="list-style-type: none"> <input type="checkbox"/> Explain to the Clients how often they will be monitored once on treatment; other ways of assessing adherence and response to treatment including pill counts <input type="checkbox"/> Emphasize the importance of attending all the clinic appointments for review and support <input type="checkbox"/> Discuss the Positive Health, Dignity, and Prevention package <input type="checkbox"/> Explain the implication of not adhering to ARV treatment <input type="checkbox"/> Explain what VL test is and the meaning of suppressed and unsuppressed viral load
Agree on	<p>An adherence plan (refer to Table 5.4)</p> <ul style="list-style-type: none"> <input type="checkbox"/> Family and community support systems (expert client in the community) <input type="checkbox"/> Possible home visit and consent <input type="checkbox"/> Possibility of testing of other family members including sexual partner and children <input type="checkbox"/> Assess client's readiness to start ART (see annex xxx: ART readiness assessment form)
Assist	<p>The client to:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Evaluate the possible barriers to adherence and how to overcome them <input type="checkbox"/> Identify the support systems that will enable the client to take his drugs and to regularly come to the facility such as treatment supporter, social support groups <input type="checkbox"/> Disclose to a trusted person of their choice such as a treatment supporter, social support group, etc. <input type="checkbox"/> Develop an individual support adherence plan <input type="checkbox"/> Document the agreed-upon options on the ART card <input type="checkbox"/> Look for assistance as required by phone, WhatsApp etc.
Arrange for	<p>The patient to see a clinician for ARV prescription if they are ready to start ART</p> <ul style="list-style-type: none"> <input type="checkbox"/> Follow-up adherence counseling and psychosocial support sessions <ul style="list-style-type: none"> ○ At one month for patients who have initiated ART

	<ul style="list-style-type: none"> ○ At agreed time but probably a week for those who were not ready for ART at the initial visit <input type="checkbox"/> The client to join psychosocial support groups and use support systems <input type="checkbox"/> The clients to be linked to COVs <input type="checkbox"/> Follow-up appointments (home visiting where appropriate, phone call reminders and text messages where appropriate) <input type="checkbox"/> Monthly counseling sessions for drug adherence. <input type="checkbox"/> Reviewing the action plans at every encounter <input type="checkbox"/> When to bring sexual partners and other family members for testing <input type="checkbox"/> Supported disclosure where it has not happened
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Table 5.2: Basic questions and answers about HIV and ARVs

Questions	Answers
What does it mean to be HIV positive?	It means your body has the HIV. This virus destroys your immune system and causes AIDS.
How does HIV affect your body?	It destroys the CD4 cells in your blood and leaves your body defenseless against opportunistic infections or malignancies.
What are ARVs?	These are drugs that are used to treat HIV. There are several of them, and they work in different ways at different stages of the multiplication of the virus.
How do ARVs work?	They stop the virus from multiplying in the body resulting in reconstitution of the CD4 cells, which helps the body to fight opportunistic infections.
What are the benefits of taking ARVs?	<p>ARVs:</p> <ul style="list-style-type: none"> ▪ Suppress the multiplication of the virus in the body and produce viral suppression. ▪ Cause your CD4 count to increase, and you will be able to fight diseases better and reduce your risk of falling sick. ▪ Promote growth and better development in children. ▪ Increase your life span since you will not be falling sick often

	<ul style="list-style-type: none"> ▪ Because you are not sick often, you will be able to work and provide for yourself and your family. ▪ Reduces the risk of transmitting HIV to your uninfected partners or baby. ▪ Be productive to support your family and your country at large
When should an HIV-infected person start ARVs?	<p>As soon as one is confirmed to be HIV-infected and is ready to start treatment.</p> <p>However, the health worker should ensure that you have been prepared enough to start ARVs using the 5 As approach that can be reinforced during the subsequent follow up visits.</p>
How much ARVs should I take daily and how often?	<p>Although these are all ARVs, they are of different types and therefore you should take your medicine according to the health worker's prescription.</p> <p>Drug sharing should be prohibited as it affects adherence. Clients can qualify for different ARV drug regimens depending on age, type of job, weight (in children), and prevailing clinical condition(s). Therefore, ARVs should be taken by prescription only.</p>
What are some of the side effects of ARVs?	<p>In general, the ARVs you will be on are safe and have few side effects.</p> <p>Depending on the specific ARV few clients can develop anemia, vomiting, skin rash, diarrhea, nightmares, convulsions, hypersensitivity, etc.</p>
How can I know that I have side effects and what should I do?	<ul style="list-style-type: none"> ▪ If you experience conditions that were discussed as side effects of the drugs given during adherence counseling, you should report to or call the health facility that provided the treatment ▪ If away from the facility, you should go to the nearest health facility along with your client prescription book ▪ If not sure of what to do contact the expert client /COV in your area for support ▪ Call the health facility line or hotline for support
How often should I return for HIV care?	<ul style="list-style-type: none"> ▪ You should always return for care and monitoring as scheduled by the health worker. ▪ When you experience a side effect or a psychosocial challenge ▪ When you feel sick, e.g., when you have malaria

Why should I start ART when I don't feel sick?	<p>HIV harms you on the inside even when it is not seen on the outside. It destroys cells that help your body fight diseases. Soon you may start falling sick often.</p> <ul style="list-style-type: none"> When you (your child) take ARVs now, the medicines reduce the amount of HIV in your blood and as a result your body will be able to fight diseases better, and you will be healthy. Starting ARVs early helps to prevent TB, heart disease and HIV-related cancer and other infections that may occur if your immunity is low. <p>For children and adolescents</p> <ul style="list-style-type: none"> You will not fall sick often, will grow and develop well, attend school and achieve their future dreams. When you are not sickly, you will be able to carry on with your other duties normally and may save money on hospital bills. <p>Adults and sexually active adolescents</p> <p>When the amount of virus in your blood is reduced, the chances that you will transmit HIV to others are significantly reduced.</p> <p>Individuals at high risk of HIV exposure including discordant couples</p> <ul style="list-style-type: none"> ARVs will prevent your sexual partner(s) from HIV infection. Also use other prevention methods like condoms. <p>Pregnant women</p> <ul style="list-style-type: none"> Reduce the chances of transmitting HIV to your baby Starting you on ART early will help you to have a better quality of life as you will not fall sick often, you will live healthy and stronger and have an HIV-free baby.
Benefits of adhering to ARVs	<p>Suppresses the multiplication of the virus in your body</p> <ul style="list-style-type: none"> The CD4 count will increase, and you will be protected from other illnesses Reduces the risk of developing ARV drug resistance

	<ul style="list-style-type: none"> • The risk of transmitting HIV to your HIV-uninfected sexual partners may • be reduced • Reduces the risk of infecting your born or unborn baby • In children, they will grow and develop better • In adolescents, they will look healthy
Consequences of not adhering to ARVs	<p>You may not be able to suppress viral multiplication in your body</p> <ul style="list-style-type: none"> • The virus will continue to destroy your immune system and decrease your • Viral Load <ul style="list-style-type: none"> ◦ When your Viral load is above 1,000 copies, you will be prone to opportunistic infections • The virus in your body may also become resistant to ARVs • You will have limited options for treatment and require more expensive and more toxic ARVs for your treatment which may not be readily available in the country • Become less productive resulting in loss of economic activity • May succumb to life-threatening conditions of AIDS which leads to death • The chances are high that pregnant and breastfeeding women will transmit HIV to their born and unborn babies • Adolescents might not realize their future dreams

Table 5.3: Barriers to adherence

Population	Barriers
Infants and Children	<ul style="list-style-type: none"> ▪ Lack of a committed, involved and responsible caregiver ▪ HIV infected caregiver/parent with ill health/adherence/emotional challenges ▪ Caregiver's job obligations ▪ Child may refuse to take the medicine

	<ul style="list-style-type: none"> ▪ Multiple caregivers for the child ▪ Poor palatability of some medicines ▪ Difficulty in swallowing medicines ▪ High pill burden ▪ Frequent dosing changes ▪ Limited choice of pediatric formulations ▪ Child abuse and neglect ▪ Stigma and discrimination ▪ Non-disclosure to the child and family members
Adolescents	<ul style="list-style-type: none"> ▪ Psychosocial issues such as peer pressure, the perceived need to conform ▪ Inconsistent daily routine ▪ Child abuse and neglect ▪ Stigma and discrimination ▪ Left out of decisions and have limited opportunities to discuss their concerns ▪ Limited availability of adolescent-specific treatment literacy and adherence ▪ counseling tools ▪ For adolescents who are transitioning from pediatric to adolescent care, ▪ additional challenges may include: ▪ Assuming increased responsibility for their care ▪ Issues relating to disclosure to peers or partners ▪ Difficulties in navigating the health care system ▪ Lack of links between adult and pediatric services and inadequately skilled ▪ health workers ▪ The adolescent stages of growth and development ▪ Alcohol and substance abuse

Pregnant or breastfeeding women	<ul style="list-style-type: none"> ▪ Pregnancy-related conditions such as nausea and vomiting may negatively affect treatment adherence ▪ Other individual factors include suboptimal understanding of HIV, ART, and PMTCT ▪ Lack of partner disclosure and support, ▪ Fear of stigma and discrimination, ▪ Non-disclosure ▪ GBV ▪ Drug sharing ▪ Service delivery barriers including: <ul style="list-style-type: none"> ○ Poor-quality clinical practices ○ Gaps in provider knowledge and training ○ Poor access to services
Adults	<ul style="list-style-type: none"> ▪ Social barriers (e.g., long work schedules/job time/nature of Job) ▪ Forgetfulness ▪ Lack of trust in providers or medicines ▪ Stigma and discrimination ▪ Lack of social support ▪ Non-disclosure ▪ Drug side effects ▪ Pill burden ▪ Inadequate information about ARVs ▪ Alcohol and substance abuse
Key populations	<ul style="list-style-type: none"> ▪ Stigma and discrimination ▪ Provider attitude ▪ Alcohol and substance abuse ▪ Nature of job/engagement ▪ High mobility ▪ GBV ▪ Lack of peer support ▪ Lack of knowledge by health workers of KPs

People with mental health conditions and substance abuse	<ul style="list-style-type: none"> ▪ Uncontrolled depressive symptoms ▪ Forgetfulness ▪ Poor organization ▪ Poor comprehension of treatment plans
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Table 5.4: Ten questions guide for developing an adherence plan

Question	Client /caregiver response
1. How many pills of the medicine will you take/give per day? (Client demonstrates as you observe)	
2. What time will you take/give the medicine?	
3. How will you remember to take/give the medicine?	
4. Where will you keep the medicine?	
5. What will motivate you to take/give the medicine?	
6. Whom have you disclosed to/plan to disclose to?	
7. Who is your treatment supporter or your child's treatment buddy?	
8. Who will pick your/your child's medicine if you cannot come to the clinic?	
9. How will you ensure you keep your appointments as scheduled?	
10. What challenges/factors may affect your adherence? (Explore for non-disclosure, alcohol and substance abuse, sexual partner(s), and stigma)	
11. Are you willing to be matched with a COV residing close your homestead?	

5.2 MONITORING ADHERENCE TO ART

Adherence to ART requires life-long assessment and monitoring and should be part of each clinic visit, as factors that influence adherence are dynamic and require different approaches to address them as they change over time. A combination of methods to assess adherence is recommended as depicted below.

5.2.1 Viral Load Monitoring

Viral load monitoring is considered the gold standard for monitoring adherence and confirming treatment response. All HIV-infected patients should receive a viral load test 6 months after initiating treatment and annually thereafter (see [Section xxx, Viral load monitoring](#)). Following an initial high viral load (>1000 copies/mL), enhanced/intensive adherence counseling (EAC) should be offered in three monthly sessions over a minimum of 3months before requesting for a second viral load test to determine re-suppression of the virus or treatment failure.

5.2.2 Self-Reporting

Self-reporting is rapid, inexpensive, easily carried out in clinical settings and is frequently used in routine care. It involves asking questions regarding missed doses to establish adherence. It is essential that these questions be posed in a non-threatening, non-judgmental approach, and in a sensitive way. All patients, especially adolescents should be encouraged to speak openly, and they should be reassured that many people find it difficult to take all their medications.

When using self-report, use the four guide questions to determine adherence and reasons for not adhering to ART ([Table 5.5](#)).

Table 5.5: Four question guide for reviewing an adherence plan

Question	Client response
1. How many times do you take drugs in a day?	
2. What time do you take it?	
3. How many doses have you missed in the seven days or past month?	
4. What are the reasons for missing your drugs?	

Use the number of missed ARV doses in the past month to determine adherence level and appropriate action ([Table 5.6](#)).

5.2.3 Pill Counting

This approach compares the actual to the expected consumption of ART since last dispensed by the pharmacy. The effectiveness of pill counting is limited by the fact that patients may discard tablets not taken before their routine clinic visit leading to overestimated adherence. Pill count performs better when combined with self-reported adherence.

Using pill counts to determine adherence levels

- Count the number of pills the patient has in the medicines bottle.
- Determine the number of pills the patient should have taken since the last clinic visit.
- Compute the percent adherence using the formula below:

$$\% \text{ adherence} = \left(\frac{\text{Number of pills taken}}{\text{Total number of pills expected to have been taken}} \right) * 100\%$$

After computing % adherence, use [Table 5.6](#) to determine the adherence level and support the client accordingly.

Table 5.6: Determining adherence levels from self-report and pill count and recommended action

Missed doses per month		Percent adherence	Adherence ranking	Recommended action
Once daily dosing	Twice daily dosing			
<2 doses	≤ 2 doses	≥95%	Good	Review adherence plan Support to continue adhering well
2-4 doses	4-8 doses	85–94%	Average /fair	Address the causes of average/poor Adherence Review adherence plan
≥5 doses	≥9 doses	<85%	Poor	Note: Adherence >105% could imply potential drug sharing or other inconsistencies in dosing and should be investigated.

5.2.4 Pharmacy Refill / Clinic Records

Adherence can also be assessed by viewing the patient's clinic and pharmacy records. Such records document if and when a patient or caregiver collected their ARVs; irregular collection may indicate adherence challenges. Additionally, computerized pharmacy records assist health managers to assess the overall adherence. Pharmacy records are more reliable than self-reporting if documentation is accurate.

5.3 ADHERENCE SUPPORT

Adherence support interventions should be provided to people on ART. The following interventions have demonstrated benefit in improving adherence and viral suppression:

- **Peer counselors:** These include peer/mentor mothers in the PMTCT program, adolescent peers, expert clients and other peers as patients and caregivers usually relate better to peers.
- **Mobile phone calls and text messages:** These should be used with the patient or caregiver consent. The patient or caregiver should provide the appropriate phone numbers to avoid accidental disclosure when messages are sent to a wrong person.
- **Reminder devices** like calendars, pillboxes and diaries can be used by clients.
- **Behavioral skills training and medication adherence training:** These include module-based interventions and those designed to improve life skills, attitudes, behavior, and knowledge.
- **Fixed-dose combinations and once-daily regimens:** When available, health-care workers should prescribe fixed dose combinations because they reduce the pill burden. If once daily regimens are available and recommended, they should be used.
- **Use of treatment buddies:** This is an individual identified by the client to take on the role of a treatment supporter. This person reminds/gives the client their medication whenever it is time and reminds them of their refill dates.
- **Peer-led dialogues:** These include group discussions among clients. They could discuss the challenges they face and come up with possible solutions.

5.4 ENHANCED ADHERENCE COUNSELING FOR PATIENTS WITH UNSUPPRESSED VIRAL LOAD

Enhanced adherence counseling (EAC) is the counseling offered to patients with a non-suppressed viral load. EAC helps a client develop a comprehensive plan for adhering to ARVs by identifying barriers to adherence, understanding the barriers, and exploring possible ways to overcome the barriers and planning to adhere to medicine. EAC requires a multidisciplinary team including clinicians, nurses, counselors, family members, peers, etc. It may also require consultations or referrals to address issues related to stigma, disclosure, mental health, co-morbidities, and nutrition.

The multidisciplinary team should use the 5 As to offer intensive adherence counseling and psychosocial support. These are; **Assess, Advise, Agree, Assist and Arrange** and are summarized in [Table 5.7](#) below.

Table 5.7: 5A's for adherence support for people with non-suppressed viral load

Guide	Components
Assess	<ul style="list-style-type: none"> ▪ Client's adherence history ▪ Patient's psychosocial concerns and needs ▪ Patient's willingness and commitment to take medicines correctly ▪ Patient's understanding of the implications of a non-suppressed viral load ▪ Barriers to ART adherence ▪ Patient's readiness to receive comprehensive counseling on a monthly basis ▪ Patient's psychological state in the past two weeks
Advise (Information giving)	<ul style="list-style-type: none"> ▪ Explain what VL test is and results (suppressed and non-suppressed viral load) ▪ Explain that non-suppressed viral load means: ▪ Either the ARVs are not working well, or patient is not taking medicine well ▪ The amount of virus in the patient's blood is high and is going to destroy their CD4 cells quickly, leading to a lack of protection from infections ▪ Emphasize that the patient will receive adherence counseling sessions monthly for at least 3 or more months at agreed service points as per the identified concern ▪ Repeat viral load will be taken one month after the third counseling session ▪ Discuss positive health, dignity, and prevention (PHDP) package
Assist the client to:	<ul style="list-style-type: none"> ▪ Evaluate the possible underlying causes of the non-suppressed viral load. ▪ Develop an adherence plan to achieve viral load suppression with regards to their adherence barriers. ▪ Identify the support systems that will enable the client to take his or her drugs as prescribed. These should include treatment buddy, peer support groups, and family members. ▪ Brainstorm on strategies to facilitate good adherence e.g. appointment keeping for refills, treatment buddies, social support groups, joining, and linkage to CBOs. ▪ Disclose to a trusted person of their own choice and significant other. ▪ Document the agreed upon options on the HIV/ART card, and routine/intensified adherence counseling form.

Agree on	<ul style="list-style-type: none"> ▪ An action plan on how to achieve viral suppression including using the principles in Table xx to develop an adherence plan. ▪ The support systems to help the client implement the agreed upon action plan. ▪ Supporting the patient's choices and help them own the action plan
Arrange	<ul style="list-style-type: none"> ▪ Arrange for follow up intensive adherence counseling and psychosocial support sessions. Emphasize that the patient will receive adherence-counseling sessions monthly for at least three or more months. ▪ The following are the actions to be followed: <ul style="list-style-type: none"> ▪ Joining psychosocial support groups and other support systems ▪ Home visiting ▪ Sending SMS and phone call reminders ▪ Monthly counseling sessions targeting drug adherence ▪ Following up the PHDP Care Package for PLHIV ▪ Review of the action plans at every encounter

6. ANTIRETROVIRAL THERAPY FOR PEOPLE LIVING WITH HIV

6.1 INTRODUCTION

Antiretroviral therapy is the use of a combination of antiretroviral drugs to treat HIV infection. All PLHIVs should be commenced on ART irrespective of clinical stage or CD4+ count provided there are no contraindications to ART. If necessary, priority should be given to pregnant and breastfeeding women, infants and children less than 5 years and people with advanced HIV disease. ART should be provided in a comprehensive manner that includes, ongoing adherence counselling, periodic clinical and laboratory evaluation, management of opportunistic infections, treatment monitoring and follow-up and linkage to other available health and social services.

6.2 THE GOAL OF ART

The aim of antiretroviral therapy is to achieve sustained virological suppression to undetectable levels. This reduces the risk of morbidity and mortality associated with HIV at an individual level and reduces transmission of HIV at population level including circulation of drug resistant virus.

6.3 PREPARING TO START ART

Client preparation prior to starting ART should include baseline clinical and laboratory assessments as well as a psychosocial assessment to ensure the client is ready and can achieve optimal adherence once treatment is started. However, unavailability of lab tests or results **SHOULD NOT** delay ART initiation.

6.3.1 Baseline Assessment

Though the program recommends starting all PLHIV on ART, the health workers should do the following:

- Assess all clients with the Symptom Screen and Advanced Disease Pathway for any evidence of opportunistic infections especially TB and cryptococcal meningitis. If the patient has TB meningitis or cryptococcal meningitis, ART should be deferred and initiated after starting treatment for these OIs.
- For patients without TB or cryptococcal meningitis, offer ART on the same day through an opt-out approach. In this approach, the patients should be prepared and assessed for readiness to start ART on

the day HIV diagnosis was made according to the guidelines in **Section 5** using the readiness checklist ([annex xxx](#)).

If a client is considered ready, ART should be initiated on the same day. If a client is not ready or opts out of same-day initiation, a timely ART preparation plan should be agreed upon with the aim of initiating ART within seven days.

6.3.2 Clinical Assessment:

- Retest to verify HIV Status
- Take a detailed history (this should include TB symptom screening, comorbidities, pregnancy, and family planning, prior to use of ART, mental health issues and substance use, STI and social and sexual history)
- The clinician should conduct a physical examination (this should include anthropometric assessment, rectal and vaginal examination) to determine WHO clinical stage
- Treat any pre-existing infections as a matter of priority
- Assess readiness to start ART including potential barriers for early disengagement from clinical care.

Work with the client to develop a patient-centred adherence strategy

6.3.3 Laboratory Assessment:

Note that *lack of access to laboratory tests should not be a barrier to treatment initiation in settings where resources are limited.* Where tests are not available on-site, arrangements should be made to transport specimens to a facility that is able to carry out the tests if possible. Laboratory tests are useful in pre-treatment assessment as well as in monitoring clients on treatment. Point of Care (POC) technologies are key for ensuring rapid diagnostic results in settings with limited access to laboratory services. If laboratory resources do not permit the full range of ‘desirable’ tests, minimum ‘recommended’ tests can be done.

- CD4+ cell count to rule out advanced HIV disease
- Reflex CrAg screening for all PLHIV with CD4+ cell count < 100 cells/mm³
- If there are symptoms of presumptive TB (TB score ≥ 1) collect sputum sample for Xpert MTB/RIF and for very sick patients or those with CD4+ cell count <200 cell/mm³ urine sample should be collected for LF-LAM

6.4 CLASSES OF ANTIRETROVIRAL DRUGS

Antiretroviral drugs are classified according to their mode of action. Each class targets a different step in the viral life cycle. They include:

Table 6.1: Classes of Antiretroviral Drugs Available in South Sudan

Class	Drugs
Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTI)	Abacavir (ABC); Emtricitabine (FTC); Lamivudine (3TC); Tenofovir Disoproxil fumarate (TDF); Tenofovir Alafenamide (TAF); Zidovudine (AZT; ZDV)
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTI)	Efavirenz (EFV) ; Nevirapine (NVP)
Protease Inhibitors (PI)	Atazanavir (ATV); Darunavir (DRV); Lopinavir (LPV)
Protease Inhibitor Boosters	Ritonavir (RTV);
Integrase Strand Transfer Inhibitors (INSTIs)	Dolutegravir (DTG); Raltegravir (RAL);

6.4.1 Mechanism of Actions of Classes of Antiretroviral Drugs

Nucleoside/Nucleotide Reverse Transcriptase inhibitors (NRTIs): They compete with host nucleotides to serve as the substrate for reverse transcriptase chain elongation. Absence of 3'OHgroup on sugar moiety prevents the addition of another nucleotide resulting in chain termination, abortion of viral DNA chain elongation and cessation of viral replication.

HIV Integrase inhibitors: They are also known as Integrase Strand Transfer Inhibitors (INSTI). They inhibit DNA strand transfer into the host cell genome and thus prevent viral integration. They do not confer resistance to other ART classes

Protease Inhibitors (PI): PIs inhibit protease by binding to its active site thereby preventing the cleavage of gag and gag-pol precursor. Virions are produced but they are incomplete and non-infectious

- **Entry Inhibitors:** the block the mechanism by which HIV gains access into the cytoplasm of CD4+ cell molecule bearing cells. **There are three classes**
 - **Attachment inhibitors:** these agents complex with glycoprotein 120 and prevent it from interacting with the CD4+ molecule. This blocks the attachment of the virus to the cell

- **Fusion Inhibitors:** These agents are designed to complex with the viral GP41, the protein that is capable of fusing with cellular membrane molecules called chemokine receptors. This interaction blocks the fusion of viral membranes with cellular membranes
- **Chemokine Receptor antagonists:** these are agents that complex with cell membrane receptors that serve as fusion proteins i.e., CXCR4, CCR5

Protease Inhibitor Boosters: These are drugs used to increase the effectiveness of certain classes of ARVs. The PIs are metabolized by the cytochrome P450 (CYP) 3A enzymes and inhibition of these enzymes lead to higher drug exposure, lower pill burden and simplify dosing schedules (pharmacokinetic enhancement). Ritonavir and Cobicistat inhibit CYP3A4 but unlike ritonavir, Cobicistat does not have any antiretroviral activity.

Non-Nucleoside Reverse Transcriptase inhibitors (NNRTIs): they inhibit reverse transcriptase by binding a hydrophobic pocket close to the active site thereby locking the site in an inactive conformation

6.5 WHAT ART REGIMEN TO START

It is recommended that a combination of a minimum of three drugs from at least two different classes of ARVs be used for ART. An optimal ART regimen is a combination that is the most effective, durable, safe, well tolerated, and affordable treatment. It is recommended that a backbone of 2 NRTIs and one Integrase Inhibitor or NNRTI or PI is used. To accomplish this, South Sudan has prioritized fixed-dose combinations and once-daily regimens for ART. These facilitate better adherence, tolerance, and viral suppression.

6.5.1 First-line ART Regimens for Adults and Adolescents and Women

Table 6.2: Preferred First-line ART Regimens Adolescents and Adults, including women of child-bearing age

First Line ART	Preferred First Line	Alternative First Line	Special Considerations
Adults and Adolescents	TDF + 3TC + DTG	TDF + 3TC + EFV ₄₀₀	TAF + 3TC + DTG ABC + 3TC + DTG

6.5.2 Initiating ART in Children

Before a child is started on ART one must ascertain the following:

- If the parents/caregiver are ready to give the child lifelong ART
- If older, whether the child is ready to start ART

- A pre-treatment baseline assessment must be performed

ART eligibility criteria: Infants and children

- All infants and children living with HIV should be initiated on ART regardless of WHO clinical stage or CD4 cell count (Treat All approach)
 - All infants under 18 months of age with a presumptive diagnosis of HIV i.e. positive serological HIV test (in either the mother or child), and who have specific symptoms suggestive of HIV infection that include oral thrush, severe pneumonia, severe sepsis or AIDS defining condition such as Pneumocystis pneumonia, cryptococcal meningitis, severe wasting or severe malnutrition, Kaposi sarcoma, extrapulmonary TB.

Preparing for ART in Children

- Children and infants are dependent on parents/guardians to receive regular treatment. Children should be prepared for lifelong treatment.
- Adherence counselling sessions should be attended by the parent/guardian/caregiver and the child. Topics covered are essentially like adults' counselling. However, other issues that should be addressed during counselling include timing of disclosure of HIV serostatus, the challenge of sustaining confidentiality and minimizing stigma.
- *Pre-treatment baseline assessment for children* is similar to adults but in addition:
 - Weight, height, head circumference, MUAC (age 6-59 months)
 - Assessment of the child's and caregiver's preparedness for therapy.
 - Measurement of CD4 where available. CD4 test result is not a requirement for starting ART as all children are eligible.

Table 6.3: Preferred First-Line ART Regimen for Children

Weight (Kg)	Age (years)	Preferred First Line Regimen	Alternative First Line Regimen	Special Circumstances
Neonates: Since PCR at birth is not yet recommended, it may not be possible to routinely diagnose neonatal HIV. However, if HIV infection is diagnosed in a neonate				
<3kg	< 1month	AZT + 3TC + RAL	AZT + 3TC + LPV/r**	AZT + 3TC + NVP
Infants and Children:				
3- 20kg	4 weeks to 6 years	ABC + 3TC + DTG*	ABC + 3TC + LPV/r ABC + 3TC + RAL ***	AZT + 3TC + LPV/r (or RAL)
20 – 30kg	6 – 10 years	ABC +3TC + DTG TDF*+ 3TC + DTG ₅₀	ABC + 3TC + LPV/r ABC + 3TC + RAL	

* DTG 5mg and 10mg (scored/dispersible) formulations are available for use in children 4 weeks of age and weighing at least 3kg - <20kg

**LPV/r pellets or granules can be used if starting after 2 weeks of age

***The use of RAL can be considered where available in instances of poor tolerability or difficulty with administering LPV/r particularly I settings where the rapid expansion of maternal treatment could lead to infants and children at very high risk of carrying an NNRTI resistant virus

*+TDF is used for children aged 6 – 10 years weighing >30kg

6.6 MANAGEMENT OF TREATMENT FAILURE

6.6.1 Definition of Treatment Failure

HIV treatment failure may be defined as sub-optimal treatment outcomes following the initiation of ART. Although HIV treatment failure can be classified as either virologic, immunologic or clinical failure (see table 3.9); virologic treatment failure is the best measurement of treatment failure. Virologic failure using a public health approach is defined as a VL above 1000 copies/ml based on two consecutive VL measurements 3 months apart, and after an adherence intervention Non-suppressed VL ($VL \geq 1000$ copies/ml) and its management. Critical to the goal of viral suppression is the return of results to the clinical staff and patient, and actions for non-suppressed VL. A $VL \geq 1000$ copies/ml should be considered a critical lab value and communicated to the clinical staff and the patient in an expedited fashion. All patients with non-suppressed VL results should undergo Enhanced Adherence Counselling (EAC) sessions, which involves:

Table xx:

Step 1	A structured assessment of ART adherence (Refer to Chapter 5)
Step 2	Exploration of specific barriers contributing to poor adherence (as well as the possibility of drug interactions, inter-current infections, incorrect dosage in children, wrong dispensing of drugs or weak regimen)
Step 3	Identification of potential solutions to address barriers
Step 4	Joint development of an individualized adherence intervention plan and the follow up of patients for improved adherence

A VL test should be repeated in 3 months after three sessions of EAC one month apart. Review patients for ART regimen switch if VL is still unsuppressed. It is important to ensure that effective laboratory information management systems are in place for the prompt identification and notification of the sites, HCWs and unsuppressed patients for timely management. All VL results must be returned to the patient in addition to their charts.

Table 6.4: Definition of HIV Treatment Failure

Suspected treatment failure: Treatment failure is suspected when a patient has a high VL \geq 1,000 copies/ml after at least 6 months of using ART. Treatment failure should be suspected when a new or recurrent HIV-associated condition indicating severe immunodeficiency (WHO stage III or IV condition) develops after at least 6 months on ART (excluding IRIS occurring after initiation of ART), or when CD4 count fails to rise as expected or when CD4 count drops while on ART.

Confirmed treatment failure: Treatment failure is only confirmed when VL is \geq 1,000 copies/ml after assessing for and addressing poor adherence or other reasons for high VL, and then repeating VL after at least 6 months of good adherence to allow for viral re-suppression.

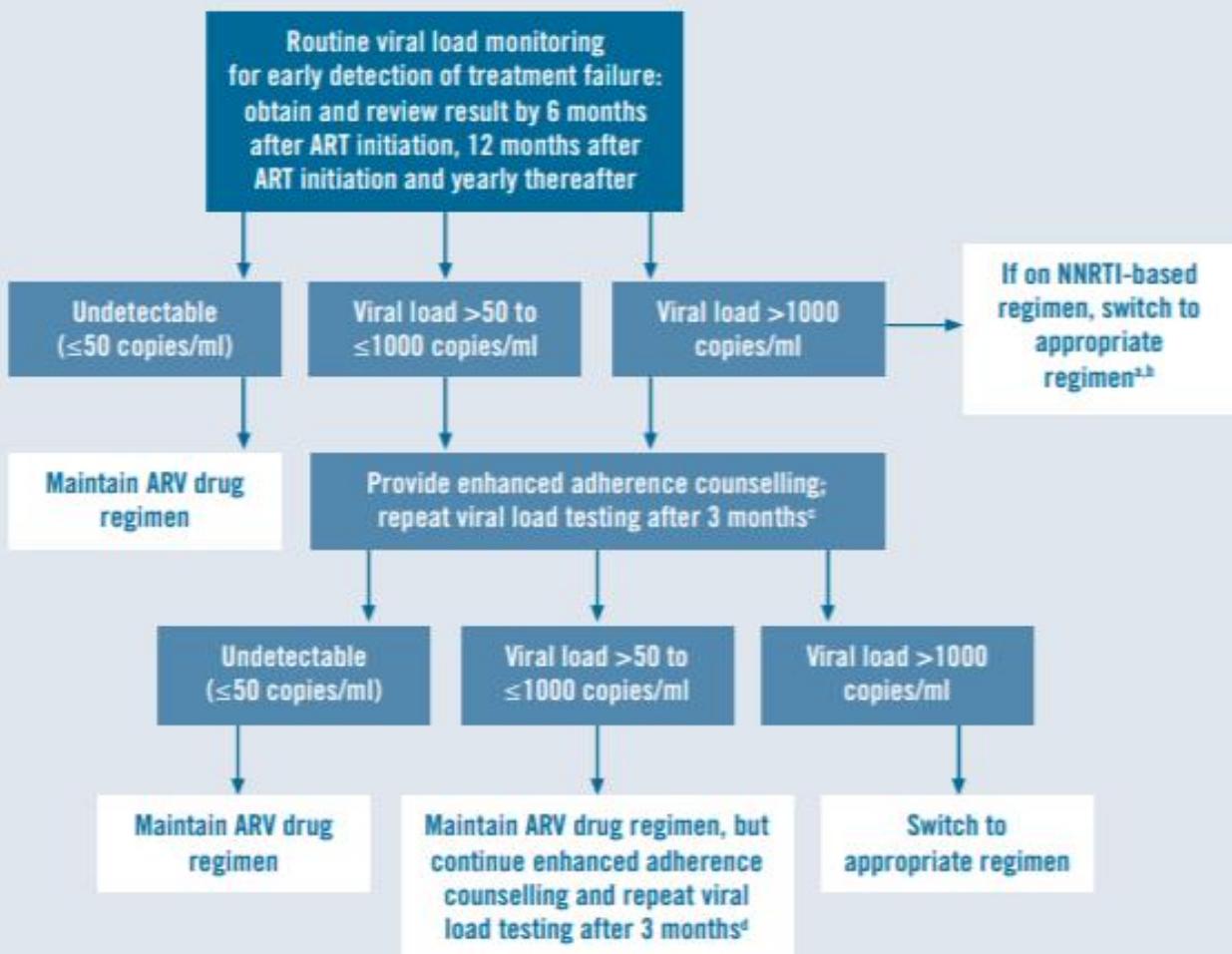
Failure	Definition	Comments
Virological Failure	Viral load \geq 1000 copies/ml 6 months after starting ART or consecutive VL measurements	An individual must be taking ART for at least 12 months before it can be determined that a regimen has failed. When on DTG based regimen, the period is usually after 2 years on treatment

6.6.2 HIV Treatment Monitoring

Viral load is strongly recommended as the preferred approach to monitoring treatment among PLHIVs on ART. **Figure 6.1** below shows the treatment monitoring algorithm for PLHIVs.

Figure 6.1. Treatment Monitoring Algorithm

Fig 1. Treatment monitoring algorithm



Adherence counselling should be provided at all visits to ensure that viral suppression is maintained or given priority throughout care

- Switch after a single elevated viral load should be considered if treatment experience is likely.
- A second viral load may be considered before regimen switch if DTG-based regimens are unavailable and the results of a viral load test can be returned and acted on rapidly.
- Conduct same-day testing using point-of-care viral load testing for a repeat viral load test, where available, to expedite the return of results. If not available, viral load specimens and results for a repeat viral load should be given priority across the laboratory referral process (including specimen collection, testing and return of results). See subsection 3.2.
- Consider therapy switch for those receiving NNRTI-based regimens and based on clinical considerations and no adherence concerns.

6.6.3 Causes of Treatment Failure

1. Viral factors

- Acquired drug resistance: Patients may develop drug-resistant mutations while on ART if maximal adherence ($\geq 95\%$) is not maintained.
- Transmitted drug resistance: Patients may be infected with drug-resistant virus during their initial exposure or be re-infected with drug-resistant virus while on ART.

2. Non-viral Factors

HIV Treatment failure may result when ARV plasma drug levels do not reach therapeutic concentration.

This may be due to:

- Host factors: poor adherence to ART, malnutrition, and malabsorption of drugs
- Choice of initial ART regimen, poor potency, or improper dosing
- Drug-drug interactions

6.6.4 Substitution and Switching of ARV drugs

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

- Toxicity/Adverse drug reactions
- Co-morbidities
- Pregnancy
- Drug interactions

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

When to Switch to Second Line ART

The longer an individual is maintained on a failing regimen, the longer there is ongoing viral replication and accrual of mutations. This will lead to a worse clinical outcome, greater opportunity for drug resistance and increased risk of transmission. In some patients with repeat VL $> 1,000$ copies/ml it may be useful to consider the extent of viral load reduction by log scale. A reduction of > 1 log per month with good adherence may suggest viral load suppression is achievable on the current regimen with additional time. Such patients should continue the current regimen and repeat viral load in another few months to see if it has gone below 1,000 copies/ml. Before switching to a second-line regimen, improved ART adherence should be reported and detected, and treatment failure should be confirmed (repeat VL $> 1,000$ copies/ml). Health facilities should constitute a multidisciplinary Switch committee to review, track, and make

decisions about switching to second line. Ideally, the committee should consist of a healthcare worker (medical doctor) and a nurse who knows the client and is conversant with his/her ART treatment history, and the adherence counsellor who has provided EAC to the client and is aware of his/her barriers to adherence

6.6.5 Second Line ART Regimens

Protease inhibitor-based regimens are the preferred Arv drugs for second-line Art among adults, adolescents, and children. However, DTG may be used as an alternative if an individual was on a first line regimen that did not contain DTG and is intolerant to LPV/r or has contraindications to ATV/r.

Table 6.5 Preferred and Alternative Second-line Art regimens for Adults and Adolescents including Pregnant and breastfeeding Women

Target Population	Failing 1 st Line Regimen	Preferred 2 nd Line Regimen	Alternative 2 nd Line Regimen
Adults and Adolescents	TDF+3TC (or FTC) +DTG	AZT+3TC (or FTC) +ATV/r or LPV/r	AZT+3TC (or FTC) +DRV/r
	TDF+3TC (or FTC) +EFV	AZT+3TC (or FTC) + DTG	AZT+3TC (or FTC) + ATV/r or LPV/r
	AZT+3TC (or FTC) +EFV	TDF+3TC (or FTC) + DTG	TDF+3TC (or FTC) + ATV/r or LPV/ r
TB/HIV Co - infection	Same regimens as recommended above for adults and adolescents; however, DTG should be administered at 50 mg twice daily with first -line anti-TB medicines and rifabutin substituted for rifampicin in patients receiving protease inhibitors. Alternatively, double-dose LPV/r (that is, LPV/r 800 mg/200 mg twice daily) is recommended for TB/HIV co-infected patients on first-line anti-TB medicines.		
HIV/HBV Co - infection	TDF + 3TC (OR FTC) + DTG		

Table 6.6 Recommended Second Line ART Regimen for Neonates, Infants and Children

Weight	Age (years)	Failing 1 st Line Regimen	Preferred 2 nd Line Regimen
Neonates			
<3kg	<1 month	AZT + 3TC + RAL	AZT + 3TC + LPV/r
Infants and Children			
3 to 20kg	4 weeks -6 years	ABC + 3TC + DTG	AZT + 2TC + LPV/r or ATV/r *** ABC + 3TC + LPV/r ABC (or AZT) + 3TC + RAL
20 – 30 kg	6 – 10 years	ABC + 3TC + DTG Or TDF* (TAF**) + 3TC or (FTC) + DTG	AZT + 3TC + LPV/r or ATV/r or DRV/r ⁺ ABC + 3TC + LPV/r or ATV/r or DRV/r ⁺
TB/HIV Co-infection	Same recommendations as for adults and adolescents. However, RAL dose should be doubled and administered twice daily with first -line anti -TB medicines		

*TDF is used for children 6 – 10 years weighing >30kg

**TAF is used for children weighing >25 kg

***ATV/r can be used as an alternative to LPV/r for children older than 3 months but limited availability of suitable formulation for children younger than 6 years

+should not be used for children <3 years and combine with appropriate dosing of ritonavir

6.6.6 Third-Line ART Regimen

Third-line regimens are offered to PLHIVs who fail second-line regimens. They are also called salvage therapy. Efforts should be made to optimize adherence and rule-out drug interactions before deciding on switch to third-line regimen. This decision should be left in the hands of highly experienced HIV specialists and based on a genotype result to properly interpret the result and suggest the combination of the 3rd line regimen.

The new drug included should be one with minimal risk of cross-resistance to previously used regimens such as INSTIs, second or third generation NNRTIs and PIs.

Criteria for Switching to third-line ART

Before switching a patient from second line to third-line ART regimen, the following criteria should be met:

1. Confirm that the patient has failed first- and second-line ART regimen
2. The patient should have VL results suggestive of treatment failure after at least 6 months on of an effective second-line ART
3. The patient must have undergone at least three months EAC with adherence optimized (>95%) and significant drug interaction(s) ruled out
4. Where possible, HIV drug resistance typing (genotype) should be done to determine the ARVs that are still active

Operational Guidance for switching to third-line ART

- Assessment of eligibility of all patients being considered for switch to a third line regime will be done by the MoH third-line ART committee made up of HIV specialists
- The third-line ART committee will use a country specific standard operating procedure for initial evaluation and referral of patients being considered for third line switch to a third-line ART center
- Third-line ART centers will be strategically established in each region of the country to ensure easy access to third-line ART

Table 6.7 Sequencing of Switching ART from First Line to Third Line Regimen

Target Population	First-Line Regimen	Second-Line Regimen	Third Line Regimen
Adults and Adolescents	TDF + 3TC + DTG	AZT + 3TC + LVR/r (or ATV/r or DRV/r)	TDF + 3TC + DRV/r* - DTG ₅₀ +/- ETV**
	TDF + 3TC + EFV ₄₀₀	AZT + 3TC + DTG ₅₀ or LPV/r or ATV/r or DRV/r	AZT + 3TC + DRV/r +/- ETV +/- DTG
Children and Infants	ABC + 3TC + DTG	AZT + 3TC + LPV/r (or ARV/r) (or DRV/r in children > 3years)	ABC (or AZT) + 3TC + DRV/r + DTG (or RAL)
	ABC (or AZT) + 3TC + LPV/r	AZT (or ABC) + 3TC + DTG or	

		AZT (or ABC) + 3TC + RAL	
	ABC (or AZT) + 3TC + EFV	AZT (or ABC) + 3TC + DTG Or AZT (or ABC) + 3TC + LPV/r (or ATV/r)	

*DRV is Darunavir and can be used in children > 3years

**ETV is Etravirine

6.7 LOW-LEVEL VIREMIA

Treatment failure is defined as a persistently detectable VL exceeding 1000 copies/mL after at least 6 months of starting a new ART regimen. This VL threshold, however, misclassifies PLHIV who harbour drug-resistant viruses. Data have shown that low level viremia (LLV), defined variably as an intermittent or persistent VL between 200 - 999 copies/ml is associated with drug resistance mutations (DRMs) and/or treatment failure, with an incidence of virologic failure (VF) among PLHIV with persistent LLV.

6.7.1 Management of Low-Level Viraemia

All clients with low-level viremia (VL 50 – 999 copies/ml) should undergo a thorough assessment to ascertain the cause of elevated VL. The following should be considered

- Adherence problems
- Bugs (inter-current infections)
- In-Correct ART dosage
- Drug Interactions
- Resistance

The client should be taken through EAC and VL test repeated after 3 months of good adherence. If VL levels remain detectable, consider regimen optimization. For PLHIV with persistent low-level viremia (pLLV) – consult the ARV Switch committee

6.8 ART IN SPECIAL CIRCUMSTANCES

Several non-communicable diseases (NCDs) adversely affect the outcome of ART in PLHIV. These NCDs must be taken into consideration as dose adjustment helps significantly to limit the complications of ART in these settings. The most common NCD in HIV infection is kidney impairment. Many patients also have drug-induced or disease-related cardiomyopathy. Osteoporosis is also becoming a common complication being reported among older women on TDF-containing ART.

Table 6.8 Recommendations for Art in Special Circumstances

Special Circumstance	Problem	Recommendation
Kidney Impairment	TDF Toxicity	<p>Replace TDF 300mg with ABC 600mg*</p> <p>OR</p> <p>Replace with TAF 25mg</p> <p>OR</p> <p>Adjust the dose of TDF based on the creatinine clearance</p>
	3TC Toxicity	<p>Dose adjustment based on eGFR</p> <ul style="list-style-type: none"> • eGFR>50, no adjustment, 300mg daily • eGFR 30 – 49ml/min, 150mg daily • eGFR 15-29ml/min, 75mg daily • eGFR <15ml/min or dialysis dependent, 75mg alternate days
Cardiomyopathy	ABC Toxicity	Refer the patient for cardiology review and HIV specialist opinion
Osteoporosis	TDF Toxicity	Replace with TAF

*eGFR >50ml/min, recommended regimen is ABC+3TC+DTG, 600/300/50mg daily

eGFR 30-49ml/min, recommended regimen is ABC/3TC/DTG, 600/150/50mg daily

eGFR 15-29ml/min, recommended regimen is ABC/3TC/DTG, 600/75/50mg daily

eGFR <15ml/min, or on renal dialysis, recommended regimen id ABC/3TC/DTG, 600mg daily, 75mg on alternate days (or 37.5mg daily), 50mg daily

Creatinine Clearance can be calculated using the Cockcroft-Gault equation below:

140 – Age(years) x Weight (kg)/Plasma Creatinine (mg/dl) x 72

For females, the result should be multiplied by 8

7. MONITORING AND FOLLOW UP

A client on ART should be monitored to determine adherence to ART, clinical response to ART, virological and immunological response to ART and to detect and manage any side effects and toxicities. This should include clinical and laboratory monitoring.

This chapter provides guidance on using clinical assessment and laboratory tests to monitor response to ART.

7.1 CLINICAL MONITORING OF CLIENTS ON ART

Clinical monitoring involves taking a medical history and doing a physical exam. Clinical monitoring should be performed routinely for all ART clients at every visit to monitor adherence to ART, response to ART, drug side effects, identify opportunistic infections and other co-morbidities.

Follow-up schedule for clients on ART

Table 7.1 ART follow up schedule for adults and adolescents

Visit	Mode	Focus
Date of ART initiation	In person	<ul style="list-style-type: none">▪ Post-test counselling▪ Adherence Counselling▪ Index testing
2 weeks after initiation	In person, health facility and community outreach workers	<ul style="list-style-type: none">▪ Confirm that the client has started taking ART.
One month after initiation	Remote call by the health facility team and community outreach workers	<ul style="list-style-type: none">▪ Confirm proper medication storage, dose and timing (adherence) counsel as appropriate
3 months after initiation	Remote call by the health facility team and community outreach workers	<ul style="list-style-type: none">▪ Ask for drug side effects.▪ Assess clinical progress/general health, TB screening

		<ul style="list-style-type: none"> ▪ Assess disclosure and plan for index testing ▪ Start TPT if not contraindicated
6 months	In person, health facility	<ul style="list-style-type: none"> ▪ Assess adherence ▪ Assess clinical progress/general health, TB screening ▪ Viral load monitoring ▪ Six-monthly drug refills

If the client has mild or moderate immunodeficiency (clinically well) at first clinical review and is adherent to treatment with no side effects at the 2-week review, then client can start monthly reviews.

If the client has advanced immunodeficiency (advanced disease), opportunistic infections, toxicities or comorbidities, the second review should be 14 days later (i.e., 4 weeks/one month after ART initiation).

All clients with advanced immunodeficiency should be monitored closely (monthly or more frequently if indicated) until they are clinically stable.

PLHIV **established on ART** should be provided clinical visits and ARV refills every six months.

Criteria for determining whether a person is established on ART

- Receiving ART for at least six months.
- No current illness, which does not include well-controlled chronic health conditions.
- Good understanding of lifelong adherence: adequate adherence counselling provided and applied; and
- Evidence of treatment success: at least one suppressed viral load result within the past six months (if viral load is not available: CD4 count >200 cells/mm³ or weight gain, absence of symptoms and concurrent infections)

Table 7.2 Recommended Schedule for Clinical Monitoring of Adults on ART

	Pre-Treatment (Baseline)	Month Three (3)	Month Six (6)	Every Scheduled clinical appointment
Physical Exam including BMI	X	X	X	X
Adherence counselling	X	X	X	X
Clinical screening for TB and other OIs	X	X	X	X
Clinical screening for chronic care and PHDP	X	X	X	X

Table 7.3 Recommended Schedule for Clinical Monitoring of Children and Adolescents on ART

	Pre-Treatment (Baseline)	Week on ART				Every 3 Months
		1	2	3	4	
History and physical exam	X	X	X	X	X	X
Anthropometric measurement (weight, height, length, OFC, MUAC*, Chest circumference, BMI**)	X	X	X	X	X	X
Nutritional Assessment	X	X	X	X	X	X
Growth and development milestones	X	X	X	X	X	X
Immunization Status***	X					
HPV Vaccination Assessment****	X					
Adherence Monitoring	X	X	X	X	X	X
Psychosocial Assessment*****	X	X	X	X	X	X
Clinical screening for TB, Meningitis and other OIs and other infectious diseases	X	As Indicated				

*Most appropriate for children aged 1 – 5 years’***BMI in kg/m for adolescents, +/- grading for obesity’; ***Ascertain completion of routine immunization, otherwise refer, accordingly; ****For female children and adolescents between ages 9-18 years; *****Most appropriate for adolescents; +More frequent clinic visits and examination may be required for unstable patients

7.2 LABORATORY MONITORING OF TREATMENT RESPONSE

It is important to monitor ART response as successful ART results in suppressed viral load, immune recovery, and a rise in CD4 cell count. Viral load testing remains the primary method used to monitor the effect of therapy. CD4 cell count serves as a marker of the degree of immunosuppression in clients with HIV. It is also a prognostic indicator for clients initiating ART. CD4 testing is recommended to identify individuals with advanced HIV disease. It is **not** to be used for determining eligibility for ART or monitoring response to ART. Individuals who have been out of care for more than a year, or who have documented viremia should have a CD4 performed to determine eligibility for the advanced disease package.

Priorities for point-of-care viral load testing

Point-of-care viral load testing should be given priority for the following populations:

- Pregnant and breastfeeding women
- Infants, children and adolescents
- People requiring a repeat viral load after a first elevated viral load
- People for whom treatment failure is suspected
- People presenting sick, living with advanced HIV disease or having a known opportunistic infection (TB, cryptococcal infection, etc.)
- First scheduled viral load test for people re-entering care

Table 7.4 Recommended Laboratory Monitoring Schedule for Adults

	Pre-Treatment (Baseline)	Month on ART				Every 6 Months	Every 12 Months (Annually)
		1st	3rd	6th	12th		
Viral Load				X	X		X
CD4+*	X			X			
Cryptococcal Antigen test (CrAg) and	X						

TB LAM if CD4+ cell count <100 cells/mm ³							
Hb/PCV	X	X	X			X	
WBC, Platelets	X			As clinically indicated			
Alanine transaminases (ALT)	X			As clinically indicated			
Serum Creatinine (Calculate eGFR)	X		X			X	
HBsAg and HCV	X						
Urinalysis	X		X			X	
Syphilis Test	As clinically indicated						
Cervical Cancer Screening (VIA/Pap Smear/HPV)	X			Every 3 years if a screening test is negative			
AST, ALP, FBS, Amylase, Pregnancy Test, Lipid profile, U/E, Xpert MTB/RIF test, Chest X-Ray	As clinically indicated						

Table 7.5 Recommended Laboratory Monitoring Schedule for Children and Adolescents

Investigations	Pre-Treatment (Baseline)	Months on ART				Every 6 Months	Every 12 Months (Annual)
		1st	3rd	6th	12 th		
HIV-1 RNA (VL estimation)	*	All children and adolescents should have a VL test every 6 months					
CD4+ cell count/CD4%**				X	X	X	
Hb/PCV	X	As clinically indicated					
WBC + differentials, Platelets		As clinically indicated					
ALT		As clinically indicated					
BUN/Creatinine (Calc CrCl)		As clinically indicated					
HBsAg and HCV							
Urinalysis	X	As clinically indicated					
GeneXpert, Chest X-Ray		As clinically indicated					

Cervical Cancer screening***	X	Every 3 years if screening test is negative
CrAg Test	X	Every Adolescent 10-15 years only (not recommended for children <10 years)
AST, ALP, FBC, Amylase, Pregnancy test*, LF-LAM test for TB infection		As clinically indicated

X Essential; 1 for patients on AZT; 2 Patients on NVP; 3 Patients on TDF

*Baseline VL can be performed especially for those with prior exposure to ARVs but is not routinely recommended

**Most appropriate for adolescents especially where pregnancy is suspected

***Older or sexually active adolescents

****Baseline VL can be performed especially for those with prior exposure

7.3 MONITORING ADHERENCE TO ART

Adherence to ART is a major determinant of treatment success. The optimal level of adherence for durable virologic and clinical success is over 95%. Adherence may be measured by:

- *Pill counts* conducted in clinics or at unannounced home visits.
- *Self-report*: of pill-taking behaviour by the client
- *Pharmacy re-fills records*. This provides information on when clients picked their ARV medications
- *Viral load monitoring*: routinely at month 6 and 12 of ART then yearly thereafter for adults and adolescents

For more on adherence monitoring, refer to Chapter 5

8. PHARMACOVIGILANCE IN ANTIRETROVIRAL THERAPY

INTRODUCTION

Pharmacovigilance (PV) is the science and activities relating to the detection, assessment, understanding, and prevention of adverse effects or any other drug-related problem including medication errors, drug misuse, and abuse. Pharmacovigilance is an arm of patient care that aims at making the best use of medicines for the treatment or prevention of disease. Good pharmacovigilance practise will identify the risks and the risk factors in the shortest possible time so that harm can be avoided or minimized.

8.1 ADVERSE DRUG REACTIONS

An adverse drug reaction (ADR) is defined by WHO as “a response to a drug which is noxious and unintended, and which occurs at doses normally used in man for the prophylaxis, diagnosis, or therapy of disease, or the modification of physiological function.” Side Effect refers to the unintended effect of a health product occurring at doses normally used in man which is related to the pharmacological properties of the drug. The therapeutic benefits of ARV use far outweigh the risk, thus despite the ADRs and toxicities encountered with ARV use, they are still essential inpatient management. ARVs resulting in ADRs that pose a serious threat to the health and well-being should be discontinued without delay and necessary consultations made regarding the next line of actions.

8.1.1 Classification of Adverse Drug Reactions

The WHO classifies ADRs into four categories based on severity. Severity is a subjective assessment made by the healthcare provider and/or patients. Despite being subjective, it is useful in identifying adverse reactions that may affect adherence or further harm that needs prompt intervention.

Table 8.1 WHO Grading of Severity of ADRs

Severity Grade	Characteristics
1 - Mild	<ul style="list-style-type: none">• Transient or mild discomfort (48hours)• No limitation of activity• No medical intervention or therapy required
2 - Moderate	<ul style="list-style-type: none">• Mild to moderate limitation of activity• Some assistance may be needed

	<ul style="list-style-type: none"> • No or minimal medical intervention required
3 - Severe	<ul style="list-style-type: none"> • Marked limitation of activity • Some assistance usually required • Medical intervention or therapy required • Hospitalization possible
4 - Life threatening	<ul style="list-style-type: none"> • Extreme limitation of activity • Significant assistance required • Significant medical intervention or therapy required • Hospitalization or hospice care probable.

In the event of severe/life-threatening ADRs, the offending drug(s) must be discontinued and changed to another drug from within its class.

8.2 DRUG TOXICITIES

Antiretroviral drugs are known to produce unwanted side effects in some clients. This can be as a result of administering an excessive dose, accumulation in body fluids due to inefficient absorption, distribution, metabolism, or excretion. Clinical conditions such as renal impairment or liver disease can predispose PLHIVs on ART to drug toxicities. Clinical and laboratory assessment can help detect drug toxicities. Dose adjustment or substitution of the offending drug can help ameliorate the side effects. Development of side effects often affects adherence to ART regardless of its severity and must be discussed before initiation of ART. In early stages of treatment ART when side effects are more common PLHIVs should be monitored closely, and support provided until the side effects are addressed. ALL adverse events are supposed to be documented and reported.

8.2.1 Laboratory Monitoring of ARV Toxicities

Laboratory monitoring of patients receiving ARVs for either HIV treatment or prophylaxis is very important for early detection and prevention of some ADRs. Abnormal laboratory values may be early warning signals preceding the clinical manifestations of some ADRs in patients receiving antiretroviral drugs. Symptom-related monitoring is useful and there are also several laboratory tests (but not routinely required) for assessing the safety and toxicity of ART, especially in high-risk clients. The table below shows the ARV drug class, clinical abnormality, and the laboratory test that could be used for its monitoring

Table 8.2 Showing Common ADRs associated with ARV drug

Drug Class	Specific Drug	Common ADRs	Risk Factors	Laboratory Tests
NRTIs	Abacavir	Hypersensitivity Hepatotoxicity	Presence of HLA-B*5701 gene	CPK Liver enzymes
	Emtricitabine (FTC)	Hepatotoxicity		Liver Enzymes
	Lamivudine (3TC)	Cough, diarrhea, fatigue, headache, lethargy, nausea, vomiting and pancreatitis		Non-specific
		Renal toxicity	Underlying renal disease, concomitant use of nephrotoxic drugs, >50 years, BMI <18.5 or low body weight (<50kg), diabetes, hypertension, boosted PI	Creatinine Urinalysis
	Tenofovir Disoproxil Fumarate (TDF)	Decrease in bone mineral density	History of osteomalacia and rickets, vitamin D deficiency	
		Anaemia, Leukopenia, neutropenia	Naseline Anaemia or neutropenia, CD4+ cell count ≤200 cells/mm ³	Full blood count, E/U/Cr CPK
	Zidovudine (AZT)	Lactic acidosis, severe hepatomegaly with myopathy	BMI> 25 or body weight >75kg, prolonged exposure to NRTIs	

Drug Class	Specific Drug	Common ADRs	Risk Factors	Laboratory Tests
Integrase Inhibitors	Dolutegravir (DTG)	Hepatotoxicity	Underlying hepatic disease; Concomitant use of hepatotoxic drugs	Liver Enzymes
		Hypersensitivity Reaction	Unknown	
		Insomnia		
		IRIS	Advanced HIV Disease	
		Neural tube defects		
	Raltegravir (RAL)	Rhabdomyolysis, myalgia, myopathy	Concomitant use of other myopathic drugs including Statins	CPK Liver Enzymes
		Hepatotoxicity, severe skin rash and hypersensitivity reaction	Unknown	

Drug Class	Specific Drug	Common ADRs	Risk Factors	Laboratory Tests
PIs	Atazanavire (ATV)	ECG abnormalities, (PR and QRS interval prolongation)	Pre-existing conducting system disease Concomitant use of drugs that may prolong PR or QRS intervals, congenital long QT syndrome	ECG
		Indirect hyperbilirubinaemia	Presence of UDP Glucuronyl	

		(clinical jaundice)	transferase 1A1*28 (UGT1A1*28) gene	
		Nephrolithiasis	Previous history	
Darunavir (DRV)		Hepatotoxicity	Underlying hepatic disease, concomitant use of hepatotoxic drugs	Liver Enzymes
		Severe Skin rash and hypersensitivity reactions		
Lopinavir (LVR)		Hepatotoxicity	Underlying hepatic disease, HBV and HCV co-infection, concomitant use of hepatotoxic drugs	Liver enzymes, serum amylase, ECG, lipid profile
		Pancreatitis	Advanced HIV disease, alcohol	
		Arrhythmias	People with pre- existing conduction system disease	
		Dyslipidaemia	Cardiovascular risk factors such as obesity and diabetes	
Ritonavir (RTV)		Hepatotoxicity	Underlying hepatic disease,	Liver enzymes, urinalysis, BSL blood sugar,
		Hyperglycaemia		
		Hyperlipidaemia		

			HBV and HCV co-infection	serum lipids, CPK, uric acid
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Drug Class	Specific Drug	Common ADRs	Risk Factors	Laboratory Tests
NNRTIs	Efavirenz (EFV)	CNS manifestations	Daytime dosing, depression or other mental disorder	Liver Enzymes Serum Cholesterol
		Hepatotoxicity	Underlying HBV and HCV; concomitant use of hepatotoxic drugs	
		Hypecholesterolaemia	Unknown	
		Gynaecomastia		
	Nevirapine (NVP)	Hepatotoxicity	Underlying hepatic disease, HBV and HCV co-infection	Liver enzymes
		Severe skin rash and hypersensitivity reaction including Stevens-Johnson Syndrome	High baseline CD4+ cell count	

Table 8.3: Common ADRs associated with drugs used in the management of Opportunistic Infections

Drug	Common ADR	Laboratory Test
Cotrimoxazole	Hypersensitivity, Steven Johnson Syndrome, Anemia and Liver problems	CBC and Liver function test
Isoniazid	Liver problems, musculoskeletal symptoms and GI symptoms	LFT
Fluconazole	CNS and GI symptoms	

Amphotericin B	Injection site reactions, hypersensitivity reactions, GI symptoms, musculoskeletal symptoms, respiratory symptoms, CNS symptoms, vision changes, low potassium and dysuria	E/U/Cr
Flucytosine	Hypersensitivity, hepatic disorder, haematological, respiratory, renal, GI and CNS disorders	LFT, E/U/Cr, CBC and RBS

8.2.2 Steps to recognize ADRs

1. Take adequate history and do a thorough physical examination of the patients
2. Establish time relationships between start of the therapy and onset of suspected ADR symptom or sign
3. Carry out appropriate laboratory investigation where necessary
4. Check the pharmacological properties of the suspected drug where necessary

8.3 WHO SHOULD REPORT ADRS

The symptoms on an ADR could be brought to the attention of the clinician or healthcare worker by the patient or the clinician (or any other healthcare worker) could identify an ADR during routine history taking or clinical examination of the patient. This should be brought to the attention of the most senior clinician who fills an ADR form and submits to the facilities pharmacovigilance focal person. The ADR form should be in triplicate; the original copy is submitted to the facility pharmacovigilance focal person, and the second copy is put in the patient's folder. The last copy should remain the ADR form booklet at the service delivery point

Table 8.4 Timeline for reporting different types of ADRs

Types of ADR Report	Timeline for Reporting
Serious (expected and unexpected)	15 days
Non-serious(unexpected)	15 days
Non-serious (expected)	Within 90 days
Foreign report (Spontaneous/published/study)	Within 90 days
Notification of change in nature, severity or frequency or risk factor	15 days
New information impacting on benefits – risk profile of product including international regulatory decisions	3 days

8.3.1 What ADRs Should be Reported

1. All serious reactions (expected or unexpected) that one suspects for established or well-known drugs
2. All suspected reactions, including minor ones for new drugs
3. If an increased frequency of a given reaction is observed

4. All suspected adverse reactions associated with drug-drug, drug-food, or drug-food supplement interactions and drug-disease interactions
5. ADRs during pregnancy and lactation
6. ADRs occurring from an overdose or medication error
7. Lack of efficacy of a medication, or when suspected pharmaceutical defects are observed
8. Reactions suspected of causing death, danger to life, admission to hospital, prolongation of hospitalization, or birth defects
9. When in doubt whether the suspected adverse event/reaction is an ADR or not, you must report to the National Pharmacovigilance Centre.

8.4 PHARMACOVIGILANCE DATA COLLECTION AND REPORTING PROCESS

All ADRs should be reported to the National Pharmacovigilance centre using the xyz ADR form. It involves the steps shown in **Figure 8.1**.

Fig 8.1 [To be developed] Pharmacovigilance Data Collation and Reporting Flow Diagram

8.5 PRINCIPLES OF MANAGING ADVERSE DRUG REACTIONS

Ensure Strict adherence to the standard procedures outlined in Figure 8.2 below for detecting, evaluating, and reporting ADRs in ART settings

When dealing with multiple drugs suspected to be associated with an ADR:

- Consider the possibility of a drug-drug interaction; do a label and literature search (consult the pharmacovigilance and drug information focal person as necessary)
- Consider discontinuing one drug at a time to observe de-challenge
- Discontinue the drug least critical to short-term health, e.g., can the individual tolerate a period off the drug to evaluate change in event (in the case of non-ARVs)
- Institute appropriate substitute drug/regimen for the patient (in the case of Arv drugs) and observe response to the change
- Follow up and document the observed adverse reactions, intervention, and outcome of the intervention

8.6 MANAGEMENT OF SPECIFIC ARV ADVERSE DRUG REACTIONS

Adverse reactions associated with ARV drugs usually have a class similarity; however certain drugs in each of the classes present more severe forms of adverse reactions than others. In the management of adverse events, special attention should, therefore, be paid to drug-specific adverse reactions. For

example, Zidovudine is implicated in ARV-induced anaemia more than any other ARV in the same class, just as Efavirenz is more likely to cause CNS toxicity than the other ARV drugs in the same class.

1. Nucleoside Reverse Transcriptase Inhibitors (NRTIs): All NRTIs are capable of inhibiting mitochondria DNA (mtDNA) gamma polymerase enzyme resulting in mitochondrial toxicity. As NRTIs inhibit DNA polymerase, all tissues that have DNA can be affected. The manifestation of NRTI adverse drug reaction is dependent on the organ involved; there can be myopathy presenting with muscle weakness, bone marrow disorders causing depression of haemopoiesis and leading to anaemia, leucopenia and thrombocytopenia; lipolysis resulting in fat atrophy (lipoatrophy). It can cause myelotoxicity and neuropathy when it affects peripheral neurons, thus precipitating peripheral neuropathy. Though rare, prolonged usage of NRTIs may also affect myocardial cells resulting in cardiomyopathy. Others include hepatitis, pancreatitis, and lactic acidosis.
2. Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs): They increase the incidence of severe hepatotoxicity in women with CD4+ cell count > 250cells/mm and in men with CD4+ cell count > 400cells/mm. Other common reactions include skin rash and CNS disorders.
3. Protease Inhibitors (PIs): PIs are potent CYP3A4 inhibitors hence many drug-drug interactions can occur on co-administration with other drugs. ADRs due to PIs can be severe. These include acute effects of diarrhoea, vomiting and hepatotoxicity; and long-term toxicity which includes peripheral loss of subcutaneous fat (lipoatrophy), fat accumulation within the abdominal cavity (protease paunch or crix-belly), fat accumulation in the upper back (dorsocervical pad or buffalo hump), gynecomastia in males, fat accumulation in the breast in females and fat accumulation in subcutaneous tissue (peripheral lipomatosis). Management of acute ADRs includes reassurance and symptomatic treatment as it clears within 4-6 weeks of therapy.
4. Integrase Inhibitors: Neuropsychiatric (NP) symptoms have been reported with all INSTIs, and their onset is usually described during the first few weeks after introduction. Symptoms include headaches, reduced concentration, anxiety, irritability, dizziness, insomnia, altered dreams, depression, unexplained pain, and more recently, mood changes.

All INSTIs have been associated with mild increases in creatinine levels, usually without clinical significance, but caution is needed in patients with low eGFR (<30mls/min), when using other nephrotoxic drugs, such as TDF. There is also a potential risk of weight gain associated with DTG. Some of the following approaches may be helpful for patients on DTG:

- Clinicians should avoid DTG for patients with a history of severe Neuro-Psychiatric symptoms.
- DTG should also not be given at the same time as supplements containing Magnesium (Mg), or Zinc (Zn). These may be in multivitamins, certain laxatives, or antacids, it is therefore important to know what other tablets your patients are taking
 - If your patients are taking any of these, advise them to take their ARVs at least 2 hours before or at least 6 hours afterwards
- DTG may be given with calcium (Ca) or Iron (Fe) supplements if taken with food § Clinicians should monitor the body weight and BMI of patients.

Table 8.5 Adverse Drug reactions associated with use of specific ARVs and their management

ARV	Primary Toxicities	Minor Toxicities	Monitoring/Management
Zidovudine (AZT)	Anaemia, neutropenia, myopathy, lipoatrophy, or lipodystrophy [Risk factors include -Baseline anaemia or neutropenia; CD4+ cell count ≤ 200 cells/mm 3] Lactic acidosis or severe hepatomegaly with steatosis [Risk factors include -BMI >25 (or bodyweight >75 kg); Prolonged exposure to nucleoside analogues	Blue to black discolouration of nails, nausea, and headache	For anaemia: · - Change to TDF and/or transfuse - Do not use AZT if Hb < 8.0 g/dl (PCV $<24\%$) For myopathy, discontinue if CPK rises. If AZT is being used in first line ART, substitute with TDF or ABC. If AZT is being used in second-line ART, substitute with ABC
ARV	Primary Toxicities	Minor Toxicities	Monitoring/Management
Lamivudine (3TC)	Pancreatitis, Liver toxicity Mild peripheral neuropathy	Skin rash Headache	Discontinue if serum amylase elevated. Restart when resolved or change to ABC

Emitricitabine (FTC)		Occasional hyperpigmentation of skin (palms/ soles)	
ARV	Primary Toxicities	Minor Toxicities	Monitoring/Management
Tenofovir Disoproxil Fumarate (TDF)	<p>Tubular renal dysfunction, Fanconi syndrome [Risk factors: Underlying renal disease; Older age; BMI <18.5 (or body weight <50kg); untreated Diabetes mellitus; untreated hypertension; concomitant use of nephrotoxic drugs or a boosted PI]</p> <p>Decrease in bone mineral density. [Risk factors include history of osteomalacia and pathological bone fracture, risk factors for osteoporosis or bone loss]</p> <p>Lactic acidosis or severe hepatomegaly with steatosis [risk factors: prolonged exposure to nucleoside analogues; Obesity]</p> <p>Exacerbation of hepatitis B [Risk factors: Discontinuation of TDF due to toxicity]</p>	<p>Occasional intolerance</p> <p>GI</p>	<p>If creatinine clearance declines, substitute with non-nephrotoxic drugs such as ABC or adjust the dosage. (See section on comorbidities)</p> <p>If TDF is being used in first-line ART, substitute with AZT or ABC. If TDF is being used in second-line ART (after AZT use in first-line ART), substitute with ABC.</p> <p>Use an alternative drug for hepatitis B treatment</p>

Abacavir (ABC)	<p>Life-threatening hypersensitivity reaction may occur in 3-9% of patients [Risk factors - the presence of HLA-B*5701 Gene]</p> <p>Lactic acidosis may also occur with/without hepatic steatosis</p>		<p>Discontinue therapy if hypersensitivity develops. Abacavir should never be used in that individual again.</p> <p>If ABC is being used in first-line ART, substitute with TDF or AZT. If ABC is being used in second-line ART, substitute with TDF</p>
Nevirapine (NVP)	<p>Life-threatening skin rash and hypersensitivity reaction (Stevens-Johnson syndrome) which occurs in less than 5% of patients and usually within 8 weeks of treatment</p> <p>DRESS syndrome (drug rash, eosinophilia, and systemic symptoms) manifesting as fever, arthralgia, etc.</p> <p>Hepatotoxicity [Risk factors: Underlying hepatic disease; HBV and HCV co-infection; Concomitant use of hepatotoxic drugs; CD4 + cell count > 250 cells/mm³ in women; CD4+ cell count > 400 cells/mm³ for men; First month of therapy (if lead-in dose is not used)]</p>		<p>Low dose over first 2 weeks minimizes rash occurrence.</p> <p>If mild or moderate (Grade 1/2) continue cautiously or substitute with EFV.</p> <p>If severe discontinue NVP and permanently if hepatitis confirmed.</p> <p>Change to EFV. If the person cannot tolerate either NNRTI, use boosted PI</p>

ARV	Primary Toxicities	Minor Toxicities	Monitoring/Management
Efavirenz (EFV)	<p>Persistent central nervous system toxicity (such as abnormal dreams, hallucination, insomnia, amnesia, depression, or mental confusion). CNS side effects occur in about 50% of patients (usually self-limiting) [Risk factors: Depression or other mental disorder (previous or at baseline); Daytime dosing]</p> <p>Hepatotoxicity [Risk factors: Underlying hepatic disease- HBV and HCV co-infection, Concomitant use of hepatotoxic drug]</p> <p>Convulsions [Risk factor: History of seizure] Hypersensitivity reaction, Stevens-Johnson syndrome. Morbilliform rash may appear but usually not life-threatening</p> <p>Potential risk of neural tube birth defects (very low risk in humans)</p> <p>Male gynecomastia.</p>	Dizziness	<p>Rash in 10% but rarely severe in <1%; CNS symptoms often resolve within 2 – 4 weeks</p> <p>EFV is contraindicated in patients who already have psychiatric manifestations</p> <p>Change to NVP. If the person cannot tolerate either NNRTI, use DTG or a boosted PIs</p>

ARV	Primary Toxicities	Minor Toxicities	Monitoring/Management
Etravirine (ETR)	Severe skin rash; hypersensitivity reactions (Stevens-Johnson syndrome), Erythema multiforme, hepatotoxicity, lipid abnormality and psychiatric disorders	GI Intolerance, rash	<p>Monitor liver enzymes and lipids. Rarely discontinue (<2%) due to adverse drug reaction</p> <p>Limited options are available</p>

Atazanavir/ ritonavir (ATV/r)	<p>Electrocardiographic abnormalities (PR interval prolongation) [Risk factors: Pre-existing conduction disease; Concomitant use of other drugs that may prolong the PR interval]</p> <p>Indirect hyperbilirubinemia (clinical jaundice) [Risk factors: Underlying hepatic disease HBV and HCV co-infection; Concomitant use of hepatotoxic drugs]</p> <p>Nephrolithiasis and risk of prematurity [Risk factor unknown]</p>	<p>Nausea and diarrhoea, skin rash</p>	<p>Clinical jaundice is cosmetic and not related to hepatitis or liver damage. Substitute only if adherence is compromised</p> <p>Monitor liver enzymes</p> <p>Change to LPV/r or DRV/r. If boosted PIs are contraindicated and NNRTIs have failed in first-line ART, consider integrase inhibitors</p>
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ARV	Primary Toxicities	Minor Toxicities	Monitoring/Management
Lopinavir/ritonavir (LPV/r)	<p>Electrocardiographic abnormalities (PR and QT interval prolongation, torsades de pointes) [Risk factors: People with pre-existing conduction system disease; concomitant use of other drugs that may prolong the PR interval]</p> <p>QT interval prolongation [Risk factors: Congenital long QT syndrome; Hypokalaemia; concomitant use of drugs that may prolong the QT interval]</p> <p>Hepatotoxicity [Risk factors: Underlying hepatic disease; HBV and HCV co-</p>	<p>Headache, weakness, nausea, vomiting, diarrhoea, and skin rash</p>	<p>Diarrhoea is rarely severe and should be managed with antispasmodics; usually resolves after a few weeks to months of therapy.</p> <p>If LPV/r is used in first-line ART for children, use DTG</p> <p>ATV can be used for children older than 6 years</p> <p>If LPV/r is used in second-line ART for adults, use ATV/r or DRV/r. If boosted PIs are contraindicated and the</p>

	<p>infection; concomitant use of hepatotoxic drugs]</p> <p>Pancreatitis [Risk factors: Advanced HIV disease]</p> <p>Risk of prematurity, lipoatrophy or metabolic syndrome, dyslipidaemia or severe diarrhoea [Risk factors unknown]</p>		<p>person has failed on treatment with NNRTI in first-line ART, consider integrase inhibitors</p>
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ARV	Primary Toxicities	Minor Toxicities	Monitoring/Management
Darunavir/ritonavir (DRV/r)	<p>Hepatotoxicity [Risk factors: underlying hepatic disease HBV and HCV co-infection, concomitant use of hepatotoxic drugs]</p> <p>Severe skin and hypersensitivity reactions [Risk factors: Sulfonamide allergy]</p>		If DRV/r is being used in second line ART, substituting with ATV/r or LPV/r can be considered. When it is used in third-line ART, limited options are available
Raltegravir (RAL)	Rare, -hypersensitivity, acute renal failure	Myopathy, myalgia, mild to moderate nausea, headache and diarrhoea	Limited options are available
Dolutegravir (DTG)	Hepatotoxicity Severe allergic reactions (hypersensitivity)	Insomnia, headache	Monitor liver function and toxicity may worsen with existing hepatitis B or C Patient should be advised to take drugs in the morning

8.7 PREVENTION OF ADVERSE DRUG REACTIONS

Applying the principles of rational use of medicines can prevent most ADRs, some of the principles include the following:

- Use of few drugs, whenever possible
- Use drugs that you are familiar with
- Do not change therapy from known drugs to unfamiliar ones without good reason

- All patients commencing ARV should be properly counselled on the ADRs related to the medications, preventive measures, where applicable, and what to do when it occurs or is suspected. The healthcare provider should be very knowledgeable about this
- Be vigilant and look out for these adverse effects when initiating therapy and during follow-up
- Encourage patients to be actively involved in ADR reporting. ADR monitoring tools can be made available for patients to document ADRs they are experiencing while on ART; and this can be validated by the HCW during clinic visits.

8.8 ARVS DRUG INTERACTIONS

Drug interaction refers to the modification of the action of one drug by another, and can be useful, of no consequence, or harmful. Multiple drug use (polypharmacy) is extremely common in ART/PMTCT settings, so the potential for drug interaction is enormous. Adverse interactions may be catastrophic but are often avoidable. Patients receiving care for HIV infection have the likelihood of experiencing various drug interactions because of the drugs in ART combinations, co-administered drugs for OIs, and co-administered drugs for other concurrent ailments. There are two major groups of ARV drug interactions:

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

As a rule of thumb, most ARV drugs are metabolized by the Cytochrome P450 3A4 isoenzyme in the liver. Many other drugs are also metabolized by this enzyme and ARV drugs will either raise or lower these other drug levels and either be increased or decreased themselves by these interactions. All PIs, as well as all current clinically used NNRTIs, are metabolized by CYP 450 enzyme cascade (particularly CYP 3A4) which can be induced and/or inhibited by several drugs thus the possibilities of many drug/drug interactions.

Table 8.6 Important ARV drug Interactions

Drug	Interaction	Action
EFV; NVP	Decreased level of Atazanavir and LPV/r significantly occur when used concomitantly with Efavirenz or Nevirapine	Avoid the combination or consider increase LPV/r dose to 533mg/133mg twice daily in PI-experienced patients.

TDF	Concomitant use with ATV: TDF level is increased by 24%- 37% and Atazanavir level is decreased by 25%	Dose: ATV/r (300/100 mg) daily co-administered with TDF 300 mg daily. Avoid concomitant use without RTV. If using TDF and H2 receptor antagonist in ART-experienced patients, use ATV/r (400 mg/100 mg) daily. Monitor for TDF-associated toxicity
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Abacavir (ABC) is not currently associated with any clinically significant pharmacokinetic drug interactions. However, a large dose of ethanol (>0.7g/kg body weight) increases ABC plasma AUC by 41% as well as prolongs ABC elimination half-life by 26%. Patients must therefore be cautioned on alcohol use during ABC therapy.

8.10.1 Interactions between contraceptives and Antiretroviral drugs

In line with standard recommendations, ALHIV can use all available contraceptive methods, including hormonal contraceptives, implantable devices, intrauterine devices, the transdermal patch, and vaginal ring. Many PIs and NNRTIs alter the metabolism of oral contraceptives and may reduce the efficacy of oral contraceptive agents or increase the risk of estrogen – or progestin – related adverse effects. Integrase strand transfer inhibitors (specifically raltegravir) appear to have no interaction with estrogen-based contraceptives. Dolutegravir (DTG) has been found safe and effective to use with hormonal contraceptives among women living with HIV. Unless there is clinical evidence or concern of bone fragility, providers may use depot medroxyprogesterone acetate (DMPA) with or without ART (specifically TDF), as an effective long-term contraceptive.

Additional resources for other possible drug interactions can be found in the following sites:

www.hiv-druginteractions.org

www.hiv-interactionslite.org

9. PREVENTION OF MOTHER TO CHILD TRANSMISSION (PMTCT) OF HIV AND IMPROVING MATERNAL, NEWBORN AND CHILD HEALTH (MNCH)

The goal of eMTCT is to “*eliminate new HIV infections among children and keep their Mothers Alive by 2025*”. Without intervention, the overall mother-to-child-transmission (MTCT) rates for HIV range from 15-35%¹. Services to prevent mother-to-child-transmission of HIV should be provided before pregnancy, during pregnancy (in ANC), during labour and delivery, and during the breastfeeding period. This chapter outlines the PMTCT services for the mother and interventions for the HIV exposed infant.

9.1 THE PMTCT PRONGS

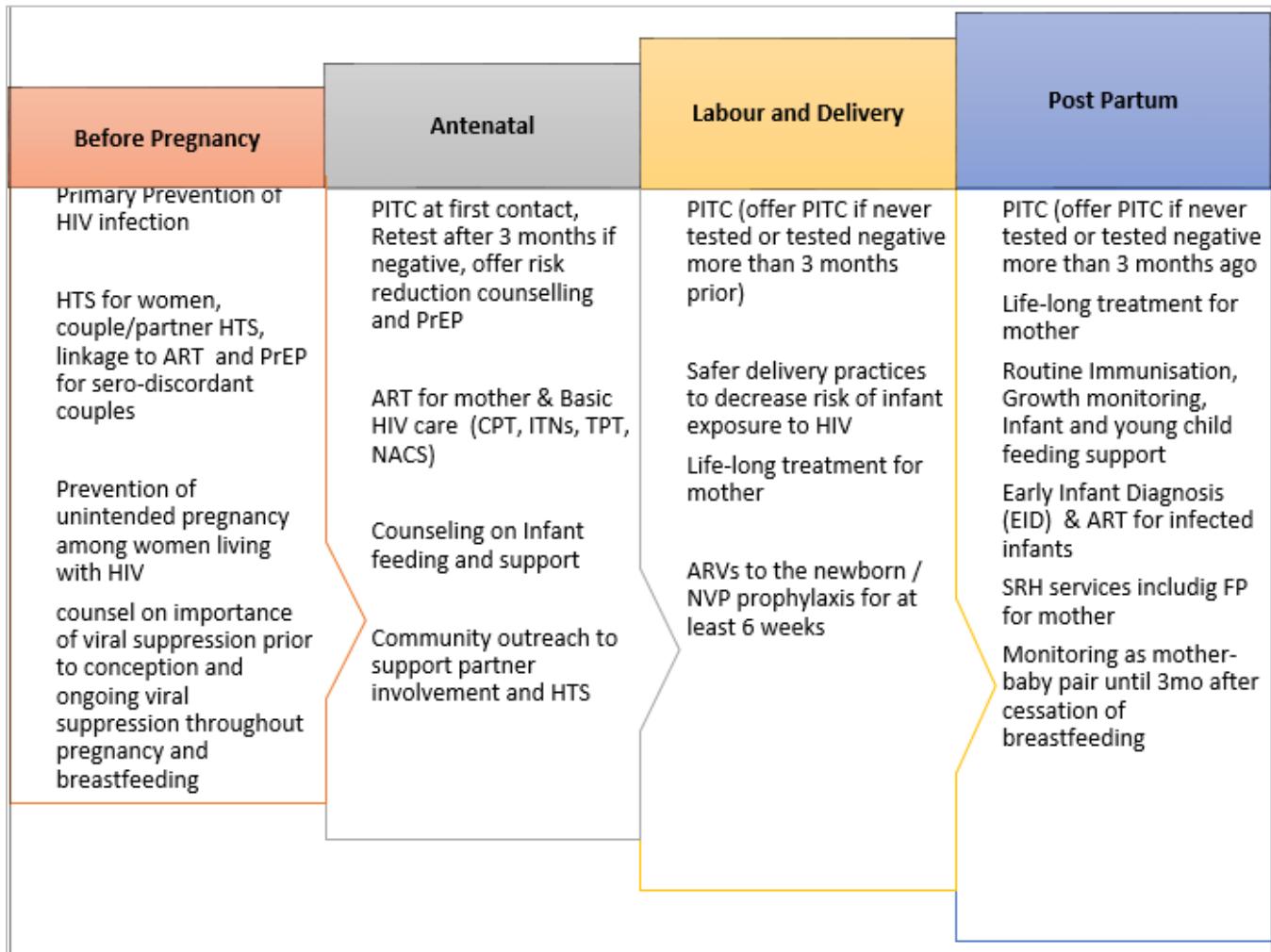
Strategically, prevention of mother-to-child transmission (PMTCT) is implemented through a 4-pronged approach as shown in **Table 1.1**. Details of services under each prong are outlined in the subsequent sections.

Table 9.1 PMTCT Prongs

Prong	Description	Target population
Prong 1	Primary prevention of HIV infection	Women and men who are sexually active including adolescents
Prong 2	Prevention of unintended pregnancies among women living with HIV	Women living with HIV
Prong 3	Prevention of HIV transmission from women living with HIV to their infants	Pregnant women living with HIV
Prong 4	Provision of treatment, care, and support to women infected with HIV, their children, and their families	Women living with HIV and their families

¹ Teasdale et al; HIV: prevention of mother-to-child transmission; BMJ Clinical Evidence; 2011

Figure 9.1 Key components of the PMTCT continuum of services



9.2 PRIMARY PREVENTION OF HIV INFECTION AMONG WOMEN OF CHILDBEARING AGE

HIV Prevention Services for Non-Pregnant Women

- Implemented at the general population level as a combination HIV prevention package
- Activities include Behavioural Change Communication (BCC) and promotion of safer sex; HIV testing and Counselling (HTS); couple HTS; partner testing; oral pre-exposure prophylaxis (PrEP) and early treatment of the HIV positive partner in serodiscordant couples; delay of onset of sexual activity; consistent and correct condom use, and strategies to reduce stigma, discrimination and gender and intimate partner violence
- PMTCT messages should be incorporated in school health curricula, community adolescent health programmes, and pre-marital counselling programmes
- Encourage consistent and correct condom use for both HIV positive and HIV negatives at risk of infection
- Encourage women to deliver at the health facilities

Table xx:

Service	Description
HIV testing services (HTS)	<p>Provide routine HTS services for all women of childbearing age visiting the health facility and their male partners, and referral for prevention, care and treatment services.</p> <p>As much as feasible, women should be tested as a couple.</p> <p>Promote family testing (See Chapter 3 on HTS for more details)</p>
Provide sexually transmitted infection (STI) screening and management	Provide STI screening for women and their partners and ensure all STIs detected are managed appropriately.
HIV prevention counselling and safer sex	<p>Provide information and counselling on HIV prevention and how to reduce the risk of sexual HIV transmission.</p> <p>Promote correct and consistent use of female and male condoms for the woman and her partner, emphasizing the benefits of dual protection:</p> <p>Give reasons and benefits for using condoms.</p> <p>Dispel myths and misconceptions about condoms.</p> <p>Demonstrate condom use.</p> <p>Teach condom negotiation skills.</p> <p>Promote/teach mutual assistance in using condoms and ensure both partners' involvement.</p> <p>Encourage joint decision-making with both partners on visits to the health facility for care, on condom usage, etc.</p> <p>(See Chapter 2 on Prevention for more details).</p>
Provide gender-based violence (GBV) prevention and impact mitigation services	<p>Provide information to empower women on gender equality and equity—sexual and reproductive health rights.</p> <p>Provide counselling, HTS, emergency contraception, HIV/STI post-exposure and psychosocial support to victims of gender-based violence.</p> <p>Provide information on services and organizations specialized on gender-based violence.</p> <p>Refer people who have experienced or are experiencing gender-based violence to appropriate services, including legal and psychological support</p>

	<p>services (e.g. Swaziland Action Group Against Abuse (SWAGAA) centres or One-Stop-Centres).</p> <p>For further information, see the national gender-based violence guidelines.</p>
Provide men's minimum health care package to partners of the women visiting the health facility	<p>Emphasizing the role of the partner in HIV prevention (for himself, partner and child); including discussing gender-based violence, cultural norms and practices; and the importance of partner support.</p> <p>Educate and counsel client on men's health issues or refer the male client for sexual and reproductive health services</p> <p>Advise on a healthy lifestyle—diet and exercise, alcohol, and substance use.</p> <p>Provide prevention measure:</p> <p>Offer HTS – couple testing and appropriate linkage to prevention or care and treatment services.</p> <p>Demonstrate correct use of male and female condoms.</p> <p>Screen and treat for STIs, TB, NCDs, and other conditions as needed.</p> <p>Promote voluntary medical male circumcision (VMMC) for HIV-negative men and refer and link men to VMMC services. Emphasize dual protection: VMMC and correct and consistent condom use</p> <p>Advise on available services for early infant medical circumcision (EIMC) for male newborns and male siblings.</p>

9.2.1 Oral PrEP for pregnant and breastfeeding women

(See Chapter 2 Section 2.2.3)

9.3 PREVENTION OF UNINTENDED PREGNANCY AMONG WOMEN LIVING WITH HIV

Family planning among women living with HIV reduces the number of unintended pregnancies, thereby reducing the number of infants exposed to HIV and the overall risk of MTCT. All sexually active women and girls should be given adequate information and the means to decide freely about contraception and HIV prevention choices.

Provider Initiated Family Planning (PIFP)

Key message on Provider Initiated Family Planning:

- Avoid unwanted and /or unintended pregnancies, regardless of HIV infection status
- Encourage women living with HIV to make an informed choice about pregnancy. HCW should inform HIV positive women that they can have a safe pregnancy and minimize the risk of HIV transmission to the baby if the mother:
 - Starts ART as early as possible, preferably before becoming pregnant

- Ensure viral suppression on ART prior to conception
 - Is fully adherent to ART with sustained viral load suppression throughout pregnancy
 - When pregnancy is not desired,
- Couples should use dual protection – condoms alone are not enough for family planning as they have to be used very consistently and correctly
 - When pregnancy is not desired, women living with HIV should use a family planning method of their choice if it is safe with ART. See table 5-2. and breastfeeding

A. Counsel women on FP routinely when they come for ANC, PNC, ART, and general health services.
 Encourage HIV-infected women to discuss their RH options and support them as appropriate. Information provided during counselling should cover:

- Family planning methods, advantages, and side effects, ARV interaction with oral contraceptives
- Common misconceptions about family planning
- Advantages of dual protection and how to negotiate for condom use.
- Use of contraception is voluntary
- What to do when pregnant

B. Following counselling, offer FP.

Where pregnancy is not desired, offer effective contraception.

- Encourage dual contraception (use of both hormonal contraception and condoms) to prevent pregnancy; prevent STIs, HIV transmission, and re-infection.
- The choice of contraceptive methods in HIV infected women is much the same as in HIV negative women. [See Annex xxx](#)

The final decision to conceive depends on the couple. HCWs should provide accurate and unbiased information necessary to support their decision-making. For HIV positive women who decide to have a baby the healthcare worker should provide guidance as follows:

Concordant positive couples	<p>Provide adequate counselling around risks reduction, reinfection, and risks of mother-to-child transmission of HIV</p> <p>Before making recommendations, assess the couple clinically, immunologically, and virologically.</p> <p>If the woman is not on ART, she should be initiated on ART as soon as possible.</p> <p>If the man is not on ART, he should be initiated on ART as soon as possible.</p> <p>If the couple is already on ART, ensure undetectable viral load.</p> <p>If viral load is undetectable, advise on fertility days and timed ovulatory intercourse (condom use at all other times).</p>
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	<p>Prevent/treat STIs.</p> <p>The final decision to conceive depends on the couple. HCWs should provide accurate and unbiased information necessary to support their decision-making.</p>
Discordant couples	<p>Provide adequate counselling around risks of infecting the negative partner and risks of mother-to-child transmission.</p> <p>Provide ART to the HIV-positive partner as soon as possible, if not already on ART.</p> <p>If positive partner is already on ART, ensure he or she has an undetectable viral load.</p> <p>If viral load is undetectable, advise on fertility days and timed ovulatory intercourse (use of condom at all other times).</p> <p>Advise the couple to wait until viral load is undetectable before trying to conceive on fertility days</p> <p>Consider pre-exposure prophylaxis (PrEP) for the HIV-negative partner where available.</p> <p>The final decision to conceive depends on the couple. HCWs should provide accurate and unbiased information necessary to support their decision-making.</p>

9.4 ANTENATAL CARE FOR PREGNANT WOMEN TO PREVENT MOTHER TO CHILD TRANSMISSION

Recommendations:

- PITC is recommended for women and their partners as a routine component of the package of care in all antenatal, childbirth, postpartum and infant/paediatric care settings.
- Health workers should retest previously HIV-negative women as follows:
 - the first trimester of pregnancy or first ANC visit
 - in 3rd trimester or during labour/ or delivery
 - at 6 weeks postpartum

Oral PrEP should be offered to HIV negative pregnant and breastfeeding women who are at substantial risk

Key activities:

- Provider – Initiated Testing and Counseling, Partner testing & Couples HTS
- Lab investigations and related ANC services
- Comprehensive care for pregnant women with HIV

- Risk reduction counselling Antiretroviral therapy

9.4.1 PITC in ANC, Partner Testing, and Couple Testing

- Provider-initiated HIV testing and counselling (PITC) with rapid tests and same-day results should be offered to all pregnant women at first ANC visit. Women who are not ready to test for HIV during the first ANC visit should be engaged at subsequent visits or soon thereafter.
- The use of Dual HIV/Syphilis test kits is recommended for routine screening in ANC
- The preferred approach for HTS in ANC is the couple testing with support for mutual disclosure.
- Providing HTS to partners improves support for adherence to health care interventions including ART if any or both are diagnosed HIV positive.
- For HIV negative pregnant women, re-testing is recommended in the third trimester, or during labour and delivery, or shortly after delivery, because of the high risk of acquiring HIV infection during pregnancy.

9.4.2 Laboratory Investigations and Related ANC Services

- For all pregnant women (regardless of HIV status), screen and treat for the following conditions: syphilis, HIV, anaemia, urinary tract infections, in addition to performing a blood group test.
- For all HIV positive pregnant women, perform a baseline CD4 count to rule out advanced HIV disease if available. The test result is not a pre-requisite for ART initiation.

VL Monitoring for pregnant and breastfeeding women

- Where possible, use same-day point-of-care testing for VL for pregnant and breastfeeding women to expedite the return of results and clinical decision-making
 - If this is not possible, systems should be put in place to give priority to samples of HIV positive pregnant and breastfeeding women across the sample referral process (including specimen collection, transfer, testing at the PCR laboratory and return of results) and at the PCR laboratory)
- Adherence counselling should be provided at all ANC and PNC visits to ensure that VL suppression is achieved and maintained throughout pregnancy and breast feeding
- For all pregnant women, regardless of ART initiation timing, conduct VL testing at 34-36 weeks of gestation (or at least at delivery) to identify women who may be at risk of treatment failure and/or may deliver infants at high risk or perinatal transmission
 - If VL >1000 copies/ml, follow the treatment monitoring algorithm in section 6.6.2 and provide enhanced postnatal prophylaxis for the infant.
 - Where possible consider NAT test at birth

In Addition

1. For pregnant women receiving ART before conception: conduct a VL test at first ANC to identify women at risk of in utero transmission
 - If VL >100 copies/ml, follow the treatment monitoring algorithm in section 6.6.2 and consider NAT at birth
2. For women starting ART during pregnancy: conduct a VL test three months after ART initiation to ensure that there has been rapid VL suppression

- If VL >1000 copies/ml follow the treatment monitoring algorithm in section 6.6.2.
 - Regardless of the maternal VL consider NAT testing infants born to these women at birth where possible
3. For all breastfeeding women, regardless of when ART was initiated, conduct a VL test three months after delivery and 6 months thereafter to detect viraemic episodes during the postnatal period
- If VL is >1000 copies/ml follow the treatment monitoring algorithm in section 6.6.2, conduct infant HIV testing immediately and consider reinitiating enhanced postnatal prophylaxis for the infant

Note:

If planned VL testing is expected to be done close to the planned 34 – 36 months VL testing the first test can be delayed the 34 – 36 months of gestation

- For example, if a woman is presenting and initiating ART at 20 weeks gestational age, as per this guideline she should be due for VL testing at 32 weeks gestation (3 months after ART initiation). In this case VL can be delayed till 34 weeks gestation

9.4.3 Comprehensive Care for Pregnant Women with HIV

HIV positive pregnant and breastfeeding women should receive the same care and treatment services as other HIV negative women during pregnancy. This includes

- Nutrition assessment, counselling, and support: counsel mothers on appropriate feeding practices. Counsel mothers to exclusively breastfeed for six months and continue breastfeeding with the addition of complementary foods till the child is at least 12 months
- Provide iron, folic acid, and multivitamins for supplementation
- Deworm during the second trimester of pregnancy – single-dose mebendazole 500
- Provide tetanus vaccination

In addition, they should receive

- Rapid initiation of ART, if not already on ART
- ART Adherence counselling and support
 - Including support through the disclosure process
- Clinical and laboratory monitoring for
 - treatment response using VL testing at 6 months post ART initiation and 6 monthly thereafter until cessation of breastfeeding
- Preventive therapy for OIs including CPT and TPT
- Pregnant women on CPT should **NOT** be given Sulphadoxine Pyrimethamine for intermittent preventive treatment for malaria

9.5 TREATMENT FOR HIV-POSITIVE PREGNANT AND LACTATING WOMEN

Key Recommendations: <ul style="list-style-type: none">○ All women living with HIV that are identified during pregnancy, labour or while breastfeeding should be started on lifelong ART (option B+) irrespective of CD4 counts or WHO clinical stage.○ A once-daily fixed-dose combination of TDF+3TC +DTG is recommended as the preferred first-line ART regimen for pregnant and breastfeeding women.○ Women should be provided with adequate and simplified information about benefits and risks to make an informed choice regarding the use of DTG or other ART○ If women identify pregnancy after the first trimester, DTG should be initiated or continued for the duration of the pregnancy○ Pregnant and breastfeeding women living with HIV should be provided with the same HIV care and treatment services as other adults receiving ART, including VL monitoring if available.○ HIV-positive mothers and their HIV-exposed or -infected children should be provided services together at the same location.	<i>Why lifelong ART for pregnant and breastfeeding women?</i> <ul style="list-style-type: none">○ ART prevents further disease progression in the mother, with a reduction in maternal HIV-related deaths, opportunistic infections especially TB, and improved survival of their children.○ ART reduces viral load in blood and breast milk thus greatly reducing the risk that the exposed child will get infected with HIV. This makes breastfeeding safer and contributes to child survival.○ Giving the mother ART avoids the need for extended infant ARV prophylaxis.○ Lifelong ART in the mother protects the current pregnancy as well as subsequent pregnancies○ Maternal ART reduces the risk of HIV transmission to HIV-negative partners in serodiscordant couples.○
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ART for pregnant and breastfeeding women is essentially the same as in adult men and non-pregnant women. See details of ART in pregnant and breastfeeding women in Chapter 6

9.6 SERVICES FOR WOMEN DURING LABOR, DELIVERY AND IMMEDIATELY AFTER DELIVERY

Key steps

- Ascertain HIV status, offer PITC if never tested or tested negative more than 3 months ago. see
- Give ART: for mothers on treatment, continue the same ART regimen. Initiate ART for mothers not yet on treatment and consider extended ARV prophylaxis for the infant.
- Ensure safe obstetric practices
- ARV prophylaxis for the new-born

9.6.1 Safe Obstetric Practices

To reduce obstetric risk of HIV transmission during labor and delivery of HIV positive women:

- HTS should be offered to women who have not been previously tested OR those who tested HIV negative three or more months before labour
- Maintain dignity, privacy, and confidentiality, ensure freedom from harm and mistreatment, and provide continuous support throughout labour and the postpartum period
- Use a partogram to allow for early detection and management of prolonged labour. Prolonged labour increases the number of hours the baby is exposed to maternal blood and secretions in the birth canal.
- Avoid routine (artificial) rupture of membranes (ARM). If prolonged labour is due to poor uterine contraction, perform ARM at ≥ 6 cm cervical dilation and augment with oxytocin (Pitocin)
- Do not perform routine episiotomy except for specific obstetric indications (e.g., vacuum extraction)
- Avoid frequent vaginal examinations
- Do not ‘milk’ the umbilical cord before cutting
- Actively manage the third stage of labour: Active management reduces the risk of postpartum haemorrhage which increases the exposure of the new-born to maternal blood. This involves 3 important components:
 - (i) Giving oxytocin within 1 minute following the birth of the baby
 - (ii) Delivery of the placenta using controlled cord traction
 - (iii) Massaging the uterus after delivery of the placenta

NB: *HIV infection in a pregnant woman is no longer considered an absolute indication for Caesarean section. Caesarean section is therefore not recommended specifically for HIV infection in South Sudan; rather it is recommended for obstetric and other medical reasons.*

9.7 SERVICES FOR LACTATING WOMEN AND THEIR CHILDREN

Following delivery, it is important to address the treatment, care and support needs of HIV-infected women, their children, and families. This is Prong 4 of PMTCT. Ideally, mothers living with HIV and their HIV-exposed infants should be provided with ongoing HIV care and treatment services together in the same location. This follow-up could be done within MCH or within the ART clinic as appropriate to the human resource capacity and space within the facility.

9.7.1 Follow-Up of Mother-Baby Pairs After Delivery

Services for the mother

For the mother, the services include:

- Antiretroviral therapy (ART) *--throughout the breastfeeding period*
- Viral load monitoring
- Co-trimoxazole prophylaxis
- TB screening, diagnosis, and treatment. IPT can be postponed until after delivery
- Provision of TB preventative therapy
- Continued infant feeding counselling and support
- Nutritional counselling and support
- Sexual and reproductive health services including FP
- Psychosocial support

Women with HIV and women of unknown HIV status who deliver outside health facilities should be assessed at an MCH facility as soon as possible.

The first postnatal for the HIV infected mother and her infant is usually scheduled at 6 weeks following delivery. This visit coincides with immunization visit for the baby. On this visit:

- Dried blood sample is collected by a trained healthcare worker for first NAT test
- Postpartum check (for sepsis, anaemia, high blood pressure, etc.); provision of vitamin A
- Family planning counselling and services
- Review of ART regimen and adherence support
- Re-enforcement of safe feeding practices
- Cervical cancer screening - where available

Thereafter the mother-infant pair should be followed up at 10 weeks, 14 weeks (as per immunisation schedule) and then quarterly. The baby should have an NAT at 9 months, and Ab test at 18mo and 3 months after cessation of breastfeeding.

9.8 CARE OF HIV-EXPOSED INFANT (HEI)

Key Components of the Care Package For HIV- exposed infants:

- ARV prophylaxis to prevent MTCT to HEI for 6 weeks or until 12 weeks for the high-risk infants
- Encourage and support exclusive breastfeeding for 6 months and continued infant feeding counselling and support

- Infant HIV testing: NAT at 6 weeks (for Early Infant diagnosis) and 9 months. Antibody testing at 18 months or 3 months after cessation of breastfeeding
- Routine immunization
- Growth, and development monitoring
- Cotrimoxazole prophylaxis (from 6 weeks of age)
- Vitamin A 100,000-200,000 IU every 6 months up to the age of 5 years.

9.8.1 ARV Prophylaxis for the Infant

ARV prophylaxis for HIV exposed infants is administered based on the level of risk of HIV for the infant. **A high-risk infant is defined as follows:**

1. An infant born to woman with established HIV infection with viral load >1000 copies/ml in the 4 weeks before delivery or **unknown VL** or
2. An infant born to an HIV infected woman who has received less than 4 weeks of ART at the time of delivery or
3. An infant born to a newly diagnosed HIV infected woman during pregnancy or postpartum (Incident HIV infection) or
4. An HIV exposed infant identified for the first time during the postpartum period, with or without a negative test prenatally

All infants who do not meet the criteria for ‘high-risk’ infants are classified as ‘low-risk’ infants.

The table below shows infant prophylactic ARV regimens by risk stratification.

*Health workers should offer high-risk infants **dual ARV prophylaxis of AZT and NVP for 12 weeks post-delivery.***

Figure 9.3 Prophylaxis for high and low risk HIV exposed infants

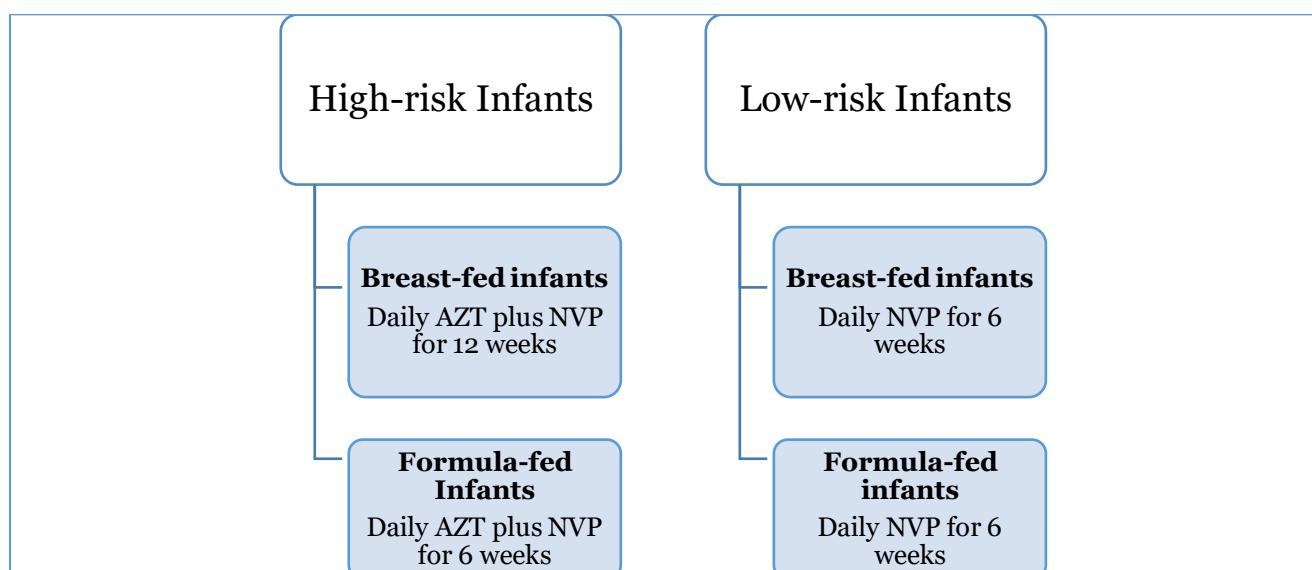


Table 9.2 ARV prophylaxis for Low-Risk Infant with Nevirapine

Infant Age	Daily Dosing
Birth to 6 weeks	
Birth weight <2.5 kg	10mg (1ml) once daily
Birth weight ≥2.5 kg	15mg (1.5 ml) once daily

Table 9.3: ARV prophylaxis for High-risk infants with Nevirapine and Zidovudine

Infant Age / Birth Weight	Nevirapine Daily Dosing	Zidovudine Daily Dosing
Birth to 6 weeks (dual prophylaxis)		
Birth weight <2.5 kg	10mg (1ml) once daily	10mg (1ml) twice daily
Birth weight ≥2.5 kg	15mg (1.5ml) once daily	15mg (1.5ml) twice daily
6 – 12 weeks	20mg (2mls) once daily	60mg (6ml) twice daily

9.8.2 Infant Feeding

Breastfeeding accounts for up to 20% of infections acquired through Mother-To-Child Transmission (MTCT) in the absence of interventions. However, breastfeeding is critical for the survival of the infant. Infants that are not breastfed are at increased risk of death from malnutrition, diarrhoea, and pneumonia. HIV transmission through breastfeeding can be significantly reduced if a mother is on ART and virally suppressed, breastfeeds her child exclusively for the first 6 months and the baby receive ARV prophylaxis as recommended. The maximum benefit of breastfeeding in preventing mortality from diarrhoea, pneumonia, and malnutrition is in the first 12 months of life.

9.8.3 Early Diagnosis of HIV among Infants and Children < 18 Months of Age

(See Chapter 3 Figure 3.2 for Infant HIV Diagnosis Algorithm)

9.8.4 Cotrimoxazole Prophylaxis in Children

- All HIV exposed infants from 6 weeks of age until HIV infection has been excluded by an age-appropriate HIV test 8-12 weeks after complete cessation of breastfeeding should receive daily cotrimoxazole prophylaxis.
- All children proved to be HIV infected need cotrimoxazole prophylaxis to be continued for life even after they start ARVs. Refer to section 8.8.

Table 9.4 Cotrimoxazole Prophylaxis for HIV Exposed Infants

S/N	Infant Age/Weight	Dosage
1	For infants below 6 months or <5 kg	120mg daily
2	For children 5 months – 5 years or 5 – 15 kg	240mg daily

9.8.5 Routine Immunization

- HIV-infected infants and children can safely receive most childhood vaccines. All HIV infected and exposed children should be immunized as per South Sudan national Expanded Programme (EPI) for Immunization schedule
- Immunization status should be reviewed at every visit
- BCG vaccination is protective against severe forms of TB such as miliary TB and TB meningitis.
BCG should not be given to infants and children with symptomatic HIV infection. If BCG is administered at the right time (at birth), the majority of children will receive the BCG vaccine, since HIV-infected children are unlikely to be symptomatic at birth.
 - If HIV symptomatic children are given BCG, they may develop BCG disease, whereby the BCG vaccination site develops an abscess, the axillary lymph nodes enlarge, and the child gets TB symptoms. Children with presumed BCG disease should be referred to as tertiary facilities for treatment.
 - When children, especially those below 1 year of age, start ARVs, the recovery of the immune system may lead to BCG disease Immune Reconstitution Inflammatory Syndrome (IRIS). This usually presents as an abscess and axillary lymph node enlargement. Refer to [3.9.2](#) & [8.1.10](#)

9.8.6 Growth Monitoring

Growth monitoring is the regular measurement of a child's size in order to document growth. The child's size measurements must then be plotted on a growth chart. This is extremely important as it can detect early changes in a child's growth.

- Weight-for-age is usually used to monitor growth. It is particularly useful in small infants who normally gain weight fast. Normal weight gain suggests that the infant is healthy and growing normally. Failure to gain weight normally is often the earliest sign of illness or malnutrition (i.e. under-nutrition).
- Height and head circumference are also important measurements of growth. Height is the best method of measuring linear growth (stature) as height reflects growth over a longer period than does weight. Measuring height is, therefore, an important measure of growth in older children.
- Head circumference can be used to assess brain growth in children under 2 years. During this period brain growth is fast and, therefore, head circumference increases rapidly. A small head (microcephaly)

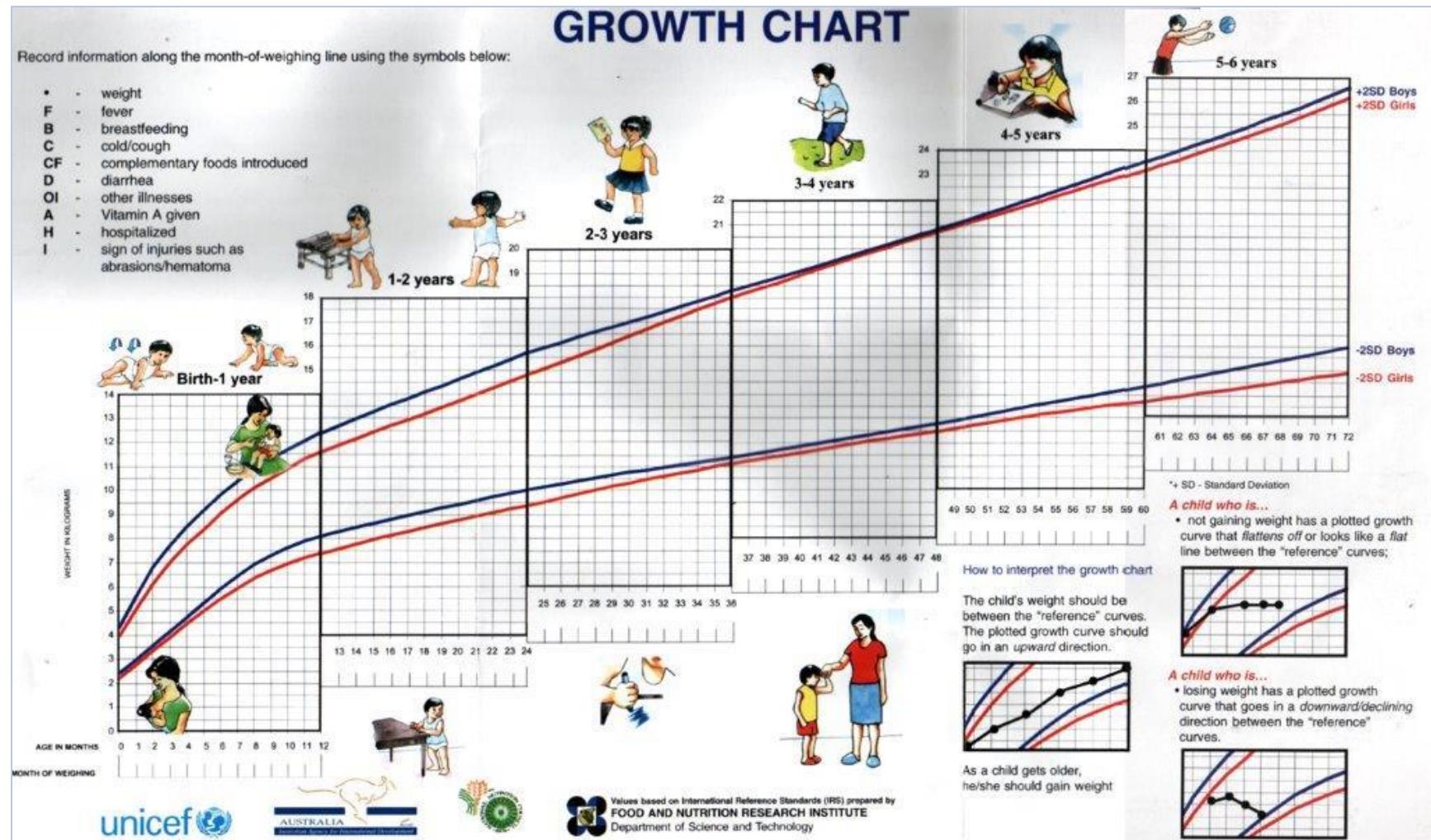
suggests a small brain, while a large head suggests hydrocephaly. Head circumference is less accurate in assessing brain growth over 2 years of age. Therefore, measuring head circumference is most useful in young children and height in older children.

Frequency of growth monitoring

- **HIV exposed infants should receive regular follow up**
 - **Weight should be measured and recorded on the child's health card every month for the first year of life.** In addition, a child's weight should also be measured and recorded every time the child is seen at a clinic, hospital or by a general practitioner and the weight should be plotted on a growth chart. Follow up visits should be scheduled every 3 months for children aged between 1 and 5 years. The dosage for ART, cotrimoxazole and any other drugs the child is taking should be adjusted accordingly and recorded on the child's health card
 - Height should be measured annually.
 - Head circumference is measured routinely at each encounter during the first 2 years of life.
-
- At all encounters with a child, growth parameters should be taken and recorded and interpreted on the Child Health Card and ART Care Card.
 - Plot the child's weight on a centile chart to compare the child's size (usually the weight) to that of other children using a growth chart. For a given age, the size of most children (94%) falls between the 3rd and the 97th centiles. These children are regarded as having a normal (average or appropriate) size for their age and are growing well.
 - Children are underweight if their weight is below the 3rd centile.
 - Alternatively, Z-scores (standard deviations from the mean) may be used to assess a child's size. A Z-score of -2 is equivalent to the 3rd centile.
 - A growth curve indicates the child's growth rate and helps identify children who have a growth pattern that differs from the average growth pattern.
 - Wasting is a danger sign and suggests malnutrition or illness. These children usually look very thin and have a weight that falls below the 3rd centile while their height and head circumference may often fall within the normal range. These children also have a body mass index below the 3rd centile, i.e., they are underweight for their height. Their growth curve may show weight faltering.
 - Infants with growth faltering (failure to thrive or slow growth) who have not been gaining weight normally. Their weight may remain the same or may even be dropping. Their height and head circumference may also not be increasing normally. Most of these children have a medical, nutritional or social problem, which needs to be urgently diagnosed and managed. Faltering weight gain must be detected as soon as possible so that the cause can be corrected. Growth faltering may be the first sign of HIV infection.

- Stunted children are shorter than normal for their age. As they are often symmetrically small and do not look thin, their stunting is often missed. Usually, their growth curves have followed the centiles although their weight, height and head circumference all fall below the 3rd centile. Stunting usually occurs before 3 years of life.
- If the failure to gain weight adequately does not respond to management at a primary care clinic, the child must be referred for further assessment and management. This is particularly important in children with a weight that falls or crosses centiles. Usually, these children are referred to a special nutritional clinic where the following steps should be followed:
 - Exclude any chronic illness such as tuberculosis or HIV infection.
 - A dietitian or nutritional counsellor should educate the mother or caregiver.
 - A social worker should interview the mother or caregiver and assist where help is needed.
 - If the child is still not improving, refer to a paediatrician.
- Failure to gain weight or height or slow weight or height gain, and loss of weight may be an indication of HIV infection in an infant/young child: Failure to thrive affects as many as 50% of HIV-infected infants and children. HIV-infected infants and children who are failing to thrive have a significantly increased risk of mortality
- Counsel the mother/ caregiver on the child's growth trend and take appropriate action where necessary.[_](#)

Figure 9.4 Child Growth Monitoring Chart



9.9 DEVELOPMENT MONITORING

Development represents the maturation of the brain and central nervous system and broadly looks at a child's mental, physical, and social development.

Neurodevelopment:

Neurodevelopment is the progressive, orderly change of behavior and activities which are seen as a child becomes older. Their physical ability and understanding of the world around them increases and matures with age. Developmental milestones are used to monitor neurodevelopment in childhood. The neurodevelopmental monitoring of milestones must be part of the routine growth and developmental screening of all children. The following table 5.5 provides guidance on the gross motor, visual motor/problem-solving, language, and social/adaptive milestones of children from one month to five years old.

Table 9.5 Development milestones

Age	Gross Motor	Visual-Motor/Problem-Solving	Language	Social/Adaptive
1 mo.	Raises head from a prone position	Visually fixes, follows to the midline, has a tight grasp	Alerts to sound	Regards face
2 mo.	Holds the head in midline, lifts the chest off table	No longer clenches fists tightly, follows object past midline	Smiles socially (after being stroked or talked to)	Recognises parent
3 mo.	Supports on forearms in the prone position holds head up steadily	Holds hands open at rest, follows in a circular fashion, response to visual threat	Coos (produces long vowel sounds in musical fashion)	Reaches for familiar people or objects anticipates feeding
4 mo.	Rolls over, supports on wrists, shifts weight	Reaches with arms in unison, brings hands to midline	Laughs, orients to voice	Enjoys looking around
6 mo.	Sits unsupported, puts feet in the mouth in a supine position	Unilateral reach uses raking grasp, transfers objects	Babbles, ah-goo, razz, lateral orientation to bell	Recognises that someone is a stranger

9 mo.	Pivots when sitting, crawls well, pulls to stand, cruises	Uses immature pincer grasp, probes with a forefinger, holds the bottle, throws objects	Says “mama, dada” indiscriminately, gestures, waves bye-bye, understands “no”	Starts exploring the environment plays gesture games (e.g., pat-a-cake)
12 mo.	Walks alone	Uses mature pincer grasp, can make a crayon mark, releases voluntarily	Uses two words other than “mama, dada” or proper nouns, jargoning (runs several unintelligible words together with tone or inflection), one-step command with a gesture	Imitates actions, comes when called, cooperates with dressing
15 mo.	Creeps upstairs, walk backward independently	Scribbles in imitation build tower of 2 blocks in imitation	Uses 4–6 words, follows the one-step command without gesture	15–18 mo.: uses spoon and cup
18 mo.	Runs, throws objects from standing without falling	Scribbles spontaneously builds a tower of 3 blocks, turns two or three pages at a time	Mature jargoning (includes intelligible words), 7–10-word vocabulary, knows 5 body parts	Copies parent in tasks (sweeping, dusting), plays in company of other children
24 mo.	Walks up and down steps without help	Imitates stroke with pencil, builds a tower of 7 blocks, turns pages one at a time, removes shoes, pants, etc.	Uses pronouns (I, you, me) appropriately, follows two-step commands, 50-word vocabulary, uses 2-word sentences	Parallel play
3 yrs.	Can alternate feet going up steps, pedals tricycle	Copies a circle, undresses completely, dresses partially, dries hands if reminded, unbuttons	Uses a minimum of 250 words, 3-word sentences, uses plurals, knows all pronouns, repeats two digits	Group play, shares toys, takes turns, plays well with others, knows the full name, age, gender

4 yrs.	Hops, skips, alternates feet going down steps	Copies a square, buttons clothing, dresses self completely, catches a ball	Knows colors, says song or poem from memory, asks questions	Tells “tall tales,” plays cooperatively with a group of children
5 yrs.	Skips alternating feet jumps over low obstacles	Copies triangle, ties shoes, spreads with knife	Prints first name asks what a word means	Plays competitive games, abides by rules, likes to help in household tasks

Source: Tschudy, Megan M.Arcara, Kristin M. (Eds.) (2012) *The Harriet Lane handbook: a manual for pediatric house officers* Philadelphia, PA: Mosby Elsevier

- HIV-infected Infants are at high risk for HIV encephalopathy, severe neurologic disease, and developmental delay. Delayed development or loss of developmental milestones may be the first sign of HIV infection in an infant or young child. Early identification of developmental delay and neurologic abnormalities should facilitate intervention and remediation.
 - Development monitoring assesses the cognitive, motor, language, and social skills of a child.
 - Delay in acquisition or loss of the above-mentioned skills/milestones is a sign of severe HIV in infants and children
 - Small head circumference may also be an indicator of developmental delay and suggestive of brain encephalopathy
- It is always important to ask parents to report on milestones achieved by the child since their last visit. All this should be documented on the Child Health Card.

9.10 COMMUNITY PMTCT INTERVENTIONS

All HIV positive pregnant mothers and their families, with consent, should be linked to psychosocial and community groups for on-going support. Linkage to community support groups (family support groups, peer mothers) is important in enhancing retention in care and follow up of the HEI until HIV infection is ruled out. Community involvement is necessary for the successful implementation of PMTCT & EID services in the country.

Key community PMTCT interventions include:

- Community mobilization and sensitization to utilize RH/PMTCT services.
- Promotion of male participation in RH/PMTCT services
- Psycho-social support through peer mothers for PMTCT and other groups
- Health Education and Promotion
- Mother-Baby Pair follow up

- Home-based HTS
- Community distribution of FP commodities
- Community linkages and tracking to care and support groups.
- Community growth promotion and development monitoring.-
- Sexual and Gender-Based Violence (Sensitization, prevention, and Support)

10. ADOLESCENT HIV CARE AND SUPPORT

ADOLESCENT CLASSIFICATIONS

Adolescents Living with HIV (ALHIV) are in the age category of 10-19 years. There are 2 groups of ALHIV: a) adolescents who acquired HIV perinatally, and b) adolescents who acquired HIV during childhood or adolescence. Adolescents may be further classified as younger adolescents (10-14 years) and older adolescents (15-19 years). The needs of young adolescents differ from those of older adolescents, and therefore the interventions must be implemented in age-appropriate ways. Adolescents are often underserved with poor access to and uptake of HIV testing and counselling and linkage to prevention and care services. Adolescents need special attention because of their unique health, psychological, and social needs. See some of the major challenges in **Table 4** below.

Table 2 Challenges of adolescents living with HIV (ALHIV)

Common challenges faced by all ALHIV	Challenges of adolescents with perinatally acquired HIV	Challenges of adolescents who acquired HIV during childhood or adolescence (through sexual intercourse, sexual abuse, blood transfusion, etc)
<ul style="list-style-type: none">• Poor retention in care / high loss to follow-up• Poor adherence to ART• Difficulties in adopting Positive living and positive prevention behaviors• Stigma and discrimination• Finding a partner/ and starting a family	<ul style="list-style-type: none">• Disclosure of HIV status to the child• Mother's acceptance of her HIV status• Long term ART use• Potential medical fatigue• For the family: Demands of caring for a child/adolescent with chronic HIV infection	<ul style="list-style-type: none">• Acceptance of HIV status• Disclosure to family, partners, and peers• If raped or abused, dealing with emotional and physical repercussions of that experience

	<ul style="list-style-type: none"> The complexity of living in a home affected by HIV, particularly if caregivers are unwell, unemployed or have died 	
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The package of adolescent HIV care and treatment services includes:

- HIV clinical care (HTS, ART, Chronic care, TB care, PMTCT) [5.21](#)
- Counseling and psychosocial support (including disclosure) [5.3](#) and [5.4](#)
- Sexual and reproductive health services [5.5](#)
- Family planning and PMTCT services for ALHIV [5.6](#)
- Retention, adherence, and disclosure support [5.7](#)
- Mental health issues
- Youth-friendly services [5.9](#)
- Support for the transition to adult care [5.10](#)
- Community linkages including peer-based activities

10.1 CLINICAL CARE FOR ADOLESCENTS LIVING WITH HIV (ALHIV):

Clinical care (HTS, ART, TB) for ALHIV is generally similar to that of adults. Of note:

- HTS (including disclosure):** adolescents should be counselled about the potential benefits and risks of disclosure of their HIV status. They should be empowered and supported to determine if, when and how to disclose. All adolescents should be disclosed of their HIV status and the HIV status of their parents / guardians.
- ART services:** Normally, the adolescent ART regimen is similar to the regimen for adults (Refer to the adult ART Regimen in these guidelines). It is essential to also note that some adolescents living with HIV may be stunted or underweight and hence medicine dosage may require adjustments accordingly. The treatment recommendation for adolescents with weight $\geq 35\text{kg}$ is the same as that for

adults while for adolescents weighing <35kg it is the same as that for children 3-9 years. In order to support retention in care and adherence to ART, health care workers must be trained to understand the adolescent population and to encourage them to utilise the HIV services.

10.2 COUNSELING AND PSYCHOSOCIAL SUPPORT NEEDS OF ADOLESCENTS

Adolescents have unique psychosocial needs different from those of children and adults. ALHIV may require extra support in several areas including:

- Understanding and coming to terms with their HIV status and that of family members
- Grieving the illness and loss of family members with added responsibilities
- Coping with cycles of wellness and ill health
- Long term adherence to treatment
- Sexual and reproductive health
- Anxiety over physical appearance and body image
- Developing self-esteem, confidence, and a sense of belonging
- Dealing with stigma, discrimination, and social isolation
- Accessing education, training, and work opportunities
- Managing mental health issues

10.3 DISCLOSURE AND ALHIV

- Disclosure is an ongoing process of:
 - Telling a child / young adolescent that he or she has HIV,
 - Helping him/her understand what it means,
 - Helping him/her disclose his or her HIV status to significant others
- Disclosure can help young clients to access HIV services. It can also improve adherence, reduce stigma and discrimination, and reduce HIV transmission by helping people protect themselves and their partners.
- Health workers should assess clients' and caregivers' readiness, work with the caregiver to develop and follow a disclosure plan, prepare the client for different stages in the disclosure process, and support the client and caregiver throughout the process.

10.4 SUPPORTING RETENTION & ADHERENCE TO CARE & TREATMENT FOR ALHIV

- Ensure services are ‘youth-friendly’ – See [5.9](#)
- Provide counseling and education including adherence preparation support to all ALHIV and their caregivers
- Ensure linkages to peer support groups for peer-to-peer adherence counseling and support
- Use appointment systems (appointment logbooks) and send SMS reminders where possible
- Ensure tracking system is in place including following up clients who miss clinic appointments - by phone, SMS or home visits using treatment or adherence support groups
- Use Fixed-Dose Combination ARV regimens

10.5 SEXUAL AND REPRODUCTIVE HEALTH SERVICES FOR ADOLESCENTS

ALHIV in HIV care should be provided with the age and developmentally appropriate sexual and reproductive health services.

- Support ALHIV to practice safer sex to protect themselves and their partners from HIV, other STIs, and unwanted pregnancy. For sexually active adolescents, dual protection with a condom should also be discussed and safe sex with consistent condom use encouraged. Because ARVs reduce the amount of virus in body fluids, maintaining excellent adherence to ART to reduce the risk of HIV transmission.
- Sexually active adolescents should be screened for STI symptoms and managed in accordance with national STI guidelines.

10.6 FAMILY PLANNING AND PMTCT SERVICES FOR ALHIV

Adolescent pregnancy is associated with many health risks (pregnancy complications), and psychosocial risks (stigma, changes in education, career, or marriage aspirations).

- Health workers should discuss with adolescents the advantages of delayed sexual debut, the right to delay marriage and to decline sex when approached by a man or woman in an inappropriate manner
- Health care workers should counsel ALHIV on the safest times to have children in the future; they should wait until they are adults (due to the risks of adolescent pregnancy), get pregnant when healthy, when virally suppressed and when adherent to ART.

- ALHIV have high family planning discontinuation rates and are less tolerant of contraceptive side effects. Counsel all clients on correct and consistent condom use, whether condoms are their primary contraceptive choice or whether they will be used for dual protection.
- Provide counseling on PMTCT and refer all pregnant ALHIV to ANC for PMTCT services.

10.7 MENTAL HEALTH SERVICES

Adolescents living with HIV deal with challenges such as loss of loved ones, stigma and isolation, gender-based violence and the responsibility of taking care of oneself in the presence of a chronic illness. Adolescents who suffer from depression are more likely to be non-adherent to their medication. To facilitate adherence and retention to care, it is essential to screen for and treat mental health problems. Some of the potential symptoms of an adolescent experiencing depression include the following symptoms: social withdrawal, loss of appetite or increased appetite, difficulty sleeping or too much sleep and poor personal hygiene. Health workers should be trained to screen and manage adolescents for mental health problems.

10.8 YOUTH FRIENDLY SERVICES

Barriers to services' uptake by youth include cost, disapproval by providers and the community, logistical constraints (including inconvenient hours or lack of transportation), fears about violations of confidentiality, uncertainty, embarrassment, or lack of awareness. Stigma keeps many young people living with HIV from receiving the treatment they need. Youth-friendly services (see characteristics below) aim to overcome these barriers to accessibility and use.

Table 3 Characteristics of youth friendly services

Programmatic Characteristics	Health Facility Characteristics
<ul style="list-style-type: none"> • Package of essential services available • Sufficient supply of commodities and drugs • Range of contraceptives offered • Referrals available 	<ul style="list-style-type: none"> • Convenient service hours • Separate space and/or hours for youth • Convenient location • Adequate space • Privacy ensured • Comfortable setting

<ul style="list-style-type: none"> • Affordable fees / free services • Waiting time not excessive • Youth are involved in programme design • Both boys and girls are welcomed and served • Unmarried clients are welcomed and served • Educational material is available on-site • Services are well promoted in areas where youth gather • Linkages are made with schools, youth clubs, and other youth-friendly institutions 	<p>Service Provider Characteristics</p> <ul style="list-style-type: none"> • Competent staff / trained in adolescent issues • Respect for youth • Privacy and confidentiality are ensured • Adequate time is given for client-provider interaction • Peer counselors are available <p>Youth Perceptions of the Programme</p> <ul style="list-style-type: none"> • Privacy is maintained at the facility • Confidentiality is honored • Youth including boys and girls below 15 years are welcome regardless of marital status • Service providers are attentive to youth needs
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10.9 SUPPORTING THE TRANSITION TO ADULT CARE

All ALHIV attending paediatric clinics should be prepared to transition to the adult HIV clinic. The goal of the transition is to ensure the provision of uninterrupted, coordinated, and developmentally and age-appropriate services.

Healthcare workers should support ALHIV to become more independent in managing their care. In addition, providers should also support caregivers to understand their changing role. To help ALHIV prepare for the transition, ensure the client understands the illness and its treatment, promote linkage to adolescent peer and other support groups at the adult clinic. Service providers should encourage mature adolescents (in consultation with caregivers) to attend clinic visits alone where appropriate. As the last step to transitioning to adult care, adolescents should be familiarized with the adult care setting and procedures.

11. HIV SERVICE DELIVERY

INTRODUCTION

There is an ever increasing need to scale-up ART globally amid limited resources and new and existing competing priorities. It is therefore important to continually adapt client-centred service delivery approaches to meet the needs of PLHIVs, especially subpopulations with peculiar characteristics, for optimal treatment outcomes.

Long term retention in care and treatment continues to pose a challenge across geographical settings. Studies have shown that in Sub-Saharan Africa about one-third of adults enrolled in HIV care disengaged from treatment within the first five years of starting treatment (). The humanitarian situation in South Sudan has impacted the health system, including the HIV program leading to low retention rates. It is crucial to tailor the South Sudan HIV response to meet the peculiar needs of its population that continue to grapple with displacement, insecurity, food shortages, hyperinflation, and disease outbreak.

11.1 LINKAGE FROM HIV TESTING TO ENROLMENT IN CARE AND TREATMENT

The essence of HIV HTS goes beyond knowing the individuals HIV status to link to care and treatment as soon as possible to achieve and sustain viral load suppression. Linkage continues to be a major challenge globally especially for key population, men, and young people. The benefits of viral load suppression are two-fold; at the individual level it reduces morbidity and mortality and at a public health level it breaks the chain of transmission which is the basis of epidemic control.

Following a HIV diagnosis, HTS providers must ensure timely linkage to care. Same day ART initiation should be promoted provided there are no contraindications. WHO package of interventions to ensure linkage to care, and treatment includes:

- Tailored and concise post-test counselling that delivers a “message of hope”
- Linkage with case management including peer educators and counsellors
- Support for disclosure
- Empowerment of PLHIV and their families with relevant information that encourages them to play an active role in their own care through informed decisions
- Tracing services
- Building capacity of health workers and empowering them to provide multiple services

- Taking a quality improvement approach to improving linkage to treatment using data

The people-centered approach to linkage must consider the following:

- Health needs of the newly diagnosed PLHIV
- Preference (including home-based ART initiation and care)
- Upholding dignity of all PLHIV, especially those newly diagnosed and key population
- Friendly and flexible services
- Incentives including nutritional support
- Leveraging digital platforms

11.1.1 Linkages for Sub-populations of PLHIVs

Children

There is historically poor retention among children especially for infants tested using EID within PMTCT programs. Solutions include:

- Using point-of-care early infant diagnosis to improve linkage
- Using SMS, GSM or GPRS printers to speed up the return of results from central laboratories
- Using family-centered service delivery models in which the health needs of the baby, her parents and possibly siblings receive services at the same point of care

Adolescents

Developmental changes in adolescents may mean that not all of them are able to deal with a HIV diagnosis. They may not be aware of their health needs, availability of health services and confidence required to navigate available health services. Consent from parents or caregivers for enrolment may also restrict access to care and treatment. Solutions include peer-led adolescent friendly interventions such as linkage and care services that use that use mobile technology and social media.

Key and Priority Population

Challenges such as criminalization of social and behavioural orientation, violence, stigma and discrimination may affect key population access to healthcare services including HIV care and treatment thereby necessitating adaptation of services for this group of people. Their involvement in the design and implementation of these services ensures that it is acceptable to them. Community-based services has shown to be effective in settings where laws criminalize same-gender sex, sex work and drug use.

Access to high-quality healthcare is not only a matter of equity but there is also the risk of major treatment interruptions when transitioning important when transitioning between (and within) prisons and the community. Measure to consider include providing several months of treatment and addressing issues of health insurance and healthcare provider.

11.2 PEOPLE-CENTERED CARE

People-centered care is an approach to health service delivery that puts into consideration the perspectives of individuals, families and communities and sees them participants and beneficiaries of a health system that responds to their health needs in a humane and holistic way (WHO consolidated guideline 2021). To achieve this in South Sudan health systems there will be ongoing investment in practices and communications that include ongoing training, mentoring, supportive supervision, and monitoring of health care workers to improve the relationship between patients and healthcare providers. In the HIV program, care will be focused around

- the health needs and preferences of PLHIVs, upholding their individual dignity and respect and engaging them to play an active role in their care through informed decision-making
- offering safe, acceptable, and appropriate clinical and non-clinical services in a timely fashion with the aim of reducing morbidity and mortality associated with HIV and to improve health outcomes and quality of life in general

Interventions to improve patient and healthcare provider relationship include to following:

1. Providing friendly and welcoming services such as adolescent friendly services outside school hours and weekend clinics
2. Train clinical and non-clinical healthcare workers to improve care for key populations at facility and community level and addressing issues such as stigma and discrimination
3. Offering individualized adherence counselling and communication to promote shared decision-making and planning for ART initiation and adherence support
4. Facilitate patient education on empowerment and communication skills
5. Put systems in place for patients to continuously share their concerns and evaluation of the services provided and provide feedback to healthcare workers

11.3 INITIATING ART

11.3.1 Initiating ART outside the Health Facility

HIV testing in community settings and referral of positive diagnosis to a health facility for ART initiation has become a key component of HIV programs in various countries. Studies have also shown that this can be associated with significant treatment interruption due to individuals feeling healthy, insufficient social support, HIV stigma, high care-seeking cost, distance to health facilities and incomplete knowledge of treatment benefits.

The offer to initiate ART in the community has the potential to reduce delay in starting ART treatment for individuals who are unwilling or unable to be referred to the health facility. Studies have provided evidence that this is associated with increased proportion of newly diagnosed HIV-infected people initiating treatment, increased retention at 6 – 12 months and increased VL suppression (WHO 2021 guidelines).

Implementation Considerations

When implementing ART initiation outside of health facilities it is important to put systems in place to ensure

- Confirmation of HIV diagnosis – Retesting
- Targeted and concise post-test counselling that among other things, assesses readiness to commence ART and importance of lifelong adherence
- Clinical assessment that includes CD4 cell count evaluation to determine whether a person has advanced HIV disease
- Additional practice advice on drug administration and storage conditions for ARV formulations for infants and young children
- Proper monitoring and evaluation of ART initiation in the community

To ensure that these implementation requirements are carried out, the community HIV healthcare team should be made up of complementary staff with capacity and skills to conduct risk assessment and counselling support, HIV testing and venipuncture for sample collection.

11.4 CONTINUUM OF CARE

11.4.1 Retention in Care

Disengagement from care undermines program and patient outcomes. Retention is a major challenge in all settings and across populations, especially children and adolescents, postpartum women, and men. Multiple factors contribute to this including male sex, low educational status, advanced HIV disease, poor counselling, nondisclosure, distance from clinic and lack of understanding of the need for lifelong care.

Interventions that have been found to be beneficial in addressing retention in care include:

1. Community-based interventions

These interventions include counselling and psychological support provided by lay adherence counsellors, peer counsellors, patient advocates and family. They assist with linking the facilities with communities and provide these services by visiting people in their homes or community environment

2. Adherence clubs

The adherence club intervention is an example of a differentiated service delivery model designed to streamline ART care for treatment experienced adult PLHIV with history of good clinic attendance and medication adherence. It provides a conducive social environment to encourage patient interaction with peers and the opportunity. It also provides a platform for ART refills and continuous propagation of ‘message of hope’.

3. Population-specific Considerations

Pregnant and breastfeeding women

The transition from antenatal care and maternal and child health services to ART care is a potential point of loss to follow-up. This can be mitigated by the following:

- Establishing a district level mentor or mother-to-mother program
- Active patient tracing
- Providing incentives for facility visit such as financial support for transportation and distribution of nutritional commodities
- Establishing adolescent peer support groups for adolescent pregnant women living with HIV.

Clinically stable women who are receiving their ART through a differentiated service delivery model and become pregnant require additional healthcare visits. These women should have the option of continuing to receive their ART through the differentiated service delivery model or have their ART delivery integrated into their maternal, neonatal and child health service. WHO recommends an eligibility criteria for women who wish to continue receiving ART through a differentiated service delivery approach, as:

I. For women clinically established on ART when conceiving

- Should be already receiving ART through a differentiated approach
- At least one VL result <1000 copies/ml in the last 3 months
- Assessing antenatal care service

II. For women initiating ART during pregnancy

- Become eligible for ART service delivery through a differentiated approach in the postpartum period, and
- Have a NAT HIV negative result when the infant is 6 weeks, and
- Evidence of accessing infant follow-up care

Children

Achieving desired treatment outcomes in children requires that caregivers understand the importance of adherence and retention in care. Factors that affect adherence and retention in children living with HIV include use of appropriate ARV formulations, centralized pediatric care, adequate psychosocial support and effectively disclosing HIV status to children.

WHO recommends the following interventions to ensure retention in care among children:

- Assisted disclosure of HIV to the child using age-appropriate messaging and tools
- Support caregivers to attend regular follow-up visit by providing appointment reminders
- Psychological support to address stigma and fear
- Aligning mother and child clinic and laboratory appointments

Men

Across sub-Saharan Africa and in South Sudan, men are largely left behind from the gains of ART. They test for HIV at lower rates, have higher rates of loss to follow-up, higher virologic failure on ART and higher mortality rates. This translates to increases gender disparity in life expectancy among men living with HIV and receiving ART. Factors contributing to this include gender norms and expressions of masculinity that run counter to healthcare seeking behaviors, employment and livelihood engagements, view of health seeking, and healthcare spaces are primarily the woman domain, threat of leadership position in the household and accusation of promiscuity by their wives.

Interventions to increase retention in care among men include the following:

- Gender specific messages that emphasize the importance of adherence to achieve the health benefits of ART
- Engaging men in prevention of mother-to-child transmission services
- Decreased waiting time in the clinic
- Flexible clinic hours

- Phone calls and SMS reminders
- Providing care in a friendly and supportive environment

Key Populations

In settings where people are discriminated because of their behavior and identity, ART services need to consider community and peer-based delivery options to support continuity of treatment.

People in Prison and other closed settings

Worldwide the level of HIV infection among prison population tends to be much higher than that in the population outside the prison. Reducing transmission of HIV in the prison is an important component of reducing the spread of infection in the broader society. Prisoners should be provided with HIV prevention, care and treatment services that is equivalent to that available to people in the community outside.

When men and women living with HIV are incarcerated it often affects adherence and retention thereby putting their health and the health of other inmates at risk. Interventions to improve adherence and retention in ART include:

- Making voluntary HIV testing services available upon entry into prisons and routinely during incarceration
- Ensuring that HIV services are provided in a manner that promotes privacy and confidentiality
- Adequate supply of ART to incarcerated HIV positive individuals and individuals being released from prison
- Linkage of incarcerated individuals to ART services upon release
- Tracing of incarcerated individuals upon release for ongoing psychosocial support including adherence counselling

11.4.2 Tracing Patients who Disengage from Care

Tracing of patients who disengagement is an intervention that should be implemented in all facilities providing HIV services to support retention in care. Tracing of patients is usually more successful soon after a missed visit compared to a longer period of disengagement. All facilities providing HIV care and treatment services should have a trained tracking team that is responsible for this intervention. Implementing partners should develop a standard operating procedure available in hard copies at the facilities to guide tracking teams in the execution of their duties. The composition of the tracing teams

should include treatment experienced PLHIV peers, health facility personnel, social workers, and community health workers.

Facility and community health workers must ensure they get consent of PLHIVs in care and treatment to trace them in the event of missed visit and disengagement from care at the time of enrollment and collection of personal details such as phone number and home address. Without consent tracing may be considered intrusive and may not be accepted by people who miss a visit disengage from care. Patient tracing needs to be provided using a non-judgmental approach and respect the individual's human right and confidentiality. Care must be taken not to inadvertently disclose HIV status in the process of disclosing to prevent intimate partner violence.

Implementing partners and tracing team can take a proactive approach to tracing of individuals by contacting them prior to scheduled appointment to confirm that they will visit as scheduled or to get a prior notification of most suitable time of visit. This process and the entire tracing schedule must be clearly spelt out in a standard operating procedure.

Resources for tracking such as mobile phones and call cards and money for transportation in case there is need for in-person visit should be made available to the tracing team by the implementing partner.

11.5 DIFFERENTIATED SERVICE DELIVERY (DSD) MODELS

Differentiated service is a person-centered approach that simplifies and adapts HIV services to better serve the needs and preferences of PLHIV whilst reducing unnecessary burdens on the health system. This is contrast to the one-size-fits-all clinic-based approach that was used in the early days of rapid ART scale-up. The concept of DSD is client-centered and aims to improve access, quality, and efficiency of health systems by re-examining traditional service delivery approaches and building upon existing structures both in the facilities and the community. It integrates task shifting, decentralization, integration, and simplification of care across the HIV care continuum. This chapter will focus on differentiated ART service delivery.

11.5.1 Differentiated ART Service Delivery

Differentiated ART service delivery describes a series of management approaches that align with the clinical status, needs and preferences of PLHIV. They are broadly classified into facility and community-based models which implement either one or a combination of the following approaches:

- Differentiated Patient Flow: dedicated client pathway at sites for specific patient populations based on need e.g., new patients and those with advanced HIV disease
- Differentiated Schedule: adapting clinic flow or dedicating clinic hours, day, or appointment for specific populations such as adolescents
- Differentiated Locations: providing services to certain groups such as adults and adolescents established on ART within the community e.g., one-stop-shops for key populations

The choice of service delivery model for each client is individualized and should be made following consultation and consent from the client. All community-based models must be linked to approved facility-based sites.

Differentiated service delivery for HIV treatment is based on four building blocks (Fig 6.1). In any given differentiated service delivery model for HIV treatment, the building blocks need to be defined separately for clinical consultations, ART refills and psychosocial support.

Fig 11.1: Building Blocks for differentiated ART service delivery

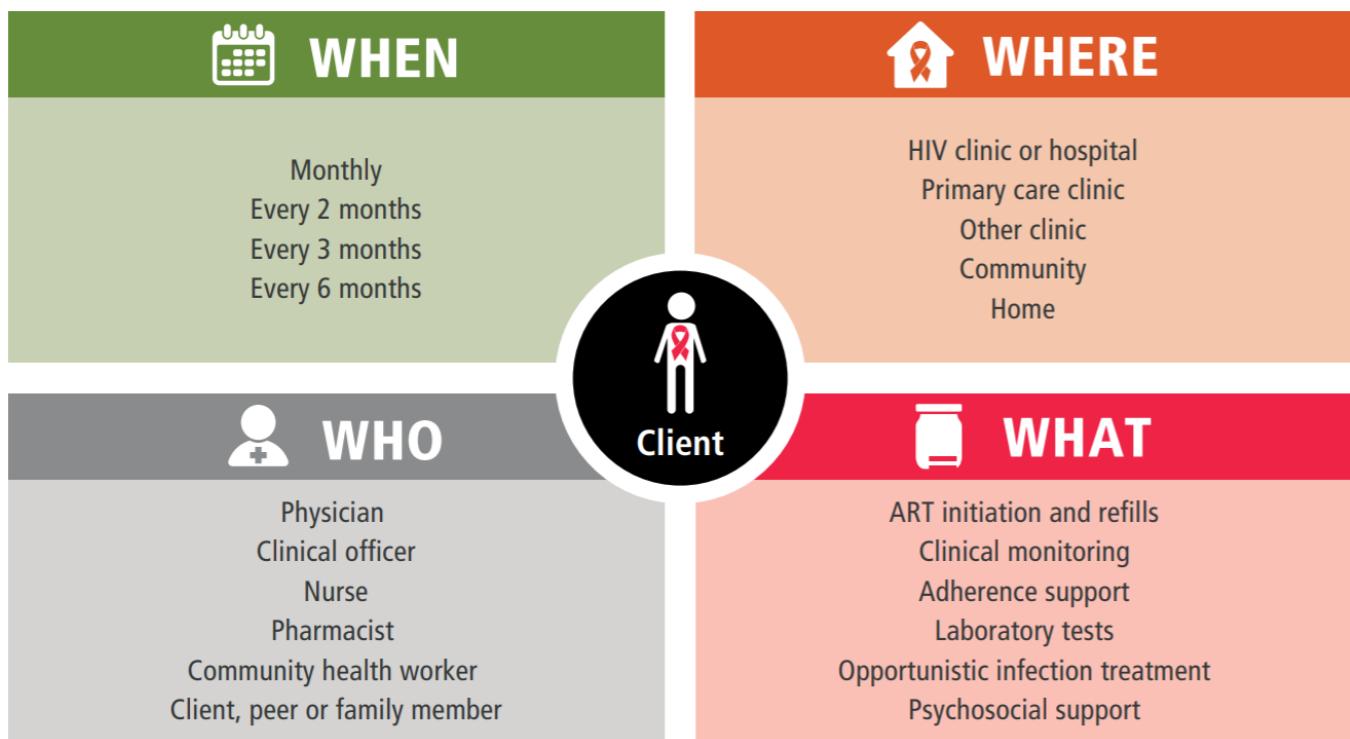


Table 11.1: Models of Differentiated ART Service Delivery

Facility-Based	Community-Based
Fast Track Stable clients established on ART collect their medication from the facility pharmacy without going through the normal clinic flow, including a doctor's review	Community drug distribution points These are designated points within the community where ARVs and other medications are dispensed to stable patients Community pharmacy refills
Health Facility Based ART Groups These are health facility-based groups formed voluntarily by support groups of PLHIV who are already meeting regularly at the health facility for ARVs and other medication refills. This can either be PLHIV-led or health care provider-led	Community ART groups These are community-based groups formed voluntarily by persons living with HIV within a community for ARVs and other medication refills. This can either be PLHIV-led or healthcare worker-led. These healthcare providers may include community health workers, case managers and other trained volunteers.

Multi-month dispensing

Medication dispensing intervals of 3 – 6 months

Adolescent clubs

Groups of adolescents and young people living with HIV for whom age-appropriate, affordable, friendly health services are provided in an accessible and acceptable environment

Post Natal Clubs

Groups of women living with HIV who are supported in the postnatal period by healthcare workers and other volunteers like mentor mothers to ensure improved maternal / child health outcomes.

One-Stop Shops and Mobile Clinics:

Community-based service delivery sites where multiple services are offered, and clients can access all their needs under one roof targeted specifically at providing services for Key Populations

In implementing differentiated service delivery models, PLHIV are categorized into four groups namely:

- individuals presenting or returning to care with advanced HIV disease; (see Section 4.3)
- individuals presenting or returning to care when clinically well;
- individuals established on ART; and
- individuals receiving an ART regimen that is failing (see Section 6.6)

These groupings are fluid with clients moving from one group to another whilst in care but enabling health systems to differentiate and target individuals requiring intense facility-based services from those who require less frequent clinical consultations and could collect their ART from the community-based models.

PLHIV **established on ART** should be provided clinical visits and ARV refills every six months.

Criteria for determining whether a person is established on ART

- Receiving ART for at least six months.
- No current illness, which does not include well-controlled chronic health conditions.
- Good understanding of lifelong adherence: adequate adherence counselling provided and applied; and
- Evidence of treatment success: at least one suppressed viral load result within the past six months (if viral load is not available: CD4 count >200 cells/mm³ or weight gain, absence of symptoms and concurrent infections)

11.5.2 Differentiated Service Delivery Based on sub-Populations

Differentiated Service Delivery for Pregnant and Breastfeeding Women

DSD models are recommended for pregnant and breastfeeding women as it makes provision for safe delivery practiced promotes mother/baby pair, in addition to prevention of mother-to-child transmission and antiretroviral therapy.

- Pregnant and breastfeeding women established on ART should continue DSD as appropriate to their preference. Their ART and antenatal clinic visits should be synchronized for those previously receiving care in a facility model of DSD. However, if she had been devolved into a community model of DSD, she should be linked to a health facility for antenatal services and to a health care provider-led group or mentor mother-led group for her drug pick up
- Facility-based DSD models are recommended for all pregnant and breastfeeding women who are not established on ART.
- Clinical consultations should be aligned with mother-infant pair visits following delivery. It is recommended that ARV refills should not exceed 3 months.

Differentiated Service Delivery for Children

It is recommended that a family centered DSD model is used which aligns the clinical care of a child with that of the caregiver (if also on ART). If, however, at any point after enrollment the criteria for eligibility for DSD are not met, the child should be promptly referred to the primary treatment facility for review and continued management.

Special Scenarios: Incarcerated children, those in boarding schools and children whose parents are classified as KPs, should also be categorized as established or not established on ART based on the criteria listed above. Provisions should also be made for their caregivers, lay providers, and school matrons to pick up their ART drug refills. It is recommended that clinical consultations for those in boarding schools should be aligned as much as possible with school holidays.

Differentiated Service Delivery for Adolescents and Young People (AYP)

Adolescents and young people who are established on ART should have fewer intensive services. Those who are not established on ART should be managed in the facility. Those presenting with AHD at the

time of ART initiation should be provided with a package of care targeting promoting clinical stability within the first year.

A family-centered approach should be adopted for stable AYP, whereby families receive same-day appointments, same-length of ART refills or allowing one family member to pick up ARVs for family members. The responsibility of picking up drugs by for family member can be rotated among family members. DSD for AYP should

- Be friendly, accessible, acceptable, affordable, and stigma and discrimination free
- Leverage on the existing adolescent support group/clubs either at the facility or community level
- Preferably be peer-led especially among the older AYP
- Adaptable and Flexible (after school hours, weekends, and holidays)
- Pregnant adolescents should not be differentiated to community-based models

ART refills can also take place at the adolescent's club or support group meetings or within the community ART groups. Adolescents not established on ART should have ART refills and clinical consultations conducted more frequently, every one or two months, at the facility.

Family-Centered Differentiated Service Delivery

Family-centered DSD in the context of HIV service delivery aims to provide services to family members at the same time, by the same health care provider and at the same location where possible. This model seeks to align visits at the facility or community level for family members, including children and adolescents to improve efficiency, adherence, retention in care and ultimately viral suppression for the entire family members living with HIV.

Differentiated Service Delivery for Men and Non-Pregnant Women

Adult men and women who are established on ART should be differentiated to models that require clinical consultations and drug refill every 3-6 months. Table 11.4 below shows recommended baseline service delivery for adults newly diagnosed or re-engaging care and feeling well and those presenting with AHD.

Table 11.4 Recommended service delivery for adults feeling well and those presenting with AHD

Baseline Package of Care	Client Presenting well	Presenting with AHD
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Who qualifies for the package of care	Client with WHO clinical stage 1 or 2 or CD4+ count > 200 cell/mm ³	Client with WHO clinical stage 3 or 4 or 3 CD4+ count <200cells/mm ³
Who is the Service Provider	Healthcare workers trained to provide ART services (Clinician, Nurse, adherence counsellor, laboratory, and pharmacy personnel) *	Healthcare workers trained to provide ART services (Clinician, Nurse, adherence counsellor, laboratory, and pharmacy personnel)
Service Location	Approved health facilities	Approved health facilities
Service Intensity (Packages Offered) and Service Frequency		
Clinical consultations	**Monthly for the first 2 months, thereafter 2-monthly for the first year.	** Weekly/Bi-weekly in the first 1 month Monthly for the first 2 months, thereafter 2-monthly for the first year
ART Refill Visits	**Monthly for the first 2 months, thereafter 3-monthly for the first year	**Monthly for the first 2 months, thereafter 3-monthly for the first year
Monitoring	Laboratory monitoring tests may differ according to the level of the health care facility and should be done according to the schedule approved in the National Guidelines	Laboratory monitoring tests may differ according to the level of the health care facility and should be done according to the schedule approved in the National Guidelines. Additional tests may be indicated based on diagnosed OIs
Ancillary services: psychosocial services, intensified adherence support chronic care/PHDP Services	At every clinic contact	Every week for the first 1 month, and at every clinic contact subsequently

*Adherence counselling/support and clinical screening for TB should be done at every clinic contact.

**The client should be informed to return to the health facility IMMEDIATELY if s/he develops adverse drug reaction(s) or has any complaints

Table 11.5. Package of Care for Men and Non-pregnant women who have been on ART for at least 1 year

Package of Care	Established on ART	Not Established on ART
Service Location	Community and health facilities	**Monthly for the first 3 months, thereafter 3-monthly for the first year
Service Intensity (Packages Offered) and Service Frequency		
Clinical consultations	Less frequent – 3 to 6 monthly	Frequent - Monthly for 3 months or as indicated; subsequently as indicated.
ART Refill Visits	Less frequent – 3 to 6 monthly	Frequent - monthly for 3 months; subsequently 3 monthly or as indicated
Monitoring	VL monitoring annually Cessation of CD4+ count monitoring if viral load testing is available	VL monitoring at the end of 3 months after EAC for unsuppressed patients; subsequently according to National guidelines
Ancillary services: psycho- social services intensified adherence support chronic care/PHDP Services	Aligned with clinic visit and ART refill	Monthly for 3 months or as indicated; subsequently aligned with clinic visits

Differentiated Service Delivery for Key and Priority Population

The following service delivery models may be most suitable for Key populations:

- **One-Stop-Shop (OSS) strategy:** This refers to the delivery of a comprehensive service package, under one roof, which is non-discriminatory, non-stigmatizing, safe, friendly and in a conducive environment.
- **Mobile ART teams (MART):** These are trained healthcare service providers that often compose of at least 3 members namely, a clinician, a pharmacist, and a laboratory scientist. These teams leverage on outreaches and designated hot spots to provide services to KPs.

- **Community Pharmacy (CP):** These are pharmacies within the community used for ARV refills to maintain good adherence to ARVs and retention on ART.
- **Focal Service Providers (FSP):** These are trained personnel who reside within the community and can easily be called upon to provide tailored services to KPs within their environment.
- **Peer-led support group meetings:** This is a confidential platform where meetings are routinely held during which ART refills, adherence education/reinforcement and general social support are provided basically to strengthen retention in care. Guidance is also provided by experts during such meetings.
- **Key Population Friendly Health Facility:** These facilities provide comprehensive services for KPs in a friendly and conducive environment. They ensure that all community-level DSD models for KPs are provided with a strong linkage to the health facilities.

Table 11.6: Service Package and level of delivery for KP

Point of Service Delivery	Community Level					Facility Level
	OSS	MART	FSP	CP	Peer Support Group	
HIV Service						
ART Enrollment / initiation	x	x	x	x		x
STI Screening/Diagnosis	x	x	x			x
TPT/CPT	x	x	x	x	x	x
GBV Interventions	x	x				x
Legal Support Services	x					x
Harm Reduction (NSP, Overdose and Wound Dressing)	x	x	x	x	x	x
Harm Reduction (OST)						x
Hepatitis Screening	x					x
TB Symptom Screening	x	x	x	x	x	x
Cervical Cancer Screening	x					x
PMTCT (ANC/ART)	x					x
HIV Exposed Infant Prophylaxis/EID	x					x

11.6 CONTINGENCY ACTION IN CRISIS SITUATION

The national HIV program has put in place measures to mitigate against adverse health outcomes following emergency situations to avoid treatment interruptions resulting in poor treatment outcomes. The actions listed in the table below summarize key actions to be implemented at various levels in preparedness for an emergency. Health workers at all levels should implement this contingency plan for HIV services.

Table xx: Contingency plans for emergency preparedness

Actions Areas	Facility level	State Level	National Level
Strengthening client adherence education	Provide adherence education and support Discuss with the client about the plan in case of emergency		
Treatment information cards	Provide client held card with basic care & treatment information		
Duplicate medical records	Keep back up list and basic client information records When possible, keep a client-level database with back up	Ensure facilities have back up records through supervision	Have a national client-level database with back up
Communication networks	Discuss/plan for back communication channels in case of emergency	Plan for back up communication national MoH, CHDs, facilities, and partners including humanitarian agencies	Plan for back up communication with states, CHDs, facilities, and partners including humanitarian agencies
Emergency drug stocks	Provide emergency drug stocks of 3-6 months (ARVs & CTX)	Reposition emergency drug stocks at the state level	Ensure emergency stocks are quantified, procured, and kept

Secure drug storage	Divide drug stocks and store in different locations	Keep emergency drug stores in secured storage facilities	Divide drug stocks and store in different locations
Human resources capacity	<p>Strengthen continuous medical education at the facility level</p> <p>Train as many staffs as possible so that all staffs have basic HIV&AIDS management skills</p>	<p>Support continuous medical education on basic HIV care and treatment</p>	<p>Support continuous medical education on basic HIV care and treatment</p>
Decentralisation of care		Scale-up service to more peripheral, hard to reach areas	Scale-up service to more peripheral, hard to reach areas
Cooperation with HIV treatment facilities in neighbouring regions	Compile addresses and contact persons of HIV care & treatment facilities in nearby regions and share with clients	<p>Facilitate communication between facilities, especially to move drugs where there is a surplus to where needed</p>	Map out groups of facilities for possible referral in the event of an emergency

11.7 DECENTRALIZATION OF HIV DELIVERY SERVICES

Decentralization of HIV services to periphery health facilities is an important strategy to widen treatment access by bringing services closest to where clients live. To ensure access to comprehensive HIV prevention, care, and treatment services, several strategies will be scaled up including service integration, enhanced referral and linkages, and accreditation of additional sites. The national HIV program will continue to build the capacity of lower-level health facilities to offer comprehensive HIV and AIDS services. In the long term, it is envisaged that ART will be available at all teaching hospitals, state hospitals, county hospitals, and selected Primary Health Care Centers (PHCCs). In addition to the static ART services at health facilities, outreach (including satellite sites) models of ART delivery are needed to improve service availability especially to the hard-to-reach communities and to the internally displaced persons (IDPs).

11.8 SERVICE INTEGRATION

Chronic care requires integrating and linking related services to ensure that comprehensive and consistent care is provided over time, including providing related services in the same settings, systems to share information and effective referrals across settings and providers. Integrating and linking services are likely to reduce missed opportunities for initiating ART, enhance adherence support and optimize retention in care.

11.8.1 Delivering ART in Maternal and Child Healthcare Setting

Maternal and child healthcare settings provide a key opportunity to provide access to ART. MNCH services are provided at primary health care level where women and children predominantly access services.

It is recommended that HTS is offered to pregnant women and their partners through provider initiated testing and counselling approach as an essential component of MNCH services. ART and VL monitoring should also be provided in MNCH service settings to ensure uninterrupted ART, good adherence, and retention to achieve or maintain VL suppression.

MNCH settings that cannot provide long-term HIV care and treatment for women, their partners, and children need to assess and decide on the best time to transition and link mothers and their infants to chronic care. ART service providers should also endeavor to link pregnant women to MNCH services if already on ART at the time of conception.

11.8.2 TB and HIV Service Integration

Where feasible, ART and cotrimoxazole preventive therapy should be initiated in TB treatment settings. TB treatment should also be initiated in ART settings with attention to TB infection prevention and control measures.

Where this is not feasible, access to these services should be provided by linking patients to preferred facilities where these services can be provided. Health care workers initiating these linkages need to follow-up with the patient and receiving service provider to ensure that linkage is successful to achieve the desired treatment outcomes.

11.8.3 Integrating Sexual and Reproductive Health Services, including Contraception, with HIV Services

Sexual and reproductive health and HIV services are intertwined and service integration reinforces HIV prevention and family planning. HIV positive women continue to have high rates of unplanned pregnancies which contributes to the high level of HIV infection among children in sub-Saharan Africa.

Integrating SRH and HIV services requires the following to be successful, careful planning and coordination of management, clear SOP for integrating services, adequate staff training and supervision, simple low-cost interventions, male partner involvement and electronic patient records. Barriers include stigma and discrimination, long waiting times at service delivery points, staff attrition, staff burnout, stock shortages, lack of privacy for counselling and service provision.

11.8.4 Integrating Non-Communicable Disease Care with HIV Services

The life expectancy of PLHIV has improved significantly over the years with widespread access to ART and this puts them at risk of developing NCDs that is common with increasing age. The risk of NCDs in PLHIV is also increased by HIV infection and the side effects of ARVs.

Screening and management of NCDs such as diabetes, hypertension, and cervical cancer screening for women should be integrated into HIV services as part of standard package of care for PLHIV.

Feasibility of integration will depend on the setting and health systems factors but should be supported by policy, consistent training of providers, integrated data systems and robust referral network. Potential downside to integrating NCD and HIV services include increased workload that may invariably affect quality of both services, space constraints, and supply chain shortages.

11.8.5 Diagnostic Integration (Lab Team)

11.9 HUMAN RESOURCE FOR HEALTH

The inadequacy of the right number and mix of health workers to deliver quality ART services is a major obstacle to the achievement of universal access to quality HIV prevention, treatment, and care. There is also the need to minimize staff attrition/incessant transfer of trained ART service providers and for government and responsible agencies to consistently employ competent healthcare providers for the provision of ART services and management of the HIV program.

11.9.1 Training of Health Care Workers

All healthcare workers involved in the delivery of HIV prevention, care, and treatment services need to be trained prior to offering these services and periodically to bring them up-to-speed on emerging trends and new guidance. Training must be conducted with nationally approved training material and curriculum and in line with global best practice.

11.9.2 Task shifting and Sharing

Task shifting and task sharing involve the redistribution of tasks within health workforce teams that allows specialized health workers more time to focus on advanced clinical conditions while non-physician providers attend to more stable patients. It also makes it possible for lay providers to offer certain non-specialized services especially in community models of HIV service delivery. Task shifting and task sharing has enhanced linkage to care, addressed the high patient-to-doctor ratio, helped reduce the high default rates among patients already on ART, improved treatment adherence, patient satisfaction and strengthened community systems. Task shifting and sharing must be implemented with clear cut clarification of roles and assignments. It also requires mentorship and supportive supervision to ensure continuous quality improvement. The *National Policy on Task Shifting* provides guidelines and recommendations on task shifting and service provision and should be referred to for support in ensuring consistent quality of service delivery.

12. HEALTH SYSTEMS IN SUPPORT OF GUIDELINES IMPLEMENTATION

The MOH will provide leadership in the operationalization of these guidelines and will engage with key stakeholders to develop detailed implementation plans.

12.1 MONITORING AND EVALUATION

The Ministry of Health (MOH) will monitor the implementation of these guidelines through routine service data collected in the Health Management Information System (HMIS), as well as specialized periodic surveys, surveillance, and vital statistics, and research. There are standardised data collection and monitoring tools for reporting on HIV prevention, care, and treatment data. See [Table 11.1](#)

Table 4 Client care and health facility records collection tools

	HIV care /ART care	MCH / PMTCT	TB / HIV
Client held cards	HIV care / Appointment card	Maternal /Child Health card Mother-child booklet /passport with PMTCT code. HIV care / Appointment card	TB card HIV care / Appointment card
Facility held cards	HIV care / ART card	Labour record/ Partogram card/ form. HIV care and ART card	TB treatment card HIV care and ART card
Registers tracking diagnostic tests	HTS register (PITC, VCT)	ANC, labour and delivery registers (contains PMTCT data)	TB lab & Presumed TB registers
Longitudinal care and treatment registers	ART registers	ANC and L&D registers HIV-exposed Infant register	Basic Management Unit TB register
Reporting tools	Monthly summary form	Monthly summary reports	Monthly summary report on

	Cohort reporting form		Case finding, Treatment outcome
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- Other data collection tools include: commodity management tools used for ordering medicines, reagents, and supplies; drug dispensing logs; appointment logbooks; referral forms; supervision checklists
- At the health facility, the responsibility of completing the client-held cards, the facility held cards, registers, reporting tools, etc. primarily rests with the data clerks and clinicians of the clinic ensuring all tools are completed; reports are accurate, and submitted in a timely manner to the counties /states/national Ministry of Health. Personnel to support the process include:
 - *Data clerks*: responsible for issuing of cards/registers, filling clients' demographic data in cards, extracting register data into reporting tools, filing /retrieval of client records, and submission of reports. In high volume facilities, data is entered directly in to DHIS2. Others send reports to the County Health Department to be entered in to DHIS2.
 - *Health care providers* (nurses, clinicians, nutritionists, social workers): responsible for completion of information on the client held card, the facility held cards and registers, preparing cohort summaries, and completing client referral as needed.
 - *Pharmacists/ Pharmacy technicians*: complete the drug inventory records, drug dispensing details for each client, and prepare and submit supplies orders.
- At the CHD level, the DHIS2 focal person receives data review and enters in to DHIS2 system. They also give feedbacks to health facilities should there is issue
- At the State level, the HIV&AIDS coordinator review data, give feedback to CHDs and prepares the state programme summary report for onward submission to the Ministry of Health headquarters.
- MOH is responsible for the production of monthly, quarterly, and annual reports using data from the HMIS. The performance indicators are detailed in the National HIV&AIDS Strategic Plan.

12.2 HEALTH WORKFORCE

The provision of HIV prevention, care and treatment services requires a multidisciplinary team of health care providers at the different levels of service delivery. The major roles of each team member are described in the table below.

Table 5 Summary of the roles and responsibilities of staff in ART sites

Cadre	Roles and responsibilities
Medical Officers / Clinical Officers	Clinical supervision and facility/district management Management of HIV clients in all aspects*
Nurses, midwives	Nursing care Triage of clients Continuation of clinical care of stable clients Adherence counseling supervision and training of community workers Post pharmacy counseling
Nutritionists	*Nutritional assessment, counselling, and support
Laboratory technologists /technicians	Phlebotomy Lab services provision Lab commodity management
Counselors	**Counseling for HIV testing Client education **Adherence counseling
Community health workers /Community outreach volunteers	Community and home treatment support including tracing clients lost to follow up and missed appointments
Health records information officers/data clerks	Client records management
Pharmacist/ pharmacy technicians	Adherence counseling, rational drug prescription (following national treatment guidelines), ARVs dispensing, effective commodity/inventory management

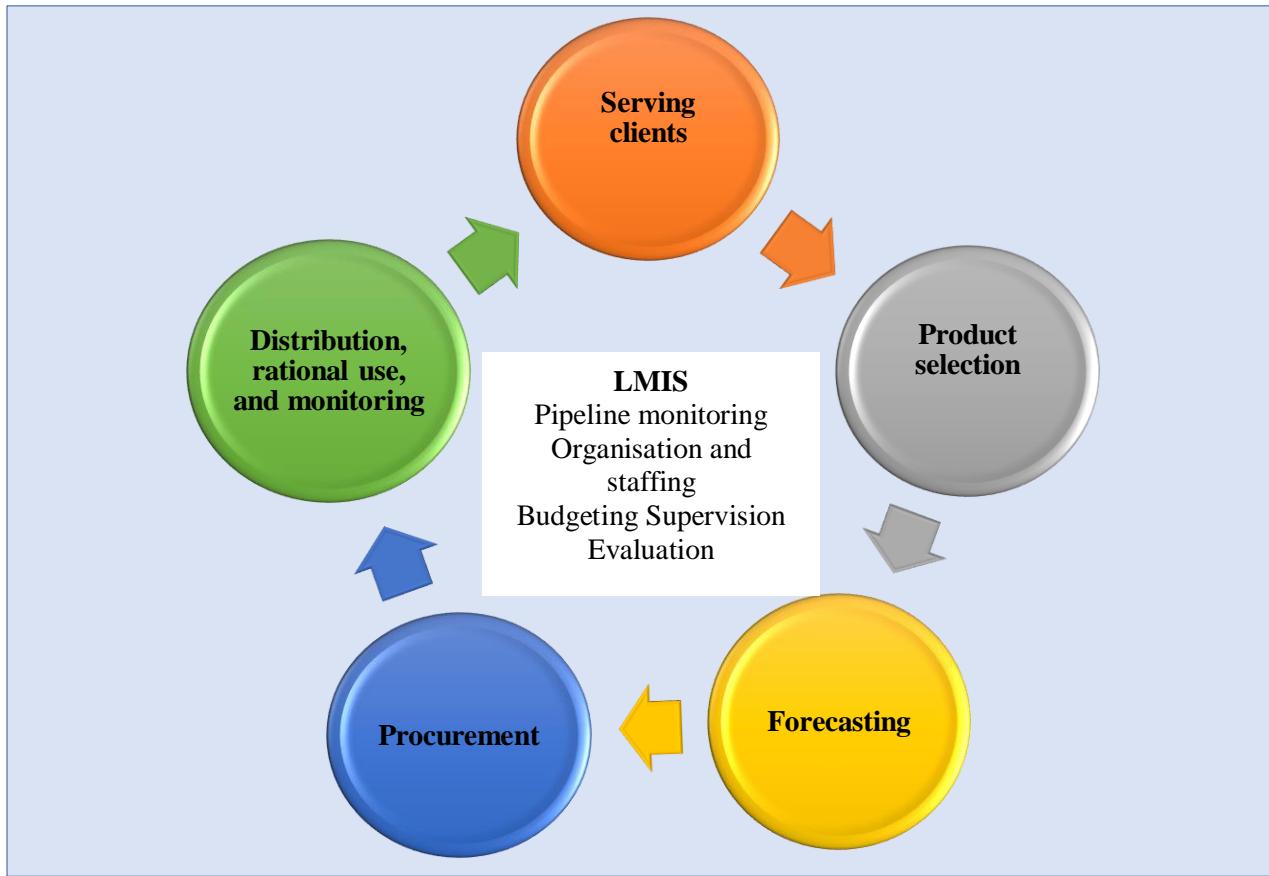
Storekeeper	Commodity management (with lab and pharmacy staff)
Social worker and /or community health worker	Adhere support Defaulter tracing Community linkage Health education

- Due to staffing shortages especially at primary health care facilities, task shifting (of responsibilities) will be adopted to support service delivery:
 - *Nurses and midwives will initiate ART and manage clients on HIV treatment
 - **Counselling, ^anutritional assessment and support may be provided by any cadre with the requisite training
 - Community-based organisations and PLHIV may provide services such as counselling support, client tracing, and health education
- Task shifting will be supplemented by mentorship, on-going support supervision, and continuous quality improvement.
- To ensure quality services' delivery, all staff is expected to have undergone basic training in the provision of HIV services – prevention, care, and treatment.
- Guidelines, job aids, and SOPs should be provided to support consistent service quality.

12.3 SUPPLY CHAIN MANAGEMENT SYSTEMS

Ensuring adequate and continuous availability of quality and affordable essential medicines, diagnostics and other consumables at service delivery sites is a critical role of procurement and supply management systems. For HIV services, commodities include ARV drugs, laboratory reagents, HIV testing kits, and cotrimoxazole, among others. **Figure 19** below outlines the key activities in the logistics management cycle.

Figure 19. The Logistics Management Cycle



At the national level:

- The selected products/commodities required for HIV services delivery (ARV drugs, HIV testing kits, cotrimoxazole, and lab reagents) have been specified in national guidelines.
- The *procurement, supply, storage, and distribution systems* should ensure uninterrupted availability and minimize loss due to damage and expiry, theft and fraud
- **Quantification & forecasting:**
 - Coordinated centrally by the MOH through the PSM TWG that meets regularly on a quarterly basis.
 - Estimates short-, medium-, and long-term requirements
 - Requires reliable data on consumption, and stock status from health facilities/sites
 - Should consider MMD and other refill models
 - Should take into consideration the revised treatment guidelines such as the newly introduced ARV drug regimens.

- *Procurement*: Coordinated by the MOH. On receipt of supplies in the country, there is clearance at the port of entry and payment of taxes. The Drug and Food Authority conducts physical inspections and randomly samples medicines and related commodities from each consignment on arrival for lab testing as a measure to assure quality. See the list of ARV formulations approved for procurement in South Sudan in Table 11.4.

At facility level:

Effective commodity management by the relevant health care workers is critical to ensure the continuous availability of supplies and programme quality. The staff should promote good inventory management practices and rational use of commodities utilizing all the necessary tools such as SOPs.

- i. *Ordering / requesting of commodities*: The facility is responsible for ordering commodities in an appropriate and timely manner based on facility-specific requirements. Quantities to be ordered should be determined by past consumption and projected future need.
- ii. *Receiving, storage, and issuing of commodities*: Items in stock should always be stored in a proper storage place. The store should be secure, in good condition, and well organised. All supplies should be kept in the store and requisitions made for what is required for dispensing. Receipt, storage, and issuance of commodities should follow set down SOPs. Accurate inventory records should be maintained.
- iii. *Dispensing of medicines*: When a medicine is given to a client, it is important to ensure the client has received the right medicine, the correct quantity, correct information on how to take the medicine and potential side effects, and correct information on how to store the medicine.

Inventory control:

- Should happen at all storage levels central, intermediate and at the facility. This ensures stock status monitoring- (tracking of quantity and use the span of commodities to determine how long supplies will last).
- Inventory control helps detect potential stock-outs/ expirations and enables appropriate and timely action particularly for ARV drugs. The information needed includes:
 - stock on hand – through performing physical inventory or looking at the stock card
 - monthly consumption - dispensed to user or consumption data and issues data

- stock status

Rational use and monitoring pharmaceuticals

- Providers at facilities have to be adequately trained in rational drug use
- Systems for monitoring and reporting, including monitoring adverse effects (pharmacovigilance) feed into the selection of products, rational use, prescription, and forecasting. See the list of ARVs approved and available in South Sudan in Table 11.4

Logistics Management Information systems (LMIS)

- Critical for monitoring the supply chain
- Essential LMIS data items include – stock on hand, consumption, losses and adjustments, service statistics
- Sources of LMIS data include: stock keeping records; transaction records; consumption records; reports

12.3.1 Recommended ARV Formulations for Procurement

A consolidated ARV formulary should include both recommended drugs and formulations which are solid, heat-stable, and fixed-dose combinations whenever possible. Liquids, even for children, are often difficult to administer, store, transport, and are frequently more sensitive to temperature. Solid child-friendly formulations, which can be crushed or dispersed in water, are available and more optimal for clinical environments in South Sudan.

12.4 LABORATORY SAFETY PROCEDURES

Adherence to safety precautions in the laboratory is required at all steps, including specimen collection, storage, transportation, and disposal of biohazard wastes, to minimize occupational risks such as the risk of transmission of HIV, hepatitis B virus (HBV) and other blood-borne disease agents. All specimens should be treated as infectious.

12.4.1 Sample Storage Procedures

All samples should be stored in tightly closed, labelled tubes, and kept in an upright position in racks. Workers must observe temperature requirements during specimen storage, keep a record of all samples, and always dispose of used or old specimens in a timely fashion by autoclaving and incineration.

12.4.2 Sample Transportation Procedures

Whenever the capacity for a particular test does not exist in the laboratory on-site, the laboratory staff should make efforts to prepare samples for transportation to the nearest facility with such capacity.

When transporting samples from the clinic to the laboratory or from one laboratory to another, the following should be observed:

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

12.5 BUNDLING PMTCT PACKS

Given the challenges in access to facilities and based on experience from HIV programmes impacted by conflict, strong consideration should be given to bundling PMTCT-packs to be provided during the first ANC which includes all ARVs and CTX needed, including one bottle of NVP syrup for the infant.

Table 6 Bundled PMTCT medications for sites

Population	Antiretroviral Formulation	Dosing	Comment
HIV-infected pregnant and breastfeeding women	Tenofovir/Lamivudine/Dolutegravir tablet (300mg/300mg/50mg) CTX 960mg tablet	1 tablet once daily	Same regimen as for adults
HIV-exposed infants	Nevirapine syrup 10mg/ml	Weight and age dosing	For the first 6 weeks of life
	CTX 120mg scored tablet		From 6 weeks through final diagnosis

NB. Note that high-risk infants will require dual ARV prophylaxis for 12 weeks from birth

12.6 ADDITIONAL GENERAL CONSIDERATIONS

Buffer stock and multiple month drug disbursements

Procurements and buffer stock that allows for clients to receive a six-month medication supply is optimal to maximize maintenance of therapy during periods of erratic service or commodity delivery. Increasing buffer stock, accessible at State or regional level, is recommended as feasible during periods of increased logistical challenges with transporting commodity out of the central warehouse.

Treatment interruption due to supply chain challenges

Treatment interruptions either due to insufficient stock at the ART site or due to unexpected displacement of an individual and lack of access to ART supplies increase the risk of ARV resistance. This should be avoided whenever possible.

Table 7 List of formulations for procurement (ARVs, cotrimoxazole)

Formulation (ARV, Cotrimoxazole)	Dosing ²	Comment
<i>First-line ARVs</i>		
TDF/3TC/EFV tablet (300mg/300mg/600mg)	Adult/adolescents: 1 tablet once daily	Adolescents and Adults: 1 tin = 1 treatment month
TDF/FTC/EFV tablet (300mg/200mg/600mg)	Adult/adolescents: 1 tablet once daily	Adolescents and Adults: 1 tin = 1 treatment month
TDF/FTC (300mg/200mg)		
TDF/3TC	Adults and adolescents 1 tab od	Adolescents and Adults: 1 tin = 1 treatment month
ABC/3TC dispersible tablet (60mg/30mg)	Pediatric weight band dosing	
EFV 200mg tablet (scored)	Pediatric weight band dosing	
Nevirapine 50mg tablet (dispersible)	Pediatric weight band dosing	
<i>Alternative First line and PMTCT ARVs</i>		

² Dosing information for procurement informational purposes only.

AZT (300mg)/3TC (150mg) /NVP (200mg)	Adult: 1 tablet twice a day	Alternative regimen for TDF toxicity
AZT/3TC (300mg/150mg) tablets	Adult: 1 tablet twice a day	For use as alternative 1st line NRTI backbone for adults/adolescents.
NVP 200mg tablet	Adult: 1 tablet bd, except with 14-day lead-in dosing	For use in alternative 1st line in situations of EFV toxicity.
AZT /3TC/NVP (60mg/30mg/50mg)	Paediatric	
AZT/ 3TC (60mg/30mg) dispersible tablet	Pediatric weight band dosing	Alternative regimen only -for ABC toxicity
Nevirapine 10mg/ml syrup	Pediatric weight/age band dosing – once-daily dosing	For HIV-exposed infant PMTCT only
AZT oral suspension 10mg/ml		
3TC oral solution 10ml/ml		
<i>Cotrimoxazole prophylaxis</i>		
Sulfamethoxazole/trimethoprim 800mg/160mg tablets (Cotrimoxazole 960mg scored tablet)	Child 6-14y: ½ tablet once daily Adult: 1 tablet daily	
Sulfamethoxazole /trimethoprim 100mg+20mg/5ml Cotrimoxazole 120mg scored tablet	Child 6wk-6mo: 1 tablet daily 6mo-5y: 2 tablets daily	For HIV-exposed infants and HIV-infected children
Sulfamethoxazole /trimethoprim 200mg+40mg/5ml		

13. ANNEXES

[To be Updated]

Overview of ARV Drugs

Generi c Name	Standard Adult Dose	Adult Formulation	Pediatric Formulation	Food Restrictions / Special Considerations	Caution/Contraindications	Use in Pregnancy
Nucleoside reverse-transcriptase inhibitors (NRTIs)						
Abacavir (ABC)	300 mg every 12 hours	300 mg tabs	20 mg/mL suspension	With or without food	Previous hypersensitivity reactions, kidney or liver disease	High placental transfer to fetus but no evidence of teratogenicity
Emtricitabine (FTC)	200 mg once a day	200 mg caps		With food	Kidney or liver disease	High placental transfer to fetus but no evidence of teratogenicity
Lamivudine (3TC)	150 mg every 12 hours or 300 mg once daily	150 mg tabs	10 mg/mL syrup	With or without food	Acute or chronic pancreatitis	High placental transfer to fetus but no evidence of teratogenicity
Nucleoside reverse-transcriptase inhibitors (NRTIs)						
Zidovudine (AZT)	300 mg every 12 hours	300 mg tabs	10 mg/mL syrup	With or without food, with adequate fluid (water)	Lactic acidosis Hypersensitivity to zidovudine or any of the components (e.g., anaphylaxis, Stevens-Johnson syndrome)	High placental transfer to fetus
Nucleotide reverse-transcriptase inhibitors (NtRTIs)						
Tenofovir (TDF)	300 mg every 24 hours	300 mg tabs	Oral powder scoops 40 mg/scoop Tablets 150 mg or 200 mg	With or without food	Kidney or liver disease	Low placental transfer to fetus. Insufficient data to assess for teratogenicity in humans. No evidence of teratogenicity in rats. Renal function should be monitored because of the potential for renal toxicity.

13.1 OVERVIEW OF ARV DRUGS (CONTINUED FROM PREVIOUS PAGE)

Gener ic Nam e	Standard Adult Dose	Adult Formulation	Pediatric Formulation	Food Restrictions / Special Considerations	Contraindicatio ns	Use in Pregnancy
Non-nucleoside reverse-transcriptase inhibitors (NNRTIs)						
Efavire nz (EFV)	600 mg at night	200 mg caps/tabs, 600 mg caps/tabs	50 mg caps/tabs, 30 mg/mL susp	Without food, at bed- time on an empty stomach	Psychosis	Potential fetal safety concern, no contraindication
Etraviri ne (ETV)	200 mg every 12 hours	100 mg caps, 200 mg caps		With food	Severe liver disease, history of Stevens- Johnson syndrome	Placental transfer varies; Insufficient data to assess for teratogenicity in humans. No evidence of teratogenicity in animal models.
Nevirapine (NVP)	200 mg every 24 hours for 14 days, then 200 mg every 12 hours	200 mg tabs	10 mg/mL syr	With or without food	Severe liver disease, history of Stevens- Johnson syndrome	Potential risk of life-threatening hepatotoxicity in women with ≥ 250 cells/mm ³ CD4 counts
Rilpiviri ne (RIL)	25 mg every 24 hours	25 mg		With food	Previous history of depression	—
Integrase strand transfer inhibitors (INSTIs) / Integrase inhibitors						
Raltegra vir (RAL)	400 mg film-coated tablet orally, twice daily	400 mg tabs, 600 mg tabs	100 mg scored and 25 mg chewable tabs Single-use packet of 100 mg susp	With or without food	—	
Dolutegravi r (DTG)	50 mg once daily	10 mg, 25 mg, and 50 mg tabs	40 mg tabs	With or without food	Previous hypersensitivity reaction to dolutegravir	

NRTI/NtRTI Fixed-Dose Combinations					
Tenofovir + Lamivudine		1 tablet every 24 hours	300 mg + 300 mg tabs		See tenofovir, lamivudine
NNRTI/NRTI Fixed-Dose Combinations					
Zidovudine + Lamivudine + Nevirapine		1 tablet every 12 hours	300 mg + 150 mg + 200 mg tabs	60 mg + 30 mg + 50 mg tabs	See zidovudine, lamivudine, nevirapine
NRTI/NRTI Fixed-Dose Combinations					
Abacavir + Lamivudine		1 tablet every 24 hours		60 mg + 30 mg tab	See abacavir, lamivudine

Zidovudine + Lamivudine	1 tablet every 12 hours	300 mg + 150 mg tabs	60 mg + 30 mg tabs	See zidovudine, lamivudine
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13.2 OVERVIEW OF ARV DRUGS (CONTINUED FROM PREVIOUS PAGE)

Generic Name	Standard Adult Dose	Adult Formulation	Pediatric Formulation	Food Restrictions / Special Considerations	Caution/Contra indications
NtRTI/NRTI/NNRTI Fixed-Dose Combinations					
Tenofovir + Lamivudine + Efavirenz	1 tablet every 24 hours	300 mg + 300 mg + 600 mg tabs		See tenofovir, lamivudine, efavirenz	
Tenofovir + Lamivudine + Nevi- rapine	1 tablet every 24 hours (TDF + 3TC) 1 tablet every 12 hours (NVP)	300 mg + 300 mg + 200 mg tabs		See tenofovir, emtricitabine, efavirenz	
Tenofovir + Emtricitabine + Rilpivirine	1 tablet every 24 hours	300 mg + 200 mg + 25 mg tabs		See tenofovir, emtricitabine, rilpivirine	
Protease Inhibitors					
Daruna vir (DR V)	600 mg with 100 mg ritonavir every 12 hours or 800 mg with 100 mg ritonavir every 24 hours	400 mg tab, 600 mg tabs		With food	Liver disease
Indinavir (ID V)	800 mg every 8 hours	400 mg caps		Without food—take 2 hours before or 1 hour after a meal Avoid taking within an hour of taking didanosine	Kidney or liver disease
Lopinavir (boost- ed with ritonavir) (LPV/r)	LPV + RTV (200 mg + 50mg) tabs every 12 hours	100 mg + 25 mg tabs 200 mg + 50 mg tabs	100 mg + 25 mg oral tablet 80 mg + 20 mg syr Oral pellets 40 mg/10 mg	With food	Diabetes, liver or heart problems

Ritonavir (RTV)	To boost other protease inhibitors, 100–200 mg every 12 hours or 24 hours	100 mg caps		With food	
Saquinavir (boosted with ritonavir) (SQV/r)	1000 mg with 100 mg ritonavir every 12 hours	200 mg caps		With food	Kidney or liver disease
Atazanavir (boosted with ritonavir) (ATV/r)	ATV + RTV (300 mg + 100 mg) tabs every 24 hours	300 mg tabs		Better with food	Liver disease, heart problems, diabetes

13.3 ARV DRUG COMBINATIONS TO BE AVOIDED/ADMINISTERED WITH CAUTION

Drug Combination	Reason to Avoid
TDF + 3TC + ABC	High incidence of virological failure.
ETV + TPV/r	RTV-boosted TPV could significantly reduce ETV concentration.
FTC + 3TC	Similar resistance profiles; no potential benefit.
ATV + IDV	Overlapping toxicity—hyperbilirubinemia and jaundice but clinically insignificant.

13.4 POTENTIAL ARV INTERACTIONS WITH OTHER DRUGS

ARV Drug	Potential Interaction With	Avoid Combination With
Zidovudine (AZT)	Codeine, Clarithromycin, Dapsone, Methadone, Rifampicin, Phenytoin, Phenobarbital, Valproate, amphotericin B, Fluconazole	<ul style="list-style-type: none"> Ganciclovir—Increased zidovudine effects Ribavirin—In vitro antagonism
Abacavir (ABC)	Rifampicin, Methadone, Metronidazole, Phenobarbital, Phenytoin	None
Lamivudine (3TC)	Amphotericin B, Co-trimoxazole	Chlorpropamide—Potentially increased serum glucose concentrations
Tenofovir (TDF)	Acyclovir, Amphotericin B, Co-trimoxazole, Cimetidine, Furosemide, Hydroxyurea, Streptomycin	<ul style="list-style-type: none"> Lamivudine (3TC) + Abacavir (ABC)—High virological failure Probenecid—Probenecid-induced inhibition of the renal tubular secretion of tenofovir

Efavirenz (EFV)	Artemisinin, Codeine, Buprenorphine, Cimetidine, Clarithromycin, Diazepam, Ergometrine, Estradiol, Ethinyl Estradiol, Ketamine, Furosemide, Garlic, Gliclazide, Glipizide, Halofantrine, Haloperidol, Ketoconazole, Levonorgestrel, Lumefantrine, Lorazepam, Midazolam, Milk Thistle, Phenobarbital, Phenytoin, Prednisolone, Quinine, Rifabutin, Rifampicin, St John's Wort	<ul style="list-style-type: none"> • Etravirine (ETV)—Co-administration decreases etravirine concentration and is contraindicated • Atazanavir—Do not co-administer efavirenz with unboosted atazanavir • Boceprevir—Potentially decreased boceprevir effects • Carbamazepine—Decreased efavirenz and carbamazepine effects • Ergotamine—Potentially increased ergotamine effects(e.g., ergotism)
Lopinavir/ritonavir (LPV/r)	Amiodarone, Atorvastatin, Carbamazepine, Colchicine, Dexamethasone, Diltiazem, Ethinyl Estradiol, Midazolam, Norethindrone, Oxycodone, Phenobarbital, Prednisolone, Rifampicin, Sildenafil, Simvastatin, St John's Wort, Tricyclic Antidepressants, Warfarin (monitor INR)	<ul style="list-style-type: none"> • Astemizole—Increased astemizole effects (e.g., cardiac arrhythmias) • Cisapride—Increased cisapride effects (e.g., cardiac arrhythmias) • Darunavir—Decreased darunavir/ritonavir effects; increased lopinavir/ritonavir effects • Fluticasone—Increased fluticasone concentrations
Atazanavir/ritonavir (ATV/r)	Amiodarone, Antacids, Carbamazepine, Clarithromycin, Colchicine, Dexamethasone, H2 Receptor Antagonists, Midazolam, PPIs, Phenobarbital, Rifampicin, Sildenafil, Simvastatin, Tricyclic Antidepressants, St John's Wort, Warfarin (monitor INR)	<ul style="list-style-type: none"> • Etravirine, nevirapine • Cisapride—Increased cisapride effects (e.g., cardiac arrhythmias) • Ergotamine—Increased ergotamine effects (e.g., ergotism) • Lansoprazole—Do not co-administer PPIs with unboosted atazanavir • Lovastatin—Increased lovastatin effects (e.g., myopathy, rhabdomyolysis) • Simvastatin—Increased simvastatin effects (e.g., myopathy, rhabdomyolysis)
Darunavir/ritonavir (DRV/r)	Amiodarone, clarithromycin, colchicine, diltiazem, ethinyl estradiol, norethindrone, phenobarbital, simvastatin, rifampicin, midazolam, sertraline, St John's wort, tricyclic antidepressants, warfarin (monitor INR)	<ul style="list-style-type: none"> • Astemizole—Increased astemizole effects (e.g., cardiac arrhythmias) • Cisapride—Increased cisapride effects (e.g., cardiac arrhythmias) • Lopinavir/ritonavir—Decreased darunavir/ritonavir effects; increased lopinavir/ritonavir effects • Phenobarbital and phenytoin—Decreased darunavir/ritonavir effects

Etravirine (ETV)	Rifampicin, St John's Wort, Artemether/Lumefantrine	<ul style="list-style-type: none"> Unboosted protease inhibitors ATV/r, FPV/r, or TPV/r, or other NNRTIs Atazanavir—Possibly increased etravirine effects; decreased atazanavir effects Clarithromycin—Increased etravirine effects; decreased clarithromycin effects Clopidogrel—Possibly decreased clopidogrel effects Dolutegravir—Potentially reduced dolutegravir effectiveness. Efavirenz—Decreased etravirine and efavirenz effects
Raltegravir (RAL)	Antacids, Carbamazepine, H2 Antagonists, Hydroxyurea, Phenobarbital, Phenytoin, Proton-pump inhibitors, Rifampicin	<ul style="list-style-type: none"> Fosamprenavir (fAVP) Rifapentine—Potential for increased raltegravir adverse effects if given with rifapentine once weekly; potential for decreased raltegravir effectiveness if rifapentine co-ad ministered daily
Dolutegravir (DTG)	Carbamazepine, Phenobarbital, Phenytoin Rifampicin - double dose of DTG Antacids, iron and multivitamins	<ul style="list-style-type: none"> Use alternative anticonvulsant agent Spacing of 6 hours when administering with antacids and iron

13.5 POTENTIAL INTERACTIONS BETWEEN ARVs AND PAIN MANAGEMENT MEDICINES

ARV	Analgesic	Effect	Time Course	Significance of the Interaction	Comments
Zidovudine (AZT)	Paracetamol	May rarely result in granulocytopenia and hepatotoxicity	Delayed	Minor	Intermittent use of paracetamol is considered safe; adverse effects not consistently reported
Efavirenz (EFV)	Phenytoin and carbamazepine	May decrease serum levels of Efv and anticonvulsants	Delayed	Moderate	Consider alternative anti-convulsant as an adjuvant analgesic

Indinavir (IDV)	Phenytoin and carbamazepine	May decrease serum levels of IDV; IDV may increase serum levels of anticonvulsants	Delayed	Moderate	Consider alternative anti-convulsant as an adjuvant analgesic
Saquinavir (SQV)	Dexamethasone	May decrease serum levels of SQV	Delayed	Moderate	Clinical significance unknown
	Phenytoin and carba-mazepine	May decrease serum levels of SQV	Delayed	Moderate	Consider alternative anticonvulsant as an adjuvant analgesic
	Amitriptyline	May increase serum levels of tricyclics	Immediate	Minor	Monitor closely and adjust medication as needed
Ritonavir (RTV)	Benzodiazepines	Prolonged sedation due to accumulation of benzodiazepine	Delayed	Major	Monitor closely and adjust medication as needed
	Phenytoin and carba-mazepine	May decrease serum levels of RTV; RTV may increase serum levels of anticonvulsants	Delayed	Moderate	Consider alternative anti-convulsant as an adjuvant analgesic
	Antidepressants	Increased serum levels of anti-depressants	Immediate	Major	Monitor closely and adjust dose or change medication as needed
Nelfinavir (NFV)	Benzodiazepine	Prolonged sedation due to accumulation of benzodiazepines	Delayed	Major	Monitor closely and adjust medication as needed
	Phenytoin and carbamazepine	May decrease serum levels of NFV; NFV may increase serum levels of anticonvulsants	Delayed	Moderate	Consider alternative anti-convulsant as an adjuvant analgesic
Amprenavir (APV)	Midazolam	Prolonged sedation	Immediate	Major	Monitor closely and adjust medication as needed
	Dexamethasone	May decrease APV	Delayed	Moderate	Use with caution
	Amitriptyline	May increase serum levels of tricyclics	Immediate	Moderate	Monitor closely and adjust medication as needed
	Phenytoin and carba-mazepine	May decrease serum levels of APV	May decrease serum levels of APV	Delayed	Consider alternative anti-convulsant as an adjuvant analgesic
	Benzodiazepines	Prolonged sedation due to accu-mulation of	Delayed	Major	Monitor closely and adjust

Lopinavir/ritonavir (LPV/r)		benzodiazepines			medication as needed
	Antidepressants	Increased serum levels of anti-depressants	Immediate	Moderate	May increase toxicities
	Phenytoin (also carbamazepine)	May significantly decrease serum levels of LPV/r	Delayed	Major	Consider alternative anti-convulsant as an adjuvant analgesic
Atazanavir (ATV)	Benzodiazepines	Prolonged sedation due to accumulation of benzodiazepines	Delayed	Major	Monitor closely and adjust medication as needed
	Phenytoin and carbamazepine	May decrease serum levels of ATV. ATV may increase serum levels of anticonvulsants	Delayed	Moderate	Consider alternative anti-convulsant as an adjuvant analgesic

13.6

ARV INTERACTIONS WITH CONTRACEPTIVES

Family Planning Options		Antiretroviral Therapy				Rifampicin	HIV Stage III/IV (Severe/ advanced clinical disease, CD4<200)	Untreated STI (Gonorrhea and/or Chlamydia)
		NNRTI NVP	NNRTI EFV	NRTIs (AZT, d4T, 3TC, ABC, TDF)	PIs (ATV/r, LPV/r, DRV/r)			
Male/Female Condoms								
Oral Contraveptive Pills (COCs/ POP)								
Impants (Jadelle or Implanon)*			Orange					
IUD (copper or hormonal IUD)							Initiation Continuation	Initiation Continuation
Progestins- only Injectables	Depo NS T							
Emergency Contraception (ECP)								
Tubal Ligation/ Vasectomy							After the patient improves from AHD	Delay until fully treated

Key	
	No Restrictions for use
	Generally use: some follow-up may be needed
	Usually not recommended unless other more appropriate methods are not available or acceptable
	This method should not be used

13.7 DRUGS THAT SHOULD NOT BE USED WITH SELECTED ARV REGIMENS

ARV	Anti-TB Agents to Avoid	Antiepileptic Agents to Avoid	Neurologic Agents
ATV/r	Rifampin Rifapentine	ATV/c only: Carbamazepine; Phenobarbital; Phenytoin	Lurasidone; Midazolame; Pimozide; Triazolam
DRV/r	Rifampin Rifapentine	DRV/c only: Carbamazepine Phenobarbital; Phenytoin	Lurasidone; Midazolame; Pimozide; Triazolam
FPV +/ - RT V	Rifampin Rifapentine	None	Lurasidone; Midazolame; Pimozide; Triazolam
LPV/r	Rifampin Rifapentine	None	Lurasidone; Midazolame; Pimozide; Triazolam
SQV/r	Clarithromycin; Dapsone Erythromycin; Pentamidine (par- enteral); Rifampin; Rifapentine; Quinine	None	Clozapine; Haloperidol; Lurasidone; Midazolame; Phenothiazines; Pimozide; Trazodone; Triazolam; Ziprasidone
TPV/r	Rifampin Rifapentine	None	Lurasidone; Midazolame; Pimozide; Triazolam
EFV	None	None	None
ETV	Rifampin Rifapentine	Carbamazepine; Phenobarbital; Phenytoin	None
NVP	Rifapentine	None	None
RPV	Rifampin Rifapentine	Carbamazepine; Oxcarbazepine; Phenobarbital; Phenytoin	None
MVC	Rifapentine	None	None
DTG	Rifapentine	Carbamazepine; Phenobarbital; Phenytoin	None

13.8

MOST COMMON ADVERSE DRUG REACTIONS TO ARV DRUGS

Adverse drug reaction (ADR) is defined by World Health Organization as “a response to a drug which is noxious and unintended, and which occurs at doses normally used in man for the prophylaxis, diagnosis, or therapy of disease, or for the modification of physiological function”

Generi c Nam e	Adverse Reactions	Frequenc y	Signs and Symptoms	Management	Prevention
Zidovudine (AZT)	Minor symptoms	High	Nausea, vomiting, abdominal pain, diarrhea, headaches; at the beginning of the treatment	Symptomatic treatment only if not subsiding or if leading to complication (dehydration)	Take AZT with food
	Lipodystrophy	High	Shrinking of lower limbs and buttocks, accumulation of fat around the abdomen, gynaecomastia, buffalo hump	If clearly marked, switch to TDF	Regul ar exerci se
	Myalgia	High	Intermittent muscle pain (usually lower limbs), cramps	NSAID, stretching, massages	None
	Leucopenia	High	Leucopenia < 750/mL	Follow up, if high grade, with structured ART interruption, monitoring, and reintroduction of ART (TDF)	None
	Red cell megaloblastia	High	None	None—a good sign of adherence to AZT	None
	Nail discoloration	Medium	Black lines perpendicular to nail growth line (fingers, toes)	None	None
	Bone marrow* suppression	Medium	Anemia, or pancytopenia	If high grade, implement structured ART interruption, monitoring, and reintroduction of ART (TDF)	None
	Hepatitis*	Low	Nausea, vomiting, jaundice, right flank pain, or asymptomatic + raised ALTs	Follow up, if high grade, with structured interruption of ART, monitoring, and reintroduction of ART without AZT	Avoid alcohol and other hepatotoxic drugs
	Lactic acidosis*	Low	Fatigue, rapid loss of weight, abdominal and limb cramps, nausea, in a very adherent client (more commonly female, obese, pregnant) Critical stage: dyspnea	Stop all ART and follow up on the weight gain; usually after one month, reintroduce ART with TDF. When dyspneic hospitalization is recommended	Weight check at each consultation , client's edu- cation
	Myopathy	Low	Muscle weakness, muscle stiffness, muscular pain, cramps	Check creatinine kinase (CK); if high grade, switch AZT to TDF; massage, stretching	None

13.9

MOST COMMON ADVERSE DRUG REACTIONS TO ARV DRUGS (CONTINUED FROM PREVIOUS PAGE)

Generi c Nam e	Adverse Reactions	Frequenc y	Signs and Symptoms	Management	Prevention

Lamivu-dine (3TC)	Pancreatitis	Low	Epigastric pain, loss of appetite	If high grade, implement structured ART interruption; when subsided, reintroduce regimen without 3TC, d4T, or ddI	Avoid alcohol and other pancreatotoxic drugs
	Paresthesia/ peripheral neuropathy	Low	Numbness, pins and needles, burning sensation of the limbs	Pyridoxine, amitriptyline. If high grade, switch regimen to one without 3TC, d4T, and ddI	Avoid alcohol and other neu-rotoxic drugs
Abacavir (ABC)	Hypersensitivity reaction	Low	Fever, rash, headache, sore throat, cough, shortness of breath	Stop the medication immediately, treat symptoms Substitute with AZT or TDF	None
	Lactic acidosis	Low	Nausea, vomiting, abdominal discomfort, fatigue, muscle weakness in arms and legs	Stop the medication and treat symptoms	None
	Minor symptoms	Medium	Loss of appetite, headache, malaise, nausea, vomiting, diarrhea	Continue medication, symptoms improve within a few weeks of starting ART	None
Didanosine (ddI)	Lactic acidosis	Medium	Nausea, vomiting, abdominal discomfort, muscle weakness and tiredness, shortness of breath	Stop all ART, treat symptoms and re-introduce ART with another NRTI e.g. TDF	Avoid alcohol
	Pancreatitis	Low	Nausea, vomiting, abdominal pain	Stop all ART, treat symptoms	None
	Peripheral neuropathy	Medium	Pain, tingling, numbness, burning sensation in hands and or feet	Stop ddI and substitute with another NRTI that does not cause neuropathy, e.g. AZT	None
	Minor symptoms	High	Nausea, headache, dry mouth, CNS symptoms (anxiety, insomnia, irritability, restlessness)	Continue treatment, symptoms subside within weeks of starting ART	None
Emtricitabine (FTC)	Lactic acidosis	Low	Nausea, vomiting, abdominal discomfort, muscle weakness and tiredness, shortness of breath	Stop all ART, treat symptoms and re-introduce ART with another NRTI e.g. TDF	None
	Minor symptoms	Low	Headache, diarrhea, nausea, rash, stomach pain, indigestion	Continue treatment. Symptoms usually subside within a few weeks	None
Tenofovir (TDF)	Reduction in bone mineral density		Renal insufficiency especially the elderly and those at risk of renal diseases	Monitor creatinine clearance and adjust the dose accordingly	Avoid concomitant corticosteroids
Efavirenz (EFV)	CNS adverse effects	50% of clients (less common in kids)	Tiredness, dizziness, impaired concentration drowsiness, vivid dreams	Generally, resolve after 2-4 weeks. Avoid alcohol as may worsen CNS side effects.	
	Gyneacomystia		Enlargement of breast	Substitute with NVP or another therapeutic class (integrase inhibitors or boosted PIs).	

13.10 MOST COMMON ADVERSE DRUG REACTIONS TO ARV DRUGS (CONTINUED FROM PREVIOUS PAGE)

Gener ic Name	Adverse Reactions	Frequenc y	Signs and Symptoms	Management
Lopinav ir (LPV/r)	Rash, diarrhoea			
Atazanav ir (ATV/r)	Unconjugated Hyperbilirubinaemia		Jaundice - yellowing of the eyes and skin	
	Cholelithiasis		Abdominal pain. History of kidney stones increases risk and clients may present with cholelithiasis and Kidney stones concurrently	Substitute with LPV/r or DRV/r. If boosted PIs are contraindicated and NNRTIs have failed in first-line ART, consider substituting with integrase inhibitors.
Daruna vir (DRV)	DRV has a sulphonamide moiety which may predispose to Stevens Johnson syndrome and erythema multiforme Hepatotoxicity Hyperlipidaemia	10%	Skin rash, Diarrhea, nausea, Head-ache, Transaminase elevation, Fat misdistribution, Hyperglycemia	
Ritonavir*	GI intolerance, Paraesthesia, Hyperlipidaemia, Hepatitis		Nausea, vomiting, diarrhea, Fat misdistribution, Taste perversion, Hyperglycemia	
Raltegravir (RAL)	Pyrexia, CPK elevation, muscle weakness, and rhabdomyolysis		Headache, Rash, diarrhea and nausea	
Etravirine (ETV)	Hypersensitivity reactions have been reported , characterized by rash, constitutional findings , and sometimes organ dysfunction, including hepatic failure	Rash: 2% discontinuation because of rash during clinical trials	Rash, Nausea	
Dolutegravir (DTG)	Hepatotoxicity Hypersensitivity reactions Insomnia		Rash	If DTG is used in first-line ART, and there are hypersensitivity reactions, substitute with another therapeutic class (EFV or boosted PIs).

* (RTV) (as a pharmacokinetic booster)

13.11

GRADING OF SEVERITY OF ARV TOXICITIES

	Mild (Grade 1)	Moderate (Grade 2)	Severe (Grade 3)	Severe and potentially life-threatening (Grade 4)
General Guidance on Estimating Severity / Grade				
Characterization of symptoms and general guidance on management	Symptoms causing no or minimal interference with usual social and functional activities	Symptoms causing greater than minimal interference with usual social and functional activities; may require minimal intervention and monitoring	Symptoms causing inability to perform usual social and functional activities; requires medical care and possible hospitalization	Symptoms causing inability to perform basic self-care functions; requires medical or operative intervention to prevent permanent impairment, persistent disability or death
<p>^a Values are provided for children in general except where age groups are specified.</p> <p>^b Usual social and functional activities in young children include those that are appropriate for their age and culture (e.g., social interactions, play activities, learning tasks).</p> <p>^c Activities appropriate for age and culture (e.g., feeding self with culturally appropriate eating implement, walking or using hands).</p>				
Hematology				
Absolute neutrophil count	750 - 1000/mm ³ 0.75 x 10 ⁹ - < 1 x 10 ⁹ /L	500-749/mm ³ 0.5 x 10 ⁹ - 0.749 x 10 ⁹ /L	250-500/mm ³ 0.25 x 10 ⁹ -0.5 x 10 ⁹ /L	<250/mm ³ <0.250 x 10 ⁹ /L
Hemoglobin	8.5 - 10.0 g/dl 1.32 - 1.55 mmol/L	7.5 - 8.5 g/dl 1.16 - 1.32 mmol/L	6.5 - 7.5 g/dl 1.01 - 1.16 mmol/L	<6.5 g/dl <1.01 mmol/L or severe clinical symptoms attributable to anemia (e.g., cardiac failure), refractory to supportive therapy.
Platelets	100,000 - < 125,000/mm ³ 100 x 10 ⁹ - 125 x 10 ⁹ /L	50,000- < 100,000/mm ³ 50 x 10 ⁹ - < 100 x 10 ⁹ /L	25,000 - < 50,000/mm ³ 25 x 10 ⁹ - < 50 x 10 ⁹ /L	<25,000/mm ³ <35 x 10 ⁹ /L or bleeding
Liver Function				
ALT (SGPT)	1.25 - 2.5 x ULN	2.5 - 5.0 x ULN	5.1 - 10.0 x ULN	>10.0 x ULN
AST (SGOT)	1.25 - 2.5 x ULN	2.5 - 5.0 x ULN	5.1 - 10.0 x ULN	>10.0 x ULN
Gastrointestinal				
Bilirubin (>2 weeks old)	1.1 - 1.5 x ULN	1.6 - 2.5 x ULN	2.6 - 5.0 x ULN	> 5.0 x ULN
Lipase	1.1 - 1.5 x ULN	1.6 - 3.0 x ULN	3.1 - 5.0 x ULN	> 5.0 x ULN
Pancreatic amylase	1.1 - 1.5 x ULN	1.6 - 2.0 x ULN	2.1 - 5.0 x ULN	> 5.0 x ULN
Clinical				
Diarrhea > 1 year of age	Transient or intermittent episodes of unformed stools OR increase of < 3 stools over baseline per day	Persistent episodes of un-formed to watery stools OR increase of 4-6 stools over baseline per day	Grossly bloody diarrhea OR increase of > 7 stools per day OR intravenous fluid replacement indicated.	Life-threatening consequences (e.g. hypotensive shock) < 1 year of age

Diarrhea < 1 year of age	Liquid stools (more unformed than usual) but usual number of stools	Liquid stools with increased number of stools OR mild dehydration	Liquid stools with moderate dehydration	Liquid stools resulting in severe dehydration with aggressive rehydration indicated OR hypo-tensive shock
Nausea	Not applicable	Symptomatic AND hospitalization not indicated (other than emergency treatment)	Symptomatic AND hospitalization not indicated (other than emergency treatment)	Life-threatening consequences (i.e. circulatory failure, hemorrhage, sepsis).
Vomiting	Transient or intermittent vomiting with no or minimal interference with oral intake	Frequent episodes of vomiting with no or mild dehydration	Persistent vomiting	Life-threatening consequences (e.g. hypotensive shock)
Allergic / Dermatological				
Acute systemic allergic reaction	Localized urticarial (weal) lasting a few hours	Localized urticarial with medical intervention indicated OR mild angioedema	Generalized urticaria OR angioedema with medical intervention indicated OR symptomatic mild bronchospasm	Acute anaphylaxis OR life-threatening bronchospasm or laryngeal edema
Cutaneous reaction-rash	Localized macular rash	Diffuse macular, maculo-papular or morbilliform rash with vesicles or limited number of bullae OR superficial ulcerations of mucous membrane limited to 1 site	Diffuse macular, maculo-papular or morbilliform rash with vesicles or limited number of bullae OR superficial ulcerations of mucous membrane limited to 1 site	Extensive or generalized bullous lesions OR Stevens-Johnson syndrome OR ulceration of mucous membrane involving 2 or more distinct mucosal sites OR toxic epidermal necrolysis (TEN).

13.12 GRADING OF SEVERITY OF ARV TOXICITIES (CONTINUED FROM PREVIOUS PAGE)

	Mild (Grade 1)	Moderate (Grade 2)	Severe (Grade 3)	Severe and potentially life-threatening (Grade 4)
Neurological				
Alteration in personality behavior or mood	Alteration causing no or minimal interference with usual social and functional activities ^b	Alteration causing greater than minimal interference with usual social and functional activities ^b	Alteration causing inability to perform usual social and functional activities ^b AND intervention indicated	Behavioral potential harmful to self or others OR life - threatening consequences
Altered mental status	Changes causing no or minimal interference with usual social and functional activities	Mild lethargy or somnolence causing greater than minimal interference with usual social and functional activities	Onset of confusion, memory impairment lethargy or somnolence causing inability to perform usual social and functional	Onset of delirium obtundation or coma

			activities	
Neuromuscular weakness (including myopathy and neuropathy)	Asymptomatic with decreased strengthen on examination OR minimal muscle weakness causing no or minimal interference with usual social and functional activities ^b	Muscle weakness causing greater than minimal interference with usual social and functional activities ^b	Sensory alteration or paresthesia causing greater than minimal interference with usual social and functional activities	Disabling muscle weakness causing inability to perform basic self-care functions OR respiratory muscle weakness impairing ventilation.
Neurosensory alteration (including painful neuropathy)	Asymptomatic with sensory alteration on examination OR minimal paresthesia causing no or minimal interference with usual social and functional activities	Sensory alteration or par-aesthesia causing greater than minimal interference with usual social and functional activities	Sensory alteration or par-aesthesia causing inability to performing usual social and functional activities	Disabling sensory alteration or paresthesia causing inability to perform basic self-care functions ^c

^b Usual social and functional activities in young children include those that are appropriate for their age and culture (e.g. social interactions, play activities, learning tasks)

^c Activities that are appropriate for age and culture (e.g. feeding self with culturally appropriate eating implement, walking or using hands)

Other Laboratory Functions				
Cholesterol (fasting paediatric < 18 years old)	170-<200 mg/dl 4.40-5.15 mmol/L	200-300 mg/dl 5.16-7.77 mmol/L	>300 mg/dl >7.77 mmol/L	Not applicable
Glucose, serum, high: non-fasting	116-<161 mg/dl 6.44-<8.89 mmol/L	161-<251 mg/dl 8.89-<13.89 mmol/L	251-500 mg/dl' 13.89 - 27.75 mmol/L	>500 mg/dl >27.75 mmol/L
Glucose, serum, high: fasting	110-<126 mg/dl 6.11-<6.95 mmol/L	126-<251 mg/dl 6.95-<13.89 mmol/L	251-500 mg/dl' 13.89 - 27.75 mmol/L	>500 mg/dl >27.75 mmol/L
Lactate	<2.0 x ULN without acidosis	2.0 x ULN without acidosis	Increased lactate with pH < 7.3 without life-threatening consequences or related condition present	Increased lactate with pH < 7.3 with life-threatening consequences (e.g. neurological findings, coma, or related condition present)
Triglycerides (fasting)	Not applicable	500-751 mg/dl 5.65 - <8.49 mmol/L	751 - 1200 mg/dl 8.49 - 13.56 mmol/L	>1200 mg/dl >13.56 mmol/L

13.13

SUPPLEMENTARY INFORMATION ON DOLUTEGRAVIR

Dolutegravir (DTG-50) is an HIV Type 1 (HIV-1) integrase strand transfer inhibitor (INSTI) that can be used—in adults and children 12 years and older who weigh more than 20 kg or DTG10 for children between 3 to 20Kg calculated for weight bands. DTG-50 and DTG 10 are prescribed in combination with other antiretroviral medications for the treatment of HIV. Integrase inhibitors block HIV replication by preventing the viral DNA from integrating into the genetic material of human immune cells (T cells). This step is essential in the HIV replication cycle and is also responsible for establishing chronic infection. Both DTG preparations are approved for use in South Sudan as well as more than 90 countries across North America, Europe, Asia, Australia, Africa and Latin America.

Additional information regarding DTG:

- DTG may be taken with or without food.
- The most commonly reported adverse drug reactions include insomnia (3%), fatigue (2%) and headache (2%).
- Hypersensitivity reactions characterized by rash, constitutional findings, and sometimes organ dysfunction, including liver injury, have been reported (in <1% or fewer clients). DTG is contraindicated in clients with previous history of hypersensitivity. Discontinue DTG immediately if signs of hypersensitivity develop.
- DTG inhibits OCT2 and MATE1, which are responsible for tubular secretion of creatinine resulting in mild increase in creatinine after initiation, which remains stable. No DTG dose adjustment is necessary in INI-naive subjects with mild, moderate or severe renal dysfunction.
- Drugs that are metabolic inducers (e.g., Rifampicin) may decrease the plasma concentrations of DTG.
- Take DTG 2 hours before or 6 hours after taking cation-containing antacids or laxatives, sucralfate, oral supplements containing iron or calcium, or buffered medications. Alternatively, DTG and supplements containing calcium or iron can be taken together with food.
- Co-administration of DTG with dofetilide (an antiarrhythmic) is not recommended.
- Plasma concentrations of metformin increase with co-administration of DTG. Metformin requires a total daily dose limit of 1000 mg with co-administration. When stopping DTG, the metformin dose may require an adjustment. Discuss with an HIV specialist prior to any adjustments.
- Clients with underlying hepatitis B or hepatitis C may be at increased risk for worsening or development of transaminase elevations with use of DTG. Appropriate laboratory testing prior to initiating therapy, and monitoring for hepatotoxicity during therapy with DTG, is recommended in clients with underlying hepatic disease such as hepatitis B or C.
- Redistribution or accumulation of body fat and immune reconstitution syndrome have been reported in clients treated with combination antiretroviral therapy.
- The efficacy of DTG 50 mg is reduced in clients with an INSTI-resistance Q148 substitution plus 2 or more additional INSTI-resistance substitutions, including T66A, L74I/M, E138A/K/T, G140S/A/C, Y143R/C/H, E157Q, G163S/E/K/Q, or G193E/R.
- Dolutegravir in pregnancy: DTG is classified as a B1 by the United States Federal Drug Administration. This category means that the drug has been taken by only a limited number of pregnant women and women of childbearing age, and there has not been an increase in the frequency of malformation or other direct or indirect harmful effects on the human fetus observed. Studies in animals have also not shown evidence of an increased occurrence of fetal damage.

13.14**HIV TESTING SCREENING TOOL**

HIV Testing Screening Tool for Adults and adolescents

Have you ever tested for HIV?

Yes Record date of last HIV test and status in HTS client record and continue with HIV testing screening tool to identify the need for re-testing	No Offer routine HIV testing
1.	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
2.	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
3.	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
4.	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
5.	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
6.	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
7.	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
Clients that answer “Yes” to one or more of the above questions should be re-tested for HIV.	

HIV Testing Screening Tool for Children

13.14.1 Complete the tool for all children (age 18 months - 15 years) with negative or unknown status.

If there is a single “Yes” the child needs HIV testing.

1. Are one or both parents of the child deceased?	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
2. Has the child been admitted to the hospital before?	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
3. Does the child have reoccurring skill problems?	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
4. Has the child had poor health in the last 3 months?	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No
5.	[<input type="checkbox"/>] Yes [<input type="checkbox"/>] No

13.15

ART READINESS AND PSYCHOSOCIAL ASSESSMENT FORM

The ART readiness and psychosocial assessment can be used when applying a Test and Start approach during ART initiation or during follow up of clients on ART who may be at risk of disengaging from care or defaulting on ART.

Categories	Key Variables Identified	Questions
ART readiness/ overview of psychosocial wellbeing	Basic HIV and ART knowledge	<p>What do you know about ARVs?</p> <p>What are opportunistic infections?</p> <p>Can you tell me the names of the ARVs you will be taking and what time you will take each?</p> <p>Can you tell me some of the side effects of your medicines and what you will do if you have side effects?</p> <p>Do you know what can happen if you do not take all of your ARVs every day, at the same time for life?</p> <p>How and where will you store your medication?</p> <p>Do you feel confident that you can take ARVs every day at the same time for the rest of your life? (Yes/No)</p> <p>What is the goal of viral load monitoring? (Viral load tests should be conducted at 6, 12, 24 and 36 months)</p>
	Motivation	<p>Can you explain why you think you need to take ARVs?</p> <p>What do you expect from taking ARVs?</p> <p>What are your goals for the future?</p> <p>Do you think ARVs can help you achieve those goals?</p> <p>Do you feel confident that you can take ARVs every day at the same time for the rest of your life? (Yes/No)</p> <p>Do you foresee / are there any potential barriers with taking treatment? (Yes/No) <i>If yes how can these be addressed?</i></p>
Assessment of Potential adherence Barriers	Theme	Specific Questions
Individual	Alcohol/ Substance Use	<p>Do you sometimes forget to take your medicines/ARVs because you used alcohol or other drugs? (Yes/No)</p>
	Side Effects of Treatment	<p>Do you sometimes experience side effects from your medication/ARVs that make you want to stop treatment? (Yes/No)</p>
	Pill Burden	<p>Do you sometimes feel that taking your medication is tiresome because you have to take them every day at the same time for the rest of your life? (Yes/No)</p>
	Missed Clinic Appointment in Past 6 Months	<p>Have you missed your HIV clinic appointment(s) by more than 1 week since you started taking your HIV medications? (Yes/No)</p>

13.16

ART READINESS AND PSYCHOSOCIAL ASSESSMENT FORM

Assessment of Potential adherence Barriers	Theme	Specific Questions
	Poverty/Economic Struggles	Is it sometimes difficult for you to keep your HIV clinic appointments because you do not have money for transport? (Yes/No)

Economic	Food Insecurity	Do you sometimes forget, skip or are unable to take your HIV medications because you are hungry/lack food? (Yes/No)
Psycho-Social	HIV Disclosure	Have you told your partner or family members about your HIV status? (Yes/No)
	Experienced Violence at Home	In the past 24 months, have you experienced emotional, physical or sexual violence from a sexual partner that prevented you taking your HIV medications or coming to the HIV clinic for follow-up? (Yes/No)
	Family/Partner Relationship/ Inadequate Psy- chosocial Support	Do you have someone at home who can remind you about or make sure you are taking your HIV medications? (Yes/No) Has this person been trained on HIV treatment and care? (Yes/No)
	Stigma and Discrimination	Do you feel stigmatized because of your HIV positive status? (Yes/No)
	Emotional Issues/ Depression/Mental Health	Over the last two weeks, how much have you been bothered by: 1. Feeling sad, down, or uninterested in life? 2. Feeling anxious or nervous? 3. Feeling stressed? 4. Feeling angry? 5. Not having the social support you feel you need? Scale: 0 to 9, with 0 = not at all, 3 = a little, 6 = moderately, 9 = severely
Structural	Distance from the Health Facility	Do you find it difficult to get to the clinic because of the distance from home or availability of transport? (Yes/No)
Disease/ Treatment Consequences	Co-Morbid Health Conditions	Do you have any other chronic conditions (hypertension, diabetes) that require you to come to the clinic frequently? (Yes/No)
	Poor Functional Status	Do you have energy to carry out your usual day-to-day activities? (Yes/No)
	Low Self-Efficacy regarding treatment	How sure are you that you can take your HIV medications as recommended by your health care provider? (Yes/No)

13.17

DEPRESSION ASSESSMENT TOOL

Over the last 2 weeks, how often have you been bothered by any of the following problems?				
	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating (on things linked with your usual activities)	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed, or, on the contrary, being fidgety, restless, or moving around a lot more than usual	0	1	2	3

9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3
TOTAL:				

Depression Assessment Score

Client Health Questionnaire Score	Provisional diagnosis	Recommendation
5–9	Minimal symptoms	Support and educate to call for support if symptoms get worse.
10–14	Minor to mild depression or chronic depression (symptoms lasting for 2 years)	Support and watchful waiting. Reassess in 1–2 weeks. Consider starting treatment for psychological support.
15–19	Major depression	Refer to social workers/psychologist/nurse. Needed for specific treatment.
>20	Severe depression	Major impairment, need for active treatment.

13.18

KARNOFSKY PERFORMANCE STATUS ASSESSMENT TOOL

Status	Response
100%	• Normal, no complaints, no signs of disease
90%	• Capable of normal activity, minor symptoms or signs of disease
80%	• Normal activity with some difficulty, some symptoms or signs
70%	• Caring for self, not capable of normal activity or work
60%	• Requiring some help, can take care of most personal requirements
50%	• Requires help often, requires frequent medical care
40%	• Disabled, requires special care and help
30%	• Severely disabled, hospital admission indicated but no risk of death
20%	• Very ill, urgently requiring admission, requires supportive measures or treatment
10%	• Moribund, rapidly progressive fatal disease processes
0%	• Death

Summary of the Uses of CD4 and Viral Load Monitoring

	CD4 count	VL
Baseline laboratory for clients diagnosed with HIV	X	
Disease progression for clients with HIV who have not initiated ART	X	
To determine immune status at enrolment—mild, moderate or advanced immunodeficiency	X	
To determine if LF TB-LAM testing and LF-CrAg screening should be conducted	X	
To assess treatment success or failure		X

To assess adherence to treatment

X

Adverse Drug Reaction Report Form

13.19 REPORT CAN BE RETURNED TO MOH/CENTRAL MEDICAL STORES

BY:

Fax:

Email:

Post: Adverse Drug Reaction, Central Medical Stores. P.O. Box

Section A: Patient Information

Patient initials or reference number: _____ Sex: Male _____ Female _____ Pregnant: No

Yes _____ Unknown _____ Weight (if known): _____ kg.
Date of Birth: (dd/mm/yyyy) / / or age (at last birthday): _____

Section B: Medication History

All drug therapies/ vaccines prior to ADR (please use trade names and report the suspected drug)	Batch number	Daily Dosage	Route	Date Be- gun	Date Stopp ed	Indication for Use

Allergies or other relevant history (including medical history, liver/kidney problems, smoking, alcohol use, etc.)

Section C: About the Adverse Drug Reaction

Date of onset of ADR: (dd/mm/yyyy) / /

Summary Description of event:

Category of ADR (please tick)

- Suspect minor / major reaction from a drug (e.g. allergic reaction)
- Adverse Event (e.g. congenital defects)
- Product Use Error (e.g. use of antibiotic instead of NSAID)

Severity (can tick more than one if appropriate)

- Life threatening
- Hospitalization (dd/mm/yyyy) / /
- Hospitalization NOT required
- Relevant laboratory result

13.20 SECTION D: TREATMENT AND OUTCOMES

13.20.1 Treatment of ADR: _____ No Yes

Details (including dosage, frequency, route, duration):

Outcome:

- Recovered on (dd/mm/yyyy) / /
- Not yet recovered
- Unknown
- Died on (dd/mm/yyyy) / /
- Persistent disability
- Birth defect
- Medically significant events

Details:

Section E: Reporter Details

Name: _____ Title of service: Private Public
Occupation: _____ Doctor _____ Dentist _____ Pharmacist _____ Nurse _____ Other: _____

Correspondence:

Address: _____
Telephone number: _____ Fax Number: _____ --

Email: _____

Also report to: _____ Manufacturer _____ Distributor/Importer _____ Others: _____
Date of this report: (dd/mm/yyyy) / _____ / _____

Instructions/ Notes

1. ADR can be briefly described as a noxious and unintended response to a drug or vaccine when the normal dose is used
2. This report form is used for voluntary of all suspected ADR
3. There is no need to put down the full name of the patient
4. Please provide information to every section, information of individual reporter will be treated with strict confidence
5. Please use another page for additional information if necessary
6. For further enquiries, please contact the Pharmacist at Central Medical Stores at _____

13.21 PRE-EXPOSURE PROPHYLAXIS (PREP) SCREENING FOR SUBSTANTIAL RISK AND ELIGIBILITY

1. Facility Information		
<p>Facility Name _____</p> <p>Date of Initial Client Visit (<i>dd/mm/yyyy</i>) ____ / ____ / ____ Person Completing Form _____</p>		
2. Client Information		
First Name _____	Middle Name _____	Surname _____
Address _____	Telephone # _____	
Client ID Number _____		
3. Client Demographics		
What was your sex at birth?	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Other (<i>specify</i>): _____ <input type="checkbox"/> No response	
What is your current gender?	<input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Transgender (<i>male to female</i>) <input type="checkbox"/> Transgender (<i>female to male</i>) <input type="checkbox"/> Other (<i>specify</i>): _____ <input type="checkbox"/> No response	
What is your age? (<i>Specify number of years.</i>) _____		
4. Screening for Substantial Risk for HIV Infection		
Client is at substantial risk if he/she belongs to categories ①, ②, or ③ below		Question Prompts for Providers
① If client is sexually active in a high HIV prevalence population <u>PLUS</u> reports ANY one of the below in the last 6 months		Have you been sexually active in the last 6 months?
<input type="checkbox"/> Reports vaginal or anal intercourse without condoms with more than one partner		In the last 6 months, how many people did you have vaginal or anal sex with? In the last 6 months, did you use condoms consistently during sex?
<input type="checkbox"/> Has a sex partner with one or more HIV risk:		In the last 6 months, have you had a sex partner who: <ul style="list-style-type: none"> Is living with HIV? Injects drugs? Has sex with men? Is a transgender person? Is a sex worker? Has sex with multiple partners without condoms?
<input type="checkbox"/> History of a sexually transmitted infection (STI) <i>based on self-report, lab test, syndromic STI treatment</i>		In the last 6 months, have you had an STI?
<input type="checkbox"/> History of use of post-exposure prophylaxis (PEP)		In the last 6 months, have you taken post-exposure prophylaxis (PEP) following a potential exposure to HIV?

② If client reports history of sharing injection material or equipment in the last 6 months <input type="checkbox"/> History of sharing injection material or equipment	In the last 6 months, have you shared injecting material with other people?
③ If client reports having a sexual partner in the last 6 months who is HIV positive AND who has not been on effective* HIV treatment (i.e., the partner has been on ART for fewer than 6 months or has inconsistent or unknown adherence) <input type="checkbox"/> History of HIV-positive sex partner not on effective treatment	Is your partner HIV positive? Is he/she on ART? What was the last viral load result?

5. PrEP Eligibility

Client is eligible if he/she fulfills ALL the criteria below:	
<input type="checkbox"/> HIV negative	Date client tested: (dd/mm/yyyy): ____ / ____ / _____ Date client received test results: (dd/mm/yyyy): ____ / ____ / _____ Test result: <input type="checkbox"/> Negative <input type="checkbox"/> Positive (<i>Refer to HIV medical care.</i>) <input type="checkbox"/> Inconclusive (<i>Re-test in 14 days.</i>) Type of test used: <input type="checkbox"/> Determine <input type="checkbox"/> Unigold <input type="checkbox"/> ELISA <input type="checkbox"/> Other (<i>specify</i>): _____
<input type="checkbox"/> At substantial risk of HIV	At least one item/risk in Section #4 above is ticked
<input type="checkbox"/> Has no signs/symptoms of acute HIV infection	See Section #6 below to confirm no recent exposure to HIV
<input type="checkbox"/> Has creatinine clearance (eGFR) >60 ml/min	Result: _____ Date of creatinine test (dd/mm/yyyy): ____ / ____ / ____ —
If all boxes in Section 5 are ticked, offer PrEP.	

6. Recent Exposure to HIV

Ask the client:

In the past 72 hours, have you had sex without a condom with someone whose HIV status is positive or not known to you, or have you shared injection equipment with someone whose HIV status is positive or unknown to you?	<input type="checkbox"/> Yes*	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
In the past 28 days, have you had symptoms of a cold or flu, including fever, fatigue, sore throat, headache, or muscle pain or soreness?	<input type="checkbox"/> Yes**	<input type="checkbox"/> No	<input type="checkbox"/> Don't know
* If the client reports potential exposure to HIV within past 72 hours, do NOT offer PrEP. Follow facility procedures to evaluate further or refer for evaluation for post-exposure prophylaxis (PEP).			
** If the client reports flu-like symptoms or other signs of acute HIV infection, do NOT offer PrEP and evaluate further, following facility procedures to diagnosis acute HIV infection.			

7. Services Received by Client

PrEP offered.

- PrEP accepted.
- PrEP declined. (*If declined, see Reasons for Declining PrEP, below*).

Date eligible (dd/mm/yyyy): ____ / ____ / _____

Date initiated (dd/mm/yyyy): ____ / ____ / _____ *Same-day initiation recommended.*

Reasons for Declining PrEP

(Check all that apply.)

No need for PrEP

Does not wish to take a daily medication

Concerns about side effects

Concerns about what others might think

Concerns about time required for clinic follow-up

Concerns about safety of medication

Concerns about effectiveness of medication

Other (specify):

Referred for PEP evaluation

Referred for PCR/HIV Ag test or follow-up HIV re-testing (if suspicion of acute HIV infection)