

**MINISTRY OF HEALTH
REPUBLIC OF SOUTH SUDAN**



**CONSOLIDATED CLINICAL
GUIDELINES ON USE OF
ANTIRETROVIRAL DRUGS FOR HIV
TREATMENT AND PREVENTION**

March, 2014

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FOREWORD

South Sudan is experiencing a generalized HIV epidemic. The limited data available indicates wide variations in HIV prevalence by geographical region ranging from 0.3% in Northern bar el Ghazal to 6.8% in Western Equatoria. Of the estimated total population of 10.9 million as of 2012, about 2.7% of adults aged 15-49 years are infected with HIV. Approximately 152,000 people are living with HIV; 13% of these are children under 15 years of age. The number of new HIV infections occurring annually is estimated at 15,000; majority of these acquired through heterosexual transmission. The estimated number of deaths due to HIV is 13,000 annually.

Nationally, there has been continued scale-up of HIV/AIDS interventions with support from various development partners. Currently there are 114 sites providing HIV testing and counseling, with 75 sites providing Prevention of Mother to Child Transmission services, and 22 sites providing antiretroviral treatment. The South Sudan National HIV/AIDS Strategic Plan (NSP) 2013-2017 is aimed towards achievement of universal access to HIV prevention, treatment and care by 2017 with the overall impact of reducing new HIV infections, and mortality among PLHIV by 50%. This will be achieved through increasing HIV testing and ART coverage among adults, children, pregnant and breastfeeding women from below 10% to 80%, improving retention of PLHIV in care and treatment from 71% to 83%, and improving livelihood support for PLHIVs.

The NSP is aligned to the third pillar of the South Sudan Development Plan (SSDP): ‘Social & Human Development with one of the health objectives being “To increase equitably the utilization of quality basic health and HIV/AIDS services”. As a signatory to the 2011 UN General Assembly political declaration on HIV/AIDS, South Sudan has committed itself to accelerating the HIV/AIDS response to achieve the set targets of reducing HIV sexual transmission by 50% by 2015; eliminating new infections among children and keeping mothers alive; reaching 15 million people with ART; and reducing TB deaths in PLHIV by 50%.

The national ART guidelines have been revised to provide health care workers with an up-to-date guide for the use of antiretroviral therapy in all population groups including adults, children, and pregnant women. These guidelines have been developed by the Directorate of HIV/AIDS in the MOH with technical and financial support from World Health Organization (WHO) and other partners. It is hoped the guidelines will contribute towards provision of quality HIV care in the Republic of South Sudan.

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Ministry of Health, Republic of South Sudan

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Finally, it is important to note that the Ministry urges all partners to familiarize themselves with the content of these guidelines and use it accordingly in providing treatment, care and support to people living with HIV and AIDS in South Sudan. This will further ensure optimal therapy, good clinical outcomes, effective care, and better outlook for the patients.

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ACRONYMS AND ABBREVIATIONS

3TC	lamivudine	GOSS	Government of South Sudan
AAFB	Alcohol acid fast bacilli	H	Isoniazid
ABC	Abacavir	HAART	Highly active Antiretroviral Therapy
AIDS	Acquired Immune deficiency Syndrome	HB	Hemoglobin
ANC	Antenatal care	HBC	Home Based Care
ART	Antiretroviral Therapy	HBV	Hepatitis B Virus
ARVs	Antiretroviral Drugs	HTC	HIV Counseling and Testing
ATV	Atazanavir	HCV	Hepatitis C Virus
AZT	Zidovudine	HIV	Human immunodeficiency virus
BCG	Bacille Calmette Guerin (vaccine for TB)	HIVDR	HIV Drug Resistance
BF	Breastfeeding	HSV	Herpes Simplex Virus
BMI	Body Mass Index	HTC	HIV testing and counseling
CD4	CD4+ T cell (T lymphocyte bearing CD4 receptor)	IC	Infection Control (for TB)
CDR	Case Detection Rate (for TB)	ICF	Intensified Case Finding
CO	Clinical Officer	IM	Intramuscular
CPT	Cotrimoxazole Preventive Therapy	INH	Isoniazid
CSF	Cerebrospinal fluid	IPT	Isoniazid Preventive Treatment
CTX	Cotrimoxazole	IRIS	Immune Reconstitution Inflammatory Syndrome
CXR	Chest X Ray	ITN	Insecticide Treated (mosquito bed) Net
D4T	stavudine	IV	Intravenous
DBS	Dried Blood Spot	KS	Kaposi sarcoma
ddI	Didanosine	LFTs	Liver Function Tests
dl	decilitre	LPV/r	Lopinavir /ritonavir
DNA-PCR	Deoxyribonucleic acid polymerase chain reaction (for EID)	LTFU	Lost to Follow Up
DOTS	Directly Observed Treatment Short Course (for TB)	MARPs	Most At Risk Populations (for HIV)
E	Ethambutol	M&E	Monitoring and Evaluation
EFV	Efavirenz	MCH	Maternal and child health
EIA	Enzyme immune assay	MDR-TB	Multiple Drug Resistant tuberculosis
EID	Early Infant Diagnosis	MTCT	Mother to child transmission (of HIV)
ELISA	Enzyme Linked Immuno Sorbent Assay	NFV	Nelfinavir
eMTCT	elimination of Mother To Child Transmission (of HIV)	NNRTIs	Non-Nucleoside Reverse Transcriptase Inhibitors
EPI	Expanded Program for Immunization	NRTIs	Nucleoside Reverse Transcriptase Inhibitors
EPTB	Extra-pulmonary tuberculosis	NSP	National Strategic Plan (for HIV/AIDS)
FDC	Fixed Dose Combination	NVP	Nevirapine
FP	Family Planning	OI	Opportunistic Infection
FTC	Emtricitabine	ORS	Oral Rehydration Solution

PC	Palliative Care	S	Streptomycin
PCP	Pneumocystis Carinii (jiroveci) Pneumonia	SCM	Supply Chain Management
PCR	Polymerase Chain Reaction	SGBV	Sexual & Gender Based Violence
PEP	Post-Exposure Prophylaxis	sdNVP	single dose nevirapine
PGL	Persistent Generalized Lymphadenopathy	SOP	Standard Operating Procedure
PHDP	Positive Health Dignity and Prevention (also PwP)	SQV	saquinavir
PI	Protease Inhibitor	SRH	Sexual and Reproductive Health
PITC	Provider Initiated HIV Testing and Counseling	STD	Sexually Transmitted Disease
PLHIV	People Living with HIV/AIDS	STI	Sexually Transmitted Infections
PML	Progressive multi focal Leucoencephalopathy	TEN	Toxic Epidermal Necrolysis
PMTCT	Prevention of Mother to Child Transmission	TDF	Tenofovir (Disoproxil Fumarate)
POC	Point of Care (technology)	TB	Tuberculosis
PreP	Pre-exposure Prophylaxis	TSR	Treatment Success Rate (for TB)
PTB	Pulmonary tuberculosis	VCT	Voluntary Counseling and Testing
PwP	Prevention with Positives (also PHDP)	VIA	Acetic acid visualization (of the cervix)
PNC	Postnatal Care	VL	Viral Load
R	Rifampicin	HBC	White Blood Cells
RH	Reproductive Health	WHO	World Health Organization
RSS	Republic of South Sudan	Z	Pyrazinamide
RTV	Ritonavir (as PI pharmacoenhancer)	ZDV	Zidovudine (or AZT)

1 INTRODUCTION

1.1 BACKGROUND AND CONTEXT

The first national guidelines for the use of antiretroviral drugs in adults and children in South Sudan were launched in 2008. At that time, the CD4 threshold for ART initiation in adults was 200 cells/mm³, and for 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 PLHIVs with CD4 below 350 cells/mm³. By December 2012, there were 22 accredited antiretroviral therapy (ART) sites nationally. Of the 12,500 patients enrolled into HIV care and treatment services, just over 5,000 were on ART, representing 6% of the estimated number in need. Children below 14 years of age contributed only 1% of persons on ART.

In June 2013, the World Health Organization (WHO) released new recommendations on the use of ARV drugs 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 clinical HIV care and prevention addresses all the various population groups (adults, adolescents, children and pregnant women), in different clinical care settings including TB clinics, MCH clinics, ART clinics, and HIV testing sites.

These recommendations provide an opportunity for improved quality of life for PLHIVs, and reduction in incident HIV infections and have prompted revision of the South Sudan ART guidelines.

- These revised guidelines recommend earlier HIV treatment and raise the threshold for starting ART from a CD4 of 350 cells/mm³ to 500 cells/mm³ (i.e. starting treatment when the immune system is stronger) because of the evidence that earlier treatment prolongs life and results in fewer HIV transmissions from an infected person to an uninfected person.
- These guidelines also recommend that all pregnant and breast feeding women start ART at any CD4 count and continue lifelong ART (Option B+) to reduce the risk of transmission of HIV to the infant and promote HIV-free survival for the HIV-exposed infant.
- All children under 5 years of age should start ART as soon as HIV is diagnosed regardless of clinical stage or CD4 cell count.
- Individuals co-infected with HIV and active TB should initiate ART regardless of clinical stage or CD4.
- Individuals co-infected with HIV and Hepatitis B virus (HBV) who require treatment for their HBV should be initiated on ART regardless of CD4, using a TDF+FTC (or 3TC) based regimen.
- HIV-infected partners in sero-discordant relationships irrespective of clinical stage or CD4 count should be offered ART to reduce the risk of HIV transmission to the negative partner.
- These guidelines recommend a preferred first-line, fixed dose combination of three ARV drugs in a single pill. This regimen of tenofovir + lamivudine (or emtricitabine) + efavirenz (TDF+3TC (or FTC) +EFV) was selected because it is simple, less toxic and can be used in all populations except for very young children.

Implementation of these recommendations is supported by the national scale-up plan that is aimed at achieving universal access by 2017. The guidelines support expansion of HTC especially through PITC and EID, further decentralizing ART to match PMTCT and TB care delivery, adoption of task shifting to alleviate the human resource gaps, and strengthening the supply chain management and M&E systems to support services scale-up.

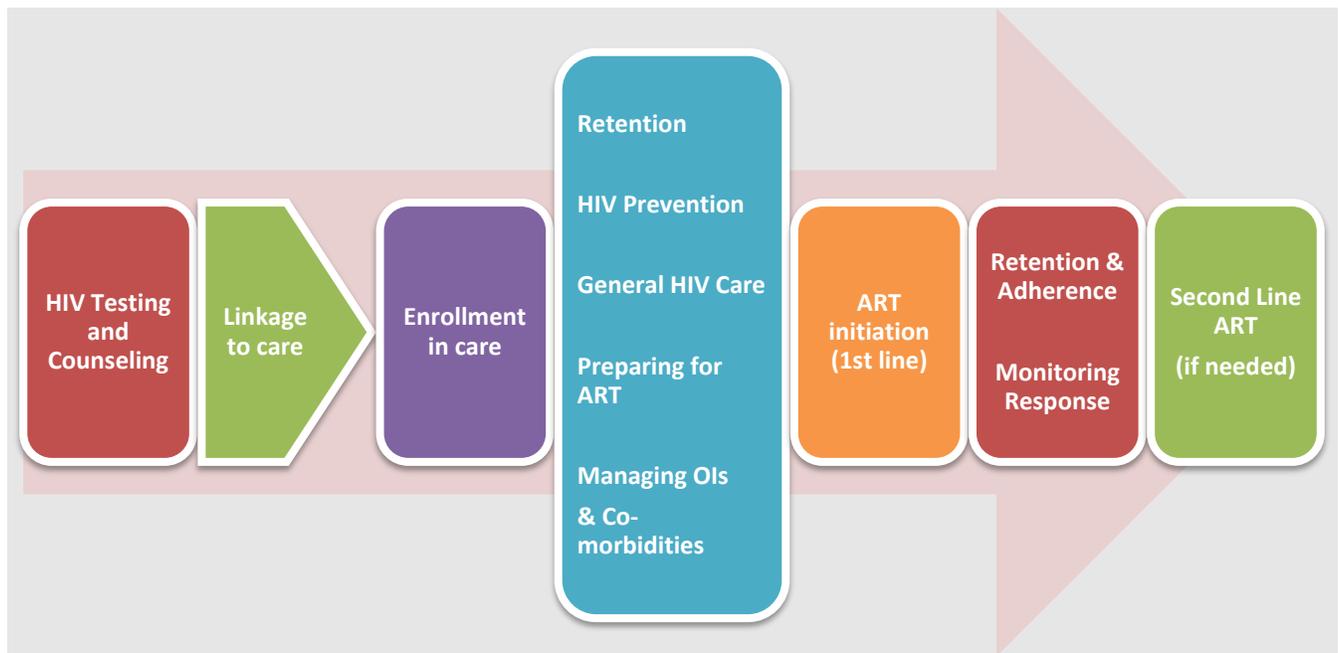
1.2 RATIONALE FOR REVISED AND CONSOLIDATED GUIDELINES

The guidelines have been developed to standardize management of HIV in different population and age groups and clinical care settings using an integrated approach, and emphasize the fact that HIV treatment and prevention should be offered in a comprehensive continuum of care setting as shown in [Figure 1-1](#). Previously, there was separate guidance based on population group or HIV intervention.

In addition, the revised guidelines contribute to the National HIV/AIDS Strategic Plan goal of universal access to ART by 2017.

‘Continuum of care’ refers to a comprehensive package of HIV prevention, diagnostic, treatment and support services provided for PLHIV and their families ranging across initial HIV diagnosis and linkage to care, management of opportunistic infections, initiating, maintaining and monitoring antiretroviral therapy, and palliative care.

Figure 1-1: Continuum of HIV care



1.3 OBJECTIVES OF THE GUIDELINES

The objectives of consolidated guidelines are:

- To provide a standardized and simplified guide to use of antiretroviral drugs in the comprehensive HIV/AIDS service delivery setting.
- Ensure timely initiation of ARVs for HIV treatment and prevention
- Improve clinical outcomes, promote adherence and improved retention of patients in care
- Strengthen health systems to support service delivery in the continuum of care
- To serve as a training tool and reference material for health service providers, program managers, and people living with HIV.

Specific national program objectives include:

1. To scale-up PITC and other HTC approaches with linkage to care
2. To initiate ART for all eligible adults and children (for prevention & treatment) including PMTCT mothers
3. Decentralize and scale –up services with capacity building for ART and accreditation of additional health facilities to initiate ART, manage, monitor and refer patients
4. Strengthen capacity of health care workers for services delivery; develop a national policy to address task shifting; recruit additional staff; and enhance staff retention
5. Strengthen supply chain management to support scale-up of all HIV interventions, phase out D4T and phase in use of Tenofovir-based FDCs
6. Strengthen program monitoring and evaluation
7. Scale up early infant diagnosis services, and scale-up use of viral load- for ART monitoring and diagnosis of treatment failure
8. Strengthen linkages and integrate services for all population groups, and clinical care settings

1.4 TARGET AUDIENCE

The guidelines are targeted to reach the following audiences:

- Clinicians and other health service providers
- Program managers of the national HIV program, the TB program, laboratory services, MCNH and reproductive health programs, commodity supply chain management for HIV related commodities
- Researchers
- Development partner agencies that support the national program

1.5 SCOPE AND COMPONENTS OF THE GUIDELINES

The guidelines include several chapters:

- Chapter 1 describes the background, rationale, objectives of the guidelines and the target audience
- Chapter 2 covers *HIV Counseling and Testing (HTC)*, a key strategic entry point to prevention, treatment, care and support services.
- Chapter 3 looks at *Chronic HIV care* which enables early ART eligibility assessment and timely initiation of treatment, as well as access to interventions aimed at preventing further HIV transmission, and prevention of opportunistic infections and co-morbidities.
- Chapter 4 covers *Antiretroviral Therapy*, the goal of which is to suppress viral replication, reduce CD4 cell destruction, restore the immune system thereby reducing HIV-related illness and improving quality of life.
- Chapter 5 outlines *Elimination of Mother to Child HIV transmission*, a central component in the continuum of care for women living with HIV to reduce the burden of HIV in the pediatric population.
- Chapter 6 & 7 look at *HIV infection in children* which tends to follow a more aggressive course than in adults. Children are therefore given a special section highlighting some of the unique features of care in this population. Recommendations on *Infant and Young Child Feeding* are covered in Chapter 7.
- Chapter 8 highlights *TB and HIV* co-management since TB is a common cause of illness among PLHIV.
- Chapter 9 outlines recommendations on *Prevention of new HIV infections using ARV drugs*. Prevention remains the cornerstone in HIV control in the absence of a cure.
- Chapter 10 and 11 highlight health systems to support HIV services delivery including *Laboratory support* (Chapter 10), *Monitoring and Evaluation, Supply Chain Management and Human Resource* in Chapter 11.

Table 1-1: Integrated Provision and Scheduling of Clinical HIV Services

	Section	Schedule	Pre-ART clinic	ART clinic	TB clinic	Family Planning	ANC	Maternity	Post -natal	Under 5/ young child	OPD	In-patient
PITC	2.4	Ascertain current status at each visit	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
WHO clinical staging	3.2	At HIV diagnosis, enrollment in care, every 3/12 in care, at ART initiation	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Management of HIV related disease	3.5	When diagnosed	✓	✓	✓		✓	✓	✓		✓	✓
Clinical Monitoring HIV disease	3.1	At every visit	✓									
CD4 monitoring	3.3	6 monthly - in pre-ART and while on ART	✓	✓								
Provider initiated Family Planning	5.2.2	At every scheduled visit	✓	✓								
Prevention with Positives	3.7	At every visit	✓									
Pregnancy status		At every visit – for women of child bearing age	✓	✓	✓	✓					✓	✓
Cotrimoxazole Preventive Therapy	3.6	At every scheduled visit	✓	✓	✓		✓	✓	✓	✓	✓	✓
(Insecticide treated bed net (ITNs)	3.5	Dispense one ITN every 24 months	✓	✓			✓		✓	✓		
Infant and child feeding counseling	7	At every visit					✓	✓	✓	✓	✓	
Starting ART	4.2	Within 7 days of being found eligible for ART		✓	✓		✓	✓	✓	✓		
ART follow-up	4.5	At 2/52, monthly for 6/12, then 3 monthly										
Management of labour and delivery	5.4	At admission						✓				
Newborn and post natal care	5.4	After delivery						✓	✓			
Infant ARVs prophylaxis	5.4.2	At birth (may dispense NVP in ANC)						✓				
Mother infant follow up	5.5	At first opportunity when known HIV +					✓	✓	✓	✓		
Post exposure prophylaxis	10.3	As soon as possible after risk exposure						✓			✓	

2 HIV TESTING AND COUNSELING (HTC)

HIV testing and counseling (HTC) is a key strategic entry point to prevention, treatment, care and support services. The goal of HTC is to identify as many people as possible with HIV early in their infection and link them successfully to prevention, treatment, care and support services and to link those who test negative to prevention services.

Key messages & recommendations:

- HIV testing and counseling (HTC) is provided through many approaches: client initiated, provider initiated, at health facilities, stand-alone sites, or within the community as door-to-door, mobile outreach, or at the workplace
- Regardless of the model, HTC must be voluntary and adhere to the five Cs—Consent, Confidentiality, Counselling, Correct test results and linkage to Care
- Provider Initiated Testing and Counseling (PITC) is recommended for:
 - All patients accessing health care services and their partners, regardless of whether they demonstrate signs and symptoms of HIV infection
 - Partners of people living with HIV (PLHIV)
 - Key populations at high risk for HIV infection
- Components of the PITC protocol include:
 - Group education
 - Pre-test counseling
 - HIV testing
 - Post-test counseling
 - Linkages to other services
- Enroll all adults and children with confirmed HIV into care and treatment to ensure they can start ART as soon as they are eligible

2.1 PRINCIPLES OF HTC

- Persons receiving HTC must give informed **Consent** to be tested and counselled. Clients should freely decide whether to accept the test (opt-in), or decline (opt-out)
- HTC services are **Confidential**: what the HTC provider and the client discuss will not be disclosed to anyone else without the expressed consent of the person being tested
- HTC services must be accompanied by appropriate pre-test information and post-test **Counseling**
- HTC providers should strive to provide high-quality testing services, and ensure the provision of **Correct** test results
- HTC should provide **Connections** (linkages) to prevention, care, and treatment services.

2.2 APPROACHES TO HTC

It is recommended that all HTC approaches be implemented in South Sudan, with priority given to expanding Provider-Initiated Testing Counseling, targeted outreach HTC, and Early Infant Diagnosis.

2.2.1 Provider Initiated Testing and Counseling (PITC):

- 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.
- PITC aims to identify unrecognized or unsuspected HIV-infected persons and link them to care.
- Family members should also be offered testing but only with the consent of the HTC client. Testing sexual partners of clients will identify HIV positive sero-concordant and sero-discordant couples who should be linked to ART immediately. Providing HTC to family members of HIV patients (after consent and / or disclosure of the HIV patient) improves support for adherence to ART and other care interventions.

2.2.2 Client Initiated HIV testing and Counseling (CICT):

- Also referred to as Voluntary Counseling and Testing (VCT), involves individuals actively seeking HTC from a facility that offers the service.

2.2.3 Community Based HTC:

- More likely to reach first-time testers, PLHIV with higher CD4 cell counts, men, adolescents, discordant couples, and key populations.
- Includes Home-Based HIV testing and counseling (HBHTC) provided as either door-to-door HTC, or index-case HBHTC as provided to households with a known index HIV-positive patient.
- *Community-based HTC* may be provided at the work place, through outreach, or in schools.
- *Mobile & outreach HTC services*: Target special population groups such as communities living in remote regions, refugees, prisoners, and key populations (female sex workers and their clients; and cross border populations such as truck drivers, traders and migrant workers). Outreach HTC may also be provided at work places, schools, or as part of special testing campaigns and events.
- *Work place HTC services*: Provided as part of comprehensive workplace HIV programs.

2.2.4 HIV self-testing (HIVST):

- Can be performed using oral fluid rapid diagnostic tests. HIVST is not currently recommended due to concerns about test accuracy, results' interpretation, lack of counseling, and links to follow-up services.

2.2.5 Diagnostic HTC:

- Whereby health care providers offer HTC to individuals who show signs or symptoms consistent with HIV-related disease or AIDS.

2.2.6 Mandatory and compulsory HIV testing:

- Can be performed for specific reasons such as when requested by court. However, individuals should be informed of test results, and testing should be accompanied by appropriate counseling.
- Mandatory screening for HIV of blood and blood products destined for transfusion targets blood products and not the person donating blood. Blood donation should therefore not be considered as an appropriate means of knowing one's HIV status.

2.3 HTC IN SPECIFIC POPULATIONS

2.3.1 HTC in infants and children below 18 months

- All infants with unknown HIV status or uncertain HIV exposure should have their HIV exposure status ascertained using maternal or infant serological antibody (Ab) test
- Routinely ascertain the mother's HIV status regardless of whether the child is healthy or sick by reviewing the mother's health passport/card for the latest HIV test result
- Initiate a new HIV rapid test:
 - *For the mother:* If she was not tested at least once during pregnancy or delivery, or if mother's HIV status is unknown or unclear
 - *For the child, if the mother is unavailable/has died /doesn't consent to maternal HTC*
 - If the child is sick, even if the mother tested negative during pregnancy or delivery. This is to rule out new HIV infection in the child.
- A negative antibody test in the infant means the infant or child is not exposed to HIV
- If the infant is HIV-exposed (ie infant and/or mother is Ab positive), then confirm HIV infection using virological testing using DNA PCR.
- Where virologic testing is readily available, HIV- exposed infants should be tested within 4 to 6 weeks of birth or at the earliest opportunity.
 - If the DNA PCR test is positive, the infant is likely to be infected and should be initiated on ART immediately as a second blood specimen is collected for confirmatory testing.
 - If the DNA PCR test is negative and the child is still breastfeeding or has breastfed in the 6 weeks before testing, the test result is not definitive and should be repeated 6 weeks after breastfeeding has ended.
- Where virologic testing is not readily available:
 - HIV-exposed infants should have serological Ab testing and regular clinical monitoring.
 - Infants with signs and symptoms suggestive of HIV and a positive serological Ab test should be presumed to be HIV-infected, have any acute illness managed, initiated on ART until HIV can be excluded (using Ab tests at 18 months of age or by virological testing). A presumptive diagnosis of severe HIV infection may be used to support the management of infants and children for whom a definitive diagnosis is not possible. See [6.7.1](#)
 - HIV-exposed infants who are well (asymptomatic) should have an Ab test at 9 months of age. If the test is *negative*, assume child is not infected, but if the child is still breastfeeding, repeat Ab test at 18 months of age or 6 weeks after cessation of breast-feeding. If the Ab test is *positive*, assume either persisting maternal HIV Ab or possible HIV sero-conversion. Follow-up the child clinically, repeat Ab test at 18 months of age or 6 weeks after cessation of breast-feeding.
- See testing algorithm in [Figure 2-2](#) and [Table 2-1](#)

Table 2-1: Recommended Testing Approaches for Infants and Children below 18 months

Category	Test required	Purpose	Action
A. Infant with unknown exposure status	Maternal serological Ab test or infant Ab test	To identify /confirm exposure	If HIV-exposed, do virological test (where available)
B. HIV-exposed infant who is <u>well</u>.	Virologic testing (EID test) at 4-6 weeks of age.	To diagnose HIV	Start ART if HIV-infected.
	<i>If virologic test is not available, perform Ab test.</i>	To identify /confirm exposure	<i>If Ab positive, follow-up clinically. Repeat Ab test after 18 months to confirm HIV. If symptoms develop during follow-up, see category D below.</i> <i>If HIVAb negative, assume uninfected, repeat testing is required if still breast feeding</i>
C. Well HIV-exposed infant at 9 months	HIV serological (Ab) test (at last immunization) usually 9 months	To identify infants who have persisting HIV Ab or have sero-converted	If positive, do virological test and continue follow-up. If no PCR test, confirm HIV at 18 months with Ab test. If HIV-negative, assume uninfected, repeat testing required if still breast feeding.
D. Infant or child with signs & symptoms suggestive of HIV	HIV serological test.	To confirm exposure	If Ab positive, presume infant is HIV-infected, treat acute illness, start ART, confirm HIV with virologic test or Ab test after 18 months
E. Well or sick child >9 months and <18 months	Virological testing	To diagnose HIV	If positive, start HIV care and ART
F. Infant or child who has completely discontinued breast feeding	Repeat testing 6 weeks or more after breast feeding – usually with serological test followed by virological testing for HIV positive child < 18months	To exclude HIV infection after exposure	Infected infants and children <5 years need to start HIV care and ART

2.3.2 Couples HTC:

Couple HTC enhances safer sexual behavior, increases services uptake and treatment adherence, and identifies couples that need ART for prevention of HIV transmission (the sero-discordant couples) or ART for their own health (sero-concordant positive). Both partners must consent to testing and agree to learn the results together.

- Couple HTC (with support for mutual disclosure) should be offered in all HTC settings
- All PLHIV should be supported to encourage partner testing and disclosure
- HIV-positive partners in a sero-discordant relationship should be offered ART
- Reproductive health counseling should be provided to couples of child bearing age

2.3.3 Counseling children and youth:

Children and youth have unique vulnerability to HIV infection, and as their ability to comprehend HIV/AIDS issues differs from that of adults, this population therefore deserves special consideration. The welfare of the child should be the paramount guiding principle when considering testing; the counselor should determine reasons for testing with the parent or guardian.

- Anyone 18 years of age and above requesting HTC should be considered able to give full, informed consent.
- Young people under age 18 years of age who are married, pregnant, parents, engaged in behavior which puts them at risk, or are child sex workers are considered capable of giving their own consent for HTC, and do not need a parent or guardian's consent.
- HTC of those who are under 18 years and do not have the above mentioned risk factors, should be done with knowledge and consent of their parents or guardians.
- For those under 18 years of age who have no parents or guardians, parental/guardian consent will not be required before testing is done but the young person will be asked to sign a declaration that they have no parents or guardians.
- Giving information about the HIV status of a child should be done only if necessary in the interest of the child with his parents'/guardian's consent; and only to trustworthy teachers who have received training in HIV counseling.
- HTC counselors should be trained on a child developmental approach to gradual disclosure of HIV status.
- *For additional detail on psychosocial support needs of adolescents, refer to section 6.8.*

2.3.4 HTC for male circumcision:

- HTC is part of the minimum services' package for Voluntary Medical Male Circumcision (VMMC). Male circumcision therefore provides an opportunity to reach men with HIV prevention and care services.

2.4 THE PITC PROTOCOL

Recommendation:

PICT should be offered to everyone (adults, adolescents, and children) attending all health facilities; including medical and surgical services; STI, TB clinics, public and private facilities, inpatients and out patients settings, mobile and outreach, services for pregnant women (ANC, FP, MCNH settings); services for key populations; services for infants and children; and Reproductive Health services.

Group education:

- Usually provided as an interactive health education session to groups of waiting patients and facilitated by peer educator, nurse or counselor
- Gives information on benefits of HTC; confidentiality and interpretation of test results; HIV transmission, prevention, and treatment; partner HIV testing and disclosure
- IEC materials such as posters and brochures may supplement group education

Pre-test counseling:

- Usually conducted as a one-on-one session between the health provider and PITC client.
- Routinely ascertain HIV status of patients/clients, initiate new test if status is unknown or unclear
- Reinforce education messages, encourage testing, and seek consent for HIV testing (verbal consent is sufficient). Remind patients/clients that they have a right to decline testing.
- In the ANC setting, individuals who are not ready to test for HIV during the visit should be engaged at subsequent visits.

HIV testing: - See testing algorithms for adults and children in [Figure 2-1](#) and [Figure 2-2](#) .

Post-test counseling:

- Clearly communicate the meaning of the HIV test results to the client. Couples should be encouraged to receive results together.
- For the HIV-negative client:
 - Focus on risk reduction interventions
 - If follow-up test or additional counseling is required, provide referrals/information. Repeat testing (retesting) should only be recommended for individuals at continued risk of HIV infection (uninfected partners in sero-discordant relationships, pregnant women, 'key' populations, people in high-burden generalized epidemics, and seronegative individuals taking Pre -exposure prophylaxis (PrEP in [10.1](#)) or Post- exposure prophylaxis (PEP in [10.3](#)).
 - If male and HIV negative, counsel and refer for male circumcision (MC) services
- For the HIV positive client:
 - Focus on encouraging acceptance of HIV diagnosis; partner testing and disclosure; assessing and resolving barriers to accessing care.
 - Refer to HIV care site for enrollment into pre-ART care and additional counseling; provide information on local HIV services' providers and support networks.
 - Counsel on HIV re-infection, prevention & transmission
 - If HIV diagnosis is not accepted – refer for additional counseling

2.5 HIV TESTING ALGORITHM

2.5.1 In adults and children above 18 months of age:

- The HIV rapid testing algorithm should use three rapid HIV test kits using the serial method. See schematic representation [Figure 2-1](#)
- All blood is first tested with one rapid assay (T1), which is highly sensitive
- Blood that is non-reactive on the first test is considered HIV antibody negative
- Specimens that are reactive on the first assay but non-reactive on the second assay (T1+; T2–) should be repeated using the same specimen (when serum/plasma) with the same two assays. When using finger-stick whole blood, a new specimen will have to be taken.
- On repeat, any specimen(s) that is reactive on the first assay but non-reactive on the second assay (T1+; T2–) are considered HIV-negative or inconclusive. Re-testing should be performed with a second specimen taken after 14 days.
- For specimens that are reactive on both the first and the second assays (T1+; T2+), a third assay should be used to confirm HIV-reactive specimens. If the third test result is also reactive (T1+; T2+; T3+), the result can be reported as HIV-positive.
- If the result of the third assay is non-reactive (T1+; T2+; T3–), then the result is considered HIV-inconclusive.
- Individuals with inconclusive overall results should be asked to return for re-testing after 14 days.

2.5.2 In children below 18 months of age:

- See section [2.3.1](#) and [Figure 2-2](#)

Figure 2-1: HIV testing algorithm in Adults and Children over 18 months

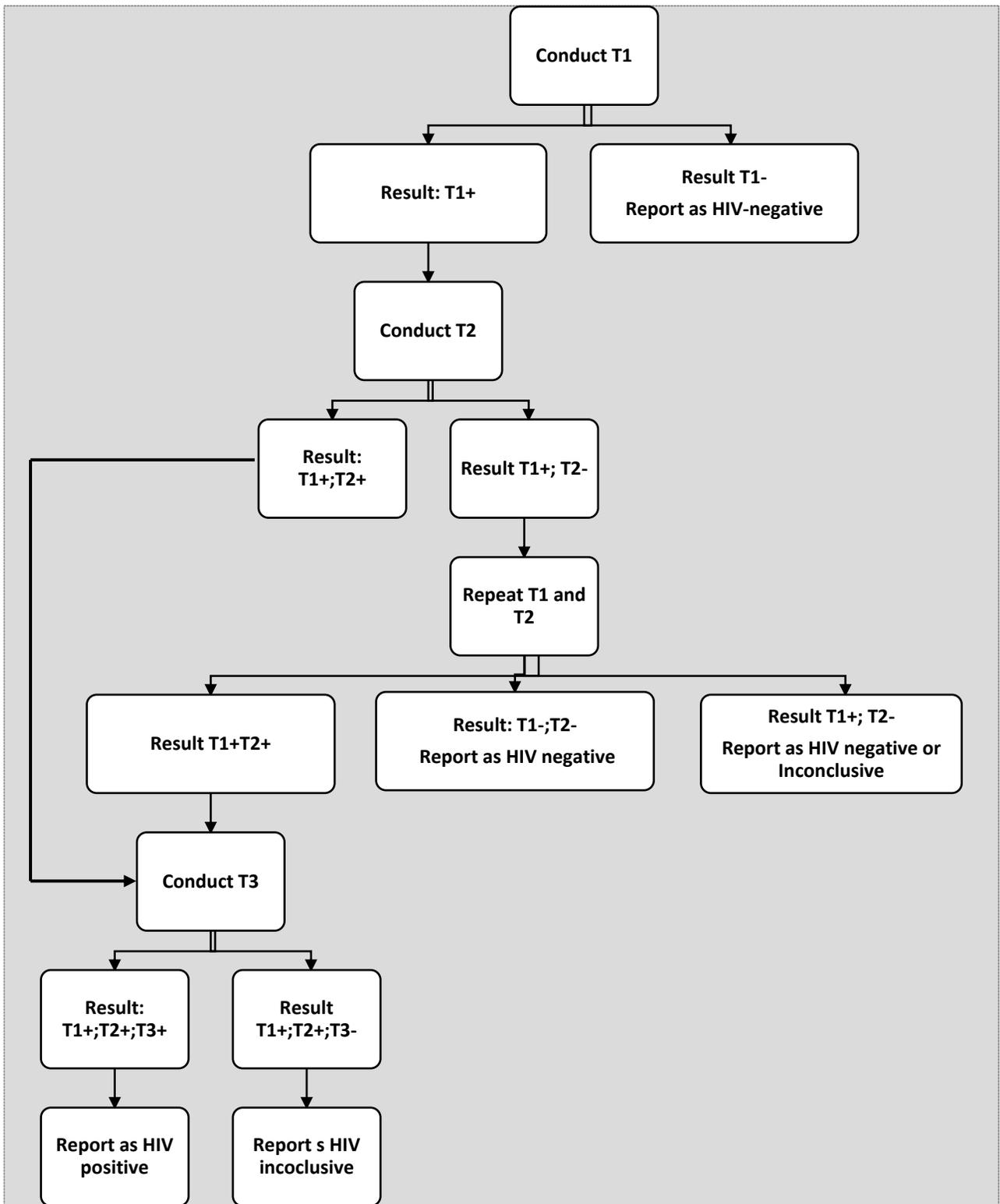
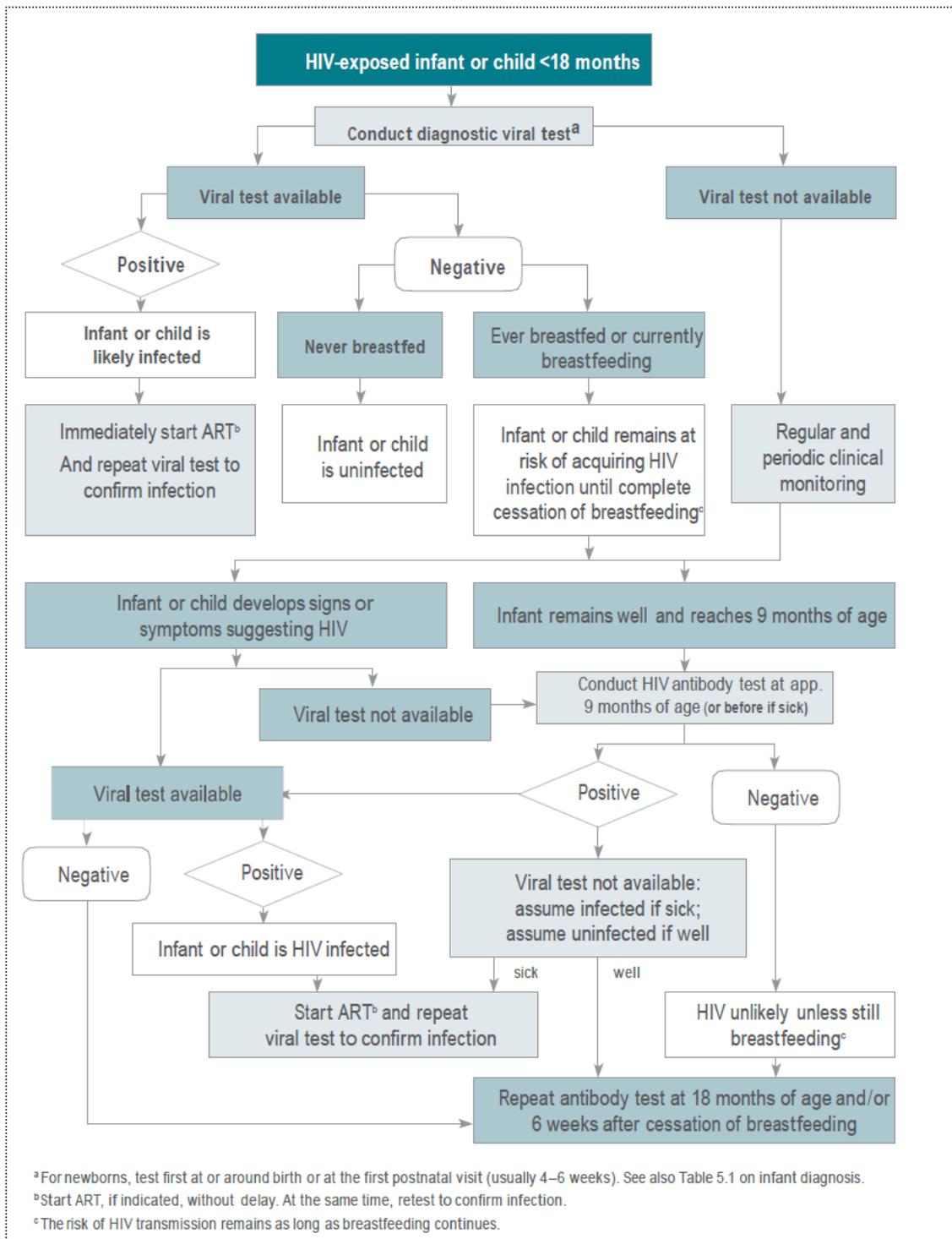


Figure 2-2: HIV Testing algorithm for HIV-Exposed Infants



2.6 LINKAGE FROM HTC TO HIV PREVENTION, TREATMENT AND CARE

- Linkage to care is the process of assisting HIV-diagnosed persons to enter medical care. Linkage is described as successful when following receipt of HIV diagnosis, a client has attended an initial visit at the HIV medical care facility, has been registered, initiated on cotrimoxazole, and assessed for ART eligibility.
- Linkage to care enables early assessment for ART eligibility and timely initiation of treatment, as well as access to interventions to prevent HIV transmission, other infections and co-morbidities, and interventions to reduce the risk of loss-to-follow-up (LFTU).
- HTC services are required to be linked to local HIV treatment, care and support services and to other units of the respective health facilities. 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 and fear of disclosure of HIV status
 - Use of herbal and other medicine
- Structural factors, such as related to underlying economic conditions of daily life
 - Accessibility of care
 - Lack of transportation
 - Work responsibilities
 - Food insecurity
- Health care delivery factors:
 - Quality of care at the point of contact with the patient (long waiting time, conflict with staff, coordination of care, stigma)
 - Service inaccessibility (distance from home)

Recommended strategies for improving linkage include:

- *Integration of HTC with other services and use of rapid HIV testing kits at Point-of Care:* such as provision of PITC in the ANC, the TB clinic or OPD enhances linkage
- *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. At regular intervals, monitoring is carried out and clients that are lost-to-follow-up (LTFU) are actively tracked by providers
- *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 HTC site
- Client reminder and follow-up through *use of mobile phone short message service (SMS) reminders* or telephone calls
- *Immediate CD4 testing at HTC sites for ART eligibility assessment:* e.g. through use of Point-of-Care (POC) CD4 technology or other on-site CD4 testing where available.

3 PRE-ART AND CHRONIC HIV CARE

Enrollment into chronic HIV care enables early ART eligibility assessment and timely initiation of treatment, as well as access to interventions to prevent further HIV transmission, and prevention of infections and co-morbidities. Entry points into HIV care include HTC sites in health facilities and communities.

Key services provided in Pre-ART care:

1. Clinical Monitoring of HIV disease [3.1](#)
2. WHO clinical staging [3.2](#)
3. CD4 monitoring [3.3](#)
4. Nutrition Assessment Counseling and Support [3.4](#)
5. Management of HIV related disease [3.5](#)
6. Provider initiated Family Planning [5.2.2](#)
7. Prevention with Positives (PwP) / Positive Health Dignity and Prevention (PHDP) [3.7](#)
8. Cotrimoxazole Preventive Therapy (CPT) [3.6](#)
9. Insecticide treated bed net (ITNs) [3.5.1](#)
10. Palliative care and management of other co-morbidities

All Pre-ART clients should be registered, have a medical record opened, and have a clear follow-up plan.

3.1 MONITORING HIV DISEASE

Clinical monitoring should be performed routinely for all pre-ART individuals at every visit to ascertain WHO clinical stage and exclude opportunistic infections. This should include medical history, physical examination, and laboratory assessment with CD4 monitoring for ART eligibility, TB screening, and pregnancy screening. See [Table 3-1](#)

History:

- Demographics (age, sex, etc.)
- History of OIs & other significant illnesses e.g. TB, hospitalizations, surgeries previous ART
- Symptoms of chronic pain and depression
- Current medications (including anti TB drugs, traditional therapies etc.)
- Pregnancy risks: contraception choices, current or planned pregnancy
- Sexual risks and disclosure: willingness to practice safer sex, disclosure of HIV sero-status, use of condoms, HIV counseling and testing of sex partners and children.

Physical exam:

- Weight & height
- Nutritional status (wasting, oedema, pallor, nail changes, MUAC, etc)
- Functional capacity and level of disability
- Examination of vital signs, skin, eyes, oropharynx (presence of thrush), lymph nodes, lungs, heart, abdomen, genital tract (for STIs), extremities, nervous system

Table 3-1: Lab Assessment at Enrollment into Pre-Art Care

Lab test	Purpose	Comment
Confirming HIV serostatus	Ensure that national testing algorithm has been followed	
CD4 testing	To assess eligibility for ART (after excluding those eligible for immediate ART) <i>NB: Laboratory monitoring is not a pre-requisite for ART initiation</i>	For the following patients, send for ART immediately: <ul style="list-style-type: none"> ○ Age under 5 years ○ WHO clinical stage 3 and 4 ○ Pregnant or breast feeding women ○ TB patients ○ HBV patients that require HBV treatment ○ HIV positive partners in serodiscordant couples
Screen for pregnancy or ask if planning to conceive	To identify women eligible for lifelong ART	Women living with HIV found to be pregnant or breast feeding should be referred to initiate lifelong ART immediately regardless of clinical stage of CD4.
Screen for TB symptoms	To identify TB/HIV co-infected	PLHIV diagnosed with active TB should receive ART immediately as per guidelines
HBV testing	To identify HBV/HIV co-infected	PLHIV diagnosed with HBV that requires treatment should receive ART immediately NB: HBV testing is currently only available at a few tertiary hospitals in SS.
Haemoglobin	To detect anaemia	
Symptom directed lab tests to diagnose pre-existing illnesses:	See management of HIV related diseases Table 3-5	

3.2 WHO CLINICAL STAGING

- Clinical staging should be performed at HIV diagnosis, on entry into clinical pre-ART care, and at every visit in pre-ART care to help guide decisions on ART and related care.
- HIV-related diseases are grouped into four (4) WHO clinical stages that correlate with disease progression and prognosis of survival: *Stage 1: Asymptomatic; Stage 2: Mild; Stage 3: Advanced; Stage 4: Severe.* See [Table 3-2](#) for staging in adults and adolescents and [Table 3-3](#) in children.
- Patients in WHO stage 3 or 4 are always eligible to start ART. Other eligibility criteria apply for clinical stage 1 and 2.
- WHO clinical staging requires confirmed HIV infection.
 - An infant aged under 12 months with only a positive HIV rapid antibody test can NOT be given a WHO clinical stage because in infants, HIV antibodies do not confirm HIV infection.
 - However, an infant with HIV antibodies and specific clinical conditions is very likely to have AIDS and needs to start ART without delay (see [6.7.1](#) for Presumptive diagnosis of severe HIV disease)

Table 3-2: WHO Clinical Staging for HIV Infections: Adults and Adolescents

<p>Clinical Stage I:</p> <ul style="list-style-type: none"> ○ Asymptomatic ○ Persistent generalized lymphadenopathy
<p>Clinical Stage II:</p> <ul style="list-style-type: none"> ○ Moderate unexplained weight loss (less than 10% of presumed or measured body weight) ○ Recurrent respiratory tract infections, e.g., bacterial sinusitis, tonsillitis, otitis media and pharyngitis ○ Herpes zoster ○ Minor mucocutaneous manifestations (seborrhoeic dermatitis, prurigo, fungal nail infections, recurrent oral ulcerations, angular stomatitis)
<p>Clinical Stage III:</p> <ul style="list-style-type: none"> ○ Unexplained severe weight loss (more than 10% of presumed or measured body weight) ○ Unexplained chronic diarrhea for longer than 1 month ○ Unexplained persistent fever (intermittent or constant for longer than 1 month) ○ Persistent oral candidiasis ○ Oral hairy leukoplakia ○ Pulmonary tuberculosis (current) ○ Severe bacterial infections such as pneumonias, pyomyositis, empyema, bone or joint infection, bacteremia or meningitis ○ Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis ○ Unexplained anemia (<8gm/dl), neutropenia (<0.5× 10⁹ per litre), or chronic thrombocytopenia (<50× 10⁹ per litre)
<p>Clinical Stage IV:</p> <ul style="list-style-type: none"> ○ HIV wasting syndrome – ○ <i>Pneumocystis carinii (jiroveci) pneumonia</i> (PCP) ○ Recurrent severe bacterial pneumonia ○ Chronic herpes simplex (HSV) infection (orolabial, genital, or anorectal of more than 1 month or visceral at any site) ○ Oesophageal candidiasis (or candidiasis of the trachea, bronchi or lungs) ○ Extrapulmonary tuberculosis ○ Kaposi's sarcoma ○ Cytomegalovirus infection (retinitis or infection of other organs) ○ Central Nervous system toxoplasmosis ○ HIV encephalopathy ○ Extrapulmonary cryptococcosis including meningitis ○ Disseminated non-tuberculous mycobacterial infection ○ Progressive multifocal leukoencephalopathy (PML) ○ Chronic cryptosporidiosis ○ Chronic isosporiasis ○ Disseminated mycosis such as histoplasmosis, coccidioidomycosis ○ Lymphoma (cerebral or B-cell non-Hodgkin) ○ Symptomatic HIV-associated nephropathy or cardiomyopathy ○ Recurrent septicaemia (including non-typhoidal Salmonella) ○ Invasive cancer of the cervix ○ Atypical disseminated leishmaniasis

Table 3-3: WHO Clinical Staging of HIV in children

<p>Clinical Stage I:</p> <ul style="list-style-type: none"> ○ Asymptomatic ○ Persistent generalised lymphadenopathy
<p>Clinical Stage II:</p> <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
<p>Clinical Stage III:</p> <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 month) ○ Persistent oral candidiasis (after first 6 weeks of life) ○ Oral hairy leukoplakia ○ Acute necrotizing ulcerative gingivitis/periodontitis ○ Lymph node TB ○ Pulmonary TB ○ Severe recurrent bacterial pneumonia ○ Acute necrotizing ulcerative gingivitis or periodontitis ○ Unexplained anaemia (<8.0 g/dl), neutropenia (<0.5 x 10⁹/L) or chronic thrombocytopenia (<50 x 10⁹/L) ○ Symptomatic lymphoid interstitial pneumonitis ○ Chronic HIV-associated lung disease including bronchiectasis
<p>Clinical Stage IV:</p> <ul style="list-style-type: none"> ○ Unexplained severe wasting, stunting or severe malnutrition not responding to standard therapy ○ Pneumocystis pneumonia (PCP) ○ Recurrent severe bacterial infections (e.g. empyema, pyomyositis, bone or joint infection, meningitis, but excluding pneumonia) ○ Chronic herpes simplex infection; (orolabial or cutaneous of more than one month's duration, or visceral at any site) ○ Oesophageal candidiasis (or Candida of trachea, bronchi or lungs) ○ Extra pulmonary TB ○ Kaposi sarcoma ○ Cytomegalovirus (CMV) infection; retinitis or CMV infection affecting another organ, with onset at age over 1 month ○ Central nervous system toxoplasmosis (after the neonatal period) ○ HIV encephalopathy ○ Extra pulmonary cryptococcosis (including meningitis) ○ Disseminated non-tuberculous mycobacteria infection ○ Progressive multifocal leukoencephalopathy ○ Chronic cryptosporidiosis (with diarrhoea) ○ Chronic isosporiasis ○ Disseminated endemic mycosis (extrapulmonary histoplasmosis, coccidiomycosis) ○ Cerebral or B cell non-Hodgkin lymphoma ○ HIV-associated cardiomyopathy or nephropathy

3.3 CD4 MONITORING

- CD4 cell counts are the most direct routine measure for HIV immune suppression
- CD4 should be measured at the time of HIV diagnosis AND for those not yet eligible for ART, monitored every 6 months while in pre-ART follow-up
- Use CD4 counts to monitor ART eligibility only in patients who would otherwise not be eligible
- CD4 counts are not needed to initiate ART for the following patients;
 - Age under 5 years
 - WHO clinical stage 3 and 4
 - Pregnant or breast feeding women
 - TB patients
 - Patients with HBV who require treatment for their HBV infection
- Use of clinical criteria alone tends to under-diagnose eligibility for ART

3.4 NUTRITION ASSESSMENT COUNSELING AND SUPPORT

Low food intake combined with increased energy demand because of HIV infection and related infections may lead to HIV-related weight loss and wasting.

- Nutritional assessment (anthropometry, clinical and dietary assessment) counseling and support should be an integral component of HIV care and should be conducted at enrolment into care and monitored at every visit. See [Table 3-4](#)
 - Record length / height to the nearest cm at every visit for children, and once at enrolment for adults
 - Record weight in kg to the nearest 100gm at every visit (children and adults)
- Based on each individual's assessment, nutritional education and counseling should be provided.
- Clinically malnourished PLHIV should be provided with therapeutic feeding (TF) support (BMI<16) or supplementary feeding (BMI 16-18.5) until the patient's BMI stabilizes above 18.5
- Food and/or micronutrient supplementation should be provided where necessary and where available.
- Recommended daily allowances of micronutrients should be consumed by adults with HIV through diversified diets, fortified foods and micronutrient supplements.
- PLHIV whose diets are determined as likely to be inadequate in micronutrients, (Vitamins and minerals) should be provided a daily multi micronutrient supplement (one RDA).
- People with HIV (and their families) should be referred to existing 'Food Security and Sustainable Livelihood' programs that will help them achieve household food-security and benefit from livelihood assessment and support.

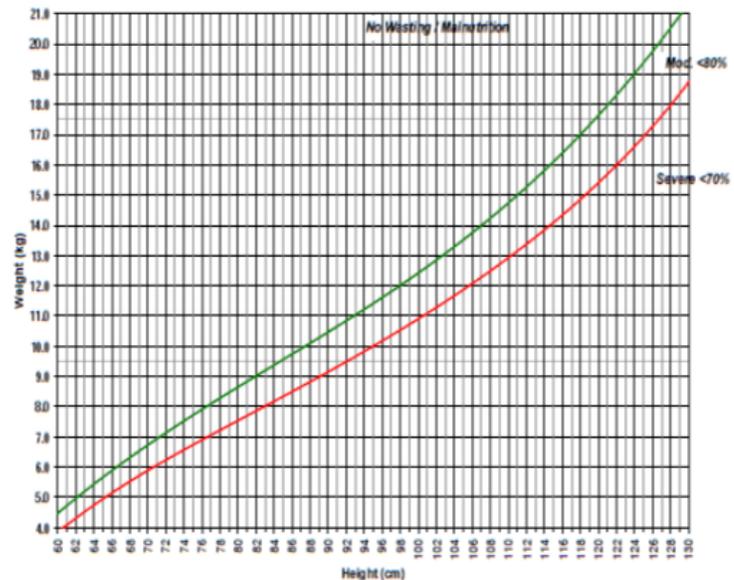
Table 3-4: Nutritional Assessment for adults, adolescents, and children

Children 0-14 years

Classify wasting / malnutrition status according to weight-for-height form – See adjacent figure

- Watch out for flattening of the growth curve (weight for age) see [Figure 6.1](#)
- Weight-for-height less than 80% and/or Mid Upper Arm Circumference (MUAC) less than 12cm:
 - Investigate for tuberculosis (TB)
 - Refer / admit for Therapeutic Feeding (TF)
 - Start ART if no response to TF after 3 weeks (WHO stage 3)

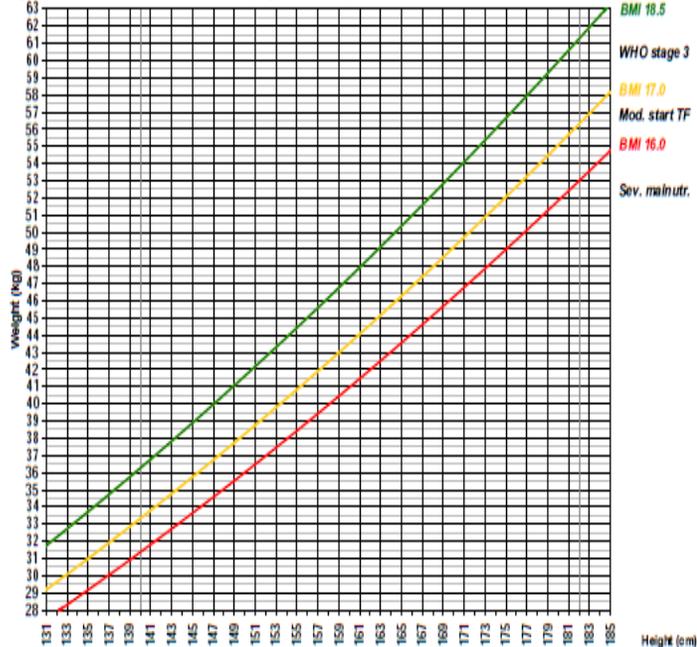
Figure 2: Weight for Height classification of wasting / malnutrition for children 0 - 14 years



Non-pregnant adults 15 years and above

- Classify nutritional status according to Body Mass Index (BMI): $BMI = \text{weight in kg} / \text{height in m}^2$
- Watch out for any weight loss over time
 - Review documented previous weight whenever available as reported weight loss can be unreliable
 - Investigate any weight loss for TB
- Weight loss >10% and/or BMI under 18.5
 - Investigate for TB
 - Start ART if weight loss unexplained (WHO stage 3)
- BMI under 17: Start TF for 'moderate malnutrition'
- BMI under 16: Start TF for 'severe malnutrition'

Figure 3: BMI classification of malnutrition for non-pregnant adults 15 years and above



Pregnant and lactating women

- Use Mid Upper Arm Circumference (MUAC) instead of BMI
- Universally eligible for ART if confirmed HIV infection
- MUAC less than 22cm: start TF for 'moderate malnutrition'
- MUAC less than 19cm: start TF for 'severe malnutrition'

3.5 MANAGEMENT OF HIV-RELATED DISEASE, CO-INFECTIONS. AND OTHER CO-MORBIDITIES

Opportunistic Infections (OIs) are the most important cause of morbidity and mortality in HIV-infected individuals. Improvement in the recognition, treatment and prevention of these conditions in PLHIV has been shown to reduce morbidity and mortality. Prevention of OIs involves patient education, behavior modification, as well as judicious use of chemoprophylaxis. The most common OIs include bacterial respiratory tract infections, tuberculosis, skin conditions and diarrheal diseases.

This section gives a brief overview on the management of selected OIs, common co-infections, and co-morbidities. Refer to [Table 3-5](#), and OI guidelines for further guidance. Refer to [Chapter 8](#) and National TB & Leprosy guidelines for tuberculosis and HIV co-management.

3.5.1 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 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 (IPT).
- 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 patients 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 detail.

3.5.2 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 (program data 2012).
- Patients co-infected with HIV and HBV (requiring treatment) should be initiated on ART immediately irrespective of CD4 count or clinical stage using a TDF/3TC (or FTC) containing regimen.
- Initiating ART among PLHIV and hepatitis C should follow the same principles as for the general population of people living with HIV.

3.5.3 Prevention and Treatment of Sexually Transmitted Infections (STIs)

- HIV is a sexually transmitted infection with the majority of adults acquiring the infection sexually.
- STIs are important co-factors in the transmission of HIV infection; the presence of either inflammatory or ulcerative STIs facilitates both the acquisition and transmission of HIV infection.
- All health care settings should deliver HIV prevention services including prevention-counseling, access to condoms, and treatment for STIs. For details on syndromic management of STIs please refer to national STI guideline.

3.5.4 **Cryptococcus neoformans: screening and treatment**

Cryptococcal meningitis is a major cause of morbidity and mortality even after ART has been initiated. Early diagnosis is key to improving mortality. Prevalence of cryptococcaemia is higher at low CD4 counts. National data on prevalence of cryptococcal disease in SS is currently unavailable.

- Screening for Cryptococcus neoformans and pre-emptive therapy for asymptomatic infection:
 - Where diagnosis and treatment of cryptococcal meningitis is available (such as at tertiary referral hospitals in SS), ART-naive adults with a CD4 count of less than 100 cells/mm³ should have routine serum or plasma cryptococcus neoformans antigen (CrAg) screening performed prior to ART initiation. This should be followed by pre-emptive antifungal therapy if CrAg-positive to reduce risk of developing cryptococcal disease. Treatment of asymptomatic CrAg positive infection is by use of fluconazole 800 mg daily for 2 weeks followed by 400mg daily for 8 weeks.
- Treatment of symptomatic cryptococcal disease:
 - Immediate ART is not recommended in PLHIV with cryptococcal meningitis due to the high risk of life threatening IRIS
 - In HIV-infected patients with recent diagnosis of cryptococcal diseases, ART initiation should be deferred until there is evidence of sustained clinical response to antifungal therapy (2-4 weeks of treatment with Amphotericin B containing regimens and 4-6 weeks with high dose Fluconazole containing regimens)

3.5.5 **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.
- *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.
 - Cervical cancer: In many African countries, cervical cancer is the number one cancer causing death in women. HIV infected women are more likely to develop both pre-invasive and invasive cervical cancer and have a poorer outcome than their HIV negative counterparts. Screening for pre-invasive cervical lesions should therefore ideally be a part of services offered to HIV infected women. Programs should aim to adopt at minimum simple methods of screening such as visual inspection methods and refer patients for better a management to a site where services are available; this would take into account the lack of infrastructure to support more complex screening systems
- *Mental Health:* PLHIV and their carers 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.

NB: Refer to the relevant national guidelines for detailed management of the above conditions.

Table 3-5: Common Opportunistic Infections and Management

	Clinical Signs	Diagnosis / investigations	Primary Management	Secondary Management
Oral candidiasis	Multiple whitish or red patches anywhere inside mouth		<p>Nystatin oral suspension Treat for 7-14 days; keep in mouth as long as possible; apply to mother's nipples if breastfeeding Adult: 4ml 6-hourly Child: 1ml 6-hourly</p>	<p>Secondary Management 3 Alternative treatment options if severe or no response to nystatin: Fluconazole tablets Treat for 14 days Adult: 100 mg 24-hourly Child: 6mg/kg on day 1 then 3mg/kg Ketoconazole tablets Do not give with NVP Adult: 200mg 24-hourly for 14 days Child: 5mg/kg 24-hourly for 14 days Miconazole gum patch or gel Use for children > 4 months and adults Treat with 1 patch 24-hourly for 14 days</p>
Oesophageal candidiasis	Retrosternal pain on swallowing; infants & children refusing to eat; +/- oral thrush		<p>Fluconazole tablets Treat for 14 days Adult: 200mg 24-hourly for 14 days Child: 12mg/kg day one then 6mg/kg</p>	
Chronic diarrhoea	More than 3 loose non-bloody motions per 24 hours for more than 2 weeks	<p>Based on response to stepwise empirical treatment:</p> <p>Step 1 treats: isospora, cyclospora, bacterial</p> <p>Step 2 treats: giardia, clostridium, amoeba, microspora.</p> <p>Step 3 treats: microspora., helminths</p>	<p>ORS Drink 5ml/kg 4-hourly and after every episode of diarrhoea. Drink 5ml doses every 5 min if vomiting occurs</p> <p>IV Fluids If severe de-hydration</p> <p>Loperamide tablets Adult: 2mg after every loose stool (max 12mg in 24 hours) Child: Do NOT use for children</p> <p>Step 1: Cotrimoxazole tablets Adult: 960mg 8-hourly for 7 days Child: 80 mg/kg 8-hourly for 7 days</p> <p>Zinc tablets Give for 10 days Child 0-6mths: 10 mg 24-hourly Child 6mths – 5 yrs: 20 mg 24-hourly</p>	<p>Continue with step 2 and 3 if no improvement</p> <p>Step 2: Metronidazole tablets Adult: 800mg 8-hourly for 7 days Child: 15mg/kg 8-hourly for 7 days</p> <p>Step 3: Albendazole tablets Adult: 400mg 12-hourly for 14 days</p>

	Clinical Signs	Diagnosis / investigations	Primary Management	Secondary Management
TB	Very variable: Persistent fever / drenching night sweats; weight loss; failure to thrive; persistent cough; anaemia <8g/dl; enlarged nodes; meningitis signs	TB case / TB suspect in household; 3x sputum for AAFB; CXR; fine needle aspiration nodes (for microscopy); pleural tap for biochemistry: straw coloured effusion; lumbar puncture: CSF for biochemistry, microscopy.	1st Line TB treatment Consider presumptive TB treatment in HIV patients with suspected TB New smear-positive or negative PTB: Intensive phase: 2 RHZE Continuation phase: 4 RH TB Meningitis: Intensive phase: 2 SRHZ Continuation phase: 6 RH	Relapse/ return after default/ treatment failure/ recurrent TB Admit for Intensive phase: 2 SHRZE 1 RHZE (in hospital) Continuation phase: 5 RHE Chronic/MDR-TB Specialized treatment
Cervical cancer	No early symptoms therefore active screening needed; abnormal vaginal discharge	Acetic acid visualization (VIA) Use good light source Expose cervix with cusco speculum, visualise cervix after washing for 2 minutes with a large cotton swab immersed in 4% acetic acid	Surgical, depending on stage	
Shingles (Herpes zoster)	Grouped blisters in one patch; intense pain /burning; +/- fever; +/- body pains; lesions do not usually cross the body's mid-line		Analgesic Ladder Rigorous pain control Acyclovir tablets Must be started before blisters burst Adult: 800mg 5 times per day for 7 days Child: 20 mg/kg 8-hourly for 7 days If face affected: Refer to Eye specialist Monitor for secondary bacterial infection	
Pruritic papular eruptions	Severe itching, evenly distributed normal or dark-coloured papules on trunk, arms or legs, often scratch-lesions		Calamine Lotion Antihistamines	Corticosteroid cream or tablets Metronidazole tablets 250mg 12-hourly for 7-14 days
Seborrhoeic dermatitis	Greasy, scaly rash in axilla, groin, scalp, neck, face		Clotrimazole or Miconazole cream / ointment	Ketoconazole tablets 200 mg twice daily for 7 days
Tinea corporis / cruris / pedis	Round reddened plaques with scaly edge in multiple sites, poss. widespread		Whitfield's ointment Clotrimazole cream or Gentian-Violet paint Apply twice daily for 3-4 weeks	Griseofulvin tablets Adult: 500 mg 12-hourly for 4-6 weeks Child: 20mg/kg per day for 4-6 weeks
Pneumocystis carinii (jiroveci) pneumonia (PCP)	Extreme shortness of breath; dry cough; +/- fever Severe pneumonia in infants <12 months	O₂ saturation: hypoxia CXR: Diffuse interstitial infiltrates or hyperinflation; bats wing shadow	Admit Oxygen Cotrimoxazole tablets Adult: 4 x 480mg 8-hourly for 21 days Child: 80mg/kg 8-hourly for 21 days	Clindamycin 300mg 6-hourly for 3 weeks + Primaquine 30mg 24-hourly for 3 weeks

	Clinical Signs	Diagnosis / investigations	Primary Management	Secondary Management
		Treat for empirically for PCP any HIV exposed or confirmed infected infant presenting with severe pneumonia	Lifelong maintenance (CPT) IV Cotrimoxazole if unable to swallow and NGT impossible to place Prednisolone tablets: Give 15-30 minutes before cotrimoxazole Adult: 8 tablets 12-hourly for 5 days 8 tablet 24-hourly for 5 days 4 tablets 24-hourly for 11 days Child: 2mg/kg 24-hourly for 7 days 1mg/kg 24-hourly for 7 days 0.5mg/kg 24-hourly for 7 days	
Cryptococcal meningitis	Slow onset severe headache; confusion; convulsions; +/- fever; +/- neck stiffness	CSF India ink stain; CrAg: cryptococcal antigen in serum or CSF	Admit Therapeutic spinal tap (up to 20ml per puncture) Fluconazole tablets Adult: 1 200mg 24-hourly for 14 days 400mg 24-hourly for 42 days 200mg 24-hourly for life Child: 12mg/kg 24-hourly for 2 weeks 6mg/kg 24-hourly for life	Amphotericin B (Specialized sites only) Adult and Child: 0.7-1mg/kg IV over 6 hours 24-hourly for 14 days Fluconazole tablets Adult: 400mg 24-hourly for 42 days 200mg 24-hourly for life Child: 6mg/kg 24-hourly for life For asymptomatic infection see 3.5.3
Pneumonia	Productive cough; chest pain; fever; tachypnoea / dyspnoea	Diagnosis / investigations Infiltrations on CXR	Child: Mild: Tachypnoea but no dyspnoea Adult: Mild to moderate presentation: Amoxicillin tablets 500mg 8-hourly for 5 days Doxycycline or Erythromycin if no response	Severe presentation: Chloramphenicol + Benzyl Penicillin Add Gentamycin if no response
Sepsis	Severe illness; fever (can be absent, especially in children); fast heart rate; fast breathing	+/- Malaria parasites; do not rule out sepsis if malaria parasites are seen; blood culture for culture and sensitivity (if available)	Health Centre Level: Immediate presumptive treatment Referral to hospital Child: Benzyl Pen 50,000 IU/kg IV or IM stat + Gentamycin 7.5mg/kg slow IV / IM stat + Quinine 10mg/kg IM stat Adult: Chloramphenicol 1g IV or IM stat + Gentamycin 240mg slow IV or IM stat + Quinine 1200mg IV in 5% dextrose over 4 hours	Health Centre Level: Immediate presumptive treatment Referral to hospital Child: Benzyl Pen 50,000 IU/kg IV or IM stat + Gentamycin 7.5mg/kg slow IV / IM stat + Quinine 10mg/kg IM stat Adult: Chloramphenicol 1g IV or IM stat + Gentamycin 240mg slow IV or IM stat + Quinine 1200mg IV in 5% dextrose over 4 hours
Toxoplasmosis	Focal weakness, headache, confusion, fever, seizures	Clinical CT / MRI – mass lesion	Preferred Adult: pyrimethamine 75 mg od + sulfadiazine 1.5gm 6 hourly + leucovorin 10-25mg od for	Option 2: Pyrimethamine 75 mg od + clindamycin 600mg qid + leucovorin for 10-25mg od for 6 weeks or

	Clinical Signs	Diagnosis / investigations	Primary Management	Secondary Management
			6 weeks Then maintenance therapy	TMP-SMX (TMP 5 mg/kg and SMX 25 mg/kg) IV or PO BID for 6 weeks
Kaposi sarcoma	Single or multiple purple patches or nodes, mainly mouth, skin, conjunctiva, lung, GI tract; +/- enlarged nodes; +/- Oedema	Usually clear picture; children often present with lymphadenopathy only; consider KS even without skin or oral lesions if no response to EPTB therapy within 4 weeks	<p>For all patients: Analgesia Symptomatic treatment ART</p> <p>For KS stage T0 (skin KS without oedema): Delayed chemotherapy if no improvement after 3 months on ART</p> <p>For KS stage T1 (KS in mouth or internal organs, nodular skin KS, skin KS with oedema): Immediate chemotherapy</p> <p>Contraindications for chemotherapy: Severe PN; Hb<10g/dl; platelet count <50/mm³; jaundice; pregnancy 1st Line: Vincristine Each cycle consists of 6 doses; ensure strictly IV injection as infiltration causes burns; document therapy and response in health passport; examine for recurrence at every visit Adult: 2mg vincristine IV Child: 0.05 mg/kg vincristine IV (max 2mg)</p> <p>Review after every cycle:</p> <ul style="list-style-type: none"> • Severe neuropathy / constipation: stop • Lesions cleared: stop • Good response but residual lesions: continue next cycle • Poor response: Start 2nd line chemotherapy <p>1) Initial cycle: 1 dose every 7 days for 6 weeks 2) Second cycle: 1 dose every 14 days for 12 weeks 3) Final cycle: 1 dose every 28 days for 6 months</p>	<p>2nd Line: Vincristine + Bleomycin Cumulative max. lifetime dose for Bleomycin is 400 units for adults and 17 doses for children; stop bleomycin immediately if any sign for lung fibrosis (incl. cough, shortness of breath) are seen; give one combined dose every 14 days until cumulative max. dose is reached or until response is achieved; refer for 3rd line chemotherapy (doxorubicin) if poor response Adult: 15 units bleomycin IM / IV / SC plus 2mg vincristine IV Child: 0.5 mg/kg bleomycin IM plus 0.05 mg/kg vincristine IV (max 2mg)</p>

3.6 COTRIMOXAZOLE PREVENTIVE THERAPY (CPT)

Cotrimoxazole is effective against common bacterial infections, including bacterial pneumonia, septicemia; diarrhea including that caused by *Isospora belli*; toxoplasmosis; *Pneumocystis Carinii (jiroveci) pneumonia (PCP)*; and malaria. Cotrimoxazole is effective in both pre-ART and ART patients.

- All PLHIV including those on ART, regardless of age, or immunological status, should be given cotrimoxazole unless contraindicated.
- *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*
- In HIV-exposed infants, CPT should be initiated at 6 weeks after birth and continued until the risk of HIV transmission is excluded (breast feeding has ended and infant is confirmed HIV negative).
- Do not give Sulfadoxine – Pyrimethamine (SP) to HIV infected pregnant women on CPT
- *See below dosing chart for cotrimoxazole and toxicity grading in adults.*

Table 3-6: Dosing of cotrimoxazole in infants, children and adults

Daily dose for age	Suspension (5 ml of syrup 200mg/40mg)	Child tablet	Single strength adults tablet (400mg/80mg)	Double Strength adult tablet (800mg/160mg)
<6 months 100mg sulfamethoxazole/ 40 mg trimethoprim	2.5 ml	One tab	1/.4 tab	-
6 months–5 years 200 mg sulfamethoxazole/ 40 mg trimethoprim	5ml	Two tablets	1/2 tablet	
6–14 years 400 sulfamethoxazole/ 80 mg trimethoprim	10 ml	Four tablets	One tablet	Half tablet
>14 years 800 mg sulfamethoxazole/ 160mg trimethoprim	-	-	Two tablets	One tablet
Frequency: Once daily				

Table 3-7: Cotrimoxazole toxicity grading in adults

Toxicity	Clinical description	Recommendation
GRADE 1	Erythema	Continue CPT with careful and repeated observation and follow-up. Provide symptomatic treatment, such as antihistamines, if available
GRADE 2	Diffuse maculopapular rash	
GRADE 3	Vesiculation, mucosal ulceration	CPT should be discontinued until the adverse effect has completely resolved (usually two weeks), and then reintroduction or desensitization can be considered
GRADE 4	Exfoliative dermatitis, Stevens-Johnson syndrome or erythema multiforme, moist desquamation	Co-trimoxazole should be permanently discontinued

3.7 PREVENTION WITH POSITIVES (POSITIVE HEALTH, DIGNITY, & PREVENTION)

At every visit, assess and counsel for;

- High risk sexual activity
- Partners' and children's HIV status
- Disclosure to partner /guardian / treatment supporter
- Signs and symptoms of STIs
- Pregnancy status
- Adherence to ART and other medications
- Abuse of alcohol and other substances

Prevention with Positives (PwP), also known as Positive Health, Dignity, and Prevention (PHDP), is a set of HIV prevention interventions for PLHIV with a focus on keeping PLHIV healthy physically, mentally and psychologically, as well as preventing transmission of HIV. PLHIVs should be provided with information about ways they can protect their own health:

- *Prevention of HIV transmission:* Encourage PLHIV to adopt safer sexual behavior including abstinence, partner reduction, correct and consistent condom use. Condom use prevents HIV transmission, reduces risk of other STIs, and prevents unintended pregnancies.
- *Promote adherence to treatment:* Adherence to HIV treatment facilitates viral suppression, thus reducing HIV transmission risk, and also reduces risk of developing HIV drug resistance (HIVDR).
- *Disclosure and partner testing:* Discuss with PLHIV strategies for disclosing HIV status to sexual partners and family members. Offer HTC to the sexual partners and children born to all PLHIV. Provider- and/or counselor-mediated or supported disclosure are options for those who do not feel comfortable disclosing on their own.
- *PMTCT, Family Planning and safer pregnancy:* Encourage HIV-positive women and young people to discuss their reproductive options and supported to adopt PMTCT. See PMTCT section [5.2.2](#)
- *STI care:* Provide education, diagnosis and treatment of sexually transmitted infections (STIs): Presence of active STIs can increase chances of HIV transmission.
- *Alcohol and other risk reduction:* Give PLHIV information about the risks of alcohol abuse. Heavy drinking can cause poor treatment adherence and increase disease progression. Under the influence of alcohol, individuals may be more likely to engage in risky behaviors, placing themselves at increased risk for acquiring STIs and placing their negative partners at risk for infection.
- *Referral to community-based programs:* Prevention messages and strategies can be included in counseling, support groups or peer-led interventions, or through HBC providers. Interventions including Income Generation Activities (IGAs), empowerment of women and girls increase the likelihood that individuals will have the means to change high-risk behaviors.

3.8 FOLLOW-UP IN PRE-ART CARE

While in chronic pre-ART care, it is important to ensure retention and minimize loss to follow-up; promote HIV prevention; provide appropriate HIV care, and prepare patients for ART. Patients should be seen on a regular basis and any concurrent illnesses managed appropriately.

- Asymptomatic adults in pre-ART care should have scheduled 3-monthly follow-up visits with CD4 testing every 6 months
- Children should be seen more frequently

Table 3-8: Routine Follow-up in pre-ART care

Test	Purpose
Repeat CD4 count every 6 months	To see if they have become eligible for ART
WHO clinical staging at every visit	To see if they have become eligible for ART
Perform nutritional assessment, counseling & support	To ensure good nutritional status
Screen for TB symptoms to identify TB suspects	To identify TB/HIV co-infection, and refer for ART if active TB
Check pregnancy status	Refer for ART if pregnant
Offer prevention for HIV positives	To prevent HIV transmission, re-infection, and prevent STIs. Cater for RH needs.
Provide CPT	To prevent OIs
Provide Insecticide treated mosquito nets (ITNs) for malaria prevention	To prevent malaria Replace once every 24 months
Screen for non-communicable disease and other co-morbidities	For better management of other comorbidities

3.8.1 Retention in care

- Defined as a situation whereby a patient has attended the health care clinic within the last 90 days—for medicine collection, laboratory testing, and/or clinical review—and is not documented as having transferred-out, died, or stopped treatment.
- *Key barriers to retention include:*
 - Poor understanding of why it is important to enroll & remain in care
 - Long distance to the clinic & lack of transportation funds
 - Fear of disclosure & stigma
 - Poverty
 - Lack of customer-friendly services at receiving facilities
- *To enhance retention in care;*
 - Ensure proper registration with contact information – telephone number, home address
 - Give clients/patients appointments and record in register
 - Counsel clients on disclosure, stigma, etc.
 - Provide medical care as needed including timely delivery of lab results or on-site testing
 - Trace patients that have missed appointments, defaulted, or are lost to follow-up.
 - Link clients in care to peer support groups for education and support
 - Decentralize services to help improve access and to minimize transport costs

4 ANTIRETROVIRAL THERAPY

Antiretroviral Therapy (ART) is associated with clinical and HIV prevention benefits, improving survival and reducing the incidence of HIV infection at the community level. ART helps preserve the immune system of PLHIV, reduces the risk of OIs, restores growth (especially in children), and improves mental functioning and overall quality of life.

- ART may be initiated in the ART clinic, in MNCH settings (ANC, maternity, PNC), in the TB clinic, or while a patient is hospitalized (in-patient).
- Initiation of ART can be done at ART accredited health facilities by medical officers, clinical officers, or midwives trained in ART services provision. Follow-up of ART clients may be done at lower level facilities and at community level. Refer to [5.3.4](#) for ART in pregnant and breast feeding women, and [6.7](#) for pediatric ART.

At enrollment, ART-Eligible clients / patients should have:

1. Clinical evaluation
 - WHO clinical staging [3.2](#)
 - CD4 monitoring [3.3](#)
 - Clinical Monitoring HIV disease (History, Physical exam, Lab assessment) [3.1](#)
2. Management of HIV related disease [3.5](#)
3. Ongoing provision of basic HIV care
 - Cotrimoxazole Preventive Therapy [3.6](#)
 - (Insecticide treated bed net (ITNs) [3.5](#)
 - Provider initiated Family Planning [5.2.2](#)
 - Prevention with Positives [3.7](#)
4. Starting antiretroviral therapy [4.2](#)

4.1 ART ELIGIBILITY CRITERIA FOR ADULTS AND ADOLESCENTS

ART eligibility: Adults and Adolescents

- WHO clinical stage III and IV disease regardless of CD4 cell count
- CD4 cell count of ≤ 500 cells/mm³ regardless of WHO clinical stage
- ART should be initiated in all individuals with HIV regardless of WHO clinical stage or CD4 cell count in the following situations:
 - Individuals with HIV and active TB disease
 - Individuals co-infected with HIV and HBV with evidence of severe chronic liver disease
 - Pregnant and breastfeeding women with HIV
 - Partners with HIV in sero-discordant couples

As a priority, ART should be initiated in all individuals with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and individuals with CD4 count < 350 cells/mm³

4.2 PREPARATION FOR ART

Patient preparation prior to starting ART should include baseline clinical and laboratory assessment as well as a psychosocial assessment to ensure the patient can achieve optimal adherence once on treatment. Treatment should be initiated within 7 days of a person being found eligible for ART.

- Clinical Assessment: Treat any pre-existing infections as a matter of priority. Remember *patients with TB should be initiated on anti-TB treatment first, then ART within 2-8 weeks*
- Laboratory Assessment: 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.

Table 4-1: Baseline Laboratory Tests at ART Enrollment

Lab test	Purpose	Comment
Recommended test(s)		
CD4 testing	As baseline	<ul style="list-style-type: none"> ○ Measurement of CD4% is preferable in children <5 years. ○ If on-site CD4 testing is not available, blood samples should be sent for CD4 cell count testing.
Desirable – do if available.		
Pregnancy test	To identify women who need referral for ANC	All pregnant women should be referred for ANC care while taking ART.
Renal function: <ul style="list-style-type: none"> ○ Urine dipstix for glucose ○ Serum creatinine 	To detect renal insufficiency at baseline - particularly for patients starting on TDF containing regimen.	TDF induced renal injury is more common in patients with underlying kidney disease such as cases with long standing hypertension.
Blood Pressure measurement	As baseline	
Screen for TB symptoms	To identify TB/HIV co-infected	PLHIV diagnosed with active TB should receive ART as per guidelines
HBV testing	To identify TB/HIV co-infected	PLHIV diagnosed with HBV (requiring treatment for HBV) should receive ART as per guidelines (using TDF-3TC or FTC containing regimen)
Do HB or FBC if requires AZT	To detect anaemia or neutropenia,	For patients initiating AZT
Alanine aminotransferase (ALT)	To exclude liver disease For patients initiating NVP-based regimen	<p>If ALT is high, do not give NVP but use EFV.</p> <p>If ALT is elevated, do Hepatitis B and C surface antigen test, if available or refer.</p>
Serum cryptococcus antigen if CD4 count is ≤100 cells/ml	To detect asymptomatic infection with <i>cryptococcus neoformans</i> infection	<ul style="list-style-type: none"> ○ Cryptococcal meningitis is a major cause of death even after ART has been initiated. ○ Prevalence of cryptococcaemia is higher at low CD4 counts. ○ Patients with positive serum CrAg should receive pre-emptive anti-fungal treatment for latent cryptococcal infection ○ Diagnosis and treatment is available at tertiary sites- referral hospitals
Symptom directed lab tests to diagnose pre-existing illnesses:	See management of HIV related diseases 3.5	

4.2.1 Psychosocial assessment and adherence counseling

The goal of the psychosocial assessment is to identify problems which may impact negatively on the patient's health or treatment outcomes and correct them. The preparation of the patient for ART should start with baseline counseling to address the following issues:

- *Expected benefits of ART and limitations of ART*
- Importance of adherence to ART, potential barriers and how to improve adherence.
- *Potential side effects of ART and what to do*
- *Possible drug interactions*
- *Follow-up on ART*
- *The importance of food hygiene and proper nutrition.*
- *Sexual and Reproductive Health (RH):*
- For older children and adolescents, disclosure of HIV status
- Patients' willingness and readiness to start ART

ART adherence counseling:

Poor adherence can lead to development of drug resistance, and subsequent immunologic and clinical failure. Potential or actual barriers to adherence should be identified and discussed with the patient during treatment preparation. These may be related to the patient/client, the provider, the regimen, or the health system. The client and provider can work together to address and solve barriers related to the individual client and to medications. The table below highlights some of these factors.

Table 4-2 Patient Preparation To Start ART And Maintain Adherence

Potential Adherence Barrier	How to address this barrier
Barriers related to the patient / client	
<ul style="list-style-type: none"> ○ Poor understanding, misconceptions ○ Stigma and Lack of disclosure of HIV status, lack of social support ○ Depression or other psychiatric diseases ○ Active alcohol abuse ○ Poverty, transport challenges 	<ul style="list-style-type: none"> ● Patient education, counseling and support ● Assisted disclosure ● Linkage to Peer & community support groups ● Treatment of underlying psychiatric condition (s) ● Referral for social support e.g. nutritional support ● Co-management of alcohol abuse/substance use disorder ● Co-management of mental health disorders ● Nutritional support in food insecure settings
Barriers related to medication	
<ul style="list-style-type: none"> ○ Regimen complexity ○ Frequency of dosing ○ High pill burden ○ Food requirements or restrictions ○ Frequency and severity of side-effects 	<ul style="list-style-type: none"> ● Use Fixed Dose Combination (FDC) ARVs / Use regimens requiring less frequent dosing ie od of bid ● Utilise pill boxes especially where patient needs multiple drugs ● Give clear instructions to patients ● Consider patient's routine ● Use of reminders – IEC can be employed ● Do not give unessential medicines ● Inform patient about possible side effects and what to do in case they occur.

4.3 STANDARDIZED ANTIRETROVIRAL DRUG REGIMENS

The Ministry of Health, Republic of South Sudan has decided on standardized antiretroviral drug regimens in line with the 2013 WHO Guidelines on ART in resource-limited settings. The choice of regimens reflects the imperatives of a public health approach to scaling up of ART. Further, regimen selection took into consideration efficacy, tolerability and opportunities for second line treatment. Fixed Dose Combinations (FDCs) are the preferred formulations for the initial combination treatment in the standardized regimen, and are recommended where available.

Recommendation:

In adults, the preferred 1st line regimen is **TDF + 3TC (or FTC) + EFV** as a once daily Fixed Dose Combination (FDC) and should be prescribed for all population groups including adults, pregnant women, patients co-infected with HIV and TB or HBV

Rationale for preferred first line regimen:

- This regimen is simple, effective, and well tolerated.
- Available as a single, once-daily fixed dose combination (FDC), it is easy to prescribe, enhances treatment adherence, and simplifies drug procurement and supply chain management.
- It is safe to use in women of childbearing age whether pregnant or breast-feeding
- Effective against HBV infection, and can be used with anti-TB drugs
- Use of this regimen as 1st line provides for better regimen sequencing and maintains future treatment options
- In areas with high prevalence of anemia like South Sudan, it provides a safe alternative to AZT.
- The regimen has relatively low monitoring requirements.

The list of ARV drugs approved for the treatment protocol in South Sudan is shown in the [Table 4-3](#). Also see [Table 12.2](#) for list of ARV drugs available globally.

Table 4-3: ARV drugs approved for treatment protocol used in South Sudan

Nucleoside Reverse Transcriptase inhibitors (NRTIs)	Comments
<ul style="list-style-type: none"> ○ Zidovudine (AZT) ○ Abacavir (ABC) ○ Stavudine (d4T) ○ Emtricitabine (FTC) ○ Lamivudine (3TC) 	<ul style="list-style-type: none"> - Available evidence suggests 3TC and FTC are equivalent in terms of efficacy and safety. 3TC may therefore be substituted for FTC and vice versa - Currently 3TC is more available in fixed-dose combination
Nucleotide reverse transcriptase inhibitor <ul style="list-style-type: none"> ○ Tenofovir Disoproxil Fumarate (TDF) 	
Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs) <ul style="list-style-type: none"> ○ Nevirapine (NVP) ○ Efavirenz (EFV) 	
Protease inhibitors (PI) <ul style="list-style-type: none"> ○ Lopinavir/Ritonavir (LPV/r) ○ Ritonavir (RTV) 	

4.4 ART REGIMENS FOR ADULTS AND ADOLESCENTS

Table 4-4: ART Regimens for Adults and Adolescents: 1st and 2nd Line

First Line ART		
Adult & Adolescents	Regimen	Comment
All new patients needing treatment, including pregnant women, TB patients, HBV	TDF + FTC (or 3TC) +EFV FDC preferred	Replace EFV with NVP in patients with significant psychiatric co-morbidity or intolerance to EFV
Contraindications to EFV	TDF + (FTC or 3TC) + NVP	Use NVP based regimen: In patients with significant psychiatric co morbidity or intolerance to EFV
Contraindication to TDF	AZT+ 3TC +EFV or (NVP)	Renal disease or the use of other nephrotoxic drugs e.g. aminoglycosides
Contraindication to TDF and AZT	d4T + 3TC+ EFV (or NVP)	Renal disease and anaemia or the use of other nephrotoxic drugs, aminoglycosides
Contraindication to TDF, AZT and d4T	ABC + 3TC + EFV (or NVP)	Renal disease, anaemia, peripheral neuropathy, the use of other nephrotoxic drugs
Currently on d4T-based regimen	TDF + FTC(or 3TC) + EFV FDC preferred	Switch is mandatory if patients experience toxicity and patients who are at high risk of toxicity (high BMI or pregnant). Switch to TDF - based regimen even if D4T is well tolerated.
Adolescents \leq 35 kg	ABC + 3TC + EFV	ABC maybe used in adolescents (10 to 19 years) \leq 35 kg in special circumstances
Second Line ART		
Management of clinical failure	Do CD4 count and viral load	New or recurrent clinical event indicating severe immunodeficiency (WHO stage 4 condition) after 6 months of effective treatment
Management of immunological failure	Confirm with viral load testing	CD4 count falls to the baseline (or below) OR Persistent CD4 levels below 100 cells/ml
Management of virological failure	If confirmed, change to second line ART	If plasma HIV RNA >1000 copies/ml. Check for adherence, compliance, tolerability and drug- drug interaction and assess psychological issues. Repeat VL test 3 months later. If plasma VL confirmed >1000 copies/ml, change regimen to second line therapy
Failing on TDF-based 1 st line	AZT+3TC+ LPV/r	Patients with anaemia and renal failure switch to ABC
Failing on AZT based 1 st line	TDF +3TC (or FTC) + LPV/r	
Failing on a d4T-based 1st line regimen	TDF+3TC (or FTC) + LPV/r	
Third Line		
Failing any 2nd line regimen	Specialist referral	Patients failing on second line therapy will be managed at tertiary referral centers and the drugs for third line managed centrally

NB: Also refer to summary in [Table 12-1](#)

Table 4-5: ARV Adult Dosing Guide

Generic name	Dose	Comment
Nucleoside reverse transcriptase inhibitors (NRTIs)		
Lamivudine (3TC)	150 mg twice daily or 300 mg once daily	
Abacavir	300 mg orally twice a day or 600 mg orally once a day	ABC maybe used in adolescents (10 to 19 years) ≤35 kg in <u>special circumstances</u>
Stavudine (d4T)	30 mg twice daily	To be used only in <u>special circumstances</u> – no suitable alternative. Monitor for toxicity.
Zidovudine (AZT)	250–300 mg twice daily	Avoid if severe anaemia (Hb<8g/dl)
Nucleotide reverse transcriptase inhibitors (NRTIs)		
Tenofovir	300 mg once daily	Contra-indicated in renal disease or the use of other nephrotoxic drugs
Nucleotide reverse transcriptase inhibitors (NRTIs)		
Efavirenz (EFV)	600 mg nocte	Avoid if active psychiatric illness
Nevirapine (NVP)	200 mg once daily for 14 days, followed by 200 mg twice daily	Should be used with caution with TB treatment Avoid NVP if CD4 count >250cells/mm ³
Proteases inhibitors (PIs)		
Lopinavir/ritonavir (LPV/r)	Fixed Dose Combination tablets (LPV 200 mg / RTV 50 mg) Two tablets (400 mg/200 mg) twice daily	Preferably taken with food.
	Considerations for individuals on TB therapy In the presence of rifabutin, no dose adjustment required In the presence of rifampicin; use ritonavir superboosting (LPV 400 mg + RTV 400 mg twice daily) or LPV 800 mg + RTV 200 mg twice daily, with close clinical and hepatic enzyme monitoring	Boosting required with TB treatment

4.4.1 ART regimens for adults and children with TB

TB diagnosed before starting ART:

- Start TB treatment (add pyridoxine to reduce risk of INH-induced peripheral neuropathy)
- Introduce ART within 2-8 weeks of initiating TB therapy:
 - For adults: TDF + 3TC (or FTC) + EFV
 - For children: see [Table 4.6](#) below
- If patient cannot tolerate EFV due to toxicity, consider triple NRTI (ABC + 3TC+ AZT) or TDF+ 3TC + AZT) under the supervision of a senior clinician. NB: Triple nucleoside ART should NEVER be used in TB/HIV patients who have previously failed standard ART.

Adults and children diagnosed with TB while on first line ART:

- Continue ART throughout TB treatment
- For adults, and children 3 years and older, continue with the same regimen.
- For children under 3 years maximize dose of NVP to 200mg/m² or give a triple NRTI regimen (AZT/3TC/ABC)

Adults and children diagnosed with TB while on second line ARV regimen

- For adults, the lopinavir/ ritonavir dose should be doubled (from 2 tablets 12 hourly to 4 tablets 12 hourly) while the patient is on rifampicin-based TB treatment. Monitor ALT monthly. Reduce lopinavir/ ritonavir to standard dose 2 weeks after TB treatment is completed.
- For children, refer to table below

Table 4-6: ART Regimens for Children and Adolescents with TB

Initiating ART while on TB treatment		
Younger than 3 years	AZT+3TC+NVP	Ensuring NVP dose is 200mg/m ²
3 years or older	AZT+3TC+EFV	Alternative: Triple NRTIs (AZT+3TC+ABC) or (TDF+3TC+AZT)
Initiating TB treatment while on ART		
Child on first line: standard NNRTI-based regimen (two NRTIs +EFV or NVP)	Younger than 3 years	Child on preferred 1 st line ABC+3TC + NVP OR AZT+3TC+NVP Continue NVP, ensuring dose is 200mg/m ² OR give Triple NRTIs (AZT+3TC+ABC – preferred)
	3 years or older	Child on ABC +3TC+EFV or ABC+3TC+NVP or AZT+3TC+EFV (or NVP) If the child is receiving EFV, continue the same regimen - ABC +3TC+EFV – preferred or give AZT + 3TC+EFV If the child is receiving NVP, substitute with EFV
Child on second line	Younger than 3 years	Substitute NVP with LPV/r ensuring dose is 200mg/m ² OR Use Triple NRTIs (AZT+3TC+ABC) OR Continue LPV/r consider adding RTV to achieve full therapeutic dose (Increase RTV until it reaches the same dose as LPV in mg , in a ratio of 1:1 (super-boosted LPV/r)
	3 years or older	Substitute EFV for LPV/r OR Use Triple NRTIs (AZT+3TC+ABC) OR Continue LPV/r consider adding RTV to achieve full therapeutic dose (Increase RTV until it reaches the same dose as LPV in mg , in a ratio of 1:1

4.5 ART FOLLOW-UP

Patients on ART need to be monitored regularly to assess for response to treatment, to identify adherence problems, assess for development of toxicity to ART, and management of inter-current illness. Monitoring of treatment involves both clinical and laboratory assessment.

Key activities at ART follow-up:

- Adherence assessment and counseling - [4.5.2](#), [4.2.1](#)
- Provision of CPT - [3.6](#)
- PWP counseling (including FP) - [3.7](#)
- Clinical assessment (for ART response, ART adherence, toxicity, IRIS, OIs) - [4.5.1](#) & [4.5.2](#)
- Lab assessment (for treatment failure, ART toxicity, etc.) - [9.4](#), [4.5.3](#)
- Substitution of first line ART (if indicated) - [4.5.4](#)

4.5.1 Follow-up schedule for patients on ART

- At the *first scheduled visit* (2 weeks after initiating ART), assess clinical progress; check for drug side effects; assess adherence and counsel as appropriate; check for proper medicine storage; adjust NVP dose.
- Week 4 visit: Manage as above, BUT look out for development of Immune Reconstitution Inflammatory syndrome. If stable, subsequent planned clinical visits should be carried out at *monthly* intervals.
- After 6-12 months following initiation of ART, *clinical* appointments may be scheduled at 2-3 monthly intervals in patients that are clinically stable and adherent to ART.
 - Monthly drug re-fills may be devolved to the pharmacist/pharmacy technician or nurse.
 - Patients should be able to see a clinician in case of any medical problems at scheduled or unscheduled visits.
 - All patients on ART should continue to receive basic HIV care including CPT and ITNs
 - Treat any inter-current infections. Appearance of infections within the first 6 months of treatment does not necessarily indicate treatment failure as the immune system takes time to recover.
 - However, in patients who have been on treatment for > 6 months or who have adherence problems, new clinical conditions should trigger an assessment for possible treatment failure.

4.5.2 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 clinic or at unannounced home visits.
- *Self-report*: of pill-taking behavior by the patient
- *Pharmacy re-fill records*. This provides information on when patients picked their ARV medications
- *Use of MEMs caps*: Micro Electronic Monitoring System (used especially in research settings)
- *Viral load monitoring*: this is however not readily available in real time

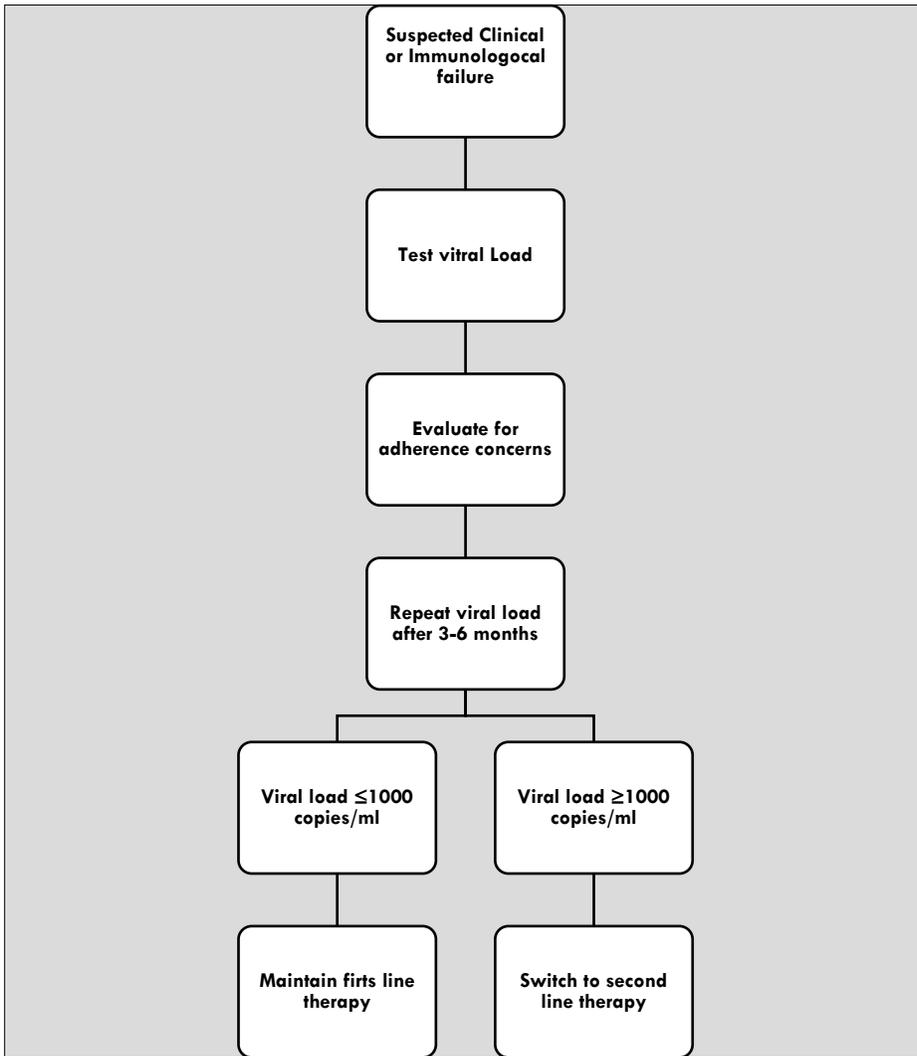
4.5.3 Laboratory testing during ART follow-up

This is important for assessment of (a) ART response, (b) diagnosis of treatment failure, and (c) detection of ARV drug toxicity. See [Table 4.7](#) for lab testing during ART follow-up.

- For assessment of treatment response, CD4 cell count should be performed 6-monthly.
- When compared to CD4 monitoring, viral load monitoring provides an early and more accurate indication of treatment failure and the need to switch to second line treatment. However, due to the limited availability of viral load testing in South Sudan, CD4 count (every 6 months) and clinical monitoring should be utilized to diagnose treatment failure, with targeted viral load testing to confirm treatment failure. See [Figure 4-1](#)
- For toxicity see [4.5.4](#) and [Table 12-3](#)

Table 4-7: Laboratory Testing During ART Follow-Up

Test	Purpose	Comment
CD4 every 6 months	To monitor immune response to ART	An increase of 100-150 CD4 cells/mm ³ in the first 6-12 months is typically seen in an ARV drug-naïve, adherent patient
VL only if treatment failure is suspected see Figure 4-1	To confirm treatment failure	Initiate 2 nd line if treatment failure is confirmed Table 4-4 and Table 12-1
ALT only if on NVP and develops rash or symptoms of hepatitis	To identify NVP toxicity	See table below on what to substitute in case of toxicity Table 4-8 & Table 12-3
FBC at month 3 and 6 if on AZT	To identify AZT toxicity	
Creatinine at month 3 and 6, 1 year then every 12 months if on TDF	To identify TDF toxicity	
Fasting cholesterol and triglycerides at month 3 if on LPV/r	To identify LPV/r toxicity	



- If HIV RNA is over 1000 copies/ml in patients suspected to have treatment failure, adherence concerns should be addressed, and viral load testing repeated after 3 months. If still high, then switch to second line and re-test by 4 to 8 weeks until suppression to <200 copies/mL, then every 3 to 6 months.

4.5.4 Monitoring and substitutions for ARV drug toxicities

Toxicity to ARVs can be monitored clinically based on the client report and physical examination. It can also be assessed by a limited number of laboratory tests. There are 3 categories of drug toxicities:

- Mild toxicities do not require ART discontinuation or drug substitution; give symptomatic treatment
- Moderate or severe toxicities may require drug substitution, but do not require discontinuation of all ART. See [Table 4-8](#) below.
- Severe life-threatening toxicities require discontinuation of all ARVs and initiation of supportive therapy until the patient is stabilized and the toxicity is resolved

For additional information on toxicities, refer to [Table 12-3](#). Regardless of severity, adverse reactions may affect adherence. Before initiating ART, it is important to discuss potential side effects. During the early stages of treatment, offer support during minor and moderate adverse reactions.

Table 4-8: Major Toxicity Substitutions for 1st and 2nd Line Regimens

ARV	ABC	TDF	AZT	NVP	EFV	LPV/r
Toxicity	Hypersensitivity reaction	Renal dysfunction	Anemia, Mitochondrial toxicity	Hepatotoxicity, skin rash, and hypersensitivity reactions	Persistent CNS toxicity	Severe diarrhea or Metabolic syndrome
Suggested substitution	1 st line: TDF 2 nd line: AZT	1 st line: AZT 2 nd line: ABC	TDF or ABC	EFV	NVP	Refer

TDF toxicity

- TDF use may be associated with increased risk of renal dysfunction.
- However, lab monitoring is not mandatory to initiate TDF treatment. Testing renal function at baseline is recommended for patients who are at increased risk of TDF toxicity to detect and limit renal impairment (older people, patients with underlying renal disease, long term diabetes, hypertension, concomitant use of boosted PIs and nephrotoxic drugs).
- *Routine blood pressure monitoring may be used to detect hypertension. Serum creatinine (if available) may be performed. Urine dipstick may be used to detect glycosuria or severe TDF nephrotoxicity in individuals without diabetes using TDF-containing regimens.*
- Do not initiate TDF in patients with long-term diabetes, uncontrolled hypertension, and renal failure, or when the estimated GFR rate is <50 ml/min.
- Children on TDF should have regular growth monitoring

Efavirenz (EFV)

- The CNS side effects associated with use of EFV typically resolve within weeks. If persistent, then NVP could be substituted. Of note, there is no increase in incidence of birth defects for 1st trimester EFV exposure.

Zidovudine (AZT)

- Associated with increased risk of hematological toxicity. Hb estimation is recommended before initiating ART especially among adults and children with low body weight, low CD4 counts, and advanced HIV disease. In individuals with severe anemia <7 g/dl, AZT should be avoided as first line therapy.

Nevirapine (NVP)

- Monitoring liver enzymes is recommended for women with HIV who have CD4 ≥ 250 cells/mm³, and individuals co-infected with HBV or HCV.

4.6 WHAT TO EXPECT IN THE FIRST SIX MONTHS ON ART

The first six months on ART are critical. Majority of ART recipients respond well with increases in CD4 cell count; however, some fail to respond as expected. Possible events during this period include;

4.6.1 CD4 Recovery

- In the majority of patients initiated on ART, the CD4 count increases as the immune system begins to recover. Rises of over 100-150 CD4 cells/ mm³ are expected in the first 6-12 months in the ARV naïve, adherent patient with drug susceptible virus. The response often continues in the subsequent years.
- However severe immunosuppression may persist in a small number of patients and low CD4 cell counts persist. This is more common in patients that initiate ART at very low CD4 cell count.
- Failure to achieve some CD4 recovery should alert the providers to potential adherence problems or primary non-response to ART.

4.6.2 Immune Reconstitution Inflammatory Syndrome (IRIS)

IRIS is an over-aggressive response of the body's defense system caused by a sudden recovery on ART. IRIS occurs in about 10-30% of people initiating ART and usually within the first 4-8 weeks. IRIS is more common among patients with low CD4 counts at ART initiation, disseminated OIs or tumors at initiation, and shorter duration of therapy for the OIs prior to ART.

- May present as *paradoxical IRIS* whereby there is worsening of an opportunistic infection or tumor that was initially responding. *Unmasking IRIS*, occur when ART initiation triggers disease that was not initially apparent before ART. BCG associated IRIS (localized or systemic) may occur in HIV infected infants following immunization. The most serious and life threatening forms of paradoxical IRIS are for TB, cryptococcal meningitis, Kaposi's sarcoma, hepatitis, and herpes zoster.
- IRIS should only be considered if the more common causes for worsening have been ruled out
- Management of IRIS:
 - Confirm that ART is actually taken as prescribed – check adherence
 - Continue ART if ARV drug toxicity has been ruled out as the underlying cause – support adherence
 - Treat the Opportunistic Infection (OI)
 - Consider TB treatment failure if worsening occurs after more than one month on TB treatment
 - Admit severe cases to hospital
 - Seek specialist advice on whether NSAIDs and/or prednisolone should be given
- To reduce the risk of developing IRIS, ensure earlier diagnosis and initiation of ART before CD4 falls below 200 cells/ mm³, improve screening for OIs before ART especially TB and cryptococcus, and properly manage OIs before ART initiation. Specific advice on concomitant TB and HIV treatment is given in chapter 8. For Cryptococcus infection, see recommendation on screening at enrollment and pre-emptive therapy. See [3.5.4](#) and [Table 3-5](#).

4.6.3 Toxicity

- See section [4.5.4](#)

4.7 TREATMENT FAILURE

- Treatment failure is when ART stops controlling an individual’s virus and he/she starts getting sicker. Poor adherence to ART is the commonest cause of treatment failure.
- Whenever treatment failure is suspected, verify if client has been on ART for at least 6 months, has been adherent to the regimen, intercurrent illness has been treated, IRIS has been excluded, and in children, inadequate nutrition is excluded (if considering changing treatment because of growth failure).
- There are 3 criteria for treatment failure; clinical, immunologic, and virologic. Virological failure is the most accurate method and is defined as a persistently detectable viral load exceeding 1,000 copies /ml (i.e. Two (2) consecutive viral load measurements within a three-month interval, with adherence support between measurements) after at least 6 months of using ARV drugs.
- Once treatment failure has been detected, select and switch the client to a new regimen as per [Table 4-4](#) for adults and adolescents and [Table 6-1](#) for children, or [Table 12-1](#). Counsel patient on the new ART regimen- highlighting reasons for change in regimen, differences in drug type, dosing, timing of administration, possible side effects, importance of adherence, and ongoing support.

Table 4-9: Clinical, Immunological and Virological Failure

Failure	Definition	Comments
Clinical failure	<p>Adults and adolescents</p> <ul style="list-style-type: none"> • New or recurrent clinical event indicating severe immunodeficiency (WHO stage 4 condition) after 6 months of effective treatment. Must exclude immune reconstitution syndromes. <p>Children</p> <ul style="list-style-type: none"> • New or recurrent clinical event indicating severe immunodeficiency (WHO stage 3 and 4 condition with the exception of TB) after 6 months of effective treatment 	Must be differentiated from IRIS occurring after ART initiation.
Immunological failure	<p>Adults and adolescents</p> <ul style="list-style-type: none"> • CD4 count falls to the baseline (or below) <u>or</u> • Persistent CD4 levels below 100 cells/ml <p>Children:</p> <ul style="list-style-type: none"> • Younger than five years : Persistent CD4 levels below 200 cells/ml or less than 10% • Older than five years : persistent CD4 levels below 100 cells/ml 	Without concomitant or recent infection, to cause a transient decline in CD4 cell count.
Virological failure	Plasma viral load above 1000 copies / ml based on two consecutive viral load measurements after 3 months, with adherence support . Refer to Figure 4-1	An individual must be taking ART for at least 6 months before it can be determined that a regimen has failed.

4.8 SECOND LINE ART FOR ADULTS AND ADOLESCENTS

- Second-line ART for adults and adolescents should consist of two NRTIs and a ritonavir-boosted PI. The preferred boosted PIs for second line therapy is LPV/r
- After failure of a TDF based first-line regimen, use AZT+3TC (or FTC) as the NRTI backbone in second line regimens. After failure of an AZT-based or d4T –based first line regimen, use TDF as the backbone in the second line regimen. See [Table 4-4](#) and [Table 12-1](#) on ART regimens.

4.9 THIRD LINE ART : SALVAGE THERAPY

- ART switch from second to third line should be guided by results of HIV drug resistance testing. In the absence of ART resistance, 3rd line regimens should include new drugs with minimal risk of cross resistance to previously used regimens. There is currently limited evidence to support specific recommendations for 3rd ART options. **Recommendation:** *Patients on a failing second-line regimen with no new ARV options should continue with a tolerated regimen.*

5 ELIMINATION OF MOTHER TO CHILD HIV TRANSMISSION (eMTCT) AND IMPROVING MATERNAL, NEWBORN AND CHILD HEALTH (MNCH)

Globally, 90% of children get HIV from mothers during pregnancy, childbirth and breastfeeding. Without intervention, the overall MTCT transmission rates range from 15-35% (and as high as 45% depending on duration of breast-feeding). The goal of eMTCT is to ensure HIV-free survival of children born to women living with HIV. Services to prevent mother to child transmission may be provided before pregnancy, during pregnancy (in ANC), during labour, or after delivery. This chapter outlines the eMTCT services for the mother while interventions for the infant are detailed in Chapter 6&7.

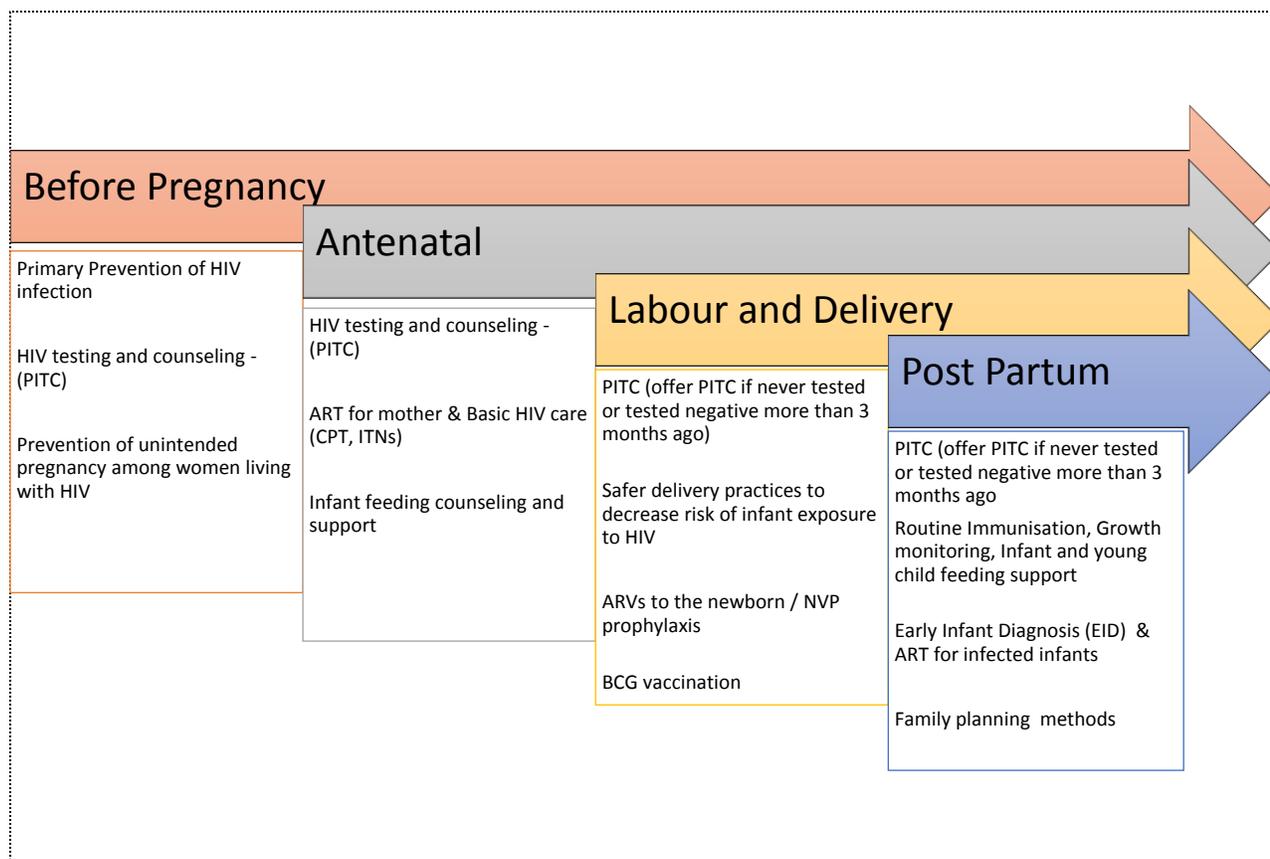
5.1 THE eMTCT PRONGS

Prevention or elimination of mother-to-child transmission of HIV (eMTCT) comprises of a package of interventions summarized as 4 prongs, which must be implemented simultaneously. See [Table 5-1](#) below:

Table 5-1: The eMTCT Prongs

Element	Target group	Additional information
Prong 1: Primary prevention of HIV infection	Women and men who are sexually active	This element aims to prevent men and women from contracting HIV. Interventions include: <ul style="list-style-type: none"> ○ Health information and education ○ HIV testing and counselling - regular retesting for those with exposure ○ Couple counselling and partner testing ○ Safer sex practices, including dual protection (condom promotion) ○ Delay of onset of sexual activity ○ Behavioural change communications to avoid high risk behaviour
Prong 2: Prevention of unintended pregnancies among women living with HIV	Women living with HIV	<ul style="list-style-type: none"> ○ FP counselling & services to ensure women can make informed decision about their RH ○ HIV testing and counselling in RH/FP services ○ Safer sex practices, including dual protection (condom promotion)
Prong 3: Prevention of HIV transmission from women living with HIV to their infants	Pregnant women living with HIV	This element focuses on: <ul style="list-style-type: none"> ○ Quality antenatal and delivery care ○ Access to HTC during ANC, labour and delivery, and postpartum period. ○ ART for all HIV infected pregnant and breast-feeding women ○ Provision of ARV prophylaxis for HIV-exposed infants up to six weeks after birth ○ Safer delivery practices to decrease risk of infant exposure to HIV ○ Infant feeding information, counseling and support ○ Community outreach and efforts to support partner involvement and testing.
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	This element addresses the treatment, care and support needs of HIV-infected women, their children and families.
		<table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top;"> Package of services for mothers includes: <ul style="list-style-type: none"> ● ART ● Co-trimoxazole prophylaxis ● Continued infant feeding counselling and support ● Nutritional counselling and support ○ Sexual and reproductive health services including FP ○ Psychosocial support </td> <td style="vertical-align: top;"> Package of services for HIV-exposed children: Chapter 6 <ul style="list-style-type: none"> ○ ARV prophylaxis for 6 weeks ○ Routine immunization & growth monitoring ○ Co-trimoxazole prophylaxis from 6 weeks of age ○ EID for HIV at 6 weeks. Antibody testing for at 18 months where virological testing is not available ○ Continued infant feeding counselling and support ○ Screening and management of tuberculosis ○ Prevention and treatment of malaria ○ Nutrition care and support ○ Psychosocial care and support ○ ART for HIV infected children (see eligibility) ○ Symptom management and palliative care if needed. </td> </tr> </table>
Package of services for mothers includes: <ul style="list-style-type: none"> ● ART ● Co-trimoxazole prophylaxis ● Continued infant feeding counselling and support ● Nutritional counselling and support ○ Sexual and reproductive health services including FP ○ Psychosocial support 	Package of services for HIV-exposed children: Chapter 6 <ul style="list-style-type: none"> ○ ARV prophylaxis for 6 weeks ○ Routine immunization & growth monitoring ○ Co-trimoxazole prophylaxis from 6 weeks of age ○ EID for HIV at 6 weeks. Antibody testing for at 18 months where virological testing is not available ○ Continued infant feeding counselling and support ○ Screening and management of tuberculosis ○ Prevention and treatment of malaria ○ Nutrition care and support ○ Psychosocial care and support ○ ART for HIV infected children (see eligibility) ○ Symptom management and palliative care if needed. 	

Figure 5-1: The eMTCT Continuum of Services



5.2 BEFORE PREGNANCY

5.2.1 Primary Prevention of HIV infection among women (Prong 1)

- *Implemented at general population level*
- *Activities include: Behavioral Change Communication (BCC) and promotion of safer sex; HIV testing and Counseling (HTC); couple HTC; partner testing; delay of onset of sexual activity; condom use*
- *PMTCT messages should be incorporated in school health curricula, community adolescent health programs, and pre-marital counseling programs*

Recommendations:

- *PITC is recommended for women as a routine component of the package of care in all antenatal, childbirth, postpartum, and infant/pediatric care settings.*
- *Pregnant women who have tested HIV-negative in the 1st or 2nd trimester of pregnancy should be re-tested in the 3rd trimester (preferably between 28-36 weeks), or during labour, or shortly after delivery, because of the high risk of acquiring HIV during pregnancy.*

5.2.2 Prevention of unintended pregnancy among women living with HIV (Prong 2)

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.

Provider Initiated Family Planning (PIFP)

Key message on Provider Initiated Family Planning:

- Avoid unwanted and /or unintended pregnancies, regardless of HIV infection status
- Unprotected sex is a risk for discordant and concordant HIV infected couples
- Couples should use dual protection – condoms alone are not enough for family planning as they have to be used very consistently
- Use the 3-monthly injection (Depo-Provera) for family planning for HIV infected women. It is safe with TB treatment and ART.
- Encourage HIV positive women to make an informed choice about pregnancy. Health workers should not actively discourage pregnancy as the risk of transmitting HIV to the baby is less than 5% if the mother :
 - Starts ART in the second trimester
 - Is fully adherent to ART throughout pregnancy and breastfeeding

A. *Counsel women on FP routinely when they come for ANC, PNC, ART services.*

Encourage HIV-infected women to discuss their RH options and support them as appropriate. Information provided during counseling should cover;

- Family planning methods, advantages, and side effects.
- Common misconceptions about family planning
- Advantages of dual protection and also how to negotiate for condom use.
- What to do when pregnancy occurs

B. *Following counseling, offer FP on a one-on-one basis.*

- I. For HIV-positive women and couples who desire children, discuss strategies to reduce the likelihood of HIV transmission to infants and partners.
- II. 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 [Table 5-2](#)

Table 5-2: Available Family Planning Methods

Method	How to use	Effectiveness (pregnancies per 100 women)	Common side-effects	Considerations if HIV-positive
Short Term Methods				
Male condom	Use every time you have sex	Highly effective when used correctly each time (2 pregnancies/ year) Less effective as commonly used (15 pregnancies/year)	None	Condoms are the only contraceptive method that protects against STIs and HIV
Female condom	Use every time you have sex	Effective when used correctly each time(5 pregnancies/year) Less effective as commonly used(21 pregnancies/year)	None	Condoms are the only contraceptive method that protects against STIs and HIV
Oral contraceptive pills	Take a pill every day	Highly effective when used correctly(<1 pregnancy /year) Less effective as commonly used (8 pregnancies/year)	Menstrual changes, spotting, headaches, nausea	HIV-positive women and women on ART should use pills in combination with condoms (dual protection)
Injectables	Get an injection every 1, 2, or 3 months	Highly effective when used correctly (<1 pregnancy/year) Less effective as commonly used (3 pregnancies/year)	Spotting initially, then no bleeding	HIV-positive women and women on ART should use injectables in combination with condoms (dual protection)
Emergency contraceptive pills	Take within 5 days after condom breakage/ other unprotected sex	Reduces chances of pregnancy from that one act of unprotected sex to 1/4 or 1/8 of chances if not used	Nausea	Not as effective as other methods for regular use
Long term methods				
Implant, IUD, vasectomy, female sterilization	<ul style="list-style-type: none"> ○ Provide long-term, highly effective contraception (<1 pregnancy per 100 women per year) and can be used by women with HIV. ○ Vasectomy and female sterilization are permanent methods, for couples or women who know they will not want more children. ○ Use in combination with condoms for dual protection. ○ These methods require a procedure performed by health care provider. 			

5.3 DURING PREGNANCY

Key activities:

- Provider – Initiated Testing and Counseling [2.4](#)
- Lab investigations and related ANC services [5.3.1](#)
- Comprehensive care for pregnant women with HIV [5.3.2](#)
- Risk reduction counseling [5.3.3](#)
- Antiretroviral therapy [5.3.4](#)

5.3.1 Laboratory investigations and related ANC services

- For all pregnant women (regardless of HIV status), screen and treat for the following conditions: syphilis, HIV, anemia, urinalysis, in addition to a blood group test.
- Perform a baseline CD4 count. The test result is not required for ART initiation.

5.3.2 Comprehensive care for pregnant women with HIV

- Provide Cotrimoxazole Preventive Treatment (CPT). Pregnant women on CPT should NOT be given Fansidar for intermittent preventive treatment for malaria (IPT)
- Counsel mothers on appropriate feeding practices during pregnancy and while breastfeeding
- Provide iron, folic acid and multivitamins for supplementation
- Deworm (using mebendazole) during the second trimester of pregnancy – single dose mebendazole 500 mg

5.3.3 Risk reduction counseling and support during pregnancy, delivery and lactation

- Encourage consistent and correct condom use
- Encourage women to deliver at the health facilities
- Immediately after delivery, all mothers should receive vitamin A 200,000 IU supplementation.
- All HIV positive children will receive Vitamin A 100,000-200,000 IU every 6 months up to the age of 5 years.

5.3.4 Antiretroviral therapy for PMTCT mothers

Key Recommendations:

- 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 (or FTC) +EFV is recommended as the first line ART regimen in pregnant women, including pregnant women in the first trimester of pregnancy and women of childbearing age. See [Table 5.3](#)
- ART should be initiated and maintained in eligible pregnant and postpartum women and in infants at maternal and child health care settings, with linkage and referral to ongoing HIV care and ART.

Why lifelong ART for pregnant and breastfeeding women?

- ART reduces viral load in blood and breast milk thus preventing the exposed child from getting infected with HIV. This makes breast feeding safer, and contributes to child survival.
- Giving the mother ART avoids the need for extended infant ARV prophylaxis.
- Maternal ART reduces risk of HIV transmission to HIV-negative partners in sero-discordant couples.
- ART prevents further disease progression in the mother, with reduction in maternal HIV-related deaths, opportunistic infections especially TB and a direct impact on survival of their children.

Table 5-3: 1st Line ART Regimens for Pregnant and Breast Feeding Women and Exposed Infants

Woman	Regimen	Comment
1st ANC visit		
Woman at first ANC visit (any gestational age)	ART initiated immediately TDF + 3TC) +EFV (as FDC)	Do CD4 baseline, Check urine (glucose), blood (Hb, creatinine)
Currently on lifelong ART	Continue the ART regimen if the regimen is effective	
2nd ANC visit (1 week later)		
Creatinine \leq 85 μ mol/l <u>OR Urine normal</u> Any CD4 cell count	Continue FDC – TDF + FTC (or 3TC) +EFV	
Contraindication to TDF (renal disease) Creatinine $>$ 85 μ mol/l	AZT + 3TC + EFV	If Hb $<$ 7g/dl AZT is contraindicated. Use d4T instead of AZT. Refer for investigation for cause of renal disease
Contraindication to EFV (active psychiatric illness)	TDF + 3TC + NVP	Monitor liver function for women with CD4 $>$ 250cells/mm ³
Labour		
Unbooked and presents in labour and tests HIV positive	Start TDF + 3TC +EFV (as FDC)	Start with single dose Nevirapine – sdNVP then ART
Post-natal		
Woman breastfeeding and diagnosed as HIV positive <u>during pregnancy</u>	Continue ART regimen	
Woman breast-feeding & diagnosed as HIV positive <u>during breast feeding</u>	Initiate ART immediately TDF + FTC (or 3TC) +EFV	
Infant regimens		
Mother on lifelong ART	NVP at birth and then daily for 6 weeks	If mother is breastfeeding and not virally suppressed e.g. late booking or established poor adherence, continue NVP for infant throughout breastfeeding until one week post cessation of breastfeeding
Mother did not get ART before or during delivery and tests HIV positive post delivery	NVP as soon as possible and daily for 12 weeks ie <u>extended NVP prophylaxis</u>	Initiate ART for mother Assess ART eligibility for infant as per infant testing algorithm (EID at 6 weeks, ART if infected)
Unknown maternal status because orphaned or abandoned	Give NVP immediately Test infant with rapid HIV test. If positive continue NVP for 6 weeks. If negative discontinue NVP	Follow up at 6 weeks with HIV PCR If PCR is unavailable, do HIV antibody test at 18 months
Mother on option A regimen	NVP at birth and then daily for 6 weeks	Test infant with 6 week HIV PCR test. If negative and breastfeeding continue NVP till one week after complete cessation of breastfeeding

5.4 LABOUR AND DELIVERY

Key steps

- Ascertain HIV status, offer PITC if never tested or tested negative more than 3 months ago. see [2.4](#)
- 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. see [5.3.4](#)
- Ensure safe obstetric practices – [5.4.1](#)
- ARV prophylaxis for the newborn – [5.4.2](#)

5.4.1 Safe obstetric practices

To reduce obstetric risk of HIV transmission:

- 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 ≥6cm 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 risk of postpartum haemorrhage which increases exposure of the newborn 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 in itself 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.

5.4.2 ARV prophylaxis to the newborn

For breastfeeding infants, give six weeks of infant NVP. Extended duration of infant prophylaxis beyond 6 weeks may be considered if a mother initiates ART very late in pregnancy, in labour or postpartum.

Table 5-4: Infant Prophylaxis ARV Dosing

Infant age	Daily dosing	
Nevirapine (NVP)		<ul style="list-style-type: none"> - If NVP causes toxicity, 3TC can be substituted. - If the mother is using replacement feeding, then AZT for four weeks can be substituted for NVP - If mother has had less than 4 weeks of ART, extend NVP to 12 weeks
Birth to 6 weeks		
<ul style="list-style-type: none"> • Birth weight 2000 -2499 g • Birth weight ≥ 2500 g 	10 mg daily 15 mg daily	
> 6 weeks to 6 months	20 mg daily	
> 6 months to 9 months	30 mg daily	
> 9 months until breast-feeding ends	40 mg daily	
Infants weighing <2000 g should receive 2mg/kg once daily		

5.5 POST-PARTUM INTERVENTIONS

Following delivery, address the treatment, care and support needs of HIV-infected women, their children and families. This is Prong 4 of PMTCT. See Chapter 6&7 for infant/child services.

For the mother, the services include:

- Antiretroviral therapy (ART) - [5.3](#)
- Co-trimoxazole prophylaxis [3.6](#)
- Continued infant feeding counselling and support [Chapter 7](#)
- Nutritional counselling and support [3.4](#)
- Sexual and reproductive health services including FP [5.2.2](#)
- 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.

Follow-up for the mother is usually scheduled at 6 weeks following delivery. At the post natal visit;

- Post –partum check (for sepsis, anemia, high blood pressure etc.); provision of vitamin A
- Family planning counseling and services
- Review of ART regimen and adherence support
- Re-enforcement of safe feeding practices
- Cervical cancer screening - where available
- This visit usually coincides with immunization visit for the baby, and EID for the infant

The mother should also continue to access ART from the MCH facility - *transition from MCH to ART clinic is recommended at about 18 months after child's HIV status has been fully established.*

5.5.1 Community PMTCT/eMTCT

All HIV positive pregnant mothers and their families 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. Community involvement is necessary for 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 HTC
- 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)

6 CARE FOR HIV-EXPOSED AND INFECTED CHILDREN

Pediatric HIV accounts for about 13% of all HIV infections globally. The majority of children (over 90%) with HIV acquire the infection through mother-to child transmission during pregnancy, at birth, or through breast feeding. HIV infection in children tends to follow a more aggressive course than in adults. Mortality is very high among untreated infants infected with HIV; without treatment, 52% of infected children die within two years. It is therefore essential to have early diagnosis, prompt return of results, and rapid ART initiation.

To improve access, services for children should be integrated into clinical and community services.

- Pediatric HIV diagnosis, care, treatment, and support should be integrated into existing adult HIV care clinics
- PITC should be offered in all clinics attended by women and children especially targeting children who are malnourished, have TB, are admitted to hospital, or have signs of HIV infection
- All facilities providing lifelong ART for pregnant women and breast feeding women (PMTCT option B+) should be providing pediatric ART and related services
- All maternal, newborn and child health (MNCN) programs should integrate Early Infant Diagnosis (EID) of HIV such as into immunization outreaches, and well-child /young child days

Key Components of the Care Package For HIV- Infected Children:

1. ARV prophylaxis for 6 weeks – [5.4.2](#)
2. Routine immunization, growth and development monitoring [6.2](#), [6.3](#), [6.4](#)
3. Co-trimoxazole prophylaxis (from 6 weeks of age) – [3.6](#)
4. Early Infant diagnosis at 6 weeks. Ab testing at 18 months where virological testing is not available – [2.3.1](#)
5. Continued infant feeding counselling and support – [chapter 7](#)
6. Management of opportunistic infections – [3.5](#)
7. Psychosocial support and palliative care
8. Adolescent care and support – 6.
9. Mother and family care [Table 5.1: PMTCT Prong 4](#)
10. Antiretroviral therapy – [6.7](#)

6.1 EARLY DIAGNOSIS OF HIV AMONG INFANTS AND OLDER CHILDREN

Key messages

- *Confirm HIV status as early as possible:*
- Link all HIV-exposed infants to care by 1 month of age for medical care and early diagnosis of HIV. To enhance easy identification of exposed infants, document mothers' HIV status on the MCH passport.
- To identify more and older children, implement PICT in all child care settings (in-patients wards, clinics for immunization, under five, TB, malnutrition), and provide HTC to children of adult PLHIV attending HIV clinics
- HIV Testing: HIV infection among children below 18 months old is confirmed using DNA PCR; HIV infection among children >18 months can be confirmed using rapid HIV antibody tests. see [Table 2-1](#), [Figure 2-1](#) and [Figure 2-2](#)
- Following HIV testing, enhance linkages and follow up of lost infants [2.6](#)
- Infants and children below 5 years of age who are found infected with HIV should be initiated on ART [6.7](#)

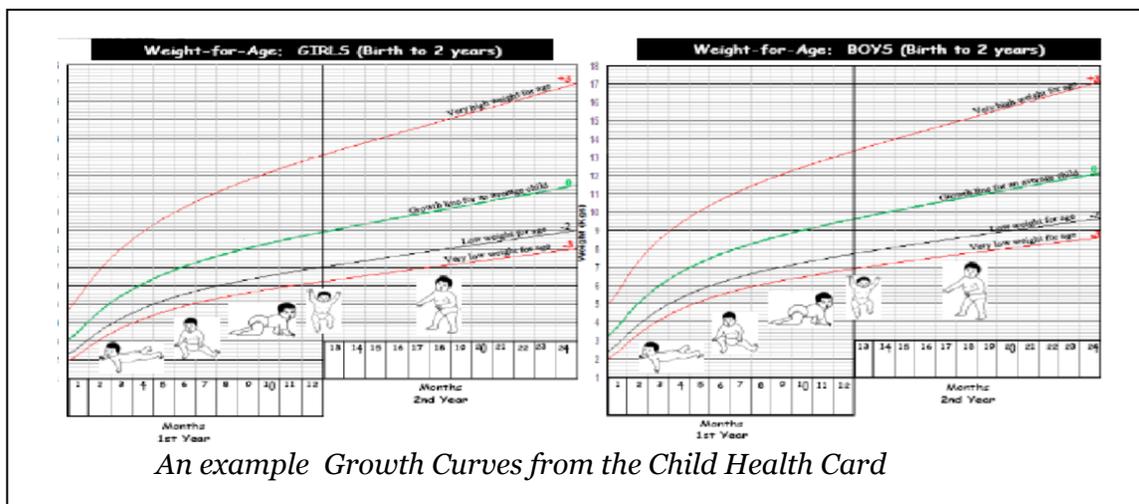
6.2 IMMUNIZATION

- 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 Program (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 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 suspected BCG disease should be referred to tertiary facilities for treatment.
 - When children especially those below 1 year 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 [4.6.2](#) & [8.6.3](#)

6.3 GROWTH MONITORING

- At all encounters with a child, growth parameters should be taken and recorded on the Child Health Card or ART Care Card. See [Figure 6-1](#) below.
- Failure to gain weight or height, 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 as outlined in section [3.4](#)

Figure 6-1: Child Health Card



6.4 DEVELOPMENT MONITORING

'Development' represents maturation of the brain and central nervous system. HIV-infected and exposed Infants are at high risk for HIV encephalopathy, severe neurologic disease and developmental delay. Delayed development or loss of development milestones may be the first sign of HIV infection in an infant or young child. Early identification of developmental delay and neurologic abnormalities can facilitate intervention and remediation.

- Development monitoring assesses cognitive, motor, language and social skills of a child.
- Delay in acquisition or loss of these is a sign of severe HIV in infants and children
- Low 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.

For adolescents, refer to the *Tanner Staging chart* to assess for development of secondary sexual characteristics.

6.5 PREVENTION OF OPPORTUNISTIC INFECTIONS

- *Cotrimoxazole Preventive Therapy (CPT)*
 - All HIV exposed infants from 6 weeks of age until proved to be HIV negative need daily cotrimoxazole for prophylaxis
 - All children proven to be HIV infected need cotrimoxazole prophylaxis to be continued for life even after they start ARVs. Refer to [3.6](#)
- *Isoniazid Preventive Therapy (IPT): Refer to [8.3](#)*

6.6 ROUTINE MONITORING FOR CHILDREN WHO ARE NOT YET ON ART

- Because of the rapid rate of disease progression in infants and young children, more frequent monitoring is indicated for children than for adults.
- Children should be managed in the same clinic with mothers/parents and other family members. Always synchronize the child's clinic appointment with that of the mother / parents to reduce on the number of visits.
- HIV positive children should have monthly clinic visits to receive clinical care and refill their drugs.
- At every visit, perform clinical staging, and CD4 monitoring every six months. Percent CD4 is preferred for children less than 5 years of age rather than absolute CD4 count.

6.7 ANTIRETROVIRAL THERAPY FOR INFANTS AND CHILDREN

Before a child is started on ART one has to ascertain the following;

- If the child is eligible for ART
- Readiness of parents/caretakers or child (if older) to start lifelong ART
- A pre-treatment baseline assessment has been performed

6.7.1 ART eligibility criteria for infants and children

ART eligibility criteria: Infants and children

- All infants and children under 5 years of age should be initiated on ART regardless of WHO clinical stage or CD4 cell count
- All children with WHO clinical stage 3 or 4 disease should be started on ART regardless of age or CD4 count
- All children above 5 years should be started on ART if CD4 count is less than 500 cells/mm³ (with priority given to those with low CD4 below 350 cells/mm³)
- All infants under 18 months of age with presumptive diagnosis of HIV**

** A presumptive diagnosis of severe HIV disease can be made in children below 18 months if:

- The child is confirmed as being HIV antibody positive,
- AND is symptomatic with two or more of the following; oral candidiasis/thrush, Severe pneumonia, Severe sepsis (Refer to IMCI guidelines)
- OR has a diagnosis of any AIDS-indicator condition(s).

Other factors that support the diagnosis of clinical stage 4 HIV infection in an HIV sero-positive infant are recent maternal death or advanced HIV disease in mother.

For these critically ill infants, ART should be initiated at any facility with ARV services as long as the child meets these criteria. Manage the acute infection, and initiate ART. Confirm HIV diagnosis with a DNA-PCR (or Ab testing at 18 months of age). Stop ART if HIV infection has been confidently ruled out and when such children are no longer exposed to HIV (i.e. through breastfeeding from an HIV-infected mother).

6.7.2 Preparation for Anti-retroviral Therapy

- A child depends on a reliable parent/guardian to receive regular treatment. Children eligible for treatment should be assessed for readiness to initiate ART and prepared for lifelong treatment.
- Adherence counseling sessions should be attended by the parent/guardian/caregiver and the child. Topics covered are essentially similar to adults' counseling. However, other issues that should be addressed during counseling include timing of disclosure of HIV sero-status, the challenge of sustaining confidentiality and minimizing stigma – see [6.8](#).
- *Pre-treatment baseline assessment for children* is similar to adults but in addition:
 - Weight, height, head circumference and other measures of growth
 - Developmental status
 - Pregnancy in adolescent girls
 - Assessment of the child's and caregiver's preparedness for therapy.
 - Measurement of CD4% (preferable for children <5 years) or absolute CD4 cell count where available

Table 6-1: ART Regimens for Infants and Children With HIV: 1st And 2nd Line

First line regimens		
Category	Regimen	• Comment (s)
All infants and children under 3 years (or < 10kg)	ABC + 3TC + NVP	<ul style="list-style-type: none"> • If ABC is contraindicated, give AZT+3TC+ NVP • If ABC and AZT are contra indicated, give d4T+3TC+NVP • If a child is anemic (Hb <7.5g/dl) do not use AZT. Use ABC based regimen. • Do not use EFV in children under 3 yrs (or 15 kg).
Children ≥ 3 years-10 years and adolescents ≤ 35kg	ABC + 3TC + EFV	<ul style="list-style-type: none"> • If EFV is contraindicated, give ABC+3TC+NVP • If ABC is contraindicated, give AZT+ 3TC+EFV (or NVP) • If ABC and AZT are contra-indicated, give TDF+3TC+EFV (or NVP) • If a child is anemic (Hb <7.5g/dl) do not use AZT. Use ABC based regimen. <p><u>In special circumstances</u>, d4T+3TC+EFV (or NVP).</p> <ul style="list-style-type: none"> • D4T should only be used if preferred or 1st alternative regimens are contraindicated or missing. All children above 5 years on this regimens should be switched to AZT based regimen
Adolescents 10-19 years ≥35 kg	TDF+3TC+EFV	<ul style="list-style-type: none"> • If EFV is contraindicated, use NVP : TDF+3TC+NVP • If TDF is contraindicated, use AZT: AZT+3TC+EFV (or NVP) • If TDF and AZT are contraindicated, use ABC: ABC+3TC+EFV (or NVP)
2 nd line regimens		
Failed 1 st Line: ABC (or TDF) +3TC + EFV (or NVP)	AZT + 3TC + LPV/r	
Failed 1 st line: AZT +3TC+ +EFV(or NVP)	ABC (or TDF) +3TC+LPV/r	
Failed 1 st Line: d4T +3TC + EFV (or NVP)	ABC +3TC + LPV/r	After failure of a d4T based regimen there will be TAMs we cannot give AZT
Third Line ART		
Failing any 2nd line regimen	Refer for specialist opinion	

NRTI drug combinations to be avoided,

- D4T + AZT, TDF + ddI both drugs work through common metabolic pathways
- TDF +ABC -both drugs select for the K65R mutation
- d4T +ddI -both drugs have overlapping toxicities
- Didanosine (ddI) is anadenosine analogue NRTI which is generally reserved for second-line regimens

While a LPV/r based regimen was recommended by WHO as first line for children below 3 years, there are still challenges with use of this regimen in South Sudan mainly due to its requirement for cold chain conditions during transportation and lack of available treatment options for 2nd line if a child should fail this regimen. For these reasons, a NVP-based regimen has been recommended. It is anticipated that the LPV/r regimen will be adopted in future when new heat-stable sprinkle formulations become available.

Second line ART for children (including adolescents)

- After failure of first line NNRTI-based regimen, a boosted PI plus two NRTIs is recommended for second line ART; LPV/r is the preferred PI
- After failure of first line regimen of ABC or TDF+3TC (or FTC), the preferred NRTI backbone option for second line is AZT+3TC
- After failure of a first line regimen containing AZT or d4T +3TC (of FTC), the preferred NRTI backbone option for second line ART is ABC or TDF+ 3TC) or FTC)

Table: ARV drug dosage for children and infants

Table 6-2: ARV Drug Dosage for Children and Infants

ARV drug	Dose	Formulation	Remarks
AZT	4 mg/kg / dose BD	Syrup 10mg/ml Caps 100; Tabs 300mg	Causes Anemia
3TC	4mg/kg/ dose BD	Syrup 10mg/ml Tabs 150 mg	Well tolerated
NVP	4mg/kg OD for 1st 2 weeks, then a) 7mg/kg/ dose BD if < 8 yrs b) 4mg/kg/dose BD if > 8yrs	Syrup 10mg/ml Tabs 200 mg	Can cause severe rash and hepatitis
D4T	1mg/kg/dose BD	Syrup 1mg/ml Cap 15, 20,30 mg	Can cause peripheral neuropathy, lactic acidosis, Lipodystrophy
LPV/r	0.125-0.15ml/kg/dose BD	Syrup (80/20mg) Tab (pediatric formulation is 100/25mg)	Keep refrigerated in pharmacy, not bring back to clinic
ABC	8mg/kg/ dose BD	Syrup 20mg/ml Tabs 300mg	Can cause life threatening hypersensitivity

6.7.3 Routine Monitoring of Children on ART

After starting ART, follow-up visits should happen as follows:

- For infants, at weeks 2, 4, 8, and then every 4 weeks for the first year
- For children, at weeks 2, 4, 8, 12, and then every 2 to 3 months once the child has stabilized on therapy.

Routine clinical assessment should include addressing the child's and/or caregiver's understanding of ART and adherence to therapy, along with their need for additional support. Key signs of an infant's and child's response to ART include:

- Improvement in growth of infants and children who have been failing to grow
- Improvement in neurological symptoms and development in children with encephalopathy or those who have demonstrated delay in the achievement of developmental milestones
- Decreased frequency of infections (bacterial infections, oral thrush and/or other OIs).

6.7.4 Monitoring Infants and Children with HIV

Ideally the child should be managed in the same clinic with the mother / parents and other family members who are HIV positive. Ensure that the appointment dates of the child are synchronized with that of the mother/parents. Children should visit the clinic every month to receive clinical care and refill their drugs. Do clinical evaluation every one to two months, clinical staging at every visit and CD4 every 6 months.

Table 6-3: Monitoring Infants and Children with HIV

At initiation of ART (Baseline)		
Test	Purpose	Comment
Hb or FBC	If less than 8g/dl start ART and refer for specialist opinion	
CD4 count (if not performed in last 6 months)	Children < 5 years – Baseline Children ≥ 5 years – To determine eligibility for ART and start cotrimoxazole prophylaxis as per national guidelines	For children below 5 years, DO NOT wait for CD4 count to start ART
Creatinine + urine dipstix for glycosuria	If abnormal refer for specialist opinion	
ALT (if jaundiced or on TB treatment)	To assess for liver dysfunction	
On ART		
Height, Weight, Head Circumference (<2yrs) and Development	To monitor Growth and Developmental stage	
Clinical assessment	To monitor response to ART and exclude adverse effects	
CD4 at 6 months into ART, and then every 6 months	To monitor response to ART	Can use viral load for monitoring where it is available
VL on suspicion of treatment failure (clinical and immunological failure)	To confirm treatment failure	
Hb or FBC at month 1, 2, 3 into ART and then annually if on AZT	To identify AZT-related anaemia	
Clinical drug-related adverse events	To identify drug-related adverse events	If develops jaundice or rash on EFV or NVP do Liver function tests and refer to specialist

Table 6-4: Follow-Up Laboratory and Clinical Monitoring Schedule for Infants and Children on ART

Visit	Baseline	Week	Month								Thereafter in stable patient	
		2	1	2	3	4	6	8	10	12		
Weight, height, clinical evaluation	+	+	+	+	+	+	+	+	+	+	+	Every 2 months
Check adherence & side effects	+	+	+	+	+	+	+	+	+	+	+	Every 2 months
Check ART drug dosages	+	+	+	+	+	+	+	+	+	+	+	Every visit
FBC	+										+	Every 6 months
LFTs or ALT	+										+	Every 12 months or as indicated
Creatinine	+										+	Every 12 months or as indicated
CD4 count & %	+										+	Every 6 months
Lipid Profile/ fasting Blood sugar												Every 3, 6-12 months especially for patients on PIs
Viral load												When indicated i.e. to confirm ART failure

Immune Reconstitution Inflammatory Syndrome in children

- There are limited data on IRIS in infants and children. The onset of IRIS in children most often occurs within the first weeks to months following the initiation of ART and is seen most often in children who initiate ART with very low CD4 levels or percentage (<15%)
- The most common opportunistic infection associated with IRIS in children is TB, but those on treatment for Pneumocystis pneumonia (PCP) or cryptosporidiosis, or who have herpes simplex virus (HSV), fungal, parasitic or other infections may also develop IRIS.
- Where BCG immunization of infants and children is routine, BCG-associated IRIS (localized and systemic) may be observed especially among HIV+ children who are undiagnosed or newly diagnosed.

ARV drug toxicity

Some toxicities are less common in children than in adults e.g. the lipodystrophy associated with use of stavudine (d4T) or the symptomatic hepatotoxicity related to nevirapine (NVP) use, while others are more commonly reported in children than in adults e.g. efavirenz (EFV) related rash. See [Table 12-3](#) and [Table 4-8](#) for more detail on ARV toxicity.

6.8 ADOLESCENT HIV CARE AND SUPPORT

Adolescents Living with HIV (ALHIV) are in the age category 10-19 years. There are 2 groups of ALHIV: a) adolescents who acquired HIV prenatally, and b) adolescents who acquired HIV during childhood or adolescence. Adolescents need special attention because of the unique health, psychological, and social needs. See some of the major challenges in [Table 6-5](#) below.

Table 6-5: 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"> Retention in care / loss to follow-up Adherence to ART Positive living and positive prevention 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 For the family: Demands of caring for a child/adolescent with chronic HIV infection Complexity of living in a home affected by HIV, particularly if caregivers are unwell, unemployed or have died 	<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

The package of adolescent HIV care and treatment services includes:

- HIV clinical care (HTC, ART, Pre-ART care, TB care, eMTCT) [6.8.1](#)
- Counseling and psychosocial support (including disclosure) [6.8.2](#) and [6.8.3](#)
- Sexual and reproductive health services [6.8.4](#)
- Family planning and PMTCT services for ALHIV [6.8.5](#)
- Retention, adherence and disclosure support [6.8.6](#)
- Youth-friendly services [6.8.7](#)
- Support for the transition to adult care [6.8.8](#)
- Community linkages including peer-based activities

6.8.1 Clinical care for Adolescents Living with HIV (ALHIV):

Clinical care (HTC, ART, Pre-ART, TB) for ALHIV is generally similar to that of adults. Of note;

- HTC (including disclosure): adolescents should be counseled about the potential benefits and risk 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 to about their HIV status and the HIV status of their parents/guardians. Also see [2.3.3](#)
- ART services: The treatment recommendation for adolescents with weight ≥ 35 kg is the same as that for adults while for adolescents weighing < 35 kg 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 use the HIV services.

6.8.2 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 own and family members' HIV status
- 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 sense of belonging
- Dealing with stigma, discrimination and social isolation
- Accessing education, training, and work opportunities
- Managing mental health issues

6.8.3 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 others
- Disclosure can help young clients 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.

6.8.4 Sexual and reproductive health services for adolescents:

- Support ALHIV to practice safer sex to protect themselves and their partners from HIV, STIs and unwanted pregnancy. Because ARVs reduce the amount of virus in body fluids, safe sex includes maintaining excellent adherence to ART.
- Sexually active adolescents should be screened for STI symptoms, and managed in accordance with national STI guidelines.

6.8.5 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 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 CD4 cell count is high (>500), 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 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.

6.8.6 Supporting retention and adherence to care and treatment for ALHIV:

- Ensure services are youth friendly –See [6.8.7](#)
- Provide counseling and education including adherence preparation support to all ALHIV and their caregivers
- Ensure linkages to peer support groups
- Use appointment systems: send sms reminders where possible
- Ensure tracking system is in place: follow-up clients who miss clinic appointments - by phone, sms or home visit
- Use Fixed Dose Combination ART regimens

6.8.7 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.

<p>Programmatic Characteristics</p> <ul style="list-style-type: none"> ● Package of essential services available ● Sufficient supply of commodities and drugs ● Range of contraceptives offered ● Referrals available ● Affordable fees / free services ● Waiting time not excessive ● Youth are involved in program 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>Health Facility Characteristics</p> <ul style="list-style-type: none"> ● Convenient hours ● Separate space and/or hours for youth ● Convenient location ● Adequate space ● Privacy ensured ● Comfortable setting
	<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 Program</p> <ul style="list-style-type: none"> ● Privacy is maintained at the facility ● Confidentiality is honored ● Youth are welcome regardless of marital status ● Boys and young men are welcome ● Service providers are attentive to youth needs

6.8.8 Supporting the transition to adult care:

After a certain age, all ALHIV attending pediatric clinics have to transition to the adult HIV clinic. The goal of transition is to ensure provision uninterrupted, coordinated, and developmentally and age-appropriate services.

- Healthcare workers should support ALHIV become more independent in managing their care. In addition, providers should also support caregivers to understand their changing role. To help ALHIV prepare for transition, ensure the patient understands the illness and its treatment, promote linkage to adolescent peer and other support groups at the adult clinic.

7 INFANT AND YOUNG CHILD FEEDING

Breastfeeding accounts for up to 20% of infections acquired through Mother-To-Child Transmission (MTCT) in the absence of interventions. At the same time, breastfeeding is critical for the survival of the infant. Infants that are not breast-fed are at increased risk of death from malnutrition, diarrhea and pneumonia.

HIV transmission through breastfeeding can be significantly reduced if a mother breastfeeds her child exclusively and if the mother or the baby receive ARV drugs at the same time. To maximize the benefit of breastfeeding and improve infant survival, while reducing the risk of HIV transmission, South Sudan has adopted use of ART with continued breastfeeding by HIV infected mothers until the infant is 12 months of age.

7.1 Key messages during pregnancy and breastfeeding

- *Diet:* Add extra meals during pregnancy and breastfeeding; drink adequate fluids; eat plenty of fruits and vegetables; eat foods rich in vitamin C to enhance iron absorption; avoid tea or coffee close to (less than 1 hour) or with meals as this may interfere with absorption of iron; and use iodized salt to prevent pregnancy complications (abortions, miscarriages and stillbirths), fetal growth retardation, and maternal goiter.
- *Recommended medications during pregnancy including:* supplemental iron to prevent anemia; folic acid to prevent fetal brain and spinal cord birth defects; de-worming tablets to treat worms and prevent anemia; and vitamin A capsule immediately after delivery or within 8 weeks to help build your baby's immunity.
- *Malaria prevention:* Malaria may cause anemia. Mothers should sleep under an insecticide-treated mosquito net; take intermittent preventive treatment (IPT) for malaria as per national guidelines beginning in the second trimester.
- Avoid alcohol, narcotics or tobacco products and medicines that are not prescribed by a trained health care provider.
- *Attend ANC:* at least four times during pregnancy and always follow your health worker's recommendations.
- *Active promotion of breast feeding initiatives;*
 - Counsel pregnant women on the benefits of breastfeeding and management, importance of adhering to ART regimen, and the risk of MTCT.
 - Counsel on the benefits of exclusive breastfeeding for the first six months regardless of the HIV serological status.
 - Link the mothers to support systems such as mother support groups, lactation clinics on discharge from the hospital or clinic.
 - Demonstrate to mothers how to position infants when breastfeeding, and how to maintain lactation should they be separated from their infants. Pay particular attention to prevention of conditions such as cracked nipples, mastitis that increase risk of HIV transmission.

7.2 DURING LABOR AND DELIVERY:

- ARV prophylaxis should be administered to the baby for 6 weeks after birth
- Mothers should be encouraged to initiate breastfeeding within an hour of birth including cases of caesarian section
- Newborn infants should be fed on only colostrum (the first milk) and not be given pre-lacteal feeds such as glucose, dill/ gripe water, mushroom soup; herbal extracts, etc
- Continue to counsel on demand feeding, exclusive breastfeeding, ways to enhance breastfeeding

7.3 DURING LACTATION

Recommendation:

- All HIV exposed infants should be exclusively breast fed for the first six months. See [Table 7-1](#)
 - Mothers known to be infected with HIV (and whose infants are HIV uninfected or of unknown HIV status) should exclusively breastfeed their infants for the first 6 months of life, introducing appropriate complementary foods thereafter, and continue breastfeeding for the first 12 months of life. Breastfeeding should then only stop once a nutritionally adequate and safe diet without breast-milk can be provided.
- *For HIV exposed but not HIV infected:* From six months continue BF until the infant is 12 months old. After 12 months, BF should be stopped only if nutritionally adequate and safe diet which includes source of milk can be provided.
 - *HIV exposed and HIV infected:* Continue BF as per the general population until the child is 24 months and beyond.
 - *HIV exposed and HIV infected on ARV treatment:* Continue BF as per the general population until the child is 24 months and beyond.
 - *HIV exposed and unknown HIV status:* Endeavour to establish the HIV status of the infant. In the meantime, encourage exclusive BF for the first six months, introduce complementary feeds at six months with continued BF until the infant is 12 months old. Once the infant's HIV status is established, follow the above guidelines as appropriate.

Table 7-1: Essential Behaviors for Exclusive Breastfeeding

A mother practices optimal breastfeeding during the first six months when she:
<ul style="list-style-type: none">- Initiates breastfeeding within one hour of birth- Feeds the colostrum to the baby- Positions and attaches the infant correctly at the breast- Breastfeeds on demand- Breastfeeds frequently during the day- Breastfeeds during the night- Offers second breast after infant empties the first- Gives only breast milk; gives no water or teas or any other liquids or foods.- Continues breastfeeding when she is sick- Increases breastfeeding frequency during and after infant's illness, including diarrhoea.- Seeks help from a trained health worker or counsellor if she has problems with breastfeeding- Eats sufficient nutritious foods herself and takes supplements as recommended by the health provider

7.4 COMPLEMENTARY FEEDING

- *At 6-12 months*
 - After 6 months of age, appropriate complementary foods should be introduced while continuing to breastfeed until 12 months.
 - The mother should be encouraged to breastfeed as often as the infant wants
- *At 12-24 months*
 - Discourage breastfeeding for mothers, whose infants are HIV negative at 12 months. Alternative forms of milk should be given; of at least 500ml a day.
 - Encourage mothers to feed their children 5 times a day - 3 main meals and 2 extra foods between meals (snacks).
- *12-24 months for infants who are HIV infected*
 - Encourage mothers to continue breastfeeding on demand, day and night up to 24 months and beyond to maintain the baby's health and nutrition.
 - Counsel caregivers to:
 - Give 1 extra snack to well children and 1 extra meal (or 2 snacks) at onset of sickness.
 - Give 3 extra meals (or 2 extra meals and 1 snack) when sick and losing weight
- *Feeding a child 2– 6years*
 - Encourage mothers to give a variety of foods prepared from the family meal (each meal should consist of a carbohydrate, protein, vegetables) at least 3 main meals a day.
 - Encourage care givers to give nutritious snacks between meals e.g. a fruit (banana, pawpaw, orange, mangoes) egg, bread, enriched thick porridge or a glass of milk.

Table 7-2: Essential Behaviors for Complementary Feeding

A mother practices optimal complementary feeding during the period 6-23m of the infant's life when she:
- Starts feeding additional foods to the child at the age of 6 months
- Starts with soft or mushy foods at first that are age appropriate and are not too thin or thick, and gradually shifts to foods of a solid consistency if the child is ready.
- Continues breastfeeding up to two years of age or beyond.
- Offers solid or semi-solid foods 2-3 times per day when child is between 6-8 months of age, and 3-4 times per day after that, and offers nutritious snacks 1 or 2 times per day, as desired.
- Offers a variety of foods, from all the food groups (grains, roots and tubers, legumes and nuts, animal source foods and fruits and vegetables) and increases in variety and quantity as the child grows.
- Practices good hygiene in preparation and storage of complementary foods (including washing hands before and using clean water and utensils).
- Continues breastfeeding and feeding complementary foods during illness.
- Gives the child iron-rich foods such as animal source foods or iron supplements if iron-rich foods are less available.
- Uses feeding times for interacting with the child, to teach and stimulate social development as well as encourage the child to eat.

Additional Messages:

HIV positive mothers who decide to stop breastfeeding at any time should stop gradually. This transition period should be between 1-2 weeks which is not too long to increase exposure and not too short to cause physical and psychological trauma to the mother and baby. Mechanism of transition includes:

- Expressing Breast Milk (BM) and feeding infant/child by cup
- Substituting the expressed BM with suitable replacement feed gradually.
- Replacement feeding (using alternative milk other than breast milk in the first 6 months of life) should be recommended only in extreme circumstances such as: mother absent, dead or mentally disabled.

8 TUBERCULOSIS AND HIV

8.1 INTRODUCTION

Among PLHIV, tuberculosis (TB) is the most frequent life-threatening opportunistic infection and a leading cause of death. TB is responsible for more than 25% of all deaths among PLHIV. HIV infection increases the risk of acquiring TB and progression to active TB disease following exposure to *M. tuberculosis*. The risk of new tuberculosis disease in HIV-infected individuals can be lowered, by reducing exposure to TB, using Isoniazid Preventive Therapy (IPT), and provision of anti-retroviral therapy (ART).

Interventions for TB and HIV should be integrated in both TB care and HIV care settings.

- ART for PLHIV should be initiated in the TB care setting, with linkage to ongoing HIV care and ART, and transition to the ART clinic after completing TB therapy.
- TB treatment should be provided for PLHIV attending HIV care settings where TB diagnosis has also been made.

Key TB/HIV interventions:

- Provider initiated HIV testing and counseling (PITC), and other HTC approaches [2.2](#)
- Cotrimoxazole Preventive therapy and other General HIV care – [3.6](#)
- The 3 'I's for HIV/TB
 - Intensified Case Finding (ICF) [8.2](#)
 - Infection Control (IC) [8.4](#)
 - Isoniazid Preventive therapy (IPT) [8.3](#)
- Antiretroviral therapy - see [Chapter 4](#) and [8.6](#)
- Anti-TB treatment – see [Table 3.5](#)

NB: Special attention is given to Multiple Drug Resistant TB (MDR-TB) and TB-HIV co-infection in children

8.2 INTENSIFIED CASE FINDING FOR TB

- TB screening among PLHIV should be done at every visit using a clinical algorithm as shown in [Figure 12-1](#) and [Figure 12-2](#)
- Evaluate clients for TB using sputum smear for AAFB, chest X-ray, etc only if:
 - An adult/adolescent has either current cough, fever, weight loss, or night sweats.
 - A child has any one of the following symptoms of current cough, fever, poor weight gain, or close contact with a TB patient. See 8.8.2 on TB diagnosis in children.
- Sputum smear-negative TB is common in HIV-infected patients, particularly those with advanced immunodeficiency and non-cavitary disease.
- Diagnosis may be enhanced among smear negatives by use of Xpert MTB/RIF (GeneXpert).
- For those confirmed with TB, use standard TB treatment regimen. TB patients with known HIV status should receive at least 6 months of a rifampicin-containing treatment regimen. See [Table 3-5](#)

8.3 ISONIAZID PREVENTIVE THERAPY (IPT)

Isoniazid Preventive Therapy reduces TB incidence by about 60% in HIV- infected individuals. Providing IPT to PLHIV does not increase the risk of developing isoniazid-resistant TB.

- *Routine use of IPT is however not currently recommended in South Sudan mainly due to challenges in excluding active TB among PLHIV.*
- Use of IPT is recommended for children of breast feeding mothers with active TB. All HIV-infected infants and children exposed to TB through household contacts, but with no evidence of active disease, should begin Isoniazid preventive therapy (IPT). Before giving the INH prophylaxis, confirm that the child has no ACTIVE TB disease. The recommended dose of Isoniazid (INH) for preventive therapy in HIV co-infection is 10 mg/kg/daily for 6 months (maximum 300 mg/day).

8.4 TB INFECTION CONTROL (IC)

Each health facility should have a TB infection control plan to reduce transmission of TB in the health care setting and actively look out for development of TB among the workers. Tuberculosis IC plans need to be developed in line with the *TB Infection Control Guidelines for South Sudan – 2012*. The TB Infection Control Guidelines should also be used for:

- Development of SOPs to triage and identify TB suspects, ensure separation of suspects from cases, promote good cough etiquette and respiratory hygiene, and rapid TB diagnosis and treatment.
- Provision of information to Health Care Workers TB prevention and care, protective equipment such as respiratory masks, and those living with HIV should be offered ART as well as possible relocation to lower risk areas.
- Provision of information on environmental measures such as proper ventilation and lighting.

8.5 TREATMENT OF ACTIVE TUBERCULOSIS IN HIV-INFECTED PATIENTS

- The principles for treatment of active tuberculosis (TB) disease in HIV-infected patients are the same as those for HIV-uninfected patients.
- Patients co-infected with TB and HIV should receive at least 6 months of a rifampicin-containing anti-TB treatment regimen. Use standard regimen TB regimen 2HERZ/4RH). See [Table 3-5](#)
- TB treatment may be provided in either the HIV clinic or the TB clinic
- Initiate ART as per guidelines taking into consideration the drug interactions. See [4.4.1](#)
- Cotrimoxazole prophylaxis should be continued
- Add pyridoxine 50mg daily in view of the risk of peripheral neuropathy associated with INH. Stavudine (d4T) should be avoided in co-infected patients who need ART particularly those with very low CD4 counts because the risk of peripheral neuropathy is higher in these patients.

8.6 ANTIRETROVIRAL THERAPY IN PATIENTS WITH ACTIVE TUBERCULOSIS

Key recommendations:

- PLHIV diagnosed with active TB should be started on anti-TB therapy immediately
- All PLHIV diagnosed with active TB should be treated with ART within 2 weeks and not later than 8 weeks of anti-TB initiation ((including those with drug resistant TB) regardless of CD4 count.
- The recommended first line ART regimen for ARV drug-naïve patients with TB/HIV who require ART while still on rifampicin is: TDF + 3TC (or FTC) + EFV. See [Table 4-6](#)
- In cases where EFV cannot be used, triple nucleoside analogue (NRTI) treatment may be considered (Abacavir + Lamivudine+ Zidovudine or Tenofovir + Lamivudine + Zidovudine) with the advice and supervision of a senior clinician.
- For adults and children diagnosed with TB while on ART (1st and 2nd line), see regimen changes in [4.4.1](#)
- Immune reconstitution inflammatory syndrome (IRIS) may occur after initiation of ART. Both ART and TB treatment should be continued while managing IRIS [4.6.2](#)
- Treatment support, which can include directly observed therapy (DOT) of TB treatment, is strongly recommended for HIV-infected patients with active TB disease.

Concurrent treatment of TB and HIV is potentially complicated by high pill burden, additive toxicities, drug interactions, and the potential for development of IRIS.

8.6.1 Drug Interaction Considerations

- Rifampicin induces liver enzymes thus reducing the serum levels of most ARV drugs including all PIs, and the NNRTIs especially NVP. Rifampin is not recommended in combination with all PIs and efavirenz is the preferred option in patients on rifampicin.
- Rifabutin, a weaker enzyme inducer, is an alternative to rifampin. When used in place of Rifampicin, the ART regimens need not be adjusted.
- Rifampicin interferes with combined oral contraceptive pills, progestin-only pills, and Norplant rendering them less effective. The most effective family planning option would be Depo-Provera or the woman should be encouraged to use condoms along with pills.

8.6.2 Anti-Tuberculosis/Antiretroviral Drug Toxicities

- ARV agents and TB drugs, particularly INH, rifampicin, and pyrazinamide, can cause drug-induced hepatitis. Patients receiving potentially hepatotoxic drugs e.g. NVP should be monitored frequently for clinical symptoms and signs of hepatitis and have laboratory monitoring for hepatotoxicity.

- Peripheral neuropathy can occur with administration of INH, or stavudine (d4T) or may be a manifestation of HIV infection. All patients receiving INH also should receive supplemental pyridoxine to reduce peripheral neuropathy.

8.6.3 Immune reconstitution inflammatory syndrome (IRIS) with TB and ART

- IRIS is more common in patients with advanced HIV disease (particularly those with a CD4 count less than 50 cells/mm³ or 10% in children) in the first few weeks of starting HAART. This is due to unmasking of a previously occult opportunistic infection by the improving immune function. Previously diagnosed disease may also get worse (paradoxical IRIS).
- Patients with mild or moderately severe IRIS can be managed symptomatically. Those with severe IRIS can be treated with corticosteroids.
- In the presence of IRIS, neither TB therapy nor ART should be stopped because both therapies are necessary for the long-term health of the patient.

8.7 MULTI-DRUG RESISTANT (MDR) TB AND HIV

- MDR-TB is defined as TB that is resistant to at least isoniazid and rifampicin
- PLHIV with suspected MDR-TB should have drug sensitivity testing performed. Where possible, use Xpert MTB/RIF (GeneXpert) since this is more sensitive for detecting TB among PLHIV and rapidly detects rifampicin resistance.
- All patients with HIV and MDR-TB should be initiated on ART irrespective of CD4 counts
- Refer patients to specialized TB treatment centers for specific MDR anti-TB medication

8.8 HIV AND TB CO-INFECTION IN CHILDREN

Children living with HIV are at increased risk of acquiring infection and progression to active TB disease following exposure to *M. tuberculosis* compared to those who are HIV negative. About 50% of HIV infected children with TB infection go on to develop the TB disease. Those who develop TB disease have a poorer prognosis for severe disease. HIV infected children often have co-existing severe malnutrition which is also a risk factor for progression to severe disease.

8.8.1 TB screening in children

- All HIV-infected and exposed infants and children should be evaluated for TB symptoms using the TB screening algorithm at every visit to a health-care facility. In addition, they should be evaluated for contact with a TB source case. See [Figure 12-2](#)
- Those reporting either positive contact history, poor weight gain, or any suggestive symptoms should be investigated for TB.
- Infants and children have a wide range of pulmonary and extra pulmonary manifestations of tuberculosis. Clinical conditions suggesting a possibility of TB include bronchopneumonia without improvement on a 7-14 day course of broad spectrum antibiotics, pleural effusion, asymmetrical peripheral lymphadenopathy, spinal deformity, abdominal peritonitis, ascites and meningitis in a setting of the above symptoms.

8.8.2 TB diagnosis in children:

- Diagnosis of TB in children is challenged by the difficulty in obtaining sputum for bacteriological confirmation of the disease. Samples such as sputum (by expectoration, gastric aspiration or induction), fine-needle aspirates of enlarged lymph nodes, pleural fluid or ear swabs should be subjected to microscopy and other available bacteriological investigations. Gastric aspirates should not be undertaken in the absence of culture services.
- Diagnosis of TB in children is presumptive and based on a suggestive clinical signs and symptoms, findings on chest x-ray, Tuberculin Skin Testing (TST) and other investigations.
- When making a diagnosis of TB among HIV infected infants and children, one needs to exclude HIV related fevers, weight loss, systemic and respiratory diseases which may mimic TB. The TST may be negative even in presence of TB disease. Radiological features in PTB are often non-specific and/or similar to those seen in other HIV related lung diseases such as *bacterial pneumonia, viral pneumonia, Pneumocystis Carinii/Jiroveci pneumonia, Kaposi's sarcoma, fungal lung disease and pulmonary lymphoma.*
- The most important diagnostic clue for detecting TB in HIV infected children is a history of contact with an adult who has infectious TB. Since TB may not have yet been diagnosed in this adult, a prompt evaluation for TB in adults who care for the children is a critical part of the evaluation of the children.

8.8.3 TB prevention

- Protection of HIV infected infants and children from TB can be achieved through early detection and treatment of adult infectious cases and universal use of BCG at birth and IPT (where implemented).
- BCG vaccination is protective against severe forms of TB such as miliary TB and TB meningitis. It should not be given to infants and children with symptomatic HIV infection.

9 LABORATORY TESTS FOR HIV AND AIDS

9.1 INTRODUCTION

Laboratory tests are useful in pre-treatment assessment as well as in monitoring patients on treatment. Lack of access to these tests should however not be a barrier to treatment initiation. Where tests are not available on site, arrangements should be made to transport specimens to facilities with capacity to perform the tests. The need for Point of Care (POC) technologies is key for ensuring rapid, diagnostic results in settings with limited access to laboratory services. In the event that laboratory resources do not permit the full range of ‘desirable’ tests, minimum ‘recommended’ tests can be done.

Table 9-1: Lab Monitoring Schedule for Patients Before and after ART Initiation

	HCT	Entry into care	Follow-up in Pre-ART care	ART initiation Baseline	Follow-up 2-8 weeks after ART initiation	Every 3-6 months	Every 6 months	Every 12 months	Treatment Failure	Clinically indicated
HIV serology	√ (or DNA PCR for infants <18/12)	√ (if not confirmed)								
CD4 testing										
CBC with differential					(on AZT)		On AZT			
TB screening										
Pregnancy screening +/- test										
Urine glucose by dipstix						√ (on TDF)				
LFTS –ALT				√(NVP)	NVP)	NVP)	NVP)			
Serum creatinine						√ (On TDF)		On TDF		
HIV viral load										
Resistance testing										
Blood glucose										
HBV serology										
Serum CrAg				(with CD4 <100)						
Fasting lipid profile						On LPV/r				

NB: This table pertains to lab tests done to select an ARV regimen and monitor for treatment responses or ART toxicities. Please refer to [Table 3-6](#) for guidance on other laboratory tests indicated for specific HIV related conditions.

NB: Recommended tests at the different stages of management have been shaded yellow. Desirable tests have been shaded blue.

9.2 TESTS FOR HIV DIAGNOSIS

Diagnosis of HIV infection in adults and children older than 18 months:

- This is commonly done by detection of antibodies to HIV using rapid tests or Enzyme Immunoassays (EIA).
- The approved HIV rapid test kits for use in SS in the HIV testing algorithm are specified in the HCT guidelines and Standard Operating Procedures. Refer to [Figure 2-1](#)
- The rapid tests can be done using whole blood, serum or plasma samples. Whenever possible, rapid testing will be done with a finger prick sample. HIV rapid testing can be performed in the laboratory or in the non-laboratory hospital, clinic or community settings by HCWs trained to perform HIV rapid tests.
- However, all testing done outside a laboratory setting must be supervised by qualified laboratory personnel to ensure accurate and quality results.

Diagnosing HIV Infection in children under 18 Months:

- A positive antibody test (rapid test or EIA) in infants under 18 months of age does not confirm HIV infection, but rather exposure to HIV.
- The method of HIV DNA polymerase chain reaction (PCR) is used to confirm HIV infection in infants and children \leq 18 months of age.
- PCR can be used to diagnose HIV infection in most infected infants by the age of four weeks.
- Samples for PCR testing can be whole blood or dried blood spots (DBS) on special filter paper cards that must be transported to the zonal hospital laboratories.
- Capacity for PCR testing is being built in South Sudan.

9.3 TESTS FOR HIV DISEASE STAGE

CD4 cell Count:

- CD4 count serves as a marker of the degree of immunosuppression in patients with HIV. It is also a prognostic indicator for patients initiating ART.
- Assessment of CD4 cell count is still necessary to guide ART initiation outside certain clinical conditions (pregnancy, TB co-infection, age below 5 years etc.
- CD4 testing is particularly useful in asymptomatic HIV positive patients some of whom may be severely immuno-compromised and eligible for treatment. CD4 testing is recommended in pre-ART, while on ART, and cases of suspected treatment failure.
- Measurement of CD4% is preferable for children <5 years.
- CD4 testing should be carried out at entry into HIV care, thereafter at 6-monthly intervals as part of ART eligibility assessment. Performing CD4 testing immediately after the HIV diagnosis enhances linkage to care and should be encouraged where available.

9.4 TESTS FOR MONITORING RESPONSES TO ANTIRETROVIRAL TREATMENT

9.4.1 Tests for Monitoring Disease Progress and Treatment Safety

- Successful ART results in decrease of viral load, immune recovery and therefore increase in number of CD4 cells.

Recommendation:

- Viral load monitoring is recommended as the preferred monitoring approach to diagnose and confirm ART treatment failure.
- If viral load is not routinely available, CD4 count and clinical monitoring should be used to diagnose treatment failure.

CD4 monitoring:

- CD4 testing should be performed as part of the baseline assessment at ART initiation. Thereafter performed after every 6 months to assess effectiveness of ART (where routine viral load testing is unavailable).
- An increase of 100-150 CD4 cells/mm³ in the first 6-12 months is typically seen in an ARV drug-naïve, adherent patient.
- In suspected treatment failure, CD4 should be performed following the clinical assessment to confirm immunological failure.
- When available, viral load is the preferred test for ART monitoring. However, capacity for viral load measurements is currently limited.

Viral Load (Virological Assessment)

- HIV viral load (VL), when available is a more reliable tool for monitoring adherence to treatment and efficacy of ART than CD4 cell counts: where available, viral load should be performed routinely at baseline, after 6 months on ART, and thereafter annually. Where viral load is available routinely, CD4 monitoring could be reduced or stopped altogether.
- Viral load should be undetectable (full virological suppression) after 6 months of initiating effective ART, although patients starting treatment with very high viral loads may take longer than this to achieve full suppression; even in these patients the fall in viral load at 6 months should still exceed 2 logs.
- VL testing is recommended when confirming treatment failure in all patients on ART. *Virologic failure is defined as having plasma viral load above 1000 copies/ml based on two consecutive viral load measurements after 3 months, with adherence support.* If HIV RNA is over 1000 copies/ml in patients suspected to have treatment failure, adherence concerns should be addressed, and viral load testing repeated after 3 months. If still high, then switch to second line and retest by 4 to 8 weeks until suppression to <200 copies/mL, then every 3 to 6 months.
- Currently viral load estimations can only be performed in a few specialized centers. However efforts are underway to improve access.

9.4.2 Tests for Monitoring Antiretroviral Treatment Safety (Toxicity)

Antiretroviral drugs are known to produce side effects in some patients. Clinical follow-up, supported by laboratory investigations, is crucial. The frequency of monitoring depends on the ART regimen used. See [Table 9.1](#) and [Table 12-3](#)

Haemoglobin (Hb):

- This is a recommended test in patients on AZT-containing ART regimens. Most AZT-related anemia occurs within the first 3/12 of treatment, is more common in women, those with pre-existing anemia, low body weight, low CD4 counts/advanced HIV disease.
- In these patients, a full blood count (FBC) or Hb estimation should be performed at baseline, month 3 and 6-monthly thereafter.
- Hb test is recommended for pregnant and breast feeding women as part of the MCH care package. Hb may also be performed when clinically indicated in patients with anemia, renal impairment etc
- Desirable test for all patients enrolling into care, at enrollment on ART as part of baseline assessment, and annually while on ART.

Alanine amino transferase (ALT):

- Desirable to perform ALT test at enrollment on ART as a baseline test in anticipation of drugs that may cause hepatotoxicity especially NVP.
- If ALT is high, do not give NVP but use EFV, and test for Hepatitis B and C if available.
- ALT is recommended test after 1-2 months of treatment when NNRTIs especially NVP are used. If normal, repeat the test at 3 months, 6 months and thereafter at 6-monthly intervals or earlier if clinically indicated.
- NVP- related hepatotoxicity is more likely to occur in women if CD4 count at treatment initiation with NVP is >250 cells/mm³; close monitoring is therefore essential

Serum creatinine:

- A desirable test in monitoring renal function for anticipated TDF toxicity. Advisable for high risk groups (older people, those with underlying renal disease, long term diabetes, and patients with long standing hypertension, concomitant use of PIs or nephrotoxic drugs).
- Useful to carry out at baseline as well as regular follow up renal function tests. Perform serum creatinine at month 3 and 6, 1 year then every 12 months if on TDF.
- Routine blood pressure monitoring maybe used to assess hypertension
- Urine dipsticks may be used to detect glycosuria or severe renal toxicity in individuals without diabetes taking TDF -based regimens.
- Do not give TDF if estimated GFR is less than 50ml/minute or in long term diabetes, uncontrolled hypertension and renal failure. Can substitute with AZT.
- Since other NRTIs including 3TC, AZT and d4T require dose adjustment in moderately severe renal impairment, creatinine measurement where available should be carried out in all patients.
- For patients with renal disease, more frequent monitoring may be indicated e.g. Patients with proteinuria, decreased glomerular dysfunction) or patients with diabetes, hypertension who are increased risk of renal insufficiency

Fasting cholesterol and triglycerides:

- Performed at month 3 if on LPV/r

9.4.3 Tests for Diagnosing Opportunistic Infections

- Common OIs and the related laboratory investigations are covered in [Table 3-5](#).

TB screening:

- Should be performed at every clinic visit including pre-ART care, and while on ART using the screening algorithms in [Figure 12-1](#) and [Figure 12-2](#). Evaluation for TB with specific laboratory testing is guided by the TB screening algorithm. Laboratory capacity for TB Acid fast bacilli (AFB) and general microscopy exists at all hospitals and majority of health centres.

HBV testing:

- Desirable test that should be performed at enrollment into care in HBV endemic regions. Patients co-infected with HIV and HBV requiring treatment should be initiated on ART immediately irrespective of CD4 count or clinical stage, using a TDF-3TC (or FTC) regimen. If HBsAg, and HBsAb, and anti-HBc are negative at baseline, hepatitis B vaccine should be administered where available

Cryptococcus antigen testing:

- Desirable test in patients with low CD4 count is ≤ 100 cells/ml since they are more likely to have latent infection in endemic areas. see [3.5.4](#)

9.5 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, so as 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.

9.5.1 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 used or old specimens in a timely fashion by autoclaving and incineration.

9.5.2 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 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.
- (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.

10 HIV PREVENTION BASED ON ARV DRUGS

Prevention of new HIV infections remains the cornerstone in HIV control in the absence of a cure. This will be achieved through implementation of Combination Prevention – a mix of biomedical, behavioral and structural interventions. Only biomedical interventions are covered in this chapter.

Antiretroviral drugs (ARVs) are used as additional tools in combination prevention. Effective ART decreases the level of plasma HIV viraemia and has been associated with reduction in levels of HIV viraemia in seminal fluids, vaginal fluids, and breast milk. Through a reduction in maternal plasma viraemia, ART given to a pregnant or breast feeding woman reduces the risk of HIV transmission to her unborn baby. See Chapter 5 on eMTCT. Among discordant couples, ART is effective in reducing HIV transmission risk by up to 96%. For Pre-exposure and Post-exposure prophylaxis, see below.

10.1 PRE-EXPOSURE PROPHYLAXIS

Pre-exposure prophylaxis (PrEP) is the use of ARVs by uninfected people to avoid HIV acquisition. The ARV drugs may be administered orally, or topically as a vaginal gel. Research on PrEP is still ongoing.

10.1.1 Oral pre- exposure prophylaxis (PrEP)

- For oral PrEP, the regimens that have been proven to be effective include TDF and TDF/FTC given daily. These drugs are potent against HIV-1 and HIV-2, tend to act early in the life cycle of HIV (pre-integration) thereby blocking initial infection. The regimens are safe, and easy to use (with low pill burden and once daily administration).
- Effectiveness of oral PrEP using these regimens is variable but may reach 90% depending on the level of adherence: higher effectiveness is found among the more adherent users.
- *The use of daily oral PrEP for the uninfected partner in sero-discordant couples is currently not recommended in South Sudan due to anticipated challenges in implementation*
- Where sero-discordant couples are identified, it is recommended that early initiation of treatment for the infected partner be offered.

10.1.2 Microbicides (Topical PrEP)

- The ARV drug is applied topically within the vagina to prevent HIV acquisition among women at risk of infection who are exposed to HIV-infected partners.
- Vaginal microbicides would potentially offer women a tool to prevent HIV, since women have higher rates of HIV infection globally.
- Research is still ongoing with several microbicide candidates. ARV-based microbicides can be formulated in different dosage forms such as vaginal gels, films, and tablets, as well as vaginal rings that can be used around the time of sex, or daily or monthly, independent of sexual activity.
- Results from the CAPRISA 004 trial revealed Tenofovir gel reduced HIV acquisition by an estimated 39% overall, and by 54% in women with high gel adherence.

10.2 ART FOR PREVENTION AMONG SERO-DISCORDANT COUPLES (TASP)

- Among discordant couples, ART is effective in reducing HIV transmission risk by up to 96%.
- Provision of ART for prevention among discordant couples requires couple HTC to identify the discordant couples.
- Recommended regimens same as the standard ART regimens for adults [Table 4-4](#)
- Follow-up of couples is important to monitor for HIV seroconversion.

10.3 POST-EXPOSURE PROPHYLAXIS

Post-exposure prophylaxis is short-term use of ARVs to reduce the likelihood of acquiring HIV infection after potential exposure either occupationally or through sexual intercourse.

10.3.1 Post – exposure Prophylaxis (PEP) in the Occupational Setting

To minimize the risk of exposure to HIV contaminated blood or body fluids in the health care setting, standard precautions should be observed: all blood and blood stained body fluids should be treated as if contaminated with HIV and other blood borne viruses such as Hepatitis B and C.

The following precaution should be taken;

- Use of appropriate barriers such as gloves, gowns and goggles
- Care with sharps including minimizing blind surgical procedures and proper handling and disposal of sharps
- Safe disposal of contaminated waste
- Safe handling of soiled linen
- Adequate disinfection procedures
- Universal Hepatitis B vaccination of non-immune at risk groups including HCWs, police, prison staff and rescue workers

Basic steps in the clinical management of PEP in the occupational setting:

- First aid / Immediate care
- Establishing eligibility for PEP
- Counselling and obtaining informed consent
- Prescribing and dispensing PEP medication
- Conducting laboratory evaluation
- Ensuring record-keeping; and
- Providing follow-up and support

I. *Immediate care* - depends on type and site of exposure

After a needle stick or sharp injury

- Do not squeeze or rub the injury site
- Wash the site immediately with soap or mild disinfectant (chlorhexidine gluconate solution)
- Use antiseptic hand rub/ gel if no running water
- Don't use strong irritating antiseptics (like bleach or iodine)

After a splash of blood or body fluids in contact with intact skin

- Wash the area immediately
- Use antiseptic hand rub/ gel if no running water
- Don't use strong irritating antiseptics (like bleach or iodine)

After a splash of blood or body fluid in contact with eye(s):

- Irrigate the exposed eye immediately with normal saline or water
- Sit in a chair and let a colleague help you to rinse the eye with water, and pulling up and down the eye lid
- Do not use soap and disinfectant in the eye
- In case of contact lenses: leave them in, while cleaning the eye. Remove them later and clean them in the usual way.

After a splash contacts the mouth:

- Spit the fluid out immediately
- Rinse the mouth thoroughly, using water or saline, and spit again.
- Repeat this several times
- Do not use soap or disinfectant in the mouth

II. *Establish eligibility for PEP:*

Individuals are eligible for PEP if:

- Exposure occurred within the past 72 hours, and
- the exposed individual is not infected or not known to be infected with HIV, and
- the 'source' is HIV-infected or has unknown HIV status, and
- exposure was to blood, body tissues, visibly blood-stained fluid, cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid or amniotic fluid, and
- exposure penetrated the skin with spontaneous bleeding or deep puncture or splash of significant amount of fluid to mucous membrane or prolonged contact of an at-risk substance with non-intact skin and
- If the skin was penetrated, exposure was from a recently used hollow bore needle or other sharp object visibly contaminated with blood.

III. *Counsel and obtain informed consent:*

- Counseling should cover benefits and risks of PEP, the risk of acquiring HIV infection from the specific exposure, importance of adherence, drug side effects, and risk of HIV transmission.

IV. *Prescribe and dispense PEP medication;*

- For recommended regimens, see [Table 10-1](#)
- Provide adherence information and support
- A complete course of PEP comprises 28 days of ART
- The first doses should not be delayed by baseline HIV Testing: starter packs of medicines may be used especially in emergency settings and at lower facility levels

Table 10-1: Recommended Regimens for Post-Exposure Prophylaxis for HIV

Preferred	Alternative
TDF + 3TC (or FTC) + EFV	TDF + 3TC (or FTC) + LPV/r

V. *Conduct laboratory evaluation:*

- Perform HTC using standard algorithm [Figure 2-1](#). Performing HIV testing minimizes the use of PEP for people who are already infected with HIV, thereby reducing drug waste and possible drug side effects. In addition, when the source person tests negative for HIV infection and is unlikely to be in the window period, this prevents the exposed person from having to take PEP unnecessarily.
- If HTC test results are not immediately available, PEP should be prescribed based on the risk evaluation and the likelihood that the source person is HIV positive; further evaluation should be made after the test results are known.
- People who have a positive rapid test result should be referred into HIV care
- Where possible Hepatitis B testing should be done followed by vaccination B if test is negative.
- Other desirable lab tests include pregnancy testing for women of childbearing age

VI. *Ensure proper record-keeping:*

- Proper documentation and reporting of event and patient management.
- Maintaining the confidentiality of client data

VII. *Provide follow-up and support:*

- To monitor adherence and manage side effects
- Perform follow-up HIV testing after 3-6 months after exposure to exclude sero-conversion
- Provide or refer for counseling and psychosocial support

10.4 HIV PEP FOR PEOPLE WHO HAVE BEEN SEXUALLY ASSAULTED

Eligibility criteria for PEP following sexual assault:

- less than 72 hours has elapsed since exposure; and
- the exposed individual is not known to be HIV infected; and
- the person who is the source of exposure is HIV infected or has unknown HIV status; and
- a defined risk of exposure, such as: receptive vaginal or anal intercourse without a condom or with a condom that broke or slipped; or contact between the perpetrator's blood or ejaculate and mucous membrane or non-intact skin during the assault; or receptive oral sex with ejaculation; or the person who was sexually assaulted was drugged or otherwise
- unconscious at time of the alleged assault and is uncertain about the nature of the potential exposure; or the person was gang raped.

NB: The clinical management is only one of the components of care needed.

Table 10-2: Clinical Management of HIV Post-exposure Prophylaxis

Item	Recommended action and notes
Immediate care / First aid	- Depends on type and site of exposure
Establish PEP eligibility	- Exposure occurred within the past 72 hours - Exposed individual not known to be infected with HIV - Significant exposure - Person who was the source of exposure is HIV infected or has unknown HIV status
Informed consent for PEP	- Information about risks and benefits - Consent may be given verbally
ART Regimen	- See Table 10-1
Time to initiation	- The initial dose of antiretroviral medicines should be given as soon as possible but no later than 72 hours after exposure
Duration of therapy	- 28 days
HIV testing and counseling	- Baseline HIV test in exposed person - Follow-up HIV testing 3–6 months after exposure - Rapid HIV test of the source person if feasible and based on informed consent and standard operating procedures
Additional laboratory evaluations	- Pregnancy testing - Hepatitis B screening if available
Counseling	- For adherence; side effects; risk reduction; trauma or mental health problems; and social support and safety
Referral	- As appropriate
Record-keeping	- Maintain accurate, confidential records
Follow-up	- Assess and manage side effects - Assess and support adherence - HTC after 3-6 months

10.5 OTHER BIOMEDICAL INTERVENTIONS

- Male and female condoms: Male condoms reduce heterosexual transmission by at least 80% if used correctly and consistently. Female condoms have a similar prevention benefits.
- Voluntary Medical Male circumcision reduces acquisition of HIV by men by up to 66% and offers lifelong protection.

11 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.

11.1 MONITORING AND EVALUATION

The Ministry of Health (MoH) will monitor implementation of these guidelines through routine service data collected in the Health management Information System (HMIS), as well as specialized periodic surveys, surveillance, census and vital statistics, and research. There are standardized data collection and monitoring tools for reporting on HIV prevention, care and treatment data. See [Table 11-1](#)

Table 11-1: Patient care and health facility records collection tools

	HIV care /ART card	MCH/PMTCT	TB/HIV
Patient held cards	HIV care/ Appointment card	Maternal /Child Health card Mother child booklet /passport	TB card
Facility held cards	HIV care /ART card	Labour record/ Partogram card/ form	TB treatment card
Registers tracking diagnostic tests	HCT register (PITC, VCT)	ANC and labor and delivery registers (contains PMTCT data)	TB lab and TB suspect registers
Longitudinal care and treatment registers	Pre-ART and ART registers	ANC and L&D registers HIV-exposed Infant register	Basic Management Unit TB register
Reporting tools	Monthly summary form Cohort reporting form	MOH form	MOH form

- Other data collection tools include: commodity management tools used for ordering commodities and drug dispensing logs; appointment registers; referral forms supervision checklists
- *At the health facility*, the responsibility of completing the patient-held cards, registers, reporting tools etc. primarily rests with the nurse-in-charge of the clinic ensuring all tools are completed, reports are accurate, and submitted in a timely manner to the state/district. Personnel to support the process include:
 - *Records clerks*: responsible for issuing of cards / registers, filling patients’ demographic data in cards, extracting register data into reporting tools, filing /retrieval of patient records, submission of reports
 - *Health care providers* (nurses, clinicians, nutritionists, social workers): responsible for completion of information on the patient held card and registers, preparing cohort summaries, and completing patient referral as needed.
 - *Pharmacists/ pharmacy technicians*: complete the drug inventory records, drug dispensing details for each patient, and prepare and submit supplies orders.
- *At the State/district level*, the HIV/AIDS coordinator prepares the state program summary report for onward submission to MOH headquarters.
- MOH is responsible for production of monthly, quarterly and annual reports using data from the HMIS. The performance indicators are detailed in the National HIV/AIDS Strategic Plan.

11.2 HEALTH WORK FORCE

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 11-2: Summary of the roles and responsibilities of staff in ART sites

Cadre	Roles and responsibilities
Medical Officers	Clinical supervision and facility / district management Management of HIV patients in all aspects
Nurses	Nursing care Triage of patients Continuation of clinical care of stable patients Adherence counseling supervision and training of community workers Post pharmacy counseling
Nutritionists	Nutritional assessment and counseling
Laboratory technologists / technicians	Phlebotomy Lab services provision Lab commodity management
Counselors	Counseling for HIV testing Patient education Adherence counseling
Community health workers	Community and home treatment support including defaulter tracing
Health records information officers / data clerks	Patient records management
Pharmacist/ pharmacy technicians	Adherence counseling, rational drug use, ARVs dispensing, effective commodity/inventory management
Store keeper	Commodity management (with lab and pharmacy staff)
Social worker and /or community health worker	Adhere support Defaulter tracing Community linkage Health education

- Due to challenges in staffing (both in numbers of staff and skills), task shifting (of responsibilities) will be adopted in order to support services delivery especially at the lower health facility levels. This will include greater involvement of community based organizations and PLHIV. Task shifting will be supplemented by mentorship, ongoing support supervision, and continuous quality improvement.
- To ensure quality services delivery, all staff is expected to have undergone basic training in provision of HIV services – prevention, care and treatment. Guidelines, jobaides, and SOPs should be provided to support consistent service quality.

11.3 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, HCT kits, cotrimoxazole among others. [Figure 11.1](#) below outlines the key activities in the logistics management cycle

Figure 11-1: The Logistics Cycle



At 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 MOH.
 - Estimates short, medium, and long term requirements
 - Requires reliable data on consumption, and stock status from health facilities/ sites
 - Should take into consideration the revised treatment guidelines such as the newly introduced ARV drug regimens, and phase out of D4T.
- Procurement: Coordinated by the MOH. On receipt of supplies in the country, there is clearance at port of entry and payment of taxes. There is also physical inspection on arrival of each consignment with random sampling for lab testing by the regulatory body responsible for ensuring quality.

At facility level:

Effective commodity management by the relevant health care workers is critical to ensure continuous availability of supplies and program 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 organized. 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 patient, it is important to ensure the patient has received the right medicine, the correct quantity, correct information on how to take the medicine, and correct information on how to store the medicine.

Inventory control:

- Should happen at all storage levels central, intermediate and at facility. This ensures stock status monitoring- (tracking of quantity and use 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.

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

Transition to new HIV treatment regimens

Implementation of these guidelines requires smooth transition to new recommended regimens while minimizing wastage or expiry of ARVs that are no longer recommended such as d4T. To ensure that supply of ARV drugs is uninterrupted, a phased program is highly recommended.

- All new adults eligible for ART should receive the preferred 1st line – TDF-based.
- Transition clients currently receiving D4T-based regimens to a TDF-based regimen.
- People with evidence of treatment failure should shift to a TDF-based 2nd line regimen
- People currently on AZT and/or NVP based regimens should be transitioned in a phased manner to minimize wastage

12 ANNEXES

Table 12-1: 1st line ART regimens for adults, adolescents, pregnant & breast-feeding women, and children

First line ART	Preferred first-line regimens	Alternative first-line regimens	Special circumstances*
Adults Including: <ul style="list-style-type: none"> • Pregnant and breast-feeding women • Adults with TB • Adults with HBV • HIV-infected partners in sero-discordant relationships 	TDF +3TC (or FTC) + EFV (as FDC - fixed dose combination)	AZT+3TC (or FTC)+EFV (or NVP) TDF+3TC (or FTC) +NVP	Regimens containing ABC, d4T, and boosted PIs
Adolescents (10 to 19 years) ≥35 kg	TDF +3TC (or FTC) + EFV	AZT+3TC(or FTC)+EFV (or NVP) TDF+3TC (or FTC) +NVP	ABC+3TC (or FTC) + EFV (or NVP)
Children 3 years to less than 10 years and adolescents ≤ 35 kg	ABC+3TC +EFV	ABC+3TC+NVP AZT+3TC (or FTC) +EFV (or NVP) TDF +3TC (or FTC) + EFV (or NVP)	d4T +3TC + EFV (or NVP)
Children < 3 years	ABC +3TC +NVP	AZT+3TC+NVP	d4T +3TC+NVP

* *Special circumstances may include situations where the preferred regimen or alternative may not be available or suitable because of significant toxicities, anticipated drug interactions, drug procurement and supply chain management issues etc.*

Table 12-2: ARV Drugs used in treatment of HIV Infection

	Generic name	
Nucleoside Reverse Transcriptase Inhibitors (NRTIs) (NsRTIs or NtRTIs)		
Single Drug Medicines (SDMs)	Abacavir (ABC)	Ziagen
	Didanosine (ddl)	Videx
	Emtricitabine (FTC)	Emtriva
	Lamivudine (3TC)	Epivir, Lamivir, Lamivox, avolam, Virolam
	Stavudine (d4T)	Zerit, Stavir, Stag, Atavex, Avostav, Virostav
	Tenofovir disopropryl fumarate (TDF) (is a <u>NtRTI</u>)	Viread
	Zalcitabine (ddC)	Hivid
	Zidovudine (AZT) (ZDV)	Retrovir, Zidovir, Zido-H, Zidovex
Fixed Dose Combinations (FDCs)	Abacavir + Lamivudine (ABC/3TC)	Epzicom
	Abacavir + Zidovudine + Lamivudine (ABC/AZT/3TC)	Trizivir
	Stavudine + Lamivudine (d4T/3TC)	Zidolam, Stavex L, Virolis,
	Tenofovir + Emtricitabine (TDF/FTC)	Truvada
	Zidovudine + Lamivudine (AZT/3TC)	Combivir, Duovir
Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs)		
Single Drug Medicines	Delavirdine (DLV)	Rescriptor
	Efavirenz (EFV)	Sustiva, Stocrin, Efavir, Estiva, Viranz
	Nevirapine (NVP)	Viramune, Nevipan, Nevimune, Nevirex
	Rilpivirine (RPV)	Edurant (TMC-278)
	Etravirine (ETV)	Intelence (TMC-125)
Protease Inhibitors (PIs)		
Single Drug Medicines	Amprenavir (APV)	Agenerase
	Atazanavir sulfate (ATV)	Reyataz
	Darunavir (DRV)	Prezista
	Fosamprenavir calcium (FOS-APV)	Lexiva
	Indinavir (IDV)	Crixivan
	Nelfinavir mesylate (NFV)	Viracept
	Ritonavir (RTV)	Norvir
	Saquinavir mesylate (SQV)	Invirase
FDC	Tipranavir (TPV)	Aptivus
	Lopinavir/Ritonavir (LPV/r)	Kaletra, Aluvia
Fusion Inhibitors		
SDM	Enfuvirtide (T-20)	Fuzeon
Integrase inhibitors		
SDM	Raltegravir	Isentress
CCR5 antagonist		
	Maraviroc	Selzentry
Multi-class Combination Products		
Fixed Dose Combinations (FDCs)	Stavudine + Lamivudine + Nevirapine (d4T/3TC/NVP)	Triomune, Virolans, Nevilast, Stavex LN
	Zidovudine + Lamivudine + Nevirapine (AZT/3TC/NVP)	Combipack, Duovir-N
	Tenofovir DF + Emtricitabine + Efavirenz (TDF/FTC/EFV)	Atripla

Figure 12-1: TB screening card: adult and adolescent

TB SCREENING CARD: Adult & Adolescent

Screening for TB should be done at every visit

Name of /patient _____ Age Sex Address.....
 Pre ART/ Unique ART _____ Patient ID No. _____
 Health Facility _____ State _____ County _____



		Insert dates below					
Adult & Adolescent TB screening questions		___/___/___	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___
1. Current cough (Y/N)							
2. Fever (Y/N)							
3. Weight loss (Y/N)							
4. Night sweats (Y/N)							
Evaluate for TB if "Yes" to any of the above (Positive TB screening)							
Bacteriology : sputum for AFB	Done = Yes/No						
	Result (AFB+, -ve, unknown)						
Radiology: CxR, etc	Done= Yes/No						
	Results (Suggestive, inconclusive, other Dx, unknown ,etc						
FNA, culture, ultrasound, etc	Done : Yes/No						
TB diagnosed	Yes (write type of TB)/ No						

Figure 12-2: TB screening CARD: Children (0-14 years)

TB SCREENING CARD: Children (0-14 yr)

Screening for TB should be done at every visit

Name of /patient _____ Age Sex Address.....

Pre ART/ Unique ART _____ Patient ID No. _____

Health Facility _____ State _____ County _____



Child TB screening questions	Insert dates below						
	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___	___/___/___
1. Current cough (Y/N)							
2. Fever (Y/N)							
3. Poor weight gain* (Y/N)							
4. Close contact history with TB patient (Y/N)							
Evaluate for TB if "Yes" to any of the above (Positive TB screening)							
Bacteriology : sputum for AFB	Done = Yes/No						
	Result (AFB+, -ve, unknown)						
Radiology: CxR, etc	Done= Yes/No						
	Results (Suggestive, inconclusive, other Dx, unknown ,etc						
FNA, culture, ultrasound, etc	Done : Yes/No						
TB diagnosed	Yes (write type of TB)/ No						

***Poor weight gain is defined as:** reported weight loss, or very low weight (weight-for-age less than -3 z-score), or underweight (weight-for-age less than -2 z-score), or confirmed weight loss ($>5\%$) since the last visit, or growth curve flattening.

Table 12-3: Toxicities associated with first and second line ARV drugs

ARV drug	Major toxicity	Risk Factors	Minor toxicity	Suggested management
ABC	Hypersensitivity reaction	Presence of HLA-B*5701 gene	Lactic acidosis	If ABC is being used as first line ART, substitute with TDF or AZT, or d4T If ABC is being used as second line ART, substitute with TDF
AZT	Anemia, neutropenia, myopathy, lipoatrophy or lipodystrophy	Baseline anemia or neutropenia CD4 count \leq 200 cells/mm ³	Blue to black discoloration of nails, nausea and headache	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 d4T. For severe anemia: may transfuse. For myopathy, discontinue if CPK high
d4T	Peripheral neuropathy , lipoatrophy or lipodystrophy	Older age CD4 count \leq 200 cells/mm ³ Concomitant use of INH or DDI	Insomnia, anxiety, panic attacks	Severe peripheral neuropathy, abnormal serum amylase and transaminases, discontinue therapy
	Lactic acidosis or severe hepatomegaly with steatosis, acute pancreatitis	BMI > 25 (or body weight >75kg) Prolonged exposure to nucleoside analogues		
EFV	Persistent CNS toxicity (such as abnormal dreams, depression and mental confusion)	Depression or other mental disorder (previous or at baseline) Daytime dosing	Dizziness, Rash in 10% but rarely severe <1%	NVP. If the person cannot tolerate either NNRTI, use a boosted PIs CNS symptoms often resolve 2-4 weeks. Stop if hepatitis is confirmed.
	Hepatotoxicity	Underlying hepatic disease HBV and HCV co-infection Concomitant use of hepatotoxic drugs		
	Convulsions	History of seizure		
	Hypersensitivity reaction, Steven Johnson Syndrome Potential risk of neural tube birth defects (very low risk in humans) Male gynaecomastia	Risk factors unknown		
3TC	Peripheral neuropathy, pancreatitis (more common in children)		Skin rash, headache	Do serum amylase, stop if elevated. Restart when resolved or change to ABC
LPV/r	Electrocardiographic abnormalities (PR and QT interval prolongation, torsades depointes)	People with pre-existing conduction system disease Concomitant use of other drugs that may prolong the PR interval	Headache, weakness, diarrhea rarely severe	If LPV/r is used in first line ART for children, use an age appropriate NNRTI (NVP for children younger than 3 years and EFV for children 3 years and older) ATV can be used for children older than 6 years If LPV/r is used in second line for adults, use ATV/r or DRV/r. If boosted PI are contraindicated and the person has failed on treatment with NNRTIs in first line ART, consider integrase inhibitors
	QT interval prolongation	Congenital long QT syndrome Hypokalemia Concomitant use of other drugs that may prolong QT interval		
	Hepatotoxicity	Underlying hepatic disease HBC and HCV co-infection Concomitant use of hepatotoxic drugs		
	Pancreatitis	Advanced HIV disease		

ARV drug	Major toxicity	Risk Factors	Minor toxicity	Suggested management
	Risk of prematurity, lipoatrophy or metabolic syndrome, dyslipidemia or severe diarrhea	Risk factors unknown		
NVP	Hepatotoxicity	Underlying hepatic disease HBV and HCV co-infection Concomitant use of hepatotoxic drugs CD4 \geq 250 cells / mm ³ in women Cd4 \geq 400 cells/mm ³ in men First month of therapy if lead in dosing is not used		EFV. If the person cannot tolerate either NNRTI, use a boosted PIs Low-dose over first 2 weeks minimizes rash occurrence. If mild or moderate continue cautiously or substitute with EFV. If severe stop NVP and permanently if hepatitis +ve
	Severe skin rash and hypersensitivity reaction Steven Johnson syndrome	Risk factors unknown		
TDF	Tubular renal dysfunction, Fanconi syndrome	Underlying renal disease older age BMI <18.5 (or body weight below 50kg) Untreated Diabetes mellitus Untreated hypertension Concomitant use of nephrotoxic drugs or a boosted PI		If TDF is being used in first line ART, substitute with AZT or d4T or ABC If TDF is being used in second line ART (after d4T + AZT use in first line ART), substitute with ABC or DDI Monitor renal function at baseline and every 6 months.
	Decreases in bone mineral density	History of osteomalacia and pathological fracture Risk factors for osteoporosis or bone loss		
	Lactic acidosis or severe hepatomegaly with steatosis	Prolonged exposure to nucleoside analogues Obesity		
	Exacerbation of hepatitis B (hepatic flares)	Discontinuation of TDF due to toxicity		

Table 12-4: Drugs that commonly interact with ARVs

	Drug name	NVP	EFV	TDF	LPV/r
Antimycobacterial	Rifampicin	NVP levels reduced by 20-58% Potential of additive hepatotoxicity Use of this combination is <u>not recommended</u> however if used, careful monitoring should be instituted	EFV level reduced by 25%	No significant change No dose adjustment necessary	Reduces LPV levels by 75% and reduced ritonavir level by 35%. Where available, use rifabutin in place of rifampicin
	Rifabutin	Reduces NVP Levels by 16%. No dose adjustment.	EFV levels unchanged; Rifabutin 35% Dose: rifabutin dose to 450-600 mg Once daily or 600 mg 3x/week. EFV: Standard		Levels: Rifabutin AUC 3-fold. 25 Decrease rifabutin dose to 150 mg once daily or 3x/week LPV/r: Standard.
Antifungal	Ketoconazole	Ketoconazole level reduced by 63% NVP level increased by 15-30% Not recommended to co-administer	No significant changes in ketoconazole or EFV level		Ketoconazole level increased 3-fold Use with caution; do not exceed 200mg/day ketoconazole
	Fluconazole	NVP levels increased by 100% No change in fluconazole level Increased risk of hepatotoxicity if coadministred; monitor closely for NVP toxicity	No significant changes in EFV or fluconazole		
Oral contraceptives	Ethinyl estradiol	Ethinyl estradiol reduced by 20%. Use alternative or additional methods	Ethinyl estradiol levels reduced by 37%. Use alternative or additional methods	No significant change No dose adjustment necessary	Ethinyl estradiol level by 42% Use alternative or additional methods
Lipid lowering agents	Atorvastatin	No data	Atorvastatin AUC reduced by 43% EFV level unchanged Adjust atorvastatin dose according to lipid response, not to exceed maximum recommended dose		Atorvastatin AUC 5.88 fold Use lowest possible starting dose with careful monitoring

Table 12-5: First and Second line ART regimens for infants and children in South Sudan

	Children < 3 years		Children 3 years to less than 10 years and adolescent < 35 years		Adolescents (10-19 years) ≥35 kg	
	First line	2nd line	First line	2 nd line	First line	2 nd line
Preferred	ABC +3TC +NVP	AZT + 3TC +LPV/r	ABC +3TC+EFV	AZT + 3TC +LPV/r	TDF +3TC (or FTC) +EFV	AZT + 3TC+LPV/r
Alternative	AZT +3TC +NVP	ABC + 3TC (or FTC) + LPV/r	ABC +3TC +NVP AZT+3TC (or FTC)+EFV (or NVP) TDF +3TC (or FTC) + EFV (or NVP)	AZT+3TC+LPV/r If AZT was used in 1 st line, TDF +3TC (or FTC) + EFV (or NVP) If TDF was used in 1 st line, AZT/3TC+LPV/r	AZT + 3TC + EFV (or NVP) TDF +3TC (or FTC) +NVP	ABC or TDF + 3TC (or FTC)+ LPV/r AZT + 3TC+LPV/r
Special circumstances	d4T +3TC+NVP	ABC (or TDF) + 3TC (or FTC) + LPV/r	d4T +3TC + EFV (or NVP)	ABC+3TC (or FTC) +LPV/r	ABC +3TC + EFV (or NVP)	AZT + 3TC++LPV/r

NRTI drug combinations to be avoided,

- D4T + AZT, TDF + ddI both drugs work through common metabolic pathways
- TDF +ABC -both drugs select for the K65R mutation
- d4T +ddI -both drugs have overlapping toxicities
- Didanosine (ddI) is anadenosine analogue NRTI which is generally reserved for second-line regimens

Other comments

If a child is anemic (Hb <7.5g/dl) do not use AZT. Use ABC based regimen.

Do not use EFV in children under 3 yrs (or 15 kg).

D4T should only be used if preferred or 1st alternative regimens are contraindicated or missing. All children above 5 years on this regimens should be switched to AZT based regimen

Table 12-6: Antiretroviral Drug Dosing for Children

	ABC		3TC		EFV	LPV/r	D4T	NVP	AZT			
Target dose	8mg/kg twice daily OR ≥10kg: 16 mg/kg ONCE daily		4mg/kg TWICE daily OR ≥10kg: 8 mg/kg ONCE daily		By weight band ONCE daily	300/75mg/m2/dose LPV/r TWICE daily	1 mg/kg/dose TWICE daily	160-200mg/m2/dose TWICE daily (after once daily lead-in ×2 wks)	180-240mg/m2/dose TWICE daily	Target dose		
Available Formulations	Sol 20mg/ml Tabs 300mg (not scored)		Sol 10mg/ml Tabs 150 mg (scored) 300mg		Caps 50, 200mg Tabs 50, 200, 600mg (not scored)	Sol. 80/20 mg/ml Adult tabs 200/50mg Paed 100/25mg	Sol. 1 mg/ml Caps 15, 20, 30 mg	Sol. 10mg/ml Tabs 200mg (scored)	Sol. 10mg/ml Caps 100mg Tabs 300mg (not scored)	Available formulations		
Wt. (kg)	Weight in kg		Currently available tablet formulations of abacavir, efavirenz, LPV/r, and AZT are film coated and must be swallowed whole and NOT chewed, divided or crushed							Weight in Kg		
<3	<3 kg		Consult with a clinician experienced in pediatric ARV prescribing for neonates (<28 days of age) and infants weighing <3 kg							<3kg		
3-3.9	2 ml bd		2 ml bd		Avoid using when <10kg or <3years: dosing not established	1 ml bd	6 ml	5 ml bd	6 ml bd	3-3.9		
4 – 4.9										4-4.9		
5 – 5.9										5-5.9		
6 – 6.9	3 ml bd		3 ml bd				1.5ml bd	7.5mg bd: open 15 mg capsule into 5 ml of water: give 2.5 ml	8 ml bd	9 ml bd	6-6.9	
7-7.9								10 ml bd: open 20mg capsule into 5 ml of water: give 2.5ml			7-7.9	
8 – 8.9	4ml bd		4 ml bd							1 cap bd	8-8.9	
9 – 9.9										9-9.9		
10 – 10.9	Choose only one option		Choose only one option		200 mg nocte (1×200mg cap/tab)	2 ml bd	15mg bd: open 15mg capsule into 5 ml of water	10 ml bd	OR	10-10.9		
11- 13.9	6 ml bd	12 ml od	6 ml bd	12 ml od					12 ml bd	11-13.9		
14 -16.9										14-16.9		
17 – 19.9	8 ml bd	1 tab od or 1.5 ml od	1/2×150mg tab bd or 8 ml bd	1×150mg tab odor 1.5 ml od	300 mg nocte (200 mg cap/tab + 2×50mg cap/tab)	Choose one option -2.5ml bd -100/25mg paed tabs 2 bd -200mg/50mg Adult tabs 1 bd	20 mg bd: open 20 mg capsule into 5 ml of water (if the child is unable to swallow a capsule)	1 tab am ½ tab pm OR 1.5 ml bd	2 cap am 1 cap pm Or 15 ml bd	17-19.9		
20- 24.9	10 ml bd	20 ml od	1×150mg tab bd or 15 ml bd	2×150mg tab od or 1×300 tab od or 30ml od		Choose one option - 3ml bd -100/25mg paed tabs 2 bd -200mg/50mg Adult tabs 1 bd				2 cap bd OR 20 ml bd	20-24.9	
25- 29.9										25-29.9		
30 – 34.9	1 ×300 mg tab bd	2×300mg tab od	1×150 tab bd	2×150mg tab od or 1×300mg tab od	400 mg nocte (2×200 mg cap/tab)	Choose one option - 3.5ml bd -100/25mg paed tabs 3 bd -200mg/50mg Adult tabs 1 bd + 100/25mg paed tabs 1 bd	30 mg bd	1 tab bd	1 tab bd	30-34.9		
35- 39.9						Choose one option - 4 ml bd -100/25mg paed tabs 3 bd -200mg/50mg Adult tabs 1 bd + 100/25mg paed tabs 1 bd						35-35.9
>40					600 mg tab nocte	Choose one option - 5ml bd 200/50mg adult tabs: 2 bd						>40

