



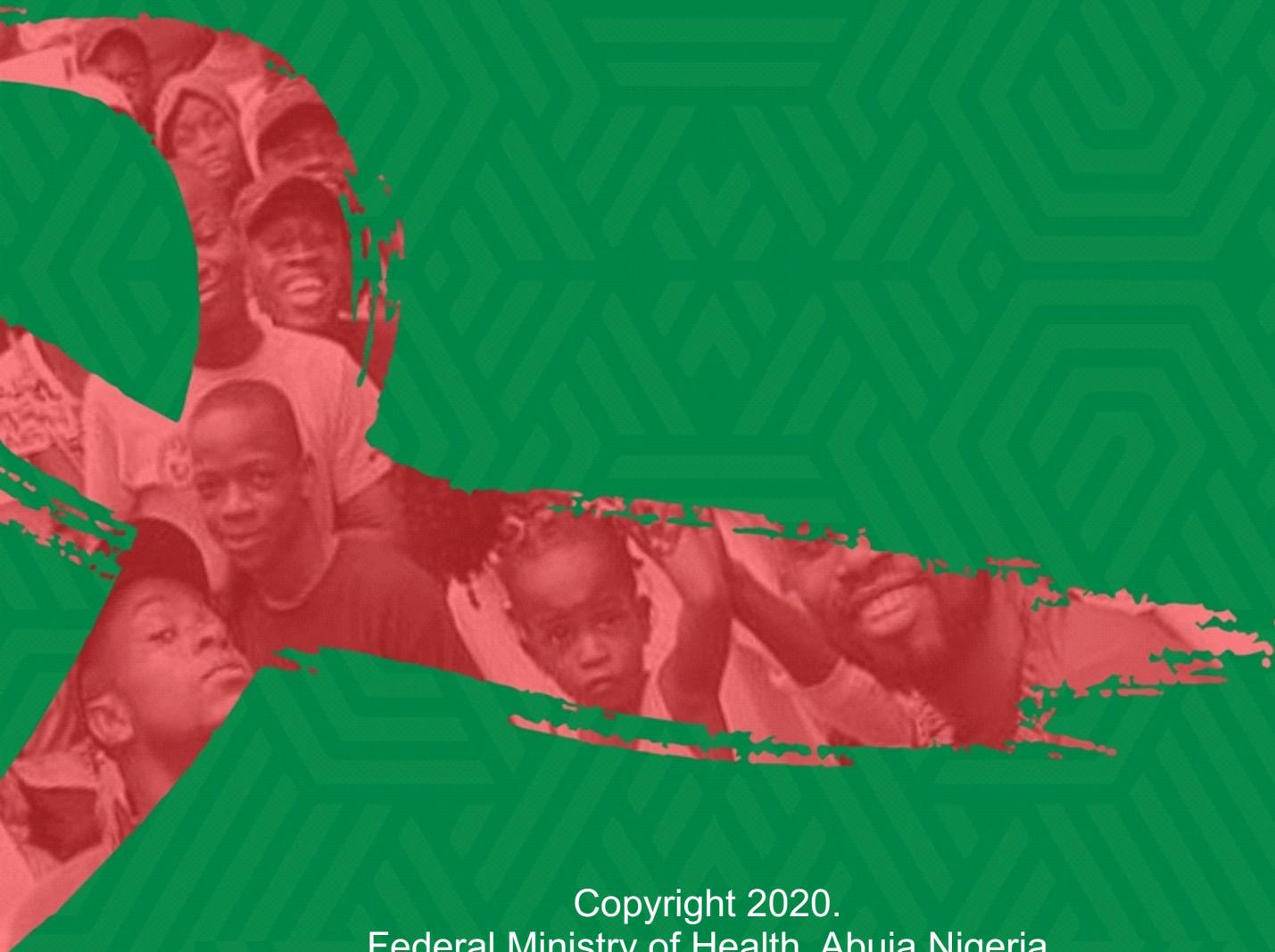
NATIONAL GUIDELINES FOR HIV PREVENTION, TREATMENT AND CARE



NATIONAL AIDS AND STIs CONTROL PROGRAMME
FEDERAL MINISTRY OF HEALTH NIGERIA
2020



NATIONAL GUIDELINES FOR HIV PREVENTION, TREATMENT AND CARE



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Foreword

Over the years, the Federal Ministry of Health has put in place several response mechanisms aimed at reducing the impact of HIV and AIDS and ensuring people living with HIV (PLHIV) in Nigeria receive quality services by formulating national policies, protocols and standard operating procedures to guide implementation.

These new 2020 National Guidelines for HIV Prevention Treatment and Care further underscores the government's commitment to the welfare of all Nigerian children, adolescents, young persons, pregnant women and adults living with HIV. It was developed through extensive consultations involving government, bilateral and multilateral organizations, civil society organizations, the academia, and the patient community. The wellbeing of the recipients of care remained the principal consideration.

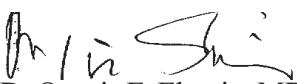
These new Guidelines support evidence-based interventions that can improve efficiency and effectiveness despite the limited resources in the country's HIV programme. Its implementation will require increased investment and shared responsibility from all arms of government, donors and implementing agencies. Implementing the guidelines fully will have an unprecedented impact on preventing new infections and reducing the number of people dying from HIV-related causes over the coming years.

The key recommendations of these guidelines include the use of novel testing strategies for improved case finding, initiating antiretroviral therapy (ART) in all HIV positive people including children, adolescents, adults, pregnant and breastfeeding women, regardless of clinical and immunological stages of the disease. Other recommendations include re-testing of patients prior to initiating ART, adoption of pre-exposure prophylaxis (PrEP) for individuals at high risk of acquiring the infection, TB/HIV co-infection management, provision of a specialized package of care for patients with Advanced HIV Disease (AHD), and one-off administration of tuberculosis preventive treatment (TPT), differentiated service delivery models (DSD), as well as the establishment of adolescent-friendly services.

These Guidelines provide all the guidance that health workers require to deliver comprehensive package of high-quality HIV prevention, treatment and care interventions that addresses the needs of PLHIV, individuals at a high risk of acquiring HIV infection and the general population.

I am optimistic that proper deployment and application of all the recommendations contained here will help in effective management of HIV infections, bolster the HIV response, and ensure an irreversible decline of the epidemic.

I therefore endorse and recommend this 2020 National Guidelines for HIV prevention, Treatment and Care for use across all the health facilities and service delivery points in the country and also for individuals and organizations involved in the management of HIV and AIDS.


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Honourable Minister for Health



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Finally, I thank the Honourable Minister of Health and the entire Ministry leadership for the creation of an enabling environment for the staff to work. I also commend the staff in the Office of the Director Public Health for the immense support to the various programmes/divisions in the department. I appreciate the efforts of NASCP staff under the leadership of the National Coordinator, and especially the staff of the Treatment, Care and Support component of NASCP that coordinated all the activities and meetings that ultimately led to the completion of this document in a timely manner.



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Executive Summary

The 2020 National Prevention, Treatment and Care Guidelines is a ten-chapter consolidated document that provides general and specific guidance on the diagnosis of HIV infection, the use of antiretroviral (ARV) drugs for preventing and treating HIV infection, and the care of people living with HIV using a broad range of current technological innovations, interventions and evidence-based practices. This guideline is structured along the continuum of HIV testing, prevention, treatment and care.

The first chapter introduces the guidelines in general, its guiding principles, the process of reviewing and evaluating its implementation across service delivery points, the epidemiology of HIV in Nigeria, and a summary of the new inclusions into the 2020 Guidelines.

Chapter two provides guidance on HIV testing services (HTS), novel testing strategies including HIV self-testing, recency testing, use of HIV risk stratification checklists, and Nucleic acid testing at birth. It also provides guidance on laboratory and clinical diagnosis of HIV infection.

Chapter three focuses on the use of antiretroviral therapy (ART), with emphasis on the characteristics and mechanisms of action of ARVs, criteria for initiating ART in different age groups, the approved regimens for ART and management of treatment failure. It also provides guidance on the use of Tenofovir, Lamivudine and Dolutegravir (TLD) as the preferred first-line regimen for all adults and adolescents, the use of Dolutegravir in second-line ART for adults and adolescents, and the use of Dolutegravir based regimen as preferred first-line for children weighing 3kg and above. Chapter four recognizes the need to track and manage adverse drug reactions and provides guidance for effective pharmacovigilance in ART.

In the fifth chapter, the focus is on adherence to ART, its importance in achieving viral suppression, and guidance on monitoring and improving adherence. Chapter six is dedicated to the prevention of mother to child transmission (PMTCT) of HIV using ART and non-ART interventions including prophylaxis for the HIV exposed infant.

In chapter seven, preventive management of HIV is presented. This chapter provides detailed guidance for offering pre and post-exposure prophylaxis (PrEP and PEP). Chapter eight focuses on Advanced HIV Disease (AHD), Opportunistic infections (OIs) and the comorbidities. It provides guidance on the implementation of the AHD package of care, cotrimoxazole preventive therapy, tuberculosis preventive therapy, as well as the management of common opportunistic infections.

Chapter Nine focuses on improving the efficiency of service delivery by using Differentiated Service Delivery (DSD) models, and decentralized services. Special attention is given to differentiated service delivery based on clinical characteristics and sub-groups including key populations.



Finally, the tenth and the last chapter deals with the monitoring and evaluation of all the various strategies and interventions involved in the health sector response. It also provides basic information on the strategies for monitoring the implementation of HIV services under these guidelines, and relevant indicators used for measuring the impact as well as the effectiveness of all the HIV Interventions.



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Abbreviations and Acronyms ▶

3TC	Lamivudine	CrAg	Cryptococcal Antigen
ABC	Abacavir	CrCl	Creatinine Clearance
ABUTH	Ahmadu Bello University Teaching Hospital	CRRF	Combined Report and Requisition Form
ACT	Artemisin-based Combination Therapy	CS	Cesarean Section
ADR	Adverse Drug Reaction	CSF	Cerebrospinal Fluid
AHD	Advanced HIV disease	CSO	Civil Society Organization
AIDS	Acquired Immunodeficiency Syndrome	CT	Computed Tomography
AKTH	Aminu Kano University Teaching Hospital	CTX	Cotrimoxazole
ALP	Alkaline Phosphatase	CXR	Chest X-Ray
ALT	Alanine Transaminase	D4T	Stavudine
ANC	Antenatal Care	DAA	Directly Acting Antiviral
APIN	AIDS Prevention Initiative in Nigeria	DBS	Dried Blood Spot
ARM	Artificial Rupture of Membrane	Ddl	Didanosine
ART	Antiretroviral Therapy	DHOS	Department of Hospital Services
ARV	Antiretroviral drugs	DLV	Delavirine
AST	Aspartate Transaminase	DNA	Deoxyribonucleic Acid
ASWHAN	Association of Women Living with HIV/AIDS in Nigeria	DOTS	Direct Observed Treatment Short Course
ATV/r	ritonavir boosted Atazanavir	DRESS	Drug Reaction, Eosinophilia, Systemic Symptoms
AUC	Area under the curve	DRV/r	Ritonavir boosted Darunavir
UATH	University of Abuja Teaching Hospital	DRTB	Drug Resistant Tuberculosis
AZT	Zidovudine	DTG	Dolutegravir
c-ART	Combination ART	ED	Erectile Dysfunction
CD4+	Cluster of Differentiation Antigen 4	EFV	Efavirenz
CDC	Centres for Disease Control	EID	Early Infant Diagnosis
CFCC	Client and Family Centred Care	ELISA	Enzyme Linked Immunosorbent Assay
CHAI	Clinton Health Access Initiative	Emtct	Elimination of Mother to child transmission of HIV
CHEW	Community Health Extension Worker	ENT	Ear Nose Throat
CIHP	Centres for Integrated Health Programs	EPTB	Extra Pulmonary Tuberculosis
CiSHAN	Civil Society for HIV/AIDS in Nigeria	EQA	External Quality Assurance
CKD	Chronic Kidney Disease	ESRD	End Stage Renal Disease
Cmax	Maximum Concentration	ETR	Etravirine
CMS	Central Medical Stores Oshodi	ECV	External Cephalic Version
CMV	Cytomegalovirus	EVG	Elvitegravir
CNS	Central Nervous System	FBO	Faith based Organization
COBI	Cobicistat	FBS	Fasting Blood Sugar
COPD	Chronic Obstructive Pulmonary Disease	FCT	Federal Capital Territory
CPK	Creatinine Phospokinase	FCTA	Federal Capital Territory Administration
CPT	Cotrimoxazole preventive Therapy	FDC	Fixed Dose Combination



FETH	Federal Teaching Hospital	LUTH	Lagos University Teaching Hospital
FMC	Federal Medical Centre	M&E	Monitoring and Evaluation
FMOH	Federal Ministry of Health	MAC	Mycobacterium Avium Complex
FP	Family Planning	MARPs	Most at Risk Populations
FPV	Fosamprenavir	MCH	Maternal and Child Health
FTC	Emtricitabine	MLSCN	Medical Laboratory Science Council of Nigeria
GFR	Glomerular Filtration Rate	MNCH	Maternal, Newborn and Child Health
HAART	Highly Active Antiretroviral Therapy	MOH	Ministry of Health
Hb	Haemoglobin	MP	Malaria Parasites
HbsAg	Hepatitis B surface Antigen	MTB	Multidrug Resistance TB
HBV	Hepatitis B Virus	MTCT	Mother to Child Transmission
HCT	HIV Counselling and Testing	MUAC	Mid Upper Arm Circumference
HCV	Hepatitis C Virus	NACA	National Agency for the Control of AIDS
HCW	Health Care Worker	NACS	Nutrition Assessment Counselling and Support
HIV	Human Immunodeficiency Virus	NARH	National AIDS and Reproductive Health Survey
HLA	Human Leucocyte Antigen	NASCP	National AIDS and STIs Control Programmed
HPV	Human Papilloma Virus	NAUTH	Nnamdi Azikiwe University Teaching Hospital
HSR	Hypersensitivity Reaction	NBBFSW	Non-Brothel Based Female Sex Worker
HSV	Herpes Simplex Virus	NEPWHAN	Network of People Living with HIV in Nigeria
HTS	HIV Testing Services	NFV	Nelfinavir
HU-PACE	Howard University Pharmacy and continuing Education	NIMR	Nigeria Institute of Medical Research
IBBSS	Integrated Biological Behavioural Sentinel Survey	NNRTI	Non-Nucleoside Transcriptase Inhibitors
IDV	Indinavir	NPHCDA	National Primary Health Care Development Agency
IHVN	Institute of Human Virology Nigeria	NRTI	Nucleoside Reverse Transcriptase Inhibitors
INH	Isoniazid	NSAIDS	Non-Steroidal Anti-Inflammatory Drugs
INSTI	Integrase Strand Transfer inhibitor	NTTA	National Task Team on ART
IPT	Isoniazid Preventive Therapy	NVP	Nevirapine
IPV	Intramuscular Polio Vaccine	OIs	Opportunistic infections
IRIS	Immune Reconstitution inflammatory Syndrome	Pap	Papanicolaou Test for cervical cancer screening
JUTH	Jos University Teaching Hospital	PCR	Polymerase Chain Reaction
LF-LAM	Lateral Flow Lipoarabinomannan	PCV	Packed Cell Volume
LGBTI	Lesbian, Gay Bisexual Transgender and Intersex	PDSA cycle	Plan, Do, Study, Act
LIP	Lymphoid Interstitial Pneumonia	PEP	Post Exposure Prophylaxis
LMCU	Logistic Management Coordinating Units	PEPFAR	US President Emergency Plan For AIDS Relief
LMIS	Logistic Management Information System	PHC	Primary Health Care
LP	Lumbar Puncture		
LPV/r	Lopinavir/ritonavir		



PHDP	Positive Health Dignity and Prevention	tARVp	Triple Antiretroviral Drug Prophylaxis
PI	Protease Inhibitor	TB	Tuberculosis
PI/r	Ritonavir boosted Protease Inhibitor	TDF	Tenofovir
PITC	Provider Initiated HIV Testing and Counselling	TPT	Tuberculosis Preventive Therapy
PJP	Pneumocystis Jiroveci Pneumonia	TPV	Tipranavir
PLHIV	People Living with HIV	TT	Tetanus Toxoid
PME	Programme Monitoring and Evaluation	UBTH	University of Benin Teaching Hospital
PMM	Patient Management and Monitoring	UCH	University College Hospital Ibadan
PMTCT	Prevention of Mother to Child Transmission	UCTH	University of Calabar Teaching Hospital
PrEP	Pre-Exposure Prophylaxis	UNAIDS	Joint United Nations Programme on HIV/AIDS
QA	Quality Assurance	UNICEF	United Nations Children Emergency Fund
QI	Quality Improvement	UNN	University of Nigeria
RAL	Raltegravir	UNTH	University of Nigeria Teaching Hospital
RNA	Ribonucleic Acid	USAID	United States Agency for International Development
RTI	Reproductive Tract Infection	VIA	Visual Inspection Acetic Acid for cervical cancer screening
RVP	Rilpivirine	VL	Viral Load
SACA	State Agency for the Control of AIDS	WBC	White Blood Cell
SQV	Saquinavir	WHO	World Health Organization
STI	Sexually Transmitted Infection		



— Definition of Terms —

HIV-Retesting: This is a second HIV test conducted after a positive first test result. Re-testing is recommended before initiation of ART.

HIV sero-discordant couples: Sexual relationship in which one partner is HIV positive and the other HIV negative.

Key populations: These are groups of individuals who bear a high burden of HIV and are exposed to a higher risk of acquiring the infection.

ARVs: These are medicines used to treat HIV.

ART: This is the use of a combination of three or more ARVs to treat HIV in order to achieve better viral suppression. Highly active anti-retroviral therapy (HAART) or combination Anti-Retroviral Therapy (cART) is used interchangeably.

Viral load: It is the number of HIV RNA copies in a millilitre of plasma.

Sustained viral suppression: This is an optimal response to ART such that the viral load remains below the detection threshold usually at less than 20 copies of HIV RNA/ml.

Stable on ART: These are PLHIV who have received ART for at least one year and have no adverse drug reactions that require regular monitoring, no current illnesses, have a good understanding of lifelong adherence with evidence of treatment success (i.e. two consecutive viral load measurements below 1000 copies/mL).

Clinical failure in adults and adolescents: It is the presence of new or recurrent clinical event indicating severe immunodeficiency (WHO clinical stage 4 condition) following 6 months of effective treatment.

Clinical failure in Children: It is the presence of new or recurrent clinical event indicating advanced or severe immunodeficiency (WHO clinical stage 3 and 4 clinical condition with the exception of TB) after 6 months of effective treatment.

Immunological failure in adults and adolescents: This is when the CD4+ cell count fall to or below pre-treatment baseline value or persistent CD4 levels below 100 cells/mm³ or 50% decline from on-therapy CD4+ cell count peak level.

Immunological failure in Children younger than 5 years: It is persistent CD4 levels below 200 cells/mm³ or <10%.

Immunological failure in Children older than 5 years: It is persistent CD4 levels below 100 cells/mm³



Virologic failure: It is a persistently detectable viral load exceeding 1000 copies/ml (that is, 2 consecutive viral load measurements within a 3-month interval, with adherence support between measurements) after at least six months of using ARV drugs.

Pharmacovigilance in HIV: This is also known as drug safety. It is the collection, detection, assessment, monitoring, and prevention of adverse effects in patients on antiretroviral drugs and other medicines associated with the management of HIV/AIDS.

Adherence to ART: It is the extent to which a PLHIV behaviour coincides with the ART regimen as agreed through mutual decision-making between the PLHIV and the adherence counsellor.

MTCT of HIV: This is mother to child transmission of HIV, which can occur in pregnancy, labour and delivery, or through breastfeeding.

PMTCT: Prevention of mother to child transmission of HIV is the strategy for ensuring that HIV infection is not transmitted to an infant during pregnancy and lactation period

HIV-exposed infants: These are infants delivered to HIV positive women.

High-risk infants: These are infants delivered to HIV positive women with an increased risk of viral transmission. These women may not have had ARVs or have had less than 4 weeks of ARV or have a viral load of greater than 1000copies/ml in the last month prior to delivery.

Infant ARV prophylaxis: These are ARVs administered to all HIV exposed infants to prevent them from acquiring HIV infection.

EID: Early infant diagnosis of HIV is the testing of all HIV exposed babies to determine their HIV infection status by detecting the presence of HIV DNA using PCR.

DBS: Dried blood spot testing (DBS) is a form of biosampling where blood samples are blotted and dried on filter paper. The dried samples can easily be shipped to an analytical laboratory and analysed using various methods such as DNA amplification.

PCR DNA: Polymerase chain reaction is the use of an enzyme to multiply both HIV DNA and RNA in blood sample.

PrEP: It is the use of oral ARVs to prevent HIV infection in individuals exposed to high risk of acquiring HIV.

PEP: It is the use of oral ARVs by individuals exposed to HIV in order to block the acquisition of HIV.

TB Preventive Therapy: TB Preventive Therapy (TPT), previously referred to as Isoniazid preventive therapy (IPT) is the treatment offered to individuals who are considered to be at risk of developing active TB disease, in order to reduce that risk. It is also referred to as the treatment of



Latent TB Infection (LTBI) .

CPT: Cotrimoxazole preventive therapy is the routine administration of cotrimoxazole in all HIV positive individuals to prevent the development of a variety of infections.

Co-infection: Co-infection is the spontaneous existence of two or more infections in an individual.

Co-morbidity: Co-morbidity is the occurrence of one or more illnesses in an individual with a primary disease.

Opportunistic infection: Opportunistic infections (OIs) are infections that occur more frequently and can become severe in individuals with HIV when their immune system becomes weakened.

Differentiated care: Differentiated care is the delivery of a minimum package of HIV/AIDS treatment care and support services according to the diversity of the care needs for people living with HIV.

Decentralization in the context of HIV: Decentralization is the devolution of part responsibility for the offer of HIV treatment and care from the tertiary and secondary level ART centres to the primary level health facilities.

Retention in HIV care: It is the number of individuals on ART who are retained in the same facility or are transferred out to another facility offering ART services over a period of time.

Linkage to HIV prevention, care, treatment and support: Proportion/number of individuals who complete a medical visit within 3 months of the diagnosis of HIV

Task shifting/sharing: It is a rational redistribution of tasks among health workforce teams, allowing a wider range of cadres to offer certain services, safely and effectively as a means of rapidly expanding access and improving health care.

Continuum of care: it is an integrated system of care that guides and tracks clients over time, through a comprehensive range of health services starting from screening for HIV, through to initiation of ART, retention in care and psychosocial support.

Monitoring in HIV: Monitoring in HIV is the regular observation, recording and process of routinely gathering information of activities taking place in HIV programme.

Evaluation: Evaluation in HIV is a systematic assessment which focuses on expected and achieved accomplishments in HIV programmes.

HIV Data flow: Data flow is the transmission of HIV data from source (health facilities) through local governments and states data platforms to the Federal Ministry of health as the final data repository.



HIV Data validation: Data validation is defined as the checking of all collected HIV data for completeness, thoroughness and reasonableness, and the elimination of errors.

Data Quality Assurance: Data Quality Assurance is a routine measure to ensure quality of data through a process of validation, reliability, precision, integrity and timeliness.



— Table of Contents —

Foreword	i
Acknowledgements	ii
Executive Summary	iii
Editorial Team	v
Abbreviations & Acronyms	vi
Definition of terms	ix
Table of Contents	xiii
CHAPTER 1 –INTRODUCTION	1
1.1 Objectives of the Guidelines	3
1.2 Epidemiology of HIV in Nigeria	6
1.2.1 HIV Transmission	6
1.3 Natural History of HIV	7
1.3.1 Adults and Children older than 5 years	7
1.3.2 HIV in Pregnancy	7
1.3.3 HIV infection in children under 5 years	8
CHAPTER 2 - DIAGNOSIS OF HIV INFECTION	10
2.1 Introduction	11
2.2 HIV Testing Services	11
2.2.1 Risk Stratification	11
2.2.2 Pre -test services	11
2.2.3 Post -test services	11
2.2.4 Index Testing Services	12
2.2.5 Social Network Testing	13
2.2.6 Blended Index and Social Network Strategies	13
2.2.7 HIV Self-testing	13
2.2.8 Recency Testing	14
2.3 HTS in Pregnancy	14
2.3.1 Approach to HTS in Pregnant Women	14
2.3.2 Essential Components of HTS for PMTCT	14
2.3.3 HTS for women in labour	15
2.3.4 HTS for post-partum women	15



2.4 Re-testing	15
2.5 Repeat HIV Testing	15
2.6 Disclosure Scenarios	16
2.7 Linkage of HTS to care and ART	16
2.8 Laboratory Diagnosis of HIV Infection	17
2.8.1 Antibody Assays	17
2.8.2 Enzyme-Linked Immunosorbent Assay (ELISA) or Enzyme Immunoassay (EIA) for Blood Screening	18
2.8.3 Nucleic Acid-based Testing	19
2.8.4 HIV DNA Polymerase Chain Reaction (PCR)	19
2.8.5 Viral Load Assay - Reverse Transcriptase Polymerase Chain Reaction (RT-PCR)	19
2.9 Laboratory Diagnosis of HIV Infection in Children by Age Group	20
2.9.1 Children aged ≤18 months	20
2.9.2 Children aged ≥18 months	22
2.10 Clinical Diagnosis and Staging of HIV Infection	22
CHAPTER 3 - ANTIRETROVIRAL THERAPY	26
3.1 Introduction	27
3.2 Classes of Antiretroviral Drugs	27
3.3. Preparation of Adults, Adolescents and Children for ART	29
3.3.1 Baseline Assessment for ART	29
3.3.2 Further Baseline Assessment	29
3.3.3 Initiating ART in Adults	30
3.3.4 Initiating ART in Adolescents (10-19 years of age)	30
3.3.5 Initiation of ART in infants and children younger than 10 years of age	30
3.3.6 Recommendations for Use of ART in TB/HIV Co-infection	30
3.3.7 Key considerations when treating PLHIV with TB:	31
3.3.8 Recommendations for use of ART in HIV/Hepatitis Co-infection	32
3.4 Recommended ART Regimen for Adults, Adolescents and Children	33
3.4.1 First -line ART regimens for adults and adolescents	33
3.4.2 First -line ART for children	33
3.4.3 Programming Transitioning to DTG -based regimen	34
3.5 Monitoring Patients on ART	34



3.5.1 Monitoring and Follow-up in Adults	34
3.5.2 Monitoring Children and Adolescents on ART	35
3.6 Management of HIV Treatment Failure	37
3.6.1 Definition of HIV Treatment Failure	37
3.6.2 Causes of HIV Treatment Failure	39
3.6.3 Substitution and switch of ARV drugs	40
3.6.4 Second-line ART Regimens	40
3.7 Third-line ART	42
3.7.1 Criteria for Switch to Third-Line ART	42
3.7.2 Operational Guidance for Third-Line ART	42
3.8 Low-Level Viremia (LLV)	43
3.8.1 Management of Low -level viremia (LLV)	43
3.9 ART in Special Circumstances	44
3.9.1 Kidney impairment	44
3.9.2 Cardiomyopathy	44
3.9.3 Osteoporosis	44
CHAPTER 4- PHARMACOVIGILANCE IN ANTIRETROVIRAL THERAPY	47
4.1 Introduction	48
4.1.1 Active Pharmacovigilance	48
4.2 Pregnancy Monitoring for Patients on ARVs	48
4.3 HIV Drug Resistance (HIVDR)	49
4.4 Adverse drug reactions (ADRs)	49
4.4.1 Classification of Adverse Drug Reactions (ADRs)	49
4.5 Drug toxicity	50
4.5.1 Laboratory monitoring of toxicity:	50
4.6 Steps to Recognize ADRs	54
4.7 Who is to Report ADRs?	54
4.8 What ADRs Should be Reported?	54
4.9 Pharmacovigilance Data Collection and Reporting Process	55
4.10 Principles of Management of Adverse Drug Reactions	55
4.10.1 Management of Specific ARV Adverse Drug Reactions	57
4.11 Prevention of Adverse Drug Reactions	61
4.12 ARV Drug Interactions	62



4.1.2.1 Interactions Between Contraceptives and Antiretroviral Drugs	62
CHAPTER 5 -ADHERENCE TO ANTIRETROVIRAL THERAPY	65
5.1 Introduction	66
5.2 Adherence Preparation for ART	66
5.3 On-going adherence for clients on ART	67
5.4 Monitoring of Adherence	67
5.4.1 Factors known to improve adherence	68
5.4.2 Factors associated with poor adherence	68
5.4.3 Adherence in Specific Populations	69
5.4.4 Recommendations for improving adherence	70
CHAPTER 6 -PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV INFECTION	72
6.1 Introduction	73
6.2 Mother-to-Child Transmission of HIV	73
6.2.1 Prevention of MTCT	74
6.2.2 Benefit of PMTCT	77
6.3 Pre-ART Care for HIV-positive pregnant women	78
6.3.1 Initial evaluation of HIV pregnant women	78
6.3.2 Initial Clinical Examination of HIV Positive Pregnant Women	78
6.3.3 Laboratory Investigation of HIV Positive Pregnant Women	79
6.3.4 Syphilis testing for pregnant women	80
6.4 Use of Antiretroviral Therapy for PMTCT	80
6.4.1 Recommended first-line regimen for pregnant and breastfeeding women.	80
6.4.2 ARV prophylaxis for the HIV exposed infant	80
6.4.3 Cotrimoxazole Prophylaxis for HIV exposed infants	81
6.4.4 Antenatal Care for HIV positive pregnant women	82
6.5 Management of HIV positive women in labour, delivery and within 72 hours of delivery	82
6.5.1 Induction of Labour	83
6.5.2 Conduct of Delivery	83
6.5.3 Vaginal Delivery	83
6.5.4 Caesarean Section (CS)	83
6.5.5 Specific Modification of Obstetric Care for HIV Positive Women	84



6.6 PMTCT/TB integration services	84
6.6.1 Pregnant women with TB and HIV co-infection	84
6.6.2 Infection Control	86
6.6.3 Management of Newborn of a Mother/ Household contacts with LTBI	86
6.7 Care and Support of the HIV-Exposed Infant	86
6.7.1 Immediate and on-going care of the new-born of HIV positive women	86
6.7.2 Infant feeding in the context of HIV	87
6.7.3 Early Infant Diagnosis (EID)	87
6.7.4 Childhood Immunizations in the Context of HIV	87
6.8 Special Considerations for Adolescent and Young Women in PMTCT	90
6.9 Linkage of PMTCT with comprehensive HIV Treatment, Care and Support Services for Mothers and Infants	91
6.9.1 Engagement of Non-Formal Health Actors (NFHA) in the (referral and Linkage) of PMTCT services	91
CHAPTER 7- PREVENTIVE MANAGEMENT IN HIV	93
7.1 Introduction	94
7.1.1 Combination prevention / Minimum Prevention Package Intervention (MPPI)	94
7.2 Pre-Exposure Prophylaxis	95
7.2.1 Criteria for PrEP initiation	95
7.2.2 PrEP minimum package	95
7.2.3 PrEP effectiveness	95
7.2.4 Approved drugs for PrEP	95
7.2.5 PrEP administration guidance	96
7.2.6 Daily PrEP and Event -Driven PrEP	96
7.2.7 PrEP for Serodiscordant Couples	96
7.2.8 Settings where PrEP can be accessed	96
7.2.9 Contraindications for PrEP	97
7.2.10 Client follow-up	97
7.2.11 PrEP discontinuation	99
7.3 Post -Exposure Prophylaxis	99
7.3.1 Post-Exposure Prophylaxis for Occupational HIV exposure	99
7.3.2 Evaluation for Post-Exposure Prophylaxis	100
7.3.4 Determination of Risk and ARV drugs for PEP	100



7.3.5 Recommendations for PEP	100
7.3.6 Recommended Drug Combinations for PEP	101
7.4 Post-Sexual Assault Exposure Prophylaxis	102
7.4.1 Recommendations	103
7.4.2 Clinical considerations	103
7.5 Interventions for Key Populations	104
7.5.1 Recommended comprehensive prevention package of Interventions for key populations	104
7.6 Condom availability and promotion for HIV programme	105
7.6.1 Elements of Condom Programing	105
7.6.2 Key Steps in Condom Programing	106
7.7 Gender -Based Violence	106
7.7.1 GBV Prevention	107
7.7.2 GBV Case Identification and First-line Support Recommendations	107
7.7.3 GBV Clinical Response Recommendations	107
7.8 Management of Sexually Transmitted Infections (STIs)	108
7.8.1 Objectives of STIs/RTIs management	108
7.8.2 Components of syndromic management	108
7.8.3 Prevention of STIs/RTIs	108
7.9 Prevention for Adolescent and Young Persons (AYPs)	109
7.9.1 Harm Reduction program	109
7.9.2 Cervical Cancer Prevention	110
CHAPTER 8-ADVANCED HIV DISEASE, OPPORTUNISTIC INFECTIONS, AND CO-MORBIDITIES	112
8.1 Advanced HIV Disease	113
8.1.1 Introduction	113
8.1.2 Definition of advanced HIV disease	114
8.1.3 Components of AHD package of care	115
8.1.4 Diagnostics for AHD and associated OIs	115
8.1.5 Management of opportunistic infections in AHD	117
8.1.6 ART Initiation and Intensive Adherence Support for Patients with AHD	121
8.1.7 Vaccination for People with AHD	122
8.1.8 Immune Reconstitution Inflammatory syndrome (IRIS)	123



8.1.9 Management of AHD among Children less than ten years	124
8.2 Other Opportunistic Infections (OIs)	126
8.3 Preventing Opportunistic Infections (OIs)	126
8.3.1 Cotrimoxazole Preventive Therapy (CPT)	127
8.3.2 Tuberculosis Preventive Treatment (TPT)	128
8.4 HIV-RELATED CO-MORBIDITIES	146
8.5 Mental Health and HIV	146
8.5.1 Recommendations	146
8.5.2 Management Considerations	147
CHAPTER 9 -SERVICE DELIVERY	149
9.1 Introduction	150
9.2 Differentiated Service Delivery	150
9.2.1 Differentiated HIV Testing Service Delivery	151
9.2.2 Differentiated ART Service Delivery	151
9.2.3 Differentiated Service Delivery Based on Clinical Characteristics	153
9.2.4 Differentiated Service Delivery based on Sub-Populations	155
9.2.5 Differentiated Service Delivery Based on Context	161
9.2.6 Integration of Service Delivery	161
9.2.7 Family-Centred Differentiated Service Delivery	162
9.3 Standards for Quality HIV Service Delivery	163
9.3.1 Standards of Care	163
9.3.2 Standard Precautions	166
9.4 Nutrition	167
9.4.1 Nutrition in HIV Positive Pregnant and Lactating Woman	167
9.4.2 Nutrition in Children Living with HIV	167
9.4.3 Nutrition and Antiretroviral Therapy	169
9.5 Service Delivery for Adolescents Living with HIV	169
9.5.1 Adolescent Friendly Health Service	169
9.5.2 Package of services for adolescents living with HIV	170
9.5.4 Psychosocial support for adolescents living with HIV	172
9.5.5 Transitioning to adult care	172
9.5.6 Peer-driven adolescent service delivery models	174



CHAPTER 10- MONITORING & EVALUATION	176
10.1 Introduction	177
10.2 Selection of Indicators	177
10.3 Data Management	182
10.3.1 Data Collection	182
10.4 HIV Data Dissemination and Use	184
10.5 Human Resource for M&E	184
10.6 HIV M&E Logistics	185
10.7 Additional strategies in M&E	185
10.8 HIV Research	185
10.9 Periodic monitoring of the implementation of the guidelines and content update	185
References	187
Appendix	189
Appendix 1: Commonly used Adult and Paediatric ARV Formulations and Dosage	190
Appendix 2: Mental Health Screening	198
Appendix 3: Energy and Nutritional Recommendations for PLHIV	199
Appendix 4: Recommended activities for adolescent HIV service delivery	200
Appendix 5: Guide on Age-Appropriate Disclosure for Children and Adolescents	203
Appendix 6: Self-management timeline for transitioning ALHIV	204
Appendix 7: Algorithm for Screening and Diagnosing TB in PLHIV	206
Appendix 8: Global Standards for Quality Health-Care Services for Adolescents	210
Appendix 9: Pharmacovigilance or Drug and Therapeutic Committees (PVC) - Terms of Reference	211
Appendix 10: NAFDAC ADR Form	212



1. INTRODUCTION

What's Inside:

1.1 Objectives of the Guidelines.....	3
1.2 Epidemiology of HIV in Nigeria.....	6
1.3 Natural History of HIV.....	7

The 2020 Nigeria HIV Guidelines are informed by the basic principles of equality, equity and social justice and they align strongly with the universal declarations of human rights. They promote universal access to comprehensive HIV prevention, treatment and care for all persons in Nigeria. The recommendations of these guidelines are the product of careful balancing of science and public health. The core principles of these guidelines include::

- 1. Public Health Approach:** These guidelines reinforce the objectives of the national strategy for decentralization of HIV services in Nigeria. They seek to make HIV prevention, treatment and care services universally available to all Nigerians irrespective of socioeconomic class and creed. This approach uses simplified drug formularies, fixed-dose combinations, task shifting and sharing, and simplified systems for clinical mentoring.
- 2. Promotion of human rights and equity:** Access to quality health care services including HIV prevention, treatment, care and support is a basic human right which is the entitlement of all people regardless of nationality, sex, sexual orientation, ethnicity, race, religion or other status. These rights should be recognized as fundamental to realizing the universal right to health. These guidelines will support the equitable provision of quality HIV services including ART and related interventions to all the people who need them; especially pregnant women, children and high-risk populations. These services should be provided in an environment that minimizes stigma and discrimination. Basic rights and freedom of all clients will be respected in the implementation of the guidelines. For example, informed consent (for HIV testing and initiation of ART) and adequate health information safeguards should be put in place to ensure consent and confidentiality. Priority should be given to people who are most ill and those who are already on treatment.
- 3. Implementation guided by in-country peculiarities:** Implementation of the recommendations of these guidelines will be informed by local context including; HIV epidemiology, availability of resources, the organization and capacity of the health systems at all levels of care. Indigenous best practices will be promoted alongside global standard practices.
- 4. Strengthening health systems through innovation and learning:** Service delivery approaches recommended in these guidelines will be implemented in a manner that strengthens health systems and enhances the local capacity to keep pace with the rapidly evolving science of HIV medicine.
- 5. Increasing the effectiveness and efficiency of programmes:** As the country scales-up access to ART in the face of competing national priorities, efforts will be made to optimize the effectiveness and efficiency of National HIV programmes through provision of ART to people living with HIV and implementing strategies and recommendations that are sustainable and less dependent on foreign aid.
- 6. Differentiation and Integration of Services:** With the UNAIDS 95-95-95 targets, scale-up of HIV care, treatment and support services, and differentiating ART treatment



becomes imperative for expansion and provision of patient-focused care. Strengthening linkages and referrals are important components of differentiation. The integration and linkage of HIV services with TB, sexual and reproductive health, maternal, newborn and child health services offer opportunities for providing ART, increasing adherence and reducing attrition in care.

7. **The HIV Continuum of Care:** These guidelines are predicated on HIV continuum of care. The diagnosis of HIV should be followed with timely initiation of ART and retention in care, sustained virological suppression resulting in improved quality of life. As many more PLHIV live longer, stable and healthier, HIV has become a chronic health condition. This requires that health systems and community interventions should be modified to optimize the chronic care model.
8. **Contribution to National and Global Health Goals:** These guidelines have taken into consideration the letter of the 2016 United Nations General Assembly Special Session (UNGASS) Political Declaration on HIV which affirms the 2030 agenda for sustainable development including the resolve of member states to end the AIDS epidemic by 2030. The 2016 guideline was designed to ensure that the UNAIDS 2014 declaration of 90-90-90 was achievable; however, huge gaps still exist. In particular, the 2018 National AIDS Indicator and Impact Survey (NAIIS) showed that an estimated 800,000 individuals are yet to be identified. As at the end of 2019, approximately 1.14 million people were on treatment out of the estimated 1.9 million people living with HIV. Thus, the country is at 60% ART coverage. Although there are facility reports of giant strides being made concerning the third 90 at tertiary institutions in Nigeria, nationwide report showed widely variable suppression rates as low as 50% in some facilities to 80% in others. Specifically, the current guidelines seek to contribute towards the achievement of UNAIDS 95-95-95 targets. In addition, this document will contribute to achieving the goals and targets articulated in the National HIV/AIDS strategic framework (NSF 2021-2025).

1.1 Objectives of the Guidelines

- To provide updated and evidence-based clinical recommendations for the provision of HIV prevention, treatment, care and support services
- To provide guidance on key service delivery and operational issues needed to increase the effectiveness and efficiency of HIV service delivery and strengthen the continuum of HIV care through linkage and integration
- To provide programmatic guidance for the effective delivery of HIV prevention, treatment, care and support services at all levels of the health care system

These Guidelines will support;

- Early HIV diagnosis and timely initiation of lifelong combination ART
- Package of care for the management of PLHIV presenting with advanced HIV disease
- Use of viral load testing for monitoring ART treatment success and diagnosis of treatment failure
- Monitoring drug toxicity in every individual on ART
- ARV prophylaxis to HIV exposed infants, timely DNA PCR testing and early linkage of HIV positive infants to treatment and care



- Prevention of new HIV infections among adults, adolescents, pregnant and breastfeeding women and children
- Strengthened adherence to ART and retention in care
- Improved quality ART service delivery all over the country

What is new in the 2020 National Guidelines for HIV Prevention, Treatment and Care?

ART should be initiated in all adults, adolescents, pregnant and breastfeeding women, and children with a diagnosis of HIV regardless of WHO clinical stage and CD4+ cell count. This recommendation (as in the 2016 Guidelines) maintains that people who test HIV positive will be initiated on ART once they are willing and ready to start ART for life.

However, as a priority, health care workers should initiate ART in the following;

- All adults and adolescents with severe or advanced HIV clinical disease (WHO stage 3 or 4)
- All adults and adolescents with HIV and CD4+ cell count of less than 350 cells/mm³
- All HIV positive pregnant and breastfeeding women
- All HIV positive children older than 5 years of age with severe or advanced disease (WHO stage 3 or 4)
- All HIV positive children older than 5 years of age with CD4+ cell count less than 350 cells/mm³
- All HIV positive children less than 2 years of age
- All HIV positive children less than 5 years of age with CD4+ cell count of less than 750 cells/mm³; or CD4+ percentage less than 25%

Table 1.1: List of new recommendations

Service Area	New update
HIV diagnosis	Current innovative testing strategies for improved case finding and efficient use of resources Risk stratification before HIV testing Index testing Recency testing HIV Self testing Nucleic acid testing at birth
HIV Treatment	Tenofovir+Lamivudine+Dolutegravir as preferred first-line ART for all adults and adolescents Use of Dolutegravir (DTG) in second-line ART regimen Use of DTG in Children less than 20kg Package of care for advanced HIV disease Use of long-acting injectables Use of reverse transcriptase translocator inhibitor



Service Delivery	Expansion on models for Differentiated service delivery for specific populations Adolescent friendly services and models Integration of family planning service in ART
Laboratory testing	Use of point of care devices for rapid assessment of: Viral load in pregnant women presenting close to labour Early infant diagnosis in hard to reach areas Same day CD4+ cell count Diagnostics for opportunistic infections Urine Lateral Flow Lipoarabinomannan (LF-LAM) assay Stool for Xpert MTB/RIF assay in children CrAg test Histoplasma antigen test IgG/IgM Toxoplasma Antibody Test
HIV exposed infants	Nucleic acid testing at birth (NAT)
Prevention	Event-driven Pre-Exposure Prophylaxis

Process of guidelines review

The review and development of the 2020 National Guidelines on HIV prevention, treatment, and care, commenced in June 2019 when the Federal Ministry of Health established working groups of the National Task Team on ART. These working groups included:

- i. PMTCT working group
- ii. Adult/Pediatric ART working group
- iii. Service Delivery working group
- iv. AHD working group
- v. Lab/HTS working group

The working groups were mandated to review the respective sections of the 2016 National guidelines for HIV Prevention, treatment and Care in line with emerging HIV management modalities. The committees worked remotely and also met in person to review the guidelines and develop recommendations for inclusion in the 2020 guidelines. Following the completion of the tasks by the groups, the FMOH convened series of stakeholders' meetings to review the output from the working groups and integrate into a final document. Resources used for the review included the WHO Policy brief on Antiretroviral Regimens (July 2019), NAIIS 2018 Technical Report and the Nigerian National data repository amongst others.

Recommendations contained in this document are the product of stakeholder consensus, and the principal consideration is the wellbeing of the patients. The recommendations are essentially guidance on HIV diagnosis, general HIV care and support, rational use of ARV drugs for treating and preventing HIV infection and effective delivery of services.

Stakeholders involved in the review and development of the 2020 national guidelines included



representatives of the FMOH, SMOH, NPHCDA, NACA, NAFDAC, NTBLCP, CHAI, UNAIDS, WHO, UNICEF, PEPFAR, CDC, USAID, HIV Implementing Partners, NEPWHAN, CSOs, National Task Teams for ART, PMTCT and HTS, facility-level HIV service providers. The process was coordinated by the NASCP.

Target audience

The 2020 National Guidelines for HIV Prevention, Treatment and Care is intended primarily for use by HIV programme managers and service providers at all levels of HIV service delivery. The critical audiences for the guidelines include:

- Health facility level service providers
- National and State level HIV Programme Managers
- National HIV treatment and prevention technical working groups
- National TB programme managers
- Managers of maternal, newborn and child health and reproductive health programmes
- Clinicians and other health service providers in private practice
- Managers of national laboratory services
- Community-based organizations including People living with HIV
- International and bilateral agencies and organizations

1.2 Epidemiology of HIV in Nigeria

Nigeria reported the first case of AIDS in 1986. Since then, the National HIV prevalence increased exponentially from 1.8% in 1991 peaking at 5.8% in 2001 and progressively declining through 4.4% in 2005, 3% in 2014. Based on the report from NAIIS, the current prevalence of individuals aged 15 - 64 is 1.4%. As at 2019, Nigeria had an estimated HIV burden of 1.9 million people, the fourth largest in the world. The incidence of HIV in 2018 was estimated at 8 per 10,000 persons (NAIIS). The prevalence varied across Regions and States with the highest prevalence being in the South-South (3.1%) while the North-West had the lowest prevalence (0.6%). Akwa Ibom state had the highest prevalence (5.5%) while Katsina had the lowest prevalence (0.3%).

1.2.1 HIV Transmission

Heterosexual sex still accounts for the majority of transmissions in Nigeria. Over 90% of transmissions are via unprotected sexual intercourse between heterosexual individuals. However, current data suggest that homosexuality is contributing disproportionately to the overall National epidemic. It is estimated that MSM constitutes only about 1% of the Nigerian population, yet this group now contributes 20% of new infections in Nigeria. This is not unexpected given the fact that 2018 NAIIS documented National population HIV prevalence of 1.4% whereas the prevalence of the infection among MSM has been rising consistently from 14% in 2007 to 17% in 2010 and 23% in 2014.

Another prominent mode of transmission of HIV is from the HIV positive mother to her child. Most children less than 15 years living with HIV acquire the infection through mother-to-child transmission (MTCT). This can occur during pregnancy, labour and delivery or during breast-feeding.



Other modes of transmission of HIV whose incidence rate is not well documented include transmission from transfusion with infected blood and blood products, contact with sharp skin-piercing objects used for scarifications, tattoos, and surgical procedures.

1.3 Natural History of HIV

1.3.1 Adults and Children older than 5 years

A typical HIV infection can be divided into three stages: primary infection, asymptomatic infection, and symptomatic infection including AIDS. Following primary HIV infection, the CD4+ cell count decreases and the HIV RNA rises significantly. With sufficient exposure to viral antigens, cytotoxic T-lymphocyte responses are generated, and the HIV viral load typically declines to an equilibrium known as a virologic “set-point” within 6 to 12 weeks of infection. Once this viral set-point is reached, the CD4+ cell count may rebound again marginally, although it does not often return to baseline values. Concurrent with these events are clinical manifestations of acute HIV infection in 30% to 60% of individuals.

About half of newly infected people experience flu-like symptoms while the rest are asymptomatic. Once infected, adults experience an asymptomatic clinical latency that lasts 2 to 10 years, during which HIV is produced and removed by the immune system and CD4+ T cells are killed and replaced. This latency period is considerably shorter in children. During this asymptomatic period, the number of infected circulating CD4+ cells and free virions are relatively low. Moreover, the hematopoietic system can replace most T cells that are destroyed, thus keeping the CD4+ cell counts in the normal range for adults and children >6 years ($636\text{-}977 \text{ cells/mm}^3$).

A number of opportunistic infections (OIs), including recurrent oral candidiasis and tuberculosis are common during the early symptomatic phase of AIDS. As the CD4+ cell count declines to an even lower level, additional life-threatening OIs such as herpes zoster, amoebiasis, microsporidiosis, strongyloidiasis, toxoplasmosis, dermatophytosis etc. may occur with increasing frequency and severity. In the later stages of symptomatic HIV infection, the viral load levels rise again. Quantitative PCR methods (viral load assays) demonstrate:

- Continuous replication of HIV in nearly all infected individuals, although the rates of virus production vary by as much as 70-fold in different individuals
- The average half-life of an HIV infected cell in vivo is 2.1 days. Recent reports have suggested an even faster turnover of plasma virus of 28 to 110 per minute
- Up to $10^9\text{--}10^{10}$ HIV particles are produced each day, and averages of 2×10^9 CD4+ cells are produced each day.

1.3.2 HIV in Pregnancy

In pregnancy, immune function is suppressed in both HIV-infected and uninfected women. There is a decrease in immunoglobulin and complement levels in early pregnancy and a more significant decrease in cell-mediated immunity. Studies have shown that pregnancy may however not affect the progression of HIV or the rate of death. On the other hand, HIV infected pregnant women are more likely to develop early pregnancy complications such as bacterial pneumonia, urinary tract infections, spontaneous abortion, higher rates of ectopic pregnancy and increased stillbirth rates, especially from areas where the epidemic has been present for a long time. The risk appears to be lower in asymptomatic HIV positive pregnant women.



1.3.3 HIV infection in children under 5 years

There are critical differences between HIV progression in children and adults. Stemming largely from the lower efficiency of a child's immature immune system, these differences usually result in more rapid disease progression and a much shorter duration for each stage.

At birth, viral load is usually very low but within the first 2 months of life, it increases rapidly to values well above 100,000 copies/ml. Thereafter the viral load remains high until the age of 2 or 3 years after which it declines gradually to reach the viral load set point. These viral dynamics are significantly different from the rapid increase and decrease of the viral load seen in horizontally infected older children and adults.

In children, the higher viral load is associated with the level of somatic growth of the lymphatic system and the inability of their immature immune system to mount an HIV-specific response. When assessing the immune system in infants and children, it is very important to compare the child's CD4+ cell count with the age-appropriate values. Lymphocyte counts are very high in infancy and decline to adult levels around 6 years of age.

Higher mortality in HIV-infected children may result from intercurrent infections, malnutrition, and lack of access to primary HIV care including delayed definitive diagnosis. With no interventions, the majority of children who acquired HIV perinatally develop HIV-related symptoms by 6 months of age.

Perinatally infected children fit into one of three categories:

- *Category 1:* Rapid progressors develop signs and symptoms of HIV and AIDS and die by age 1 year. These children are likely to have acquired the infection in-utero or during the early perinatal period (about 25 – 30%)
- *Category 2:* Children develop symptoms early in life, followed by rapid deterioration and death by age 3 to 5 years (about 50 – 60%)
- *Category 3:* Long-term survivors live beyond age 8 years (5 - 25%)



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2. DIAGNOSIS OF HIV INFECTION

What's Inside:

2.1 Introduction.....	11
2.2 HIV Testing Services.....	11
2.3 HTS in Pregnancy.....	14
2.4 Re-testing.....	15
2.5 Repeat HIV Testing.....	15
2.6 Disclosure Scenarios.....	16
2.7 Linkage of HTS to care and ART.....	16
2.8 Laboratory Diagnosis of HIV Infection.....	17
2.9 Laboratory Diagnosis of HIV Infection in Children by Age Group	20
2.10 Clinical Diagnosis and Staging of HIV Infection.....	22

2.1 Introduction

Diagnosis of HIV infection is simply a proof of the presence of HIV in an individual, and this can be achieved by demonstrating either the presence of HIV antibodies in plasma or serum (indirect test) or the virus in blood (direct test). Available tests for diagnosis of HIV include antibody, antigen and nucleic acid tests. The antibody detection tests are suitable for the diagnosis of HIV infection in adults and children 18 months and above, while the nucleic acid test is used mainly for the diagnosis of HIV infection in children under 18 months. The diagnosis of HIV infection should not be made without first obtaining a positive result from any of the test methods highlighted above. It is recommended that before commencing ART all persons who have tested HIV positive should be re-tested.

2.2 HIV Testing Services

HIV Testing Services (HTS) provides a gateway to HIV prevention, treatment and care services. HTS consists of a range of services that include diagnosis of HIV using HIV testing methods, counselling (pre-test information and post-test counselling), linkage to HIV prevention, treatment and care and other clinical services, and coordination with laboratory services for quality assurance and the delivery of accurate results.

All forms of HTS should be voluntary and should adhere to WHO's five C's: consent, confidentiality, counselling, correct test results and connections to care, treatment and prevention services. The WHO five C's are principles that apply to all models of HTS and in all circumstances. For further information, refer to the National HTS Guidelines 2017.

2.2.1 Risk Stratification

Risk stratification is a strategy that identifies those who are likely to be infected with HIV based on their risk exposure. The HIV risk stratification tool enables service providers to determine if a client presenting at the health facility or community is eligible for an HIV test or not, following an assessment using a set of predetermined criteria. The Risk stratification Tool (RST) has been useful in aiding the programme to be more efficient in the testing of clients.

2.2.2 Pre-test services

Pre-test information may be provided through individual or group information sessions and media such as posters, brochures, and short video clips shown in waiting rooms. When children and adolescents are receiving HTS, information should be presented to them in an age-appropriate manner and in a way their guardians can understand. Pre-test information sessions for people receiving HIV testing should emphasize the benefits of HIV testing, the meaning of an HIV-positive and an HIV-negative test, and an assessment of clients' readiness for HIV testing. For further information, refer to the National HTS Guidelines 2017.

2.2.3 Post-test services

Post-test information and counselling for people who test HIV negative should emphasize an explanation of the test result, referral and linkage to other relevant HIV prevention services, and advise to return in 4 weeks for repeat testing in the event of recent risky behaviour. For those people who test HIV positive, post-test information should emphasize an explanation of the test result and helping the client to cope with emotions arising from the diagnosis, clear information



on ART and its benefits for maintaining health and reducing the risk of HIV transmission, as well as proper linkage to care. For further information, refer to the National HTS Guidelines 2017.

2.2.4 Index Testing Services

Index testing services (ITS) is a focused HTS approach in which the household, family members (including children) and partners of people diagnosed with HIV are offered HTS. ITS should be offered by a trained provider in an appropriate, safe and ethical manner. The provider should ask people diagnosed with HIV (index clients) to list their sexual partners, drug-injecting partners (where applicable), children, and other family members. If the index client agrees, offer these partners and the children HIV testing services (HTS). The process is completely voluntary. Such services are key to increasing HIV case finding and achieving epidemic control.

Implementers need to ensure that the following minimum requirements are in place to conduct voluntary safe and ethical ITS:

- All providers conducting index testing must be trained and supervised on index testing procedures including 5Cs, intimate partner violence (IPV) screening, adverse event monitoring, and ethics (respect for the rights of clients, informed consent and 'do no harm').
- Strict Adherence to 5C's should be observed/assessed at least quarterly, as well as provision of additional voluntary and ethical practices as detailed below:
 - Providers must offer clients a choice of all four partner notification strategies (client, contract, provider, dual referral) and indicate that there are both ways to notify contacts that do not involve disclosure and ways to ensure anonymity
 - Providers will work with clients experiencing IPV to choose a partner notification method that ensures their safety (which may be declining of index testing service)
- All HIV testing clients, including index clients, should be provided with all available HIV prevention, care and treatment services, regardless of whether or not they provide details about their contacts. Clients must NEVER be pressured into sharing the names of their contacts for fear of being denied services. Services must NEVER be withheld under any circumstances.
- Clients should be informed of their right to decline participation in index testing services throughout the process, not just during the elicitation interview .
- IPV risk assessment should be conducted for each contact elicited, with referral options to necessary services using SOPs (available at www.humanitarianresponse.info/files/document/nigeria_sops_gbv_prevention_response_2019.pdf).
- Onsite provision of first-line services (Listen, Inquire, Validate, Ensure safety, Support) for anyone reporting IPV, and additional services offered either onsite or as referral.
- A secure environment (e.g. lockable cabinets) to store patient information.



See the figure below for detailed information:

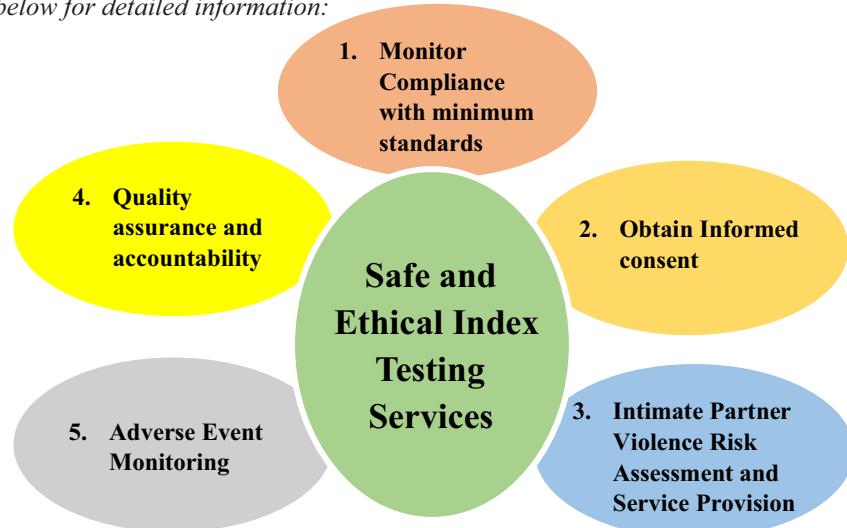


figure 2.1: Safe and Ethical Index Testing Services

2.2.5 Social Network Testing

Social Network Testing (SNT) is when HIV-positive and/or high-risk HIV-negative persons, particularly from key populations (KP) are enlisted as recruiters to identify individuals from their social, sexual, and drug-using networks (network associates) for HTS. Social and risk network strategies complement traditional peer outreach by engaging previously unidentified KP and other high-risk populations for HIV prevention and testing. The goal is to reach hidden, high-risk networks, expand HIV case detection potential, and, as an integrated part of a differentiated model, link HIV-positive individuals to rapid treatment, and connect HIV-negative individuals to services that will help them remain HIV-negative.

2.2.6 Blended Index and Social Network Strategies

It is valuable to synergistically build upon a core foundation of index testing to introduce social network strategies (SNS) to expand case-finding options for high-risk groups. The two strategies can be used in concert to ensure that all high-risk, direct exposure contacts and social network members are tested and that HTS extends into harder-to-reach networks of undiagnosed PLHIV.

2.2.7 HIV Self-testing

HIV self-testing (HIVST) refers to a process in which a person collects his or her specimen (oral fluid or blood) and then performs an HIV test and interprets the result, often in a private setting, either alone or with someone he or she trusts. As with all approaches to HTS, HIVST should always be voluntary, not coercive or mandatory. Although reported misuse and social harm are rare, efforts to prevent, monitor, and further mitigate related risks are essential. A reactive (HIV-positive) HIVST result always requires further testing and confirmation from a trained provider, starting from the beginning of the validated national testing algorithm. Importantly, HIVST is a screening test and should not be used to provide a definitive HIV diagnosis. Clear messages are essential to ensure that HIVST users understand how to perform the test, the meaning of the test results, and where and how to access follow-up services following a test, including retesting, care, and treatment. Linkage to HIV testing services through a facility or HTS provider is critical following a reactive HIVST. A negative HIVST is reliable evidence of no infection and does not



require additional testing unless PrEP is planned, in which case the negative result should be confirmed using the national testing algorithm before PrEP initiation. Interpretation of a non-reactive (HIV-negative) self-test result will also depend on the ongoing risk of HIV exposure. Individuals at high ongoing risk, or who test within six weeks of possible HIV exposure, should be encouraged to retest. HIVST is not recommended for users with a known HIV status who are taking antiretroviral drugs, as this may lead to an incorrect self-test result (false non-reactive). HIVST for children 2-11 years must be caregiver assisted or health care worker assisted with caregiver consent. Provisions should also be made for persons with disabilities to access appropriate information and educational materials about HIVST and to receive support to conduct the HIVST as needed. For further information, refer to the National HIVST Operational Guidelines 2019.

2.2.8 Recency Testing

Recency testing refers to an anti-body-based test to distinguish recent from long-term HIV infection using antibody avidity (binding strength). The recency test kit is used to indicate whether a person's HIV infection was recently acquired (i.e. in the last 4-6 months). This promises to be a useful tool for disease monitoring and surveillance. All kits for this procedure should be evaluated in line with National standards before deployment or public health use after post-market validation. This test should be done immediately after the client tests positive using the National testing algorithm.

2.3 HTS in Pregnancy

The entry-point for PMTCT services is through HIV testing of pregnant women at the earliest opportunity; during antenatal care, labour and delivery including post-partum. In all settings, HTS should be offered to all pregnant women seeking antenatal care. Retesting for HIV in late pregnancy and early in labour is recommended for pregnant women who tested negative in early pregnancy.

2.3.1 Approach to HTS in Pregnant Women

HIV testing of pregnant women should be accompanied by culturally acceptable counselling that highlights the benefits of knowing one's HIV status and its implications for the woman's health, pregnancy and the unborn child. The elements of effective counselling are confidentiality, timeliness, acceptance, accessibility, consistency and accuracy.

The recommended approach to testing and counselling is the routine approach (also referred to as the PITC "opt-out" approach) where HIV testing is offered as part of routine tests in antenatal clinics. The pregnant woman reserves the right to refuse the test.

2.3.2 Essential Components of HTS for PMTCT

These include:

- Pre-test information
- HIV testing with same-day result
- Post-test counselling
- Follow-up counselling



Women should be encouraged to start antenatal care early (within first trimester from 14 weeks of pregnancy) and HTS should be provided during the first ANC visit.

2.3.3 HTS for women in labour

HIV testing in labour should be provided for all women of unknown HIV status and those who tested negative during pregnancy. This is because some women might not have registered in the antenatal clinic and are presenting for the first time in labour. Such women should be offered the opt-out approach and given appropriate post-test counselling in the post-partum period or pre-test counselling if she had declined the test. The following steps should be taken:

- Determine HIV test history
- Discuss the benefits of HIV testing and ART
- Explain the HIV testing process
- Offer the test

If the above is not feasible at the time the woman presents, steps should be taken to offer the test as soon as possible after delivery.

2.3.4 HTS for post-partum women

To reduce the number of new paediatric infections, additional efforts are required to reduce mother to child transmission post-partum (especially during breastfeeding). Breastfeeding mothers of unknown HIV status and those who tested negative during pregnancy should be counselled and assessed to determine exposure and offered testing if indicated at the 6-week infant immunization visit. If negative, breastfeeding mothers should be retested at 6-month intervals until the cessation of breastfeeding. Counselling on the HIV retesting schedule both in pregnancy and the postpartum period should be integrated into routine ANC and postnatal education.

2.4 Re-testing

With the advent of the “Test and Treat” policy in Nigeria, all HIV-positive persons are now eligible to receive ART, regardless of CD4+ cell count. To ensure that individuals are not needlessly placed on life-long ART (with potential side-effects, waste of resources, psychological impact of misdiagnosis), all individuals should be retested to verify their HIV status before or at the time of starting ART. Misdiagnosing HIV infection, irrespective of its scale is of critical importance. Any incorrect diagnosis, whether false-positive or false-negative has severe personal and public health consequences and should be prevented.

Retesting should be conducted by a different provider using the same testing algorithm with a new specimen. Retesting should be conducted at a different site, ideally, the site where the decision about ART initiation will be made. Retesting according to this procedure aims to rule out possible technical or clerical errors, including specimen mix-up through mislabelling and transcription errors, as well as random error either by the provider or of the test device.

2.5 Repeat HIV Testing

If an antibody only test is negative, repeat HIV testing should occur at 6 weeks, 3 months and 6 months following the exposure. The following scenarios are applicable for repeat HIV testing.

- Window period: Post-test counselling messages should include a recommendation that



HIV-negative persons retest in 3 months to rule out acute infection that is too early for rapid HIV tests to detect—in other words, the window period.

- General Population: HIV-negative persons from the “general population” with low or no risk of infection should not be advised to retest after three months, but rather they should be retested annually, or as indicated by their risk of exposure. Providers should help HIV-negative clients feel confident in their HIV test results and support them to stay HIV-negative by linking them with appropriate follow-up prevention services.
- Persons with Ongoing High Risk: In some instances, HIV-negative clients will require more frequent retesting. Persons who are diagnosed HIV-negative but are at ongoing high risk, such as some people from key populations, may benefit from retesting every three to six months. This may help ensure early HIV diagnosis and ongoing health education about HIV prevention.

2.6 Disclosure Scenarios

People who test HIV-negative may not need assistance or support with disclosing their HIV status to others, but maintaining privacy about testing HIV-positive, and deciding whom they should disclose to, are concerns for many people who test HIV-positive. Disclosure can help clients get emotional support to cope with a new diagnosis and can encourage access and adherence to ART. Providers should support clients to disclose to persons in their life who care about their health and well-being.

Disclosure is not mandatory, and providers should assess the risk of intimate partner violence to their clients and make referrals to appropriate services as needed.

- Disclosure to partners who may be at risk of HIV and who need to be tested is also important for the partner's health and well-being and should be supported through couple HIV counselling and testing or partner notification services as described in the National HTS Guidelines 2017.
- In the event where efforts to encourage the client to disclose their HIV status fail, and if the client is placing a sexual partner(s) or other persons at risk, a service provider may disclose that person's HIV status to their sex partner(s) or other people at risk. However, persons must be given a reasonable opportunity to disclose their HIV status to the sexual partner(s) on their own before the service provider intervenes.
- In some situations, a provider may disclose a client's HIV-positive results to another medical provider involved in the client's care, to ensure the client receives appropriate medical care. Such disclosure should respect the client's right to privacy and confidentiality.

2.7 Linkage of HTS to care and ART

Following an HIV diagnosis, a package of support interventions should be offered to ensure timely linkage to care for all PLHIV. The following interventions should be used in improving linkage to care:

- Enhanced linkage with case management
- Support for HIV disclosure
- Patient tracking for those who failed to enroll in care
- Training staff to provide multiple services
- Streamlined services to accelerate time to initiation



- Peer support and navigation approaches for linkage and
- Quality improvement approaches using data to improve linkage

2.8 Laboratory Diagnosis of HIV Infection

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

2.8.1 Antibody Assays

Antibody testing is performed with serial or parallel testing algorithms using rapid test kits (RTK). Screening tests include Enzyme-linked Immunosorbent Assay (ELISA), which is mainly used in blood banks.

HIV Rapid Testing Algorithm

Serial and parallel testing algorithms are the two HIV testing algorithms. The algorithm recommended for routine HIV testing is the serial HIV testing algorithm. Rapid test kits (RTKs) recommended for use under this algorithm include Determine, Unigold, Stat-Pak, Double-check Gold, Sure-Check, and HIV Quick Check among others. HIV serological assays adopted for use should have a minimum sensitivity of 99% and specificity of 98%. All test kits meeting these conditions should be approved by the Honorable Minister of Health following formal evaluation by appropriate government agencies. All groups and organizations wishing to procure test kits for use in the country should adhere to the approved RTKs. Similarly, all newly procured batches of RTKs should undergo Post-Market Validation (PMV) duly endorsed by the national and State HIV Program.

- **Serial testing:** This is the use of 2 different screening tests employed sequentially to test for HIV antibody. If the initial screening is negative, no further testing is required. If the initial test is positive, it is followed by a second test. The first test should be the most sensitive test and the second test should be very specific and based on an antigen source different from that of the first test. Samples that produce discordant results in the two tests are subjected to a third test called a tiebreaker. The main advantage of the serial over parallel testing is the cost-savings in testing.



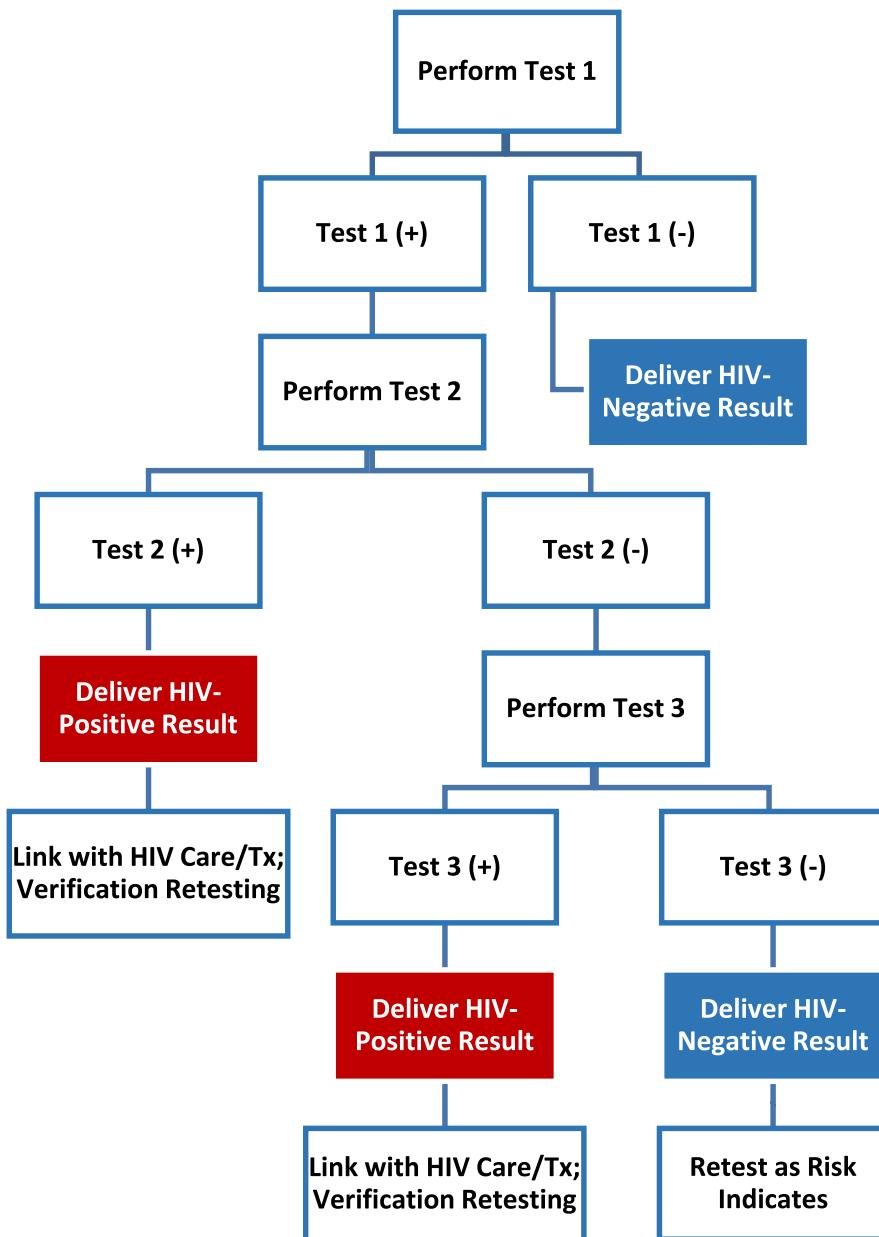


Figure 2.2 Serial Testing Algorithm

Key:

Test 1: Screening

Test 2: Confirmatory

Test 3: Tie Breaker

2.8.2 Enzyme-Linked Immunosorbent Assay (ELISA) or Enzyme Immunoassay (EIA) for Blood Screening

This test detects HIV antibodies, which the body starts producing between 2-12 weeks after becoming infected with HIV. Current HIV antibody test can detect antibodies as early as 3 weeks after exposure. ELISA test system is grouped into 1st to 4th generation. While all can detect HIV antibody as early as 3 weeks, the 4th generation can detect both IgG and IgM antibodies, HIV-



1/HIV-2 antibodies and also p24 antigen. This makes the 4th generation more suitable for blood transfusion screening for HIV.

2.8.3 Nucleic Acid-based Testing

This consists of DNA Polymerase Chain Reaction (DNA-PCR) and Reverse Transcriptase Polymerase Chain Reaction (RT-PCR). These tests are not routinely used for laboratory diagnosis of HIV infection in adults and adolescents. Nucleic acid tests are virologic assays that detect, confirm and measure the number of viral particles in the blood. It is recommended that virologic assays used for clinical diagnostic testing (usually at birth, 6-8 weeks of age and below 18 months of age) should have a sensitivity of >95% and a specificity of >98% under quality-assured, standardized and validated laboratory conditions.

2.8.4 HIV DNA Polymerase Chain Reaction (PCR)

The HIV DNA-PCR test involves the amplification of specific DNA sequences in the proviral DNA that has been integrated into the host cell. This test is the preferred option for diagnosing or confirming HIV infection in infants less than 18 months of age. However, false-positive results may occur as a result of contamination or improper specimen handling. There is a need therefore to always ensure quality assurance and validation procedures in the laboratory.

2.8.5 Viral Load Assay- Reverse Transcriptase Polymerase Chain Reaction (RT-PCR)

Viral load RT-PCR test is used to detect and quantify the amount of HIV RNA in plasma, Dried Blood Spot (DBS) and plasma separation cards. The assay requires the conversion of viral RNA to DNA and amplification of specific sequences in the DNA produced by a process known as reverse transcriptase polymerase chain reaction (RT-PCR). Results are reported in copies/ml of plasma.

Sample Referral System: VL and EID samples are moved from areas without PCR laboratories to testing laboratories in the optimized networks and results returned by the National Integrated Sample Referral Network (NISRN). Clinical sample types have been expanded from the traditional whole blood EDTA-plasma and DBS for VL to include Plasma Separation Card (PSC) and Plasma Preparation Tubes (PPT) to facilitate improved viral load quantification testing, equitable viral load access for both clinic and community service-points across Nigeria through ease of handling, storage and transportation. All the standard of care PCR laboratories should be linked to the National Laboratory Information Management Systems (LIMS) which is in turn linked to Nigeria Medical Records System (NMRS) and National Data Repository (NDR) for real-time reporting of patients results into the health facility records and health repository. Point of Care Testing (POCT) devices are being introduced into the HIV program to further ensure equitable viral load access to key populations: paediatrics, pregnant/breastfeeding mothers, MSM, FSW, PWID; hard-to-reach communities, security challenged and other settings to bring testing closer to the clients, enhance effective viral load coverage and quick Turnaround Time (TAT) of results for clinical management of patients. Capacity development and Quality Assurance (QA) oversight will be provided quarterly by experts supporting the standard of care laboratories. All the POCT devices for viral load will participate in National EQA supported by the National Reference Laboratory/National External Quality Assurance Lab. This is to ensure quality assured results are produced from these devices and are useful for the management of patients.



2.9 Laboratory Diagnosis of HIV Infection in Children by Age Group

2.9.1 Children aged ≤18 months

Nucleic Acid Amplification Testing (NAAT) or Nucleic Amplification Testing (NAT) to detect DNA - can be used to detect HIV infection in neonates at birth, 6-8 weeks and 9 months. Testing at birth will plug the gap of loss to follow up between birth and 6 months. Exposed infants are brought into care as early as possible to reduce morbidity and mortality. NAAT has a specificity of 99.6% and sensitivity of 100% for infants infected during pregnancy or at least 4 weeks prior to sample collection for testing. However, there is a need for follow-up testing at 6 weeks, 9 months and 6 weeks after cessation of breastfeeding at a standard of care laboratory because of the possibility of a false positive or negative result.

Polymerase Chain Reaction (PCR) should be used for the detection of HIV DNA in children between the ages of 6 weeks to 18 months. Standard PCR laboratories available as referral network in the six geopolitical zones of Nigeria will support EID testing and return of results back to facilities through the linkage of Laboratory Information Management Systems (LIMS) to EMR platform.

- All HIV-exposed infants should have initial DNA PCR testing at 0-3 days of age, then at 6-8 weeks of age (or earliest opportunity thereafter) and 6 weeks after complete cessation of breastfeeding. DNA PCR test results should be provided to the clinic and caregiver as soon as possible; latest within four weeks of specimen collection.
- HIV-exposed children 9 -18 months of age may have circulating maternal antibodies which could be from the child and/or the mother. In this case, DNA or RNA PCR is the test of choice for a definitive diagnosis.
- If a screening antibody test is negative, HIV-infection is excluded if the test has been conducted at least 6 weeks after complete cessation of breastfeeding.
- For sick children <18 months in whom HIV infection is being considered, in the absence of virological tests (DNA-PCR), HIV serological testing (RTKs) and use of the algorithm (WHO clinical staging) for presumptive clinical diagnosis are recommended.
- In a child <18 months with an initial positive virological test result, it is recommended that ART should be started immediately, while a second specimen is collected to confirm the result. It is not advised to defer ART until the confirmation result is received.
- HIV-exposed infants who are well should undergo HIV serological testing at 9 months of age (or at the time of last immunization visit).
- Infants who have reactive serological assays at 9 months should have an immediate virological test to confirm HIV infection and the need for ART.
- It is strongly recommended that children <18 months of age, with signs and symptoms suggestive of HIV infection should undergo HIV serological testing in a setting where DNA-PCR is not immediately available and if positive (reactive), do a DNA PCR test or NAAT.
- NAT technologies that are developed and validated for use at or near to the point of care can be used for early infant HIV testing.



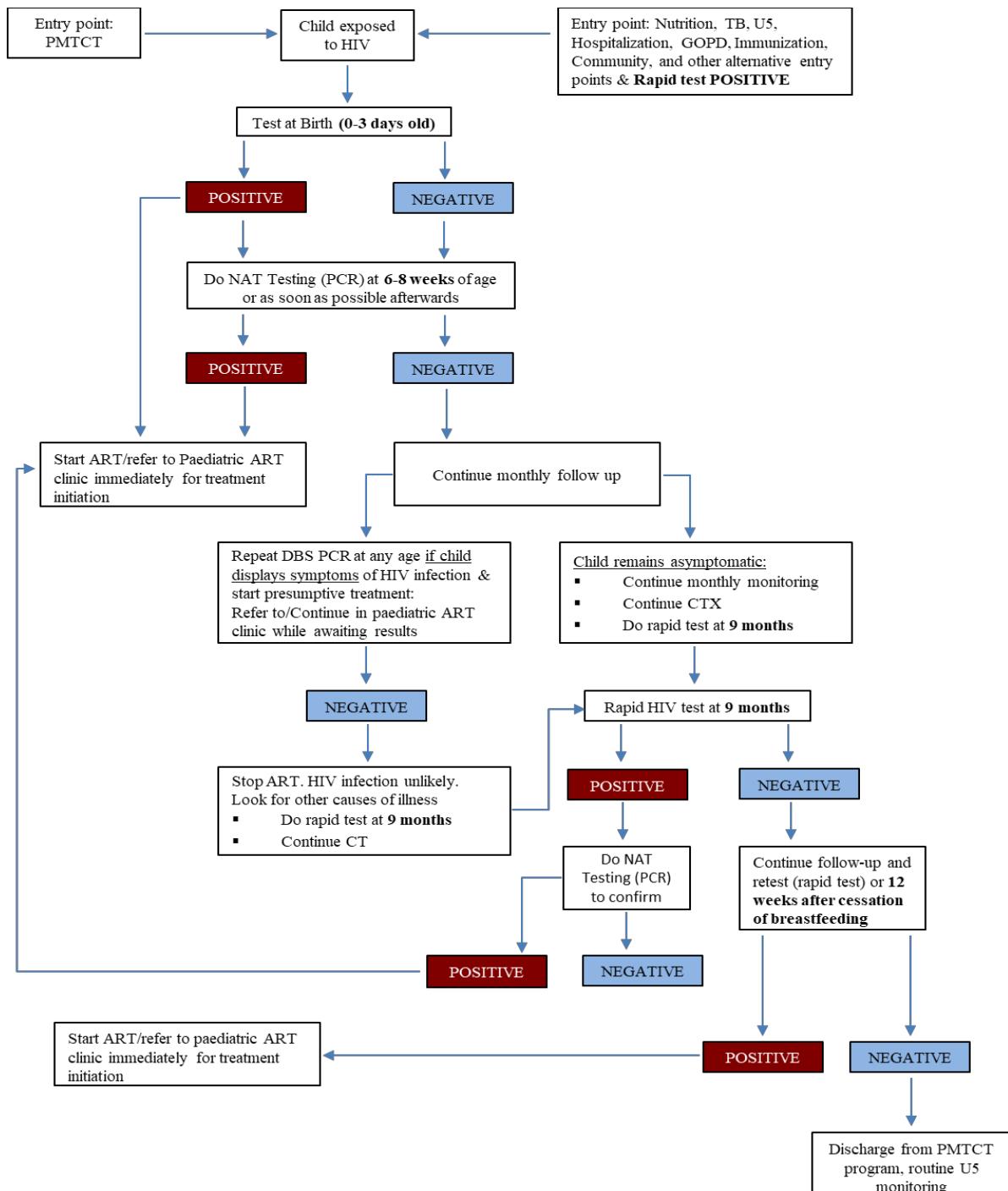


Figure 2.3: Nigeria diagnostic testing protocol: HIV-exposed infants (< 18 months of age)



2.9.2 Children aged ≥18 months

- Antibody detection is reliable and recommended for children ≥ 18 months. The exception is during the window period (6-8 weeks post-exposure) where antibodies may not be present at a detectable level. For children testing negative, a repeat antibody testing 3 months later is recommended if the window period is suspected.
- From 18 months of life, an antibody test should be performed irrespective of whether a child received breast milk or replacement feeds.
- If the child is receiving breast milk after 18 months of age, repeat the test 12 weeks after complete cessation of breastfeeding.
- Methods such as DNA/RNA PCR could be used to resolve suspected false-negative result.

2.10 Clinical Diagnosis and Staging of HIV Infection

The WHO clinical staging of HIV for adults and adolescents that are HIV positive is as shown in Tables 2.1 and 2.2. Staging is based on the patient's clinical presentation at the time of initial assessment with the healthcare provider. The most advanced symptoms at the time of evaluation represent the initial clinical stage of HIV infection.

Table 2.1 WHO Clinical Classification of Established HIV Infection

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

The staging systems include.

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



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

Adults and adolescents^a	Children
Clinical stage 1	
<ul style="list-style-type: none"> • Asymptomatic • Persistent generalized lymphadenopathy 	<ul style="list-style-type: none"> • Asymptomatic • Persistent generalized lymphadenopathy
Clinical stage 2	
<ul style="list-style-type: none"> • Moderate unexplained weight loss (<10% of presumed or measured body weight) • Recurrent respiratory tract infections (sinusitis, tonsillitis, otitis media, pharyngitis) • Herpes zoster Angular cheilitis • Recurrent oral ulceration Papular pruritic eruption Fungal nail infections Seborrhoeic dermatitis 	<ul style="list-style-type: none"> • Unexplained persistent hepatosplenomegaly • Recurrent or chronic upper respiratory tract infections (otitis media, otorrhoea, sinusitis, tonsillitis) • Herpes zoster • Lineal gingival erythema Recurrent oral ulceration Papular pruritic eruption Fungal nail infections Extensive wart virus infection • Extensive molluscum contagiosum • Unexplained persistent parotid enlargement
Clinical stage 3	
<ul style="list-style-type: none"> • Unexplained severe weight loss (>10% of presumed or measured body weight) • Unexplained chronic diarrhoea for longer than 1 month • Unexplained persistent fever (intermittent or constant for longer than 1 month) • Persistent oral candidiasis Oral hairy leukoplakia Pulmonary tuberculosis • Severe bacterial infections (such as pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteraemia) • Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis • Unexplained anaemia (<8 g/dL), neutropaenia (<0.5 × 10⁹/L) and/or chronic thrombocytopenia (<50 × 10⁹/L) 	<ul style="list-style-type: none"> • Unexplained moderate malnutrition^b not adequately responding to standard therapy • Unexplained persistent diarrhoea (14 days or more) • Unexplained persistent fever (above 37.5°C, intermittent or constant, for longer than one 1 month) • Persistent oral candidiasis (after first six weeks of life) Oral hairy leukoplakia • Lymph node tuberculosis; pulmonary tuberculosis Severe recurrent bacterial pneumonia • Acute necrotizing ulcerative gingivitis or periodontitis • Unexplained anaemia (<8 g/dL), neutropaenia (<0.5 × 10⁹/L) or chronic thrombocytopenia (<50 × 10⁹/L) • Symptomatic lymphoid interstitial pneumonitis • Chronic HIV-associated lung disease, including bronchiectasis
Clinical stage 4^c	



<ul style="list-style-type: none"> • HIV wasting syndrome • Pneumocystis (jirovecii) pneumonia Recurrent severe bacterial pneumonia • Chronic herpes simplex infection (orolabial, genital or anorectal of more than one month in duration or visceral at any site) • Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs) • Extrapulmonary tuberculosis Kaposi sarcoma • Cytomegalovirus infection (retinitis or infection of other organs) • Central nervous system toxoplasmosis HIV encephalopathy • Extrapulmonary cryptococcosis, including meningitis • Disseminated nontuberculous mycobacterial infection • Progressive multifocal leukoencephalopathy • Chronic cryptosporidiosis Chronic isosporiasis • Disseminated mycosis (extrapulmonary histoplasmosis, coccidioidomycosis) • Lymphoma (cerebral or B-cell non-Hodgkin) • Symptomatic HIV-associated nephropathy or cardiomyopathy • Recurrent septicaemia (including nontyphoidal • Salmonella) • Invasive cervical carcinoma Atypical disseminated leishmaniasis 	<ul style="list-style-type: none"> • Unexplained severe wasting, stunting or severe malnutritiond not responding to standard therapy • Pneumocystis (jirovecii) pneumonia • Recurrent severe bacterial infections (such as empyema, pyomyositis, bone or joint infection, meningitis, but excluding pneumonia) • Chronic herpes simplex infection (orolabial or cutaneous of more than 1 month's duration or visceral at any site) • Oesophageal candidiasis (or candidiasis of trachea, bronchi or lungs) • Extrapulmonary tuberculosis Kaposi sarcoma • Cytomegalovirus infection (retinitis or infection of other organs with onset at age older than one month) • Central nervous system toxoplasmosis (after the neonatal period) • HIV encephalopathy • Extrapulmonary cryptococcosis, including meningitis • Disseminated nontuberculous mycobacterial infection • Progressive multifocal leukoencephalopathy • Chronic cryptosporidiosis (with diarrhoea) Chronic isosporiasis • Disseminated endemic mycosis (extrapulmonary histoplasmosis, coccidioidomycosis, penicilliosis) • Cerebral or B-cell non-Hodgkin lymphoma HIV-associated nephropathy or cardiomyopathy
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a In the development of this table, adolescents were defined as 15 years or older. For those younger than 15 years, the clinical staging for children should be used.

b For children younger than 5 years, moderate malnutrition is defined as weight-for-height < -2 z-score or mid-upper arm circumference 115 mm to <125 mm.

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

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

Source: Adapted from: WHO case definitions of HIV for surveillance and revised clinical staging and immunological classification of HIV-related disease in adults and children. Geneva, World Health Organization, 2007 (www.who.int/hiv/pub/guidelines/HIVstaging150307.pdf).



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3. ANTIRETROVIRAL THERAPY

What's Inside:

3.1 Introduction.....	27
3.2 Classes of Antiretroviral Drugs.....	27
3.3. Preparation of Adults, Adolescents and Children for ART.....	29
3.4 Recommended ART Regimen for Adults, Adolescents and Children.....	23
3.5 Monitoring Patients on ART.....	34
3.6 Management of HIV Treatment Failure.....	37
3.7 Third-line ART.....	42
3.8 Low-Level Viremia (LLV)	43
3.9 ART in Special Circumstances.....	44

3.1 Introduction

Antiretroviral therapy (ART) is the treatment of HIV infection using a combination of antiretroviral drugs (ARVs). All HIV infected persons irrespective of clinical stage and CD4+ cell count without contraindications should be initiated the same day or within 7 days of HIV diagnosis if possible. Pregnant and breastfeeding women, infants and children under 5 years, and patients with advanced HIV disease (AHD) should be prioritized for rapid initiation of ART. Antiretroviral therapy (ART) should be offered in a comprehensive manner that includes access to on-going adherence counselling, baseline and periodic clinical and laboratory monitoring, prevention and management of opportunistic infection (OIs), treatment monitoring and follow-up.

The goal of ART includes achievement of sustained virologic, immunologic, clinical, and epidemiologic control of HIV. Sustained viral suppression is necessary to prevent the development of ARV drug resistance, reduce morbidity from OIs and improve the quality of life of HIV infected individuals. In children, ART will promote and restore normal growth and development.

3.2 Classes of Antiretroviral Drugs

Antiretroviral drugs (ARVs) are classified according to their modes of action. Each class targets a different step in the viral life cycle. The classes of antiretroviral drugs are:

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

Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs): Inhibit HIV reverse transcriptase by binding a hydrophobic pocket close to the active site thereby locking the site in an inactive conformation.

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

Entry Inhibitors: Block the mechanisms by which HIV gains access into the cytoplasm of CD4+ cell molecule bearing cell. There are 3 classes:

- (a) Attachment inhibitors: These agents complex with glycoprotein 120 and prevent it from interacting with the CD4+ molecule thus, the attachment of the virus to the cell is blocked.
- (b) Fusion inhibitors: These are agents designed to complex with the viral GP41. GP41 is the viral protein that is capable of fusing with cellular membrane molecules called chemokine receptors. The interaction of fusion inhibitors with GP41 blocks the fusion of viral membrane with cellular membrane.
- (c) Chemokine Receptor Antagonists: These are agents that complex with cell membrane receptors that serve as fusion proteins i.e. CXCR4, CCR5.



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

Pharmacokinetic enhancers/ PI boosters: These are drugs used in HIV treatment to increase the effectiveness of certain classes of ARV drugs. The PIs are metabolized by cytochrome P450 (CYP) 3A enzymes; and intentional inhibition of these enzymes' lead to higher drug exposure, lower pill burden and simplified dosing schedules (pharmacokinetic enhancement). In HIV therapy, two pharmacokinetic enhancers or boosting agents are used: ritonavir and cobicistat. These agents inhibit CYP3A4, with cobicistat being a more specific CYP inhibitor than ritonavir. Unlike ritonavir, cobicistat does not have antiretroviral activity.

Table 3.1 Classes of Antiretroviral Drugs

Class	Drugs
Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTIs)	Abacavir (ABC); Emtricitabine (FTC); Lamivudine (3TC); Tenofovir Disoproxil fumarate (TDF); Tenofovir Alafenamide (TAF); Zidovudine (AZT, ZDV); Didanosine (ddI)*; Stavudine (d4T)
Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs)	Efavirenz (EFV); Etravirine (ETR); Nevirapine (NVP); Rilpivirine (RPV)
Protease Inhibitors (PI)	Atazanavir (ATV); Darunavir (DRV); Lopinavir (LPV); Fosamprenavir (FPV); Indinavir (IDV); Nelfinavir (NFV); Saquinavir (SQV); Tipranavir (TPV)
Protease Inhibitors (PIs) boosters	Ritonavir (RTV); Cobicistat (COBI)
Integrase Strand Transfer Inhibitors (INSTIs)	Dolutegravir (DTG); Elvitegravir (EVG); Raltegravir (RAL); Cabotegravir (CAB)
Attachment Inhibitors	Fostemsavivir; Ibalizumab; Anti CD4 adnectin
Fusion Inhibitors	Enfuvirtide; Anti-GP41 Adnectin; Combinectin
Chemokine receptor antagonists	Maraviroc; Vicroviroc; Cenicriviroc

Antiretroviral Drug Combination for HIV Treatment: It is recommended that combinations of a minimum of three drugs from at least two different classes of ARVs be used for ART. These ARVs are expected to act at different points of the HIV life cycle. Typically, a backbone of 2 NRTIs combined with an Integrase inhibitor, an NNRTI or a PI is used. Monotherapy or dual ARV therapy for HIV infection is not recommended for treatment because of the increased risk of development of drug resistance.



3.3. Preparation of Adults, Adolescents and Children for ART

3.3.1 Baseline Assessment for ART

The baseline assessment and preparation of patients for ART should include:

- Re-testing for HIV to verify HIV positive status
- A comprehensive history and clinical examination
- Assessment of patient's readiness for initiation of ART (regimen, dosage, scheduling, benefits, adverse effects, follow up, monitoring visits and age-appropriate disclosure)
- Development of patient-centred adherence strategy
- Baseline laboratory assessment

It is noteworthy that the first few months of therapy are important especially as certain occurrences during the period can influence the outcome of treatment. These include Adverse drug reactions, immune reconstitution inflammatory syndrome (IRIS) and opportunistic infections following commencement of treatment. These may confuse healthcare workers and patients leading to poor adherence and treatment failure. Patients should be warned to expect these complications but reassured that they are usually transient and would abate in the course of treatment. The importance of adherence for positive treatment outcomes must be emphasized and health care workers are encouraged to develop individualized treatment adherence plans for each patient. Patients should be advised that poor adherence to treatment at any time following initiation of ART is associated with treatment failure, rapid development of drug resistance, ill health and possibly death. HIV positive adolescents and adults who are not willing and ready to start ART should receive on-going counselling and education to promote retention in care.

3.3.2 Further Baseline Assessment

Further baseline assessment includes:

1. Complete history and physical examination: Anthropometric assessment (weight, height/length, OFC, chest & mid-upper arm circumference). History of comorbidities (renal, cardiovascular disease), pregnancy, anaemia, STI, prior ART use - including single-dose Nevirapine, prescribed medications, drug misuse (heroin, alcohol), should be documented. Social and sexual history should also be determined especially for adolescents.
2. Screening for TB and Hepatitis (B and C) should be done. Xpert MTB/RIF assay should be used for cases of presumptive TB. Where GeneXpert equipment is not accessible or specimen not available for Xpert MTB/RIF assay, PLHIV with CD4+ cell count <200 cells/mm³ or severely ill irrespective of CD4+ cell count should receive a urine LF - LAM assay for TB diagnosis.
3. Determination of nutritional, psychosocial, growth and immunization status of patient (including determination of BMI for adults)
4. Rectal and vaginal examination (including cervical cancer screening)
5. Screen for mental health issues and substance abuse
6. Screen for Non-Communicable diseases
7. Determination of WHO clinical stage for HIV/AIDS
8. Pregnancy assessment, family planning and counselling services, where required
9. Conducting baseline laboratory assessments

This assessment should not delay the commencement of ART.



3.3.3 Initiating ART in Adults

ART should be initiated in all adults living with HIV without contraindications, regardless of WHO clinical stage and CD4+ cell count. Initiating ART early in PLHIV is associated with reduced mortality and ill health. Untreated HIV infection may be associated with the development of serious co-morbidities such as cardiovascular, kidney and liver diseases, cancers and mental illness. Early initiation of ART serves the useful purpose of preventing the occurrence of these diseases. An additional advantage of early initiation of ART is that it substantially reduces the risk of sexual transmission to HIV-negative partners.

3.3.4 Initiating ART in Adolescents (10-19 years of age)

Implementation considerations

To ensure that adolescents (10-19 years) achieve the goals of ART, it will require developing adolescent-friendly health services, appropriate provider training and implementing programmes that emphasize support for age-appropriate disclosure, adherence and retention in care, including peer to peer support.

Healthcare providers are advised to leverage the influence that parents and caregivers exercise on their adolescents to improve adherence to ART. Hence, parents and caregivers should be involved in developing a treatment adherence plan for their wards.

Recommendations for ART initiation in adolescents (10-19 years)

- It is recommended that the implementation of early ART in adolescents should be prioritized to ensure that effective and age-appropriate counselling approaches are a prominent component of the ART package for this age group.
- ART should be initiated in all adolescents living with HIV, regardless of WHO clinical stage and at any CD4+ cell count.
- Use of DTG with NRTI backbone as the preferred 1st line regimen for adolescents including women of childbearing age (TDF + 3TC (or FTC) + DTG). Women should however be given all necessary information to enable them make informed choices.
- Adolescents with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and a CD4+ cell count of <200 cells/mm³ should be given priority for ART initiation.

3.3.5 Initiation of ART in infants and children younger than 10 years of age

ART should be initiated in all children with HIV, regardless of WHO clinical stage, or at any CD4+ cell count. Infants and young children living with HIV are more likely to die within the first two years of life from the disease in the absence of any intervention. As they grow older the risk of disease progression and mortality, in the absence of treatment, falls to rates similar to those of young adults.

Aside from preventing illness and death in very young children, earlier initiation of ART can mitigate the negative effects of HIV infection on growth, pubertal and nervous system development.

3.3.6 Recommendations for Use of ART in TB/HIV Co-infection

There is strong evidence that initiation of ART within two weeks of TB treatment is associated with a marked reduction in overall TB-related morbidity and mortality. ART should be started in



all TB patients (adults, adolescents and children) living with HIV, regardless of CD4+ cell count. TB treatment should be initiated first, followed by ART as soon as possible within the first 2 weeks of treatment. This strategy will:

- Simplify patient management
- Improve adherence
- Avoid ARV and TB drug interactions
- Avoid overlapping toxicities
- Minimize the risk of immune reconstitution inflammatory syndrome (IRIS)
- Reduces the confusion over which drug (ARV or Anti-TB) to take first

3.3.7 Key considerations when treating PLHIV with TB:

- a. Patients on ART who develop TB should have the ARVs reviewed to accommodate the use of Rifampicin in the anti-TB regimen.
- b. For patients on a PI-based initial or subsequent ART regimen, rifabutin should be substituted for rifampicin.
- c. Rifampicin significantly lowers the plasma concentration of DTG therefore a double dose of DTG should be used (Give DTG 50 mg twice daily if rifampicin is being used as the anti-TB regimen).
- d. Efavirenz cannot be used with Bedaquiline (BDQ) among PLHIV with drug-resistant TB (DR-TB), as it decreases the concentration of BDQ. Nevirapine or DTG is considered the best option for treatment of DR-TB with BDQ - based regimen.
- e. In the treatment of DR-TB, Delamanid is generally considered safe to be administered with all ARVs.



Table 3.2: Scenarios for the management of TB/HIV co-infected patients

Scenario	Action
Newly registered TB patients diagnosed with HIV	<ul style="list-style-type: none"> Start TB treatment regimen immediately Commence ART within 2 weeks of anti TB (irrespective of the CD4+ cell count) Initiate CPT
PLHIV on ART who develop TB	<ul style="list-style-type: none"> Continue ART (Substitute NVP with EFV, if on DTG then administer twice daily) Start TB treatment immediately Continue/initiate CPT Reassess for HIV treatment failure
PLHIV on second -line ART who develop active TB	<ul style="list-style-type: none"> Reassess for HIV treatment failure Continue ART Start TB treatment immediately, change anti-TB to single drugs with rifabutin-containing regimen if on protease inhibitors
Pregnant PLHIV on ART who develop TB	<ul style="list-style-type: none"> Continue ART <ul style="list-style-type: none"> EFV not contraindicated Double -dose DTG Start TB treatment immediately Continue/Initiate CPT (avoid CPT in 1st trimester) Reassess for HIV treatment failure

3.3.8 Recommendations for use of ART in HIV/Hepatitis Co-infection

Antiretroviral therapy (ART) should be initiated in all HIV/Hepatitis co-infected individuals regardless of CD4+ cell count and stage of liver disease.

- HIV/HBV Coinfection: The recommended ART for HIV/HBV coinfected PLHIV is TDF + 3TC (or FTC) + DTG. This is because TDF and 3TC are active against HBV.
- HIV/HCV Coinfection: Antiretroviral therapy should be initiated first in HIV/HCV co-infected patients before commencing Direct Acting Antivirals (DAAs) for HCV treatment. Drug-drug interactions (DDIs) should be carefully considered and the appropriate ARV or hepatitis drug substitutions/dose adjustments made before commencing treatment.



Healthcare workers need to note that there is a risk of IRIS associated with early initiation of ART in HIV/hepatitis coinfection, referred to as 'hepatitis flare' which usually occurs within the first 6 to 12 weeks after ART initiation. (see section 8.1.8).

3.4 Recommended ART Regimen for Adults, Adolescents and Children

The following are the recommended ART regimens for the management of HIV in Nigeria.

3.4.1 First-line ART regimens for adults and adolescents

Table 3.3 Recommended first-line ART regimens for adults, adolescents, pregnant, breastfeeding women and children

First-line ART	Preferred first-line	Alternative first-line regimens	Special Circumstances
Adults and Adolescents	TDF + 3TC (or FTC) + DTG	TDF + 3TC (or FTC) + EFV 400	TAF + 3TC (or FTC) + DTG ABC + 3TC + DTG AZT + 3TC + EFV 400

3.4.2 First-line ART for children

Table 3.4 Recommended First-line ART regimen for Children

Weight (Kg)	Age (years)	Preferred First Line Regimen	Alternative First Line Regimen	Special Circumstances
Neonates				
< 3kg	< 1 month	AZT + 3TC + DTG* or RAL	AZT + 3TC + LPV/r**	AZT+3TC+NVP
Infants & Children				
< 20kg	< 6years	ABC +3TC + DTG	ABC+3TC +LPV/r AZT + 3TC +LPV/r ABC (or AZT) +3TC+ RAL***	ABC + 3TC +EFV***(or NVP) AZT + 3TC + EFV (or NVP) AZT + 3TC + LPV/r (or RAL)
20 – 30kg	6-10years	ABC+3TC+DTG Or TDF****(TAF)**** + 3TC +DTG	ABC+3TC +LPV/r ABC +3TC + RAL	

Note:

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

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

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

****TAF is used for children with weight >25kg

*+EFV is used for children above 3 years (>15kg)

**+The use of this INSTI could be considered where available in instances of poor tolerability or administration challenges with LPV/r; particularly in settings where the rapid expansion of maternal treatment could lead to infants and children at very high risk of carrying an NNRTI resistance virus.



3.4.3 Programming Transitioning to DTG - based regimen

The transitioning of non-DTG based first-line regimens to DTG-based regimens should be done in virally suppressed and stable patients. Patients failing on a non-DTG based first-line regimen should be switched to the preferred second-line regimen.

3.5 Monitoring Patients on ART

3.5.1 Monitoring and Follow-up in Adults

Once a patient is initiated on ART, assessment should look out for:

- Any persisting or new signs/symptoms of HIV related conditions
- Potential drug toxicities
- Optimal Adherence
- Response to therapy (Clinical, Immunological and Virological).
- Weight changes, growth and development including height in children
- Abnormal Laboratory parameters

Table 3.5 Recommended Schedule for Monitoring Adults on ART: Clinical Assessments

	Pre-Treatment (Baseline)	Month three	Every six months	Every Scheduled Clinical Consultation
Physical exam	X	X	X	X
* Adherence counselling	X	X	X	X
* Clinical Screening for TB	X	X	X	X
Clinical screening for chronic care & PHDP Services	X	X	X	X

**Adherence counselling and clinical screening for TB should be done at every clinical or drug pick up visit*



Table 3.6 Recommended Schedule for Monitoring Adults on ART: Laboratory Tests

	Pre-Treatment (Baseline)	Month on ART				Every 6 Months	Every 12 Months (Annual)
		1st	3rd	6th	12th		
HIV-1 RNA (VL)				X‡	X‡		X
CD4+*	X						
*Cryptococcal antigen test (CrAg) and TB LAM if CD4+ cell count < 200 cells/mm ³	X						
Hb/PCV	X	X ¹	X			X	
WBC, Platelets	As clinically indicated			As clinically indicated			
ALT	X			As clinically indicated			
Serum Creatinine (Calculate eGFR)	X		X			X	
HBsAg and HCV	X						
Urinalysis	X		X ³			X ³	
Syphilis test	As clinically indicated						
Cervical cancer screening (VIA/Pap Smear/HPV screen)	X			Every 3 years if a screening test is negative			
AST, ALP, FBS, Amylase, Pregnancy test, Lipid profile, U/E, Xpert MTB/RIF test, Chest X-Ray ^o	As clinically indicated						

X Essential

¹For patients on AZT; ² Patients on NVP; ³ patients on TDF.

[‡]We recommend that all adult clients on ART should have a VL test at 6 months after ART initiation; If <1000 copies/ml, then repeat testing 6 months later; then repeat at least every 12 months if remains <1000 copies/ml. If the VL is ≥1000copies/ml, the patient should receive enhanced adherence counselling (EAC) and have a repeat VL only after three months of GOOD adherence. A repeat VL test result of ≥1000 cp/ml following EAC is indicative of virologic failure. Clients with persistent virologic failure despite EAC interventions may need to have their drug regimen switched to second-line ART if they have been on a DTG-based regimen (e.g., TLD) for at least 1 year.

* urine LF-LAM assay and CrAg tests should be done automatically by the laboratory on all CD4+ counts < 200 cells/mm³. (CD4 test is recommended every 6 months until two consecutive values over 200 cells/ml).

^oLaboratory monitoring tests may differ according to the level of the health care facility and should be done according to the above schedule.

3.5.2 Monitoring Children and Adolescents on ART

Clinical and laboratory monitoring are essential parts of HIV and AIDS care in children and adolescents. However, laboratory results do not have to be available on the same day following HIV diagnosis to initiate ART, provided there is no evidence of TB, meningitis or renal disease.



Table 3.7 Recommended Schedule for Monitoring Children and Adolescents on ART: Clinical Assessments

	Pre-treatment (Baseline)	Week on ART				Every 3months ⁺
		2nd	4th	8th	12th	
History and Physical Exam	X	X	X	X	X	X
Anthropometric Measurements (Wt, Ht, Length, OFC, MUAC*, Chest circumference, BMI**)	X	X	X	X	X	X
Nutrition (Feeding, diet)	X	X	X	X	X	X
Immunization status***	X					
HPV Vaccination Assessment****	X					
Adherence monitoring	X	X	X	X	X	X
Psychosocial assessment*****	X	X	X	X	X	X
Clinical Screening for TB, Meningitis, and other OIs (assessment INH and CTX Prophylaxis) and other infectious diseases	X	As indicated				

*Most appropriate for children aged 1 – 5 years **BMI in kg/m² for adolescents, +/– grading for obesity'; ***Ascertain completion of routine immunization, otherwise refer accordingly; ****For female children and adolescents between ages 9–18 years; *****Most appropriate for adolescents; +More frequent clinic visits and examination may be required for unstable patients

Table 3.8 Recommended Schedule for Monitoring Children and Adolescents on ART: Laboratory Tests

Investigations	Pre-Treatment (Baseline)	Month on ART				Every 6 Months	Every 12 Months (Annual)
		1 st	3 rd	6 th	12 th		
HIV-1 RNA (viral load estimation)		All Children and Adolescent should have a VL test every 6-months					
CD4+ Cell count/CD4%*				X	X	X	
Hb/PCV	X	As clinically indicated					
WBC + differentials, Platelets		As clinically indicated					
ALT		As clinically indicated					
U/E/Creatinine (Calc CrCl)		As clinically indicated					
HbsAg and HCV		As clinically indicated					
Urinalysis	X	As clinically indicated					
GeneXpert, Chest X-ray		As clinically indicated					
Cervical Cancer Screening**	X	Every 3 years if screening test is negative					
CrAg Test	X	For adolescents 10 – 19 years only (Not recommended for children < 10 years)					
AST, ALP, FBS, Amylase, Pregnancy test*, LF- LAM test for TB infection		As clinically indicated					

X Essential; 1 For patients on AZT; 2 Patients on NVP; 3 patients on TDF; *Most appropriate for adolescents especially where pregnancy is suspected; **Older or sexually active adolescents; † Desirable: Baseline viral load can be performed especially for those with prior exposure to ARVs but is not routinely recommended. We recommend that all children and Adolescents initiating ART should have viral load determined 6 months following initiation of therapy and every 6 months thereafter. If the VL is ≥1000copies/ml, the patient should receive enhanced adherence counselling (EAC) and have a repeat VL only after three months of GOOD adherence. A viral load test result of >1000cp/ml following reinforced adherence counselling and support is indicative of virologic failure. Clients with persistent virologic failure despite adherence interventions should have their drug regimen switched to second-line ART regimen.



3.6 Management of HIV Treatment Failure

3.6.1 Definition of HIV Treatment Failure

HIV treatment failure may be defined as sub-optimal treatment outcomes following the initiation of ART. Although HIV treatment failure can be classified as either virologic, immunologic or clinical failure (see table 3.9); virologic treatment failure is the best measurement of treatment failure.

Virologic failure is defined as a VL above 1000 copies/ml based on two consecutive VL measurements 3 months apart, and after an adherence intervention Non-suppressed VL ($VL \geq 1000$ copies/ml) and its management. Critical to the goal of viral suppression is the return of results to the clinical staff and patient, and actions for non-suppressed VL. A VL ≥ 1000 copies/ml should be considered a critical lab value and communicated to the clinical staff and the patient in an expedited fashion. All patients with non-suppressed VL results should undergo Enhanced Adherence Counseling (EAC) sessions, which involves:

Step 1	A structured assessment of ART adherence
Step 2	Exploration of specific barriers contributing to poor adherence (as well as the possibility of drug interactions, intercurrent infections, incorrect dosage in children)
Step 3	Identification of potential solutions to address barriers
Step 4	Joint development of an individualized adherence intervention plan and the follow up of patients for improved adherence

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



Table 3.9 Classification of HIV Treatment Failure

Failure	Definition	Comments
Clinical Failure	<p>Adults and adolescents New or recurrent clinical event indicating severe immunodeficiency (WHO clinical stage 4 condition) after 6 months of effective treatment.</p> <p>Children New or recurrent clinical event indicating advanced or severe immunodeficiency (WHO clinical stage 3 and 4 clinical condition with exception of TB) after 6 months of effective treatment</p>	<p>The condition must be differentiated from IRIS occurring after initiating ART</p> <p>For adults, certain WHO clinical stage 3 conditions (pulmonary TB and severe bacterial infections) may also indicate treatment failure</p>
Immunological failure	<p>Adults and adolescents CD4+ cell count falls to the baseline (or below) Or Persistent CD4+ cell count below 100 cells/mm³ Or 50% decline from on-therapy CD4+ cell count peak level</p> <p>Children <i>Younger than 5 years</i> Persistent CD4+ cell count below 200 cells/mm³ or <10% <i>Older than 5 years</i> Persistent CD4+ cell count below 100 cells/mm³</p>	Without concomitant or recent infection to cause a transient decline in the CD4+ cell counts.
Virological Failure	Plasma viral load ≥ 1000 copies/ml 6 months after starting ART on consecutive VL measurements	An individual must be taking ART for at least 12 months before it can be determined that a regimen has failed



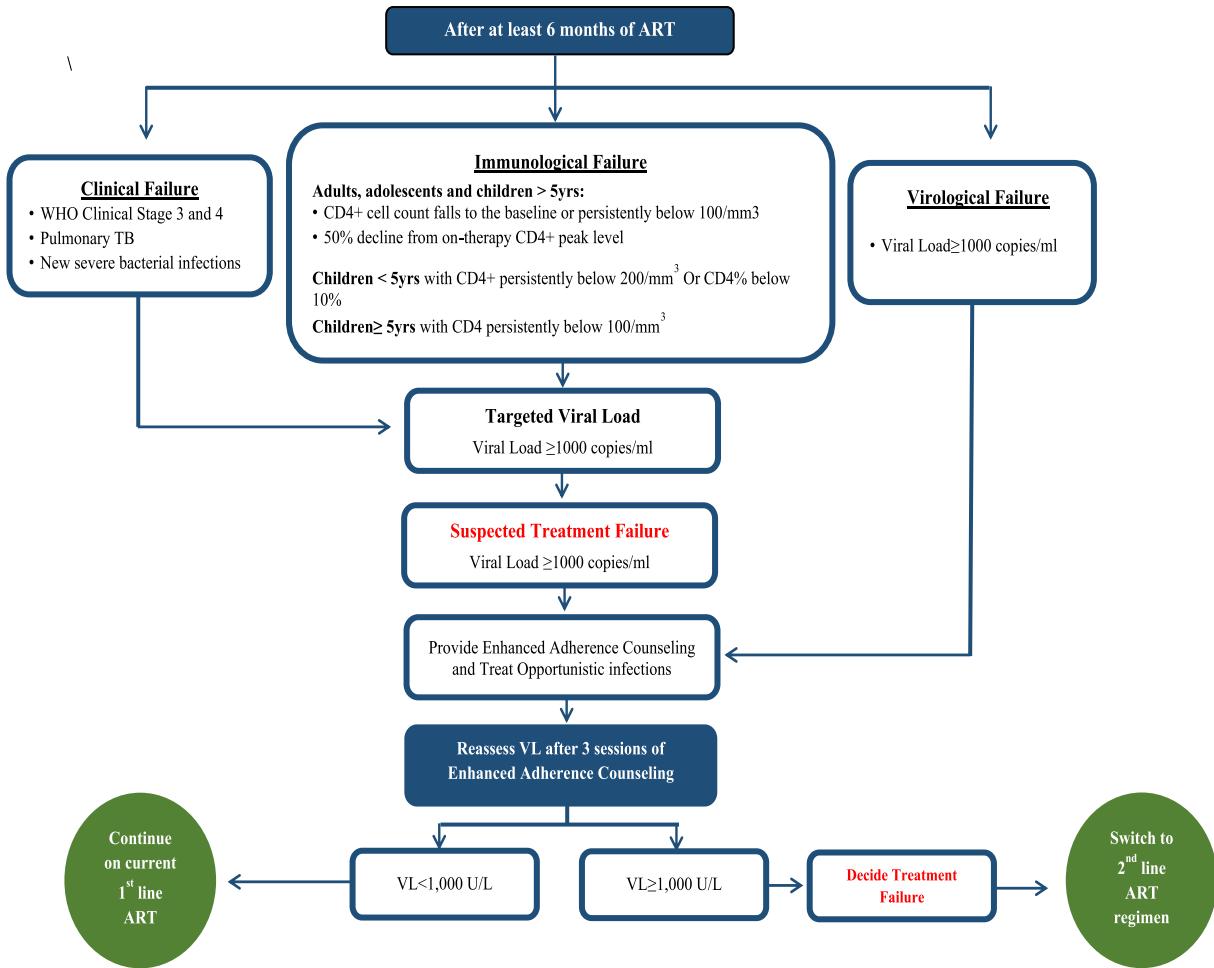


Figure 3.1: Algorithm for Treatment Failure Evaluation in Adults, Adolescents and Children

3.6.2 Causes of HIV Treatment Failure

1. Viral factors

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

2. Non-viral Factors

HIV Treatment failure may result when ARV plasma drug levels do not reach therapeutic concentration. This may be due to:

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

3.6.3 Substitution and switch of ARV drugs

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



1. Toxicity/adverse drug reactions
2. Co-morbidity
3. Pregnancy
4. Drug interaction

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

When to Switch to Second Line:

The longer an individual is maintained on a failing regimen, the longer there is ongoing viral replication. This will lead to a worse clinical outcome, greater opportunity for drug resistance and increased risk of transmission.

In some patients with repeat VL >1,000 copies/ml it may be useful to consider the extent of viral load reduction by log scale. A reduction of >1 log per month with good adherence may suggest viral load suppression is achievable on the current regimen with additional time. Such patients should continue the current regimen and repeat viral load in another few months to see if it has gone below 1,000 copies/ml.

Before switching to a second-line regimen, improved ART adherence should be reported and detected, and treatment failure should be confirmed (repeat VL >1,000 copies/ml). Health facilities should constitute a multidisciplinary Switch committee to review, track, and make decisions about switching to second-line.

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

3.6.4 Second-line ART Regimens

Protease inhibitor-based regimen is recommended as the preferred ARV drug for second-line ART among adults, adolescents and children. However, DTG may be used as an alternative second-line regimen if an individual is intolerant of LPV/r or has a contraindication to ATV/r or if the first-line regimen does not contain DTG.



Table 3.10 Preferred and Alternative Second-line ART regimens for Adult and Adolescents including Pregnant and Breastfeeding Women

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

Table 3.11: Recommended Second-line ART Regimen for Neonates, Infants, and Children

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

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

**TAF is used for children weighing > 25kg

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

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



3.7 Third-line ART

Third-line therapy refers to the ART offered to PLHIV in response to the failure of second-line treatment. Efforts should be made to assess and optimize adherence and rule out any significant drug interactions. It is recommended that switch to third-line therapy be left in the hands of HIV specialists with requisite experience and expertise in the management of treatment-experienced HIV patients. The choice of third-line therapy is more difficult in the absence of HIV drug resistance.

Third-line regimens should include new drugs with minimal risk of cross-resistance to previously used regimens, such as INSTIs and second or third-generation NNRTIs and PIs. The WHO has recommended that National ART programmes in resource-limited settings develop policies for access to third-line ART, containing ritonavir-boosted darunavir, integrase inhibitors, and etravirine. These agents have been shown to be effective in highly treatment-experienced patients in trial settings.

The FMOH has set up a third-line ART Committee to oversee the implementation of third-line ART in Nigeria; and designated some sites spread across the six geo-political zones of the country as third-line ART sites. Also, it has developed and disseminated the criteria for the switch and operational guidance for third-line ART.

3.7.1 Criteria for Switch to Third-Line ART

In the event of suspected treatment failure on second-line ART, the following criteria should be met before a switch to third-line ART:

1. The patient should be confirmed to have failed on first-line and second-line ART
2. The patient should have a viral load result suggestive of treatment failure (>1000 copies/ml) after at least 6 months on an effective second-line ART regimen
3. The patient must undergo adherence assessment, followed by 3 months of documented EAC; the EAC must assess and optimize adherence and rule out any significant drug interactions.
4. The patient's repeat viral load at the completion of EAC must be >1000 copies/ml.
5. The patient's adherence during and following EAC must be $>95\%$.
6. HIV drug resistance testing (genotype or phenotype) should be done to determine the ARVs that are still active.

3.7.2 Operational Guidance for Third-Line ART

1. Patients that meet the criteria stated above for switch to third-line ART should be referred to the third-line site closest to the referring facility with a filled third-Line ART eligibility form, a recent HIV viral load result (done within the last 6 months) and a result of HIV drug resistance testing.
2. The third-line ART site will review the third-line ART eligibility form and forward the completed forms to the National third-line Committee through the email: nationalthirdline@gmail.com
3. Upon approval by the National third-line Committee, the patient will commence treatment at the third-line site.
4. Patients commenced on third-line ART should have a viral load test done 3 months after the commencement of therapy.



The following table shows the sequence of switching ART from first-line to third-line regimens:

Table 3.12 Sequence of Switching ART from first-Line to third-Line regimens

Target Population	First-line Regimens	Second-line Regimens	Third-line Regimens
Adults and Adolescents	TDF + 3TC (or FTC) + DTG	AZT + 3TC (or FTC) + ATV/r or LPV/r or DRV/r	TDF + 3TC (or FTC) + DRV/r + DTG +/- ETV
	TDF + 3TC (or FTC) + EFV 400mg	AZT + 3TC (or FTC) + ATV/r or LPV/r or DTG or DRV/r	AZT+3TC (or FTC) + DRV/r ± ETV +/- DTG
Children and infants	ABC + 3TC + DTG	AZT + 3TC + LPV/r (or ATV/r) AZT + 3TC + DRV/r (children > 3years)	RAL or DTG + DRV/r (children >3years) + ABC or AZT + 3TC
	ABC (or AZT) + 3TC + LPV/r	AZT (or ABC) + 3TC + DTG AZT (or ABC) + 3TC + RAL	
	ABC (or AZT) + 3TC + EFV	AZT (or ABC) + 3TC + DTG AZT (or ABC) + 3TC + LPV/r (or ATV/r)	

3.8 Low-Level Viremia (LLV)

The WHO recommends routine VL for individuals on ART as the preferred monitoring approach to confirm ART success, and defines treatment failure as a “persistently detectable VL exceeding 1000 copies/mL after at least 6 months of starting a new ART regimen”. This VL threshold, however, misclassifies PLHIV who harbour drug-resistant viruses. Data have shown that low-level viremia (LLV), defined variably as an intermittent or persistent VL between 200 - 999 copies/ml is associated with drug resistance mutations (DRMs) and/or treatment failure, with an incidence of virologic failure (VF) among PLHIV with persistent LLV <500 copies/mL estimated to be about 4-8%. Persistent higher-range LLV (e.g. ≥400 copies/ml) is associated with clinical disease progression and/or mortality.

3.8.1 Management of Low-level viremia (LLV)

- All clients with low-level viremia (VL 200 - 999 copies/ml) should undergo a thorough assessment of the cause of the elevated VL and specifically consider the possibility of (ABCDE):
 - Adherence problems
 - Bugs (Intercurrent infections)
 - In-Correct ART dosage
 - Drug Interactions
 - REsistance.
- Implement interventions to re-suppress the VL, including EAC (1-3)



- Repeat VL after three months of GOOD ADHERENCE
- If the current regimen is TLE or TDF/3TC/NVP, switch to TLD.

3.9 ART in Special Circumstances

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

3.9.1 Kidney impairment

Experience from Nigeria has shown that 23.8% [2] of newly diagnosed HIV infected patients present with evidence of kidney impairment. Long term follow-up of about 5,000 patients on TDF containing regimen in another study from Jos, Nigeria [3] showed that 10% of patients without baseline evidence of kidney impairment develop laboratory features of kidney impairment by week 24 of follow up. This proportion increased to 45% by week 144. The authors concluded that ART regimens in Nigeria need to be reviewed concerning the use of TDF. They suggested an alternative regimen such as ABC or TAF. There is also the need to dose adjust 3TC as this drug is 80 - 90% eliminated by the kidney.

3.9.2 Cardiomyopathy

There is no current published national data regarding HIV and ARV related cardiomyopathy. However, anecdotal reports from high volume sites in Nigeria suggest that a significant number of HIV infected Nigerians are now developing hypertension and electrocardiographic and echocardiographic features of cardiomyopathy. Research is ongoing in Nigeria to study and report this phenomenon. While awaiting this report, present knowledge suggests that cardiomyopathy is more associated with the use of ABC. Other studies have established a relationship between ABC and increased hyperactivity of platelets. The platelet endothelial cell interaction is suggested to be a major factor predisposing to cardiovascular diseases in HIV infected population.

3.9.3 Osteoporosis

Decreased bone mineral density has been reported as a long-term complication of TDF. This is the reason why paediatricians do not recommend the use of TDF in children in order not to limit growth potential. In adults, however, particularly post-menopausal females, decreased bone mineral density associated with post-menopausal age may become complicated with long term use of TDF. Presently, we do not have in-country data to support the magnitude of this problem.



Table 3.13. Recommendations for ART in special circumstances

Special circumstance	Problems	Recommendations
Kidney impairment	TDF toxicity	Replace TDF 300mg with ABC 600mg* OR replace with TAF 25mg
	3TC toxicity	Dose adjustment based on eGFR eGFR>50, no adjustment, 300mg daily eGFR 30 – 49ml/min, 150mg daily eGFR 15-29ml/min, 75mg daily eGFR <15ml/min or dialysis dependent, 75mg alternate days
Cardiomyopathy	ABC toxicity	Refer the patient for cardiology review and HIV specialist opinion
Osteoporosis	TDF toxicity	Replace with TAF

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

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

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

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

Creatinine Clearance (eGFR) can be calculated using Cockcroft-Gault equation below

(140-age(yrs) x weight(kg)/Plasma Creatinine (mg/dl) x72

For Females, the result should be multiplied by 8



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Chapter 3

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4. PHARMACOVIGILANCE IN ANTIRETROVIRAL THERAPY

What's Inside:

4.1 Introduction.....	48
4.2 Pregnancy Monitoring for Patients on ARVs.....	48
4.3 HIV Drug Resistance (HIVDR).....	49
4.4 Adverse drug reactions (ADRs).....	49
4.5 Drug toxicity.....	46
4.6 Steps to Recognize ADRs.....	54
4.7 Who is to Report ADRs?.....	54
4.8 What ADRs Should be Reported.....	54
4.9 Pharmacovigilance Data Collection and Reporting Process	55
4.10 Principles of Management of Adverse Drug Reactions	55
4.11 Prevention of Adverse Drug Reactions	61
4.12 ARV Drug Interactions.....	62

4.1 Introduction

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

There are two methods of pharmacovigilance:

- Active pharmacovigilance
- Passive pharmacovigilance

Monitoring and reporting of drug therapy problems including adverse drug reactions (ADRs) and medication errors should be an integral part of clinical practice for ensuring patient safety and optimal treatment outcomes. All healthcare providers (doctors, pharmacists, nurses, and counsellors, etc.) at various service delivery points should, therefore, assess patients for ADRs at every encounter and report all suspected adverse events using the NAFDAC ADR form (Yellow form). All facilities should establish a functional hospital-based pharmacovigilance committee in all ART/PMTCT centres to coordinate ARV clinical pharmacovigilance. This committee is very vital to the success of pharmacovigilance and management of ADRs in a clinical setting.

4.1.1 Active Pharmacovigilance

Active (or proactive) safety surveillance means that active measures are taken to detect adverse events. This is managed by active follow-up after treatment and the events may be detected by asking patients directly or screening patient records. It is based on structured procedures to obtain detailed information about patient populations, thereby allowing consideration of modifying factors such as polypharmacy, comorbidity, and socio-demographic characteristics. In addition, it enables targeted monitoring of specific drugs and adverse reactions to optimize the quality and quantity of reports as well as quantifying the frequency and severity of both expected and unanticipated adverse drug reactions. This surveillance is best done prospectively. Active pharmacovigilance is sometimes descriptively referred to as hot 'pursuit'. The most comprehensive method of active pharmacovigilance is Cohort Event Monitoring (CEM). It is an adaptable and powerful method of getting good comprehensive data. Other methods of active monitoring include the use of registers, record linkage and screening of laboratory results in medical laboratories.

Active pharmacovigilance is compulsory for all new drugs imported or manufactured for use within the country. It may be initiated, managed or financed by the Market Authorization Holder/PHP voluntarily or pursuant to an obligation imposed by the National Agency for Foods and Drugs Administration and Control (NAFDAC). In any case, the process must be done in collaboration with NAFDAC.

4.2 Pregnancy Monitoring for Patients on ARVs

It is strongly recommended that all women who are known to be pregnant on ART should be followed up to find out the outcome of the pregnancy and the health status of the infant. Health care providers should collect data on all ARV drug exposure during pregnancy using an appropriate data collection tool. Data collected should include:



- Baseline information on the pregnancy; What ARV is the woman on?, Did the woman get pregnant while on ART?, or Was ART initiated during pregnancy?
- Details on any pregnancy-related problems in the woman, foetal death and or abnormalities observed when the infant is examined at birth or postnatally

4.3 HIV Drug Resistance (HIVDR)

The global risk of further increases in HIVDR is heightened by the implementation of WHO guidelines recommending "Treat All" and pre-exposure prophylaxis, and many more people initiating HIV treatment. While concerns about resistance should not stop the provision of antiretroviral therapy (ART) to all in need, the long-term implications of earlier initiation on adherence and drug resistance need to be closely monitored and responded to.

If not properly controlled, HIVDR can reduce the durability of the current first-line regimen for a significant proportion of patients. These patients would have to be switched to more expensive second-line or even third-line regimens. With higher levels of HIVDR, more resources would be needed to treat the same number of patients, or more likely, fewer patients could be treated with the same resources.

Therefore, surveillance of HIVDR and implementation of effective responses are key to preserving the effectiveness of first-line ART which is the goal of any ART programme.

4.4 Adverse drug reactions (ADRs)

An adverse drug reaction (ADR) is defined by WHO as “a response to a drug which is noxious and unintended, and which occurs at doses normally used in man for the prophylaxis, diagnosis, or therapy of disease, or the modification of physiological function.” Side Effect refers to the unintended effect of a health product occurring at doses normally used in man which is related to the pharmacological properties of the drug.

The therapeutic benefits of ARV use far outweigh the risk, thus despite the ADRs and toxicities encountered with ARV use, they are still essential inpatient management. ARVs resulting in ADRs that pose a serious threat to the health and well-being should be discontinued without delay and necessary consultations made regarding the next line of actions.

4.4.1 Classification of Adverse Drug Reactions (ADRs)

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



Table 4.1: WHO Severity Grading of ADR

Severity Grade	Characteristics
1 – Mild ADR	<ul style="list-style-type: none"> • Transient or mild discomfort (<48 hours) • No limitation of activity • No medical intervention or therapy required
2 – Moderate ADR	<ul style="list-style-type: none"> • Mild to moderate limitation of activity • Some assistance may be needed • No or minimal medical intervention required
3 – Severe ADR	<ul style="list-style-type: none"> • Marked limitation of activity • Some assistance usually required • Medical intervention or therapy required • Hospitalization possible
4 – Life-Threatening ADR	<ul style="list-style-type: none"> • Extreme limitation of activity • Significant assistance required • Significant medical intervention or therapy required • Hospitalization or hospice care probable.

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

4.5 Drug toxicity

This is the unwanted effect of drugs resulting from administration in excess of the required therapeutic dose, or accumulation of drugs in the body due to inefficient absorption, distribution, metabolism, or excretion. Some clinical conditions e.g. renal impairment and chronic liver disease may also predispose patients to drug toxicity. Drug toxicity can be detected clinically (history and clinical examination) and/or through laboratory testing (table 4.2).

In the event of drug toxicity, dose adjustment is recommended where feasible; otherwise, the offending drug should be discontinued and changed to another drug from within its class.

4.5.1 Laboratory monitoring of toxicity:

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

The table below shows the ARV drug class, clinical abnormality, and the laboratory test that could be used for its monitoring.



Table 4.2 Common ADRs associated with ARV drugs and necessary laboratory tests

Drug class	Drug	Common ADRs	Risk factors	Laboratory Tests
NRTI	Abacavir (ABC)	Hypersensitivity Hepatotoxicity	Presence of HLA-B*5701 gene	CPK, Liver enzymes
	Emtricitabine (FTC)	Hepatotoxicity		Liver enzymes
	Lamivudine (3TC)	Cough, diarrhoea, fatigue, malaria, headache, lethargy, Nausea, vomiting and pancreatitis (in children)		Non-specific
	Tenofovir Disoproxil Fumarate (TDF)	Renal Toxicity	Underlying renal disease; Age >50 years old; BMI <18.5 or low body weight (<50 kg), diabetes, hypertension Concomitant use of nephrotoxic drugs or a boosted PI	Creatinine, Urinalysis
		Decreases in bone mineral density	History of osteomalacia (in adults) and rickets (in children) and pathological fracture Risk factors for osteoporosis or bone mineral density loss, Vitamin D deficiency	
	Zidovudine (AZT)	Anaemia, leukopenia, neutropenia,	Baseline anaemia or neutropenia CD4+ cell count of ≤ 200 cells/mm ³	Full blood count E/U/Cr CPK
		Lactic acidosis, severe hepatomegaly with Myopathy	BMI >25 (or bodyweight >75 kg) Prolonged exposure to NRTIs	
NNRTI	Efavirenz (EFV)	CNS manifestations	Depression or other mental disorder (previous or at baseline), Daytime dosing	Liver enzymes Serum cholesterol
		Hepatotoxicity	Underlying HBV and HCV co-infection, Concomitant use of hepatotoxic drugs	
		Hypercholesterolemia	Risk factor(s) unknown	



Drug class	Drug	Common ADRs	Riskfactors	Laboratory Tests
	Nevirapine (NVP)	Gynaecomastia	Riskfactor(s) unknown	
		Hepatotoxicity	Underlying hepatic disease HBV and HCV co-infection	Liver enzymes
		Severe skin rash and hypersensitivity reaction, including Stevens-Johnson syndrome	High baseline CD4+ cell count	
PI	Atazanavir/ritonavir(ATV/r)	Electrocardiographic abnormalities (PR and QRS interval prolongation)	Pre-existing conduction system disease Concomitant use of drugs which may prolong the PR or QRS intervals Congenital long QT syndrome	ECG
		Indirect hyperbilirubinemia (clinical jaundice)	Presence of UDP Glucuronyl transferase 1A1*28 (UGT1A1*28) gene	
		Nephrolithiasis	Previous history	
	Darunavir/ritonavir(DRV/r)	Hepatotoxicity	Underlying hepatic disease, Concomitant use of hepatotoxic drugs	Liver enzymes
		Severe skin and hypersensitivity reactions		
	Lopinavir /ritonavir (LPV/r)	Hepatotoxicity	Underlying hepatic disease HBV and HCV co-infection Concomitant use of hepatotoxic drugs	Liver enzymes Serum amylase ECG Lipid profile
		Pancreatitis	Advanced HIV disease, alcohol	
		Arrhythmias	People with pre-existing conduction system disease	
		Dyslipidaemia	Cardiovascular risk factors as obesity and diabetes	



Drug class	Drug	Common ADRs	Riskfactors	Laboratory Tests
		Diarrhoea	Riskfactor(s) unknown	
	Ritonavir (RTV)	Hepatotoxicity Hyperglycaemia Hyperlipidemia	Underlying hepatic disease HBV and HCV co-infection	Liver enzymes Urinalysis, BS- blood sugar level Serum lipids CPK, Uric acid
Integrase inhibitors	Dolutegravir (DTG)	Hepatotoxicity	Underlying hepatic disease, Concomitant use of hepatotoxic drugs	Liver enzymes
		Hypersensitivity reactions	Risk factor(s) unknown	
		Insomnia	Risk factor(s) unknown	
		IRIS, Neural Tube Defects (NTDs)	PLHIV with AHD	
	Raltegravir (RAL)	Rhabdomyolysis, myopathy, myalgia.	Concomitant use of other drugs that increase the risk of myopathy and rhabdomyolysis, including statin	CPK Liver enzymes
		Hepatotoxicity, Severe skin rash and hypersensitivity reaction	Risk factor(s) unknown	

Table 4.3: Common ADRs associated with drugs used in the management of Ois

Drug	Common ADRs	Laboratory Tests
Cotrimoxazole	Hypersensitivity, Steven Johnson's Syndrome, Anaemia and Liver problems	CBC and Liver function test
Isoniazid	Liver problems, Musculoskeletal symptoms and GI symptoms	LFT
Fluconazole	CNS and GI symptoms	
Amphotericin B	Injection site reactions, hypersensitivity reactions, GI symptoms, musculoskeletal symptoms, respiratory symptoms, CNS symptoms, vision changes, low potassium, and dysuria	E/U/Cr
Flucytosine	Hypersensitivity, Hepatic disorders, Haematological, Respiratory, Renal, GI and CNS disorders	LFT, E/U/Cr, CBC & RBS



The severity grading of laboratory test abnormalities may guide prompt intervention and prevent the negative consequences of ADR.

4.6 Steps to Recognize ADRs

1. Take adequate history and do a thorough physical examination of the patient
2. Establish time relationships, between start of therapy to the time of onset of the suspected reaction.
3. Carry out appropriate laboratory investigations, where indicated
4. Check the pharmacological properties of the suspected drugs if required

4.7 Who is to Report ADRs?

Adverse drug reactions (ADRs) should be reported by Physicians, Pharmacists, Nurses, Medical laboratory scientists, other health and community health care workers, caregivers, and patients. The original copy should be sent to NAFDAC by the facility pharmacovigilance focal staff, while the duplicate copy should remain in the patient's folder. The third copy should remain in the booklet at the Service Delivery Point. All completed booklets should be sent to the pharmacovigilance focal staff for safekeeping.

Table 4.4: Reporting Timelines

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

4.8 What ADRs Should be Reported

1. All serious reactions (expected or unexpected) that one suspects for established or well-known drugs
2. All suspected reactions, including minor ones for new drugs
3. If an increased frequency of a given reaction is observed
4. All suspected adverse reactions associated with drug-drug, drug-food, or drug-food supplement interactions and drug-disease interactions.
5. ADRs during pregnancy and lactation
6. ADRs occurring from an overdose or medication error
7. Lack of efficacy of a medication, or when suspected pharmaceutical defects are observed
8. Reactions suspected of causing death, danger to life, admission to hospital, prolongation of hospitalization, or birth defects.
9. When in doubt whether the suspected adverse event/reaction is an ADR or not, you must report to the National Pharmacovigilance Centre.



4.9 Pharmacovigilance Data Collection and Reporting Process

All ADRs should be reported to the National Pharmacovigilance Centre using the NAFDAC ADR form (yellow form). The following steps should be taken:

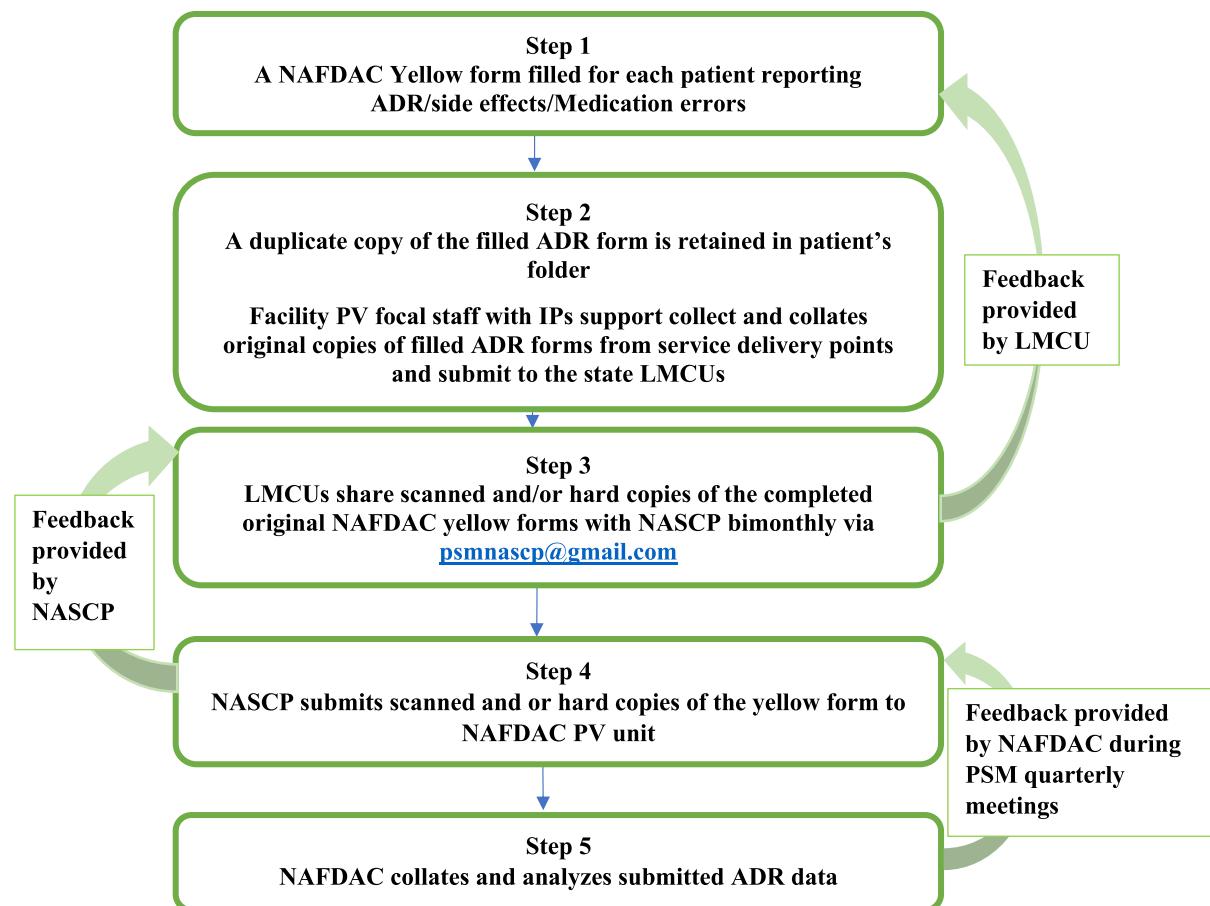


Figure 4.1 Pharmacovigilance Reporting

Refer to the NAFDAC website for all reported ADRs (<https://www.nafdac.gov.ng/>)

4.10 Principles of Management of Adverse Drug Reactions

Ensure strict adherence to the standard procedures outlined below for detecting, evaluating and reporting ADRs in ART/PMTCT Clinical Settings



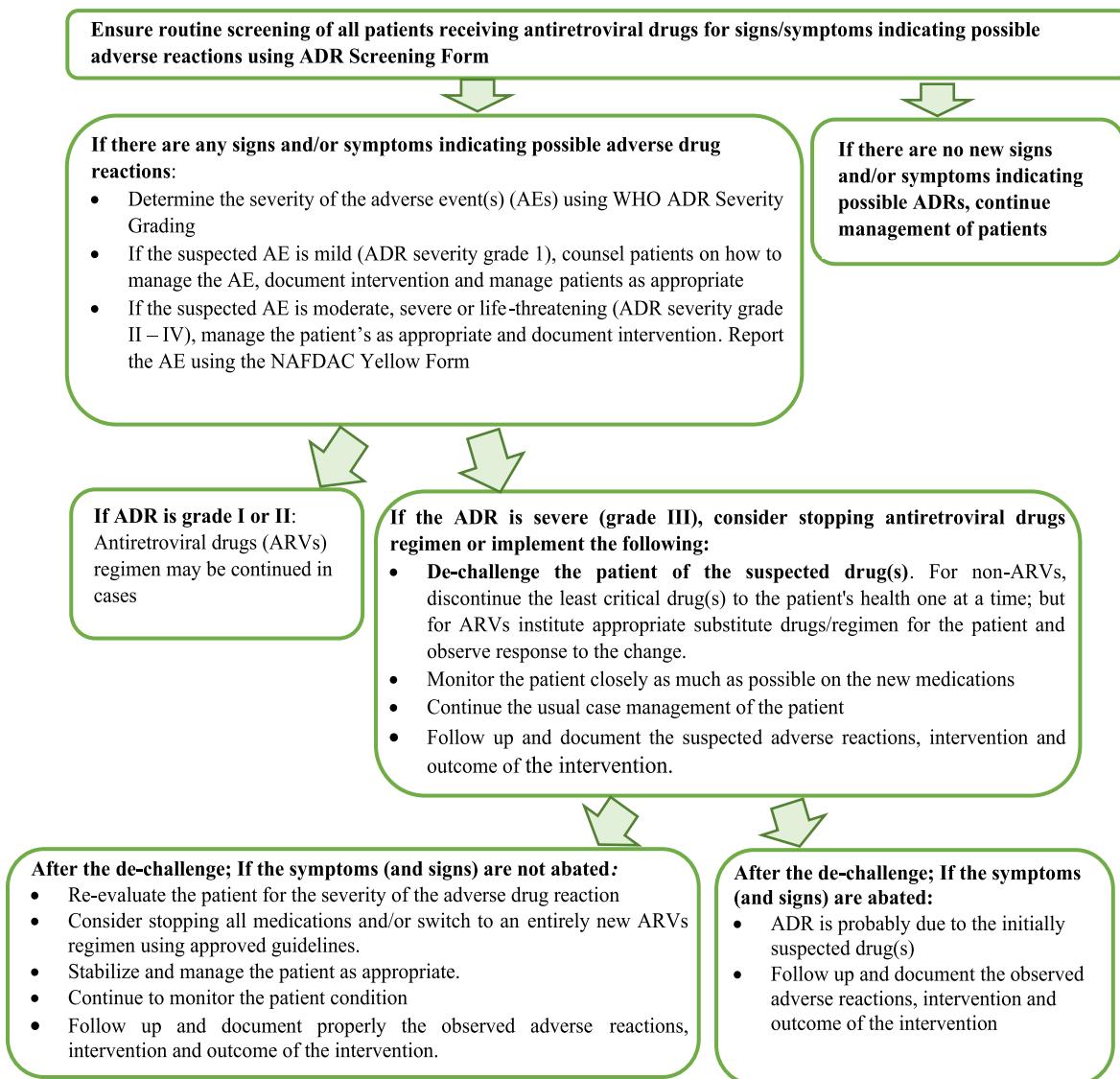


Figure 4.2: Management of Adverse Drug Reactions



4.10.1 Management of Specific ARV Adverse Drug Reactions

Adverse reactions associated with ARV drugs usually have a class similarity; however certain drugs in each of the classes present more severe forms of adverse reactions than others. In the management of adverse events, special attention should, therefore, be paid to drug-specific adverse reactions. For example, Zidovudine is implicated in ARV-induced anaemia more than any other ARV in the same class, just as Efavirenz is more likely to cause CNS toxicity than the other ARV drugs in the same class.

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

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

- Clinicians should avoid DTG for patients with a history of severe Neuro-Psychiatric symptoms.
- DTG should also not be given at the same time as supplements containing Magnesium (Mg), or Zinc (Zn). These may be in multivitamins, certain laxatives, or antacids, it is therefore important to know what other tablets your patients are taking



- If your patients are taking any of these, advise them to take their ARVs at least 2 hours before or at least 6 hours afterwards
- DTG may be given with calcium (Ca) or Iron (Fe) supplements if taken with food
- Clinicians should monitor the body weight and BMI of patients.

Table 4.3 Adverse drug reactions associated with the use of specific ARV drugs and their management

Antiretroviral Drug	Primary toxicities	Minor toxicities	Monitoring/Management
Zidovudine (AZT)	Anaemia, neutropenia, myopathy, lipoatrophy or lipodystrophy [Risk factors include -Baseline anaemia or neutropenia; CD4+ cell count ≤ 200 cells/mm 3] Lactic acidosis or severe hepatomegaly with steatosis [Risk factors include -BMI > 25 (or bodyweight > 75 kg); Prolonged exposure to nucleoside analogues]	Blue to black discolouration of nails, nausea, and headache	For anaemia: <ul style="list-style-type: none"> • Change to TDF and/or transfuse • Do not use AZT if Hb < 8.0 g/dl (PCV $< 24\%$) For myopathy, discontinue if CPK rises. If AZT is being used in first-line ART, substitute with TDF or ABC. If AZT is being used in second-line ART, substitute with ABC
Lamivudine (3TC)	Pancreatitis, Liver toxicity Mild peripheral neuropathy	Skin rash, headache	Discontinue if serum amylase elevated. Restart when resolved or change to ABC
Emitricitabine (FTC)	Similar to lamivudine	Occasional hyperpigmentation of skin (palms/ soles)	
Tenofovir Disoproxil Fumarate (TDF)	Tubular renal dysfunction, Fanconi syndrome [Risk factors: Underlying renal disease; Older age; BMI < 18.5 (or bodyweight < 50 kg); Untreated diabetes mellitus; Untreated hypertension; Concomitant use of nephrotoxic drugs or a boosted PI] Decreases in bone mineral Density [Risk factors: History of osteomalacia and pathological fracture; risk factors for osteoporosis or bone loss]	Occasional GI intolerance	If creatinine clearance declines, substitute with non-nephrotoxic drugs such as ABC or adjust the dosage. (See section on comorbidities) If TDF is being used in first-line ART, substitute with AZT or ABC. If TDF is being used in second-line ART (after AZT use in first-line ART), substitute with ABC.



	<p>Lactic acidosis or severe hepatomegaly with steatosis [Risk factors: Prolonged exposure to nucleoside analogues; Obesity]</p> <p>Exacerbation of hepatitis B (hepatic flares) [Risk factors: Discontinuation of TDF due to toxicity]</p>		<p>Use an alternative drug for hepatitis B treatment.</p>
Abacavir (ABC)	<p>Life-threatening hypersensitivity reaction may occur in 3-9% of patients [Risk factors the presence of HLA-B*5701 Gene]</p> <p>Lactic acidosis may also occur with/without hepatic steatosis</p>		<p>Discontinue therapy if hypersensitivity develops. Abacavir should never be used in that individual again.</p> <p>If ABC is being used in first-line ART, substitute with TDF or AZT. If ABC is being used in second-line ART, substitute with TDF</p>
Nevirapine (NVP)	<p>Life-threatening skin rash and hypersensitivity reaction(Stevens-Johnson syndrome) which occurs in less than 5% of patients and usually within 8 weeks of treatment</p> <p>DRESS syndrome (drug rash, eosinophilia, and systemic symptoms) manifesting as fever, arthralgia, etc.</p> <p>Hepatotoxicity [Risk factors: Underlying hepatic disease; HBV and HCV co-infection; Concomitant use of hepatotoxic drugs; CD4 + cell count>250 cells/mm³ in women; CD4+ cell count>400 cells/mm³for men; First month oftherapy (if leadin dose is not used)]</p>		<p>Low dose over first 2 weeks minimizes rashoccurrence. If mild or moderate (Grade 1/2) continue cautiously or substitute with EFV. If severe discontinue NVP and permanently if hepatitis confirmed.</p> <p>Change to EFV.If the person cannot tolerate either NNRTI, use boosted PIs</p>
Efavirenz (EFV)	<p>Persistent central nervous system toxicity (such as abnormal dreams, hallucination, insomnia, amnesia, depression or mental confusion). CNS side effects occur in about 50% of pati ents (usually self-limiting) [Risk factors: Depression or other mental disorder (previous or at baseline); Daytime dosing]</p> <p>Hepatotoxicity [Risk factors: Underlying hepatic disease- HBV and HCV co-infection, Concomitant use of hepatotoxic drug]</p>	Dizziness	<p>Rash in 10% but rarely severe in <1%; CNS symptoms often resolve 2-4 weeks.</p> <p>EFV is contraindicated in patients who already have psychiatric manifestations.</p> <p>Change to NVP. If the person cannot tolerate either NNRTI, use boosted PIs</p>



	<p>Convulsions[Risk factor: History of seizure]</p> <p>Hypersensitivity reaction, Stevens-Johnson syndrome. Mobiliform rash may appear but usually not life-threatening</p> <p>Potential risk of neural tube birth defects (very low risk in humans)</p> <p>Male gynecomastia.</p>		
Etravirine (ETR)	<p>Severe skin rash; hypersensitivity reactions (Stevens-Johnson syndrome), Erythema multiforme, hepatotoxicity, lipid abnormality and psychiatric disorders</p>	GI Intolerance, rash	<p>Monitor liver enzymes and lipids. Rarely discontinue (<2%) due to adverse reaction.</p> <p>Limited options are available</p>
Atazanavir/ritonavir (ATV/r)	<p>Electrocardiographic abnormalities (PR interval prolongation) [Risk factors: Pre-existing conduction disease; Concomitant use of other drugs that may prolong the PR interval]</p> <p>Indirect hyperbilirubinaemia (clinical jaundice) [Risk factors: Underlying hepatic disease HBV and HCV co-infection; Concomitant use of hepatotoxic drugs]</p> <p>Nephrolithiasis and risk of prematurity [Risk factor unknown]</p>	Nausea and diarrhoea, skin rash	<p>Clinical jaundice is cosmetic and not related to hepatitis or liver damage. Substitute only if adherence is compromised</p> <p>Monitor liver enzymes</p> <p>Change to LPV/r or DRV/r. If boosted PIs are contraindicated and NNRTIs have failed in first-line ART, consider integrase inhibitors</p>
Lopinavir/ritonavir (LPV/r)	<p>Electrocardiographic abnormalities (PR and QT interval prolongation, torsades de pointes) [Risk factors: People with pre-existing conduction system disease; Concomitant use of other drugs that may prolong the PR interval]</p> <p>QT interval prolongation [Risk factors: Congenital long QT syndrome; Hypokalaemia; Concomitant use of drugs that may prolong the QT interval]</p> <p>Hepatotoxicity [Risk factors: Underlying hepatic disease; HBV and HCV co-infection; Concomitant use of hepatotoxic drugs]</p> <p>Pancreatitis [Risk factors: Advanced HIV disease]</p>	Headache, weakness, nausea, vomiting, diarrhoea and skin rash	<p>Diarrhoea is rarely severe should be managed with antispasmodics-usually resolves after weeks to months of therapy.</p> <p>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</p> <p>If LPV/r is used in second-line ART for adults, use ATV/r or DRV/r. If boosted PIs are contraindicated and the person has failed on treatment with NNRTI in first-line ART, consider integrase inhibitors</p>



	Risk of prematurity, lipoatrophy or metabolic syndrome, dyslipidaemia or severe diarrhoea [Risk factors unknown]		
Darunavir/ritonavir (DRV/r)	Hepatotoxicity [Risk factors: Underlying hepatic disease HBV and HCV co-infection, Concomitant use of hepatotoxic drugs]		If DRV/r is being used in second-line ART, substituting with ATV/r or LPV/r can be considered. When it is used in third-line ART, limited options are available
Darunavir/ritonavir (DRV/r)	Hepatotoxicity [Risk factors: Underlying hepatic disease HBV and HCV co-infection, Concomitant use of hepatotoxic drugs] Severe skin and hypersensitivity reactions [Risk factors: Sulfonamide allergy]		If DRV/r is being used in second-line ART, substituting with ATV/r or LPV/r can be considered. When it is used in third-line ART, limited options are available
Raltegravir (RAL)	Rare, -hypersensitivity, acute renal failure	Myopathy, myalgia, mild to moderate nausea, headache and diarrhoea	Limited options are available
Dolutegravir (DTG)	Hepatotoxicity Severe allergic reactions (hypersensitivity)	Insomnia, headache	Monitor liver function and toxicity may worsen with existing hepatitis B or C Patient should be advised to take drugs in the morning

4.11 Prevention of Adverse Drug Reactions

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

- Use of few drugs, whenever possible
- Use drugs that you are familiar with
- Do not change therapy from known drugs to unfamiliar ones without good reason
- All patients commencing ARV should be properly counselled on the ADRs related to the medications, preventive measures, where applicable, and what to do when it occurs or is suspected. The healthcare provider should be very knowledgeable about this
- Be vigilant and look out for these adverse effects when initiating therapy and during follow-up.
- Encourage patients to be actively involved in ADR reporting. ADR monitoring tools can be made available for patients to document ADRs they are experiencing while on ART; and this can be validated by the HCW during clinic visits.



4.12 ARV Drug Interactions

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

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

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

Table 4.4 Important ARV drug interactions

Drug	Interaction	Action
EFV; NVP	Decreased level of Atazanavir and LPV/r significantly occur when used concomitantly with EFV or NVP	Avoid the combination or consider increase LPV/r dose to 533mg/133mg twice daily in PI-experienced patients.
TDF	Concomitant use with ATV: TDF level is increased by 24%–37% and Atazanavir level is decreased by 25%	Dose: ATV/r (300/100 mg) daily co-administered with TDF 300 mg daily. Avoid concomitant use without RTV. If using TDF and H2 receptor antagonist in ART-experienced patients, use ATV/r (400 mg/100 mg) daily. Monitor for TDF-associated toxicity.

Abacavir (ABC) is not currently associated with any clinically significant pharmacokinetic drug interactions. However, a large dose of ethanol ($>0.7\text{g/kg}$ body weight) increases ABC plasma AUC by 41% as well as prolongs ABC elimination half-life by 26%. Patients must therefore be cautioned on alcohol use during ABC therapy.

4.12.1 Interactions Between Contraceptives and Antiretroviral Drugs

In line with standard recommendations, ALHIV can use all available contraceptive methods, including hormonal contraceptives, implantable devices, intrauterine devices, the transdermal patch, and vaginal ring.

Many PIs and NNRTIs alter the metabolism of oral contraceptives and may reduce the efficacy of oral contraceptive agents or increase the risk of estrogen – or progestin – related adverse effects. Integrase strand transfer inhibitors (specifically raltegravir) appear to have no interaction with estrogen-based contraceptives. Dolutegravir (DTG) has been found safe and



effective to use with hormonal contraceptives among women living with HIV. Unless there is clinical evidence or concern of bone fragility, providers may use depot medroxyprogesterone acetate (DMPA) with or without ART (specifically TDF), as an effective long-term contraceptive.

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

www.hiv-druginteractions.org

www.hiv-interactionslite.org



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5. ADHERENCE TO ANTIRETROVIRAL THERAPY

What's Inside:

5.1 Introduction.....	66
5.2 Adherence Preparation for ART.....	66
5.3 On-going adherence for clients on ART.....	67
5.4 Monitoring of Adherence.....	67

5.1 Introduction

Adherence is the patients' behaviour of taking drugs correctly based on mutual agreement between the patient and health care provider. It is the act of taking the right drugs, at the right dose, at the right frequency, and at the right time.

Adherence to ART is necessary for achieving sustained suppression, delaying the onset of drug resistance, enhancing immune recovery, and improving the overall health and quality of life of the individual. Poor or non-adherence to ART results in suboptimal viral suppression which may lead to the emergence of drug resistance and loss of future treatment options.

All persons on ART should receive adherence support which could be face-to-face and/or virtual. Face-to-face and virtual adherence support may be provided by health workers, family, friends, treatment partners, and support groups. Adherence support IEC materials in the form of posters and patient information leaflets are also essential.

5.2 Adherence Preparation for ART

Adherence counselling and support has become even more important with the advent of the test and treat policy. This is because we have asymptomatic persons initiated on ART. It is recommended that patients should undergo adherence preparation before they commence ART. It is also recommended that adherence preparation should be implemented as an ongoing multidisciplinary task that involves as many relevant health workers as possible that are involved in the care of the patient including the doctor, pharmacists, laboratory scientists, nurses, and the officer officially designated as adherence counsellor.

Health workers should note that the success of any adherence strategy adopted depends on:

- Information and education provided to clients before the initiation of ART
- Assessing their understanding of the information provided
- Willingness and readiness for the client to commence treatment
- Assessing and addressing barriers to initiating ART

Adherence counselling is central to any adherence strategy and should:

- Provide basic information on HIV and its manifestations.
- Provide information on ARV medication which should include dosing, frequency, duration, and adverse effects of ARV medications including how the medications should be taken and what to do in case of missed dose.
- Provide information on ART and the benefits of early initiation.
- Highlight the importance of 100% adherence, which implies not missing any dose. Emphasize that non-adherence is the single most important factor that can lead to the development of drug resistance.
- Provide information to the patient in whom ART initiation will be delayed due to AHD (e.g. information on the increased risk of mortality when patients with AHD are commenced on certain ARVs such as DTG etc.).



5.3 On-going adherence for clients on ART

Continuous adherence counselling is essential in ART and should be accessible to every patient on ART. This should include adherence assessments and documentation at every clinic visit; emphasis should be on the importance of continued adherence, good nutrition, and involvement of support systems (relatives, friends, peers and/or community support personnel). Ongoing adherence support should be face-face or virtual. When provided by health workers, the checklist must be used to document the interaction, and this should be filed in the client's folder. Barriers to adherence should also be assessed and addressed.

5.4 Monitoring of Adherence

Sustained viral suppression is dependent on adherence to ARVs. Adherence monitoring provides an opportunity to reinforce the positive behaviour of the adherent patient, and to flag patients that require support to improve adherence. Adherence in many studies is measured by expressing the number of doses taken as a percentage of the number of doses prescribed. For example, if 20 doses are prescribed and 19 doses are taken, adherence is 95%. This translates to missing one dose in ten days on a twice-daily regimen.

Effective monitoring of adherence involves a combination of approaches based on resource capacity (human/ financial), acceptability by client and providers, and comprehension of the local context. These include:

- a. **Viral load monitoring:** This is considered the gold standard for monitoring adherence and treatment success. Where the viral load is not effectively suppressed an adherence intervention should precede a repeat viral load test. Viral load monitoring has a high likelihood to motivate adherence by engaging clients in the process of monitoring their own results and understanding the meaning of their results.
- b. **Pharmacy refill records:** These records document the dates a client collected their ARVs. Irregular collection may indicate adherence challenges. As with other adherence assessment methods, pharmacy refill records may over-estimate adherence, as collecting ARVs does not guarantee that they are being taken or taken correctly. This is however an acceptable proxy.
- c. **Self-reporting:** This is a quick and inexpensive approach to adherence monitoring. It is easily carried out in clinical settings and frequently used in routine care; however, it is subject to recall bias.
- d. **Pill counts:** This involves a physical count of the remaining pills at each pharmacy refill visit. It is used to compare the actual to the expected consumption of ARVs for a given period. The effectiveness of pill counting is limited by the fact that some clients may discard tablets not taken before their routine clinic visits leading to over-estimated adherence. Additionally, the time required by health providers to conduct pill counts may not be available, especially in resource-limited settings. Other approaches may include electronic methods e.g. Medication Event Monitoring System (MEMSCap). This involves the use of an electronic device that monitors the dates and time the pill bottle is opened. The bottle opening represents medicine intake. Another method that can be used is the quantification of drug levels in body fluids (plasma, urine, saliva) of clients.



5.4.1 Factors known to improve adherence

The following factors have been associated with high adherence rates:

- Increased access to ART.
- Individual patients, family, peers, and friends, community members, or treatment-supporter engagement in adherence education and support.
- Family-centred care when more than one family member is infected with HIV
- Continuous and effective adherence counselling, which includes knowledge and understanding of HIV infection, course of treatment, and expected adverse reactions and what to do in the event of an adverse reaction occurring.
- Drug regimen simplicity e.g. Fixed Drug Combination (low pill burden)
- The use of drugs with fewer adverse effects.

5.4.2 Factors associated with poor adherence

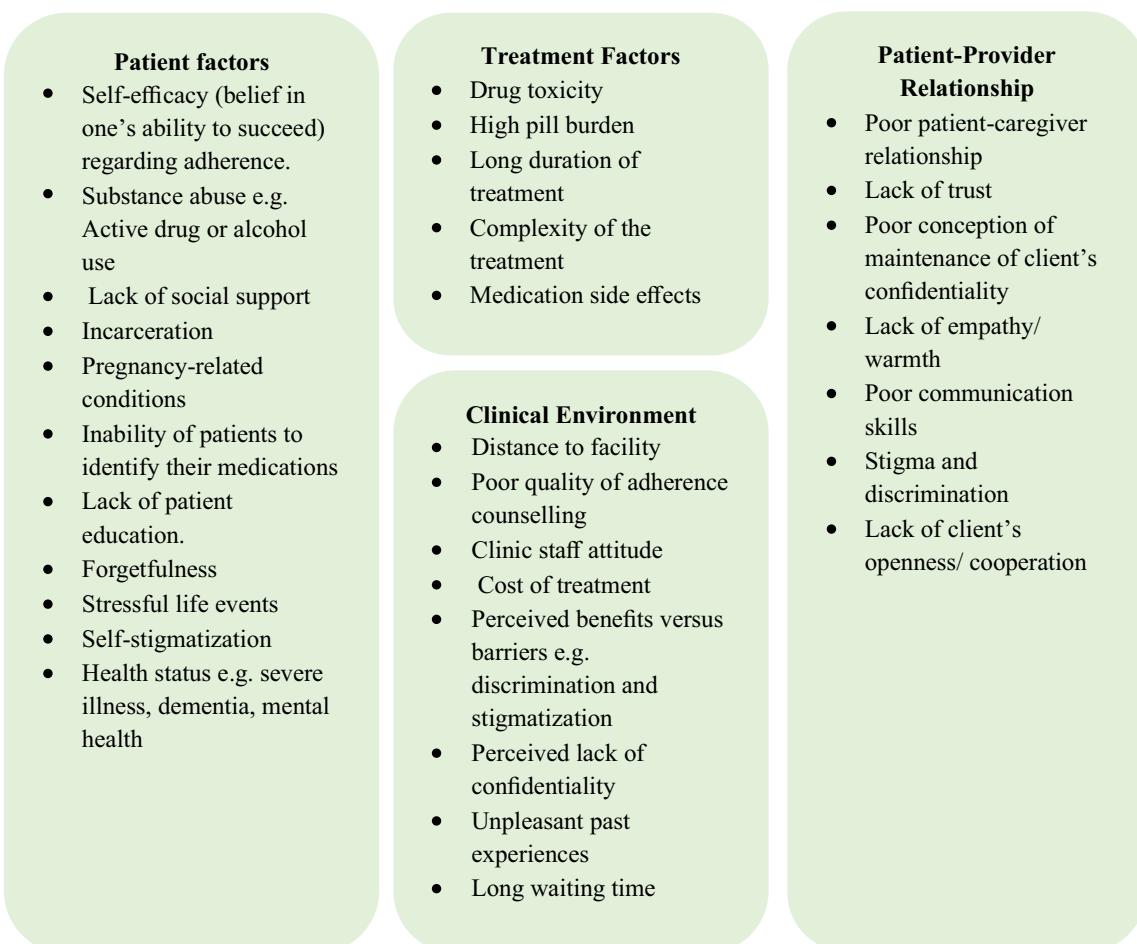


Figure 5.1: Factors associated with poor Adherence



5.4.3 Adherence in Specific Populations

While stigma, discrimination and health facility challenges are cross-cutting issues affecting adherence, some factors are peculiar to specific populations:

Table 5.1: Adherence in specific populations

Population	Factors affecting adherence
Infants and young children	<ul style="list-style-type: none"> Poor taste and large volumes of liquid formulations Large pill size, pill burden, and difficulty in swallowing pills. Changing dosage requirement in relation to weight gain Inadequate nutrition Identification of responsible caregivers and a family-centred approach would improve adherence
Adolescents	<ul style="list-style-type: none"> Psychosocial factors such as peer pressure Limited adolescent-friendly health services including skilled health workforce The transition from paediatric to adolescent care Limited adolescent-tailored treatment literacy and adherence training tools Disclosure issues
Pregnant and postpartum women	<ul style="list-style-type: none"> Nausea and vomiting Post-partum depression Non-disclosure to significant persons Inadequate awareness and knowledge of HIV and PMTCT
People with substance use and mental health conditions	<ul style="list-style-type: none"> Use of alcohol and substances abuse can lead to forgetfulness Poor comprehension of treatment plans Drug interaction and ADRs
Key populations including prisoners	<ul style="list-style-type: none"> Stigma and discrimination Poor access to health services Absence of health care which targets their specific needs Risk of drug-drug interaction
Persons with disability	<ul style="list-style-type: none"> Poor access to health facilities Lack of appropriate patient education channels (e.g. for visually and hearing impaired)

Health workers are required to take note of the adherence challenges peculiar to each of the groups and design for each patient an individualized adherence plan that adjusts for their lifestyle, work, and social environment.



5.4.4 Recommendations for improving adherence

The following can be useful to improve patient adherence to ART:

- Treatment education for patients and treatment supporters
- Treatment-supporter involvement
- Peer health education/peer counsellors
- Routine assessment and reinforcement of adherence during follow up
- The use of Fixed-Dose Combination (FDC) and drugs with lower dosing frequency
- Reminders and patient engagement tools (e.g. a cell phone, SMS text messages, alarm clock, calendars, social media platforms etc.)
- Convenient ARV packs
- Follow up visits before ARV supplies are exhausted
- Positive feedback on health improvements
- Nutritional assessment, care, and support
- Prevent and/or adequately manage ADR
- Address lifestyle factors e.g. alcohol abuse
- Adapting therapy to the client's lifestyle
- Minimizing out-of-pocket payments at the point of care as much as possible
- Encourage participation in support groups
- Improved social support
- Directly Observed Therapy –where possible
- Cognitive-behavioral therapy and behavioral skill training



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6. PREVENTION OF MOTHER TO CHILD TRANSMISSION OF HIV INFECTION

What's Inside:

6.1 Introduction	73
6.2 Mother-to-Child Transmission of HIV	73
6.3 Pre-ART Care for HIV-positive pregnant women.....	78
6.4 Use of Antiretroviral Therapy for PMTCT.....	80
6.5 Management of HIV positive women in labour, delivery and within 72 hours of delivery.....	82
6.6 PMTCT/TB integration services.....	84
6.7 Care and Support of the HIV-Exposed Infant.....	86
6.8 Special Considerations for Adolescent and Young Women in PMTCT.....	90
6.9 Linkage of PMTCT with comprehensive HIV Treatment, Care and Support Services for Mothers and Infants.....	91

6.1 Introduction

HIV can be transmitted from an infected mother to her child during pregnancy and delivery, and subsequently through breastfeeding. This mother-to-child transmission of HIV (MTCT) is also referred to as vertical transmission while measures to prevent its occurrence are the Prevention of Mother-to-Child Transmission (PMTCT). Given the successes recorded in the PMTCT, the global community is moving towards the elimination of Mother to Child Transmission of HIV (eMTCT).

6.2 Mother-to-Child Transmission of HIV

In the absence of any preventive measures, the rate of occurrence of MTCT is about 25-40% (Figure 6.1). This mode of HIV transmission is responsible for most HIV infections in children. The following factors have been associated with increased risk of MTCT in any population, high prevalence of HIV among women of reproductive age and their partners, low contraceptive use resulting in unintended pregnancies among HIV positive women. Increased risk of MTCT in a HIV positive woman during pregnancy, labour, delivery and breastfeeding has been associated with high maternal viral load (from new or re-infection, advanced disease or treatment failure); wide range of infections, including STIs and those of the genital tract and maternal malnutrition. Obstetric factors such as antepartum haemorrhage, external cephalic version, early rupture of membrane exceeding four hours before delivery, chorioamnionitis, prolonged labour, invasive delivery procedures including use of forceps and episiotomy have also been observed to increase MTCT of HIV. Other risk factors include; preterm birth, first infant in multiple births, breastfeeding and extended duration of breastfeeding, early mixed feeding, breast abscesses, nipple fissure, mastitis, and oral disease in the infant.

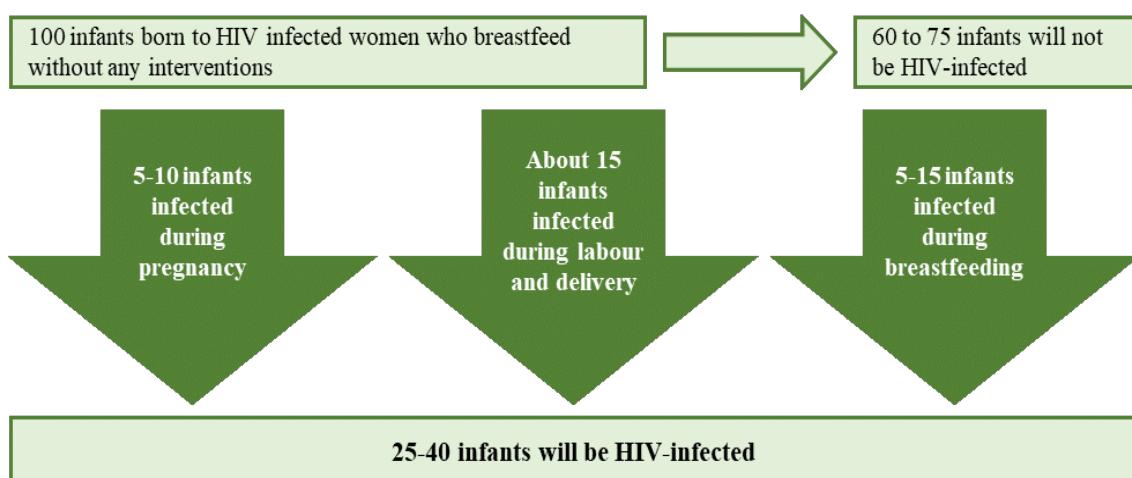


Figure 6.1: The Pattern of Mother-to-Child Transmission of HIV (MTCT) during Pregnancy, Delivery and Breastfeeding in Untreated Women Living with HIV.

Although the current HIV prevalence of 1.4% in Nigerian adults and 0.2% among children (NAIIS 2018) suggest a low MTCT, two findings in the report have an ominous outcome;

- a) Women (1.3%) have almost 4 times the prevalence of men (0.4%) in the same age group.
- b) This gender disparity was greatest among females of age 20-24 years, the age when most Nigerian women bear children.



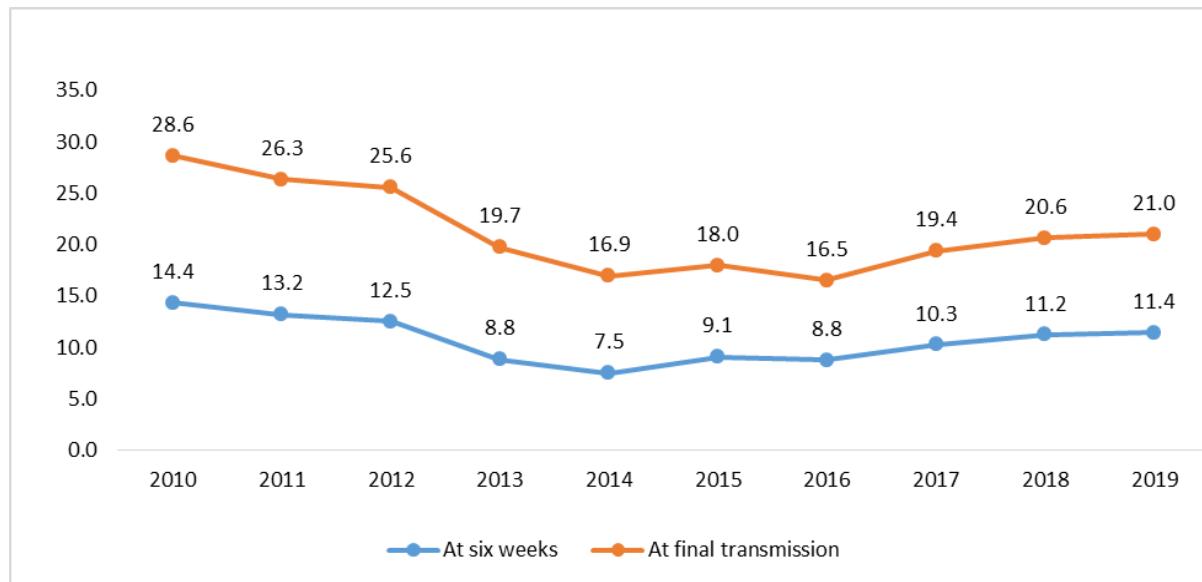


Figure 6.2: Trends in Estimated Pattern of MTCT in Nigeria

6.2.1 Prevention of MTCT

To stop the vertical transmission of HIV, WHO introduced a set of interrelated public health interventions designed to prevent transmission of the virus from an HIV positive mother to her child during the period of pregnancy, delivery and breastfeeding. Prevention of MTCT is the package of care given to pregnant women, their families and communities, aimed at preventing transmission of HIV from infected mothers to their babies (vertical transmission). It operates on 4 pillars:

Pillar 1	Primary prevention of HIV infection in women of reproductive age (WRA) & their partners
Pillar 2	Prevention of unintended pregnancy among HIV- positive women
Pillar 3	Prevention of HIV transmission from HIV positive mothers to their infants
Pillar 4	Provision of appropriate treatment, care and support to HIV Positive mothers, their infants & families

Pillar 1:

Primary prevention of HIV infection in women of reproductive age and their partners include the following:

- Use of the “ABC” approach to enhance safer and responsible sexual behaviour and practices. This involves:
 - A = Abstinence from having sexual intercourse
 - B = Be faithful to a faithful partner
 - C = Condom use correctly and consistently
- Safe and responsible sexual practices include:
 - Delaying the onset of sexual activity until marriage



- Reducing the number of sexual partners
- Consistent and correct use of condoms.
- Provision of early diagnosis and treatment of STIs: The early diagnosis and treatment of STIs can reduce the incidence of HIV in the general population by about 40%. Comprehensive STI treatment services present an opportunity to provide information on HIV infection, MTCT and referral to HIV testing services (HTS). Making HIV testing services widely available especially to women attending antenatal clinic ensures that they know their HIV status. All HIV pregnant women should be linked to PMTCT services on-site or by referral.
- Provision of appropriate counselling for women who are HIV negative: Counselling provides an opportunity for a woman who is HIV negative to better understand how to protect herself and her infant from HIV infection. It also serves as motivation to adopt safer sex, family planning practices and encourages partner testing.

Pillar 2:

Prevention of unintended pregnancy among HIV positive women improves the lives of these women and their children and is essential for eliminating mother-to-child transmission of HIV. Nigeria has an unmet need for family planning of 19% (NDHS 2018). The unintended pregnancy rate among women living with HIV reaches an estimated 51-90% in some settings, accounting for 27% of maternal death, which can be prevented by meeting the unmet need for family planning.

It is the responsibility of health services to provide HIV positive women and their partners with comprehensive information and education about the risks associated with childbearing as part of routine public information about HIV and AIDS. This is to ensure that HIV positive women and their partners have informed choices of action and to respect and support the decisions they reach as this is their sexual and reproductive rights. This implies:

- Providing good quality, user-friendly, and easily accessible family planning services to HIV positive women that can prevent unwanted pregnancy.
- Providing and promoting consistent condom (male/female) use combined with a more effective method of contraception (dual method) for dual protection from HIV and other STIs and from unplanned pregnancies.
- Integrating dual protection messages into family planning counselling services
- Offering contraception including emergency contraception to all HIV positive mothers in the immediate postpartum period to prevent unintended pregnancy. Lactational amenorrhoea does not guarantee adequate contraception even in women who exclusively breastfeed. (Refer to medical eligibility criteria for contraceptive use in HIV positive women).

Pillar 3:

Prevention of HIV transmission from HIV Positive mothers to their infants includes;

- HIV testing services
- HIV and Infant feeding counselling
- Modification of obstetric practices
- Administration of ART to all HIV positive pregnant women irrespective of their WHO clinical stage and CD4+ cell count
- Administration of single or dual ARV prophylaxis to all infants delivered to HIV positive women.



Pillar 4:

Provision of appropriate treatment, care and support to HIV Positive mothers, their infants and family

<u>Package of services for mothers</u>	<u>Package of services for HIV exposed children</u>
<ul style="list-style-type: none"> ▪ ART for all HIV positive women ▪ Cotrimoxazole prophylaxis ▪ TB screening, prophylaxis and treatment ▪ Continued infant feeding counselling and support ▪ Nutritional counselling and support ▪ Sexual and reproductive health services including family planning ▪ Cervical cancer screening ▪ Psychosocial support. ▪ Partner counselling and testing ▪ Pre-Exposure Prophylaxis (PrEP) for serodiscordant couples 	<ul style="list-style-type: none"> ▪ ARV prophylaxis ▪ Routine immunization and growth monitoring and support ▪ Cotrimoxazole prophylaxis starting at 6 weeks HIV diagnostic testing using DBS for DNA-PCR or NAT at birth (when available), 6 to 8 weeks of age and 6 weeks after breastfeeding has ended. HIV antibody test can be used for HIV screening for children older than 9 months where virologic test is not available. HIV antibody test is the recommended diagnostic testing for children older than 18 months. ▪ HIV antibody tests should primarily be used for screening of infants and children less than 18 months, so as to establish exposure status where the mother has not herself been tested for HIV or is not willing to be tested ▪ Ongoing infant feeding counselling and support ▪ Screening and management of tuberculosis ▪ Prevention and treatment of malaria ▪ Nutritional care and support ▪ Psychosocial care and support ▪ Antiretroviral therapy for all HIV infected children (see Chapter 3) ▪ Symptom management and palliative care if needed

To achieve effective PMTCT across Nigeria, the following challenges should be addressed (Table 6.1)



Table 6.2 Challenges and Strategies to achieve effective PMTCT in Nigeria

Challenges	Strategies to Achieve Effective PMTCT
Only 46% WRA (45% of Males) have comprehensive knowledge of HIV Transmission & Prevention*	Primary prevention of HIV in WRA & Partners
Only 57% WRA (52% Males) know MTCT*	
1% WRA (13% Males) have 2+ sexual partners*	
Only 12% of married women use modern contraceptive*	Prevention of unintended pregnancy in PLHIV
High PMTCT Cascade gaps & MTCT of 5% at 2months (NASCP)	Prevention of MTCT in pregnant PLHIV
Dwindling funding for supporting PMTCT programmes High out-of-pocket expenses for PLHIV	Treatment, care & support to HIV Positive mothers, children & families

*NDHS 2018

6.2.2 Benefit of PMTCT

The benefits of PMTCT is not limited to the baby alone, a successful PMTCT intervention benefits the mother, the family, community and health system as outlined in table 6.2

Table 6.2 Challenges and Strategies to achieve effective PMTCT in Nigeria

Benefits of PMTCT	
Mother	<ul style="list-style-type: none"> Identification of HIV positive mothers for targeted interventions to reduce risk of transmission of infection to their infants and to access treatment, care and support services
	<ul style="list-style-type: none"> Promotion of positive behaviour change and reduction in risk of HIV transmission
	<ul style="list-style-type: none"> Increase the use of dual protection methods of family planning and STI prevention
	<ul style="list-style-type: none"> Promotion of optimal infant feeding practices and support
	<ul style="list-style-type: none"> Promotion of access to early preventive and medical care
Infant	<ul style="list-style-type: none"> Prevention of HIV transmission to infants
	<ul style="list-style-type: none"> Promotion of early diagnosis and intervention for the HIV exposed infants including linkage to care for HIV positive infants
	<ul style="list-style-type: none"> Improvement of child health and survival
Family	<ul style="list-style-type: none"> Promotion of communication between couples and testing of both partners
	<ul style="list-style-type: none"> Reduction in the risk of sexual transmission to sero-discordant partners
	<ul style="list-style-type: none"> Provision of opportunity for testing other family members
	<ul style="list-style-type: none"> Access to reproductive health services
	<ul style="list-style-type: none"> Contribution to reduction of stigma and discrimination
	<ul style="list-style-type: none"> Provision of infant feeding support.



Community	<ul style="list-style-type: none"> Promotion of the understanding of the HIV and AIDS epidemic among those living with HIV and AIDS within the community thereby strengthening community support structures
	<ul style="list-style-type: none"> Promotion of uptake of risk reduction practices
	<ul style="list-style-type: none"> Promotion of acceptance and uptake of HIV testing services
	<ul style="list-style-type: none"> Contribution to reduction of stigma and discrimination
	<ul style="list-style-type: none"> Provision of infant feeding support
Health System	<ul style="list-style-type: none"> Provision of opportunity to strengthen the health system

6.3 Pre-ART Care for HIV-positive pregnant women

6.3.1 Initial evaluation of HIV pregnant women

All HIV- positive pregnant women should have a full physical examination. In addition to routine antenatal services, special focus should be placed on HIV-related illnesses including symptoms and signs of opportunistic infections (OIs) especially tuberculosis. Special attention should also be paid to the following:

- Anaemia
- Persistent diarrhoea
- Respiratory infections: TB and other bacterial respiratory infections are common OIs in HIV positive women
- Oral and vaginal candidiasis
- Lymphadenopathy
- Herpes zoster (chronic/recurrent) is a common presenting sign of HIV infection, occurring early in the disease, often before there is much immune suppression
- Other skin conditions such as candidiasis, vaginal wart, and others
- Other sexually transmitted infections
- Weight gain or loss

Furthermore, pregnant women found to have Advanced HIV Disease (AHD) should be managed accordingly (see chapter 8).

6.3.2 Initial Clinical Examination of HIV Positive Pregnant Women

The initial examination of the HIV positive pregnant woman is done to identify possible problems and complications that might be present. This examination should be done in a way that respects clients' privacy and rights. All pregnant women should be counselled and told why it is important to conduct clinical examinations. A complete physical examination should be performed and care taken to maintain all safety precautions. The examination should be holistic. However, special attention should be paid to HIV related signs of OIs;

- **Palor:** anaemia is common in pregnancy and can also occur as a result of ARV related side effect (AZT) and OIs.
- **Dehydration:** this could occur as a result of persistent diarrhoea.
- **Abnormal chest finding:** respiratory infections, especially TB, are common OIs among HIV positive women.
- **Oral, oesophageal and vaginal candidiasis:** candidiasis is common and may be recurrent



- Other skin conditions: such as pityriasis versicolor, vaginal warts, Kaposi sarcoma, herpes zoster etc may also be found. It is therefore important to look out for these skin conditions.
- Signs of other STIs: HIV positive women may have other STIs. It is therefore important to look out for these signs (see the section on STIs).

6.3.3 Laboratory Investigation of HIV Positive Pregnant Women

HIV positive pregnant women should have all routine laboratory investigations conducted for pregnant women. They should have additional tests performed to monitor the progression of their clinical condition. They should have haemoglobin or hematocrit estimation at least four times during the pregnancy and urinalysis done at every clinic visit. The following investigations are recommended. (See table 6.3 for appropriate laboratory investigation).

Table 6.3 Recommended laboratory investigation of HIV positive pregnant women

Laboratory Investigations	At Booking/ Presentation	2 nd visit (26- 28 weeks)	3 rd visit (30-32 weeks)	4 th visit (34-36 weeks)
Routine for all pregnant women				
PCV or FBC where available	X	X	X	X
Blood Group	X			
Haemoglobin Genotype	X			
Cervical Cancer Screening	X	This screening should be done at least once during pregnancy		
HBsAg and HCV	X			
Syphilis test	X			
Urinalysis	X	X	X	X
MP	As clinically indicated			
Specific for HIV positive				
CD4+	X			X
Viral load	At 3months after the commencement of ART			X
LFT	As clinically indicated			
E/U/Cr	As recommended by chapter 3			
Lipid Profile	As clinically indicated			

*Hepatitis B at booking; If negative, she should be offered HBV vaccination. When positive, ART regimen containing TDF+ 3TC or FTC should be used.

**Newly diagnosed HIV positive women enrolled into care, should have at least one viral load test at a gestational age of 32 to 36 weeks.



6.3.4 Syphilis testing for pregnant women

Syphilis has devastating effects on the unborn baby and mother. Untreated syphilis increases the risk of spontaneous miscarriage and congenital infection which has lifelong impact. Syphilis is an opportunistic infection whose presence if not treated increases the risk of MTCT of HIV during pregnancy. The spirochete has been documented to bore through the placental barrier thereby promoting MTCT of HIV. All pregnant women should be screened for syphilis using available Treponema pallidum-based test.

6.4 Use of Antiretroviral Therapy for PMTCT

Pregnancy in HIV positive women is an absolute indication for ART. ART should be initiated in all HIV pregnant and breast-feeding women regardless of gestational age, WHO clinical stage and at any CD4+ cell count and continued for life.

ART should be initiated urgently in all pregnant and breastfeeding women, even if they are identified late in pregnancy or postpartum. This is the most effective way to prevent MTCT of HIV through the reduction of maternal viral load. Same day initiation of ART is preferred except in patients with AHD (see chapter 8).

6.4.1 Recommended first-line regimen for pregnant and breastfeeding women

In line with National recommendations, DTG-based regimen is the preferred first-line ART for HIV positive pregnant women.

Table 6.4 Recommended first-line ART Regimen in Pregnant and Breast-Feeding Women

Target Population	Preferred first-line regimens	Alternative first-line regimens
Pregnant or breastfeeding women	TDF + 3TC + DTG	TDF + 3TC (or FTC) + EFV ₄₀₀ AZT + 3TC + EFV ₄₀₀ TDF + 3TC (or FTC) + EFV ₄₀₀ AZT + 3TC + NVP TDF + 3TC (or FTC) + NVP ABC + 3TC + DTG.

In order to serve this preferred 1st line regimen, all women of reproductive age who can potentially be on DTG-based regimen during the 1st trimester of pregnancy should receive intensive counselling on the benefits and potential risks. This includes those already on the DTG-based regimen and those newly diagnosed.

6.4.2 ARV prophylaxis for the HIV exposed infant

All HIV exposed infants should receive ARV prophylaxis. Infants at low risk of acquiring HIV from their mothers should receive NVP only once daily for 6 weeks. While infants born to mothers with HIV who are at high risk of acquiring HIV should receive dual prophylaxis with AZT (twice daily) and NVP (once daily) for the first 12 weeks of life, whether they are breastfed or formula-fed. Antiretroviral prophylaxis should commence within 72 hours of birth.



Table 6.5 ARV Prophylaxis for Low-Risk Infants with NVP

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

ARV prophylaxis for high-risk Infants

High-risk infants are defined as those:

- Born to women with established HIV infection who have received less than four weeks of ART at the time of delivery
OR
- Born to women with established HIV infection with viral load >1000 copies/mL in the four weeks before delivery;
OR
- Born to women with incident HIV infection during pregnancy (this includes women diagnosed in labour) or breastfeeding;
OR
- Identified for the first time during the postpartum period, with or without a negative HIV test prenatally.

Table 6.6 ARV prophylaxis for High-risk Infants with NVP and AZT

Infant Age	Nevirapine daily dosing	Zidovudine daily dosing
Birth to 6 weeks (dual prophylaxis):		
Birth weight <2.5kg	10mg (1ml) once daily	10mg (1ml) twice daily
Birth weight ≥2.5kg	15mg (1.5ml) once daily	15mg (1.5ml) twice daily
6 weeks to 12 weeks	20mg (2ml) once daily	60 mg (6ml) twice daily

6.4.3 Cotrimoxazole Prophylaxis for HIV exposed infants

Cotrimoxazole prophylaxis is recommended for HIV-exposed infants from 6 weeks of age and should be continued until HIV infection has been excluded by an age-appropriate HIV test 8-12 weeks after complete cessation of breastfeeding.

Table 6.7 Dosing for Cotrimoxazole Prophylaxis in HIV-Exposed Infants and HIV-Infected Children

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



6.4.4 Antenatal Care for HIV positive pregnant women

When a woman is known to be HIV positive or is diagnosed as HIV positive during pregnancy, her obstetric and medical care will need to be strengthened and modified. Post-test counselling for HIV positive pregnant women should include information on the following:

- Disclosure, partner notification and testing
- Benefits of PMTCT intervention
- ART
- Nutrition
- Delivery
- Infant feeding and infant testing
- Importance of testing other children and benefits of paediatric ART
- The need for follow-up and adherence
- Continuous screening for active TB infections and TB Preventive Therapy (TPT) for those who do not have the infection (see NTBLCP guidelines)

All HIV positive pregnant women should be given optimal health care to ensure their safe delivery*. In a situation where the life of the woman is being threatened by the continuation of the pregnancy, consideration of termination of pregnancy should be in accordance with the provisions of the law. (see National Guidelines on the termination of pregnancy for legal indications 2018).

6.5 Management of HIV positive women in labour, delivery and within 72 hours of delivery

The current use of very efficacious ARVs, such as DTG assures that most women should be virologically suppressed by the time their delivery is due. Nonetheless, viral load estimation is recommended between 32-36 weeks of gestation to confirm this and enhance the preference of vaginal delivery. The management of Labour should therefore follow standard obstetric practice (see National obstetric protocol). Analgesia should be given in labour if required and epidural analgesia is not contraindicated (See Table 6.8 Interventions for safe vaginal delivery).

HIV positive women should not be isolated or treated differently from other women in labour. Supportive measures, empathy and caring attitudes by the health care provider are important for all women, particularly for HIV positive women who are concerned about their condition and risks of HIV transmission to their children. HIV positive pregnant women should not be stigmatized nor discriminated against by medical staff including those who may not have disclosed their status to their partner or family members.

Whenever possible, during labour, HIV positive women should have the option to have a companion of their choice who can provide supportive companionship. Where this is not possible, labour ward staff must be sensitive to the fears and concerns of the HIV positive mother.

*Note

- *Avoid invasive procedures such as chorionic villous sampling, amniocentesis or cordocentesis*
- *External cephalic version (ECV) may carry a risk of HIV transmission to the foetus and should therefore be avoided*



Table 6.8 Intervention for Safe Vaginal Delivery and Baby Care at Delivery

Interventions during labour/delivery	Care of the baby at delivery
<ul style="list-style-type: none"> ▪ Perform vaginal cleansing with warm (0.25%) chlorhexidine solution to prevent genital infections ▪ Avoid the following: <ul style="list-style-type: none"> - Frequent vaginal examinations - Episiotomies (unless absolutely necessary) - Instrumental delivery (unless when necessary) - Milking the cord before clamping - Clamp cord immediately after the baby is delivered and cut, under cover of wrapped gauze swab to avoid blood spurting. 	<ul style="list-style-type: none"> ▪ Wipe baby's mouth and nostrils with gauze at the delivery of the head. ▪ Handle all babies with gloves regardless of the mother's HIV status until blood and secretions are washed off ▪ Keep all babies warm soon after delivery ▪ Where suctioning is indicated, a mechanical suction unit (at a pressure below 100mmHg) or bulb suction should be used; mouth operated suction should be avoided ▪ Place the baby on the mother's body for skin-to-skin contact soon after delivery

6.5.1 Induction of Labour

As prolonged rupture of membranes is associated with increased risk of MTCT, careful assessment of the desirability of Caesarean Section (CS) rather than induction of labour is necessary. The use of prostaglandins or its analogues (misoprostol) can be considered.

6.5.2 Conduct of Delivery

Delivery should be conducted using standard practices and aseptic techniques while avoiding unnecessary trauma or prolongation of the second stage.

6.5.3 Vaginal Delivery

HIV positive women who are on ART should be allowed to deliver vaginally where there is no obstetric contraindication. Vaginal delivery remains the primary delivery mode of choice.

6.5.4 Caesarean Section (CS)

HIV infection on its own is not an indication for CS. Available evidence shows that elective CS for women on ART who have achieved viral suppression has no added advantage over vaginal delivery. Every pregnant woman including adolescents should be monitored closely.

Elective CS can be considered for HIV positive women before the onset of labour or rupture of membranes in cases where the woman is not on ART and/or where the maternal viral load is known to be high (> 1000 copies/ml). Available evidence shows that when elective CS is performed before the onset of labour or rupture of membranes, it reduces the risk of MTCT by greater than 50% as compared to vaginal delivery among women not on ART or with high viral load. These guidelines, however, do not recommend routine offer of elective CS for any group of HIV positive pregnant women.



Where CS is performed (elective or emergency) in HIV positive women, they should receive prophylactic antibiotics. If CS is performed after prolonged labour or prolonged rupture of membranes a longer course of antibiotics is recommended.

6.5.5 Specific Modification of Obstetric Care for HIV Positive Women

- Care should be individualized in special circumstances such as premature rupture of membranes (preterm and term) and ante-partum haemorrhage
- Use of the partograph: proper and consistent use of the partograph in monitoring the progress of labour will improve the management and reduce the risk of prolonged labour in all women
- Artificial rupture of membranes (ARM) is practised routinely in many settings although it should be reserved for women with abnormal progress of labour. Rupture of membranes of more than four (4) hours duration is associated with an increased risk of HIV transmission. Therefore, early ARM should be reserved for those with foetal distress or abnormal progress. ARM can be done if cervical dilatation is 7 cm or more.
- Instrumental delivery: forceps and vacuum delivery should be avoided as they have been shown to be associated with increased risk of MTCT. If it has to be done, vacuum with silastic cup is preferred
- Vaginal cleansing with chlorhexidine (0.25% solution) reduces the risk of puerperal and neonatal sepsis. It may also have some effect on HIV transmission where membranes are ruptured for more than 4 hours. The number of vaginal examinations should be kept to a minimum.
- Routine episiotomy has been shown to have no obstetric benefit; it should be used only for specific obstetric indications

6.6 PMTCT/TB integration services

6.6.1 Pregnant women with TB and HIV co-infection

Nigeria has the highest TB burden in Africa and the sixth highest in the world . TB causes one in three deaths among PLHIV, and co-morbidity of TB and HIV in pregnancy causes up to 40% mortality. These are the reasons why continuous screening of HIV positive pregnant women should be conducted throughout pregnancy to identify women who have active TB disease. Those with the disease should be given immediate access to TB treatment according to the NTBLCP Guidelines. Those without the disease should be placed on TB Preventive Therapy (TPT) irrespective of the duration of pregnancy.

Every ANC provider should be prepared and equipped to screen every pregnant woman for TB disease at each clinic visit, whether they are HIV positive or not. The screening of those who are HIV positive is even more important because not detecting the co-infection of HIV and TB in pregnancy is a leading cause of death among them.

At every ANC visit, the HIV positive pregnant woman should be asked if she has any of the major symptoms of TB; cough, fever, weight loss or night sweats (especially drenching type). Refer to Appendix 7 for Algorithm for Screening Adults and Adolescents Living with HIV for TPT.



At each visit, the pregnant or breastfeeding HIV positive woman should be identified to belong to any of the following three categories:

- 1) Has no cough but has other symptoms of TB – the patient should be referred to the medical officer to exclude TB (according to NTBLCP Guidelines); or
- 2) Has cough with other symptoms of TB – the patient is likely to have TB disease that requires confirmation with Xpert MTB/RIF assay, and subsequent management according to NTBLCP Guidelines; or
- 3) Has none of the four symptoms – the patient should be counselled and started on TPT irrespective of the gestational age of the pregnancy.

Tuberculosis Preventive Therapy (TPT) involves the administration of medicines (e.g. Isoniazid 300mg daily) for a minimum period of six months to a pregnant/breastfeeding PLHIV who does not have active TB disease. It is purposed to protect her from developing active TB disease.

Triple pill combination of Isoniazid + Cotrimoxazole + Pyridoxine is available and a good option for TPT among pregnant and postpartum women with HIV.

Management of Newborn of a Mother/ Household contacts with active TB

Infants born to mothers with active TB disease may become infected with TB. When infected, the infant may be asymptomatic or present with acute symptoms that are often non-specific.

Management depends on the peculiar situation, but evaluation should be at a referral centre

Some possible scenarios regarding infant born to mothers with TB include:

- i. If a mother is diagnosed with TB before the third trimester of pregnancy and taking TB medications with good adherence and is improving:
 - Examine the new born
 - o If symptoms and signs of TB are not present administer BCG
 - o If symptoms and signs of TB are present, evaluate further for TB disease
 - o If symptoms and signs suggest other disease(s), manage/refer as appropriate
 - Perform maternal HIV screening (if not done in ANC)
 - Refer all other household contacts for TB evaluation
- ii. If a mother is diagnosed with TB in the third trimester or shortly after delivery:
 - Evaluate for maternal PTB or EPTB disease including uterine TB
 - Perform maternal HIV screening (if not done in ANC)
 - Defer BCG vaccine administration for the newborn
 - Evaluate infant for congenital TB if the newborn is symptomatic or where mother is AFB positive or has untreated disseminated or partially treated TB/poor adherence.
 - Evaluate infant if mother is diagnosed with endometrial TB regardless of treatment status with:
 - o CXR
 - o Gastric aspirates for Xpert MTB/Rif and culture of 3 consecutive samples
 - o Abdominal ultrasound
 - Lumbar puncture for CSF Xpert MTB/Rif, LPA and cultures.
 - If TB disease is confirmed in the newborn, initiate TB therapy promptly in consultation with a paediatrician where available.



- If congenital TB is excluded, administer TPT for LTBI until age of 6 months
Perform Mantoux or IGRA test and if positive, reassess for active TB
- If active disease is ruled out, give TPT for LTBI
- If the Mantoux/IGRA is negative and TB disease is ruled out and mother/household contact becomes smear-negative, stop INH and administer BCG vaccine two weeks after stopping TPT
- Follow-up infant monthly.
- Refer all other household contacts for TB evaluation

6.6.2 Infection Control

- Separate the newborn from any active TB case in the household including the mother during the evaluation period
- Newborn should receive expressed breastmilk during period of isolation
- Mother/adult contact should wear a facemask while handling the baby
- Follow isolation precautions
- Once the baby is on INH and the mother or adult source is on continuation phase of treatment, no need to separate the baby, and the mother can again breastfeed the baby

6.6.3 Management of Newborn of a Mother/ Household contacts with LTBI

In a newborn whose mother or other household contact has LTBI:

- Treat the mother or household contact for LTBI (if mother or household contact are contacts of an infectious TB index case)
- Perform maternal HIV screening (if not done in ANC)
- Since a positive Mantoux/IGRA result is a marker for an unrecognised case of active TB in the household, evaluate all other household members for TB disease/LTBI.
- The newborn needs no special evaluation
- Administer BCG vaccine if no active case of TB is detected in the household

6.7 Care and Support of the HIV-Exposed Infant

6.7.1 Immediate and on-going care of the new-born of HIV positive women

The immediate care of the new-born follows standard practice regardless of the mothers' HIV status. At delivery all newborns should:

- Be handled with latex gloves until maternal blood and secretions are washed off
- Have their mouths and nostrils wiped with sterile gauze after delivery of the head
- Have the cord clamped immediately after the baby is delivered and avoid milking the cord
- Have the cord cut under cover of a lightly wrapped gauze swab to avoid blood spurting
- Be kept warm
- Be suctioned if indicated using a mechanical/electrical suction unit at a pressure below 100mmHg or bulb suction. Mouth operated suction is contraindicated
- Be cleaned with warm chlorhexidine solution or wiped dry with a towel or surgical cloth to remove maternal body fluids
- Place the baby on the mother's chest for skin to skin contact soon after delivery. In this position, the baby will latch on to one of the mother's breasts to initiate feeding unless the mother opted for an alternative feeding method
- Have vitamin K administered, ensuring injection safety



6.7.2 Infant feeding in the context of HIV

Appropriate infant feeding is critical to child survival because the natural food for infants is breast milk. In the context of maternal HIV infection, infant feeding can become complex. HIV infection may be transmitted through breast milk from mother to child and this risk approaches 5%-15% in the absence of any intervention. Breast milk substitute has the benefit of zero HIV transmission but carries with it the risk of increased morbidity and mortality from malnutrition, diarrhoea and pneumonia.

- It is recommended that mothers of HIV exposed infants breastfeed their babies exclusively for the first six (6) months of life.
- Adequate complementary feeds should be introduced at 6 months in addition to breast milk
- Breastfeeding complemented by adequate complementary and household foods should be continued till 12 months of age.

Mothers who breastfeed should be aware that:

- Mixed feeding (breast milk plus substitutes or foods) increases the risk of MTCT of HIV.
- ARV provided during labour and to the mother/infant pair throughout breastfeeding protects the infant from MTCT of HIV
- The risk of transmitting HIV to her infant during breastfeeding is higher in certain conditions such as:
 - When the woman is severely ill (by clinical or laboratory measures)
 - When she has mastitis, breast abscess, or other similar conditions
 - When the child has ulcers in the mouth
 - When breastfeeding is prolonged beyond 12 months of age

Breast milk substitute: Breast milk substitute means feeding infants who are receiving no breast milk with correctly prepared commercial infant formula that provides most of the nutrients' infants need until the age at which they can be fully fed on family foods. Unlike breastfeeding, it does not protect against infections. During the first 6 months of life, breast milk substitutes should be with a suitable commercial infant formula prepared hygienically. After 6 months the suitable commercial formula should be complemented with other foods.

6.7.3 Early Infant Diagnosis (EID)

All HIV-exposed infants should have DNA PCR testing or NAT at birth, 6 – 8 weeks of age, 9 months and 8-12 weeks after complete cessation of breastfeeding. If the baby is not being breastfed, DNAPCR testing should be done at birth and 6 weeks [Refer to figure 2.3].

6.7.4 Childhood Immunizations in the Context of HIV

HIV-exposed infants, children and adolescents with HIV should receive all vaccines under routine vaccination according to recommended national immunization schedule (NPI) as shown on Table 6.9. The WHO recommends that the certain situations require special considerations for HIV exposed and infected neonates, infants and children as outlined below.

6.7.4.1 Considerations for BCG vaccine

- Neonates born to women of unknown HIV status should be vaccinated as the benefits of BCG vaccination outweigh the risks



- Neonates of unknown HIV status born to HIV infected women should be vaccinated if they have no clinical evidence suggestive of HIV disease, regardless of whether the mother is receiving ART
- Neonates with HIV infection confirmed by early virological testing, BCG vaccination should be delayed until ART has been started and the infant confirmed to be immunologically stable ($CD4 > 25\%$)
- HIV-infected children on ART, those clinically and immunologically stable ($Cd4\% > 25\%$ for < 5 years or $CD4$ count ≥ 200 for > 5 years) should be vaccinated with BCG.

6.7.4.2 Considerations for Pneumococcal vaccines

- HIV-positive infants and pre-term neonates who have received their 3 primary vaccine doses before 12 months of age may benefit from a booster dose in the second year of life.
- Unvaccinated children aged 1–5 years at high risk for pneumococcal infection due to underlying conditions, such as HIV infection or sickle-cell disease, should receive at least 2 doses separated by at least 8 weeks.

6.7.4.3 Considerations for Measles vaccines

In the following situations, a supplementary dose of MCV should be given to infants from 6 months of age:

- Measles vaccine should be routinely administered to potentially susceptible, asymptomatic HIV infected children and adults, given the severe course of measles in patients with advanced HIV disease (AHD).
- Vaccination may be considered for those with symptomatic HIV infection if they are not severely immunosuppressed.
- Where there is a high incidence of both HIV infection and measles, an initial dose of Measles vaccine may be offered as early as age 6 months (recorded as MCV0).
- The 2 routine doses of Measles vaccines (MCV1 and MCV2) should then be administered to these children according to NPI schedule.
- An additional dose of Measles vaccine should be administered to HIV-infected children receiving HAART following immune reconstitution.
- If $CD4^+$ counts are monitored, an additional dose of MCV should be administered when immune reconstitution has been achieved, e.g. when the $CD4^+$ count reaches 20–25%.
- Where $CD4^+$ monitoring is not available, children should receive an additional dose at 6–12 months after initiation of HAART.
- A supplementary dose (recorded as MCV0) should be considered for infants known to be exposed (i.e. born to an HIV-infected woman) or soon after diagnosis of HIV infection in children older than 6 months who are not receiving HAART and for whom the risk of measles is high, with the aim of providing partial protection until they are revaccinated after immune reconstitution with HAART.

6.7.4.4 Considerations for Human Papillomavirus vaccine

- A 3-dose schedule (0, 1-2, 6 months) should be used for all vaccinations initiated ≥ 15 years of age, including in girls < 15 years known to be immunocompromised and/or HIV infected (regardless of whether they on HAART or not).
- It is not necessary to screen for HPV infection or HIV infection prior to HPV vaccination.



Table 6.9 National Routine Immunization Schedule

Minimum Target age	Vaccine	Dosage	Route of delivery	Site of administration
At Birth	BCG	0.05ml	Intradermal	Left upper arm
	OPV0	2 drops	Oral	Mouth
	Hep B	0.5ml	Intramuscular	Right thigh (antero-lateral aspect)
6 Weeks	Pentavalent (DPT, Hep B, Hib) 1	0.5ml	Intramuscular	Left thigh (antero-lateral aspect)
	Pneumococcal Conjugate Vaccine (PCV) 1	0.5ml	Intramuscular	Left thigh (antero-lateral aspect)
	OPV1	2 drops	Oral	Mouth
	Rota 1	1ml	Oral	Mouth
10 Weeks	Pentavalent (DPT, Hep B, Hib) 2	0.5ml	Intramuscular	Left thigh (antero-lateral aspect)
	Pneumococcal Conjugate Vaccine (PCV) 2	0.5ml	Intramuscular	Right thigh (antero-lateral aspect)
	OPV2	2 drops	Oral	Mouth
	Rota 2	1ml	Oral	Mouth
14 Weeks	Pentavalent (DPT, Hep B, Hib) 3	0.5ml	Intramuscular	Left thigh (antero-lateral aspect)
	Pneumococcal Conjugate Vaccine (PCV) 3	0.5ml	Intramuscular	Right thigh (antero-lateral aspect)
	OPV3	2 drops	Oral	Mouth
	IPV	0.5ml	Intramuscular	-Right thigh (anterolateral aspect, 25cm away from PCV3 site)
6 Months	Vitamin A	100,000 IU	Oral	Mouth
9 Months	Measles (MCV0)	0.5ml	Subcutaneous	Left upper arm
	Yellow fever	0.5ml	Subcutaneous	Right upper arm
	Meningitis	0.5ml	Intramuscular	Left thigh (antero-lateral aspect)
15 Months	Vitamin A	100,000 IU	Oral	Mouth
	Measles (MCV1)	0.5ml	Subcutaneous	Left upper arm



6.8 Special Considerations for Adolescent and Young Women in PMTCT

In Nigeria, an estimated 23% of women aged 15-19 years begun childbearing, of which 17% have had their first child and 5% are pregnant for their first child [4].

To achieve eMTCT in Nigeria, it is therefore very important to pay special attention to any adolescent girl presenting with pregnancy in a health facility. Efforts should be made to seek out the many pregnant adolescents in the community that do not present to health facilities for ANC and delivery. The needs of Adolescent Girls and Young Women (AGYW) in eMTCT are like those of an adult woman, the major difference is the fact that their vulnerabilities are heightened physiologically, emotionally and socially. Service delivery thus needs to be responsive to their needs across the 4 pillars of PMTCT as below:

Pillar 1:

Key concerns for AGYW include:

- Low knowledge of HIV transmission
- Low-risk perception
- Lack of awareness of prevention options/methods to reduce risks and/or skills to use them
- Late start of ANC

PMTCT programmes should make provision for integration of HIV prevention messages/information targeting AGYW at the community level and through women groups, mobile services, social media platforms, peer-groups, youth centres etc. Provider-facilitated screening, lay or peer counsellor, self-assessment (considering sexual risk, risky relationships, lifestyle risk and situational risk) are additional considerations required.

Pillar 2:

Considering the high rates of unintended pregnancies in AGYW, unsafe abortion among adolescents contributes to maternal mortality for this age group. The specific challenges faced by pregnant AGYW living with HIV include lack of knowledge of contraceptive options, life skills and self-efficacy, inaccessible and non-friendly services, lack of support for dual protection and limited access to contraceptives beyond condoms.

Specific considerations required include:

- FP/SRH information and life skills tailored for Adolescents living with HIV (ALHIV)
- Contraception and dual protection tailored to their needs integrated within HIV care, safe conception and pregnancy planning
- Support group-based approaches
- Community-based distribution and activities to optimize contraceptive options available to ALHIV

Pillar 3:

The major risk factors associated with vertical transmission in pregnant AGYW living with HIV are late start of ANC, delayed HIV testing and treatment initiation leading to suboptimal treatment outcomes.

Special considerations to be offered to AGYW include;

- Tailored approaches to case finding, earlier pregnancy testing, and early initiation on treatment for young mothers



- Active (facilitated) treatment referrals
- Facility and out-of-facility based models specifically serving young mothers

Pillar 4:

The major concern for AGYW living with HIV postpartum (post EID) is treatment continuity. Other concerns include SRH needs, age of young mother and spacing of children. The PMTCT program should ensure young mothers living with HIV receive:

- Longer-term care and support focused on retaining young mothers and children in care
- Integrated delivery of ARV, SRHR, FP
- Care involving men
- Family-based care
- Mental health screening and intervention approaches in the context of HIV care
- Integrated case management systems

6.9 Linkage of PMTCT with comprehensive HIV Treatment, Care and Support Services for Mothers and Infants

The follow-up treatment, care and support for HIV-positive mothers after delivery, the care of their HIV exposed infant and other children is important as part of the continuum of care package. A family-focused care should be the standard, this is designed to identify, engage and care for all HIV-positive family members, prevent new infections among family members at risk, raise family support and awareness within the HIV department at a health facility depending on the PMTCT service model.

PMTCT services can be offered in both public and private health facilities. Mother-infant pairs from health facilities with no capacity for comprehensive HIV care should be referred to comprehensive health services that provide HIV treatment, care and support by 6 weeks after delivery or at the earliest possible time thereafter. This is because it is important that treatment and care extend beyond the prevention of MTCT for women, infants, and family members at risk for or infected with HIV.

6.9.1 Engagement of Non-Formal Health Actors (NFHA) in the (referral and Linkage) of PMTCT services

There are human resource gaps in the health sector in Nigeria, while the implementation of the task shifting policy is ongoing, there is a need for a medium-term intervention in the form of engagement of the non-formal health actors in the delivery of PMTCT services in Nigeria.

Non-formal health actors play a critical role in maternal and child health care response. Their role in PMTCT will include the following:

1. Community sensitization and awareness creation
2. Community mobilization
3. HIV case identification
4. Peer influence for PMTCT service uptake
5. Referral and linkage including EID and immunization services
6. Tracking and contact tracing
7. Non-clinical care and support



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7. PREVENTIVE MANAGEMENT IN HIV

What's Inside:

7.1 Introduction.....	94
7.2 Pre-Exposure Prophylaxis.....	95
7.3 Post-Exposure Prophylaxis.....	99
7.4 Post-Sexual Assault Exposure Prophylaxis.....	102
7.5 Interventions for Key Populations.....	104
7.6 Condom availability and promotion for HIV programme.....	105
7.7 Gender-Based Violence.....	106
7.8 Management of Sexually Transmitted Infections (STIs).....	108
7.9 Prevention for Adolescent and Young Persons (AYPs).....	109

7.1 Introduction

Preventive management of HIV is a broad term for different interventions that protect individuals from contracting/transmitting HIV infection. It also includes interventions that protect the HIV positive individual from common opportunistic infections (OIs) including tuberculosis. It is recommended that all persons who come in contact with health services should be allowed access to any combination of HIV prevention interventions most suitable to their needs. The necessity for the simultaneous employment of different approaches and intervention types for the prevention of HIV infection has led to the concept of combination prevention.

7.1.1 Combination prevention / Minimum Prevention Package Intervention (MPPI)

The National Prevention Plan (NPP) 2010-2012 introduced the combination prevention approach, locally called the “Minimum Prevention Package Intervention” (MPPI), which are defined prevention intervention packages that address the drivers of the epidemic. The package emphasized dosage and intensity and promoted ownership and sustainability. The MPPI is defined as, “the strategic, simultaneous use of different classes of prevention activities (biomedical, behavioural, structural) that operate on multiple levels (individual, community and structural), to respond to the specific needs of particular audiences and modes of HIV transmission, and to make efficient use of resources through prioritization, partnership, and engagement of affected communities” (UNAIDS Prevention Reference Group Definition).

Behavioural interventions include a range of behaviour change communication activities designed to promote HIV risk-reducing and protective behaviours. These activities span, and often combine, mass media, community mobilization, advocacy and interpersonal communication (IPC) such as one-to-one or one-to-group educational activities. Social media and mobile technology are important tools that should be integrated into HIV prevention programmes and is particularly critical in informing about and providing prevention services to key populations.

Biomedical interventions include several medical interventions that can prevent HIV infection, reduce transmission, and/or reduce the risk of infection. These are interventions that directly influence the biological systems through which the virus infects a new host, such as preventing infection (e.g., male and female condoms), reducing transmission (e.g., ART as prevention), or reducing acquisition/infection risk. These interventions include correct and consistent use of male and female condoms and lubricants, HIV testing and counselling, PMTCT, STI diagnosis and treatment, ARV for PrEP and PEP, microbicides, and vaccines.

Structural interventions are strategies recommended for change in social, legal, political and economic factors that increase vulnerability to HIV. These interventions address stigma and discrimination, legal and human rights violations, gender-based violence and inequality. They are also designed to support income-generating activities, promote the integration referral, adherence and retention in health services.

Effective implementation of combination prevention in the country will require political commitment and leadership, programme coordination and management, partnerships and collaboration, adequate HR, advocacy, community and social mobilization, functional commodity supply management systems, M&E and research.



7.2 Pre-Exposure Prophylaxis

Pre-exposure prophylaxis (PrEP) is the pre-emptive use of ARVs to reduce the probability of HIV negative individuals acquiring HIV infection, especially in persons who are deemed at substantial risk.

Rationale: A systematic review and meta-analysis of oral PrEP trials using TDF-based ARV drug combinations demonstrated that daily oral PrEP is effective in reducing the risk of acquiring HIV infection. The level of protection did not differ by age, sex, mode of acquiring HIV (rectal, penile or vaginal exposure).

7.2.1 Criteria for PrEP initiation

The criteria for PrEP initiation are as follow:

- HIV seronegative
- No suspicion of acute HIV infection
- A substantial risk of HIV infection
- Urinalysis to rule out proteinuria
- Willingness to use PrEP as prescribed

7.2.2 PrEP minimum package

The PrEP minimum package of services includes:

1. HIV testing and counselling, including index testing, self-testing and couple testing
2. eGFR* and monitoring of kidney function
3. Hepatitis screening
4. Comprehensive HIV prevention including risk-reduction counselling and condom/lubricant distribution
5. Assessment of need for contraceptives and/or pregnancy testing
6. Sexually Transmitted Infection screening, diagnosis and treatment
7. Screening for NCDs, such as diabetes mellitus and hypertension
8. Referral for services for gender-based violence, legal aid services, or mental health issues identified during counselling
9. Adherence assessment and counselling, help identify possible barriers to good adherence

7.2.3 PrEP effectiveness

When used as directed, PrEP can reduce the risk of HIV among at-risk individuals by more than 90%. PrEP can be more effective if it is combined with other HIV prevention mechanisms such as condom use, drug abuse treatment and harm reduction services for people living with HIV.

7.2.4 Approved drugs for PrEP

The preferred drug regimen for PrEP is the combination of daily TDF + FTC / TDF + 3TC. The alternate regimen for PrEP is a daily dose of TDF.

* Urinalysis should be offered as baseline screening when eGFR results are delayed, or when eGFR is not available in the health care facility. Waiting for eGFR result should not delay initiation of PrEP. However, if urinalysis is not normal, PrEP initiation should be delayed until creatinine results come back. eGFR should be performed at 6 months, followed by annual screening.



7.2.5 PrEP administration guidance

PrEP must be prescribed by a healthcare professional who has completed training on the National Guidelines for the use of ARVs for PrEP. Daily PrEP should be used during periods of substantial risk of HIV acquisition and can be stopped during periods of low or no risk. The category of individuals prioritized for PrEP are listed below;

1. Sero-discordant couples/partners
2. Sex workers
3. People who inject drugs (PWID)
4. Individuals who engage in anal sex on a prolonged and regular basis
5. Sexually exposed adolescents and young people

7.2.6 Daily PrEP and Event-Driven PrEP

There are two options for the dosing frequency of PrEP: daily dosing and event-driven dosing. Daily dosing is recommended for men, women and transgender people. Event driven PrEP is ONLY recommended for MSM.

Daily dosing is the provision of PrEP given as 1 tablet daily. People must take their PrEP for 7 consecutive days before drug levels are high enough to prevent HIV infection. Daily dosing with a single pill should be sustained throughout the period of HIV risk for as long as substantial risk is ongoing. Those wanting to stop PrEP should continue taking the single pill daily dose for 28 days after the last HIV exposureas

Event-driven PrEP (ED-PrEP) is only recommended for men who have with men. The first dose of 2 pills (TDF/FTC or TDF/3TC), called the loading dose, should be taken between 2 and 24 hours prior to exposure. The second dose (after sex) is a single pill taken 24 hours after the first dose. The third dose is a single pill taken 24 hours after the second dose. ED-PrEP has been described as “2+1+1” dosing. This 2+1+1 dosing is the only ED-PrEP regimen that has been demonstrated to be effective. The 2+1+1 dosing describes ED-PrEP when an isolated act of sex is involved. If more sex acts take place over the following days, a single PrEP pill can be continued daily for as long as sex continues, with a single daily pill taken for the next two days after the last sex act.

7.2.7 PrEP for Serodiscordant Couples

HIV transmission occurs among sero-discordant couples. Where additional HIV prevention choices are needed for sero-discordant couples, daily oral PrEP may be considered as a possible additional intervention for the uninfected partner. PrEP can be discontinued by the uninfected partner when the infected partner has achieved viral load suppression and are adhering to their ARVs.

7.2.8 Settings Where PrEP can be Accessed

PrEP implementation can be integrated into any setting that meets the conditions for initial evaluation and initiation including:

- One-Stop-Shop (OSS) for KPs (including community and facility settings)
- HIV clinics
- ANC/MNCH/RH and STI clinics
- Community settings meeting the criteria for initial client assessment and evaluation e.g. integrated prevention centres
- Adolescent and youth-friendly outlets.



Table 7.1: Services provided by cadre

Human resource cadre	Services Provided
Doctors	Risk screening, clinical eligibility assessment, counselling, initiation, prescriptions and follow up reviews
Nurses	Counselling and refills
Pharmacists	Dispensing PrEP drugs, counselling on adherence and side effects
Laboratory Scientists/Technicians	Conducting laboratory tests and providing results
HTS Counsellors	Counselling and risk screening, laboratory samples (if trained as a phlebotomist)
Community and facility support cadres (i.e. expert clients, Outreach Workers, peer educators)	Demand creation, health education, counselling and risk screening, appointment reminders and follow up

7.2.9 Contraindications for PrEP

PrEP should NOT be provided to people with:

- HIV positive test on the day of PrEP initiation using the Nigeria national HIV testing algorithm
- Known exposure to HIV in the past 72 hours (requires PEP)
- Signs of Acute HIV Infection (AHI) (Box 7.1) (Defer PrEP and consider PEP counselling for clients with a history of high-risk unprotected sex in the past three days, even in the absence of symptoms of AHI).
- A client unable to commit to PrEP adherence, and to attend scheduled PrEP visits
- Drug allergy to TDF or FTC
- eGFR < 60 ml/min
- Concurrent nephrotoxic medication

Box 7.1. Sign and symptoms of AHI

- Fever 38.3°C or 101 F
- Swollen lymph glands
- Fatigue/Malaise
- Skin rash
- Headache
- Sore throat
- Muscle or joint pains
- Nausea or vomiting
- Diarrhoea
- Sweats

7.2.10 Client follow-up

Once on PrEP, clients should return after one month to assess and confirm HIV-negative test status, assess for early side effects, discuss any difficulties with medication adherence, and any other client concerns. Follow-up should be every 3 months from the initiation visit. Table 7.2 outlines the procedures for each of the follow-up visits.



Table 7.2. Follow-up visits procedures

Visit	Procedure
Visit 2 (Month 1) Counsellor/Clinician Visit	<ul style="list-style-type: none"> • Safety monitoring clinical assessment • HIV testing and counselling • Adherence and risk reduction counselling • Offer HBV vaccination if available and HBsA gnegative (follow HBV vaccination schedule complete series)
Visits for Months 3, 9, 15	<ul style="list-style-type: none"> • HIV testing and counselling • HIV risk assessment for PrEP continuation • Adherence and risk reduction counselling • Assess for adverse drug reactions
Visits for Months 6, 12, 18, 24, 36	<ul style="list-style-type: none"> • HIV testing and counselling • Creatinine and eGFR * • HIV risk review and assessment for PrEP continuation • Adherence and risk reduction counselling • Assess for adverse drug reactions
Unscheduled visits: as per need.	<ul style="list-style-type: none"> • Determine if the reason for the visit is PrEP related or not e.g adverse events • Assess and manage the reason for the unscheduled visit according to national guidelines e.g. acute or chronicillnesses, worsening existing conditions • Provide HIV risk reduction and PrEP adherence counselling • Agree on follow up schedule
During every visit	
Remind PrEP users on the dosage of PrEP needed to achieve adequate levels of the ARVs in tissues to be effective and importance of adherence. During these window periods, safer sex practices should be encouraged (including abstinence and condoms).	
Management of clients with inconclusive HIV test result during follow-up visits	
For non-pregnant or lactating clients:	
<ul style="list-style-type: none"> • Discontinue PrEP • Follow the national HIV testing algorithm for clients with an inconclusive result. • Only after a confirmed HIV negative result, can the client continuewith PrEP • Offer risk reduction counselling and strongly emphasize the importance of condom use during the period with inconclusive HIV test results (e.g. new infection is highly infectious) 	

*creatinine clearance should be performed at 6 months, followed by annual screening.



7.2.11 PrEP discontinuation

Ideally, clients should inform their service provider when they want to discontinue PrEP. Health care workers should discuss the options of when to discontinue PrEP with their clients. PrEP can be stopped for the following reasons:

- Client request
- Positive HIV test (clients who seroconvert while on PrEP should be linked to care and initiated on ART in line with national guidelines)
- Safety concerns, such as eGFR <60mls/min
- No longer at substantial risk
- Persistent side effects

Documentation for persons on PrEP should be as rigorous as for person who are on ART. Upon discontinuation of PrEP, the following information should be documented:

- HIV status at the time of discontinuation
- Reasons for discontinuation

7.3 Post-Exposure Prophylaxis

Post-Exposure Prophylaxis (PEP) is the short-term use of ARVs to prevent HIV infection in persons accidentally exposed to a potential risk of acquiring HIV infection. This applies usually to accidental exposure to HIV either in the course of legitimate work as could occur among health workers who are vulnerable to needle stick injuries or contact with infectious body fluids. It also applies to sexual assault victims especially in cases where the HIV status of the perpetrator cannot be readily determined.

It is recommended that PEP for HIV infection should be offered and initiated as early as possible in all individuals with an exposure that has the potential for HIV transmission, as soon as possible within 72 hours.

7.3.1 Post-Exposure Prophylaxis for Occupational HIV exposure

Needlestick injuries are major risks for HIV transmission in the workplace. The risk of transmission is greatly increased if associated with deep injury, visible blood on the sharp instrument, procedures involving a needle placed in the source patient's blood vessel, virally unsuppressed patients and terminal illness in the source patient.

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

- Needlestick injury or injury with a sharp object that has been used on an HIV positive patient
- Mucosal exposure of the mouth, eye, or nose by splashing infectious body fluids
- Broken skin exposed to blood, blood stained body fluids, or other infectious body fluids (breast milk, genital secretions, cerebrospinal, amniotic, peritoneal, synovial, pericardial and pleural fluids).

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

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

- Do not squeeze, suck or rub the injury site



- Allow blood or secretion to flow freely
- Wash exposed area well immediately with soap and running water or antiseptic solutions such as 2% polyhexidine or 70% glutarylaldehyde.
- After a splash to the eye or any other mucous surface, irrigate/rinse the exposed area immediately with water (preferably running water) or normal saline
- Report the exposure to a senior member of staff, supervisor or the PEP officer
- If eligible, give ARV drugs recommended for PEP immediately possibly within 1 hour and at the latest within 72 hours of the exposure (persons presenting after 72 hours of the exposure should also be considered for PEP).

7.3.2 Evaluation for Post-Exposure Prophylaxis

Evaluating exposed person's eligibility for HIV PEP involves assessing the following:

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

7.3.4 Determination of Risk and ARV drugs for PEP

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

Low Risk:	High Risk:
<ul style="list-style-type: none"> ▪ Solid needle or superficial exposure on intact skin ▪ Small volume (drops of blood) on mucous membrane or non -intact skin exposures ▪ Source is asymptomatic or viral load <1000 copies/ml 	<ul style="list-style-type: none"> ▪ Large bore needle, deep injury, visible blood on device, needle in patient artery/vein ▪ Large volume (major blood splash on mucous membrane or non -intact skin exposures) ▪ Source patient is symptomatic, in acute seroconversion and has high viral load (> 1000 copies/ml)

7.3.5 Recommendations for PEP

- Immediately after exposure to HIV, all exposed individuals should take a 3drug ARV combination for PEP.
- The chosen regimen should be continued for 28 days or until the result of the HIV test for the source patient is known to be negative.
- Enhanced adherence counselling and support (psychosocial, mental, etc.) should be provided for PEP users
- If the preferred regimen is not available, it is better to administer an alternative regimen than to wait.



Table 7.3 Recommended actions following HIV testing in PEP

If the source person is HIV negative	<ul style="list-style-type: none"> ▪ No PEP is necessary for the exposed health worker unless there is suspicion that the source is newly infected and in the window period.
If the exposed health worker is HIV positive	<ul style="list-style-type: none"> ▪ No PEP is necessary ▪ The health worker should be referred for further counselling and initiation of ART/ long - term management
If the health worker is HIV negative and the source patient is HIV positive	<ul style="list-style-type: none"> ▪ Give ARV drugs for four weeks; ▪ Repeat health worker's HIV test at 3 and 6 months after the initial test. ▪ Should the health worker seroconvert during this period, provide appropriate care and counselling; refer for expert opinion and long-term management.
If it is not possible to determine the HIV status of the source patient	<ul style="list-style-type: none"> ▪ Assume that the source patient is positive and proceed according to the guidelines above

7.3.6 Recommended Drug Combinations for PEP

It is recommended that a three-drug ARV regimen should be used for PEP. TDF + 3TC (or FTC) is recommended as the preferred backbone regimen for HIV PEP for adults and adolescents. DTG or EFV are recommended as the preferred third drug for HIV PEP for adults and adolescents. However, where available, LPV/r, RAL, or DRV/r, can be considered as alternative options. If the source person is known to be on a second-line regimen or has failed first-line regimen, the preferred prophylaxis regimen should be "a second-line regimen". If the source person on the second-line regimen has a detectable viral load, the prophylaxis should be a third-line regimen. Children above 30kg should receive TDF/3TC/DTG or EFV. In children <10 years or less than 30kg, AZT + 3TC is recommended as the preferred backbone regimen for HIV PEP. Alternative backbone regimen for this age category will include ABC + 3TC or TDF + 3TC (or FTC). DTG is recommended as the preferred third drug for HIV PEP for children < 10 years. An age-appropriate alternative regimen can be identified from LPV/r, ATV/r, RAL, DRV/r.

Table 7.4 Recommended Drug Combinations for Post-Exposure Prophylaxis

Recommended 3-Drug ARV Combinations
<ol style="list-style-type: none"> 1. TDF/3TC/DTG (Preferred) 2. TDF/3TC/EFV or AZT/3TC + EFV <p><i>Nevirapine should never be used for PEP as the risk of fatal hepatotoxicity outweighs the risk of HIV infection.</i></p> <p><i>Where DTG and EFV is contraindicated, either of the 2 drug combinations may be combined with LPV/r, RAL, or DRV/r</i></p>

Note:

- *NVP should not be used in children above the age of 2 years.*
- *A 28-day prescription of antiretroviral drugs should be provided for HIV PEP following initial risk assessment.*
- *Enhanced adherence counselling is suggested for individuals initiating HIV PEP*



In areas of high HIV incidence, a significant number of HIV positive individuals may be in the 'window period' of acute infection and test antibody negative. A high level of suspicion for acute HIV infection should therefore be maintained and PEP continued if there is suspicion that the source patient has recently been infected with HIV.

Guidance should be given on risk reduction measures until the exposed person is known to be HIV negative. It is important to consider the risk of exposure to viral hepatitis when evaluating persons for post-exposure management.

Table 7.5 Recommended schedules of investigations following HIV exposure

Period	Recommended Investigations
Baseline	HIV, HBV, HCV screening, FBC, LFT, Renal function test
Two weeks	FBC, Liver function test, Renal function test
Six weeks	HIV screening
3 months	HIV screening
6 months	HIV screening

7.4 Post-Sexual Assault Exposure Prophylaxis

The possibility of HIV exposure from sexual assault should be assessed at the time of the post-assault examination. The benefit of PEP in the prevention of HIV infection should be discussed with the assault survivors if the risk of HIV exposure exists. The likelihood of the assailant being HIV infected, the time that elapsed after the event and any exposure characteristics that might increase the risk for HIV transmission will impact the medical recommendation for PEP and the assault survivor's acceptance of the recommendation. When an assailant's HIV status is unknown, the following factors should be considered in evaluating the level of risk:

- Occurrence of vaginal or anal penetration
- Occurrence of ejaculation on mucous membranes
- Involvement of multiple assailants
- Presence of mucosal lesions on the assailant or survivor
- Other characteristics of the assault, survivor, or assailant that might increase the risk for HIV transmission

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

- Benefits and known toxicities of ARV;
- Follow-up that will be necessary
- Benefit of adherence to recommended ARV dosing
- Early initiation of PEP to optimize potential benefits (as soon as possible after and preferably within 72 hours after the assault)



7.4.1 Recommendations

- A three-drug ARV regimen should be used for post-sexual exposure PEP (see ART Section)
- As with all cases of sexual assault, it is important to arrange for continuous counselling and support (psychosocial, mental and legal, etc.) for the survivor
- Emergency contraception should also be provided if indicated

7.4.2 Clinical considerations

- Assessment of HBV infection status should not be a precondition for offering TDF-, 3TC- or FTC- based PEP, but people with established chronic HBV infection should be monitored for hepatic flare after PEP discontinuation. Among people with unknown HBV status and where HBV testing is readily available, people started on TDF-, 3TC- or FTC-based PEP should be tested for HBV to detect active HBV infection and the need for ongoing HBV therapy after discontinuing PEP
- NVP should not be used for PEP among adults, adolescents and older children because of the risk of life-threatening adverse events associated with HIV-negative adults using this drug
- DTG or EFV is widely available as a third agent, as this drug is used as part of the preferred first-line ART regimen. EFV is well tolerated for treatment but has limited acceptability for use as PEP, as there are concerns about giving a drug associated with early neuropsychiatric adverse events to HIV-negative people who may have anxiety related to HIV exposure
- NVP has been widely used to prevent the transmission of HIV from mothers to HIV uninfected infants and should be used for preterm babies or infants younger than two weeks of age where LPV/r oral liquid cannot be used. However, because the NV toxicity profile beyond infancy remains unclear, its use should be avoided in children older than 2 years of age
- Flow chart for the provision of care for a sexually assaulted child is shown in figure 7.1



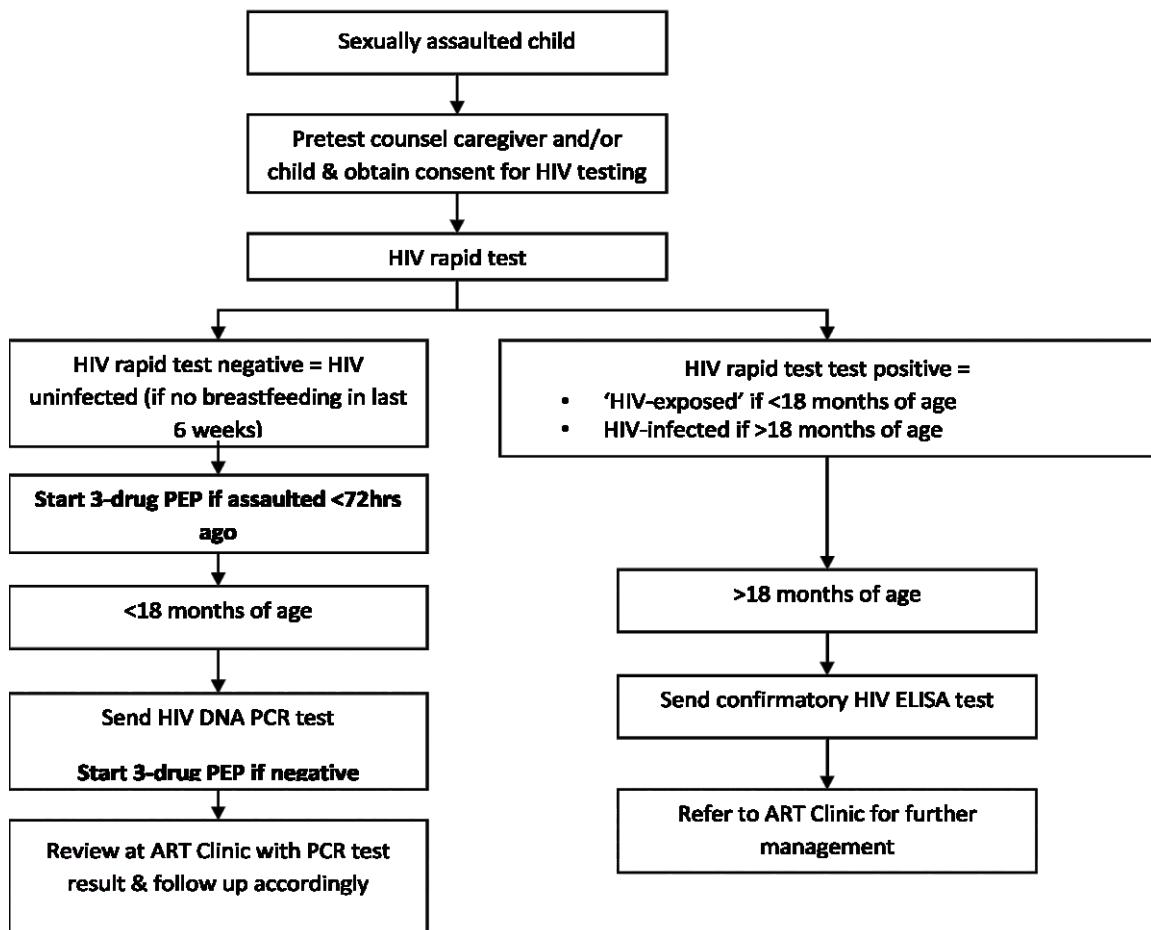


Figure 7.1. Algorithm for screening of sexual assault in children

7.5 Interventions for Key Populations

Key Populations (KPs) are defined groups who, due to specific high-risk behaviours, are at increased risk of HIV irrespective of the epidemic type or local context. Also, they often have legal and psycho-social issues related to their behaviours that increase their vulnerability to HIV. The KPs are important to the dynamics of HIV transmission. In Nigeria, the various KPs makeup only 3.4% of the population, yet account for around 32% of new HIV infections. Without addressing the needs of key populations, a sustainable response to HIV will not be achieved.

7.5.1 Recommended comprehensive prevention package of Interventions for key populations

A combination of interventions is required to respond effectively to HIV among KPs. The following comprehensive package of interventions is recommended to assist programming for HIV prevention among KPs.

1. HIV prevention
 - Provision of condom for correct and consistent use with compatible lubricants.
 - PrEP should be offered as an additional prevention choice (see PrEP section for guidance).
 - PEP should be available to all eligible people (see PEP section for guidance).



2. HIV Testing Services
 - HTS including HIVST and index testing should be routinely offered to all Kps.
3. Treatment as Prevention
 - Key populations living with HIV should have the same access to antiretroviral therapy (ART) as achieving viral suppression is also key to HIV prevention.
 - All pregnant women from KPs should have access to PMTCT services (see PMTCT section for guidance)
4. Prevention, diagnoses and treatment of TB, viral hepatitis, cervical cancer screening, STIs etc. (see the relevant sections for guidance)
5. Routine screening and management of mental health disorders should be provided to KPs
6. Harm reduction for PWID: These include;
 - Improving access to sterile injecting equipment through needle and syringe programme
 - Ensuring that KPs dependent on opioids should be offered and have access to Opioid Substitution Therapy (OST)
 - Community distribution of Naloxone for overdoes management
 - Ensuring that KPs using harmful alcohol or other substance should have access to evidence-based interventions

7.6 Condom availability and promotion for HIV programme

Universally, condoms are pivotal in stemming the tide of the spread of HIV and STIs among any population. This is because they are the only known device that protects against STIs including HIV. Condom programming for key and general populations with latex condoms, compatible with lubricants, substantially reduces the risk of HIV infection by 94% provided the condoms are used correctly and consistently. Condoms have in addition, contraceptive benefits hence their popularity as a product for dual protection (against unintended pregnancies and STIs including HIV).

However, challenges with affordability, accessibility, availability, acceptability, perception including breakage and consistent and correct usage, have created a gap between the number of condoms distributed and the amount needed for populations to protect themselves from HIV and STIs. Improved condom programming can help close the gap in condom supply and use to reduce the spread of HIV and other STIs.

7.6.1 Elements of Condom Programming

Condom programming is a strategic approach to ensure that sexually active persons at risk of HIV and STIs are motivated to use condoms, have access to quality condoms, and can use them consistently and correctly. Thus, condom programming must address both the supply of and demand (see figure 7.2) for good quality condoms as well as the environment, which is the critical operating framework through which access to and use of condoms is ensured.



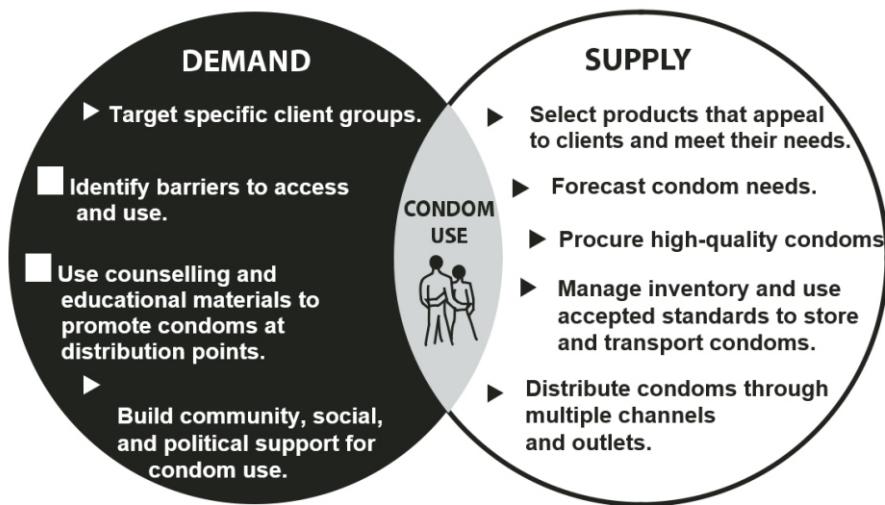


Figure 7.2. Elements of condom programming

7.6.2 Key Steps in Condom Programming

The goal of condom programming is to ensure that the sexually active persons at risk of STIs are motivated to use condoms, have easy access to quality condoms and can use them consistently and correctly. It addresses the supply of and demand for condoms as well as the political, socio-cultural, and economic environment. (see figure 7.3 below for the key steps)

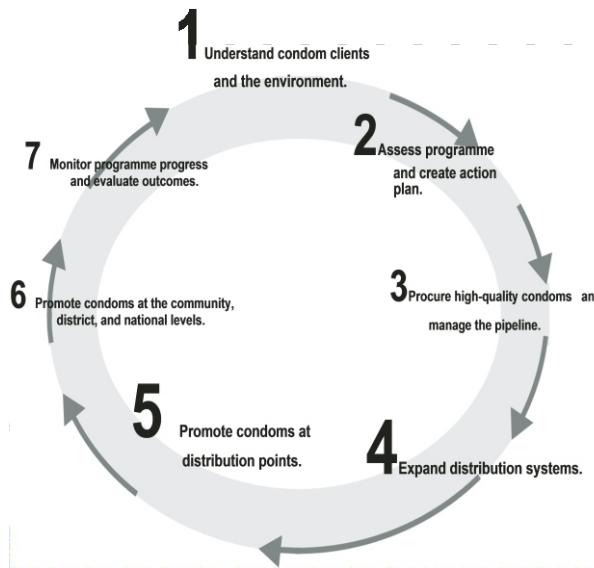


Figure 7.3. Seven steps for condom programming for HIV prevention

7.7 Gender-Based Violence

Gender-Based Violence (GBV), is a problem throughout the world, occurring in every society, country and region. When individuals or groups do not “fit” established gender expectations/norms they often face stigma, discriminatory practices or social exclusion – all of which adversely affect health and increase vulnerability to HIV.



Ignoring gender-related barriers and its integration into HIV programs can negatively affect prevention efforts, service utilization, adherence and health outcomes for everyone. In line with this, all health care service providers should ensure the following is implemented in health care settings:

7.7.1 GBV Prevention

- Prevent risk before it begins by using evidence-based and age-appropriate approaches to prevent sexual violence and any form of coercive/forced/non-consensual sex, prevent early sexual debut, and support for healthy choices.
- Implement activities to prevent Intimate Partner Violence (IPV), sexual violence, and provide training of HCWs to deliver evidence-based violence prevention and how to respond should participants in GBV prevention activities disclose an experience of violence.

7.7.2 GBV Case Identification and First-line Support Recommendations

Conduct routine clinical inquiry to actively identify cases of GBV in the following settings:

- Care & Treatment,
- ANC/PMTCT,
- Adolescent friendly services
- PrEP and PEP services
- HTS

7.7.3 GBV Clinical Response Recommendations

Provide comprehensive and age-appropriate clinical post-GBV care that meets the expressed need of survivors. Clinical care should include the following:

- Providers identify survivors via routine and/or clinical enquiry during ART initiation and routine clinical care.
- Survivors offered support and provided with or referred to GBV clinical care interventions that help improve the mental health and psychosocial functioning of survivors.
- Ensure that all sites delivering post-violence clinical care services provide the full minimum package of post-violence care, including:
 - o Treatment of injuries
 - o Rapid HIV testing and counselling with linkage to treatment as needed
 - o STI testing/screening and treatment
 - o Post-exposure prophylaxis (PEP)
 - o Emergency contraception
 - o Counselling (first-line support)
 - o Referral to non-clinical GBV response services, such as longer-term psychosocial support, child protection, police, legal aid, shelter, economic empowerment, etc.
- Improve the quality of post-violence clinical care services in care and treatment sites by strengthening HIV/GBV health systems and service delivery

GBV considerations: Providers only ask about violence in a private setting, ensuring confidentiality, which requires space, thus an audio-visual private room/space should be considered and provided accordingly.



7.8 Management of Sexually Transmitted Infections (STIs)

Globally, STIs / Reproductive Tract Infections (RTIs) remain a very important public health challenge, and with the emergence of the HIV pandemic, it has become imperative for a more coordinated approach to reduce its burden.

A syndromic approach to the management of STIs/RTIs makes treatment accessible and affordable to a majority of the population because trained workers at all levels can use it as this approach does not require the use of sophisticated equipment, but a flow chart of symptoms presented by the patient and signs elicited by the health care provider is used for treatment.

The goal of STIs/RTIs syndromic management is not only to cure the patient but also to break the chain of transmission, avoid complications, patient education, partner treatment, provision of condoms, diagnosis and prescription.

7.8.1 Objectives of STIs/RTIs management

- To make a correct diagnosis based on appropriate clinical assessment
- To provide proper antimicrobial therapy, obtain cure, decrease infectivity and avoid complications.
- To reduce and prevent future high-risk behaviour
- To treat sexual partners in order to break the transmission chain.

7.8.2 Components of syndromic management

- Building the capacity of the health care provider
- Provision of counselling for STIs/RTIs
- Identifying /treating all STIs/RTIs syndromes
- Conducting risk assessment
- Specific antimicrobial therapy
- Partner notification
- Prevention of ophthalmia neonatorum
- Prevention of mother-to-child transmission of HIV
- Referral to secondary/tertiary Healthcare levels for further management.
- Data collection/management

7.8.3 Prevention of STIs/RTIs

Sexually transmitted infections (STIs) and RTIs can be prevented by the following measures:

- **Primary preventive measures:** abstinence, faithful sexual relationships, correct and consistent use of condoms and vaccination
- **Secondary preventive measures:** encouraging STI care-seeking behaviour, rapid and effective treatment and case finding
- **Tertiary preventive measures:** limitation of disability and rehabilitation including psychosocial support

There is the risk assessment for all patients presenting with symptoms of STIs and anyone who falls into two or more of the categories listed in the assessment is considered to be “risk assessment positive” and is assessed based on the flow charts that fits his/her symptoms. Below are flow charts that describe the steps to be taken in managing a patient with STI using the syndromic approach.



7.9 Prevention for Adolescent and Young Persons (AYPs)

Adolescents and young people are persons between 10 and 24 years of age. This age is characterized by rapid physical growth and development as well as sexual maturation. It is a period that can be marked by the need to try out new things such as sex, experiment with injectable drugs as well as other drug types. As a result of engaging in these high-risk behaviours, there has been an upsurge in the prevalence of HIV and other STIs in AYPs. The low social and economic status of most AYPs complicates the situation.

AYPs make up 31% of the entire population of Nigeria. Data from the Nigeria AIDS Control Agency (NACA) put the prevalence of HIV at 4.2% for young people aged 15 to 24. Forty percent of all reported new cases of HIV occur in young persons aged 15 to 24 which is the highest when compared to other age groups.

In Nigeria, there are social and contextual factors that make AYP vulnerable to HIV infection. Identification of the prevailing sociocultural factors in a particular community and designing interventions to address them is key to success. The drivers of the epidemic pertinent to Nigerian AYP include multiple and concurrent sexual partnerships, intergenerational sex, sexual coercion, low-risk perception, and transactional sex. Married adolescents and young women may also be exposed to increased risk of HIV infections from their husbands. Exacerbating high-risk behaviours are socioeconomic conditions like pervasive gender inequalities and gender-based violence, poverty, unemployment or underemployment, and widespread HIV-related stigma and discrimination. There are also a number of traditional, religious, and cultural factors that increase the risk of HIV infection and other sexual and reproductive health (SRH) morbidities among young women and girls such as child and forced marriage, female genital mutilation, and widow inheritance. In addition, ineffective STI programming, poor integration of HIV and SRH services are other factors [5].

HIV program for AYPs in Nigeria has a goal to reduce new HIV infections and should be delivered as a package of interventions for AYP in line with Minimum Prevention Package Intervention (MPPI).

7.9.1 Harm Reduction program

Harm Reduction (HR) is a range of public health policies and practices that are designed to lessen the negative psychosocial and/or physical consequences associated with various human behaviours, both legal and illegal. As relates to HIV, drug-related harms include overdose, drug-related deaths, blood-borne infections such as HIV, HCV, HBV and bacteremia/sepsis. HR programming in Nigeria include services such as:

- Needle and syringe programmes (NSPs).
- Opioid substitution therapy (OST) and other evidence-based drug dependence prevention services
- Use of own snorting straws and crack pipes
- Peer interventions to reduce the incidence of viral hepatitis and HIV
- Use of motivational techniques to increase behavioural change
- Distribution of condoms and lubricants
- IEC materials for PWID
- Testing and management of STI, HIV, HCV, HBV



- Vaccination, diagnosis and treatment of viral hepatitis
- Prevention, diagnosis and treatment of other opportunistic infections (including HIV and tuberculosis).

If scaled -up, these evidence-based harm reduction-oriented practices are known to reduce transmission of blood-borne illnesses and injection related infections among PLHIV, as well as prevent fatal drug-related overdose and other harm associated with risky behaviours.

7.9.2 Cervical Cancer Prevention

Cervical cancer is preventable and curable if diagnosed and treated early. The most effective strategy available for primary prevention of cervical cancer is the vaccination against the HPV aetiological agent of cervical cancer. HPV vaccines are indicated for pre-pubertal girls and offer most hope to effectively stop cervical cancer epidemic in Nigeria. HIV positive children can also receive HPV vaccination because available evidence has shown that they develop sufficient immune response.

Women living with HIV (WLHIV) have a higher risk of pre-cancer and invasive cervical cancer. The risk and persistence of HPV infection increases with low CD4+ cell count and high HIV viral load. Cervical cancer screening leads to early detection of precancerous and cancerous cervical lesions that will prevent serious morbidity and mortality. WLHIV should be screened every three years for evidence of precancerous changes in the cervix, regardless of whether they are taking ART or their CD4+ cell count or viral load. All WLHIV should be screened for cervical cancer regardless of age. Immediate management for precancerous and cancerous lesions should be provided. For further detail, refer to the National Cervical Cancer Prevention and Control Policy.



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Chapter 7

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8. ADVANCED HIV DISEASE, OPPORTUNISTIC INFECTIONS, AND CO-MORBIDITIES

What's Inside:

8.1 Advanced HIV Disease.....	113
8.2 Other Opportunistic Infections (OIs).....	126
8.3 Preventing Opportunistic Infections (OIs).....	126
8.4 HIV-Related Co-Morbidities.....	146
8.5 Mental Health and HIV.....	146

8.1 Advanced HIV Disease

8.1.1 Introduction

The morbidity and mortality associated with HIV infection have decreased over the past decade as access to ART has increased. Worldwide, AIDS-related deaths rose to 1.7 million in 2004 but have been on a steady decline to 770,000 as at 2018 [6]. In Nigeria, there were 94,000 AIDS death in 2003, but declined to 53,000 in 2018 [6]. Notwithstanding this progress, the decline in AIDS-related deaths appears to have plateaued in recent years. This is largely due to the persistent challenge of Advanced HIV Disease (AHD) [8]. Globally, the proportion of people presenting with AHD has remained largely unchanged during the past five years although the number of people receiving ART in low- and middle-income countries (LMIC) has more than doubled over this period. Recent estimates suggest that about 30–40% of people living with HIV starting ART in LMIC have a CD4+ cell count of < 200 cells/mm³ and 20% have a CD4+ cell count <100 cells/mm³ [9]. In some settings, up to 50% of people present to care with advanced HIV disease [9]. In Nigeria, 32% of patients that commenced ART in 2018 presented with advanced HIV disease [9]. Similarly, data from six high volume ART sites in the country suggests that the burden of AHD ranges from 16% - 50% [11].

HIV infects the CD4+ cells leading to their destruction. The resultant immunosuppression predisposes the individual to severe opportunistic infections. These opportunistic infections include Tuberculosis, Cryptococcal meningitis, Oro-esophageal candidiasis, Toxoplasmosis, Pneumocystis jiroveci pneumonia, histoplasmosis and septicemia [9]. Nigeria has the first and sixth highest TB burden in Africa and globally respectively [4]. Cryptococcus and Histoplasmosis, initially thought not to be prevalent, are now becoming increasingly endemic in Nigeria with more than 25,000 cases of Cryptococcus reported annually [9] and about 124 cases of Histoplasmosis also reported in Nigeria. These infections account for significant morbidity and mortality in the AHD population. Thus, the Nigerian government is committed to focusing efforts to ensure that those infected with HIV achieve virological suppression, minimize the risk of HIV transmission, prevent and treat co-morbidities, improve survival rate and ultimately move Nigeria closer to ending the HIV epidemic.

Differentiated service delivery (DSD) is an approach that simplifies and adapts HIV services to better serve the needs of PLHIV and reduce unnecessary burdens on the health system. Under a DSD approach, people who are stable on treatment would have a reduced frequency of clinical consultations and drug refills three monthly and in exceptional circumstances six monthly. This allows health service resources to focus on care for patients who are ill and need intensive clinical follow-up. Management of AHD is one of the DSD models which the country has now adopted to control the HIV epidemic.

The 2017 WHO guidelines on the management of AHD recommend a package of care for screening, prophylaxis, rapid ART initiation and intensified adherence interventions. These are offered to everyone living with HIV presenting with advanced disease. The guidelines include an algorithm to support decision making for providing care for people with AHD. Even though the 2016 Nigeria treatment guidelines also highlighted the need to provide a differentiated package of care for OIs, the entity AHD was not clearly defined.



8.1.2 Definition of advanced HIV disease

WHO defines AHD in adults, adolescents and children older than five years as CD4+ cell count <200cells/mm³ or WHO stage 3 or 4 event. All children younger than five years of age with HIV are considered as having AHD. The appearance of OIs is directly related to the extent of immune deficiency; the lower the CD4+ cell count, the higher the likelihood of the appearance of OIs [12]. The common OIs associated with AHD include the following:

- **Tuberculosis:** Tuberculosis is the leading cause of morbidity and mortality among PLHIV, accounting for one-third of the estimated 1.1 million people dying from AIDS-related causes one-third of the estimated 1.1 million people dying from AIDS-related causes globally in 2015 [9]. Most of these TB-associated deaths (200,000 cases) occurred among men [9]. TB also remains a leading cause of HIV-associated hospitalization among adults and children living with HIV worldwide. In 2017, the number of AIDS-related deaths reported in Nigeria was 51,000, and 35,000 (68%) were associated with TB [6]. Furthermore, 11% (12,521) out of the diagnosed 120,266 TB cases in Nigeria in 2019 were co-infected with HIV [13]. Factors responsible for the persistent high burden of TB among PLHIV include low ART coverage, low uptake of Tuberculosis Preventive Therapy (TPT) and sub-optimal diagnosis of active TB.
- **Cryptococcal meningitis:** the incidence of cryptococcal meningitis remains substantial despite the scale-up of ART [9]. A recent review estimated that there were 223,100 incident cryptococcal meningitis cases globally in 2014, with 73% of the cases occurring in sub-Saharan Africa; the annual global deaths from cryptococcal meningitis were estimated to be 181,100. Cryptococcal meningitis is a leading cause of mortality among hospitalized adults living with HIV, accounting for 15–20% of adult deaths but is less common among children living with HIV [14]. An average global cryptococcal antigenemia of 6% is reported among people with CD4+ cell count of < 100 cells/mm³ [14]. In Nigeria, there is an estimated 25,000 cases of Cryptococcosis annually [9]. Several studies from Nigeria have revealed rates of 2% 12.9% of Cryptococcus with geographical variations [15]. An earlier study on cryptococcal meningitis revealed a 36% hospital-based frequency amongst patients presenting with neurological symptoms at Jos University Teaching Hospital [16]. The 2018 WHO guidelines on the diagnosis, prevention and treatment of cryptococcal disease among adults, adolescents and children summarizes the recommendations for the prevention, diagnosis and treatment of cryptococcal meningitis. Pre-emptive therapy for cryptococcal antigen-positive asymptomatic people is a key strategy to prevent cryptococcal meningitis.
- **Toxoplasmosis:** Cerebral toxoplasmosis is the most frequent cause of meningo-encephalitis among adults living with HIV not receiving co-trimoxazole. Toxoplasmosis is a common protozoan infection among people with HIV. The prevalence of co-infection is especially high in sub-Saharan Africa (45%), Latin America, the Caribbean (49%), North Africa and the Middle East (61%) [9]. People with latent toxoplasmosis infection are at risk of developing cerebral toxoplasmosis when their CD4+ cell count <200 cells/mm³. About 15% of hospitalized adults living with HIV died from AIDS-related illnesses were associated with cerebral toxoplasmosis [9]. The diagnosis of cerebral toxoplasmosis requires imaging techniques, such as computed tomography scans. In 2005, a study from JUTH revealed 32% prevalence of Toxoplasmosis among



HIV infected patients [17]. However, diagnosis was made using serological technique.

- **Pneumocystis jiroveci pneumonia:** Pneumocystis jiroveci pneumonia (PJP) is a leading cause of mortality among hospitalized adults (13%) and children (29%) living with HIV [18]. However, the global burden of morbidity and mortality attributable to PJP is poorly characterized because appropriate diagnostic facilities are lacking in most LMIC. This highlights the need for more accurate and feasible diagnostic approaches and improved access to co-trimoxazole and ART. A study from Calabar revealed a 7.4% prevalence of PJP among 272 known symptomatic HIV infected patients [19].
- **Histoplasmosis:** Histoplasmosis is an AIDS-defining infection that is endemic and commonly misdiagnosed as TB. The condition has been severally reported in Africa and particularly in Nigeria. A recent review article revealed 470 documented cases in Africa. HIV infected patients accounted for 38% of the cases and Nigeria accounted for the highest number of reported cases (124) [20]. However, most cases from Nigeria were among HIV negative patient with only 4 documented cases in HIV positive Nigerian-emigrant in Europe. A recent multicenter skin sensitivity screening revealed a 4.4% prevalence rate of prior subclinical histoplasmosis with wide geographical variations
- **Severe bacterial infections:** People with AHD frequently have severe bacterial infections in the bloodstream, respiratory, central nervous and gastrointestinal systems. The burden of mortality and morbidity attributable to severe bacterial infections is poorly characterized largely because appropriate diagnostic facilities are limited. Severe bacterial infections are estimated to cause more than one-third of hospitalizations among adults and children living with HIV worldwide. It has been reported that there is a 12.9% prevalence of bacterial bloodstream infection among PLHIV with coagulase negative staphylococcus accounting for 58% of the patients [22]. Another study from Lagos revealed 33% of bacterial bloodstream infections in HIV infected population with non-typhoidal salmonella species accounting for 45.5% followed by coagulase negative staphylococcus [23]. Co-trimoxazole prophylaxis provides protection against some but not all severe bacterial infections.

8.1.3 Components of AHD package of care

1. Diagnostics for AHD and associated OIs
2. Prophylaxis against associated OIs with AHD
3. Pre-emptive treatment for OIs associated with AHD
4. Treatment of confirmed OIs associated with AHD
5. ART initiation in the setting of AHD
6. Intensive adherence counselling and monitoring
7. Vaccination

8.1.4 Diagnostics for AHD and associated OIs

These include CD4+ cell count test required to diagnose AHD and specific tests to diagnose the country defined AHD associated OIs.

8.1.4.1 Role of CD4+ cell count testing in the diagnosis of AHD

The 2016 National treatment guidelines recommended starting ART regardless of CD4+ cell count and that it should be done at baseline and every six months in addition to routine VL



monitoring. Relying on clinical staging alone risks missing substantial numbers of PLHIV with severe immunosuppression [24]. In a study from Zimbabwe, Uganda, Kenya and Malawi, close to half the people with CD4+ cell count <100 cells/mm³ were classified as having WHO clinical stage 1 or 2 disease [24]. A five year (2005- 2010) retrospective cohort study involving over 14,000 patients revealed that 63% of PLHIV presented with AHD in Nigeria [25]. Despite the implementation of the 'test and treat' strategy, data from the national treatment program revealed that 32% of PLHIV presented with AHD in 2018. Consequently, it is imperative that all newly diagnosed PLHIV and those returning to care should have a baseline CD4+ cell count and same-day results obtained.

Table 8.1: Diagnostics for associated opportunistic infections in AHD

Associated OIs	Screening & diagnosis	Required Sample	CD4+ Cell Count	Adults & Adolescents	Children
Tuberculosis	Xpert MTB/RIF assay as the first test for TB diagnosis in symptomatic patients	Sputum	Any	Yes	Yes
	AFB, Xpert MTB/RIF assay	Sputum/non sputum (stool, CSF and Cold Abscess)		Yes	Yes
	LF-LAM	Urine	Urine LF-LAM assay for patients with CD4+ cell count <200 cells/mm ³	Yes	Yes*
Cryptococcosis	Cryptococcal antigen (CrAg) screening	Serum, plasma or whole blood	<200 cells/mm ³	Yes	No
Histoplasmosis	Histoplasma urinary antigen screening	Urine	<200 cells/mm ³	Yes	Yes
Pneumocystis jiroveci pneumonia (PJP)	Giemsa stain, Grocott Methenamine Silver stain	Bronchial aspirate	<200 cells/mm ³	Yes	Yes

Adapted from WHO advanced HIV disease package of care 2018

* Limited data available for children



Table 8.2: Prophylaxis for AHD associated OIs

Disease	Prophylactic Intervention	Pre-emptive Treatment	Criteria for Prophylaxis & Pre-emptive Treatment	Target Population
Tuberculosis	Yes (TPT)	No	Any CD4+ cell count value.	Adult and children
Pneumocystis jiroveci pneumonia (PJP)	Yes (CPT)	No	<ul style="list-style-type: none"> • CD4+ cell count ≤ 500 cells/mm³ or WHO clinical stage 3 or 4 event. • Any CD4+ cell count value in settings with high prevalence of malaria and/or severe bacterial infections 	Adult and children
Cryptococcal Meningitis	No	Yes (Fluconazole pre-emptive therapy for CrAg positive patients without evidence of meningitis)	AHD	Adult and adolescent

8.1.5 Management of opportunistic infections in AHD

8.1.5.1 Tuberculosis

Diagnosis

- Xpert MTB/RIF assay and TB-LF LAM are the recommended diagnostic tests for PLHIV presenting with AHD
- Where the above tests are not available, AFB microscopy can be used, or representative samples referred to sites where Xpert MTB/RIF assay or TB-LF LAM is available

WHO strongly recommends the use of LF-LAM to assist in diagnosing active TB among children and Adolescent living with HIV,

- with signs and symptoms of TB (pulmonary and/or extrapulmonary)
- with advanced HIV disease or who are seriously ill, regardless of signs and symptoms of TB and with a CD4+ count < 200 cells/ mm³;

Prophylaxis & Treatment

- Manage as in the national TB guidelines.

ART Initiation

- Immediate ART initiation is not recommended for adults, adolescents and children living with HIV who have TB, because of the risk of increased mortality and should be deferred by 2 weeks (if CD4+ cell count is < 50), or 4 weeks (if CD4+ cell count is > 50 cells/mm³) after the initiation of anti-TB drugs.

8.1.5.2 Cryptococcal Meningitis

Diagnosis

For adults, adolescents and children living with HIV suspected of having a first episode of cryptococcal meningitis, prompt lumbar puncture with measurement of cerebrospinal fluid (CSF) opening pressure and rapid cryptococcal antigen assay is recommended as the preferred diagnostic approach.



The following diagnostic approaches are recommended, according to the context:

- a. In settings with ready access to and no contraindication for lumbar puncture:
 - i. If both access to a cryptococcal antigen assay (either lateral flow assay or latex agglutination assay) and rapid results (<24 hours) are available, proceed with Lumbar puncture (LP) for a rapid CSF cryptococcal antigen assay as the preferred diagnostic approach
 - ii. If access to a cryptococcal antigen assay is not available and/or rapid results are not available, proceed with LP with CSF India ink test as the preferred diagnostic approach
- b. In settings without immediate access to LP or when LP is clinically contraindicated^a
 - i. If both access to a cryptococcal antigen assay and rapid results are available within < 24 hours, proceed with rapid serum, plasma or whole-blood cryptococcal antigen assays as the preferred diagnostic approaches
 - ii. If a cryptococcal antigen assay is not available and/or rapid access to results is not ensured, prompt referral for further investigation and treatment is required

Prophylaxis

Screening for cryptococcal antigen^b followed by pre-emptive antifungal therapy among cryptococcal antigen-positive people to prevent the development of invasive cryptococcal disease is recommended before initiating or reinitiating ART for adults and adolescents living with HIV who have a CD4+ cell count < 200 cells/mm³.

Fluconazole 800 mg/day for two weeks, then 400 mg/day for eight weeks and continued maintenance with fluconazole 200 mg/day is recommended for pre-emptive antifungal therapy. When cryptococcal antigen screening is not available, fluconazole primary prophylaxis should be given to adults and adolescents living with HIV who have a CD4+ cell count < 200 cells/mm³. Fluconazole 100mg daily for 8 weeks is recommended. Screening and primary prophylaxis are not recommended for children, given the low incidence of cryptococcal meningitis in this age group.

Induction

- The following is recommended as the preferred induction regimen: For adults, adolescents and children, a short-course (one-week) induction regimen with liposomal amphotericin B (3.0 mg/kg/day) and flucytosine (100 mg/kg/day, divided into four doses per day), followed by 1 week of fluconazole (1200mg/day for adults, 12 mg/kg/day for children and adolescents, up to a maximum dose of 800mg daily)

The following induction regimens are recommended as alternative options depending on drug availability:

^a Contraindications include significant coagulopathy or suspected space-occupying lesion based on focal nervous system signs (excluding cranial nerve VI palsy) or recurrent seizures and, where possible, confirmed by computed tomography. Raised intracranial pressure does not contraindicate LP in (suspected) cryptococcal meningitis. Other contraindications include major spinal deformity and patient refusal despite adequate counselling.

^b Good practice principle: All PLHIV with a positive cryptococcal antigen result on screening should be carefully evaluated for signs and symptoms of meningitis and undergo an LP if feasible with CSF examination and cryptococcal antigen assay (or India ink if cryptococcal antigen assay is not available) to exclude active cryptococcal disease.



- Two weeks of fluconazole (1200 mg daily for adults, 12 mg/kg/day for children and adolescents) + flucytosine (100 mg/kg/day, divided into four doses per day)
- Two weeks of amphotericin B deoxycholate (1.0 mg/kg/day) + fluconazole (1200 mg daily for adults, 12 mg/kg/day for children and adolescents up to a maximum of 800 mg daily).

Consolidation

- Fluconazole (800 mg daily for adults, 6–12 mg/kg/day for children and adolescents up to a maximum of 800 mg daily) is recommended for the consolidation phase (for eight weeks following the induction phase)

Maintenance

- Fluconazole (200 mg daily for adults, 6mg/kg/day for adolescents and children) is recommended for the maintenance phase
- Discontinuation of maintenance therapy should be done when the patient is stable on and adherent to ART and has had antifungal maintenance treatment for at least one year and has a CD4+ cell count ≥ 200 cells/mm³ and a fully suppressed VL

Therapeutic Lumbar Puncture

Using drugs (mannitol, acetazolamide, furosemide or steroids) for managing raised intracranial pressure is not being recommended because there is no evidence that these drugs improve

- Outcomes in managing cryptococcal meningitis-associated raised intracranial pressure; and available evidence suggests their utilization may be harmful [3]
- Initial measurement of intracranial pressure and management of raised intracranial pressure is an essential part of cryptococcal meningitis management to prevent death and serious nervous system complications
- Reduction of raised CSF pressure is associated with clinical improvement and survival benefit, regardless of initial opening pressure. Conversely, failure to reduce CSF pressure is associated with poor nervous system outcome and increased mortality
- Pressure should be relieved by draining a volume sufficient to reduce the CSF pressure to $< 20\text{cm H}_2\text{O}$ or halving the baseline pressure if extremely high**
- For people with initial intracranial pressure of $20\text{cmH}_2\text{O}$ or more or subsequent development or recurrence of symptoms or signs of raised intracranial pressure, repeat therapeutic LP should be carried out

ART Initiation

Immediate ART initiation is not recommended for PLHIV who have cryptococcal meningitis because of the risk of increased mortality and should be deferred by 4–6 weeks from the initiation of antifungal treatment.

Note: A minimum package of pre-emptive hydration, electrolyte replacement, toxicity monitoring and management should be provided to minimize toxicity related to amphotericin B and flucytosine.

***Ensure manometers are available*



8.1.5.3 Oro-oesophageal candidiasis

Diagnosis

- Clinically diagnosed by retrosternal chest pain (heartburn), pain or discomfort on swallowing and features of candidiasis (pseudo membranous, erythematous lesions and angular cheilitis) in the mouth or throat
- Laboratory: Wet mount microscopy using KOH preparation
- Endoscopy should be conducted for the patient if no response to antifungal therapy and collect a representative sample for testing.

Treatment

Adult:

- Fluconazole – oral 200mg on day 1, then 100 mg daily; doses up to 400 mg/day may be used based on patient's response. Treat for a minimum of 3 weeks and at least 2 weeks after resolution of symptoms
 - or
- Itraconazole – oral 200mg daily for at least 2 weeks after resolution of symptoms
 - or
- Oral Nystatin 400,000 – 600,000 IU qds for at least 2 weeks after resolution of symptoms

Paediatric:

- Fluconazole – oral, 6mg/kg stat on day 1, then 3mg/kg/day for 14-21 days.
 - or
- Oral Nystatin 100,000 – 200,000 IU qds for at least 2 weeks after resolution of symptoms

8.1.5.4 Toxoplasmosis

Diagnosis

- Symptoms include fever, reduced alertness, headache, focal neurological deficits, seizures, chorio-retinitis
- The following diagnostic tool can be used on CSF sample: Dye test, indirect fluorescent antibody test (IFA), enzyme immunoassays (ELISA, immunoblots), agglutination test, avidity test

Prophylaxis

- Cotrimoxazole until CD4+ cell levels increase to more than 200 cell/mm³ for more than 3 months
- Alternatively, dapsone – pyrimethamine plus leucovorin

Treatment

- Pyrimethamine 100mg stat and 50mg daily with folinic acid 10-25mg daily plus clindamycin 300mg given qds for 6 weeks followed by life-long suppressive therapy until full immunological recovery.
 - or
- Cotrimoxazole (Trimethoprim 10mg/kg/day + Sulphamethoxazole 50mg/kg/day) for 4 weeks if there is clinical and radiological improvement. Longer therapy may be necessary if a response is incomplete at 6 weeks



8.1.5.5 Pneumocystis jiroveci pneumonia (PJP)

Diagnosis

- Acute/sub-acute nonproductive cough with difficulty in breathing. Oxygen saturation of <92% at rest on room air
- Sample types: bronchoalveolar lavage (BAL), induced and expectorated sputum, nasopharyngeal aspirates and oral washing
- Giemsa stain or GMS stain can be used for identification

Prophylaxis

- Cotrimoxazole in adult and children (Children 6-8mg/kg/day PO, Adults 960mg daily)
- Alternatively, Dapsone (100mg daily) or Dapsone plus pyrimethamine (50mg) plus folinic acid 10mg weekly can be used.

Treatment

- For Moderate to severe PJP: IV Cotrimoxazole (TMP 15–20 mg and SMX 75–100 mg) / kg/ day given qds or tds (switch to PO after clinical improvement for 21 days).
- For Mild PJP: Cotrimoxazole: (TMP 15–20 mg/kg/ day and SMX 75–100 mg/kg/ day), given PO in 3 divided doses for 21 days

Alternative:

- Moderate to Severe PJP: Primaquine 30 mg (base) PO once daily + clindamycin [IV 600 qds or 900 mg tds] or [PO 300 mg q6h or 450 mg q8h], Or Pentamidine 4 mg/ kg IV once daily infused over at least 60 minutes, may reduce the dose to 3mg/kg IV once daily because of toxicities
- For Mild PJP: Dapsone 100 mg PO daily + TMP 15 mg/kg/day PO (3 divided doses), OR Primaquine 30 mg (base) PO daily + clindamycin PO (300 mg q6h or 450 mg q8h)

8.1.5.6 Histoplasmosis

Diagnosis

- Symptoms are non-specific mimicking TB (pulmonary or extrapulmonary)
- Histoplasma urinary antigen screening
- Tissue diagnosis will require histology of representative sample

Treatment

- Liposomal amphotericin B (3.0 – 5.0 mg/kg daily intravenously for 1 -2 weeks) followed by itraconazole (200mg 3 times daily for 3 days and then 200mg twice daily, for a total of 12 weeks) is the preferred therapy for disseminated Histoplasmosis
- For mild to moderate disease, itraconazole (200mg 3 times daily for 3 days and then twice daily for at least 12 months is recommended).

8.1.6 ART Initiation and Intensive Adherence Support for Patients with AHD

These Guidelines recommend that;

- People who have no clinical signs and symptoms of TB or other OIs and whose CrAg test is negative should initiate ART the same day in combination with their package of prophylaxis outlined above.
- In settings where CrAg testing is not available; ART should be initiated, and fluconazole prophylaxis may be considered for people with AHD and be monitored with CD4+ cell count test until immunological recovery is achieved.



8.1.6.1 Intensive Follow-Up for Patients with AHD

People with AHD require closer follow-up during the initial period of receiving ART to monitor the response to ART and to identify signs and symptoms of possible IRIS. The guidelines recommend that;

- Weekly telephone calls or home visits be provided during the first month on ART.
- Intensive follow-up may be required after discharge for AHD.
- People missing appointments should also be actively tracked by phone or through home visits.
- Where face-to-face contact is not feasible; distance contact through telephone consultation, mHealth, text messaging or other mobile interventions, or visits through a community health worker or home-based caregiver should be considered, with the consent of the client.

8.1.6.2 Initiating ART in Patients with AHD

People presenting for the first time or those returning to care should undergo history and clinical examination to evaluate for significant OIs (such as signs and symptoms of TB and signs and symptoms suggesting meningitis) before rapid ART initiation is offered. Baseline CD4+ cell count testing should be performed to determine whether the patient has AHD before initiating on ART.

People who have no clinical signs and symptoms of TB or other OIs and whose cryptococcal antigen test is negative may initiate ART the same day in combination with their package of prophylaxis outlined in Chapter 3. For people with CD4+ cell count <100 cells/mm³ in settings where cryptococcal antigen testing result is not available on the same day, consideration could be given to starting fluconazole prophylaxis and discontinuing if a cryptococcal antigen screening result is negative.

Table 8.3: ART Initiation and Intensive Adherence Support for Patients with AHD

Package	Intervention	CD4+ cell count	Adults and adolescents	Children
ART initiation	Rapid ART initiation	Any	Yes	Yes
	Defer ART initiation if clinical signs and symptoms are suggestive of TB or cryptococcal meningitis	Any	Yes	Yes
Intensive adherence support	Tailored counselling to ensure optimal adherence to advance disease care package, including home visits if feasible.	< 200 cells/mm ³	Yes	Yes

8.1.7 Vaccination for People with AHD

Providing vaccinations to PLHIV does not appear to accelerate HIV disease progression and is recommended as an important part of the HIV care package. However, people with severe immunosuppression may be at higher risk of complications from some live attenuated vaccines, and the response to other inactivated vaccines may be less effective because of the degree of immunosuppression. Additional doses or revaccination after immune reconstitution on ART may therefore be required.



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

8.1.8 Immune Reconstitution Inflammatory syndrome (IRIS)

AHD package of care is designed to ensure that early initiation of ART in severely immunocompromised individuals does not precipitate immune reconstitution inflammatory syndrome (IRIS) particularly in the setting of the use of highly potent DTG based first-line regimens. The package of care recommends that individuals with AHD initiate ART immediately if the AHD defining OIs have been excluded. Despite this recommendation, other OIs that are associated with IRIS but whose management are not included in the package of care for AHD may still occur when severely immunocompromised individuals initiate ART. Consequently, clinicians should be familiar with the risk factors associated with the development of IRIS, its diagnosis and management.

The risk factors for IRIS include:

- High baseline viral load (>100,000 copies/ml)
- Low CD4+ cell count (≤ 200 cells/mm³) at ART initiation
- Disseminated OIs or malignancies
- Shorter duration of therapy for OIs before ART initiation
- A potent ART regimen e.g TDF/3TC/DTG

The management of IRIS involves prompt and effective treatment of any co-infections, reassurance of the patient to prevent discontinuation or poor adherence and supportive management. The prevention of IRIS includes:



- Appropriate screening and treatment of OIs before initiation of ART; with the exception of TB and cryptococcal meningitis, outcomes are improved with early ART in patients with OIs.
 - TB: Start ART 2 weeks after initiating TB treatment. However, if the patient has TB Meningitis, ART initiation should be started after 4 weeks of starting TB treatment.
 - Cryptococcal meningitis (CCM): Start ART 4 - 6 weeks after initiating CCM treatment

It is important for healthcare workers to exercise a high index of suspicion for IRIS in PLHIV commencing ART.

8.1.9 Management of AHD among Children less than ten years

All children less than 5 years are considered to have AHD. This is based on the rationale that most children younger than five years usually present for care with advanced immunosuppression, younger children have an increased risk of disease progression and mortality regardless of clinical and immune condition. Thus, varying age dependent CD4+ cell count definitions for advanced immunosuppression among children younger than five years make definitions based on CD4+ cell count difficult to implement. Children under 5 years diagnosed with HIV should immediately be offered the requisite screening tests, and where applicable, provided with prophylaxis, treatment and vaccination for the major OIs based on the outcome of the screening. For children between 5 and 9 years of age, a positive HIV test should be followed with a CD4+ test and clinical evaluation. If diagnosed with AHD, the child should receive the applicable package of care that involves screening, prevention and treatment of OIs and comorbid conditions, and optimized care.

- **Screen:** In addition to clinical screening using signs and symptoms of common OIs, HIV positive children with AHD less than 10 years should be screened for TB using available laboratory tools such as urine LF-LAM assay, Xpert MTB/RIF, and AFB Microscopy.
- **Treat:** The major OIs and co-morbidity associated with AHD in children <10 years are; TB, severe pneumonia, severe bacterial infections and malnutrition. Refer to table 8.4 and the section on management of OIs for the recommended treatment options for these conditions.
- **Prevent:** The care package for children on AHD should include; TPT and CPT. Screening and primary prophylaxis of cryptococcal meningitis are not recommended for children younger than 10 years, given the low incidence of cryptococcal meningitis in this age group.

Live vaccines should be avoided in children with advanced HIV disease, however, vaccination is recommended for some of the OIs as the benefits outweigh the risk. Some of the vaccines include BCG, measles, catch up pneumococcal vaccine, and HPV (mainly for adolescent female). Neonates with confirmed HIV infection should delay BCG vaccination until ART has started and they are confirmed to be immunologically stable ($CD4\% >25\%$). See table 8.4 for details on the screening, diagnosis, prevention and treatment components of the AHD package of care for children under 10 years. Recommendations for adolescents are similar to what obtains for adults.

- **Optimize:** Although rapid ART initiation within seven days of diagnosis is a priority, children with AHD who present with severe acute malnutrition or TB or other illnesses that require hospitalization need to be stabilized first. However, initiating ART is encouraged as part of the child's hospital admission to minimize loss to follow-up and



failure to initiate ART after discharge. Similarly, ensuring linkage to the facility where the child will receive ongoing HIV care upon discharge is critical. In addition, intensive counselling and follow up should be provided to caregivers of children with AHD.

Table 8.4: Components of the Package of Care for Children with AHD

Intervention	Component	< 5 years	5 – 9 years
Screening and diagnosis	Screen for TB using clinical algorithm followed by X-ray when indicated and if available Xpert® MTB/RIF or Xpert® Ultra assay as the first test (Induced or expectorated) sputum, gastric aspirate, stool or nasopharyngeal aspirate or other extrapulmonary specimens	Yes	Yes
	LF-LAM assay	Yes	Yes
	Cryptococcal antigen screening using serum, plasma, or whole blood specimen	No ^a	No ^a
Prevention, prophylaxis and pre-emptive treatment	Pneumococcal conjugate vaccine (catch-up)	Yes	No
	Human Papilloma Vaccine (HPV) ^b	No	No
	Measles	Yes	No
	BCG	Yes	No ^c
	Co-trimoxazole ^d	Yes	Yes
	TB preventive treatment ^e TPT options include <ul style="list-style-type: none">• INH for 6 months• Daily rifampicin and isoniazid for three months (3HR)• Weekly rifapentine and isoniazid for three months (3HP) could be used from two years of age	Yes	Yes
	Fluconazole pre-emptive therapy for cryptococcal antigen positive without evidence of meningitis	Not Applicable	Not Applicable
Treatment	Tuberculosis <ul style="list-style-type: none">• based on current TB guidelines	Yes	Yes
	Severe Pneumonia (if diagnosed) <ul style="list-style-type: none">• for children less than one, empirical treatment with Cotrimoxazole• for children between one and five, treat according to laboratory findings	Yes	Yes
	Severe bacterial infection <ul style="list-style-type: none">• treat according to the confirmed organism	Yes	Yes
	Malnutrition treatment	Yes	Yes

^a Screening and primary prophylaxis of cryptococcal meningitis are not recommended for children younger than 10 years given the low incidence of cryptococcal meningitis in this age group; although this guideline does not recommend routine screening of children with AHD for cryptococcal infection because of the rarity of this condition in children, studies are appearing in literature reporting cases among children. As such, clinicians are encouraged to use their clinical judgement and screen their pediatric patients for cryptococcal infections and cryptococcal meningitis when clinical features are suggestive.

^b Evidence indicates that adolescent females living with perinatally-acquired HIV have a higher prevalence of high-risk HPV and abnormal cervical cytology than uninfected adolescents. WHO recommends a three-dose series (0, 1–2 and 6 months) for females older than nine years living with HIV rather than the standard two-dose series;

^c only if the child missed birth and early childhood dose;

^d To be discontinued when CD4+ cell count >350 and viral load suppressed for at least 6 months;

^e TB preventive treatment is currently not recommended for infants living with HIV younger than 12 months of age unless they have a household contact of a TB case;



8.2 Other Opportunistic Infections (OIs)

Persons living with HIV (PLHIV) are more prone to developing infections than persons not infected with the virus largely because of the immune system damage associated with HIV infection. Most of the infections that occur in PLHIVs are called OIs because they depend on a compromised immune system. The appearance of OIs in PLHIV is directly related to the extent of immune deficiency that is the degree of depletion of CD4+ cells. The lower the CD4+ cell count, the higher the likelihood of the appearance of OIs. Most OIs in PLHIV begin to appear at CD4+ cell counts of <350cells/mm³; and many of the OIs are useful for staging the severity of

HIV disease.

Opportunistic infections (OIs) associated with HIV fall into four broad categories namely, bacterial, viral, fungal and protozoal infections. The infections affect all major systems of the body including the; nervous, gastrointestinal, respiratory, skin, musculoskeletal, eyes, ear, nose and throat. When OIs occur among PLHIV they should be treated immediately since they can cause considerable damage to the immune system and lead to a rapid increase in viral replication and disease progression and death.

Xpert MTB/RIF has enhanced the diagnosis of TB in HIV positive patients and its widespread use in the country should improve health outcomes for HIV/TB co-infected patients.

Chronic non-communicable diseases (NCDs), including cardiovascular disease (CVD), hypertension, diabetes, chronic obstructive pulmonary disease (COPD), kidney disease and mental health illnesses present important considerations in adults and adolescents living with HIV and requires early assessment and management. Pre-disposing factors such as lack of physical activities, smoking, and unhealthy dietary habits should be addressed.

Early initiation of ART, appropriate treatment of identified OIs and comorbidities, lead to a reversal of immune system damage with reconstitution and prevention of AIDS-related death.

8.3 Preventing Opportunistic Infections (OIs)

The relationship between HIV and OIs is bi-directional; HIV depresses the immunity of an individual thereby increasing predisposition to OIs, while OIs and other similar infections may lead to an acceleration of HIV disease progression.

It is therefore important that health workers have a good understanding of the role of chemotherapy in the prevention and treatment of OIs because while chemoprophylaxis directly prevent pathogen-specific morbidity and mortality, they also contribute to a reduced rate of progression of HIV disease.

For instance, there is evidence that chemoprophylaxis with trimethoprim-sulfamethoxazole can both decrease OI-related morbidity and improve survival. The reduced progression of HIV infection would reduce the risk of subsequent OIs.

There are currently two main strategies for the prevention of OIs; CPT, which provides protection to a wide range of bacterial infections and TPT, which is useful for treating latent tuberculosis.



8.3.1 Cotrimoxazole Preventive Therapy (CPT)

Cotrimoxazole Preventive Therapy (CPT) is a fixed-dose combination of two antimicrobial agents (sulfamethoxazole and trimethoprim) used for the prevention of some AIDS-associated OIs (Pneumocystis jirovecii pneumonia [PCP] and toxoplasmosis) and the reduction of HIV-associated mortality in people with low CD4+ cell counts. CPT is also used to treat a variety of bacterial, fungal and protozoan infections.

8.3.1.1 Cotrimoxazole prophylaxis for adults

Cotrimoxazole (CTX) prophylaxis is recommended for adults (including pregnant women) with severe or advanced HIV clinical disease (WHO stage 3 or 4) and/or with a CD4+ cell count ≤ 500 cells/mm³:

- Due to the high prevalence of malaria and severe bacterial infections in Nigeria, Cotrimoxazole prophylaxis should be initiated regardless of CD4+ cell count or WHO stage. Priority should be given to adults (including pregnant women) with severe or advanced HIV clinical disease (WHO stage 3 or 4) and/or with a CD4+ cell count < 500 cells/mm³
- Routine cotrimoxazole prophylaxis should be given to all HIV-infected patients with active TB disease regardless of CD4+ cell count
- Cotrimoxazole prophylaxis may be discontinued in adults (including pregnant women) with HIV who are clinically stable on ART, with evidence of immune recovery and virological suppression

8.3.1.2 Cotrimoxazole prophylaxis for HIV-infected infants, children and Adolescents

Cotrimoxazole prophylaxis is recommended

- For infants, children and adolescents with HIV, irrespective of clinical and immune conditions. Priority should be given to all children younger than 5 years old regardless of CD4+ cell count or clinical stage, and children with severe or advanced HIV clinical disease (WHO clinical stage 3 or 4) and/or those with a CD4+ cell count ≤ 500 cells/mm³
- Should be continued until adulthood, irrespective of whether ART is provided
- For HIV-exposed infants 6 weeks of age and should be continued until HIV infection has been excluded by an age-appropriate HIV test to establish a final diagnosis after complete cessation of breastfeeding
- In all persons with active TB regardless of CD4+ cell count and continued until criteria for discontinuation in adults and children is met

In HIV positive individuals who have ADR to cotrimoxazole, options for prophylaxis of PJP include dapsone, dapsone plus pyrimethamine plus folinic acid and atovaquone. For those who will be started on dapsone, do a G6PD deficiency test. Dapsone should be avoided in individuals with G6PD deficiency.

8.3.1.3 Starting Patients on CPT

Before commencing a client on CPT the health worker should undertake the following actions:

- Verify HIV status
- Take medical history
- Conduct physical examination
- Counsel on OIs in HIV infection
- Treat pre-existing OIs



- Screen for contraindications to CPT: e.g. known allergy to Sulphur-containing drugs, first trimester pregnancy, kidney or liver disease

In addition, the patient should be counselled for drug adherence and given detailed information of the likely side effects of cotrimoxazole and action to take in the event of the occurrence of any. Common side effects associated with CPT include skin eruptions, which may be severe (Stevens Johnson syndrome), nephritis, hepatitis, anaemia and hyperkalaemia.

Table 8.5: Dosage of Cotrimoxazole for CPT

Adult	Children
≥ 14 years or >30 kg: 960 mg daily	Infants <6 months or < 5 kg: 120mg daily Children 6 months –5 years or 5 -15 kg: 240 mg daily Children 6 –14 years old or 15 –30 kg: 480 mg daily

8.3.2 Tuberculosis Preventive Treatment (TPT)

Tuberculosis Preventive Treatment (TPT), previously referred to as Isoniazid preventive therapy (IPT) is the treatment offered to individuals who are considered to be at risk of developing TB disease, in order to reduce that risk. It is also referred to as the treatment of TB infection or LTBI treatment. TB is a disease that is driven by HIV and so it is frequently associated with HIV and a common cause of illness and death among PLHIV.

TPT is effective in preventing the development of active TB in HIV positive individuals. However, it is not a treatment for active TB, therefore this should be excluded before commencing a patient on TPT.

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

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

8.3.2.1 Recommendations for TPT

- Adults and adolescents living with HIV
 - o Adults and adolescents living with HIV should be screened with a clinical algorithm; those who do not report any one of the symptoms of current cough, fever, weight loss or night sweats are unlikely to have active TB and should be offered TPT
 - o Adults and adolescents living with HIV who are unlikely to have active TB or in whom active TB has been safely ruled out should receive TPT as part of a comprehensive package of HIV care. TPT should be given to such individuals regardless of the degree of immunosuppression, and also to those on ART, those who have previously been treated for TB and pregnant women
- Children
 - o Children living with HIV who do not have poor weight gain, fever or current cough are unlikely to have active TB. Children living with HIV who have poor weight gain, fever or current cough or contact history with a TB case may have TB and should be



- evaluated for TB and other conditions. If the evaluation shows no TB, they should be offered TPT regardless of their age
- o Children living with HIV who are \geq 12 months of age and who are unlikely to have active TB on symptom-based screening and have no contact with a TB case should receive six months of TPT (Isoniazid 10 mg/kg/day) but not more than 300mg/day as part of a comprehensive package of HIV prevention and care if they live in a setting with high TB transmission, regardless of contact with TB
- o In children living with HIV who are $<$ 12 months of age, only those who have contact with a TB case and who are evaluated for TB (using standard lab investigations) should receive 6 months of TPT if the evaluation shows no TB disease
- o All children living with HIV, after successful completion of treatment for TB, should receive TPT for an additional 6 months
- o Children aged $<$ 5 years who are household contacts of people with confirmed pulmonary TB and who are found not to have active TB on an appropriate clinical evaluation or according to national guidelines should be given TPT even if LTBI testing is unavailable
- o Children aged \geq 5 years, adolescents and adults who are household contacts of people with confirmed pulmonary TB who are found not to have active TB by an appropriate clinical evaluation or according to national guidelines may be given TPT

8.3.2.2 Commencing TPT

It is recommended that health workers should undertake the following actions before initiating patients on TPT;

1. Verify/Confirm HIV Status
2. Counsel clients on TB/HIV interactions
3. Exclude active TB by asking the client about:
 - a. Ask the patients about cough, weight loss, fever and night sweats
 - b. Check for lymph node enlargement
 - c. For patients who answer no to (a) and (b) above, assess for contraindications to TPT, counsel on adherence, and commence TPT
 - d. For those with symptoms/signs in (a) and (b) above:
 - Xpert MTB/RIF should be done
 - If positive refer/commence short-course chemotherapy for TB (DOTS, preferably)
 - Those with negative results should be referred to medical officers for confirmation of diagnosis.
 - If signs and symptoms are absent, do a chest x-ray
 - If no active TB is confirmed, assess for contraindications to TPT, counsel on adherence, and commence TPT.
4. Counsel patient/caregiver on:
 - a. Importance of Treatment adherence
 - b. Side effects of INH: peripheral neuropathy, jaundice, rash and what is expected in such circumstances
 - c. Immediate recognition and reporting of signs and symptoms of active TB If a patient develops active TB during the course of TPT, discontinue TPT and refer/commence anti-TB treatment (DOTS)



5. During the monthly visit, monitor the patients for:
 - a. Signs and symptoms of active TB
 - b. Side effects. The most common side effect is peripheral neuropathy (numbness/tingling sensation of extremities). In addition, allergic skin eruptions and jaundice can occur. Since INH is co formulated with Pyridoxine, Complications such as numbness/tingling/burning sensation are not expected. However, if jaundice develops, discontinue TPT and refer to the clinician for assessment

8.3.2.3 TPT options

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

- 6 or 9 months of daily isoniazid
- 3-month regimen of weekly rifapentine plus isoniazid (3HP)
- 3-month regimen of daily isoniazid plus rifampicin. (3HR)
- 1-month of daily Isoniazid and Rifapentine (1HP)

Harmonize dispensing schedule with that of ARVs and emphasize the importance of adherence at each visit. Complete necessary INH prophylaxis register and INH appointment card.

8.3.2.4 Dosages of the Different TPT Regimens

The recommended dosages of medicines used for treatment of LTBI is as shown in Table 8.6 below.

Table 8.6: Recommended Dosages of Medicines used for Treatment of LTBI

TPT regimen	Dose per kg body weight in children	Maximum dose
Isoniazid alone daily for 6 months (6H)	10mg (range:7-15mg)	300mg
Weekly Rifapentine plus Isoniazid for 3 months- 12 doses (3HP)	Isoniazid: Individuals aged \geq 12 years -15mg Individuals aged 2 -11 years -25mg Rifapentine: 10.0 - 14.0 kg = 300mg 14.1 - 25.0 kg = 450mg 25.1 - 32.0 kg = 600mg 32.1 -50.0 kg = 750mg $>$ 50 kg = 900mg	Isoniazid - 900mg Rifapentine - 900mg
Daily Isoniazid plus Rifampicin for 3 months (3HR)	Rifampicin: Age $<$ 10 years = 15mg (range: 10–20mg) Age \geq 10 years = 10mg Isoniazid: Age $<$ 10 years = 10mg (range: 7–15mg) Age \geq 10 years = 5mg	Rifampicin - 600mg Isoniazid - 300mg
Daily Isoniazid and Rifapentine for 1 month	Age \geq 13 years (regardless of weight band) Isoniazid 300 mg/day Rifapentine 600 mg/day	Isoniazid -300mg Rifapentine - 600mg



Dosage of INH for TPT

- Dosage of INH for TPT in children: INH is administered daily for TPT in children for a total duration of 6 months as stated in Table 8.7 below
- The dosage of INH for TPT in adults is 300mg daily for 6 months.

Table 8.7: Dosage of INH for TPT in Children

Weight in kg	INH dosages in mg/day	INH in Tablet/day
<2.5	25	¼ of 100mg tablet
2.5 - 5.9	50	½ of 100mg tablet
6.0 - 10.9	100	1 of 100mg tablet
11.0 - 25.0	150	1½ of 100mg tablet

Dosage of 3HP for TPT

- Dosages of 3HP in children: The Dosages of 3HP in children is as stated in Table 8.8 below.

Table 8.8: TPT Dosage of 3HP for Children Aged 2 - 14 years*

Weight	Rifapentine** (150mg tablets)		Isoniazid (100mg tablets)	
	Dose	Tablets	Dose	Tablets
10 - 15 kg	300mg	2	300mg	3
16 - 23 kg	450mg	3	500mg	5
24 - 30kg	600mg	4	600mg	6
> 31kg	750mg	5	700mg	7

*Patient aged 15 years and older should receive adult dosing

**Rifapentine has a bitter taste. For young children who cannot swallow, crush the tablet and mix with small amount of multivitamin syrup

- Dosages of 3HP in adults: The Dosages of 3HP in adults is as stated in Table 8.9 below

Table 8.9: TPT Dosage of 3HP for greater than 14 years old

Medicine	Formulation	Weight bands for patients >14 years				
		30 - 35kg	36 - 45kg	46 - 55kg	56 - 70kg	> 70kg
Isoniazid	300mg	3	3	3	3	3
Rifapentine	150mg	6	6	6	6	6

Dosage of 3HR for TPT

The dosage of fixed dose combination of 3HR for TPT in both children and adults is as stated in Table 8.10

Note: A triple pill combination containing isoniazid 300 mg + pyridoxine 25 mg + sulfamethoxazole 800 mg + trimethoprim 160 mg (scored) is available (1 pill daily for adults, half pill for children 5 years and older of age and quarter for children < 5 years of age).



Table 8.10: Dosage of Fixed Dose Combination of 3HR for TPT

Children		Adult	
Strength: RH 75mg/50mg FDC*		Strength: RH 150mg/75mg FDC	
Weight Band	RH Tablets	Weight Band	RH Tablets
4 - 7 kg	1	25 - 37 kg	2
8 - 11kg	2		
12 - 15kg	3	38 - 54 kg	3
16 - 24kg	4		
≥ 25	Use adult Regimen	≥ 55	4

*INH and 3HR are available in child-friendly and dispersible forms

**FDC – Fixed Dose Combination

8.3.2.5 General Contraindications to TPT

- Active hepatitis (acute or chronic)
- Active TB
- Regular and heavy alcohol consumption
- Symptoms of peripheral neuropathy
- Allergy to TPT medicines.

8.3.2.6 Contraindications to the use of Rifapentine plus INH

- Individuals taking medications that may have drug interactions that are difficult to manage with the regimen (e.g. PLHIV on Protease Inhibitors and NVP)
- Persons presumed infected with MTB resistant to INH and RIF
- Pregnant women or women planning to become pregnant during treatment.
- Individuals who have had prior adverse events or hypersensitivity to INH or Rifapentine
- Known pre-existing liver damage
- Children under two years (no dosing for children <2 years)[26]

- In patients with severe malaria (impaired consciousness, low blood glucose, jaundice, kidney failure, anaemia and parasitaemia >10%), stop 3HP, treat malaria urgently. Restart 3HP once the episode of Malaria is resolved, to avoid drug - drug interactions
- Supplement with Pyridoxine 25mg daily for six months if available when INH is given for 6 months. However, lack of pyridoxine should not become a barrier to commencing TPT.
- 3HP is recommended for PLHIV on ART that have acceptable drug-drug interactions with Rifapentine such as efavirenz as well as DTG and RAL in adults. 3HP is NOT recommended for PLHIVs on PI or NVP based ART. In cases where 3HP is contraindicated or cannot be administered, use Isoniazid for 6 months.
- INH is the preferred regimen in HIV positive children on LPV/r, NVP, DTG or RAL [27]
- In view of test and treat policy as well as significant virological suppression from DTG containing regimens, repeat TPT after 2 years of completion is no longer recommended



8.3.2.6 Monitoring of Patients on TPT

During monthly drug refills, monitor patient for:

- Development of active TB (clinical assessment of signs and symptoms of active TB).
- Development of side-effects; e.g. peripheral neuropathy (numbness/tingling sensation of extremities). If present give Pyridoxine 50 - 75 mg daily.
- Check for jaundice (yellowish eyes), abdominal pain, nausea, vomiting and yellowish urine. If present, stop TPT and refer to medical officer to rule out active liver disease.
- Check for allergic skin eruptions. If present stop treatment and refer to the medical officer.
- Evaluate adherence and counsel appropriately.
- Any client who did not come a week after his/her TPT appointment day should be tracked and managed appropriately.

If patient develops symptoms suggestive of active TB during the course of TPT:

- Discontinue TPT
- Assess for active TB
- Commence DOTS if confirmed or refer to medical officer
- Assess for ART/re-assess for ART failure

8.3.2.7 Management of children and adults whose TPT is interrupted

Interrupted treatment or incomplete TB preventive treatment is defined as the loss of at least one-third of the intended LTBI treatment regimen (a lapse in treatment that lasted at least 1 or 2 months consecutively depending on the TPT regimen employed).

For any client who misses appointment:

- Trace the client/care giver
- Find out the reason for missed appointment and address as appropriate
- Offer adherence counseling
- Evaluate to rule out active TB disease
- Prolong treatment to compensate for the missed doses

Refer to Table 8.11 below on management of IPT interruption

Table 8.11: Management of interruption of TPT

TPT Regimen	Length of Interruption	Next Step
3HR, 6H	Less than 2 weeks	<ul style="list-style-type: none"> a. Resume preventive treatment immediately upon return b. Add the number of days of missed doses to the total treatment duration.
	More than 2 weeks	<ul style="list-style-type: none"> a. If treatment interruption occurred after more than 80% of doses expected in the regimen were taken <ul style="list-style-type: none"> • No action is required. • Continue and complete the remaining treatment as per-original plan.



TPT Regimen	Length of Interruption	Next Step
3HR, 6H	More than 2 weeks	<p>b. If less than 80% of doses expected in the regimen were taken, and the treatment course can still be completed within the expected time for completion, i.e. treatment duration + 33% additional time.</p> <ul style="list-style-type: none"> • No action is required. • Continue and complete the remaining treatment as per original plan. <p>c. If less than 80% of doses expected in the regimen were taken, and the treatment course cannot be completed within the expected time for completion</p> <ul style="list-style-type: none"> • Restart the full TPT course.
3HP	Weekly schedule of one dose missed	<p>a. If the missed dose is remembered within the next 2 days</p> <ul style="list-style-type: none"> • Take the dose immediately. • Continue the schedule as originally planned <p>b. If the missed dose is remembered more than 2 days later.</p> <ul style="list-style-type: none"> • Take the missed dose immediately and change the schedule for weekly intake to the day the missed dose was taken until treatment completion.
	More than 1 weekly doses of 3HP missed	<p>a. If between 1-3 weekly doses are missed.</p> <ul style="list-style-type: none"> • Treatment is continued until all 12 doses are taken, thus prolonging the treatment duration to a maximum of 16 weeks <p>b. If 4 or more weekly doses are missed, restart the full TPT course.</p>
1HP	Less than 1 week	<p>a. If more than 80% (23) of doses expected in the regimen were taken.</p> <ul style="list-style-type: none"> • No action is required, complete the remaining doses <p>b. If less than 80% (23) of doses expected in the regimen were taken.</p> <ul style="list-style-type: none"> • Resume treatment immediately upon return • Add the missed doses to the total treatment duration to complete the course within a maximum of 6 weeks.
	More than 1 week	<p>a. If more than 7 consecutive doses were missed.</p> <ul style="list-style-type: none"> • Consider restarting the complete course of 1HP regimen. <p>b. If more than 7 doses were missed intermittently.</p> <ul style="list-style-type: none"> • Resume preventive treatment immediately upon return • Add the missed doses to the total treatment duration to complete the course within a maximum of 8 weeks <p>c. If adherence to 1HP is not possible</p> <ul style="list-style-type: none"> • consider discontinuing it and offering an alternative daily regimen or 3HP

* If attempt to complete LTBI treatment fails after 3 attempts, no further effort should be made.



8.3.2.8 Outcomes of TPT

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

1. Completed treatment
2. Loss to follow-up
3. Not evaluated
4. Died
5. Developed active TB

Refer to appendix 7 for algorithms on screening and diagnosing children and adults living with HIV for TB.

For further information on TPT, refer to the National TB Guidelines and the National Guidelines on Programmatic Management of Latent TB Infection in Nigeria.



Table 8.12: Common HIV-Related Opportunistic Infections (OIs): Clinical Features, Treatment, and Prophylaxis

Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Hepatitis	Hepatitis B Virus	There may be no signs and symptoms except as in chronic liver disease.	Screen for HBsAg. If positive, screen for the following: 1. HBsAg 2. Anti HBeAg 3. Anti HBcAg 4. Anti HCV 5. HBV-DNA 6. LFT 7. Abdominal ultrasound	The regimen should include TDF and 3TC, and where TDF is contraindicated, substitute for TDF and add Entecavir Refer for specialist care if complicated. Some may require PegInterferon treatment Baseline AFP if possible	1. HBsAg quantification if available 2. Liver biopsy if necessary 3. Baseline alpha fetoprotein (AFP) if possible Refer for specialist care if complicated. Some may require PegInterferon treatment Baseline AFP if possible
	Hepatitis C Virus	There may be no signs and symptoms except as in chronic liver disease.	1. Anti HCV 2. LFT 3. Abdominal ultrasound. 4. HCV RNA (Refer if positive) 5. FBC	Direct-acting antiviral (DAA); The Guideline Recommends the pan-genotypic regimen consisting of Sofosbuvir®- Daclatasvir Refer for specialist care for complicated cases.	
Acute watery Diarrhoea	-Viruses: -Rotavirus -Enteroviruses Other viruses	-Bacteria: -Enterobacteriae -E. Coli C. jejuni	Frequent watery stools	Clinical • Laboratory: - Stool m/c/s • Serology	Rehydrate (SSS, ORS or Resomal as required) Zinc supplement 20mg daily for 10-14 days for paediatric patients



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Dysentery	- <i>E. histolytica</i> - <i>G. Lamblia</i> - <i>Isospora belli</i> - <i>Cryptosporidia</i> - <i>Salmonella</i> spp. <i>Shigella</i> - <i>M. avium complex</i> - <i>S. Stercoralis</i> <i>Clostridium difficile</i>	Frequent watery stools, abdominal cramps bloody stools, fever, nausea and vomiting, dehydration	Clinical Laboratory: - Stool m/c/s Serology, e.g. Widal test	Oral rehydration If antibiotics required: - Ciprofloxacin - Metronidazole and CTX For Strongyloidiasis: - Albendazole - Oral Zinc therapy	Provide and maintain adequate nutrition E, U. Creatinine is useful to monitor renal complications
Tinea corporis Tinea capitis	<i>Malassezia furfur</i> <i>Trichophyton rubrum</i>	Itchy circular lesions with raised edges, fine scaly area in the centre, loss of hair	Clinical Laboratory: skin scrapings stained with KOH	Topical application: - Whitfield's ointment applied b.d. for 3-5 weeks - 2% Miconazole cream b.d to the skin for 3-5 weeks Oral therapy: itraconazole/ fluconazole	Extra caution for possible NVP interactions with ketoconazole (see the section on drug interactions) Internationally ketoconazole relatively contraindicated since 2013 due to increased idiosyncratic reactions
Seborrhoeic dermatitis	Allergic reaction to yeast infection (<i>Pityrosporum</i>)	Greasy scales over scalp and redness of cheek and flexural aspects	Clinical	Selenium sulphide shampoo or Tar shampoo followed by sulphur salicylic acid cream or 1% hydrocortisone, or Ketoconazole cream	Secondary bacterial infection may be common.



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Herpes zoster (Shingles)	<i>Varicella zoster virus</i>	Painful vesicular lesions in a dermatomal distribution, on the face and trunk	Clinical	<p>Adult:</p> <p>Acyclovir: 800mg 5 times/day for 7 days + amitriptyline 25mg nocte</p> <p>OR</p> <p>-10 mg/kg IV q8hr for 7 days</p> <ul style="list-style-type: none"> -Analgesics- NSAIDS, carbamazepine, amitriptyline -Local application of calamine lotion; -Topical application of Acyclovir cream - For painful vesicular unilateral lesions on face or trunk. - Add gentian violet topical application, tab pregabalin 75mg BD (adult) 7 to 10 days, <p>Paediatrics: Tab Acyclovir 30mg/kg/day tds x 7 days</p>	<p>Refer intractable cases for specialist care.</p> <p>Refer cases of herpes zoster involving the eye and ear for specialist care.</p>
Herpes simplex Genitalis	Herpes simplex virus-(HSV)	Blisters or painful sores on or around the genitals, rectum	Clinical	<p>Acylovir Tab 400mg tds for 7 -14 days</p> <p>OR 200mg 5 times daily for 7 -14 days</p>	



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Herpes virus encephalitis	Herpes simplex virus 1 and 2	Fever, altered consciousness, convulsions ± focal neurological signs	Increased CSF: serum HSV antibody ratio Viral isolation	IV Acyclovir Paediatrics: 20mg/kg tid x 21 days Adult: 10-15 mg/kg IV q8hr for 14-21 days	Nausea, vomiting, diarrhoea, headache, malaise, rash, seizures, renal dysfunction
Cytomegalovirus (CMV)	Enterocolitis: Fever, cramps, dysphagia, odynophagia, diarrhoea ± blood; CNS: Delirium, lethargy, headache, malaise, disorientation, neck stiffness, photophobia, cranial nerve palsy, blurred vision or “floaters”	Clinical Laboratory: Biopsy (intracellular inclusions) Serology Skull X-ray CT Scan CMV in CSF	Ganciclovir 5mg/kg IV bid x 2-3 weeks; Foscarnet IV 40-60mg/kg 8 hrly x 2-3 weeks Retinitis– Ophthalmological examination; same drug therapy as above.		
Measles	Measles virus	Fever, cough, red eyes, keratoconjunctivitis, coryza, maculo papular rash;	Clinical	Supportive therapy Antipyretics Vitamin A, antibiotics as indicated, adequate hydration	Highly contagious; Refer Complications; Nutrition support



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Herpes virus encephalitis	Herpes simplex virus 1 and 2	Fever, altered consciousness, convulsions ± focal neurological signs	Increased CSF: serum HSV antibody ratio Viral isolation	IV Acyclovir Paediatrics: 20mg/kg tid x 21days Adult: 10-15 mg/kg IV q8hr for 14-21 days	Nausea, vomiting, diarrhoea, headache, malaise, rash, seizures, renal dysfunction
Cytomegalovirus (CMV)	Enteritis Colitis CNS involvement	Enterocolitis: Fever, cramps, dysphagia, odynophagia, diarrhoea ± blood; CNS: Delirium, lethargy, headache, malaise disorientation, neck stiffness, photophobia, cranial nerve palsy, blurred vision or “floaters”	Clinical <u>Laboratory</u> :Biopsy (intracellular inclusions) Serology Skull X-ray CT Scan CMV in CSF	Ganciclovir 5mg/kg IV bid x 2-3 weeks; Foscarnet IV 40-60mg/kg 8 hourly x 2-3 weeks Retinitis– Ophthalmological examination; same drug therapy as above.	
Measles	<i>Measles virus</i>	Fever, cough, red eyes, keratoconjunctivitis, coryza, maculo papular rash; Complications: Pneumonia, diarrhoeal disease, malnutrition.	Clinical	Supportive therapy Antipyretics Vitamin A, antibiotics as indicated, adequate hydration	Highly contagious; Refer Complications; Nutrition support



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Pneumonia	<i>Respiratory viruses</i> <i>Bacteria:</i> S. pneumoniae H. influenza S. aureus M. catarrhalis Kl. pneumonia P. aeruginosa	Fever, chills, cough and pleuritic chest pain, difficulty/ fast breathing. Crepitations, bronchial breath sounds	Clinical Laboratory: blood culture. Chest x-ray - sputum examination	<p>Viral pneumonia is self limiting – requires only supportive care</p> <p>Bacterial:</p> <ul style="list-style-type: none"> - Out-patient therapy with CTX or Amoxicillin or Amoxicillin/clavulanic acid. For in-patient therapy: <ul style="list-style-type: none"> - 2nd and 3rd generation cephalosporin as 2nd line. ○ (Azithromycin or clarithromycin). ○ Respiratory quinolones (levofloxacin) in adults. 	<p>For severe pneumonia in children <12 months old treat PJP presumptively with CTX.</p> <p>If facilities to exclude PJP infections are not available or if a child on CPT develops bacterial pneumonia do not treat with CTX but refer.</p> <p>Quinolones are a 2nd line anti TB drug hence rule out TB before using quinolones(levofloxacin)</p>
Acute Pharyngo-tonsillitis	<i>Respiratory viruses</i> <i>Bacteria:</i> - Strep. pneumoniae - H. influenza - Moxerella Catarhatis - Klebs. pneumoniae	Fever, cough, vomiting, refusal of feeds, drooling of saliva, inflamed tonsils/ pharynx.	Clinical Laboratory: - Throat swab for m/c/s	<p>Amoxicillin or Amoxicillin/ clavulanic acid.</p> <p>2nd generation cephalosporin</p> <p>3rd and 4th generation cephalosporin, and respiratory quinolones (levofloxacin)</p>	



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Acute otitis media	<i>Respiratory viruses</i> <i>Bacteria:</i> - <i>Strep. pneumoniae</i> - <i>H. influenza</i> - <i>Staph. Aureus</i> - <i>Moraxella catarrhalis</i> - <i>Klebs. pneumoniae</i>	Fever, vomiting, cough, ear-tugging; Hyperaemic tympanic membrane, purulent ear discharge	Clinical Laboratory: - Ear swab for m/c/s	Amoxicillin or Amoxicillin/ clavulanic acid 2nd generation cephalosporin 3rd and 4th generation cephalosporin, and respiratory quinolones (levofloxacin)	
Chronic suppurative otitis media	- <i>S. pneumoniae</i> - <i>H. influenza</i> - <i>S. Aureus</i> - <i>M. Catarrhalis</i> - <i>Kl. pneumoniae</i> - <i>P. aeruginosa</i>	Ear discharge lasting >14 days	Clinical Laboratory: - Ear swab for m/c/s X-ray of mastoid	Refer to ENT specialist	Hearing loss is a complication
Impetigo	- <i>Streptococcus spp,</i> - <i>Staph. Aureus</i>	Skin pustules crusts, Fever (rarely)	Clinical	Clean sore with antiseptics Drain pus if fluctuant Ampicillin/cloxacillin Cefuroxime, cefixime, amoxicillin-clavulanic acid and flucloxacillin. Topical agents such as Mupirocin or Retapamulin	



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Malaria	Mainly <i>P. falciparum</i>	Fever, chills and rigour, headache, nausea and vomiting	Clinical Laboratory: malaria parasite in blood film RDT.	<p>Uncomplicated: Artemisinin-based Combination Therapy</p> <p>Complicated:</p> <ul style="list-style-type: none"> • Injectable Artesunate - Avoid ACT containing amodiaquine in patients taking zidovudine or EFV. - Avoid ACT containing sulfadoxine-pyrimethamine combination if a patient is on CPT. - Avoid Intermittent Preventive Treatment (IPT) for malaria in pregnancy if the patient is on CPT. 	<p>Refer to a higher-level facility if complicated</p> <p>There is an increased risk of neutropenia with AZT and increased risk of hepatotoxicity with EFV.</p>
Sepsis	<ul style="list-style-type: none"> - <i>S. pneumoniae</i> - <i>H. influenzae</i> - <i>Salmonella</i> - <i>N. meningitidis</i> - <i>Staph aureus</i> - <i>Gramnegatives</i> (e.g. <i>E. coli</i>) - <i>Anaerobes</i> 	Fever Shock	Clinical assessment	<p>While awaiting m/c/s results, either:</p> <ul style="list-style-type: none"> - Penicillin + Gentamycin - Amoxicillin/clavulanic acid + genticin - Metronidazole for anaerobes 2nd or 3rd generation - Cephalosporin and amoxicillin-clavulanic acid with/out other antibiotics depending on the focus of infection 	<p>Refer to a tertiary facility if necessary</p> <p>If in shock, provide supportive therapy</p>



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Acute bacterial Meningitis	- <i>S. pneumoniae</i> - <i>H. influenzae</i> - <i>Salmonella</i> - <i>N. meningitidis</i> - <i>Staph aureus</i>	Fever, headache, vomiting, irritability, altered sensorium, convulsions Nuchal rigidity, bulging fontanelle (in children)	Clinical assessment Laboratory: -FBC -Blood culture -CSF analysis	Penicillin & Chloramphenicol or 3rd generation cephalosporin + Gentamycin Supportive treatment	Refer to a tertiary facility if necessary
Scabies	- <i>Sarcoptes scabiei</i>	Intense itchy lesions most prominent in inter-digital web, spaces of the fingers, wrist, buttocks and axillary area; Papular rashes or generalised (Norwegian)	Clinical, Laboratory: Microscopy on KOH prep. of skin scrapings	2.5% Benzyl benzoate applied whole body, neck down nocte for 3 days OR Permethrin cream 5% applied whole body, neck down and washed off after 8 – 14 hours. Repeat after 1 – 2 weeks. If poor response to topical treatment then oral Ivermectin tablet 200mg/kg stat, repeat after 7 - 14 days +/- 2.5% benzyl benzoate or Crotamiton.	Treat super-imposed bacterial infection with oral antibiotics Treat all household members even if asymptomatic Ivermectin is not recommended for children below 15kg and pregnant or lactating women



Infection/ Conditions	Causative organisms	Symptoms and signs	Diagnosis	Treatment and Prophylaxis	Comments
Mycobacterium Avium Complex	<i>M. Avium spp.</i>	Disseminated form – recurrent fever, chronic diarrhoea, lymphadenopathy, weight loss/failure to thrive, abdominal pain, Respiratory symptoms may occur	Clinical Laboratory: Multiple blood cultures; Lymph node biopsy for intracellular inclusions	<p>Adult:</p> <ul style="list-style-type: none"> - Clarithromycin 500 mg b.d. + ethambutol 15 mg/kg daily with or without rifabutin (300 mg daily) - Azithromycin (500-600 mg daily) can be substituted for clarithromycin. <p>Paediatrics:</p> <ul style="list-style-type: none"> - Clarithromycin 7.5mg/kg/dose b.d or azithromycin 5-20mg/kg/dose once daily plus Ethambutol 1.5mg/kg/day for 6 months. Prophylaxis: guided by CD4+ count 	<p>Nausea and vomiting</p> <p>Optic neuritis may occur with ethambutol</p>
Lymphoid interstitial pneumonitis (LIP)	<i>Unknown, but associated with co-infection with Epstein Barr Virus</i>	May initially be asymptomatic.	Clinical Diagnosis of exclusion. Chest X-Ray: reticulo-nodular infiltrates, bilateral hilar/mediastinal lymphadenopathy;	<p>Steroids (prednisolone 2mg/kg/day x 6 weeks, taper off)</p> <p>Oxygen</p> <p>Bronchodilators (salbutamol)</p> <p>Chest physiotherapy</p>	<p>Complications of therapy with prednisolone include</p> <p>Hypertension, gastritis, adrenal insufficiency, seizures, pseudotumour cerebri, hypokalaemia, fluid retention, glucose intolerance</p>



8.4 HIV-Related Co-Morbidities

Table 8.13 Common HIV-Related Co-Morbidities

Comorbidities	Example	Comment
Cardiovascular	1. Hypertension 2. Heart failure 3. Cardiomyopathy 4. Arrhythmias 5. Arteriosclerosis/Ischaemic heart diseases/Cerebrovascular diseases	Asses all PLHIV for risk of CVD and implement risk reduction strategies. Treat uncomplicated hypertension and heart failure refer others for specialist care
Others	Type 2 diabetes, Asthma Chronic obstructive pulmonary disease(COPD) Breast and Cervical cancers	Clients should be assessed and managed for these diseases including referral for specialist care where necessary. All women with HIV should be screened for cervical cancer regardless of age.

8.5 Mental Health and HIV

Mental health problems can increase the risk of HIV acquisition both directly and indirectly. In sub-Saharan Africa (SSA) HIV constitutes a major burden on mental health-related challenges [28]. The prevalence of depressive illness amongst PLHIV on ART in SSA is estimated to range from 29 to 63.1% [28]. HIV neuro-inflammation occurs nearly in every person that is HIV infected but may present with symptoms in only about 60% of patients [29] who are said to have HIV-associated neurocognitive disorder (HAND). Although the severity of HAND is said to reduce in the era of combination antiretroviral therapy the neuro-inflammation is a long-lasting inflammation that still manifests as symptoms even in some individuals on effective ARV giving rise to the notion that neurocognitive decline may be resistant to treatment in some patients [29]. HIV-associated neurocognitive disorder (HAND) is not only a long-lasting disorder, it is associated with a profound decrease in the quality of life. It complicates autonomy, may adversely modify ARV treatment adherence and can produce high-level vulnerability to wrong judgment and accidents. Therefore, this guideline recommends that every PLHIV should have a mental health assessment.

8.5.1 Recommendations

1. Conduct an assessment for HAND
2. Manage HAND appropriately



Table 8.14: Assessment for HAND as Proposed by the National Institute of Neurological Diseases and Stroke

Hand Type	Diagnostic Criteria
HIV-associated asymptomatic neurocognitive impairment (ANI)	<ul style="list-style-type: none"> • Slight cognitive deficits in two or more neuropsychological domains • Cognitive function impairment does not affect daily functioning • Neurocognitive disorders fail to meet the criteria for delirium or dementia • There is no evidence of pre-existing cause of ANI
HIV-associated mild neurocognitive disorder (MND)	<ul style="list-style-type: none"> • Mild or moderate cognitive function impairment in two or more neuropsychological domains • Cognitive disorders affect, at least to a mild extent, daily functioning • Cognitive disorders fail to meet the criteria for delirium or dementia • They are not conditioned by other concomitant diseases • A patient may display mild concentration, attention or memory disturbances (e.g. complaints about difficulty in reading)
HIV-associated dementia (HAD)	<ul style="list-style-type: none"> • Moderate or severe cognitive function impairment in two or more neuropsychological domains • Considerable difficulty in performing daily functions associated with intensification of cognitive disorders • Cognitive disorders fail to meet the criteria for delirium • Cognitive disorders are not conditioned by comorbid diseases • The patient may develop speech problems, emotional shallowness, lack of spontaneity and social withdrawal

8.5.2 Management Considerations

The key principle to management of HAND is to:

1. Exclude cerebral OIs which may mimic features of HAND or depression
2. Implementation of treatment for depression among people with HIV may require task-shifting, building health worker capacity, national adaptation of screening tools and simplification of tools for use by nonspecialized primary Health care providers.
3. The patient is placed on effective ART with good central nervous system (CNS) penetration capacity.
4. The patient is appropriately referred for expert Neuropsychiatric assessment

Another Mental health screening tool for PLHIV according to the New York state department of Health AIDS Institute is described in appendix 2.



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Chapter 8

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9. SERVICE DELIVERY

What's Inside:

9.1 Introduction.....	150
9.2 Differentiated Service Delivery.....	150
9.2 Standards for Quality HIV Service Delivery.....	163
9.3 Nutrition.....	167
9.4 Service Delivery for Adolescents Living with HIV.....	169

9.1 Introduction

Healthcare service delivery in the context of HIV management provides the continuum of care to PLHIV that ensures access to HIV prevention, treatment and care aimed at promoting sustained virological suppression and improved quality of life.

Responsive HIV service delivery that meets the needs of various sub-populations is required to ensure equitable, accessible, acceptable, appropriate and effective health services for PLHIV. In Nigeria barriers to treatment access still exist. These include service-related, structural, policy and stage of life barriers. With the introduction of 'Test and Treat', as recommended by the 2016 National Guidelines for HIV Prevention Treatment and Care in Nigeria, the burden of HIV service delivery on health facilities has increased.

To achieve the goal of virological suppression and ensure client-centred care, Nigeria must adopt innovative strategies at both the health facility and community level. These strategies reduce the challenges and barriers associated with accessing HIV services and enable healthcare workers to strategically focus HIV investments and resources on clients with AHD and those who are not stable on treatment. As a nation, they are critical to enabling us to achieve the UNAIDS 95:95:95 goals. They must be targeted at and appropriate for the various sub populations of PLHIV to ensure that no group is left behind.

9.2 Differentiated Service Delivery

Differentiated service delivery (DSD), which is synonymous with differentiated care, is “an approach that simplifies and adapts HIV services to better serve the needs of PLHIV whilst reducing unnecessary burdens on the health system” [30]. The concept of DSD is client-centred, focusing on the needs and expectations of PLHIV, those vulnerable to acquiring HIV and how to meet these needs. It seeks to improve access, quality and efficiency of health systems by re-examining traditional service delivery approaches and building upon existing structures in both the health facilities and the communities. Differentiated service delivery integrates task shifting, decentralization, integration and simplification of care across the HIV care continuum. This service delivery approach provides strategies tailored to specific patient populations. It is also termed patient-centred or focused care and aims to efficiently deliver quality services that are deemed satisfactory by the client, whilst also empowering the clients and their communities.

There are various types of DSD models which prioritize access and linkage to HTS, rapid ART initiation, re-engagement in care, adherence and retention, all with the goal of achieving sustained virological suppression.

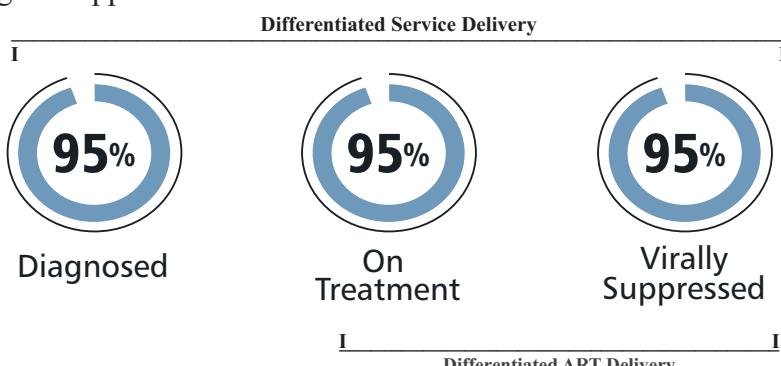


Figure 9.1: Differentiated Care – Application across the HIV Care continuum



9.2.1 Differentiated HIV Testing Service Delivery

HIV Testing Services (HTS) are the full range of services that should be provided together with HIV testing and the following components: counselling; linkage to appropriate HIV prevention, treatment and care services; other support services and coordination with laboratory services to support quality assurance and the delivery of correct results.

This chapter will focus on Differentiated ART Service Delivery (Guidelines for Differentiated HIV Testing Services are addressed in Chapter Two).

9.2.2 Differentiated ART Service Delivery

Differentiated ART service delivery describes a series of management approaches that align with the clinical status (clinically stable or unstable) of PLHIV and their needs and preferences [30]. Models are broadly classified as facility-based or community-based.

- Facility-based models are HIV treatment and care models where services are offered within the existing health facilities
- Community-based models are HIV treatment and care models where services are offered outside the existing health facilities.

These models implement either one or a combination of the following approaches:

- Differentiated patient flow: dedicated client pathways at sites for specific patient populations based on patient needs e.g. new patients and those with AHD.
- Differentiated schedules: adapting clinic flow or dedicating hours, days or appointments for specific populations such as adolescents.
- Differentiated locations: providing services to certain groups of clients such as stable adults and adolescents within the community; and One Stop Shops for Key Populations.

Table 9.1: Models of differentiated ART Service Delivery in the Country

FACILITY - BASED	COMMUNITY - BASED
Fast track (Individual or Group): stable clients pick their drugs from the facility pharmacy without going through the normal clinic flow, including a doctor's review	Community drug distribution points : These are designated points within the community where ARVs and other medications are dispensed to stable PLHIV
Multi-month dispensing: Medication dispensing interval of 3 months and above.	Community Pharmacy Refills
Health Facility Based ART Group These are health facility -based groups formed voluntarily by support groups of persons living with HIV who are already meeting regularly at the health facility for ARVs and other medication refills. This can either be client-led or Healthcare provider-led:	Community ART Group (CAG) These are community -based groups formed voluntarily by persons living with HIV within a community for ARVs and other medication refills. This can either be PLHIV led or healthcare provider led. These healthcare providers may include community health workers, case managers and other trained volunteers.



Decentralization : refers to the devolution of stable clients from larger, centralized secondary and tertiary facilities (hubs), to smaller more peripheral primary facilities (spokes). This can be either:

- semi-autonomous model which restricts ART service delivery at PHCs to ARV and medication refills only
- autonomous model which allows for ART initiation at the PHC level and also ARV and medication refills.

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

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

One-Stop Shops and Mobile Clinics are community-based service delivery sites where multiple services are offered and clients can access all their needs under one roof targeted specifically at providing services for Key Populations

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

Differentiating service delivery should be based on local assessment which is targeted to improve patient satisfaction, quality of care offered and outcomes. Clients are offered packages of care based on four building blocks (delivery components) and three elements [30]. These characteristics can be applied across the entire HIV care continuum, for both stable and unstable PLHIV who are new to treatment or on long-term follow-up. The building blocks are:

- WHERE services are provided (service location)
- WHAT service packages are offered (service intensity)
- WHO is the service provider (health worker cadre)
- WHEN the recommended frequency of visits (service frequency)

The 3 elements to be considered in each assessment for differentiating service delivery are:

- Clinical Characteristics – Patient stability and associated co-morbidities
- Specific Populations – Children, Adolescents, Women (Pregnant and breastfeeding), Men and Key Populations
- Context – Urban or rural location, unstable context (e.g. conflict, high migration) and epidemic/pandemic scenarios



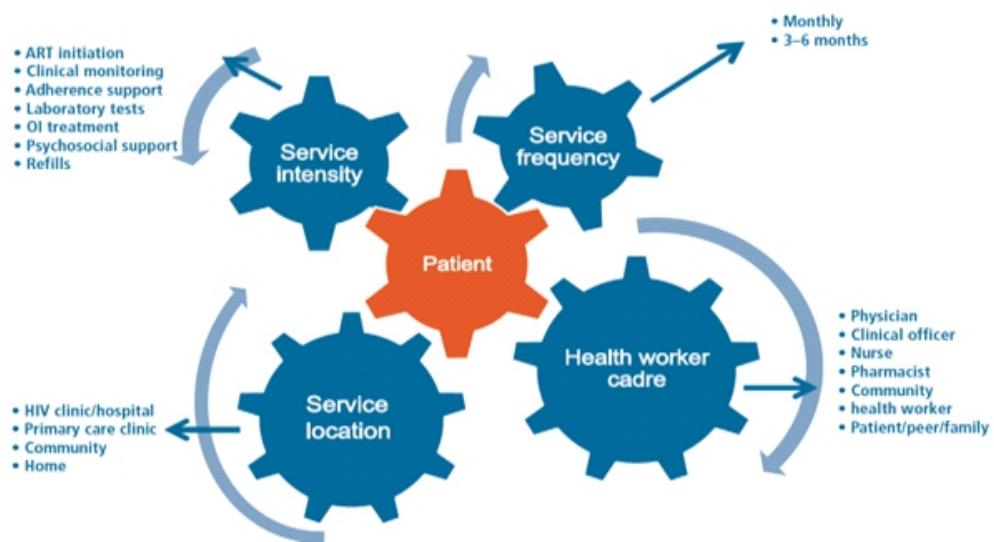


Figure 9.2: Key factors in differentiated approaches to HIV care

9.2.3 Differentiated Service Delivery Based on Clinical Characteristics

Non-pregnant adult PLHIV can be categorized into four broad groups, each with distinct care needs namely;

- Newly diagnosed or re-engaging clients who are well
- Clients who present with AHD
- Clients who are on ART and stable
- Clients on ART and unstable

It is recommended that each of these groups is offered care packages which address their peculiar needs.

Table 9.2: Care Package Elements for Distinct Groups of PLHIV

People living with HIV	Care package elements and focus of care
Newly diagnosed, generally well at presentation, in WHO stage 1 and 2 with high CD4+ cell counts (>200 cells/mm ³)	<p>Preparation for ART requires readiness and willingness to initiate treatment. Adherence and retention in care are essential in committing to lifelong ART.</p> <ul style="list-style-type: none"> - Adherence counselling - ART Initiation - TPT - Retention support - TB screening
Advanced HIV disease (CD4+ cell count <200 cells/mm ³ and /or WHO disease stages 3 and 4)	<p>Accelerated clinical response to prevent death and reduce illness with the following:</p> <ul style="list-style-type: none"> - Appropriately timed initiation of ART (taking the risk of IRIS into consideration) - Screening and management of OIs and other care and support services - TB screening, diagnosis and treatment - CPT and TPT



People living with HIV	Care package elements and focus of care
Patients who are on ART and are unstable	<ul style="list-style-type: none"> - Close monitoring for identification and management of opportunistic infections - Adherence monitoring - Treatment literacy and retention support - Viral load testing - Switch to second- or third-line ART if indicated - TB screening, diagnosis and treatment - CPT and TPT - Monitoring for HIV drug resistance (HIVDR) - Other care and support services
Patients who are on ART and are stable	<ul style="list-style-type: none"> - Reduced frequency of clinic visits - Community ART delivery models

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

Stability is defined based on duration on ART, age, clinical status, level of adherence and treatment success. Children, men and non-pregnant/breastfeeding women living with HIV are stated to be stable or unstable based on the following criteria:

Table 9.3: Stability Criteria for Children, Adult Men and Non-Pregnant Women

Criteria	STABLE	UNSTABLE/COMPLEX
Age	Adults, Adolescents and Children > 5yrs	Children < 5yrs
Duration of ART	On ART for at least one year	<ul style="list-style-type: none"> - ART naïve patients - On ART less than one year
Clinical status *	Clinically stable with no opportunistic infections or current illnesses	<ul style="list-style-type: none"> - AHD (WHO clinical stages 3-4) - Co-morbidities e.g. diabetes mellitus, heart, chronic liver, and chronic kidney diseases
Adherence	<ul style="list-style-type: none"> - Adherent with an optimal understanding of lifelong treatment - Age-appropriate disclosure desirable for children and adolescents 	<ul style="list-style-type: none"> - Poor adherence - Orphans and vulnerable children
Treatment	<ul style="list-style-type: none"> - Evidence of treatment success - two consecutive viral load measurements < 1,000 copies/ml - Has initiated/completed TPT - Has no adverse drug reactions that require regular monitoring 	<ul style="list-style-type: none"> - Unsuppressed viral load - On 2nd or 3rd line regimen - On recently changed regimen < 6months - Experiencing treatment failure
Monitoring	<ul style="list-style-type: none"> - Does not require close monitoring at the facility level - Regular CD4+ cell count monitoring is unnecessary 	<ul style="list-style-type: none"> - Close monitoring necessary at the facility level - CD4+ cell count monitoring may be required

*All mentally impaired or retarded PLHIV, including those with psychiatric manifestations should be classified as unstable, irrespective of the age, CD4+cell count or viral load ;Unstable clients require closer monitoring and should receive facility-based care. They should not be devolved into any community model of differentiated ART delivery; Clients devolved to community- based models who become unstable should be referred back to the mainstream facility for closer monitoring.



Stable clients can be offered packages of care at the community level that do not include CD4+ cell count monitoring and also a reduction in the frequency of:

- Clinical consultations to every 3-6 months
- ARV drug refills and medication pickup to every 3 months

9.2.4 Differentiated Service Delivery based on Sub-Populations

The various sub-populations of PLHIV considered for differentiated ART service delivery include :

- Pregnant and breastfeeding women
- Children
- Adolescents and young people
- Adult men and non-pregnant women
- Key Populations (KPs)

9.2.4.1 Differentiated Service Delivery for Pregnant and Breastfeeding Women

The facility-based DSD model of care is recommended for Pregnant and Breastfeeding women as it makes provision for safe delivery practices, promotes mother/baby pair, in addition to prevention of mother-to-child transmission and antiretroviral therapy.

Stability Criteria for Pregnant and Breastfeeding Women: The stability criteria for pregnant and breastfeeding women differs from the criteria for non-pregnant adults and children and is based on the viral load in the index pregnancy and previous PMTCT outcomes.

A pregnant or breast-feeding woman is stated to be stable or unstable based on the criteria outlined in Table 9.4.

Table 9.4: Stability Criteria for Pregnant and Breastfeeding Women

STABLE	UNSTABLE
Viral load < 1000copies/ml in index pregnancy	Viral load >1000copies/ml or unknown VL
Has had a previous PMTCT experience and had a child with a HIV negative test result at 18 months	<ul style="list-style-type: none"> - Is a newly diagnosed PLHIV - Is less than 20 years of age - Has an obstetric or medical condition - First PMTCT experience irrespective of ART status - Previous PMTCT experience with a negative outcome

It is recommended that pregnant and breastfeeding women be categorized into the following groups. This categorization will assist in deciding the most appropriate DSD model especially if a facility-based DSD model is not available in the environment.

- It is recommended that stable pregnant and breastfeeding women should continue on DSD as appropriate to their peculiar situation. Their ART and antenatal clinic visits should be synchronized for those previously receiving care in a facility model of DSD. However, if she had been devolved into a community model of DSD, she should be linked to a health facility for antenatal services and to a health care provider-led group or mentor mother-led group for her drug pick up.
- The facility-based DSD model of care is recommended for all unstable pregnant and



breastfeeding women and children up to five years, at the secondary or tertiary facility level, to ensure PMTCT and Safe delivery. Women on facility-based DSD models prior to delivery may choose to maintain such but clinical consultation should be aligned with Mother-Infant Pair (MIP) visits. It is recommended that ARV/medication refills should not exceed 3 months.

- It is recommended that all unstable pregnant women should be managed at a facility model of DSD
- Stable pregnant and breastfeeding women who were devolved to a community model of DSD prior to pregnancy can continue to receive ARV/medication refills at the community level but should be linked to a facility for ANC.
- Alignment of clinical visits and ARV/medication refills for the mother-infant pair is recommended
- ARV/medication refills should NOT exceed 3 months

9.2.4.2 Differentiated Service Delivery for Children

Children are peculiar and are often not adequately catered for in most health care programs. Based on this, it is recommended that the DSD model a child is devolved to should, as much as possible align with that of the mother or the caregiver (if also on ART).

Children should be considered for enrollment into DSD from 5 years and above when they meet the enrollment criteria. It is imperative that the time frame for children to be seen at the primary treatment facilities should not be longer than 3 months in any case scenario. If, however, at any point after enrollment the criteria for eligibility for DSD are not met, the child should be promptly referred back to the facility of primary treatment for review and continued management.

Special Scenarios: Incarcerated children, those in boarding schools and children whose parents are classified as KPs, should also be categorized as stable or unstable based on the criteria listed in table 9.3 above. Provision should also be made for their caregivers, lay providers, and school matrons to pick up their ART drug refills. It is recommended that clinical consultations for those in boarding schools should be aligned as much as possible with school holidays.

It is recommended that all unstable children should be managed at a facility model of DSD. Children (from 5 years), who are stable can be devolved into a community model of DSD, however, ARV/medication refills should NOT be dispensed for more than 3 months and clinical consultation visits should take place at the mainstream health facility every 3 months



9.2.4.3 Differentiated Service Delivery for Adolescents and Young People (AYP)

Differentiated service delivery for AYP focuses on the preferences and expectations of this sub-population. It aims at offering fewer intensive services to those who are stable on ART. Adolescents and young people with AHD at initiation should be provided with a package of care targeted to ensure stability within the first year of care. Stable clients on DSD who become unstable should be referred back to the mainstream facility for the continuum of care.

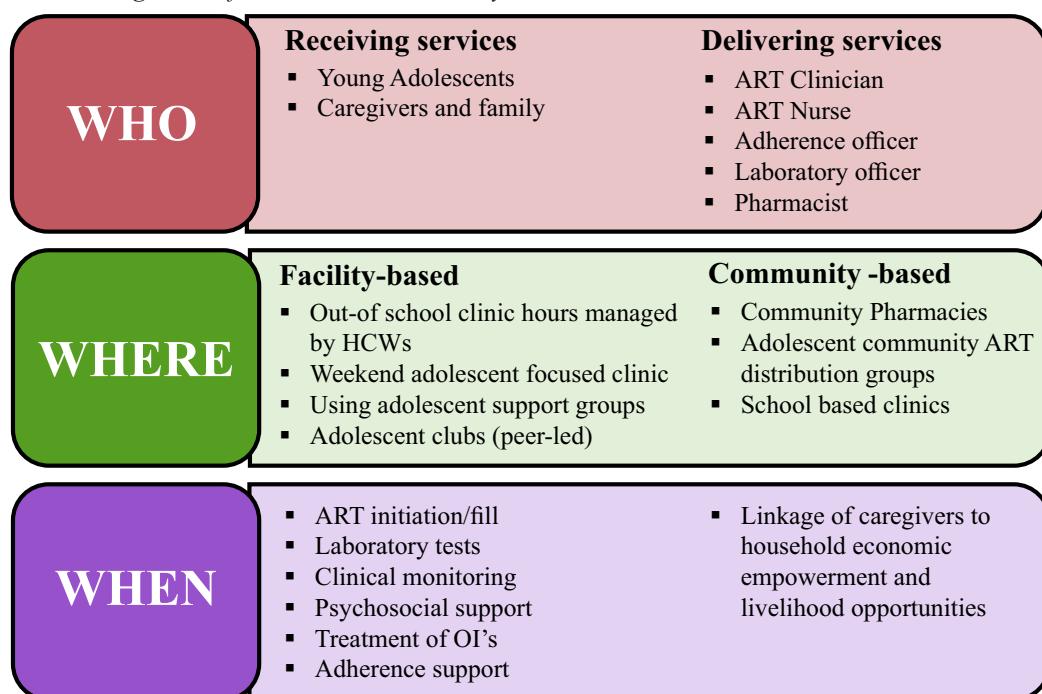
It is recommended that a family approach be adopted for stable AYP, whereby families receive same-day appointments, same-length ART refills or allowing one family member (rotated) to collect ART refills for other stable family members.

The principles of DSD models for AYP living with HIV should include the following:

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

DSD Modelling Approaches for AYP: These models outlined in Figures 9.3 and 9.4 below should be implemented primarily for stable adolescents whose ART refill should be every three to six months with clinical reviews completed at each visit. ART refills can also take place at the adolescents' club or support group meetings or within community ART groups. Where feasible, community volunteers should conduct monthly home visits to stable adolescents in community models. Unstable adolescents should have ART refills and clinical consultations conducted more frequently (one to two-monthly basis) at the facility.

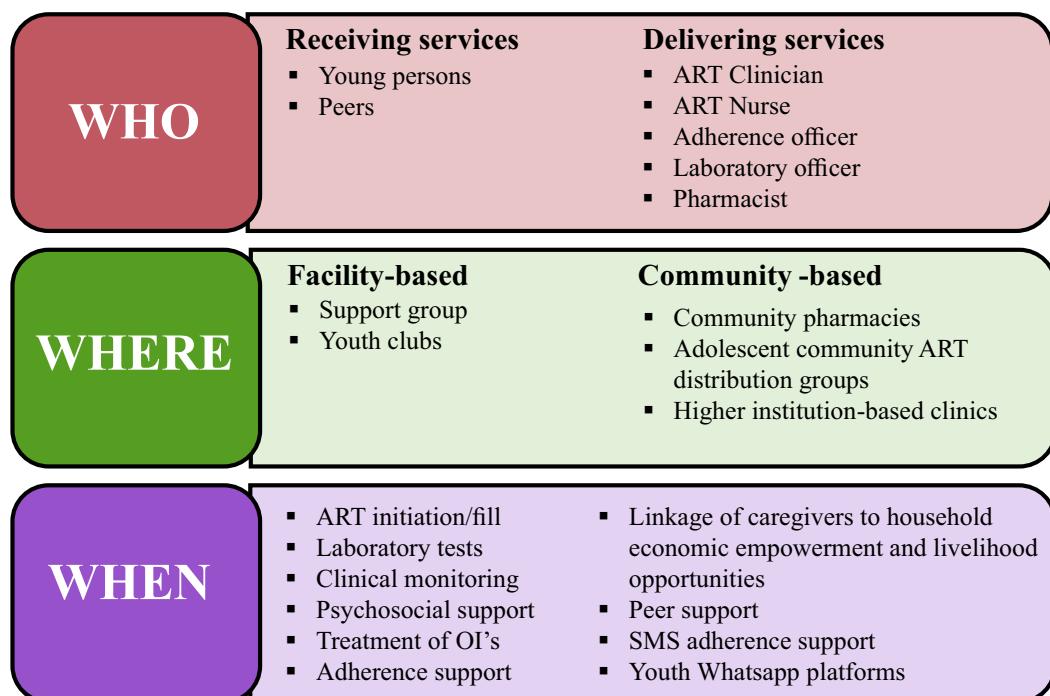
Figure 9.3: Building Blocks for DSD in AYP 10 – 19 years



*For already mapped-out schools with established clinics



Figure 9.4: Building Blocks for DSD in AYP 20 – 24 years



*For already mapped-out institutions with established clinics

9.2.4.4 Differentiated Service Delivery for Men and Non-Pregnant Women

It is recommended that adult men and non-pregnant women who are stable on ART be differentiated to models of care that offer less frequent clinical consultations (3-6 months) and drug refills (3-6 months).

Recommendations made below for service delivery in adults will be divided into those recommended at baseline, for those presenting well or with AHD and also for those who are stable or unstable after at least 1 year on ART.

Table 9.5: Packages of Care for Newly Diagnosed, Re-engaging or AHD Clients

Baseline Package of Care	Client Presenting Well	Advanced HIV Disease
Who qualifies for the package of care	Client with WHO clinical stage 1 or 2 or CD4+ count > 200 cell/mm ³	Client with WHO clinical stage 3 or 4 or CD4+ count <200 cell/mm ³
Who is the Service Provider	Healthcare workers trained to provide ART services (Clinician, Nurse, adherence counsellor, laboratory and pharmacy personnel) *	Healthcare workers trained to provide ART services (Clinician, Nurse, adherence counsellor, laboratory and pharmacy personnel)
Service Location	Approved health facilities	Approved health facilities
Service Intensity (Packages Offered) and Service Frequency		
Clinical consultations	**Monthly for the first 2 months, thereafter 2-monthly for the first year.	** Weekly/Bi-weekly in the first 1 month Monthly for the first 2 months, thereafter 2-monthly for the first year



Baseline Package of Care	Client Presenting Well	Advanced HIV Disease
ART Refill Visits	**Monthly for the first 2 months, thereafter 2 -monthly for the first year.	**Monthly for the first 2 months, thereafter 2 -monthly for the first year
Monitoring	Laboratory monitoring tests may differ according to the level of the health care facility and should be done according to the schedule approved in the National Guidelines	Laboratory monitoring tests may differ according to the level of the health care facility and should be done according to the schedule approved in the National Guidelines. Additional tests may be indicated based on diagnosed OIs
Ancillary services: psycho-social services, intensified adherence support chronic care/PHDP Services	At every clinic contact	Every week for the first 1 month At every clinic contact subsequently

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

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

Table 9.6: Packages of Care for Clients who have been on ART for at least 1 year

Package of Care	Stable Client	Unstable Client
Service Location	Community models of DSD and Approved health facilities	Approved health facilities No devolvement till stable
Service Intensity (Packages Offered) and Service Frequency		
Clinical consultations	Less frequent – 3 to 6 monthly	Frequent - Monthly for 3 months or as indicated; subsequently as indicated.
ART Refill Visits	Less frequent – 3 to 6 monthly	Frequent - monthly for 3 months; subsequently 2 monthly or as indicated
Monitoring	VL monitoring annually Cessation of CD4+ count monitoring if viral load testing is available	VL monitoring at the end of 3 months after EAC for unsuppressed patients; subsequently according to National guidelines
Ancillary services: psycho-social services intensified adherence support chronic care/PHDP Services	Aligned with clinic visit and ART refill	Monthly for 3 months or as indicated; subsequently aligned with clinic visits



9.2.4.5 Differentiated Service Delivery for Key Populations

Key populations (KPs) are defined as “groups who due to specific higher-risk behaviours, are at increased risk of HIV irrespective of the epidemic type or local context” [1].

Internally Displaced Persons (IDPs), people in closed settings, fishing communities, truckers, marginalized or minority groups such as undocumented migrants, ethnic and sexual minorities etc. are also categorized as vulnerable and hard-to-reach populations.

The stability criteria used in streamlining service delivery for PLHIV are not as suitable for KPs due to the following reasons:

- The health-seeking behaviour of KPs is geared towards alternative structures that are community- based and not facility-based and this also means that identification of new cases will be at these alternative community structures.
 - Key Populations are also highly mobile in nature.
 - There are ancillary services uniquely demanded by KPs which include legal aid support, interventions for gender-based violence, Mental Health and Psychosocial Services (MHPSS). These are not provided under one roof or in most health facilities and this mitigates against KPs accessing and being retained in care at these health facilities.
 - The fear of stigmatization, discrimination and a criminalizing legal environment is also a huge challenge at the health facilities. An enabling environment (safe space) that provides the full complement of services required by this group is pertinent.
- Based on the above peculiarities the following models are advocated for service delivery to key populations
- One-Stop-Shop (OSS) strategy: This refers to the delivery of a comprehensive service package, under one roof, which is non-discriminatory, non-stigmatizing, safe, friendly and in a conducive environment.
 - Mobile ART teams (MART): These are trained healthcare service providers that often compose of at least 3 members namely; a clinician, a pharmacist and a laboratory scientist. These teams leverage on outreaches and designated hot spots to provide services to KPs.
 - Community Pharmacy (CP): These are pharmacies within the community used for ARV refills to maintain good adherence to ARVs and retention on ART.
 - Focal Service Providers (FSP): These are trained personnel who reside within the community and can easily be called upon to provide tailored services to KPs within their environment.
 - Peer-led support group meetings: This is a confidential platform where meetings are routinely held during which ART refills, adherence education/reinforcement and general social support are provided basically to strengthen retention in care. Guidance is also provided by experts during such meetings.
 - Key Population Friendly Health Facility: These facilities provide comprehensive services for KPs in a friendly and conducive environment. They ensure that all community-level DSD models for KPs are provided with a strong linkage to the Health facilities.



Table 9.7: Service Package and Level of Provision

Where service is delivered	Community Level					Facility Level
Service Delivery Model	OSS	MART	FSP	CP	Peer Support Group	HCP
HTS	✓	✓	✓	✓		✓
ART enrolment/Initiation	✓	✓	✓			✓
ARV refills (3,6 MMD)	✓	✓	✓	✓	✓	✓
STI screening /diagnosis	✓	✓	✓	✓	✓	✓
TPT/CPT	✓	✓	✓	✓	✓	✓
GBV intervention	✓	✓				✓
Legal support services	✓				✓	
Harm reduction (NSP, Overdose &wound management)	✓	✓	✓	✓	✓	✓
Harm Reduction (OST)						✓
Hepatitis screening	✓					✓
TB screening (five questions using screening tool)	✓	✓	✓	✓	✓	✓
Cervical cancer screening	✓					✓
PMTCT (ANC/ART)						✓
HIV exposed infant prophylaxis/ EID	✓					✓

9.2.5 Differentiated Service Delivery Based on Context

The context in which HIV services are offered takes into consideration the prevalence rates of HIV in these areas (high or low), whether the epidemic is concentrated, generalized or mixed and also the location (urban or rural), where services are offered. Unstable, challenging settings such as conflict regions, high migration areas and border towns also require specifically tailored interventions to ensure that affected populations can access quality HIV services within these challenging scenarios. Linkages to and sustained care may be hindered by distance, terrain, safety concerns, transportation costs and few, over-burdened health facilities with long waiting times. It is recommended that differentiated service delivery models take into consideration the context in which services are required in such communities and be tailored to the specific needs of these individuals.

Pandemics associated with other infectious diseases lead to scenarios where there may be competing needs for human, infrastructural and financial resources. When these scenarios also involve nationwide or regional lockdowns, physical and social distancing, the challenges to healthcare service delivery are increased. These scenarios such as with the COVID-19 pandemic require innovative approaches to service delivery to ensure continuity of services, retention in care of clients and sustained viral load suppression. Refer to the guidelines on providing ART services in the presence of a complex emergency.

9.2.6 Integration of Service Delivery

It is recommended that facility and community- based sites leverage on differentiated service delivery models for ART and integrate other services. This is cost-effective in terms of human



and financial resources and will also improve the scale-up of these services. The following can be integrated into differentiated care models for ART service delivery:

- Tuberculosis Preventive Therapy (TPT)
- Sexual and Reproductive Health Services (SRHS)
- Viral hepatitis
- Sexually transmitted Infections
- Mental health services
- Men's health
- Substance use/abuse services
- Non-communicable disease services
- Food and nutrition support

Self-care is defined as “the ability of individuals, families and communities to promote health, maintain health, prevent disease and to cope with illness and disability, with or without the support of a healthcare provider”[30]. It empowers individuals, families and communities for informed health decision-making, improved access, ensure health equity and improved efficiency of health systems. Community-based DSD with its pre-established linkages to health facilities provides an enabling environment for the implementation of self-care interventions whilst ensuring the availability of hospital/specialist care, where necessary. Self-care interventions share common elements across health programs for SRHS, communicable and non-communicable diseases. The recommended interventions for self-care in PLHIV include the following:

- Self-testing/monitoring: HIV self-testing, hepatitis B and C testing, blood pressure and blood sugar monitoring
- HPV self-sampling
- Prevention transmission interventions - to combat STIs and promote sexual health
 - o PrEP and PEP
 - o safer sexual and injection drug use practices (including over the counter condoms, oral contraceptive pills and provision of safe injection packs)
 - o eliminating unsafe abortion
- Healthy lifestyle routines – nutrition, physical exercise, sleep patterns, water/sanitation hygiene and stress management

9.2.7 Family-Centred Differentiated Service Delivery

Family-centred DSD in the context of HIV services provides integrated services for family members at the same time (when), by the same healthcare provider (who) at the same venue (where). Family-centred care, though not new have had limited applicability. These interventions seek to align visits at facility or community level for family members, including children and adolescents to further improve efficiency, adherence, retention in care and virological suppression of patients. It also reduces the multiplicity of healthcare workers offering one family services, thereby reducing the frequency and intensity of contact with healthcare providers. It is recommended that implementation of DSD models provide an avenue to implement and scale-up family-centred interventions which have benefits for not only the patients and affected caregivers, but also the healthcare system itself.



- Differentiated ART service delivery models are broadly classified as facility-based or community-based and all community-based models of service delivery should be linked to an approved facility.
- It is recommended that all unstable PLHIV be managed at a facility model of DSD
- Stable clients can be offered and devolved to packages of care at the community level with a reduction in the frequency of clinical consultations and ARV/medication drug refills
- Alignment of consultation and refill visits for family members and integration of other services into differentiated ART service delivery models is recommended

9.3 Standards for Quality HIV Service Delivery

Quality is defined as the totality of features and characteristics of an entity that bears on its ability to satisfy a stated or implied need. The perception of the healthcare needs of a client or community will vary based on the views and perspectives of the client, service provider, society and the social, political and economic environment. Standards are seen as expectations of performance and help organizations understand how they can meet the diverse treatment needs of a variety of populations and thus are patient-centred.

The standards for quality HIV service delivery in Nigeria spans the entire care continuum from prevention, testing, care and treatment across both public and private health facilities as well as at the community level. The need for streamlined standards for HIV service delivery across all strata of health care cannot be over-emphasized, bearing in mind the differences in unmet need across the various sub-populations of PLHIV.

The best quality system may not function if there is no commitment on the part of the people involved to implement it. On the other hand, the simplest of systems can work very effectively if there is motivation and commitment on the part of those involved to improve the quality of care. Continuous quality improvement can therefore be achieved by encouraging a quality culture that is based on a common vision, purpose, understanding, values and principles.

9.3.1 Standards of Care

The standard care continuum for HIV extends from testing and counselling to care, treatment, and monitoring. The care continuum is not a “one size fits all” rather there are peculiarities for the various sub-populations, such as children, adolescents, key populations and pregnant/breastfeeding women. With more than 1.14 million (at 2019) PLHIV enrolled in care, it is important to employ strategies that strengthen linkages to care, retention in care and adherence to therapy to ensure that at least 95% of each of the various sub-populations of PLHIV achieve and sustain virological suppression.

Certain strategies have been shown to strengthen/optimize the indices necessary to cater to the unmet need in HIV service delivery, key among them are:

Improving Quality of Health Service Delivery

Quality of care emphasizes that services should be effective in achieving desired health outcomes and that health care practices should be people-centred and safe. Efficient and effective HIV service delivery in Nigeria requires the following:



- Health system strengthening and well-coordinated systemic linkages across primary, secondary and tertiary health facilities as well as with community-based facilities, social support services and support groups.
- National quality evaluation and accreditation processes for health facilities and health providers at both the facility and the community level aimed at:
 - o creating new service delivery sites at both facility and community levels
 - o reviewing existing facilities for potential designation as service delivery site
 - o assessing community capacity and identifying interventions to train and coordinate public education
 - o allocating new resources or reallocating existing scarce resources to HIV care
 - o overseeing national treatment programmes
- Capacity building for healthcare providers at both the facility and community level and also of PLHIV for effective service delivery and communication. Tasks must be clearly delineated and performance expectations well defined.
- Providing information and supporting clients to make informed decisions about their health, their engagement with health care and management of their health
- Strengthening existing patient appointment systems with acceptable frequency of clinic and medication refill visits and an efficient system for identification and tracking of PLHIV who default on their appointments
- Adoption of differentiated service delivery models and quality improvement strategies to reduce waiting and turnaround times in clinics, laboratories and drug refill centres
- Integrating the delivery of other services into HIV service delivery platforms as appropriate and relevant e.g. TB, hepatitis, STIs, mental health, substance abuse, NCDs, nutrition and SRHS
- Quality control for test kits, medications (including ARVs and OI drugs) and diagnostic equipment.
- Data Management

The need to continually monitor and improve on perceived gaps in service delivery cannot be over-emphasized therefore continuous quality improvement should be integrated into routine service delivery. The framework in use in Nigeria for quality improvement programs is the NigeriaQual.

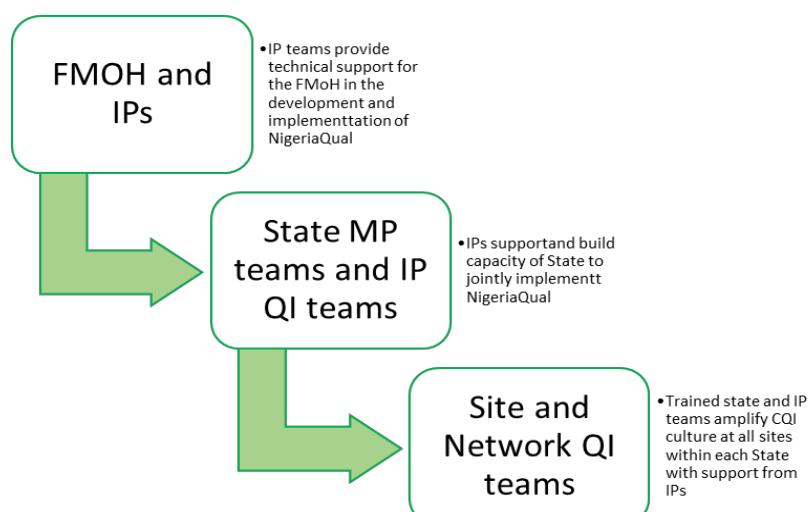


Figure 9.5: NigeriaQual Implementation Structure



NigeriaQual builds upon the HealthQual framework and has the following components:

- Performance measurement
 - Indicator development, data collection, analysis and reporting
- Quality management structure
 - Quality improvement teams at sites
 - Multidisciplinary management teams at facility, local government, state and federal government level.
- Quality improvement
 - Problem identification, prioritization, implementation of tests of change
 - Plan, Do, Study, Act (PDSA) cycle guides sustainable ongoing change



Figure 9.6: The Four Main Components of Quality Control Management

Human Resource for Health

The inadequacy of the right number and mix of health workers to deliver quality ART services is a major obstacle to the achievement of universal access to quality HIV prevention, treatment and care. Evidence-based interventions should be implemented to boost human resource for HIV service delivery. There is also the need to minimize staff attrition/incessant transfer of trained ART service providers. There is also a need for government and responsible agencies to consistently employ competent healthcare providers for the provision of ART services.

Training of Health Workers

It is recommended that:

- All health workers and lay providers involved in the provision of HIV treatment and care should receive training prior to offering services and periodic re-training thereafter
- Training of health workers and lay providers should conform with globally accepted standards for high-quality training
- Training of health workers and lay providers should be conducted using nationally approved training curricula and manuals
- Training curricula for the different cadres of healthcare providers, lay providers, peer educators, mentor mothers etc should be age and context appropriate



Task shifting and Task sharing

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

9.3.2 Standard Precautions

These are general guidelines to safeguard the various individuals involved in HIV service delivery, including healthcare workers, lay providers, clients and the community at large. In the day to day delivery of HIV services, there are safety measures that must be considered if optimal services are to be sustained; these include:

Infection Prevention and Control (IPC) Measures

These are measures/protocols put in place to ensure protection from infectious agents either as a result of nosocomial exposure or wide-spread infection at the community level. It is necessary to put in place protocols which will provide guidance in cases of infections of public health concern. In the case of HIV, it is necessary to prevent accidental infections, occupational infections and any widespread infection within a vulnerable sub population due to harmful practices or low level of awareness. There should be an established IPC policy in all health facilities in the private and public sectors to ensure the prevention of accidental/occupational exposure to blood, body fluids and airborne pathogens that may result in infection with HIV or any other infectious disease.

Standard Precautions

These are minimum infection prevention practices that should be observed by ALL health workers/lay providers in the provision of HIV services, regardless of suspected or confirmed infection status and include:

- Hand Hygiene - Routine hand washing with soap and water before and after contact with each patient, regardless of the HIV status
- Respiratory hygiene/cough etiquette
- Use of barrier precautions including Personal Protective Equipment (PPE) such as gloves, gowns and masks etc.
- Sharps Safety/Safe Injection Practices - Safe handling and disposal of sharp instruments and equipment, including needles and syringes
- Clean and disinfected work surfaces

For more details, refer to the National Guideline for Continuity of HIV service delivery in the context of complex emergencies It is recommended that ALL health facilities should provide the following for their workers:



- Vaccinations against vaccine-preventable diseases such as Hepatitis B and tuberculosis
- Post-Exposure Prophylaxis
- Screening for HIV, TB, HBV, HCV, SARS–Cov-2 and other infections
- A safe working environment. This includes the adaptation and dissemination of policies and SOPs on universal safety precautions, IPC and workplace safety to ensure the safety and health of the employees within the workplace

9.4 Nutrition

Nutritional interventions, both food-based approaches and micronutrient supplementation, are an essential component of comprehensive HIV care. Infection with HIV affects the nutritional status of PLHIV by causing increased energy requirements, metabolic alterations, reduced dietary intake and nutrient malabsorption. These eventually lead to weight loss, malnutrition and wasting in PLHIV. Malnutrition also affects the immune system in similar ways as HIV infection itself with abnormal B-cell responses, suppression of delayed hypersensitivity and decrease in CD4+ T-cells.

Good nutrition contributes to an optimal nutritional status that enhances the wellbeing of the PLHIV at all stages of the disease and contributes to the prolongation of life. It requires the consumption of adequate both macronutrients (proteins, carbohydrates and fats) and micronutrients (vitamins and minerals).

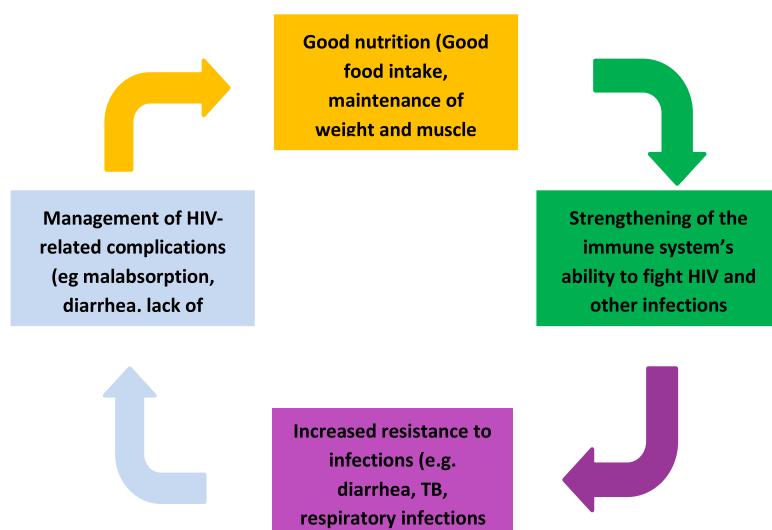


Figure 9.7: Relationship between nutrition and HIV

9.4.1 Nutrition in HIV Positive Pregnant and Lactating Woman

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

9.4.2 Nutrition in Children Living with HIV

Successfully treating a child requires the commitment and involvement of a responsible caregiver. Parents and other family members of children living with HIV may themselves be



infected with HIV, and sub-optimal HIV care and treatment for family members could result in sub-optimal care for the child. Another challenge to optimal treatment is lack of nutritional support.

The nutritional needs of infants, young children, adolescents and adults alike should be adequately addressed during the initial evaluation, and it should be balanced with the need for their medication. It is important to ensure that nutritional counselling starts as soon as the diagnosis of HIV is made and is re-emphasized at each subsequent contact with healthcare providers at both the facility and the community level. All CLHIV should benefit from nutritional assessment, counselling and support (NACS).

Improving the nutritional status of CLHIV should be based on scientific evidence, available local resources and expert opinion from clinical and programmatic experiences.

Nutritional counselling, care and support requires the following steps:

- Assessment of the specific circumstances of each CLHIV
 - Present nutritional status and diet
 - Identification of factors mitigating against and facilitating adequate dietary intake
- Nutritional counselling to address specific areas identified during assessment and mutual agreements on the dietary plan based on available local resources
- Monitoring and documentation of nutritional status

Table 9.8: Strategies and Guides for Improving and Monitoring the Nutritional Status of PLHIV

Diet and Lifestyle	Monitoring
<ul style="list-style-type: none"> ▪ Eat a variety of foods that include proteins, carbohydrates, and a little good fat (nuts, avocado, fish, soybean) ▪ Eat a diet high in fresh fruits and vegetables ▪ Daily intake of lean, low-fat protein –skinless chicken, fish, extra-lean meat, beans, groundnuts, soya beans, eggs and low-fat dairy products <ul style="list-style-type: none"> - Use salt sparingly ▪ Ensure adequate water intake ▪ Avoid alcohol and cigarette smoking ▪ Limit simple sugars in sweets, soft drinks, cakes and foods with added sugar ▪ Hygienically prepared food, drinking water and beverages ▪ Nutrition education and counselling ▪ Prompt treatment of OIs that interfere with nutrition (mouth disorders, diarrhoea etc) ▪ Nutritional Support-macro/micronutrients ▪ Regular exercise and physical activity ▪ Economic empowerment 	<ul style="list-style-type: none"> ▪ Clinical assessment <ul style="list-style-type: none"> - History taking (intake, weight changes and growth, GI symptoms, and functional capacity) ▪ Physical examination <ul style="list-style-type: none"> - Anthropometric measurements for growth monitoring in children - Height, Weight, BMI for age and Sex MUAC, ▪ Bodyweight changes in adults (BMI in kg/m²) <ul style="list-style-type: none"> - underweight ≤ 18.5 - normal = 18.5 – 24.9 - overweight = 25 – 29.9 - obese ≥ 29.9 ▪ Waist -Hip Ratio ▪ Biochemical measurements of metabolic parameters, serum proteins, and micronutrients



9.4.3 Nutrition and Antiretroviral Therapy

Metabolic complications associated with the use of some ART such as lactic acidosis, alterations in bone metabolism, derangement in blood glucose and lipid metabolism must be taken into consideration whilst planning an adequate diet for all PLHIV. Co-morbidities such as diabetes mellitus, cardiovascular and renal diseases may also require additional dietary modifications. An optimal nutritional status may enhance adherence to ART, its acceptability, effectiveness and ultimately virological suppression.

Nutritional support is an essential component of comprehensive HIV care. It is recommended that nutritional interventions, both food-based approaches and micronutrient supplementation (where applicable), are included as part of the routine care of infants, young children, adolescents and adults living with HIV and their family members

9.5 Service Delivery for Adolescents Living with HIV

There are about 120,000 adolescents (10-19 years) living with HIV (ALHIV) in Nigeria, with 70,000 (nearly 60%) being female [6]. Adolescents are a heterogenous group undergoing rapid developmental, emotional and social changes. Unique changes that occur during adolescence include: emerging autonomy but limited access to resources; dramatic increase in number and variety of social relations that could increase vulnerability; developing self and sexual identity, including capacity for self-direction; enhanced but evolving cognitive ability and greater impulsivity; and a gap between biological maturity and assumption of adult roles. Adolescents, therefore, have peculiar needs and challenges which have implications for their health and well-being.

Addressing the distinct and diverse needs of adolescents living with HIV (ALHIV) to improve their HIV-related outcomes requires a comprehensive and integrated approach. Adolescent HIV services in Nigeria (where available) often have limited integration with other adolescent health services. Surveys and HIV program results have shown that over the years, adolescents living with HIV in Nigeria have been underserved and have significantly worse access to HIV testing, lower ART coverage, and lower viral load suppression rates compared to adults. They are at higher risk of loss to follow-up both before and after antiretroviral therapy initiation, with pregnant adolescents living with HIV and adolescent key populations particularly vulnerable.

In 2014, the FMOH developed consensus guidelines to reconcile key ethical, legal and socio-cultural issues that pose serious challenges to the conduct of SRH research and access to HIV services. Globally, specific interventions, service delivery models and approaches tailored to the specific needs of adolescents have shown significant improvements in health outcomes for adolescents underscoring the need for the tailoring service delivery for adolescents living with HIV to their specific needs through what is now widely termed adolescent-friendly health services (AFHS).

9.5.1 Adolescent Friendly Health Services

Adolescent-friendly health services (AFHS) encompasses interventions, service delivery models and approaches tailored to the specific needs of adolescents. AFHS has the twin goals of promoting healthy development in adolescents, and the prevention and response to health problems if and when they arise.



To make HIV services adolescent-friendly, the principles below should be followed

- **Equitable:** all adolescents, not just certain groups, are able to obtain the health services they need
- **Accessible:** adolescents are able to obtain the services that are provided
- **Acceptable:** health services are provided in ways that meet the expectations of adolescent clients
- **Appropriate:** the right health services that adolescents need is provided
- **Effective:** the right health services are provided in the right way and make a positive contribution to the health of adolescents

9.5.2 Package of services for adolescents living with HIV

Adolescents living with HIV (ALHIV) need additional specific HIV-related services in addition to routine health services. Providing an appropriate package of services is one of the global standards for high-quality health services for adolescents. The package of services for ALHIV should be standardized and aligned with the principles of adolescent-friendly health services and the global standards for quality health-care services for adolescents (Fig 9.8). To ensure high-quality HIV services for adolescents in Nigeria, a package of HIV services for ALHIV is here defined and is recommended for implementation at health facilities and through referral links to other service delivery channels using a standardized approach.



Figure 9.8: Key elements for high-quality adolescent HIV service delivery

9.5.3 Age-appropriate disclosure support

Disclosure of HIV status is the process of informing a child or adolescent of his/her HIV status. It also refers to the adolescent sharing his/her HIV status with a family member, friend or significant other. Disclosure is not a one-time event, but rather a process that involves ongoing discussions about the disease as the child or adolescent matures cognitively, socially, emotionally, and sexually.



Phases of disclosure and age recommendations

No disclosure: There is no mention of any illness or HIV and no information is provided about HIV diagnosis. This is recommended for children aged **0-4 years**.

Partial Disclosure: Children are given some but not all information about their illness. Information may be given on immunity and the need to take medicines in order to keep illness at bay. There is no mention of HIV or AIDS. This is recommended for children aged **5 -8 years**.

Full Disclosure: Children are told the name of the illness (HIV and/or AIDS), disease specific information (e.g., how the virus works, how it is transmitted), and how they acquired the disease.

This is recommended for children/ adolescents aged **9 -12 years** with the goal of completing full disclosure by age **10-12 years**.

Post-disclosure: Period following disclosure, commonly described as early post-disclosure (first three to six months) and late post-disclosure (over six months) periods. The objective of post-disclosure evaluation and follow-up is to identify the feelings, perception, and degree of coping with the diagnosis and to prevent any complications after disclosure.

Accidental disclosure occurs when someone talks about the HIV status of a child or adolescent without knowing that he/she is not aware of it. The service provider should carry out at least a partial disclosure of an HIV status to the child or adolescent when this occurs, and a readiness assessment and discussions with the parents or caregiver should be undertaken as soon as feasibly possible.

Disclosure helps the child/adolescent to know the HIV diagnosis, infection, understand the disease process and health changes that could occur; develop strategies to lead a healthy life; and understand his/her responsibilities thereby promoting adherence to care and treatment, which is vital to achieving viral suppression. It has a positive long-term psychological impact and may improve social functioning and school performance. Both the health care team and caregivers should be involved throughout the disclosure process. Disclosure service provision should involve facility-based health care providers—such as doctors, psychologists, nurses—as well as social workers and community health workers.

Key considerations for successful disclosure:

- Service providers and healthcare workers should build up trust and establish rapport with children and adolescents and their caregivers from the start of service delivery
- The disclosure process should be aligned with recommended age guidance and should take child's cognitive development into account, while remaining flexible and sensitive to the family's feelings and needs as they evolve through the phases of disclosure
- An individual plan for disclosure should be developed for each child/ adolescent and documented using a disclosure checklist/ tracker as part of his/her medical records
- The clinical team/care providers should provide intensive support and services to



- caregivers who object to disclosing an adolescent's HIV diagnosis to address their concerns
- Beyond disclosure support by the healthcare team for informing an adolescent of his/her HIV status, support for onward disclosure to others such as family members, friend and significant other should be provided

9.5.4 Psychosocial support for adolescents living with HIV

HIV affects adolescents in various ways in addition to the peculiarities of adolescence. One of the gaps in the delivery of paediatric and adolescent HIV care and treatment services is the provision of psychosocial counselling to HIV infected/affected adolescents and their caregivers. Psychosocial support entails attendance to the emotional, psychological, social, spiritual, and practical needs of the adolescent within his/her current situation, family, environment and relationships. It is important for health care workers to receive adequate knowledge and skills needed to comfortably provide psychosocial counselling to HIV positive children/adolescents and their caregivers. There is also a need to provide on-going supportive counselling, to address care and treatment adherence issues.

Recommendations for addressing gaps in the provision of psychosocial support for ALHIV:

- Training of healthcare workers on the provision of psychosocial support to children and adolescents and their caregivers using a standard curriculum.
- Provision of child/adolescent centred counselling using appropriate SOPs and job aids. Service providers should bear in mind that each adolescent is unique and so should not generalize when providing support.
- Provision of strength-based counselling for adolescents.
- Psychosocial support should be available and accessible as part of the package of care at ART refill visits
- Counselling should be provided based on the needs of the adolescents.
- There should be multidisciplinary team involvement when providing psychosocial support to handle other issues like disclosure, nutritional support, mental health, caring for a sick caregiver etc.
- Availability of peer support through individual engagement, peer support groups, virtual platforms etc. is important for adolescents.
- Provision of access to basic education and literacy programs.
- Provision of life skill coaching and empowerment which helps build their confidence and self-sufficiency.

For adherence support and SRH in adolescents, refer to the chapters on adherence and PMTCT respectively.

9.5.5 Transitioning to adult care

Transitioning is a purposeful, planned process to facilitate and support the movement of adolescents and young people from child/adolescent care- to adult-centred healthcare. A nationwide study reported that most secondary and tertiary health facilities in Nigeria transitioned adolescents to adult care at 15 or 18 years of age [31]. Less than 30% of facilities had an adolescent-specific clinic or transition policy, and most care was provided in a family-centred fashion.



9.5.5.1 Organizing a Transition Plan

Transition should involve a multidisciplinary team of paediatricians, adult physicians, nurses, social workers, adolescent peer mentors and mental health professionals where available. All healthcare facilities and providers should have a written standard plan in place to transition adolescents to adult care. This plan should include a schedule for the transition process initiated from early adolescence and engaging both the adolescent and the parents/caregivers. The plan should not be a “one-size-fits-all,” but should be flexible and tailored to clients' individual capacities, readiness, and developmental age. Caregivers should be active stakeholders in the transition process. Disclosure is important for successful transitioning and recommendations for disclosure provided in this document should be implemented.

Discussions on the transition to adult care should be initiated latest by age 14 years and barriers to adherence, retention and viral suppression addressed. During the transition process, adolescents should be empowered to take full responsibility for their health and commit to achieving good treatment outcomes. Some services may not be available at all levels of care and may require a referral.

9.5.5.2 Key Considerations for the Transition Process

Transitioning should be a continuous and seamless process rather than a “one-off” event that occurs with one meeting. Flexibility will ensure those involved in the process can recognize and respond to the unique needs of ALHIV. Informed decision-making is the key to mature self-care and is the overall goal of successful transitioning. The following are key principles to guide the transition process:

- Individualize the approach for each child and adolescent based on their developmental readiness
- Identify HCWs to engage in the transition
- Begin the process early, ensuring communication among the adolescent, caregivers, and the HCWs in the adult health care setting, before, during, and after
- Develop and follow an individualized transition plan for each adolescent; in addition to developing an orientation plan in the adult health care setting;
 - Plans should be flexible to meet the adolescent's needs, and also should include provisions for any regressions that an adolescent may have
 - A checklist may be useful to develop such a plan
- Use a multidisciplinary transition team including peers who are in the process of transitioning or who have transitioned successfully
- Address comprehensive care needs of each adolescent, as part of the transition, including medical, psychosocial, and financial aspects of transitioning
- Allow adolescents to express their opinions
- Educate HIV care teams and staff about transitioning
- Follow up transitioned adolescents in the adult clinic for 6 - 12 months to ensure adherence and retention in care

There may be various barriers to seamless transitioning at the provider, adolescent and family levels and these should be identified and addressed to minimize interruptions in care and treatment. Poor communication among all stakeholders forms one of the largest barriers and



should be addressed. The transition should only occur when all parties have agreed that the child or adolescent has met the required criteria and is also mentally prepared.

9.5.6 Peer-driven adolescent service delivery models

Meaningful adolescent engagement is one of the standards for high-quality health services for adolescents. It entails intentionally involving adolescents in the planning, monitoring and evaluation of health services; inappropriate aspects of service provision; and in decisions regarding their care. It is essential that the meaningful participation and engagement of adolescent peers are encouraged and supported, and adolescents empowered and trained as effective peer educators, counsellors, trainers and advocates.

WHO recently selected and profiled some adolescent peer-based models that are currently being implemented in multiple countries across sub-Saharan Africa which have shown evidence of improvement in linkage to care, adherence to antiretroviral therapy, retention in care, and viral suppression. Some of these models are being tested in Nigeria but are yet to be harmonized and evaluated. They include:

- Ariel Adherence Clubs
- Baylor College of Medicine International Pediatric Aids Initiative Teen Club Programme
- Operation Triple Zero (OTZ) Model
- REACH (Re-engage Adolescents and Children with HIV) Programme
- Zvandiri Model



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10. MONITORING AND EVALUATION

What's Inside:

10.1 Introduction	177
10.2 Selection of Indicators.....	177
10.3 Data Management.....	182
10.4 HIV Data Dissemination and Use.....	184
10.5 Human Resource for M&E.....	184
10.6 HIV M&E Logistics.....	185
10.7 Additional Strategies in M&E.....	185
10.8 HIV Research.....	185
10.9 Periodic monitoring of the implementation of the guidelines and content update.....	185

10.1 Introduction

Monitoring and evaluation of the HIV programme enables the country to measure the level of effectiveness of interventions and linkages between services. This will enable the country track progress toward achieving its programme goals and set targets. It also provides data for informed decision-making on the programme and allocation of resources.

The M&E objectives include:

1. Monitoring programme performance across the domain of HIV prevention, treatment, care and support.
2. Improving data quality to inform decision making and programme planning.
3. Strengthening capacity in data management across all levels of implementation.
4. Improving data reporting from private, public and community level.
5. Strengthening and utilizing HIV surveillance and research.

New strategies in the management of HIV and co-infections, along with changes in the implementation environment call for a broadening of the M&E system in order to adequately measure and assess the impact of the interventions. In addition, routine monitoring shall be complemented by periodic systematic evaluations and programme reviews to assess the performance and impact of HIV programmes. Data triangulation, modelling and other analytic tools will be utilized to improve the accuracy and usability of HIV data.

10.2 Selection of Indicators

In 2017, the country adopted WHO global indicators for M&E reporting of the HIV programme. The categories of national indicators relate to the following:

1. HIV testing services
2. Treatment and care for pregnant and breastfeeding women (prevention of mother-to-child transmission (PMTCT)
3. Paediatric, adolescent and adult HIV treatment and care
4. Advanced HIV disease
5. TB/HIV co-infection
6. Other comorbidities and co-infections
7. Post-exposure prophylaxis (PEP) and Pre-exposure prophylaxis (PrEP)
8. Services for key populations
9. Linkage, enrolment and retention in care
10. Toxicity monitoring
11. HIV drug resistance (HIV-DR)
12. Viral suppression and
13. Impact evaluation (mortality, prevalence and incidence)



Table 10.1: MONITORING AND EVALUATION FRAMEWORK

INDICATORS	DEFINITION How is it calculated/measured?	Disaggregation	DATA SOURCE How will it be measured?	FREQUENCY How often will it be measured?	RESPONSIBLE Who will measure it?
IMPACT INDICATORS					
% of annual AIDS death among PLHIV during the reporting period.	N: Number of annual AIDS deaths among PLHIV. D: Estimated number of PLHIV.	Age (<1, 1–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+ years); sex	Programme Data Spectrum.	Annually	STATE/FMOH
Number of new infections averted	N&D:NA	Age (<1, 1–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+ years); sex	Spectrum.	Annually	STATE/FMOH
OUTCOME INDICATORS					
% PLHIV on ART who are virally suppressed at 6 months during the reporting period.	N: Number of PLHIV who are virally suppressed at 6 months of initiation on ART. D: Number of PLHIV on ART that received a VL test result at 6 months of initiation on ART	Age (<1, 1–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+ years); sex	Programme Data (PMM & PME Tools).	Bi-annually	STATE/FMOH
% of PLHIV on ART who are virally suppressed at 12 months during the reporting period.	N: Number of PLHIV who are virally suppressed at 12 months of initiation on ART. D: Number of PLHIV on ART that received a VL test result at 12 months of initiation on ART.	Age (<1, 1–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+ years); sex	Programme Data (PMM & PME Tools).	Annually	STATE/FMOH
% of PLHIV on ART who are retained on ART at 6 months after initiation during the reporting period.	N: Number of PLHIV alive and on ART at 6 months of ART initiation. D: Number of PLHIV initiating ART up to 6 months before the beginning of the reporting year. (This includes those who have died since starting therapy, those who have stopped therapy and those lost to follow-up as of month 6.)	Age (<1, 1–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+ years); sex	Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
				Cohort Analysis	



OUTPUT INDICATORS	N: Number of PLHIV alive and on ART at 12 months of ART initiation.	D: Number of PLHIV initiating ART up to 12 months before the beginning of the reporting year. (This includes those who have died since starting therapy, those who have stopped therapy and those lost to follow-up as of month 12)	Age (<1, 1 –4, 5 –9, 10–14, 15 –19, 20 –24, 25 –49, 50+ years); sex	Programme Data (PMM & PME Tools).	Annually	SMOH/ FMOH
Number counselled, tested for HIV and received results during the reporting period.	N&D: NA		Age (<1, 1 –4, 5 –9, 10–14, 15 –19, 20 –24, 25 –49, 50+ years); sex	Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
% of infants born to HIV -positive women receiving a DNA -PCR test for HIV within 2 months of birth during the reporting period.	N: Number of HIV- exposed infants who received EID/DNA-PCR test for HIV within two months of birth during the reporting period. D: Population-based denominator: Estimated number of HIV-positive pregnant women during the reporting period. Facility-based denominator: Number of HIV-positive pregnant women.			Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
% o f HIV Exposed babies who tested for HIV within 18 months of birth by Rapid Test during the reporting period.	N: No. of HIV Exposed babies who tested for HIV within 18 months of birth by Rapid Test. D: Estimated number of HIV -positive pregnant women during the reporting period. Facility-based denominator: Number of HIV positive pregnant women			Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH



% of persons who test HIV-positive during the reporting period.	N: Number of persons who test HIV-positive. D: Number of persons counselled tested and received		Programme Data (numerator) Spectrum	Annually	SMOH/ FMOH
Proportion of newly diagnosed HIV-positive PLHIV newly enrolled in clinical care during the reporting period	N: Number of newly diagnosed PLHIV newly enrolled in clinical care during the reporting period. D: Number of newly diagnosed PLHIV		Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
% of positive PLHIV who received clinical assessment (WHO staging) OR CD4+count OR viral load OR current on treatment during the reporting period.	N: Number of positive PLHIV who received at least one of the following during the reporting period: clinical assessment (WHO staging) OR CD4+ count OR viral load OR current on treatment. D: Estimated number of PLHIV.	Age (<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-49, 50+ years); sex	Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
Number of PLHIV newly started on ART during the reporting period.	N & D: N/A	Age (<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-49, 50+ years); sex	Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
ART coverage among PLHIV during the reporting period.	N: Number of PLHIV currently receiving ART. D: Estimated number of PLHIV	Age (<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-49, 50+ years); sex	Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
% of PLHIV in care (including PMTCT) who were clinically screened for TB in HIV care and treatment settings during the reporting period.	N: Number of PLHIV enrolled in HIV care whose TB status was assessed and recorded at their last visit during the reporting period. D: Total number of PLHIV currently receiving HIV care during the reporting period.	Age (<1, 1-4, 5-9, 10-14, 15-19, 20-24, 25-49, 50+ years); sex	Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH



% of PLHIV Enrolled in HIV Care who have Active TB Disease.	N: Total number of PLHIV enrolled in care who have active TB disease during the reporting period.	Age (<1, 1–4, 5–9, 10–14, 15–19, 20–24, 25 years); sex	Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
	D: Total number of PLHIV currently in HIV care who were screened for TB during the reporting period				
ART coverage among HIV-Positive New and Relapsed TB PLHIV during TB Treatment.	N: Total number of HIV-positive new and relapsed TB PLHIV started on TB treatment during the reporting period who are already on ART or started on ART during TB treatment.	Age (<1, 1–4, 5–9, 10–14, 15–19, 20–24, 25–49, 50+ years); sex	Programme Data (PMM & PME Tools).	Bi-annually	SMOH/ FMOH
	D: Total number of H-positive new and relapsed TB PLHIV registered during the reporting period				



10.3 Data Management

HIV data management is a process that includes the collection, collation, analysis, dissemination and use of HIV data for planning and implementing HIV services. The data is disaggregated by age, sex, location (LGA, state and national), breastfeeding and pregnancy status to improve decision making.

10.3.1 Data Collection

Routine HIV data is collected through both paper-based and electronic platforms. Efforts are to be geared towards strengthening the platforms to improve the quality of data.

Patients' information is collected using 2 types of tools;

1. Patient Management and Monitoring (PMM) tools
2. Programme Monitoring and Evaluation (PME) tools.

PMM tools are used to collect data on individual patients and help in improving the management of PLHIV. The tools are available at every point of HIV service delivery. This information is monitored over time and enables healthcare providers to assess a patient's response to treatment. PME tools are used to track the progress of services provided to PLHIV. The data can be used to routinely monitor and evaluate the effectiveness, efficiency and acceptability of HIV service provision at all levels of healthcare.

HCWs at service delivery points should ensure proper documentation of all HIV services provided. Facility M&E staff are responsible for the collection of data from all service delivery points for monthly reporting.

In general, the emphasis will be on using the PMM/PME tools to continuously inform HIV programming. Process and outcome evaluations will be periodically conducted to assess programme performance for informed decisions.

The following are current tools used for M&E in the national HIV programme:



Table 10.2: Tools used for M&E in the national HIV programme

HTS	PMTCT	ART
PMM <ul style="list-style-type: none"> -Client Intake form -Request & Result form -Client Referral form PME <ul style="list-style-type: none"> - HTS Register - Daily HIV & Syphilis Test Worksheet - Referral Register - HTS Monthly Summary form 	PME <ul style="list-style-type: none"> - PMTCT Monthly Summary form - General ANC Register - PMTCT HTS Register -Maternal Cohort Register -Child Follow-up Register -Partner Register -PMTCT Delivery Register 	PMM <ul style="list-style-type: none"> - Care card - Adult Initial Clinical Evaluation form - Paediatric Initial Clinical Evaluation form - Lab Order & Results form - Pharmacy Order form - HIV Care & Treatment transfer form - Client Tracking & Termination form PME <ul style="list-style-type: none"> -Care card -Enrolment Register -ART Register -ART monthly summary form -Pharmacy Daily Worksheet -HIV Care & Treatment Client Tracking Register -Post Exposure Prophylaxis Register -Cohort analysis report

10.3.2 Data Security, Collation & Reporting Flow

Handling of PMM/PME tools requires confidentiality and efficiency to give the clients a sense of security. A filing system for HIV programme records should be developed and followed within each facility. All records should be kept confidential and stored in a secure room with lockable cabinets. Backup records should be secured from damage or loss.

At the end of each month, routine HIV programme data should be validated for quality and collated into monthly summary forms. Completed monthly summary forms should be forwarded to the Local Government Area (LGA), where data from all the HIV sites in the LGA are collated and transmitted to the State Ministry of Health and District Health Information System (DHIS). At State M&E review meetings HIV data should be validated, collated and analysed by all relevant HIV programme stakeholders. States should in turn forward to the NASCP of the FMOH.

The respective health authorities at the various levels will have responsibility for reporting to the HIV and AIDS coordinating authorities at the various levels (i.e. health facility to LGA to State MOH to FMOH).

Facilities can now upload information on the monthly summary forms directly on the DHIS. Validation is conducted by the L.G.A. and the State. The information can be viewed at the local, state and national level. With the electronic medical record (EMR) system, facilities upload patient-level data into the National Data Repository (NDR) which can be reviewed for quality at all levels and analysed by stakeholders. Electronic data record should be stored and secured in a



passworded device for authorised users and uploaded to secured networks and servers. It is recommended that health facilities should migrate to the EMR system.

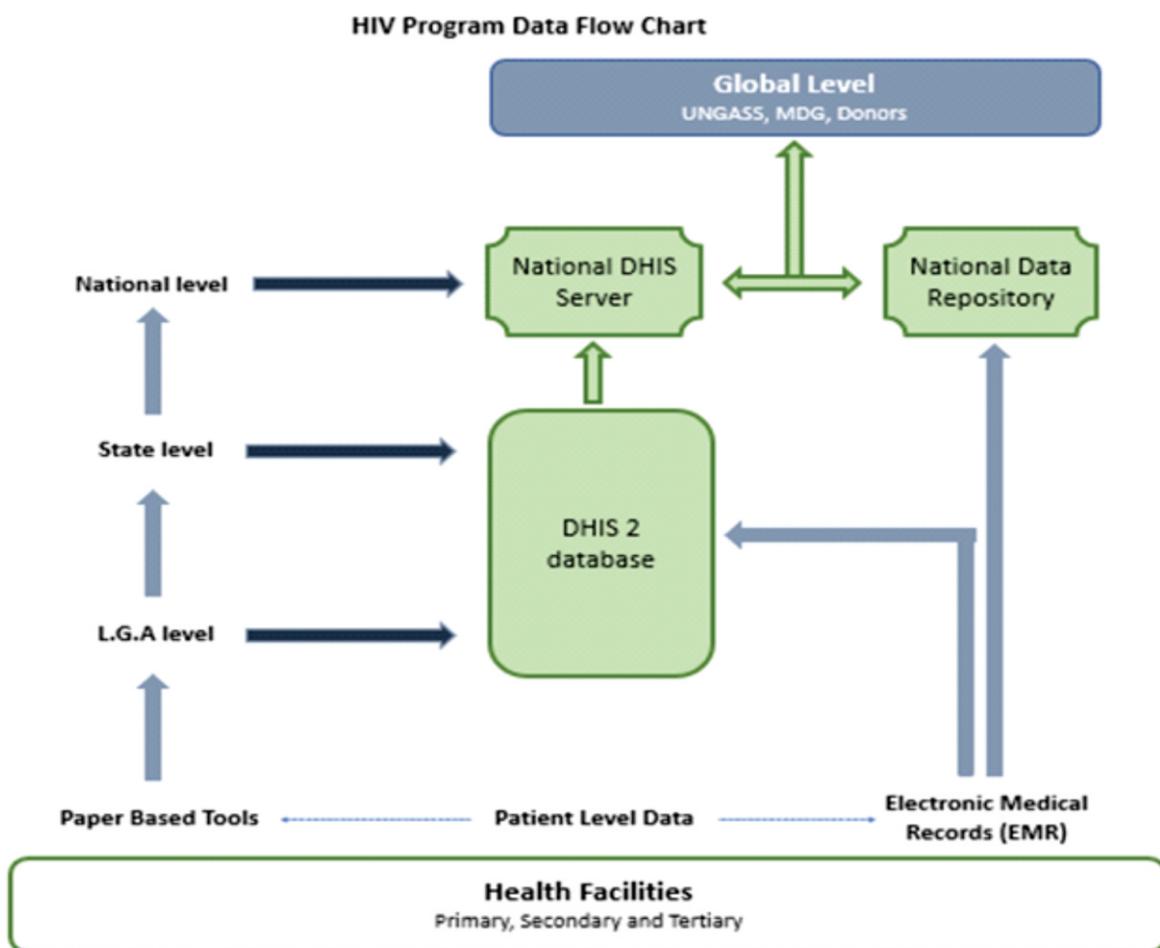


Figure 10.1 – Data Flow Chart for HIV reporting

10.4 HIV Data Dissemination and Use

The significance of data cannot be fully realized until it is disseminated to all relevant stakeholders for effective planning and decision making. The dissemination of HIV data and information products will be via regular fact sheets, bulletins, report and official social media platforms. Also validated data are shared with the states biannually as a way of feedback. Data use should be encouraged at all levels especially at the health facilities where these data are generated, to improve patient management and monitoring.

10.5 Human Resource for M&E

The relevant human resource for monitoring and evaluation should be employed at all levels to support data management. The FMOH in collaboration with relevant stakeholders will ensure training and retraining of healthcare workers, local government and state officers on data management and use.



10.6 HIV M&E Logistics

National M&E tools and infrastructure should be made available to all sites delivering HIV services to facilitate service documentation and reporting of routine data. Indicator Reference Sheets and User Guides should be made available to end-users to aid understanding of programme indicators and also help in the completion of M&E tools.

10.7 Additional Strategies in M&E

As the country makes progress towards epidemic control, the need to put in place innovative strategies in monitoring and evaluating national HIV health sector response has become highly imperative. This enables evidence-based planning, resource allocation and decision making in line with innovations within the response. Some of the innovative strategies include the introduction of case-based surveillance, mortality surveillance and recency surveillance.

- The case-based surveillance allows a shift from aggregate reporting to focus on individual follow up from the time of identification of a new case to retention in care and even death. This longitudinal form of data collection is used to track clinical outcomes and monitor the quality of linkage to care.
- Recency surveillance provides insight into the timeline of an individual's HIV infection. This information is important to public health because of the ability to use such data for targeted interventions, programmatic shifts and to achieve epidemic control.
- The mortality surveillance also determines the distribution, trends and patterns of leading causes of death attributable to HIV among people receiving ART in the program.

Additional M&E tools are being developed to capture data on Recency testing, Self-testing, PrEP, AHD and DSD.

10.8 HIV Research

The National HIV research policy and agenda seeks to inform HIV implementation and formative research that provide evidence-based data to improve the effectiveness and efficiency of HIV programme management in Nigeria.

Research programmes will be prioritized to identify cost-effective mechanisms for HIV treatment, care, and support. It should also prioritize research that promotes the reduction of HIV risk behaviours among key, vulnerable and general populations, enhance prevention programmes, strengthen basic and implementation research, clinical trials, social science research and systematic reviews.

10.9 Periodic monitoring of the implementation of the guidelines and content update

HIV medicine is a dynamic speciality with continuously emerging evidence and innovations that optimizes prevention, treatment and care of PLHIV. Consequently, this necessitates periodic updates to these guidelines. In addition, there is also a need to monitor and evaluate the level of implementation of these guidelines at service delivery points with the aim of re-strategizing for effective programme implementation. It is recommended that FMOH should take the lead with the support of all stakeholders to ensure regular reviews and update of these guidelines.



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REFERENCES

- [1] World Health Organisation, “Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection,” WHO, 2016.
- [2] O. Agbaji , P. Agaba , K. Falang , A. Onu, M. Muazu and J. Idoko, “Predictors of impaired renal function among HIV infected patients commencing highly active antiretroviral therapy in Jos, Nigeria.,” Nigerian Medical Journal. 2011, 2011.
- [3] O. Agbaji , P. Agaba, A. Ebonyi, Z. Gimba, E. Abene and S. Gomerep, “Long term exposure to tenofovir disoproxil fumarate-containing antiretroviral therapy is associated with renal impairment in an African cohort of HIV-infected adults,” vol. 18, pp. 1-9, 2019.
- [4] World Health Organisation, “GLOBAL TB REPORT,” WHO, 2018.
- [5] National Population Commission Nigeria, “Nigeria Demographic Health Survey,” NPC, 2018.
- [6] National Agency for the Control of AIDS, “National HIV strategy for adolescents and young people 2016-2020,” NACA, 2016.
- [7] UNAIDS, “90-90-90 An ambitious treatment target to help end the AIDS epidemic,” UNAIDS, 2014.
- [8] Federal Ministry of Health Nigeria, “Nigeria HIV/AIDS Indicator and Impact Survey,” FMOH, 2018.
- [9] National Agency for the Control of AIDS, “NATIONAL AGENCY FOR THE Cnational HIV and AIDS Strategic Framework 2017-2021,” NACA, 2017.
- [10] Eluwa G, Adebajo S, Eluwa T, Ogbanufe O, Ilesanmi O and Nzelu C, “Eluwa GIE, Rising HIV prevalence among men who have sex with men in Nigeria: A trend analysis.,” BMC Public Health, vol. 1, no. 19, pp. 1-10, 2019.
- [11] National Agency for the Control of AIDS, “National HTS Guidelines,” NACA, 2017.
- [12] World Health Organisation, “Guidelines for managing advanced HIV disease and rapid initiation of antiretroviral therapy,” WHO, 2017.
- [13] Federal Ministry of Health, “National Tuberculosis and Leprosy Control Programme report,” NTBLCP, 2019.
- [14] World Health Organisation, “Guidelines for the diagnosis, prevention and management of cryptococcal disease in HIV-infected adults, adolescents and children: supplement to the 2016 consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection.,” WHO, 2018.
- [15] Gomerep S, Idoko J and Ladep N, “Frequency of cryptococcal meningitis in HIV-1 infected patients in north central Nigeria.,” Nigerian Journal of Medicine. 2010; 19(4): , vol. 19, no. 4, p. 395–399, 2010.
- [16] Oladele R, Jordan A, Akande P, Akanmu S, Akase I and Aliyu S, “Tackling cryptococcal meningitis in Nigeria, one-step at a time; the impact of training.,” PLoS One, vol. 15, no. 7, 2020.
- [17] Uneke C, Duhlinska D and Njoku M, “Seroprevalence of acquired toxoplasmosis in HIV- infected and apparently healthy individuals in Jos, Nigeria.,” Parassitologia. 2005;47(2):233–6., vol. 47, no. 2, pp. 233-6, 2005.
- [18] Morris A, Lundgren J, Masur H, Walzer P, Hanson D, Frederick T, Huang L, Beard C and Kaplan J,“Current epidemiology of Pneumocystis pneumonia,” Emerg Infect Dis., vol. 10, no. 10, pp. 1713-20, 2004.



- [19] Ogbag, Ofonime, Abia-Bassey, Lydia, Epoke and James, “The relationship between opportunistic pulmonary fungal infections and CD4 count levels among HIV seropositive patients in Calabar, Nigeria,” Royal Society of Tropical Medicine, 2013.
- [20] Oladele R, Anyanlowo O, Richardson M and Denning D, “Histoplasmosis in Africa: An emerging or a neglected disease? . 2018 Jan 18;12(1):e0006046. doi:,” PLoS Negl Trop Dis, vol. 12, no. 1, 2018.
- [21] Oladele R, Toriello C, Ogunsola F, Ayanlowo O, Foden P and Fayemiwo A, “Prior subclinical histoplasmosis revealed in Nigeria using histoplasmin skin testing,” PLoS ONE, vol. 13, no. 5, pp. 1-11, 2018.
- [22] Adeyemi A, Sulaiman A, Solomon B, Chinedu O and Victor I, “Bacterial bloodstream infections in HIV-infected adults attending a Lagos teaching hospital,” J Health Popul Nutr, vol. 28, no. 4, pp. 318-26, 2010.
- [23] Ogunsola F, Arewa D, Akinsete I, Oduyebo O, Akanmu A and Odugbemi T, “Aetiology of bacteraemia among adult AIDS patients attending Lagos University Teaching Hospital (LUTH), Lagos, Nigeria.,” Niger Postgrad Med J, vol. 16, no. 3, pp. 186-92, 2009.
- [24] Ford N et al, “Managing Advanced HIV Disease in a Public Health Approach.,” Clinical Infectious Diseases, 2018.
- [25] Agaba P, Meloni S, Sule H, Agbaji O, Ekeh P, Job G, Nyango N, Ugoagwu P, Imade G, Idoko J and Kanki P, Patients who present late to HIV care and associated risk factors in Nigeria. HIV medicine, vol. 15, no. 7, pp. 396-405, 2014.
- [26] World Health Organisation, “Latent TB Infection: Updated and consolidated guidelines for programmatic management.,” WHO, 2018.
- [27] World Health Organisation, “Operational handbook on tuberculosis: module 1: prevention: tuberculosis preventive treatment,” WHO, 2020.
- [28] Nakimuli-Mpungu E, Wamala K, Okello J, Ndyanabangi S, Kanters S and Mojtabai R, “Process Evaluation of a Randomized Controlled Trial of Group Support Psychotherapy for Depression Treatment Among People with HIV/AIDS in Northern Uganda,” Community Ment Health J, vol. 58, no. 3, p.991–1004., 2017.
- [29] Elbitt D, Mahlab-Guri K, Bezalel-Rosenberg S, Gill H, Attali M and Asher I, “HIV-associated neurocognitive disorders (HAND),” Isr Med Assoc J., vol. 17, no. 1, pp. 54-9, 2015.
- [30] World Health Organisation, “Consultation on HIV differentiated service delivery models for specific populations and settings: Pregnant and breastfeeding women, children, adolescents and key populations,” WHO, 2016.
- [31] Badejo O, Menson W, Sam-Agudu N, Pharr J, Erekaha S and Bruno T, “Pediatric to adult healthcare transitioning for adolescents living with HIV in Nigeria: A national survey,” PLoS ONE, vol. 13, no. 6, pp. 1-13, 2018.



APPENDIX

Appendix 1: Commonly used Adult and Paediatric ARV Formulations and Dosage

Table 1.1 Dosages of ARV drugs for adults and adolescents

Generic name	Dose
Nucleoside reverse-transcriptase inhibitors (NRTIs)	
Abacavir (ABC)	300 mg twice daily or 600 mg once daily
Emtricitabine (FTC)	200 mg once daily
Lamivudine (3TC)	150 mg twice daily or 300 mg once daily
Zidovudine (AZT)	300 mg twice daily
Nucleotide reverse-transcriptase inhibitors (NtRTIs)	
Tenofovir disoproxil fumarate (TDF)	300 mg once daily
Tenofovir alafenamide (TAF)	10-25 mg once daily ^a
Non-nucleoside reverse-transcriptase inhibitors (NNRTIs)	
Efavirenz (EFV)	400–600 mg once daily
Etravirine (ETV)	200 mg twice daily
Nevirapine (NVP)	200 mg once daily for 14 days followed by 200 mg twice daily
Proteases inhibitors (PIs)	
Atazanavir/ritonavir (ATV/r)	300 mg/100 mg once daily
Darunavir + ritonavir (DRV/r)	800 mg + 100 mg once daily or 600 mg + 100 mg twice daily
Lopinavir/ritonavir (LPV/r)	400 mg/100 mg twice daily
	Considerations for individuals receiving TB therapy In the presence of rifampicin, adjusted dose of LPV/r (“Double dose” LPV 800 mg/ + ritonavir 200 mg twice daily or “super boosted” with LPV 400 mg/ + ritonavir 100 mg twice daily plus additional doses of RTV 300 mg twice daily), with close monitoring. In the presence of rifabutin, no dose adjustment required. Rifapentine should not be used.
Integrase strand transfer inhibitors (integrase inhibitors)	
Dolutegravir (DTG)	50 mg once daily ^b
Raltegravir (RAL)	400 mg twice daily
	Considerations for individuals receiving TB therapy In the presence of rifampicin, adjusted dose of DTG (50 mg twice daily) and RAL (800 mg twice daily), with close monitoring. In the presence of rifabutin or rifapentine, no dose adjustment is required.

^aTAF 25 mg and TAF/FTC/DTG (TAF 25 mg, Emtricitabine 200 mg, Dolutegravir 50 mg fixed dose combination) can be used once daily in adolescents living with HIV weighing at least 25 kg.

^bDTG 50 mg and TLD (Tenofovir 300 mg, Lamivudine 300 mg, Dolutegravir 50 mg fixed dose combination) can be used once daily in adolescents living with HIV weighing at least 30 kg.



Table 1.2: Dosing of optimal pediatric ARVs

Formulation	3–5.9 kg		6–9.9 kg		10–14.9 kg		15–19.9 kg		20–24.9 kg		25–29.9 kg		≥30 kg	
	A M	P M	A M	P M	A M	P M	A M	P M	A M	P M	AM	PM	AM	PM
ABC/3TC 120/60mg scored dispersible tablet	1		1.5		2		2.5		3		1 adult tab (600/300 mg)		1 adult tab (600/300 mg)	
LPV/r 40/10 mg pellets (capsules)	2	2	3	3	4	4	5	5	6	6	-		-	
LPV/r 40/10 mg granules (sachets)	2	2	3	3	4	4	5	5	6	6	-		-	
LPV/r 100/25 mg tablets					2	1	2	2	2	2	3	3	3	3
4-in-1 ABC/3TC/L PV/r 30/60/40/10 mg (capsules)	2	2	3	3	4	4	5	5	6	6	-		-	
DTG 5 mg dispersible tablets	2		3		4	5	-	-	-	-	-	-	-	-
DTG 10 mg scored dispersible tablet	1		1.5		2		2.5		-	-	-	-	-	-
DTG 50 mg tablet	-		-		-		-		1		1		1	
TDF/3TC (or FTC)/DTG 300/300 (or 200)/50 mg tablet	-		-		-		-		-		-		1	



Table I.3 Simplified dosing of child-friendly fixed-dose solid formulations for twice-daily dosing in infants and children 4 weeks of age and older^a

Drug	Strength of paediatric tablets	Number of tablets by weight band morning and evening								Strength of adult tablet	Number of tablets by weight band
		3–5.9 kg		6–9.9 kg		10–13.9 kg		14–19.9 kg			
AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
AZT/3TC	Tablet (dispersible) 60 mg/30 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3
AZT/3TC/ NVP b	Tablet (dispersible) 60 mg/30 mg/50 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3
ABC/3TC	Tablet (dispersible) 60 mg/30 mg c	1	1	1.5	1.5	2	2	2.5	2.5	3	3
	Tablet (dispersible) 120/60 mg	0.5	0.5	1	1	1	1	1.5	1.5	0.5	0.5

^a For infants younger than 4 weeks of age refer to table 4 for more accurate dosing which is reduced due to the decreased ability to excrete and metabolize medications. For infants who are at least 4 weeks of age but less than 3 kg, immaturity of renal and hepatic pathways of elimination are less of a concern but uncertainty still exists on the appropriate dosing of ARVs in preterm and low birth weight infants.

^b Please note that this regimen and formulation is no longer recommended and should only be used in special circumstances where other age appropriate formulations are not available.

^c This formulation will be phased out of use over time and programs should transition to use of the 120 mg/ 60 mg dispersible scored tablets.



Table 1.4 Simplified dosing of child-friendly solid formulations for once-daily dosing in infants and children 4 weeks of age and older^a

Drug	Strength of paediatric tablet	Number of tablets or capsules by weight band once daily				Strength of adult tablet	Number of tablets or capsules by weight band once daily
		3–5.9 kg	6–9.9 kg	10–13.9 kg	14–19.9 kg		
EFV^b	Tablet (scored) 200 mg	—	—	1	1.5	1.5	—
ABC/3TC	Tablet (dispersible) 60/30 mg	2	3	4	5	6	600 mg/300 mg
ABC/3TC	Tablet (dispersible) 120/60 mg	1	1.5	2	2.5	3	600 mg/300 mg
TAF^c	Tablet 25 mg	—	—	—	—	—	25 mg
ATV^d	Capsules 100 mg	—	—	2	2	2	300 mg
	Capsules 200 mg	—	—	1	1	1	1e
DRV^f	Tablet 600 mg	—	—	—	1	1	600 mg
	Tablet 150 mg	—	—	—	4	4	600 mg
	Tablet 25 mg	—	—	—	4	4	100 mg
RTV^g	Tablet 50 mg	—	—	—	2	2	100 mg
DTG^h	Film-coated Tablet 50 mg	—	—	—	1	50 mg	1

a See table 1.6 for dosing recommendations for infants younger than 4 weeks old. Doses for this age group are reduced to account for the decreased ability to excrete and metabolize medications. For infants who are at least 4 weeks of age but less than 3 kg, immaturity of renal and hepatic pathways of elimination are less of a concern but uncertainty still exists on the appropriate dosing of ARVs in preterm and low birth weight infants.

b Efavirenz is not recommended for children younger than 3 years and weighing less than 10 kg.

c At the time of this update, TAF film coated tablets were approved for children above 6 years by FDA for use in un-boosted regimens such as with DTG. A fixed dose combination containing TAF/FTC/DTG (TAF 25 mg, Emtricitabine 200 mg, Dolutegravir 50 mg fixed dose combination) received tentative approval by US FDA and can be used once daily in children and adolescents living with HIV weighing at least 25 kg.

d ATV is only approved for use in children 3 months and older. ATV single strength capsules should be administered with RTV 100 mg for all weight bands 10 kg and above. ATV powder formulation has



limited availability in LMIC, but enables administration of ATV to infants and children as young as 3 months. Infants and children 5-15 kg should be administered 200 mg of ATV powder (4 packets, 50 mg/ packet) with 80 mg of RTV oral solution (1 ml).

https://www.accessdata.fda.gov/drugsatfda_docs/label/2018/021567s042,2006352s007lbl.pdf

e A 300 mg dose for 25-29.9 kg is recommended on the basis of findings from the PRINCE-2 study⁸

f DRV in combination with RTV should be used, in children older than 3 years, once daily when this is used without previous exposure to PI. While approved dosing for 30-35 kg is 675 mg, preliminary data from adult studies suggest that even lower DRV doses may be effective, therefore use of 600 mg dose was extended to the entire 25-35 kg weight band.

g RTV should only be used as a boosting agent in combination with ATV or DRV or to “super boost” LPV/r when given with concomitant rifampicin for TB (see table 5).

h At the time of this update, 10 mg and 25 mg DTG film coated tablets were approved for children above 6 years by the FDA (35 mg FCT for weight 30 to < 40 kg, 50 mg FCT for weight 40 kg) and by the EMA (20 mg FTC 15 to < 20, 25 mg FCT for 20 to < 30, and 35 FCT for 30 to < 40, 50 mg FCT for weight 40 kg)⁷ based on data from the IMPAACT 1093 trial.⁹ Simplified weight band dosing which deviates from current US FDA and EMA dosing recommendations is being investigated in the Odyssey trial⁵ which supports the use of DTG 50 mg FCT dose for all children 20 kg. In January 2019 the PAWG reviewed and discussed unpublished data from the Odyssey trial investigating the use of 50 mg FCT in children weighing 20-25 kg¹⁰. The PAWG members acknowledged the short follow up and limited clinical experience, but had no major concerns and agreed with recommending the use of 50 mg FCT from 20 kg, as proposed here. Routine standard toxicity monitoring remains of critical importance in light of the current limited experience with this dosing. All children over 20 kg receiving 50 mg FCT will continue to be followed up in ODYSSEY and toxicity data collected. For adolescents living with HIV weighting more than 30 Kg a fixed dose formulation of TDF 300mg/3TC 300mg/DTG 50mg (TLD) can be used and is preferred



Table 1.5: Simplified dosing of child-friendly solid and oral liquid formulations for twice-daily dosing in infants and children 4 weeks of age and older^a

Drug	Strength of paediatric tablets or oral liquid	Number of tablets or MLS by weight-band morning (AM) and evening (PM)				Strength of adult tablet	Number of tablets by weight band		
		3–5.9 kg		6–9.9 kg					
		AM	PM	AM	PM				
Solid formulations									
AZT	Tablet (dispersible) 60 mg	1	1	1.5	2	2	2.5	3	
ABC	Tablet (dispersible) 60 mg	1	1	1.5	2	2	2.5	3	
NVP ^b	Tablet (dispersible) 50 mg	1	1	1.5	2	2	2.5	3	
LPV/r ^c	Tablet 100 mg/25 mg	—	—	—	2	1	2	2	
	Pellets 40 mg/10 mg	2	2	3	3	4	4	5	
	Granules 40 mg/10 mg sachet	2	2	3	3	4	4	5	
DRV ^d	Tablet 75 mg	—	—	—	—	—	5	5	
RTV ^e	Tablet 25 mg	—	—	—	—	—	2	2	
	Tablet 50 mg	—	—	—	—	—	1	1	
RAL ^f	Chewable tablets 25 mg	1	1	2	2	3	4	6	
	Chewable tablets 100 mg	—	—	—	—	1	1	1.5	
						1	1	400 mg	



	Liquid formulations					
AZT	10 mg/ml	6 ml	9 ml	12 ml	—	—
ABC	20 mg/ml	3 ml	4 ml	6 ml	—	—
3TC	10 mg/ml	3 ml	4 ml	6 ml	—	—
NVPb	10 mg/ml	5 ml	8 ml	10 ml	—	—
LPV/r/c	80/20 mg/ml	1 ml	1.5 ml	2 ml	2.5 ml	3 ml
DRVd	100 mg/ml	—	—	2.5 ml	3.5 ml	—
RTV	80 mg/ml	—	—	0.5 ml	0.6 ml	—
RALf	10 mg/mL (Oral granules for suspension: 100 mg sachet)	3 mL	5 mL	8 mL	10 mL	—

^aSee table 1.6 for dosing recommendations for infants younger than 4 weeks old. Doses for this age group are reduced to account for the decreased ability to excrete and metabolize medications. For infants who are at least 4 weeks of age but less than 3 kg, immaturity of renal and hepatic pathways of elimination are less of a concern but uncertainty still exists on the dosing of ARVs in preterm and low birth weight infants.

^bNVP dose escalation with half dose for 2 weeks when initiating ART is still recommended to avoid toxicity from high initial NVP levels. However, secondary analysis from the (CHAPAS-1 trial suggested that younger children have a lower risk of toxicity, and consideration can be given to starting with a full dose II. Please note that this regimen is no longer recommended and should only be used in special circumstances where other age appropriate formulations are not available.

^cLPV/r liquid requires a cold chain during transport and storage. The LPV/r heat-stable tablet formulation must be swallowed whole and should not be split, chewed, dissolved or crushed. Adult 200/50 tablet could be used for patients 14-24.9kg (1 tab am and 1 tab pm) and for patients 25-34.9kg (2 tab am and 1 tab pm). LPV/r pellets formulation should not be used in infants younger than 3 months. More details on the administration of LPV/r pellets can be found at <https://www.who.int/hiv/pub/toolkits/lat-factsheet-lopinavir-ritonavir/en/>. This dosing schedule applies to equivalent solid dosage forms such as LPV/r granules which can be use from 2 weeks of age. Since supply is currently constrained both pellets and granules should be discouraged for children above 14 kg who should receive LPV/r 100/25mg tablets instead. Info on LPV/r formulations for children available at: <https://www.artprocurementworkinggroup.org/lpv-r-supply>

^dDRV, DRV, to be used in children older than 3 years, must be administered with 0.5 ml of RTV 80 mg/mL oral suspension if less than 15 kg and with RTV 50mg (using 25mg or 50 mg solid formulation) in children 15 to 30 kg. RTV 100 mg tablets can be used as booster if lower-strength RTV tablets are not available. This is based on limited experience suggesting good acceptability and tolerability. But no efficacy data.

^e RTV should only be used at this dose as a boosting agent in combination with ATV or DRV.

^fRAL granules are approved from birth. Feasibility and acceptability of such formulations has not been widely investigated and concerns have been raised regarding administration in resource limited settings. Due to the administration challenges presented by the granule formulation the use of the 25 mg chewable tablets as dispersible has been endorsed by the PAWG for infants and children older than 4 weeks and weighing at least 3 kg. This was largely based on in vitro data on solubility and bioequivalence between tablets and granules⁶ as well as considering the limited availability of adequate alternatives for this age group. However, findings from a feasibility and acceptability assessment conducted in South Africa demonstrate that administration of RAL granules in rural settings is feasible as long as supported with adequate training and counselling.



Table 1.6 Drug dosing of liquid formulations in infants less than 4 weeks of age^a

Drug	Strength of oral liquid	2-3 kg		3-4 kg		4-5 kg	
		AM	PM	AM	PM	AM	PM
AZT	10 mg/mL	1 mL	1 mL	1.5 mL	1.5 mL	2 mL	2 mL
NVP	10 mg/mL	1.5 mL	1.5 mL	2 mL	2 mL	3 mL	3 mL
3TC	10 mg/mL	0.5 mL	0.5 mL	0.8 mL	0.8 mL	1 mL	1 mL
LPV/r ^b	80/20 mg/mL	0.6 mL	0.6 mL	0.8 mL	0.8 mL	1 mL	1 mL
	Granules 40 mg/10 mg sachet	—	—	2	2	2	2
RAL	10 mg/mL (Oral granules for suspension: 100 mg/sachet)	<1 week 0.4 mL (once daily) C	0.4 mL (once daily) C	0.5 mL (once daily) C	0.5 mL (once daily) C	0.7 mL (once daily) C	0.7 mL (once daily) C
		>1 week 0.8 mL C	0.8 mL C	1 mL C	1 mL C	1.5 mL C	1.5 mL C

^a PK data in preterm infants are available only for AZT; there is limited data and considerable uncertainty of appropriate dosing for NVP, RAL and 3TC in preterm and low birth weight infants. In addition, LPV/r solution should not be given to preterm infants until they have reached 42 weeks gestational age, because of the risk of adverse effects that may occur in this population. This guidance will be updated when more evidence is available from ongoing trials.

^b Do not use LPV/r solution in infants aged <2 weeks of age. LPV/r pellets should not be used in infants younger than 3 months. More details on the administration of LPV/r pellets can be found at <https://www.who.int/hiv/pub/toolkits/iatf-factsheet-lopinavir-ritonavir/en/>. Due to lack of clinical data to fully inform the use of LPV/r granules in neonates, these dosing recommendations were developed on the basis of the current US FDA approval (supporting use of LPV/r granules from 2 weeks) and considering the substantial uncertainty which exist particularly for neonates weighing 2-3 kg. Where no other formulation exist, 1 sachet twice a day could be considered for neonates above 2 weeks who are 2-3 kg in order to minimize the risk of potential toxicity with overdosing.

^c RAL granules for oral suspension should use in neonates of at least 2 kg and be administered in once a day during the first week of life (http://www.merck.com/product/usa/pi_circulars/iesentress/iesentress_pi.pdf) and twice a day afterwards.



Appendix 2: Mental Health Screening

Mental Health Screening for HIV Infected Patients According to the New York state Department of Health AIDS Institute

All HIV-infected patients should receive baseline and ongoing assessment of the following:

- Mental health disorders:
 - Depression (every visit)
 - Anxiety (at least annually)
 - Post-traumatic stress disorder (at least annually)
- Cognitive function (at least annually)
- Sleep habits and appetite (every visit)
- Psychosocial status (at least annually)
- Suicidal/violent ideation (every visit)
- Alcohol and substance use (at least annually)
- Screening Questions to Identify Depression in HIV infected patients
 - In the past year, were you ever on medication or antidepressants for depression or nerve problems?
 - In the past year, was there ever a time when you felt sad, blue, or depressed for more than 2 weeks in a row?
 - In the past year, was there ever a time lasting more than 2 weeks when you lost interest in most things like hobbies, work, or activities that usually give you pleasure n?
- Screening Questions to Identify Anxiety in HIV infected patients
 - In the past year, did you ever have a period lasting more than 1 month when most of the time you felt worried and anxious?
 - In the past year, did you have a spell or an attack when all of a sudden you felt frightened, anxious, or very uneasy when most people would not be afraid or anxious?
 - In the past year, did you ever have a spell or an attack when for no reason your heart suddenly started to race, you felt faint, or you couldn't catch your breath?
- Screening Questions to Identify Post Traumatic Stress Disorder in HIV infected patients
 - During your lifetime, as a child, or adult, have you experienced or witnessed traumatic event(s) that involved harm to yourself or others?
 - If “yes”:
 - In the past year, have you been troubled by flashbacks, nightmares, or thoughts of the trauma?
 - In the past 3 months, have you experienced any event(s) or received information that was so upsetting it affected how you cope with everyday life?
 - Screening Questions to Identify Mania in HIV infected patients
 - In the past year, when not high or intoxicated, did you ever feel extremely energetic or irritable and more talkative than usual?



Appendix 3: Energy and Nutritional Recommendations for PLHIV

Energy and Nutritional Recommendations for PLHIV

MACRONUTRIENT INTAKE		
Normal Energy Requirements for Health:		
Carbohydrates - 45% to 65% of total energy intake		
Protein - 10% - 30% of total energy intake		
Fat - 20% to 35% of total energy intake		
Children	Adults	Pregnant and Lactating Women
A 10% increase in energy intake is recommended to maintain growth in asymptomatic children.	A 10% increase in energy intake is recommended to maintain body weight and physical activity in asymptomatic HIV-infected adults	The recommended energy intake for HIV-infected adolescents and pregnant and lactating women should be the same as their HIV negative counterparts Additional energy requirement during pregnancy and lactation: 1 st Trimester = 90kcal/day 2 nd Trimester = 300kcal/day 3 rd Trimester = 450kcal/day Lactation = 500kcal/day
A 50% - 100% increase in energy intake over established requirements for healthy uninfected children is recommended in children who have weight loss	A 20% - 30% increase in energy intake is recommended during symptomatic disease or opportunistic infections to maintain body weight	
MICRONUTRIENT INTAKE		
People LHIV require extra vitamins and minerals to help repair and heal damaged cells. Consumption of a healthy diet may be insufficient to correct nutritional deficiencies in PLHIV and supplementation may be required. The following vitamins can be found in the foods listed:		
<ul style="list-style-type: none"> • Vitamin A and beta-carotene: dark green, yellow, orange, or red vegetables and fruit; liver; whole eggs; milk • Vitamins B: meat, fish, chicken, grains, nuts, white beans, avocados, broccoli, and green leafy vegetables • Vitamin C: citrus fruits • Vitamin E: green leafy vegetables, peanuts, and vegetable oils • Selenium: whole grains, nuts, poultry, fish, eggs, and peanut butter • Zinc: meat, poultry, fish, beans, peanuts, milk and other dairy products 		
Children	Pregnant and Lactating Women	
Vitamin A Supplementation In keeping with WHO recommendations, 6 month to 60 month-old exposed/infected children born to HIV-infected mothers living in resource-limited settings should receive periodic (every 4–6 months) vitamin A supplements (100,000 IU for infants 6 to 12 months and 200,000 IU for children >12 months)	Vitamin A Supplementation Daily vitamin A intake by HIV-infected women during pregnancy and lactation should not exceed the RDA. In areas of endemic vitamin A deficiency, a single high-dose of vitamin A (200 000 IU) is recommended to be given to women as soon as possible after delivery, but no later than six weeks after delivery. Iron Folate Supplementation To prevent anaemia, WHO recommends daily iron-folate supplementation (400 µg of folate and 60 mg of iron) during six months of pregnancy, and twice-daily supplements to treat severe anaemia. Available data do not support a change in this recommendation for women living with HIV	



Appendix 4: Recommended activities for adolescent HIV service delivery

Recommended activities for adolescent HIV service delivery aligned with the global standards for quality of health-care services for adolescents

Global standard	Description	Recommended activities
1. Adolescents' health literacy	The health facility implements systems to ensure that adolescents are knowledgeable about their own health and they know where and when to obtain health services	<ul style="list-style-type: none"> • Training of peer supporters and adolescents living with HIV(ALHIV)in HIV prevention, sexual and reproductive health, mental health and life skills • Developing job aides on HIV testing, care and treatment, viral load monitoring, adherence counselling and contraceptive information and provision specific to adolescents • Peer supporters and treatment literacy staff address HIV knowledge and adherence concerns of adolescents
2. Community support	The health facility implements systems to ensure that parents, guardians and other community members and community organizations recognize the value of providing health services to adolescents and support such provision and the utilization of services by adolescents	<ul style="list-style-type: none"> • Facilities create strong linkages with bi-directional referral to community-based services such as orphans and vulnerable children (OVC), gender-based violence prevention and support, social and legal protection, vocational training etc. through partnerships • Facilities and relevant community-based organizations (CBOs) establish formalized relationships (e.g. through memoranda of understanding) for shared implementation, monitoring and reporting whenever feasible • Facilities participate and support the training of community service providers as appropriate • Provision of community -based support for both ALHIV and their caregivers • Conducting sensitization sessions within schools to eliminate stigma and promote testing, adherence and retention by school attending ALHIV
3. Appropriate package of services	The health facility provides a package of information, counselling, diagnostic, treatment and care services that fulfils the needs of all adolescents. Services are provided in the facility and through referral links and outreach	<ul style="list-style-type: none"> • Standard operating procedures and job aids developed and implemented to provide standard and simplified information on the package of services for adolescents • Constitute a multidisciplinary mentorship team on capacity-building for the needs of the adolescents



4. Providers' competencies	Health-care providers demonstrate the technical competence required to provide effective health services to adolescents. Health-care providers and support staff respect protect and fulfil adolescents' rights to information, privacy, confidentiality, non-discrimination, non-judgmental attitude and respect	<ul style="list-style-type: none"> Development of training curriculum for facility and community health care workers, training curriculum for peer educators, and adolescent club guide Training of health-care workers at service delivery points on providing adolescent-friendly health services within an integrated service package Regular meetings, on-site support and mentorship, and refresher workshops
5. Facility characteristics	The health facility has convenient operating hours, a welcoming and clean environment and maintains privacy and confidentiality. It has the equipment, medicines, supplies and technology needed to ensure effective service provision to adolescents	<ul style="list-style-type: none"> Age band clinic appointment and flexible opening hours outside regular clinic hours, such as evenings or weekends or school holidays to facilitate convenience A safe space for adolescent HIV care and psychosocial support discussions, and peer interactions This could be designated spaces or multi-use spaces with time allotments Scheduling of multidisciplinary teams to provide various services including counselling, antiretroviral medicine refill, viral load testing Development and adherence to infection prevention and control policies
6. Equity and nondiscrimination	The health facility provides high-quality services to all adolescents regardless of their ability to pay, age, sex, marital status, education level, ethnic origin, sexual orientation or other characteristics	<ul style="list-style-type: none"> Services provided free of charge with no out-of-pocket expenses Client satisfactory survey done periodically to get feedback for improvement Involvement and collaboration by multi-layered and multisectoral agencies, including social protection services and government health ministries/agencies at all levels
7. Data and quality improvement	The health facility collects, analyses and uses data on service utilization and quality of care, disaggregated by age and sex, to support quality improvement. Health facility personnel are supported in participating in continual quality improvement	<ul style="list-style-type: none"> Develop and implement standard data collection tools at the facility level and a reporting template that capture age, sex and outcomes Establish quality improvement teams at health facilities and build their capacity to use data Quality improvement teams to routinely review disaggregated data, identify, test and implement appropriate solutions



8. Adolescents' participation	<p>Adolescents are involved in planning, monitoring and evaluating health services and in decisions regarding their care and in certain appropriate aspects of service provision</p> <ul style="list-style-type: none"> • Involvement of peer supporters/educators in relevant facility health team activities and meetings such as case reviews and advocacy for adolescent-friendly health services • Training of peers to be self-health managers, to motivate self and others and to be a source of positive peer pressure to others • Developing viable and effective mechanisms for harnessing input and feedback from adolescents on the planning, implementation, monitoring and evaluation of services provided
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Appendix 5: Guide on Age Appropriate Disclosure for Children and Adolescents

Guide on Age-Appropriate Disclosure for Children and Adolescents

Age characteristics	Stage of Disclosure	Provider Action
0 - 4 years	No disclosure	At this stage, no disclosure is done since the child is too young to understand about HIV
5 - 8 years	Partial disclosure	At this age, the child can understand a lot. Define the virus as a germ and the CD4+ as the soldier in the body that keep fighting and one has to take the drugs to strengthen the soldiers in the body
9 to 12 years	Full disclosure	<p>Full disclosure is important since most children at this stage are able to understand more about HIV and would have heard about HIV as part of formal education at school</p> <p>Follow the following stages in the disclosure process</p> <p>Stage 1</p> <p>Assessing the child social support system to ensure the availability of sufficient support once disclosure is completed</p> <p>Stage2</p> <p>Assess the child's prior knowledge about HIV/ AIDS including information given at school, any myths and misconceptions. Offer or reinforce accurate information</p> <p>Stage 3</p> <p>Use an imaginary exercise or story to assess a child's reaction to disclosure of HIV status</p> <p>Stage4</p> <p>Tell the child about their HIV status. Support parents to disclose to the child and clarify the mode of infection.</p> <p>Address immediate reaction and concerns a child might have</p>
	Post-disclosure (3-6 months after full disclosure)	<p>Find out from the parent/guardian if they have observed anything after disclosure, e.g. behaviour change:</p> <ul style="list-style-type: none"> · Introduce the child to tell their story and emerge as a hero (a comic book may be a useful aid) · Link the child to a support group or with an older child who has been disclosed to <p>NB: Find out how the child is doing at every visit after full disclosure</p>



Appendix 6: Self-management timeline for transitioning ALHIV

Self-management timeline for transitioning ALHIV

Age	From 10-12 years (Envisioning a future)	From 13-16 years (Working towards responsibility)	From 17-19 years (Capacity to transition)
<i>Individual growth and environmental support: Encouraging healthy decisions</i>			
Psycho-social support	<ul style="list-style-type: none"> Link to relevant support groups and programs 	<ul style="list-style-type: none"> Link to relevant support groups and programs 	<ul style="list-style-type: none"> Link to relevant support groups and programs Support mentorship of younger positive adolescents
Sexual and reproductive health, positive health and prevention	<ul style="list-style-type: none"> Answer any questions that emerge honestly and truthfully 	<ul style="list-style-type: none"> Link to an adolescent-friendly reproductive health provider and clinics, review sexuality issues and safe sex practices Refer for regular sexual health check-ups Discuss HIV prevention methods 	<ul style="list-style-type: none"> Continue sexuality conversations, encourage questions about HIV, pregnancy, and sexuality Refer for regular sexual health check-ups Discuss HIV prevention methods
Substance use	<ul style="list-style-type: none"> Discuss substance use and how it can impact health 	<ul style="list-style-type: none"> Discuss the links between sexually risky behaviours, substance abuse, and poor health outcomes; assess if using substances and what triggers use 	<ul style="list-style-type: none"> Discuss the links between sexually risky behaviours and substance abuse, and poor health outcomes; assess if using substances and what triggers use
Future planning	<ul style="list-style-type: none"> Initiate conversation about future goals (work, school, etc.) 	<ul style="list-style-type: none"> Promote peer education opportunities Connect ALHIV with relevant NGOs 	<ul style="list-style-type: none"> Connect ALHIV to job training, vocational training, and continued education opportunities

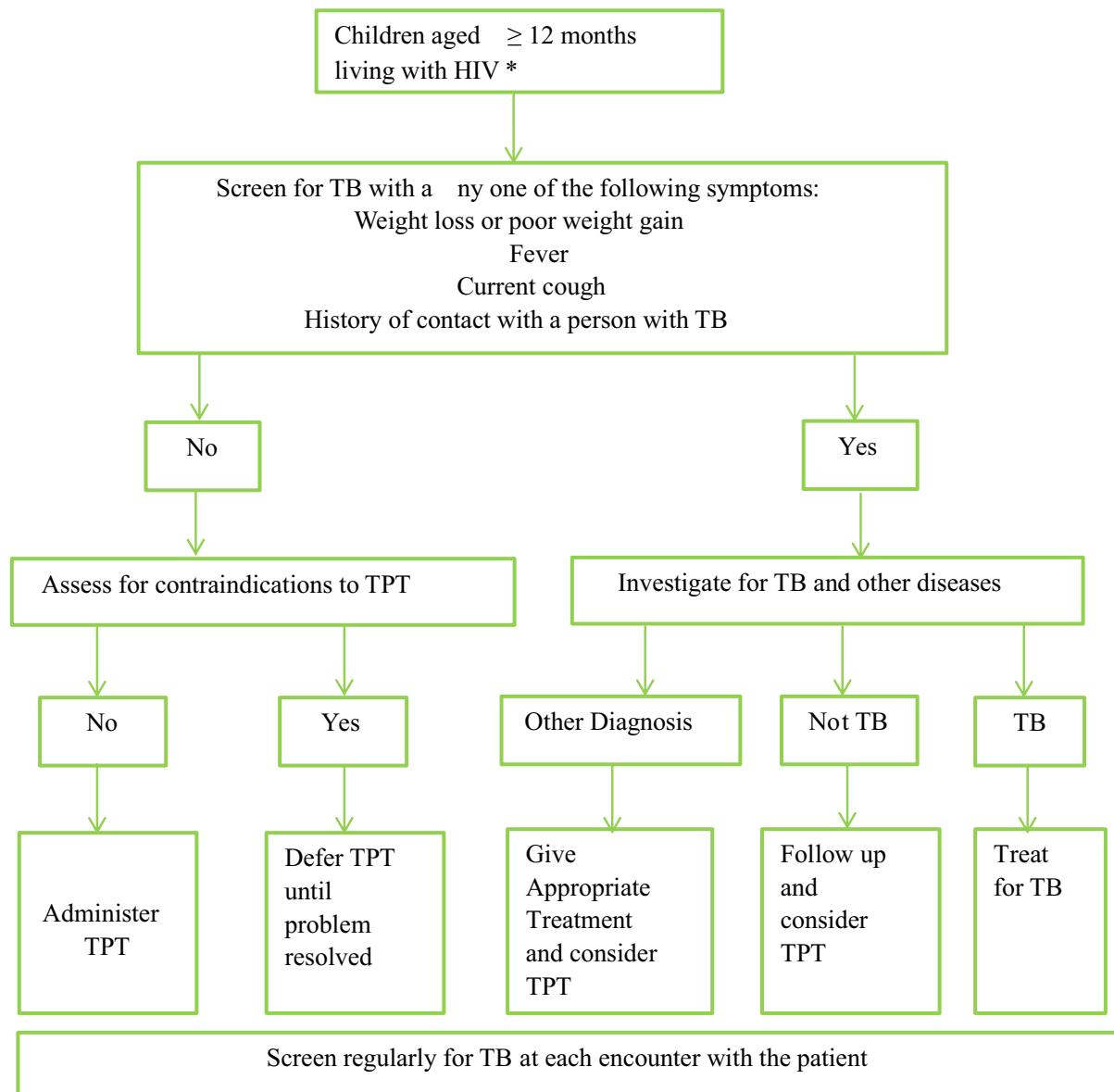


Clinical support: Providing or facilitating referrals for needed services			
Self-care	<ul style="list-style-type: none"> Support caregivers to disclose to the adolescent if not already done Talk to the child to start mapping out the transition timeline after disclosure 	<ul style="list-style-type: none"> Build a schedule/calendar with the adolescent to strengthen adherence to treatment and retention Discuss and address transport barriers and other issues that hinder Clinic and ART adherence 	<ul style="list-style-type: none"> Reinforce responsibility in taking medications and keeping appointments
Clinical management	<ul style="list-style-type: none"> Talk about HIV and prevention measures Begin to explain medications and reinforce adherence messages Talk about adherence issues Link to counselling (including lay or peer) for any mental health issues 	<ul style="list-style-type: none"> Talk to the adolescent about diagnosis, medications, appointment keeping and adherence Talk to adolescent about how to seek clinical care for symptoms or emergencies Link to counselling (including lay or peer) for any mental health issues Orient adolescent in adult clinic 	<ul style="list-style-type: none"> Help identify appropriate adult providers/clinics Solicit questions about care, treatment, and potential future changes in treatment Link to counselling (including lay or peer) for any mental health issues . Ensure that viral load suppression (<1000 copies/ml) is achieved within the last one year prior to completion of transitioning to adult care Follow up with transitioning adolescents 6 months to ensure adherence and retention in care



Appendix 7: Algorithm for Screening and Diagnosing TB in PLHIV

Figure 7.1: Algorithm for Screening Children aged ≥ 1 year living with HIV for TB Preventive Therapy



*All infants <1 year should only be given TPT if they have a history of household contact with a TB case and do not have active TB after evaluation



Figure 7.2: Algorithm for screening Adult and Adolescent Living with HIV(including pregnant PLHIV) for TB Preventive therapy

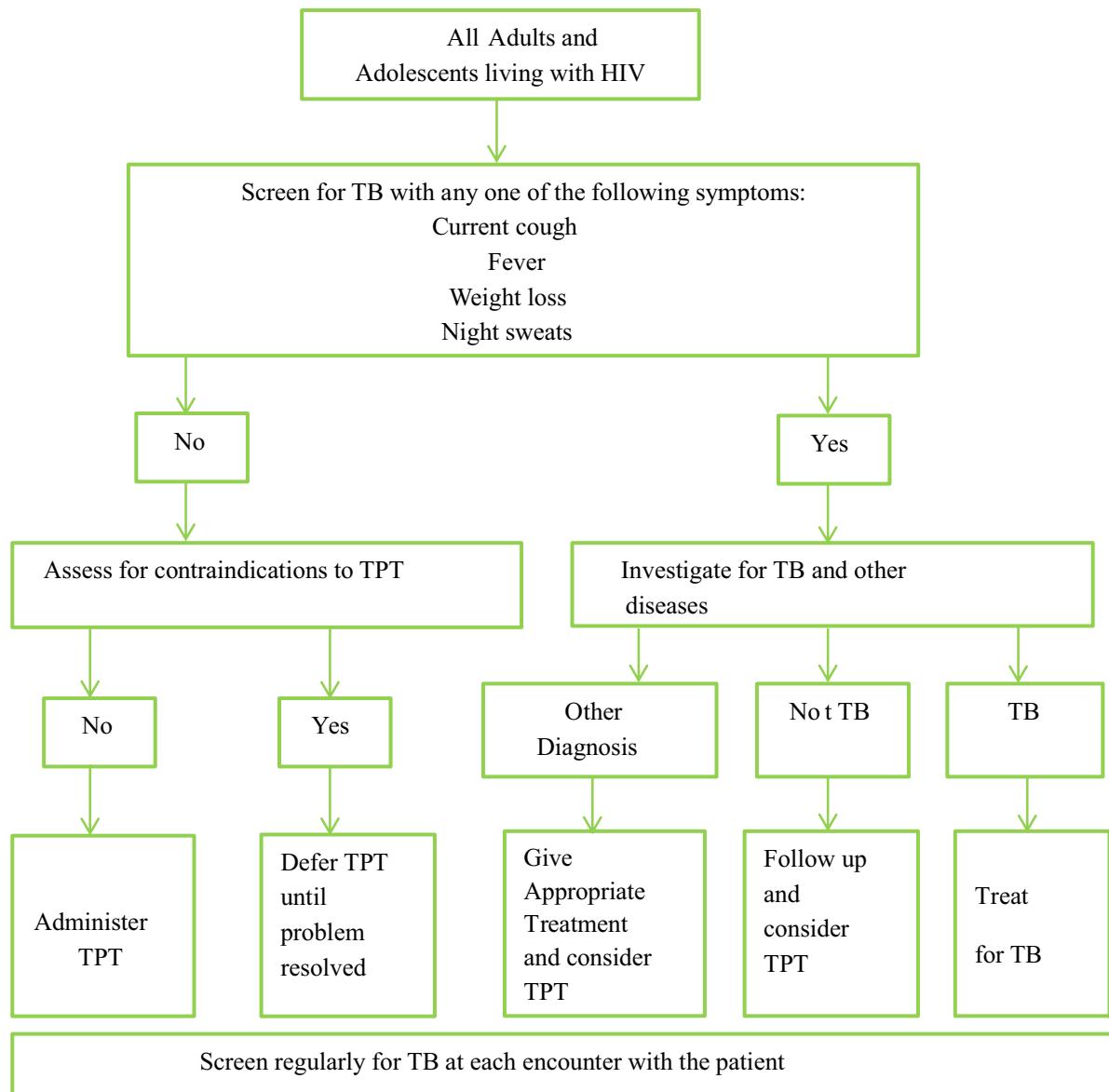
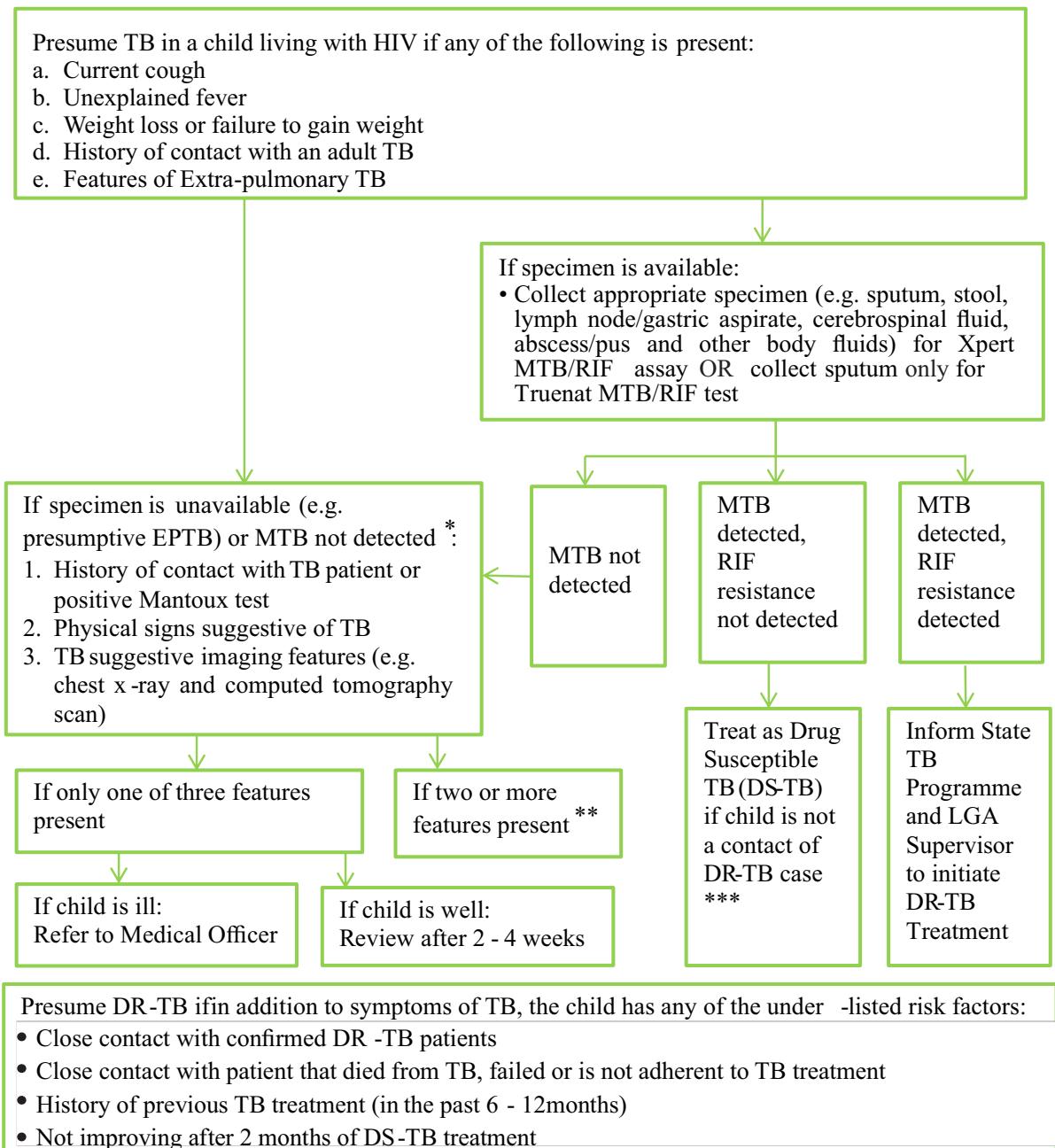


Figure 7.3: Algorithm for Diagnosing TB in Children and Adolescent



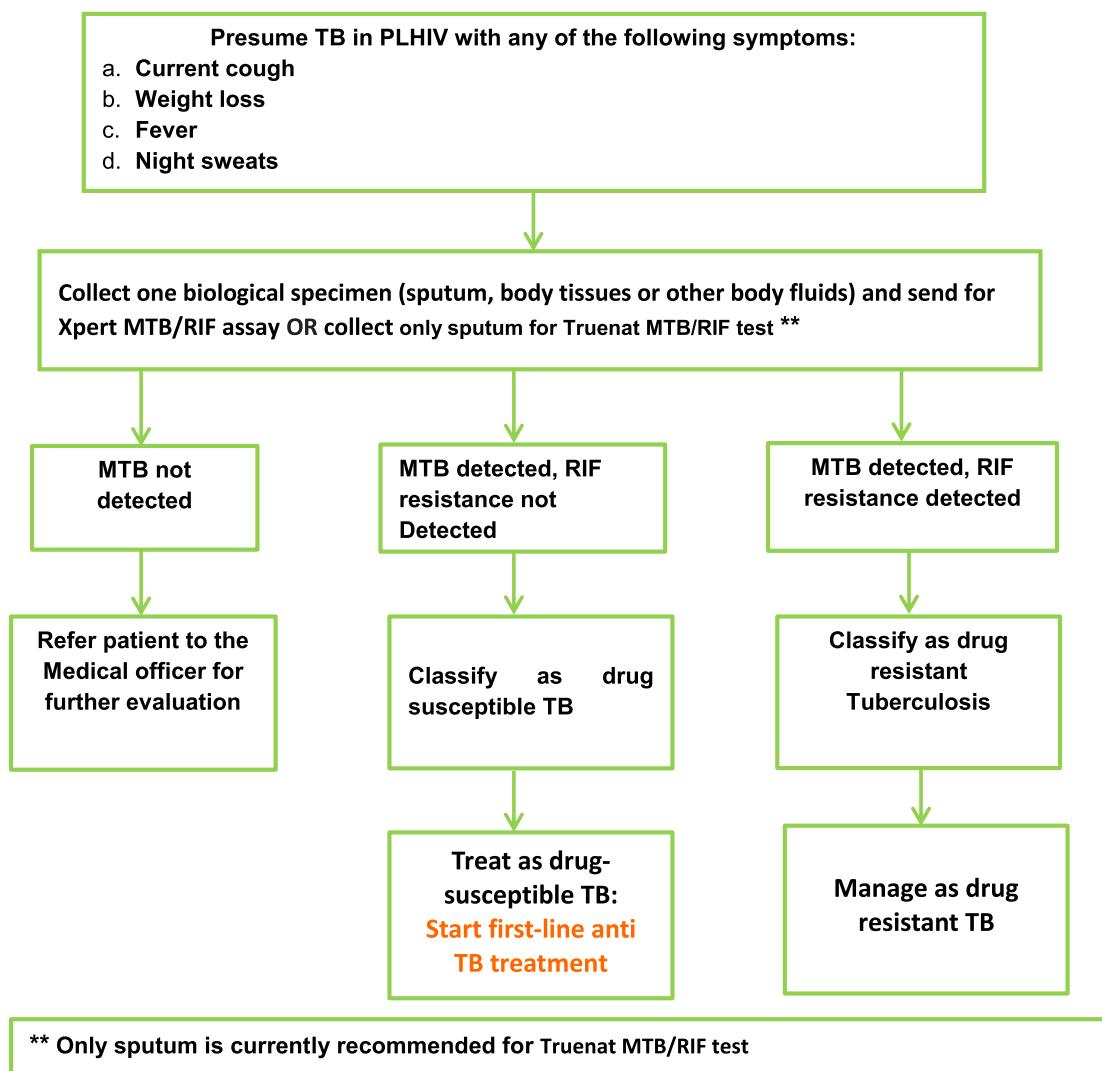
*Clinical diagnosis is recommended if all effort at bacteriological confirmation using Xpert MTB/RIF assay/Truenat test (or Urine LF-LAM assay in PLHIV with advanced disease) is not possible

**In settings where there is no doctor (e.g. hard to reach areas), the trained health care worker can make a diagnosis of TB and commence anti-TB treatment.

***Treat as DR-TB if child is a contact of DR-TB case



Figure 7.4: Algorithm TB in Diagnosis in Adults



Appendix 8: Global Standards for Quality Health-Care Services for Adolescents

Eight global standards define the required level of quality in the delivery of services as shown in the table below. Each standard reflects an important facet of quality services, and to meet the needs of adolescents all standards need to be met. This section presents each of these standards and its criteria, categorized as input, process and output criteria.

Adolescents' health literacy	Standard 1 -The health facility implements systems to ensure that adolescents are knowledgeable about their own health, and know where and when to obtain health services.
Community support	Standard 2 -The health facility implements systems to ensure that parents, guardians and other community members and community organizations recognize the value of providing health services to adolescents and support such provision and the utilization of services by adolescents.
Appropriate package of services	Standard 3 -The health facility provides a package of information, counselling, diagnostic, treatment, and care services that fulfils the needs of all adolescents. Services are provided in the facility and through referral linkages and outreach. ¹
Providers' competencies	Standard 4 -Health-care providers demonstrate the technical competence required to provide effective health services to adolescents. Both healthcare providers and support staff respect, protect and fulfil adolescents' rights to information, privacy, confidentiality, non-discrimination, non-judgmental attitude, and respect.
Facility characteristics	Standard 5 -The health facility has convenient operating hours, a welcoming and clean environment and maintains privacy and confidentiality. It has the equipment, medicines, supplies, and technology needed to ensure effective service provision to adolescents.
Equity and non - discrimination	Standard 6 -The health facility provides quality services to all adolescents irrespective of their ability to pay, age, sex, marital status, education level, ethnic origin, sexual orientation, or other characteristics.
Data and quality improvement	Standard 7 - The health facility collects, analyses and uses data on service utilization and quality of care, disaggregated by age and sex, to support quality improvement. Health facility staff is supported to participate in continuous quality improvement.
Adolescents' participation	Standard 8 -Adolescents are involved in the planning, monitoring, and evaluation of health services and in decisions regarding their own care, as well as in certain appropriate aspects of service provision.

¹ Service provision in the facility should be linked, as relevant, with service provision in referral level health facilities, schools, and other community settings.



Appendix 9: Pharmacovigilance or Drug and Therapeutic Committees (PVC) - Terms of Reference

There should be the existence of a functional Pharmacovigilance or drug and therapeutic committee at the facility level, which meets regularly to provide oversight, review all the documented/reported cases of ADRs and advise on the management of such patients. The committee should be comprised minimally of a clinician, Pharmacist, Nurse, Adherence counselor, and a Lab scientist; may also include data/record officer, Mentor mother and other support staff where available.

Terms of Reference of the PVC or DTC

The Pharmacovigilance or Drug and Therapeutic committee will hold regular meetings in pursuant of their roles and responsibilities as stated below. If necessary, the committee will need to enforce mandatory attendance to accomplish the functions of the committee. Minutes and MOVs need to be prepared for each meeting and distributed to the appropriate departments. Finally, all goals, terms of reference, policies, decisions, and other actions of the PVC or DTC should be documented, and the records kept.

Roles and Responsibilities

The responsibilities of the PVC or DTC include but are not limited to –

1. Medication advisory role to the facility
 - On VL optimization and results review, pharmacovigilance & management activities, regimen switch and substitutions decisions etc.
2. Identifying drug use problems and promoting rational drug use.
 - Through examinations of reports such as Medication error reports; Drug-drug interactions; VL reports for treatment failure (unsuppressed clients to be considered for EAC and decision to switch); ADR reports, etc.
3. Promoting interventions that improve drug use such as education program (e.g., CME, bulletin publication, in-service training) and managerial program (such as conduct Drug Use evaluation).
4. Promoting pharmacovigilance activities by encouraging, monitoring, assessing, reporting, and prevention of ADRs and other medication related problems:
 - To review the availability and adequacy of tools (ADR Screening form, NAFDAC yellow/ADR reporting form), and the skills of HCWs to monitor and report ADR at the facility.
 - Liaise with supporting Implementing Partners, state LMCU, or other partners to address identified gaps in Pharmacovigilance monitoring and reporting at the facility level.
 - Ensure the documentation, collation, and routine reporting of identified ADRs from the facility to the National Pharmacovigilance Centre (NPC) managed by NAFDAC.
 - Provide guidance to community pharmacies and other out of facility DSD models, to ensure that the capacity and tools are available to monitor and report ADRs among the patients they serve.



Appendix 10: NAFDAC ADR Form

ANNEXURE 1

PVPMS-003-01

SERIAL NO: 00024981



National Agency for Food and Drug Administration and Control (NAFDAC), Corporate Headquarters, Plot 2032 Olusegun Obasanjo Way Wuse Zone 7, Abuja

National Pharmacovigilance Centre

NAFDAC USE ONLY

A. PATIENT INFORMATION																																									
1. Patient's Full Name or Initials (In Confidence)																																									
2. Age _____																																									
3. Sex <input type="checkbox"/> Female <input type="checkbox"/> Male																																									
4. Weight (kg) _____																																									
Or Date of Birth (e.g. 03 May 1925) - - - - -																																									
Hospital/Treatment Centre			Patient Record No. _____																																						
B. ADVERSE EVENT																																									
1. Describe Event																																									
2. Seriousness of Adverse Event (Check all that apply)																																									
<input type="checkbox"/> Death Include date (dd-mmm-yyyy) - - - - - <input type="checkbox"/> Life threatening <input type="checkbox"/> Hospitalization <ul style="list-style-type: none"> <input type="checkbox"/> Initial <input type="checkbox"/> Prolonged <input type="checkbox"/> Disability or Permanent Damage <input type="checkbox"/> Congenital Anomaly/Birth Defects <input type="checkbox"/> Required intervention to Prevent Permanent Impairment or Disability (Devices) <input type="checkbox"/> Others (Specify) _____																																									
3. Outcomes																																									
<input type="checkbox"/> Recovered fully <input type="checkbox"/> Recovering <input type="checkbox"/> Fatal <input type="checkbox"/> Unknown <input type="checkbox"/> Others (Specify) _____																																									
4. Onset Date of Event (dd-mmm-yyyy) - - - - -		5. Stop Date of Event (dd-mmm-yyyy) - - - - -																																							
C. SUSPECTED DRUG (Including Biologicals, Traditional/Herbal Medicines & Cosmetics)																																									
1. Product Details (Name and other details; attach product label/ product sample if available)																																									
Brand Name:		Batch No.:																																							
Generic Name:		NAFDAC No.:																																							
Name and Address of Manufacturer:		Expiry Date:																																							
D. CONCOMITANT MEDICINES																																									
(All medicines taken within the last 3 months, including herbal and self-medication)																																									
<table border="1"> <thead> <tr> <th>Brand or Generic Name</th> <th>Dosage</th> <th>Route</th> <th>Date Started</th> <th>Date Stopped</th> <th>Reason for Use</th> </tr> </thead> <tbody> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>						Brand or Generic Name	Dosage	Route	Date Started	Date Stopped	Reason for Use																														
Brand or Generic Name	Dosage	Route	Date Started	Date Stopped	Reason for Use																																				
E. RELEVANT TESTS / LABORATORY DATA WITH DATES																																									
F. OTHER RELEVANT HISTORY																																									
Including Preexisting Medical Conditions:																																									
<ul style="list-style-type: none"> <input type="checkbox"/> Pregnancy <input type="checkbox"/> Smoking <input type="checkbox"/> Kidney Problems <input type="checkbox"/> Alcohol use <input type="checkbox"/> Liver problems 																																									
Allergies _____																																									
Others (Specify) _____																																									
G. REPORTER																																									
1. Name and Address																																									
Last Name:			First Name:																																						
Address:																																									
City:			State:																																						
Country:			Date:																																						
Phone No.:			Email:																																						
2. Health Professional?																																									
<input type="checkbox"/> Yes <ul style="list-style-type: none"> <input type="checkbox"/> No 																																									
3. Occupation:																																									



