REPUBLIC OF KENYA
IN THE HIGH COURT OF KENYA AT KISUMU
CONSTITUTIONAL AND HUMAN RIGHTS DIVISION
PETITION NO E008 OF 2023

IN THE MATTER OF ARTICLES 1, 2, 3, 10, 19, 20(1) & (4), 21, 22, 23, 24, 25, 26(1), 27, 28, 29, 35, 43(1)(a), 47, 53 (1)(c), 165, 232(1), 258 AND 259 OF THE CONSTITUTION OF KENYA, 2010

AND

IN THE MATTER OF SECTIONS 4 (b), (c), (d), (e), (f), (h), (i), (l) AND (m), 14 (f), 20, 24,32, AND 33 (2) AND (5) OF THE EAST AFRICAN COMMUNITY HIV AND AIDS PREVENTION AND MANAGEMENT ACT, 2012

AND

IN THE MATTER OF SECTIONS 4, 5, 8,12, 14, 15 OF THE HEALTH ACT, 2017

AND

IN THE MATTER OF SECTION 19 OF THE HIV PREVENTION AND CONTROL ACT

AND

IN THE MATTER OF SECTIONS 4 AND 9 OF THE CHILDREN ACT, 2001

BETWEEN

FA ..... 1ST PETITIONER
(Suing on her own behalf and as mother and next friend of Baby DM (A minor)

BK..... 2ND PETITIONER

CNN ..... 3RD PETITIONER

PATRICIA ASERO OCHIENG ..... 4TH PETITIONER

AMBASSADOR FOR YOUTH AND ADOLESCENTS REPRODUCTIVE HEALTH PROGRAM (AYARHEP) ..... 5TH PETITIONER

KENYA LEGAL AND ETHICAL

ISSUES NETWORK ON HIV/AIDS (KELIN) ..... 6TH PETITIONER

KATIBA INSTITUTE..... 7TH PETITIONER

VERSUS

THE HON. ATTORNEY GENERAL.....1ST RESPONDENT

CABINET SECRETARY FOR HEALTH..... 2ND RESPONDENT

KENYA MEDICAL SUPPLIES AUTHORITY ..... 3RD RESPONDENT

EXPERT AFFIDAVIT

I, **WILLEM DANIEL FRANCOIS VENTER**, a resident of Johannesburg, South Africa and a citizen of South Africa do hereby make oath and state **THAT**: -

INTRODUCTION

1 I am an adult male Professor and medical doctor, with my primary place of business at 32 Princess of Wales Terrace, Parktown, Johannesburg, South Africa.

2 The facts in this affidavit are true and correct and, save where the context indicates otherwise, within my own personal knowledge.

3 To the extent that I rely on information received from others, I believe such information to be true and correct.

MY EXPERTISE

4 I am both a clinician and researcher with an expertise in HIV and infectious diseases. I attach my brief curriculum vitae as Exhibit "**WDFV1**".

5 In summary of my qualifications and expertise:

5.1 I am a Professor of Medicine in the School of Clinical Medicine, Faculty of Health Sciences of the University of the Witwatersrand. I am also an Extraordinary Professor at the Department of Public Health Medicine at the University of Pretoria.

5.2 I am currently the Executive Director of Ezintsha, at the Faculty of Health, University of the Witwatersrand, Johannesburg. Ezintsha is a clinical trials, policy and health systems research unit.

5.3 I hold, amongst others, the following qualifications: a Bachelor of Medicine and Bachelor of Surgery (MBChB), Masters of Medicine (Mmed), Doctor of Philosophy (PhD) in Medicine, Diploma in Tropical Medicine and Hygiene (DTM&H), and Diploma in HIV management with subspecialisation in infectious diseases (Dip HIV Man). I am a Fellow of the College of Medicine (South Africa) having specialised as a physician in internal medicine.

5.4 I have about 30 years' clinical experience as a medical doctor, having practiced in both South Africa and the United Kingdom. I continue to treat patients concurrently to my academic and research work.

5.5 I have about 23 years' research experience, focusing predominantly on HIV.

5.6 For over 20 years, I have been at the forefront of the HIV policy and research community. I have led numerous large clinical and implementation science trials of antiretroviral treatment strategies that have influenced HIV management guidelines and contributed to characterising the full range of clinical risks and benefits of antiretroviral drugs.

5.7 My work broadly encompasses health systems research and clinical trials, most recently involving the antiretrovirals dolutegravir, tenofovir alafenamide, cabotegravir, and doravirine. My current research focus is on combinations of newer drugs to improve the resistance and potency while lowering the cost of first and second line antiretrovirals, improve early diagnosis of HIV, facilitate access to pre-exposure prophylaxis, as well as using patient information to drive improved linkage to care after diagnosis. Most recently, my team has expanded its focus to include the study of obesity, cardiovascular disease, and diabetes risk and care optimisation in South Africa, both within the context of HIV and beyond.

5.8 I have advised bodies such as the South African National AIDS Council, the South African Department of Health, UNAIDS, and World Health Organisation ("**WHO**"). I have contributed to international, regional, and national HIV guidelines. I recently served as a member of the Ministerial Advisory Committee for COVID-19 in South Africa.

5.9 I supervise Masters and PhD students and was previously the convenor of the regional Diploma in HIV Medicine and Diploma in Sexual Health and HIV for the Southern African Colleges of Medicine.

5.10 I have over 280 peer-reviewed journal publications. My recent work has included publications in Lancet HIV, the New England Journal of Medicine, Nature Communications, AIDS and PLOSMedicine.

5.11 I have received several awards and honours for my work. These include receiving the Bobby Grieve Research Award, the First Merle A Sande Health Leadership Award, and the award for the Most Prestigious Postgraduate Degree at the Wits Faculty of Health Sciences for my PhD.

6 I respectfully submit that my training and experience qualify me to express the views and opinions that I set out in this affidavit.

EXPERT OPINION

7 I swear this affidavit to provide independent, expert opinion on the clinical treatment of adults and children living with HIV in the context of:

7.1 the Kenya HIV Prevention and Treatment Guidelines, 2022, a copy of the relevant portions of which I attach to this affidavit as Exhibit "**WDFV2**" ("**the 2022 Treatment Guidelines**");

7.2 the 2018 Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV in Kenya ("**the 2018 Guidelines**"), the relevant portions of which I attach to this affidavit as Exhibit "**WDFV3**" ("**the 2018 Treatment Guidelines**"); and

7.3 international best practice.

8 I make reference to both the 2018 and 2022 Treatment Guidelines because it is my understanding that the stockouts complained of by the petitioners occurred over a period that spanned the application of both the 2018 and 2022 Treatment Guidelines.

9 I further swear this affidavit in the context of certain allegations made by the petitioners. I do not comment on the truth or otherwise of the petitioners' allegations and I note that I have not examined or treated any of the petitioners or their minor children. I refer to the petitioners' allegations in order to explain certain concepts and provide my expert opinion on issues arising out of their allegations. In each instance, I set out the allegations as I am informed of them below.

10 The opinions I express are my own and are based on my knowledge and experience as indicated above, and my review of the above-referenced documentation.

HIV: Basic concepts

11 In this section I provide a brief explanation of HIV, its effect on the human body, its transmission, and the progression of disease in the absence of treatment. I have been requested, in particular, to explain the concepts of HIV, AIDS, CD4 count, and viral load.

HIV

12 Human immunodeficiency virus ("**HIV**") is a retrovirus that weakens the body's immune system through impairing and destroying white blood cells, CD4 T lymphocytes in particular. CD4 T lymphocytes help the body to fight bacteria, viruses, and other organisms.

13 Without effective treatment to destroy HIV and restore the immune system's functioning and prevent the destruction of CD4 T lymphocytes, people living with HIV are more susceptible to diseases like tuberculosis, bacterial and fungal infections, and some cancers.

14 HIV may be transmitted through the exchange of certain body fluids such as blood, breast milk, and semen, during pregnancy and during childbirth.

AIDS

15 Acquired immunodeficiency syndrome ("**AIDS**") is a disease caused by HIV and is the most advanced stage of HIV infection. Left untreated, HIV predictably causes AIDS.

16 AIDS is diagnosed when a person living with HIV has a CD4 count below 200 cells per microlitre or acquires specific disease associated with HIV infection.

CD4 count

17 A CD4 count is laboratory test that measures the number of CD4 T lymphocytes in a measure of a person's blood. The normal range is between 500 to 1,500 CD4 T lymphocytes per cubic millimetre of blood.

18 A CD4 count indicates the extent of the damage HIV has done to the body's immune system.

Viral load

19 Viral load or viral burden refers to the quantity of virus in a person's body.

20 A viral load test measures the number of HIV copies in a millilitre of a person's blood. A person's HIV viral load assists in predicting the progression of disease, in determining the efficacy of treatment, and in guiding treatment choices.

21 Effective HIV treatment leads to an undetectable viral load or virological suppression.

Antiretroviral treatment

22 In this section, I explain the purpose of antiretroviral treatment ("**ART**"), its effect on people living with HIV in terms of life expectancy and health, and to interpret the 2022 and 2018 Treatment Guidelines in the context of international best practice.

23 There is currently no proven cure for HIV but it can be effectively managed through antiretroviral therapy ("**ART**"). ART works by stopping the virus from replicating. This allows the immune system of a person living with HIV to strengthen to effectively fight infections and disease.

24 ART is provided in combinations of antiretroviral agents. These combinations typically include 3 different drugs from at least 2 different classes.

25 ART saves lives. ART has radically transformed an HIV diagnosis from being indicative of inevitable illness, suffering and death, to a chronic, manageable condition.

25.1 Effective ART benefits the individual through stopping the virus growing and reconstituting the immune system. ART improves the health of people living with HIV, prevents opportunistic infections, and decreases the risk of infection progressing to AIDS and of death.

25.2 Effective ART also prevents transmission of HIV by suppressing the viral load of HIV in the blood. This is commonly referred to as "*treatment as prevention*". People living with HIV who are on effective treatment and have an undetectable viral load do not transmit HIV, whether sexually, or otherwise, including between mother and child during birth or breastfeeding.

26 Without ART, the life expectancy of an adult living with HIV is around 10 years after diagnosis on average. Without access to effective treatment, about 50% of infants born with HIV will die before age 2.

27 With access to treatment, life expectancy improves significantly. There is a growing body of evidence that with access to effective ART and medical care, people living with HIV can live as long as their HIV-negative counterparts or have near to normal life expectancy, as long as ART is started soon after HIV infection and ART is taken correctly.

28 In 2015, the WHO removed all restrictions on eligibility for ART among people living with HIV. The WHO therefore recommends initiating ART as soon as a

person is diagnosed with HIV, regardless of their CD4 count or disease progression. This is commonly referred to as "*test and treat*". Once treatment is commenced, treatment should continue lifelong without breaks.

29 In terms of the 2022 ART Guidelines, Kenya has a "*test and treat*" policy, which is similar to almost all countries in the world. That is to say:

> *"All individuals with confirmed HIV infection are eligible for ART, irrespective of CD4 count/%, WHO clinical stage, age, pregnancy or breastfeeding status, co-infection status, risk group, or any other criteria, provided that the individual is willing and ready to start ART. ART should be started in all patients as soon as possible, even on the same day as confirming their HIV diagnosis (and preferably within 2 weeks)".* (2022 Treatment Guidelines para 1.5 p 1-4).

30 For pregnant and breastfeeding women living with HIV, ART should similarly be initiated ideally on the same day as diagnosis. This is a continuation of the test and treat policy in the 2018 Guidelines.

31 The earliest possible initiation of ART through "*test and treat*" policies has significant benefits for individual and public health. Early initiation of ART is associated with decreased morbidity, mortality, adverse health events, and HIV transmission in people living with HIV. The earlier ART is initiated, the longer a person living with HIV can be expected to live.

32 In East Africa, the implementation of "*test and treat*" as opposed to delayed initiation of ART has demonstrated socio-economic benefits too. "*Test and treat*" leads to people living with HIV being more likely to sustain employment, to seek healthcare, and to lose time from their usual productive activities due to illness.

This translates into improvements in education outcomes for children in those households.

33 Current WHO recommended standard first-line antiretroviral therapy for adults and adolescents consists of two nucleoside reverse-transcriptase inhibitors (NRTIs) plus an integrase inhibitor. Fixed-dose combinations and once-daily regimens are preferred. Second-line antiretroviral therapy in adults consist of two NRTIs plus a ritonavir-boosted protease inhibitor.

34 The 2022 Treatment Guidelines provide for the following as the preferred first-line ART for people living with HIV:

34.1 For infants from birth to 4 weeks: azidothymidine ("AZT") + lamivudine ("3TC") + nevirapine ("NVP").

34.2 For infants from 4 weeks to children under 15 years' old: if the child is under 30kg in weight, abacavir ("ABC") + 3TC + dolutegravir ("DTG"); if the child is over 30 kg, tenofovir disoproxil fumarate ("TDF") + 3TC + DTG. (This is a change from the 2018 Guidelines which recommended for children between 4 weeks and 3 years ABC + 3TC +LPV/r; and for children between 3 and 14 years and under 35 kg ABC + 3TC + EFV.)

34.3 For all persons over 15 years' old: TDF + 3TC + DTG. (This is the same as in the 2018 Guidelines, except for the recommendation that if the person is a woman or adolescent girl of childbearing potential, TDF +3TC + EFV could be provided.)

34.4 For pregnant and breastfeeding women: TDF + 3TC + DTG. (This is a change from the 2018 Guidelines which recommended TDF + 3TC + EFV).

35 The 2022 Treatment Guidelines envisage various scenarios in which a patient's ART will be changed. These include:

35.1 optimising therapy for patients who have a suppressed viral load but who may nonetheless benefit from changes to their treatment regimen due to age or weight transitions among children, efforts to simplify treatment regimens, to prevent treatment toxicity, or to improve cost effectiveness of treatment;

35.2 patients who are experiencing adverse drug reactions, toxicity or drug interactions;

35.3 patients with particular comorbidities; and

35.4 patients with treatment failure.

36 The 2018 and 2022 Treatment Guidelines both envisage viral load testing as integral to decision making in any of the above scenarios. The 2022 Treatment Guidelines state that:

> *"Viral load is the test of choice for monitoring response to ART and identifying treatment failure. First [viral load test] should be performed 3 months after ART initiation for all [people living with HIV].*
>
> *...*
>
> *Frequency of routine VL monitoring for specific populations is:*

- *Age 0-24 years old: at 3 months after ART initiation and then every 6 months*
- *Age ≥ 25 years old: at 3 months after ART initiation, then at month 12 and then annually*
- *Pregnant or breastfeeding: at confirmation of pregnancy (if already on ART) or 3 months after ART initiation (if ART initiated during pregnancy/ breastfeeding), and then every 6 months until cessation of breastfeeding*
- *Before making any drug substitution (if no VL results from the prior 6 months)*
- *Three months after any regimen modification (including single-drug substitutions), and then as per population group*
- *For any patient with a detectable VL follow the viral load monitoring algorithm (Figure 6.6)."* (2022 Treatment Guidelines para 6.5.4 p 6-17).

37 The petitioners allege that when ART was supplied during the stockout period, these were at times provided to them in brown bags or ziplock bags. This suggests that the healthcare staff were trying to ration the ART by separating a single months' worth of tablets into one- or two-weeks' worth. In my experience, this is a common practice during drug shortages, as healthcare workers try to distribute the available drugs to provide treatment for as many patients as possible while waiting for further supplies. The problem with this, obviously, is that patients often run short of their medication if they do not return in time, or if timely delivery of new stock does not happen.

How is mother-to-child transmission prevented for mothers living with HIV?

38 In this section I explain prevention of mother-to-child transmission of HIV. In particular, I comment on:

38.1 the role of ART and viral load monitoring in pregnant woman and breastfeeding mothers;

38.2 the use of infant prophylaxis; and

38.3 safe infant feeding by mothers with HIV.

39 As stated above, HIV can be transmitted to infants during pregnancy, childbirth, and breastfeeding by an HIV-positive mother. There are several components to an effective strategy to prevent mother-to-child or "*vertical*" transmission of HIV. These include:

39.1 providing ART for pregnant and breastfeeding mothers;

39.2 providing early infant prophylaxis; and

39.3 safe childbirth and infant feeding practices.

40 Both the 2018 and 2022 Treatment Guidelines state that:

> *"Mothers who are diagnosed with HIV while breastfeeding should immediately start appropriate ART, giving extra attention to adherence support, [viral load] monitoring, and optimal retention in care. The infant should immediately start ARV prophylaxis and receive PCR testing".*

ART for pregnant and breastfeeding women

41 Initiating ART and maintaining viral suppression throughout pregnancy and breastfeeding can eliminate the risk of HIV transmission between mother and child.

42 Without treatment, the rate of transmission of HIV from a mother with HIV to a child during pregnancy, delivery or breastfeeding ranges from about 15-25%. As noted above, if a woman with HIV is virally supressed on effective treatment, she is unable to transmit HIV to her child, whether during pregnancy, birth, or breastfeeding.

43 The 2018 and 2022 Treatment Guidelines appropriately recommend immediate and lifelong initiation of ART in HIV-positive pregnant and breastfeeding women.

Viral load monitoring for pregnant and breastfeeding women

44 Viral load monitoring plays an important role for pregnant and breastfeeding women on ART.

44.1 Viral load monitoring assists healthcare providers to identify whether the woman is achieving viral suppression in order to protect her and the unborn child or infant's life and wellbeing.

44.2 The results of a viral load test will assist healthcare providers to identify if a patient requires more support to ensure her adherence to her ART and / or whether a change in medication is indicated to improve the efficacy of her treatment.

44.3 Viral load testing towards the end of a woman's pregnancy may also inform decisions about the mode of delivery and optimal treatment for the newborn.

45 The WHO recommends routine viral load monitoring be provided to pregnant women on ART at entry to antenatal care or at 3 months after ART initiation for pregnant women initiating ART during pregnancy, and at delivery for all pregnant women.

46 The 2022 Treatment Guidelines provide for viral load monitoring of women living with HIV during pregnancy and breastfeeding.

46.1 For women newly initiated on ART, the 2022 Treatment Guidelines recommend viral load testing 3 months after initiation and then every 6 months thereafter until cessation of breastfeeding. This is a continuation of the 2018 Treatment Guidelines.

46.2 For women already on ART at the time of confirming a pregnancy of breastfeeding, a viral load test should be performed immediately irrespective of when one was last done, and then every 6 months thereafter until complete cessation of breastfeeding.

Infant prophylaxis

47 The 2022 Treatment Guidelines provide for an infant prophylaxis regimen for HIV-exposed infants of AZT + NVP for 6 weeks and thereafter NVP + cotrimoxazole (also known under the brand name "Septrin") until 6 weeks after complete cessation of breastfeeding. If the child is not breastfeeding, infant prophylaxis can be discontinued after a minimum of 12 weeks on NVP. The

Guidelines further provide that where a mother is diagnosed with HIV while breastfeeding, in addition to the mother initiating treatment immediately with viral load monitoring, the infant should immediately start ARV prophylaxis and receive PCR testing.

48 Cotrimoxazole (Septrin) is a medication frequently provided to adults and children with HIV who are immune compromised. It is particularly useful to prevent respiratory infections in people with HIV and has shown significant efficacy in poor communities.

Safe infant feeding

49 Breastfeeding has significant benefits for infants, including reduced illness and improved growth and development. Infants who are breastfed are less likely to have diarrhoea, respiratory illnesses and allergies. Exclusive breastfeeding contributes to child survival and development and reduces the risk of chronic disease. Breastfeeding also has benefits for mothers by, amongst others, reducing the risk of ovarian and breast cancer.

50 Whether or not an HIV-positive mother should breastfeed her child requires comparing the risk of the infant acquiring HIV through breastfeeding, with the increased health risks from malnutrition, diarrhoea and pneumonia if the infant is not exclusively breastfed.

51 If a mother is not virally suppressed or is not on ART, a decision on whether or not to breastfeed may depend on her and the child's socio-economic circumstances. For example, a mother who is not on ART but who can afford nutritionally adequate infant formula may be advised to cease breastfeeding her

child; A mother who cannot afford nutritionally adequate infant formula or lacks access to potable water may be advised to breastfeed her child notwithstanding that she is failing to achieve viral suppression on ART.

52 The 2022 Treatment Guidelines recommend that all mothers, irrespective of HIV status should be encouraged and supported to exclusively breastfeed for the first 6 months, to continue breastfeeding with appropriate complimentary feeding after 6 months for a period of 24 months or beyond. Breastfeeding should only stop once a nutritionally adequate and safe diet without breastmilk can be sustained. The 2022 Treatment Guidelines further provide that HIV positive mothers and HIV positive infants "*should always be on ART and given extra attention for adherence support, [viral load] monitoring and optimal retention in care*".

The petitioners' allegations

53 I have considered the following allegations which are made in relation to BK, the second petitioner:

53.1 BK is a woman living with HIV who was on ART at all relevant times. She gave birth to her child in July 2020.

53.2 BK had not had any viral load testing since before she gave birth until December 2021, yet she had been breastfeeding her child until November 2021.

53.3 BK was unable to access cotrimoxazole which the government had been providing in the past to her child free of charge.

53.4 BK was unable for a period to access diagnostic testing for her child to determine whether he was HIV-positive.

53.5 She stopped breastfeeding her child at age one due to the uncertainty of whether it was safe to continue despite the Ministry of Health's recommendation to continue breastfeeding until age two.

54 I have considered the following allegations, which are made in relation to the third petitioner, CN:

54.1 CN is a woman living with HIV who was on ART at all relevant times. She never underwent viral load testing while pregnant with her twin boys because of the lack of testing kits.

54.2 After her twins were born in 2021, they were not tested for HIV because of a lack of infant testing kits and filter papers used to collect samples and reagents. They were only tested for HIV at 4 months' old.

55 In terms of both the Treatment Guidelines and best practice:

55.1 BK and CN ought to have been provided with viral load testing at regular intervals during pregnancy and after birth of their children in order to ensure the efficacy of their treatment, to prevent HIV transmission to their children, and to ensure they were supported to continue breastfeeding safely.

55.2 BK's and CN's children also ought to have received timeous PCR testing after their birth and at regular interval thereafter to monitor their HIV statuses. The failure to do so risked delays in initiating ART if the children

became HIV-infected, with grave potential impacts on the child's health and wellbeing. I address this issue further below.

Treatment and testing of children

56 In this section I comment on the treatment of infants and children living with HIV and, in particular, I explain:

56.1 the purpose and practice of testing infants for HIV who are born to mothers with HIV;

56.2 the medical purpose of early initiation on ART for infants;

56.3 the risks, if any, of delayed ART initiation in infants;

56.4 the use of syrups and paediatric formulas of ART;

56.5 the effect of administering crushed tablets for the treatment of children with HIV; and

56.6 the consequence of an infant or child living with HIV receiving inconsistent or no access to HIV treatment.

57 I have considered the following allegations, which are made in relation to FA, the first petitioner, and her child, DM:

57.1 FA's child, DM (born December 2016) was diagnosed with HIV in 2018 and commenced on ART.

57.2 In July 2018, DM was given cotrimoxaxole, nevirapine and paediatric lopinavir/ritonavir (commonly referred to under the brand name "Kaletra") syrup at the Tivoli Health Centre.

57.3 In February 2021, FA was no longer supplied with lopinavir/ritonavir syrup for DM. She was provided with lopinavir/ritonavir tablets, which were too large for DM to swallow. FA was therefore advised to crush and dissolve the tablets in water for DM to drink. DM vomited due to the bitterness of the dissolved medication.

57.4 DM was thereafter provided with lopinavir/ritonavir pellets which she was advised to administer to DM by mixing them into fruit juice. DM continued to vomit the mixture.

57.5 FA was thereafter advised to put the lopinavir/ritonavir pellets in DM's food. DM was unable to eat his food because the lopinavir/ritonavir pellets made it bitter. As a result, FA stopped providing the lopinavir/ritonavir to DM.

57.6 In the result, DM was unable to ingest his ART and food adequately. As a result, he was not on effective ART between February 2021 and August 2022. He became unwell and developed, amongst others, rashes, neck swelling, infections in his ears, coughing, delayed development and weakness.

Testing HIV exposed infants

58 Without treatment, disease progression in infants who acquire HIV around the time of delivery occurs rapidly in the first months of life and often leads to death before the age of 2. It is critical to HIV-positive infants' survival that they be diagnosed and initiated on treatment as soon as possible.

59 Initiating ART in the first 3 months of life reduces early infant mortality by 76% and HIV disease progression by 75%.

60 Early HIV diagnosis of infants not only allows for the initiation of treatment, but it also assists in decision-making on infant feeding, and improves psychosocial wellbeing of families.

61 Early initiation and adherence to ART in infants may reduce the infant's viral reservoir. A viral reservoir is a cell type or anatomical site where a form of the virus that is able to replicate persists despite ART. A reduced viral reservoir is valuable to long-term virological suppression. This means that the earlier treatment is initiated, the greater the chance that the infant's treatment will be effective in controlling the virus as they age.

62 HIV can not be tested in infants under 18 months through the same serological methods by which older children and adults are tested (i.e. by examining blood serum for HIV antibodies). This is because an HIV-positive mother transfers HIV antibodies to the infant during the third trimester of pregnancy and the detection of these antibodies in the infants' blood serum does not necessarily mean that the infant is HIV-positive. Therefore, in order to test infants under 18 months reliably, a polymerase chain reaction ("**PCR**") test must be used to detect HIV DNA or RNA in the child's blood. This is referred to as early infant diagnostic ("**EID**") testing.

63 The 2022 Treatment Guidelines required that:

63.1 HIV exposed infants be tested with DNA PCR at 6 weeks of age or first contact thereafter. If the test is negative, a further DNA PCR is repeated at 6 months. If this too is negative, the test is repeated at 12 months.

63.2 If the infant develops any symptoms suggestive of HIV, an additional DNA PCR test should be conducted immediately.

63.3 Antibody tests should be performed on the HIV-exposed infant at 18 months and every 6 months thereafter during breastfeeding as well as 6 weeks after complete cessation of breastfeeding.

64 This is similar to the approach set out in the 2018 Treatment Guidelines.

65 An absence of test kits appropriate for conducting PCR tests on infants is a significant problem for HIV-exposed babies. As explained above, this is because an ordinary HIV-antibody test is not a reliable test to determine whether such an infant is in fact HIV-positive. Should PCR testing be unavailable for HIV-exposed infants, this risks delayed HIV diagnosis and treatment initiation and, in the result, a risk of poorer health outcomes for the child.

Infant-friendly administration of ART

66 I wish to note that I am not an expert on the different paediatric formulations available in Kenya during the events alleged by the petitioners. I also did not interview the petitioners, nor the health workers who advised on the administration of the medicines.

67 I have set out the 2022 and 2018 Treatment Guidelines above as they relate to children and infants.

68 Infants and young children generally have difficulty swallowing tablets and should ideally be provided their treatment in a form that they are able to consume and digest adequately. The 2022 Treatment Guidelines specifically indicate the use of oral solutions, pellets, granules or powders to be dispensed for children who are unable to swallow tablets in respect of lopinavir/ritonavir. The 2022 Treatment Guidelines note that lopinavir/ritonavir pellets should not be used for infants younger than 3 months. The granule formulation can be used in infants over 2 weeks.

69 Where lopinavir/ritonavir tablets are dispensed, the 2022 Treatment Guidelines specifically state that "*Tablets should be swallowed whole*". The Guidelines state further that the tablets "*should not be split, chewed, dissolved or crushed*".

70 With respect to the petitioners' allegations, lopinavir/ritonavir are protease inhibitors. Lopinavir/ritonavir comes in three forms: as a tablet, in a syrup, or as oral pellets stored in capsules.

71 Tablets are generally for older children and adults as they are very large and difficult to swallow. Lopinavir/ritonavir tablets must be swallowed whole to ensure adequate absorption. The tablets should not be chewed, broken or crushed.

72 Crushing lopinavir/ritonavir tablets alters drug exposure and adversely effects the absorption of the drug in the gastrointestinal tract. Crushing the tablet may also leave part of the drug on the container or crushing device and transferring the crushed substance into a food or liquid for administration may lead to loss of the active drug. In simple terms, administering lopinavir/ritonavir tablets in crushed form in food as FA claims to have been advised to do, may result in the

child receiving suboptimal dosages of the medication even if he is able to swallow and tolerate the food.

73 Lopinavir/ritonavir pellets should be administered to children by removing the pellets from the capsules and by placing the whole pellets in mouthfuls of semisolid foods or liquids such as breastmilk. The pellets should be swallowed without chewing. The pellets should also not be stirred, dissolved or crushed into foods prior to administration. If the pellets are chewed, this will cause a bitter taste.

74 From the allegations made in respect of FA:

74.1 FA ought not to have been provided with the tablets but rather with the syrup, or the pellets.

74.2 It would further appear that DM tolerated the lopinavir/ritonavir syrup but that FA had difficulties administering the lopinavir/ritonavir pellets to DM. It is not clear to me whether DM's challenges ingesting the lopinavir/ritonavir pellets were as a result of improper administration of the pellets or whether FA was not properly advised on how to administer the pellets. The pellets are, however, generally considered an appropriate alternative to the syrup which, if properly administered, may reduce the unpalatable bitterness of the syrup for infants and children.

74.3 In my view, it would have been appropriate to provide FA with either the lopinavir/ritonavir syrup or pellets, provided that FA was adequately counselled to administer the pellets properly.

Treatment withdrawal or interruption in infants and children

75 ART withdrawal or interruption in infants and children risks serious health consequences.

75.1 Treatment interruption may cause short-term and long-term negative health consequences, including a greater risk of opportunistic infections, weight loss, developmental delay and even treatment failure.

75.2 It is highly conceivable that the persistent lung and ear recurrent infections suffered by FA's child are due to permanent damage due to infections due to treatment interruptions. Children in Africa, especially in poorer communities, are highly vulnerable to these infections, especially when they have HIV.

75.3 Inconsistent adherence to ART may result in resistance that would cause certain medications to become ineffective, necessitating changes to second- or third-line medications to achieve viral suppression. Second- and third-line regimes may be more expensive, and /or may have a greater risk of side effects and toxicity.

Routine health checks for people and children living with HIV who are on ART

76 In this section, I explain the importance and role of routine health checks for people living with HIV who are on ART.

77 Routine health screening and checks are an important part of managing patients with HIV for many reasons, including to:

77.1 Identify and respond appropriately to patients who may be experiencing treatment failure, drug resistance, and toxicity or side effects to medications.

77.2 Identify and treat opportunistic infections and other concurrent illnesses that may undermine the person's immune system and overall health.

77.3 Identify and respond appropriately to patients who may be experiencing challenges adhering to their treatment.

78 A failure to perform standard health screens and checks for people living with HIV risks otherwise preventable health complications and treatment failure.

79 The 2022 Treatment Guidelines set out a standard package of care for people living with HIV. This includes ART, HIV education and counselling, and screening for and prevention of specific opportunistic infections. The 2022 Treatment Guidelines provide further that, amongst others:

79.1 All people living with HIV should be screened for STIs at every clinic visit and pregnancy status should be determined for all women of reproductive age and their contraceptive need determined and met.

79.2 All HIV-positive women between 18 – 65 years should be screened for cervical cancer every 2 years or annually under certain conditions.

79.3 All people living with HIV should be screened for hypertension, diabetes mellitus, renal disease, and certain cancers regularly.

79.4 All people living with HIV should receive basic screening for depression and anxiety before initiating ART, and annually thereafter, and whenever there is a clinical suspicion.

79.5 All people living with HIV should receive nutritional assessment, counselling, and support tailored to the individual needs of the patients.

79.6 Symptom-based tuberculosis ("**TB**") screening must be performed for all people living with HIV at every clinic visit.

79.7 A variety of blood tests are required for monitoring patients. A baseline test is generally recommended and, thereafter, annual testing. The 2022 Treatment Guidelines state specifically:

"It is not possible for ALL facilities providing ART to offer all the laboratory tests recommended for HIV treatment. If a facility does not have on-site capacity to carry out any test, arrangements should be made to transport specimens to a local or regional reference laboratory."

Consequences of inconsistent access or adherence to ART

80 In this section I describe in general terms what the impact is of ART interruption for people living with HIV and in public health terms.

81 ART withdrawal or interruption in adults risks serious health consequences.

81.1 Treatment interruption may cause short-term and long-term negative health consequences, including a greater risk of opportunistic infections, weight loss, treatment failure, and the progression to advanced disease or AIDS.

81.2 Inconsistent adherence to ART may result in resistance that would cause certain medications to become ineffective, necessitating changes to second- or third-line medications to achieve viral suppression. Second- and third-line regimes are more expensive, and have greater risk of side effects and toxicity.

82 These negative impacts on the individual correlate with negative public health effects.

82.1 By making treatment less effective, non-adherence to treatment or treatment interruption makes people living with HIV more likely to transmit HIV to others.

82.2 By increasing the risk of drug resistance, treatment interruption increases the risk that drug resistant forms of HIV will be transmitted, thereby increasing the burden of drug resistance in the community. This in turn complicates and increases the expense of treating HIV as more expensive second- and third-line therapies must be used on a greater scale.

Differentiated service delivery

83 In this section I explain the concept and importance of differentiated service delivery ("**DSD**") or differentiated care.

84 DSD aims to adapt and simplify HIV services to better suit individual needs and to reduce unnecessary burdens on the healthcare system. It is an approach to HIV services that rejects a one-size fits all system of care.

85 DSD may be applied to all HIV services, including prevention, testing and treatment. It proposes adaptions to:

85.1 When services are offered: For example, people with HIV who are stable on treatment and virally supressed should be allowed to collect their treatment at longer intervals to reduce the burden of having to collect medicines every month or every week. This can assist with treatment adherence as the socio-economic burdens and stigma associated with frequent clinic visits are minimised.

85.2 Where services are offered: For example, HIV services should be provided at differentiated points of access to ensure accessibility for particular populations. This may mean allowing medications to be collected not only at clinics and hospitals but also at other community pick-up points or through conducting home visits by community healthcare workers.

85.3 Who provides services: Expanding services to meet diverse needs may include, for example, training peer educators to provide HIV prevention services, that this is not only conducted by doctors or nurses.

85.4 What is provided: DSD may need to include a broader range of interventions such as to include psychosocial support or contraceptive care, for example.

86 Since 2015, the WHO has promoted and recommended DSD for HIV treatment due to its potential to both improve patient outcomes and better prioritise health system resources.

87 The 2022 Treatment Guidelines adopt a DSD approach as a means to "*minimise inconvenience and frequent follow-up*" and allowing for optimal resource allocation. For example, people with HIV who are established on ART, are recommended to be offered ART refills of up to 3 months to minimise the burdens of travel costs, waiting times and inconvenience of monthly or more frequent visits to points of care and the burden on the health facility.

88 This is largely a continuation of the differentiated approach to service delivery in the 2018 Treatment Guidelines, which, for example, distinguish between "*stable*" and "*unstable*" patients after the first year of ART, allowing for stable patients to have up to 6 months between clinic appointments.

CONCLUSION

89 The 2018 and 2022 Kenyan Treatment Guidelines largely reflect current international recommendations and best practice for the treatment of management of HIV insofar as the issues I have discussed above are concerned.

90 It is important that HIV-exposed infants and people at risk of HIV infection (including pregnant and breastfeeding women) are timeously tested for HIV. Once a positive diagnosis is confirmed, ART should be initiated as soon as possible. The efficacy of treatment should be monitored with regular viral load testing. There should be no treatment interruptions for both the individual's health, and to advance public health by preventing HIV transmission.

91 ART and HIV support services should be provided in a form that is appropriate to the particular needs of the patient. This includes ensuring that age-appropriate formulations are provided to infants to enable their proper ingestion. It also

includes making differentiated services available to improve adherence and patient outcomes.

92 Finally, in conclusion, my understanding is that the petitioners' complaints strongly suggest a general supply line breakdown, of antiretrovirals, opportunistic medicine prophylaxis, and of viral load testing reagents, resulting in:

92.1 the lack of combination antiretroviral therapy and individual antiretrovirals mean treatments interruptions in HIV-positive pregnant women and mothers, exposing them to unnecessary HIV-related progression, and exposing their infant during birth and subsequently through breastfeeding to HIV, while not providing the infant HIV antiretroviral prophylaxis;

92.2 not providing viral load monitoring to the mother to ensure adequate viral suppression is occurring during this period, and switch regimens/initiate adherence counselling if unsuppressed;

92.3 not providing viral load monitoring to the infant, to adequately diagnose HIV timeously and initiate antiretroviral therapy appropriately; and

92.4 not providing cotrimoxazole (Septrin) to protect against opportunistic infection.

93 The above suggests the complete breakdown of the care system, that has proved so effective in impacting on HIV mortality and morbidity across Kenya and beyond.

SWORN at JOHANNESBURG, SOUTH AFRICA

By the said

WILLEM DANIEL FRANCOIS VENTER (the DEPONENT)

This 29 day of JANUARY 2024

BEFORE ME

_____

NOTARY PUBLIC

DRAWN AND FILED BY:

Nyokabi Njogu, Advocate,
C/O KELIN
Kuwinda Lane, off Langata Road, Karen C
P O Box 112 - 00202 KNH Nairobi
Mobile: 0790 111578
E-mail: litigation@kelinkenya.org

TO BE SERVED UPON

1. The Hon. Attorney General
   The State Law Offices
   Sheria House, Harambee Avenue,
   P.O Box 40112-00100
   Nairobi.
   Email: cl.kisumu@ag.go.ke

2. Ministry of Health,
   Afya House, Cathedral Road
   P.O Box 30016-00100,
   Nairobi.
   Email: ps.publichealth@health.go.ke

3. Momanyi & associates advocates
   Windsor house, 5th floor.
   Muindi Mbingu street, University way
   P.O Box 112-00202 KNH

Nairobi.
Email: momanyiadvocates@yahoo.com
TEL: 0722600774

DEPONENT

"WDFV1"

BIOGRAPHICAL SKETCH

NAME	POSITION TITLE
Willem Daniel Francois Venter	Executive Director: Ezintsha, Faculty of Health Sciences, University of the Witwatersrand

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	YEAR (s)	FIELD OF STUDY
University of Witwatersrand, Johannesburg, South Africa	MBBCH	1993	Medicine
University of Witwatersrand	Research Techniques Course (EXPD 701)	1998	Research
Colleges of Medicine	FCP (SA)	2000	Medicine
University of Witwatersrand	DTM&H	2001	Medicine
Colleges of Medicine	Dip HIV Man (SA)	2004	Medicine
Colleges of Medicine	Subspecialist (Infectious Diseases)	2006	Medicine
University of Witwatersrand	Mmed	2008	Medicine
University of Witwatersrand	PhD	2019	Medicine

PROFESSIONAL EXPERIENCE

1994	Internship at Hillbrow Hospital, Johannesburg
1995	Medical Specialties Rotations, Helen Joseph Hospital, Johannesburg
1996	Senior House Officer in Accident and Emergency Department, Bedford Hospital, UK Overdose and Self Harm Audit, Bedford Hospital, UK Advanced Trauma Life Support (ATLS) AND Advanced Life Support (ACLS)
1997-2000	Medical registrar, University of the Witwatersrand
1998-1999	Medical registrar academic representative
2001-2002	Investigator, Clinical HIV Research Unit, University of the Witwatersrand
2002- 2010	Cluster Head: HIV Management Cluster, Reproductive Health and HIV Research Unit (RHRU), University of the Witwatersrand
2009-2019	Associate Professor, School of Clinical Medicine, University of the Witwatersrand
2010-2018	Deputy Executive Director, Wits Reproductive Health and HIV Institute (previously RHRU), School of Clinical Medicine, University of the Witwatersrand
2018	Divisional Director, Ezintsha, Faculty of Health Sciences, University of the Witwatersrand
2019	Research Professor, School of Clinical Medicine, University of the Witwatersrand

APPOINTMENTS and MEMBERSHIPS

2004-2006	University of Witwatersrand Faculty of Health Sciences Dean's AIDS Advisory Committee
2005-2012	President: Southern African HIV Clinicians Society
2012-2014	Board member; member of Social and Ethics Committee, Southern African HIV Clinicians Society
2005-2010	Honorary Lecturer, Faculty of Health Sciences, Steve Biko Centre for Bioethics
2008-2013	Department of Medicine Executive, Faculty of Health Sciences, University of the Witwatersrand
Current	Research Professor, Department of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand Extraordinary Professor, Department of Public Health Medicine, School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria Honorary Consultant, Johannesburg Hospital Infectious Diseases Unit Member, Federation of Infectious Diseases Society of Southern Africa Member, South African Medical Association Member, International AIDS Society Member, International Union Against Tuberculosis and Lung Disease Moderator Diploma in HIV Medicine; and Diploma in Sexual Health and HIV; both Colleges of Medicine

Board Member: Dira Sengwe
Board Member: Southern African HIV Clinicians Society

COMMITTEES, GUIDELINES, PANELS

- South African National AIDS Council (SANAC) Technical Task Team: Treatment 2006-2016
- Contributor, National Department of Health Comprehensive Plan on HIV/AIDS, 2004; 2011 (2011: Treatment and Care lead)
- Committee member: Adult antiretroviral treatment guidelines, Southern African HIV Clinicians Society; 2002 onwards
- Committee member: Opportunistic infection guidelines, Southern African HIV Clinicians Society; 2002, 2004
- Committee member: Guidelines for the prevention, diagnosis and management of NRTI-associated symptomatic hyperlactataemia and lactic acidosis, Southern African HIV Clinicians Society; 2006
- Convenor: Guidelines on antiretroviral therapy management for displaced populations, Southern African HIV Clinicians Society; 2007
- Committee member: Southern African HIV Clinicians Society Guidelines for the Prevention, Diagnosis and Management of Cryptococcal Meningitis and Disseminated Cryptococcosis in HIV-infected patients; 2007, 2013
- Panel member: Academy of Science of South Africa enquiry: HIV/AIDS, TB and nutrition: Scientific inquiry into the nutritional influences on human immunity with special reference to HIV infection and active TB in South Africa; August 2007
- Committee member: Guidelines for the prevention and treatment of HIV in arrested, detained and sentenced persons. Southern African HIV Clinicians Society; 2008
- Committee member: Guidelines for renal replacement therapy for HIV-infected individuals in Southern Africa, Southern African HIV Clinicians Society; 2008
- Co-convenor: Guidelines for Post-exposure Prophylaxis; Southern African HIV Clinicians Society 2008; Committee member 2011 onwards
- Annual Interest Workshop Organising Committee: 2010 onwards
- Committee member: Guidelines for Antiretroviral Resistance, Southern African HIV Clinicians Society: 2012
- Southern African HIV Clinicians Society Conference Scientific committee: 2012 onwards
- Scientific committee: 17th International Conference on AIDS & STIs in Africa 2013
- WHO Consolidated Guidelines on the Use of antiretroviral drugs for treating and preventing HIV infection; 2012 onwards
- Co-convenor: Guidelines for ART delivery among migrants and crises affected persons, Southern African HIV Clinicians Society; 2014
- Member: PLOS One Human Research Advisory Group; 2014 onwards
- Advisory Board MAXART (Test and Treat programme, Swaziland);2012-2016
- WHO Post-exposure prophylaxis adherence group: 2014
- Committee member: Pre exposure prophylaxis guidelines, Southern African HIV Clinicians Society; 2015 onwards
- WHO technical working group on HIV resistance:2015 onwards
- WHO co-chair, technical working group on HIV self-testing: 2016
- WHO technical working group on Misdiagnosis of HIV 2016
- International HIV Drug Resistance Workshop Organising Committee; 2016 onwards
- ACTG's Antiretroviral Therapy Strategies External Advisory Group: 2017
- National Strategic Plan for HIV, TB and STIs Advisory Committee 2017-2022
- National Strategic Plan for HIV, TB and STIs Research Committee 2017-2022
- Organising committee, 3rd Conference on Drug Optimisation (CADO-3), Nov 2017
- HIV Expert Review Subcommittee of the ARV Procurement Committee, Department of Health, 2017

- Safety Monitoring Committee for the 3HP/DTG safety and PK trial 2018
- Rural Doctor's Conference Organising Committee 2018
- DSMB Witkoppen DREAMS Innovation Self Testing/PrEP project 2018
- Committee member, 4th Paediatric ARV Drug Optimisation meeting, 2018
- Editorial Committee, Southern African Journal of HIV Medicine, 2019
- Graduate Studies and Research Committee, Faculty of Health Sciences, University of the Witwatersrand, 2020 onwards
- Wits RHI Key Populations Programme Technical Advisory Group female sex worker/transgender populations, 2019 onwards
- Indlela External Advisory Board, University of the Witwatersrand, 2020 onwards
- Ministerial Advisory Committee on COVID –2020 – main committee; clinicians committee; research committee
- Health Justice Initiative, Reference Advisory Group – 2020 onwards
- South African AIDS Conference, Chair Track 1: Basic and Clinical Sciences: HIV including COVID-19.
- Alcohol Social Compact Advisory Board, 2020 onwards
- WHO HIVResNet Clinical/Research Working Group; 2019 onwards
- Committee member guidelines for harm reduction, Southern African HIV Clinicians Society, 2019 onwards
- Committee member: Guidelines on Gender Affirming Health Care, Southern African HIV Clinicians Society; 2019 onwards
- WHO Antiretroviral Trials in Pregnant Women Advocacy Workgroup; 2021 onwards
- WHO Antiretroviral Advocacy Workgroup; 2021 onwards
- Data and Safety Monitoring Committee of the CAPRISA 093 INSIGHT trial, 2021 onwards
- 2021: Vice chair, Steering Committee, NIH Heart, Lung and Blood SIMPLe Alliance
- Clinical science Track Committee of AIDS 2022, 24th International AIDS Conference
- WHO Guidelines on Long-Acting Injectable Cabotegravir for HIV Prevention, 2022
- Spotlight Editorial Advisory Panel 2022 onwards
- Medicines Patent Pool Scientific Advisory Panel 2023 onwards
- Zambia Education Network for Implementation Science Training in Health (ZENITH) D43 Training advisory group 2023 onwards
- The European treatment network of HIV, hepatitis and global infectious diseases Executive, 2023 onwards
- NIAID DAIDS Data and Safety Monitoring Board (DSMB) 2023 onwards

HONORS

2001	Bobby Grieve Research Award
2002, 2006	Scholarship, Conference on Retroviruses and Opportunistic Infections
2007	Most thought-provoking paper, 3rd South African AIDS Conference
2008	Award: one of the Top Influential Leaders at National Level, The South African Institute of Health Care Managers
2010	First Merle A. Sande Health Leadership Award
2010	Treatment Action Campaign (TAC) Lifetime Health Care Professional Award
2011	Chair, 5th South African AIDS Conference
2011	AJ Orenstein Memorial Lecture 2011
2014	Chair, 2nd Southern African HIV Clinicians Society Conference, 2014
2015	Special Achiever award, Faculty of Health Sciences
2016	Special Achiever award, Faculty of Health Sciences
2016	International Association of Providers of AIDS Care 150 List
2019	Wits Faculty of Health Sciences, Most Prestigious Postgraduate Degree Award (PhD) 2019

PUBLICATIONS

1. **Venter WDF**, Editorial: Mission Impossible? Antiretroviral treatment in South Africa, S Afr J Epidemiol Infect, 2001, 16:3, 38-39
2. Miller S, Andrews S, Cotton M, Maartens G, Martin D, Wood R, Spender D, **Venter F**, Clinical Guidelines: Antiretroviral therapy in adults, South Afr J HIV Med, 2002: 3:, 22-29
3. **Venter WDF**, HIV Viral Pathogenesis, South Afr J HIV Med, 2002, 3.2: 12-15
4. Sanne IM, **Venter WDF**, New Horizons in HIV Treatment, South Afr J HIV Med, 2002, 3.2: 44-48
5. Morris L, Pillay C, Chezzi C, Lupondwana P, Ntsala M, Levin L, **Venter F**, Martinson N, Gray G, McIntyre J, Low frequency of the V106M mutation among HIV-1 subtype C-infected pregnant women exposed to nevirapine, AIDS 2003, 17, 1695–1707
6. **Venter WDF**, IM Sanne, Cardiovascular consequences of HIV and antiretroviral therapy, Southern African Cardiovascular Journal, 2003, 14:5, 225-9
7. Conradie F, Sanne I, **Venter W**, Eron J, Failure of lopinavir-ritonavir (Kaletra)-containing regimen in an antiretroviral-naive patient. AIDS. 2004 18:7, 1084-5
8. Motloung T, Myers M, **Venter F**, Delany S, Rees H, Stevens W, Identifying acute HIV infection--a major new public health challenge. S Afr Med J. 2004, 94:7, 531
9. Hudspeth J, **Venter WDF**, Van Rie A, Wing J, Feldman C. Access to and early outcomes of a public South African adult antiretroviral clinic. S Afr J Epidemiol Infect 2004; 19: 48-51
10. **Venter WDF**, Conradie F. A National antiretroviral programme: now what? S Afr J Epidemiol Infect 2004; 19: 36
11. Barker P, McCannon J, **Venter WDF**, Mmbara NW, Managing HIV as a chronic disease: Using interactive data collection to improve clinical care, South Afr J HIV Med, 2004, 5:4, 7-11
12. **Venter WDF**, Ive P, Mmbara NW, Long-term Consequences of antiretroviral therapy, Continuing Medical Education, 2005, 23:5; 238-244
13. **Venter WDF**, A critical evaluation of the South African state antiretroviral programme, South Afr J HIV Med, 20, 2005, 28-34
14. Martin D, Andrews S, Maartens G, Wood R, Martin D, Wilson D, McDonald L, Spencer D, **Venter F**, Achmat Z, Guidelines: Antiretroviral Therapy in Adults, South Afr J HIV Med, 2005, 6:1, 20-31
15. **Venter WDF**, Panz VR, Feldman C, Joffe BI, Adrenocortical function in hospitalised patients with pulmonary tuberculosis receiving a rifampicin-based regimen, S Afr Med J, 2006 96:1; 62-67
16. Chersich MF, Urban MF, **Venter WDF**, Wessels T, Krause A, Gray GE, Luchters S, Viljoen DL, Efavirenz use during pregnancy and for women of child-bearing potential, AIDS Research and Therapy 2006, 3:11
17. Meintjes G, **Venter F**, Conradie F, Fabian J, Maartens G, Wilson D. Guidelines for the prevention, diagnosis and management of NRTI-hyperlactataemia and lactic acidosis, South Afr J HIV Med, 2006, 7:1, 8-15
18. **Venter WDF**, The failure of HIV prevention is South Africa's biggest health crisis, S Afr Med J, 2006, 96:4, 298-299
19. **Venter WDF**, Wilson D, Conradie F, Variava E, Antiretroviral drug resistance: A clinician's guide in South Africa; South Afr J HIV Med, 2006, 22, 30-37
20. Skogmar S, Shakely D, Lans M, Danell J, Andersson R, Tshandu N, Odén S, Roberts S, **Venter WDF**, Effect of antiretroviral treatment and counseling on disclosure of HIV-serostatus in Johannesburg, South Africa; AIDS Care, 2006, 18:7; 725-730
21. Bell CM, Connell BJ, Capovilla A, **Venter WD**, Stevens WS, Papathanasopoulos MA, Molecular Characterization of the HIV Type 1 Subtype C Accessory Genes vif, vpr, and vpu, AIDS Research and Human Retroviruses. 2007, 23:2, 322-3
22. **Venter WDF**, Spiegel PB, Bruns L, Dhai A, Saleshando G, Prithiviraj G, Mugala-Mukungu F, Shanks L, Serenata C, Gohre S, Clinical guidelines an antiretroviral therapy management for displaced persons, S Afr Med J, 2007, 8:1, 27-41
23. Murdoch DM, **Venter WDF**, Van Rie A, Feldman C, Immune reconstitution inflammatory syndrome (IRIS): Review of common infectious manifestations and treatment options, AIDS Research and Therapy 2007, 4:9

24. **Venter WDF**, The South African National Strategic Plan: What does it mean for our health system, South Afr J HIV Med, 2007: 26, 8-11
25. Martinson NA, Karstaedt A, **Venter WDF,** Omar T, King P, Mbengo T, Marais E, McIntyre J, Chaisson RE, Hale M; Causes of death in hospitalized adults with a premortem diagnosis of tuberculosis: an autopsy study. AIDS. 2007, 21:15, 2043-2050
26. Barker PM, **Venter F**, Setting district-based targets for HAART and PMTCT – a first step in planning effective interventions for the HIV/AIDS epidemic; S Afr Med J 2007; 97:10, 916-917
27. Meintjes, G, Wilson D, **Venter F,** Patients attending antiretroviral clinics: when and why to refer, Continuing Medical Education, 2007, 25:11, 544-555
28. Murphy RA, Sunpath H, Kuritzkes DR, **Venter F**, Gandhi RT, Antiretroviral Therapy Associated Toxicities in the Resource-Poor World: The Challenge of a Limited Formulary, Journal of Infectious Diseases, 2007:196 (Suppl 3), 449-56
29. Dalal RP, Macphail C, Mqhayi M, Wing J, Feldman C, Chersich MF, **Venter WD**; Characteristics and Outcomes of Adult Patients Lost to Follow-Up at an Antiretroviral Treatment Clinic in Johannesburg, South Africa, J Acquir Immune Defic Syndr. 2008, 471:101-7
30. Murdoch DM, **Venter WDF**, Feldman C, Van Rie A, Incidence and risk factors for the immune reconstitution inflammatory syndrome (IRIS) in HIV patients in South Africa : A prospective study, AIDS. 2008, 22:5, 601-10
31. **Venter WDF,** Naicker S, Dhai A, Fabian J, Wadee S, Britz R, Paget G, Meintjes G, Uniquely South African: Time to consider offering HIV-positive donor kidneys to HIV-infected renal failure patients? S Afr Med J, 2008, 98: 182-183
32. Ford N, Gray A, **Venter WDF**, Tough choices: Tenofovir, tenders and treatment, South Afr J HIV Med, 2008, 9:1; 8-11
33. Connell BJ, Michler K, Capovilla A, **Venter WDF**, Stevens WS, Papathanasopoulos MA, Emergence of X4 usage amongst HIV-1 subtype C: Evidence for an evolving epidemic in South Africa, AIDS, 2008, 22:7, 896-9
34. Michler K, Connell BJ, **Venter WDF**, Stevens WS, Capovilla A, Papathanasopoulos AM, Genetic characterization and comparison of full-length envelope glycoproteins from South African HIV-1 subtype C primary isolates that utilize CCR5 and/or CXCR4, AIDS Research and Human Retroviruses, 2008; 24:5, 743-751
35. Murdoch DM, **Venter WD**, Feldman C, Van Rie A, HIV immune reconstitution syndrome in sub-Saharan Africa, AIDS. 2008, 22 :13,1689-90
36. Fabian J, **Venter WDF**, Mkhabela L, Levin JB, Baker L, Naicker S, Lactic acidosis syndrome in adults on anti-retroviral therapy: A single centre experience, S Afr Med J 2008; 98; 795-800
37. Black V, Hoffman RM, Sugar CA, Menon P, **Venter F**. Currier J, Rees H; Safety and Efficacy of Initiating Highly Active Antiretroviral Therapy in an Integrated Antenatal and HIV Clinic in Johannesburg, South Africa, J Acquir Immune Defic Syndr. 2008, 49:3, 276-281
38. Pillay V, Pillay C, Kantor R, **Venter F**, Levin L, Morris L, HIV-1 subtype C drug resistance among pediatric and adult South African patients failing anti-retroviral therapy, AIDS Research and Human Retroviruses, 2008, 24:11, 1449-1454
39. **Venter WDF**, Osih R, Andrews A, Conradie F, New antiretrovirals: What's in it for Southern Africa?, South Afr J HIV Med, 2008, 4: 44-49
40. Keller P, McCarthy K, Mosendane T, Tellie M, **Venter** F, Stevens W, Van Rie A, HIV prevalence amongst medical students in Johannesburg, South Africa, S Afr Med J, 2009, 99:2; 72
41. Fabian J, Naicker S, **Venter WDF**, Baker L, Naidoo S, Paget G, Wadee S, Urinary Screening Abnormalities in Antiretroviral-Naïve HIV-infected Outpatients and Implications for Management – A Single Center Study in South Africa, Ethnicity & Disease, 2009, 19; 80-85
42. Murdoch DM, Suchard MS, **Venter WDF**, Mhlangu P, Ottinger JS, Feldman C, Van Rie A, Glencross DK, Stevens WS, Weinhold KJ, Polychromatic immunophenotypic characterization of T cell profiles among HIV-infected patients experiencing immune reconstitution inflammatory syndrome (IRIS), AIDS Research and Therapy, 2009; 6:1,16
43. Scott LE, Noble LD, Moloi J, Erasmus L, **Venter WD**, Stevens W, An evaluation of the Abbott m2000 RealTime HIV-1 assay for HIV viral load monitoring in South Africa compared to existing

technologies: Roche COBAS Ampliprep/COBAS Amplicor; Roche COBAS Ampliprep/COBAS TaqMan HIV-1, and BioMerieux NucliSENS EasyQ HIV-1, J Clin Microbiol, 2009, 47:7, 2209-17
44. George JA, **Venter WD**, Van Deventer, HE, Crowther NJ, A longitudinal study of the changes in body fat and metabolic parameters in a South African population of HIV-positive patients receiving an antiretroviral therapeutic regimen containing stavudine, AIDS Research and Human Retroviruses, 2009, 25:8,771-81
45. Scott LE, Noble LD, Langeveld M, Jentsch U, **Venter WDF**, Stevens W, Can Oral Fluid Testing Be Used to Replace Blood-Based HIV Rapid Testing to Improve Access to Diagnosis in South Africa?, J Acquir Immune Defic Syndr, 2009; 5:51, 646-647
46. McCarthy K, Chersich MF, Vearey J, Meyer-Rath G, Jaffer A, Simpwalo S, **Venter WDF**, Good treatment outcomes among foreigners receiving antiretroviral therapy in Johannesburg, South Africa, International Journal of STD & AIDS, Dec 2009; 20: 858–862
47. Stevens WS, Wallis CL, Sanne I, **Venter F,** Will etravirine work in patients failing nonnucleoside reverse transcriptase inhibitor-based treatment in southern Africa? J Acquir Immune Defic Syndr. 2009, 52(5):655-6
48. **WF Venter**, What is the optimal CD4 count to start antiretrovirals in HIV-infected adults? Southern African Journal of Epidemiology and Infection, 2009, 24, 4
49. Gokool S, Fabian J, **Venter WDF**, MacPhail C, Naicker S, HIV-positive kidney transplants for HIV-positive individuals: Attitudes and concerns of South African patients and health care workers, S Afr Med J, 2010, 100:2, 96-8
50. Fish MQ, Hewer R, Wallis CL, **Venter WD**, Stevens WS, Papathanasopoulos MA, Natural polymorphisms of integrase among HIV type 1-infected South African patients, AIDS Res Hum Retroviruses. 2010 26(4):489-93
51. Wallis CL, Mellors J, **Venter WDF**, Sanne I, Stevens W, Varied Patterns of HIV-1 Drug Resistance on Failing First-Line Antiretroviral Therapy in the South Africa, J Acquir Immune Defic Syndr, 2010, 53(4):480-4
52. Leydon NG, **Venter F**, Webster PD, Moleko W, Osih R, Barker PM, Achieving the National Strategic Plan: A practical calculator for local target setting in district health facilities, S Afr Med J, July 2010; 100 (7): 420-423
53. Boulle A, Clayden P, Cohen K, Cohen T, Conradie F, Dong C, Geffen N, Grimwood A, Hurtado R, Kenyon C, Lawn S, Maartens G, Meintjes G, Mendelson M, Murray M, Rangaka M, Sanne I, Spencer D, Taljaard J, Variava E, **Venter WD**, Wilson D, Prolonged deferral of antiretroviral therapy in the SAPIT trial: Did we need a clinical trial to tell us that this would increase mortality? S Afr Med J. 2010, 100(9):566
54. Gous N, Scott L, Perovic O, **Venter F**, Stevens W, Should South Africa be performing Nucleic Acid testing on HIV ELISA negative samples?, J Clin Microbiol. 2010 Sep;48(9):3407-9[31]
55. Clayden P, Black V, Boulle A, Coovadia AH, **Venter F**, Efavirenz in pregnancy, South Afr J HIV Med, 2010 11 (2), 24-28
56. Wallis CL, **Venter WD**, Stevens WS, Papathanasopoulos MA., Case report of the rare deletion at codon 69 of reverse transcriptase in a South African HIV-1 subtype C infected patient, Viral Genes, 2010; 41(3):358-60
57. Wallis C, Mellors JW, **Venter WDF**, Sanne I, Stevens W, Protease inhibitor resistance is uncommon in HIV-1 subtype C infected patients on failing second-line lopinavir/r-containing antiretroviral therapy in South Africa, AIDS Research and Treatment, 2011; 76962
58. Banerjee J, Klausner JD, Halperin DT, Wamai W, Schoen EJ, Moses S, Morris BJ, Stefan A. Bailis, **Venter F**, Martinson N, Coates TJ, Gray G, Bow K, Circumcision Denialism Unfounded and Unscientific, American Journal of Preventive Medicine, 2011, 40, (3), e11-e12
59. Jarvis JN, Harrison TS, Govender N, Lawn SD, Longley N, Bicanic T, Maartens G, **Venter F**, Bekker LG, Wood R, Meintjes G, Routine cryptococcal antigen screening for HIV-infected patients with low CD4+ T-lymphocyte counts – time to implement in South Africa? S Afr Med J, 2011;1014, 232-234

60. **Venter WDF**, Ndung'u T, Abdool Karim Q, Case Records of the Massachusetts General Hospital: A 19-Year-Old South African Woman with Headache, Fatigue, and Vaginal Discharge, N Engl J Med, 2011;364:1956-64
61. Scott LE, McCarthy K, Gous N, Nduna M, Van Rie A, Sanne I, **Venter WF**, Duse A, Stevens W, Comparison of Xpert MTB/RIF with Other Nucleic Acid Technologies for Diagnosing Pulmonary Tuberculosis in a High HIV Prevalence Setting: A Prospective Study. PLoS Med 2011:8(7) e1001061
62. Faal M, Naidoo N, Glencross DK, **Venter WD**, Osih R, Providing Immediate CD4 Count Results at HIV Testing Improves ART Initiation, J Acquir Immune Defic Syndr. 2011: 58: 3 e54-9
63. Innes S, Cotton M, **Venter F**, Why should we still care about the stavudine dose? South Afr J HIV Med, 2011 4:14-15
64. **WDF Venter**, HIV transmission and sex in Africa: Why can't we get it right? Adler Museum Bulletin, 2011, 37: 2, 3-11
65. Glencross DK, Coetzee LM, Faal M, Masango M, Stevens WS, **Venter WF**, Osih R, Performance evaluation of capillary blood sampling using the point-of-care CD4 analyser PimaTM in field tests in South Africa, J Int AIDS Soc. 2012 15(1):3
66. Schwartz S.R., Mehta S.H., Taha T.E., Rees T.E., **Venter F**, Black V. High pregnancy intentions and missed opportunities for patient-provider communication about fertility in a South African cohort of HIV-positive women on antiretroviral therapy. AIDS Behaviour. 2012; 16(1):69-78
67. **Venter F**, Rees H, Pillay Y, Simelela N, Mbengashe T, Geffen N, Conradie F, Shisana O, Rech D, Serenata C, Taljaard D, Gray G, The medical proof doesn't get much better than Voluntary Male Medical Circumcision (VMMC), S Afr Med J, 2012, 102:3, 124-125
68. **Venter WDF,** Innes S, Cotton M**,** Low dose stavudine trials: A public health priority for developing countries, South Afr J HIV Med, 2012, 1: 20-21
69. Webster P, Sibanyoni M, Malekutu D, Mate K, **Venter WDF**, Barker PM, Moleko W, Using quality improvement to accelerate highly active antiretroviral treatment coverage in South Africa, BMJ Quality and Safety, 2012; 21:315-324
70. Schwartz S, Rees HV, Mehta S, **Venter WF**, Taha TE, Black V. High Incidence of Unplanned Pregnancy after Antiretroviral Therapy Initiation: Findings from a Prospective Cohort Study in South Africa. PLoS ONE, 7(4) 2012: e36039
71. Gous N, Scott L, Wong E, Omar T, **Venter F**, Stevens W, Performance of the Roche LightCycler real-time PCR assay for diagnosing extra-pulmonary tuberculosis, Journal of Clinical Microbiology,. 2012 50(6):2100-2103
72. Schwartz S, Taha TE, **Venter WDF**, Mehta SH, Rees H, Black V, Efavirenz Conceptions and Regimen Management in a Prospective Cohort of Women on Antiretroviral Therapy, Infectious Diseases in Obstetrics and Gynecology, 2012;2012:723096
73. Wong EB, Omar T, Setlhako GJ, Osih R, Feldman C, Murdoch DM, Martinson NA, Bangsberg DR, **Venter WDF**, Causes of Death on Antiretroviral Therapy: A Post-Mortem Study from South Africa. PLoS ONE 7(10): e47542
74. Govender NP, Chetty V, Roy M, Chiller T, Oladoyinbo S, Maotoe T, Stevens WS, Pinini Z, Spencer D, **Venter WD**, Jassat W, Cameron D, Meintjes G, Mbengashe T, Pillay Y, Phased Implementation of Screening for Cryptococcal Disease in South Africa, S Afr Med J, 2012 8;102(12):914-7
75. Meyer-Rath G, Miners A, Santos AC, Variava E, **Venter WDF**, Cost and resource use of patients on antiretroviral therapy in the urban and semi-urban public sectors of South Africa, J Acquir Immune Defic Syndr. 2012 1;61(3):e25-e32
76. Allais L, **Venter F**, HIV, logic and sex in Africa, Preventive Medicine, 2012;55(5):401-404
77. Richter ML, **Venter WDF**, Gray A, Enabling HIV self-testing in South Africa, South Afr J HIV Med, 2012 13: 4,86-87
78. Gomez GB, **Venter WDF**, Lange JMA, Rees H,Hankins C, North-South Corridor Demonstration Project (NSCDP): ethical and logistical challenges in the design of a demonstration study of early antiretroviral treatment for long distance truck drivers along a transport corridor through South Africa, Zimbabwe and Zambia, Advances in Preventive Medicine, 2013, 190190

79. **Venter F**, Masingi N, Stacey S, Fidler S, Clinical challenge: Deteriorating liver function in TB and HIV co-treatment, S Afr J HIV Med, 2013;14(2):95-97
80. **Venter WDF**, Allais L, Richter M, Exposure Ethics: Does HIV Pre-exposure prophylaxis raise ethical problems for the health care provider and policy maker? Bioethics, 2013 28(6):269-74
81. Eakle R, **Venter WDF**, Rees H, Pre-exposure prophylaxis for HIV prevention: Ready for prime time in South Africa?, S Afr Med J. 2013 =29;103(8):515-516
82. Fabian J, Naicker S, Goetsch S, **Venter WD**, The clinical and histological response of HIV-associated kidney disease to antiretroviral therapy in South Africans, Nephrology Dialysis Transplantation, 2013 28(6):1543-54
83. Mwansa-Kambafwile J, McCarthy K, Gharbaharan V, **Venter WDF**, Maitshotlo B, Black A, Tuberculosis Case finding: Evaluation of a paper slip method to trace contacts, PLOS ONE, 20138(9): e75757
84. **Venter WDF**, Barker P, Raising the CD4 initiation threshold with our eyes wide open, SAMJ, S Afr Med J. 2013;103(11):7462
85. Van Rie A, McCarthy K, Scott L, Dow A, **Venter WD**, Stevens WS, Prevalence, risk factors and risk perception of tuberculosis infection among medical students and health care workers in Johannesburg, South Africa, S Afr Med J. 2013 103(11):853-7
86. Waweru P, Anderson R, Steel H, **Venter WD**, Murdoch D, Feldman C, The prevalence of smoking and the knowledge of smoking hazards and smoking cessation strategies among HIV positive patients in Johannesburg, South Africa, S Afr Med J. 2013;103(11):858-60
87. **Venter WDF**, A South African decade of antiretrovirals, S Afr Med J, Jan 2014;104(1):3
88. Cambiano V, Bertagnolio S, Jordan MR, Pillay D, Perriëns JH, **Venter F**, Lundgren J, Phillips A, Predicted levels of HIV drug resistance in South Africa: potential impact of expanding access to care and eligibility criteria for antiretroviral therapy initiation, AIDS, AIDS. 2014 28 Suppl 1:S15-23
89. Simelela N, **Venter WDF**, A brief history of South Africa's response to AIDS. S Afr Med J, 104: 3: 249-251
90. **Venter WDF**, What have we learnt from the last ten years of ART? S Afr J HIV Med,, 2014; 15: 39-40
91. Tumusiime DK, Musabeyezu E, Mutimurah E, Hoover DR, Shi Q, Rudakemwa E, Ndacyayisenga V, Dusingize JC, Sinayobye JD, Stewart A, **Venter FWD**, Anastos K, Over-reported peripheral neuropathy symptoms in a cohort of HIV infected and uninfected Rwandan women: the need for validated locally appropriate questionnaires, African Health Sciences 2014; 14(2):460-467
92. Martin C, Naidoo NP, **Venter WDF**, Jaffer A, Barker PM, Setting ART initiation targets in response to changing guidelines: The importance of addressing both steady state and backlog, S Afr Med J, 2014, 104: 6, 428-430
93. Allais L, **Venter F**, The Ethical, Legal and Human Rights concerns raised by licensing HIV self-testing for private use, AIDS Behav. 2014 Suppl 4:433-7
94. **Venter WD,** Black A, Allais L, Richter M, Should HIV be a notifiable disease? Old questions with some new arguments, S Afr Med J. 2014 104(9):607-9
95. Tumusiime DK, Stewart A, **Venter FW**, Musenge E. The reliability of the modified lower extremity functional scale among adults living with HIV on antiretroviral therapy, in Rwanda, Africa. SAHARA J. 2014;11:178-86
96. Simbayi L, Shisana O, Setswe G, Rehle T, **Venter F**, Ncayiyana D, Gray G, Time to stop preventable deaths from unsterile traditional male circumcision practices, SAMJ, S Afr Med J,2014;104(8):521
97. Bekker LG, **Venter F**, Cohen K, Goemare E, Van Cutsem G, Boulle A, Wood R, Provision of Antiretroviral Therapy in South Africa: the nuts and bolts, Antiviral Therapy, Antivir Ther. 2014;19 Suppl 3:105-16
98. Tumusiime DK, **Venter F**, Musenge E, Stewart A Prevalence of peripheral neuropathy and its associated demographic and health status characteristics, among people on antiretroviral therapy in Rwanda, BMC Public Health. 2014 14(1):1306

99. Martin C, Masote M, Hatcher A, Black V, **Venter WD**, Scorgie F, HIV testing in the critical care setting: Views of patients, family members and health providers from urban South Africa, AIDS Care, 2015;27(5):581-6
100. Fabian J, Maher HA, Clark C, Naicker S, Becker P, **Venter WD**, Morbidity and mortality of black HIV positive patients with end stage kidney disease receiving chronic haemodialysis in South Africa, S Afr Med J. 2015 105(2):110-4
101. Okpechi IG, Swanepoel CR, **Venter F**. Access to medications and conducting clinical trials in LMICs. Nat Rev Nephrol. 2015;11(3):189-194
102. McCarthy K; Scott L; Gous N; Tellie M; **Venter FWD**; Stevens W; Van Rie A, High incidence of latent tuberculous infection among South African health workers: an urgent call for action., Int J Tuberc Lung Dis, 2015;19(6):647-53
103. Simelela N, **Venter WD**, Pillay Y, Barron P, A Political and Social History of HIV in South Africa, Curr HIV/AIDS Rep. 2015 12(2):256-61
104. Ford N, **Venter F**, Irvine C, Beanland RL, Shubber Z, Starter Packs Versus Full Prescription of Antiretroviral Drugs for Postexposure Prophylaxis: A Systematic Review, Clinical Infectious Diseases 2015;60(S3):S182–6
105. **Venter WD**, Cowan F, Black V, Rebe K, Bekker LG, Pre-exposure prophylaxis in Southern Africa: feasible or not? J Int AIDS Soc. 2015;18 (4 Suppl 3)
106. Haberer JE, Bangsberg DR, Baeten JM, Curran K, Koechlin F, Amico KR, Anderson P, Mugo N, **Venter F**, Goicochea P, Caceres C, O'Reilly K, Defining success with HIV pre-exposure prophylaxis: a prevention-effective adherence paradigm, AIDS. 2015 17;29(11):1277-85
107. Reddy DL, **Venter WD**, Pather S, Patterns of lymph node pathology; fine needle aspiration biopsy as an evaluation tool for lymphadenopathy: A retrospective descriptive study conducted at the largest hospital in Africa, PLoS One. 2015;10(6):e0130148
108. Gray A, Conradie F, Crowley T, Gaede B, Gils T, Shroufi A, Hwang B, Kegakilwe D, Nash J, Pillay P, Stende SC, **Venter F**, Matthews P, Improving access to antiretrovirals in rural South Africa - a call to action. S Afr Med J. 2015 105(8):10095
109. **Venter WD**, What does preexposure prophylaxis mean for treatment; what does treatment mean for preexposure prophylaxis, Curr Opin HIV AIDS. 2015; 11(1):35-40
110. **WDF Venter,** Fairlie L, Feldman C, Cleaton-Jones P, Chersich M (2016) Views of Medical Doctors Regarding the 2013 WHO Adult HIV Treatment Guidelines Indicate Variable Applicability for Routine Patient Monitoring, for Their Family Members and for Themselves, in South-Africa. PLoS ONE 11(1):e0145911
111. Moorhouse M, Conradie F, **Venter F**, What is the role of CD4 counts in a large public health antiretroviral programme? South Afr J HIV Med. 2016; 17(1):446
112. Lalla-Edward ST, Fobosi SC, Hankins C, Case K, **Venter WDF**, Gomez G (2016) Healthcare Programmes for Truck Drivers in Sub-Saharan Africa: A Systematic Review and Meta-Analysis. PLoS ONE, 2016, 11(6): e0156975
113. Bekker LG, Rebe K, **Venter F**, Maartens G, Moorhouse M, Conradie F, Wallis C, Black V, Harley B, Eakle R Southern African guidelines on the safe use of pre-exposure prophylaxis in persons at risk of acquiring HIV-1 infection. South Afr J HIV Med. 2016 15;17(1):455
114. Rosen S, Fox MP, Larson BA, Sow PS, Ehrenkranz PD, **Venter F**, Manabe YC, Kaplan J, Accelerating the Uptake and Timing of Antiretroviral Therapy Initiation in Sub-Saharan Africa: An Operations Research Agenda, PLoS Med 2016 13(8): e1002106.
115. Gomez GB, Eakle R, Mbogua J, Akpomiemie G, **Venter WD**, Rees H. Treatment And Prevention for female Sex workers in South Africa: protocol for the TAPS Demonstration Project. BMJ Open. 2016 26;6(9):e011595
116. **Venter, WF** Kaiser B, Pillay Y, Conradie F, Gomez GB, Clayden P, Matsolo M, Amole C, Rutter L, Abdullah F, Abrams EJ, Casas CP, Barnhart M, Pillay A, Pozniak A, Hill A, Fairlie L, Boffito M, Moorhouse M, Chersich M, Serenata C, Quevedo J, Loots G.. Cutting the cost of South African antiretroviral therapy using newer, safer drugs. South African Medical Journal, 2016: 107: 1, 28-30
117. **Venter WDF**, A Complex but Exciting Future: New Options for Second Line Antiretroviral Therapy, Current Tropical Medicine Reports, 2017, 4:1, 6–10

118. **Venter WD,** Ford N, Vitoria M, Stevens W, Diagnosis and monitoring of HIV programmes to support treatment initiation and follow up and improve programme quality, Current Opinion in HIV and AIDS, Curr Opin HIV AIDS. 201712(2):117-12
119. Hankins CA, Koulla-Shiro S, Kilmarx P, Ferrari G, Schechter M, Kane CT, **Venter F**, Boucher CA, Ross AL, Zewdie D, Eholié SP, Katabira E, Ending AIDS as a public health threat by 2030: Scientific Developments from the 2016 INTEREST Conference in Yaoundé, Cameroon, Antivir Ther. 2017;22(2):179-184
120. Rosen S, Fox MP, Larson BA, Brennan AT, Maskew M, Tsikhutsu I, Bii M, Ehrenkranz PD, **Venter WDF**, Simplified clinical algorithm for identifying patients eligible for immediate initiation of antiretroviral therapy for HIV (SLATE): protocol for a randomised evaluation. BMJ Open 2017;7:e016340
121. **Venter WDF**, Clayden P, Serenata C, for the OPTIMIZE Consortium, The ADVANCE Study: A Groundbreaking Trial to Evaluate a Candidate Universal Antiretroviral Regimen, Current Opinion in HIV and AIDS, Current Opinion in HIV & AIDS: 2017 12: 4, 351–354
122. Flexner CW, Clayden P, **Venter WDF**, Why a universal antiretroviral regimen? Curr Opin HIV AIDS. 2017 Jul;12(4):315-317
123. Slabbert M, **Venter F**, Gay C, Roelofsen C, Lalla-Edward S, Rees H, et al, Sexual and reproductive health outcomes among female sex workers in Johannesburg and Pretoria, South Africa: recommendations for public health programmes, BMC Public Health. 2017 4;17(Suppl 3):442
124. **WDF Venter**, M Majam, G Akpomiemie, N Arulappan, M Moorhouse, N Mashabane, M Chersich, Laboratory screening for antiretroviral treatment eligibility in South Africa: public health lessons from an urban clinical trial, BMC Public Health. 2017 4;17(Suppl 3):445
125. Harmsen M, Browne JL, **Venter F**, Klipstein-Grobusch K, Rijken MJ, The association between HIV, pregnancy serum lipid concentrations and pregnancy outcomes: a systematic review, BMC Infectious Diseases, BMC Infect Dis. 2017 11;17(1):489
126. Scott L, David A, Noble L, Nduna M, Da Silva P, Black A, **Venter F**, Stevens W, Performance of the Abbott RealTime MTB and MTB RIF/INH assays in a high TB and HIV coinfection setting in South Africa, J Clin Microbiol. 2017;55(8):2491-2501
127. Benkirane M, Berkhout B, Borrow P, Fassati A, Fujii M, Garcia JV, Gorry P, Lever A, Mak J, Nijhuis M, Strebel K, **Venter F**, Weiss R Professor Mark Wainberg. Retrovirology. 2017 5;14(1):30
128. Boffito M, **Venter F,** The triumph of HIV treatment: another new antiretroviral, Lancet, 2017, 390(10107):2019-2021
129. Lalla-Edward ST, Ncube S, Matthew P, Hankins CA, **Venter WDF**, Gomez GB, Uptake of health services among truck drivers in South Africa: analysis of routine data from nine roadside wellness centres. BMC Health Serv Res. 2017; 13;17(1):649
130. Vos A, Tempelman H, Devillé W, Barth R, Wensing A, Kretzschmar M, Klipstein-Grobusch K, Hoepelman A, Tesselaar K, Aitken S, Madzivhandila M, Uiterwaal C, **Venter F**, Coutinho R, Grobbee DE, HIV and risk of cardiovascular disease in sub-Saharan Africa: Rationale and design of the Ndlovu Cohort Study, Eur J Prev Cardiol. 2017;24(10):1043-1050.
131. **Venter F**, Majam M, Jankelowitz L, Adams S, Moorhouse M, Carmona S, et al. South African HIV self-testing policy and guidance considerations. S Afr J HIV Med. 2017;18(1), a7
132. S C Fobosi, S T Lalla-Edward, S Ncube, F Buthelezi, P Matthew, A Kadyakapita, M Slabbert, C A Hankins, **W D F Venter**, G B Gomez. Access to and utilisation of healthcare services by sex workers at truck-stop clinics in South Africa: A case study. S Afr Med J., 2017, 107(11):994-999
133. Eakle R, Gomez GB, Naicker N, Bothma R, Mbogua J, Cabrera Escobar MA, Saayman E, Moorhouse M, **Venter WDF**, Rees H, Pre-exposure prophylaxis and early antiretroviral treatment for HIV prevention and treatment among female sex workers in South Africa: results from a prospective observational demonstration project, PLOS Medicine, 2017, 14(11):e1002444
134. Meintjes G, Moorhouse MA, Carmona S, Davies N, Dlamini S, van Vuuren C, Manzini T, Mathe M, Moosa Y, Nash J, Nel J, Pakade Y, Woods J, Van Zyl G, Conradie F, **Venter F** Adult antiretroviral therapy guidelines 2017. South Afr J HIV Med. 2017 15;18(1):776
135. Vos A, Tempelman H, Devillé W, Barth R, Wensing A, Kretzschmar M, Klipstein-Grobusch K, Hoepelman A, Tesselaar K, Aitken S, Madzivhandila M, Uiterwaal C, **Venter F**, Coutinho R,

Grobbee DE Disease in Sub Saharan Africa Rationale and design of the Ndlovu Cohort Study, European Journal of Preventive Cardiology, 2017, 24(10):1043-1050
136. Chersich MF, Takkinen J, Charlier C, Leclercq A, Adams PE, Godbole G, Altmeyer U, Friesema IH, Labbé Sandelin L, Jenkin L, Fontana L, Aldigeri R, **Venter F**, Luchters SM, Lecuit M, Cimino, Diagnosis and treatment of Listeria monocytogenes endophthalmitis: a systematic review, Ocular Immunology and Inflammation, 2018 26(4):508-51
137. Arullapan N, Chersich MF, Mashabane N, Richter M, Geffen N, Veary J, Jankelowitz L, Scorgie F, **Venter WDF**, Quality of counselling and support provided by the South African AIDS Helpline: content analysis of mystery client interviews, S Afr Med J., 2018, 108(7):596-602
138. Hermans LE, Moorhouse M, Carmona S, Grobbee DE, Hofstra LM, Richman DD, Tempelman HA, **Venter WDF**, Wensing AMJ, Effect of HIV-1 low-level viraemia during antiretroviral therapy on treatment outcomes in WHO-guided South African treatment programmes: a multicentre cohort study. Lancet Infect Dis. 2018;18(2):188-197
139. Hill A, **Venter F**, The EARNEST trial - the unexpected success of NRTIs in second-line treatment for HIV, Lancet Infectious Diseases, 2018, 18(1):3-5
140. **Venter WDF,** Fabian J, Feldman C, An Overview of Tenofovir and Renal Disease for the HIV-treating Clinician, SACS South Afr J HIV Med., 2018; 19(1):817
141. ST. Lalla-Edward ST, Matthew P, Hankins CA, **Venter WDF**, Gomez GB, Healthcare for Truck Drivers: assessing accessibility and appropriateness of South African Roadside Wellness Centres, Journal of Transport & Health, 2018, 8: 63-72
142. Eakle R, **Venter WDF**, Rees R, Pre-exposure prophylaxis (PrEP) in an era of stalled HIV prevention: Can it change the game?, Retrovirology, 2018; 15(1):29
143. **Venter WDF,** Chersich MF, Majam M, Akpomiemie G, Arulappan N, Moorhouse M, Mashabane N, Glencross DK, CD4 count variability with repeat testing in South Africa: Should reporting include both absolute counts and ranges of plausible values?, International Journal of STD & AIDS, 2018; 29(11):1048-105
144. Moorhouse MA, Carmona S, Davies N, Dlamini S, van Vuuren C, Manzini T, Mathe M, Moosa Y, Nash J, Nel J, Pakade Y, Woods J, van Zyl G, Conradie F, **Venter F**, Meintjes G Appropriate clinical use of darunavir 800 mg. South Afr J HIV Med. 2018 19(1):918
145. Eakle R, Mutanha N, Mbogua J, Sibanyoni M, Bourne A, Gomez G, **Venter F,** Rees H. Designing PrEP and early HIV treatment interventions for implementation among female sex workers in South Africa: developing and learning from a formative research process, BMC Open, 2018, 8(6):e019292
146. Moorhouse MA, Carmona S, Davies N, Dlamini S, van Vuuren C, Manzini T, Mathe M, Moosa Y, Nash J, Nel J, Pakade Y, Woods J, van Zyl G, Conradie F, **Venter F**, Meintjes G. Southern African HIV Clinicians Society Guidance on the use of dolutegravir in first-line antiretroviral therapy. South Afr J HIV Med. 2018 17;19(1):917
147. Vitoria M, Hill A, Ford N, Doherty M, Clayden P, **Venter F,** Ripin D, Flexner C, Domanico PL., The transition to dolutegravir and other new antiretrovirals in low-income and middle-income countries: what are the issues? AIDS, 32(12):1551-1561
148. **Venter WDF**, Pre-exposure Prophylaxis: The Delivery Challenge. Front Public Health. 2018 6;6:188
149. Grasso MA, Manyuchi AE, Sibanyoni M, Marr A, Osmand T, Isdahl Z, Struthers H, McIntyre JA2, **Venter F**, Rees HV, Lane T., Using IBBS Survey Data and Stakeholder Consensus to Estimate Population Size of Female Sex Workers in Three South African Cities: Results and Recommendations From the 2013-14 South Africa Health Monitoring Survey, JMIR Public Health & Surveillance, 2018, 4(3):e1018
150. Chersich MF, Wright CY, **Venter F**, Rees H, Scorgie F, Erasmus B, Impacts of Climate Change on Health and Wellbeing in South Africa, Int. J. Environ. Res. Public Health 2018, 15(9), 1884
151. Sydney Rosen; Mhairi Maskew; Alana T Brennan; Matthew P Fox; Lungisile Vezi; Peter D Ehrenkranz; **Willem DF Venter**, Improved simplified clinical algorithm for identifying patients eligible for immediate initiation of antiretroviral therapy for HIV (SLATE II): protocol for a randomized evaluation, Trials, 2018: 19:548

152. **Venter W**, Coleman J, Chan VL, Shubber Z, Phatsoane M, Gorgens M, Stewart-Isherwood L, Carmona S, Fraser-Hurt N, Improving Linkage to HIV Care Through Mobile Phone Apps: Randomized Controlled Trial. JMIR Mhealth Uhealth. 2018 ;6(7):e155
153. Phillips AN, **Venter F**, Havlir D, Pozniak A, Kuritzkes D, Wensing A, et al, Risks and benefits for use of dolutegravir-based antiretroviral drug regimens in sub Saharan Africa: a modelling study, Lancet HIV. 2019 Feb;6(2):e116-e12
154. A G Vos; M F Chersich; K Klipstein-Grobusch; N P A Zuithoff; M A Moorhouse; S T Lalla-Edward; A Kambugu; N Kumarasamy; D E Grobbee; R E Barth; **W D F Venter**, Lipid levels, insulin resistance and cardiovascular risk over 96 weeks of antiretroviral therapy: a randomised controlled trial comparing low-dose stavudine and tenofovir, Retrovirology, 2018: 15(1):77
155. **Venter WDF**, Kambugu A, Chersich MF, Becker S, Hill A, Arulappan N, Moorhouse M, Majam M, Akpomiemie G, Sokhela S, Poongulali S, Feldman C, Duncombe C, Brown Ripin DH, Kumarasamy N, Efficacy and safety of tenofovir disoproxil fumarate versus low-dose stavudine over 96 weeks: a multi-country randomised, non-inferiority trial. J Acquir Immune Defic Syndr. 2019 Feb 1;80(2):224-233
156. Moorhouse M, Maartens G, **Venter WDF**, Moosa MY, Steegen K, Jamaloodien K, Fox MP, Conradie F Third-Line Antiretroviral Therapy Program in the South African Public Sector: Cohort Description and Virological Outcomes. J Acquir Immune Defic Synd 2019;80(1):73-78
157. Steel HC, **Venter WDF,** Theron AJ, et al.,Effects of Tobacco Usage and Antiretroviral Therapy on Biomarkers of Systemic Immune Activation in HIV-Infected Participants Mediators of Inflammation, vol. 2018, Article ID 8357109, 10 pages, 2018. https://doi.org/10.1155/2018/8357109.
158. Benkirane M, Berkhout B, Borrow P, Fassati A, Fujii M, Garcia-Martinez JV, Margolis D, Nijhuis M, Parent L, Strebel K, **Venter F**, Kirchhoff F, Lever A, Ross S, Mak JA trip down memory lane with Retrovirology, Retrovirology. 2019 Aug 21;16(1):22.
159. **Venter WDF**, Fischer A, Lalla-Edward ST, Coleman J, Lau Chan V, Shubber Z, Phatsoane M, Gorgens M, Stewart-Isherwood L, Carmona S, Fraser-Hurt N, Improving Linkage to and Retention in Care in Newly Diagnosed HIV-Positive Patients Using Smartphones in South Africa: Randomized Controlled Trial, JMIR Mhealth Uhealth 2019;7(4):e12652
160. Lippman SA, El Ayadi AM, Grignon JS, Puren A, Liegler T, **Venter WDF**, Ratlhagana MJ, Morris JL, Naidoo E, Agnew E, Barnhart S, Shade SB, Improvements in the South African HIV care cascade: findings on 90-90-90 targets from successive population-representative surveys in North West Province, J Int AIDS Soc. 2019 Jun;22(6):e2529
161. **Venter WDF**, Moorhouse M, Sokhela S, Serenata C, Akpomiemie G, Qavi A, Mashabane N, Arulappan N, Sim JW, Sinxadi PZ, Wiesner L, Maharaj E, Wallis C, Boyles T, Ripin D, Stacey S, Chitauri G, Hill A. Low-dose ritonavir-boosted darunavir once daily versus ritonavir-boosted lopinavir for participants with less than 50 HIV RNA copies per mL (WRHI 052): a randomised, open-label, phase 3, non-inferiority trial. Lancet HIV. 2019 Jul;6(7):e428-e437. doi: 10.1016/S2352-3018(19)30081-5
162. T Brennan AT, Maskew M, Larson BA, Tsikhutsu I, Bii M, Vezi L, P Fox MP, **Venter WDF**, Ehrenkranz P, Rosen S, Who is seeking antiretroviral treatment for HIV now? Characteristics of patients presenting in Kenya and South Africa in 2017-2018; JIAS, 2019,22:e25358
163. Kummerow M, Shaddock E.J, Klipstein-Grobusch K, Barth RB, Grobbee ED, **Venter WDF**, Feldman C, Vos A. Unexpected low frequency of respiratory symptoms in an HIV-positive urban sub-Saharan population compared to an HIV-negative control group. S Afr J HIV Med. 2019;20(1), a1010
164. Tumusiime DK, Stewart A, **Venter WDF**, Musenge E., The effects of a physiotherapist - led exercise intervention on peripheral neuropathy among people living with HIV on antiretroviral therapy in Kigali, Rwanda, South African Journal of Physiotherapy, S Afr J Physiother. 2019 Aug 12
165. **Venter WDF**, Moorhouse M, Sokhela S, Fairlie L, Mashabane N, Masenya M, Serenata C, Akpomiemie G, Qavi A, Chandiwana N, Norris S, Chersich M, Clayden P, Abrams E, Arulappan N, Vos A, McCann K, Simmons B, Hill A, Dolutegravir plus Two Different Prodrugs of Tenofovir to Treat HIV, N Engl J Med, 2019 Aug 29;381(9):803-81

166. Fairlie L, Waitt C, Lockman S, Moorhouse M, Abrams EJ, Clayden P, Boffito M, Khoo S, Rees H, Cournil A, **Venter WF**, Celicia Serenata C, Chersich M, Inclusion of pregnant women in antiretroviral drug research: what is needed to move forwards?, J Int AIDS Soc. 2019 Sep; 22(9): e25372
167. Lalla-Edward ST, Fischer AE, **Venter WDF**, Scheuermaier K, Meel R, Hankins C, Gomez G, Klipstein-Grobusch K, Draaijer M, Vos AG, A cross sectional study of the health of southern African truck drivers, BMJ Open 2019 Oct 28;9(10):e032025
168. Rosen S, Maskew M, Larson BA, Brennan AT, Tsikhutsu I, Fox MP, Vezi L, Bii M, **Venter WDF**, Simplified clinical algorithm for identifying patients eligible for same-day HIV treatment initiation (SLATE): results from an individually randomized trial in South Africa and Kenya, PLOSMedicine, 2019 Sep 16;16(9):e1002912
169. Gumede SB, Fischer A, **Venter WDF**, Lalla-Edward ST, Descriptive analysis of WHO-recommended second-line antiretroviral treatment; a retrospective cohort data analysis, S Afr Med J. 2019 Nov 27;109(12):919-926
170. Vos AG, Hoeve K, Barth RE, Peper J, Moorhouse M, Crowther NJ, **Venter WDF**, Grobbee DE, Bots ML, Klipstein-Grobusch K, Cardiovascular disease risk in an urban African population. A cross-sectional analysis on the role of HIV and antiretroviral treatment, Retrovirology, 2019 Dec 3;16(1):37
171. Roozen G, Vos AG, Tempelman HA, **Venter W**, Grobbee DE, Scheuermaier K, Klipstein-Grobusch K., Cardiovascular disease risk and its determinants in people living with HIV across different settings in South Africa, HIV Medicine, 2019 Dec 18
172. Majam M, Mazzola L, Rhagnath N, Lalla-Edward ST, Mahomed R, **Venter WDF**, et al, Usability assessment of seven HIV self-test devices conducted with lay-users in Johannesburg, South Africa. PLoS ONE Jan 2020, 15(1): e0227198
173. Pepperrell T, **Venter WDF**, Moorhouse M, McCann K, Bosch B, Tibbatts M, Woods J, Sokhela S, Serenata C, Hill A, Time to rethink endpoints for new antiretroviral regimen registration? HIV RNA re-suppression in the ADVANCE trial, AIDS. 2020 Feb 1;34(2):321-32
174. Phillips AN, Bansi-Matharu L, **Venter F**, et al, Updated assessment of risks and benefits of dolutegravir versus efavirenz in new antiretroviral treatment initiators in sub-Saharan Africa: modelling to inform treatment guidelines, LancetHIV, 2020 Feb 5, epub
175. Hermans LE, Carmona S, Nijhuis M, Tempelman HA, Richman DD, Moorhouse M, Grobbee DE, **Venter WDF**, Wensing AMJ, Virological suppression and clinical management in response to viremia in South African treatment program: A multicenter cohort study. PLOSMedicine, April 2020 17(2): e1003037. https://doi.org/10.1371/ journal.pmed.1003037
176. Pepperrell T, Hill A, Moorhouse M, Clayden P, McCann K, Sokhela S, Serenata C, **Venter WDF**. Phase 3 trials of new antiretrovirals are not representative of the global HIV epidemic. J Virus Erad. 2020 Apr 30;6(2):70-73.
177. Cohen J, **Venter WDF**, The integration of occupational- and household-based chronic stress among South African women employed as public hospital nurses. PLoS ONE May 2020, 15(5): e0231693
178. Cohen J, Pepperrell T, **Venter WDF**, The same lesson over and over: Drugs alone will not get us to 90-90-90, AIDS, 2020 May 1;34(6):943-94
179. **Venter WDF**, Hill A, Weighing considerations with newer antiretrovirals, Lancet HIV. 2020 Jun;7(6):e374-e375
180. Gumede SB, **Venter WDF**, Lalla-Edwards S, Understanding adherence in virally suppressed and unsuppressed patients on second-line antiretroviral therapy, Southern African Journal of HIV Medicine, Aug 2020, 21.1
181. Maskew M, Brennan AT, Fox MP, Vezi L, **Venter WDF**, Ehrenkranz P, Rosen S, A clinical algorithm for same-day HIV treatment initiation in settings with high TB symptom prevalence in South Africa: The SLATE II individually randomized clinical trial, PlOSMedicine, PLoS Med. 2020 Aug 27;17(8):e1003226
182. Rojo P, Carpenter D, **Venter F**, Turkova A, Penazzato M, The HIV drug optimization agenda: Promoting standards for earlier investigation and approvals of antiretroviral drugs for use in adolescents living with HIV, JIAS, Sept 2020

183. **WDF Venter**, Nel J, COVID-19: First data from Africa, Clin Infect Dis. 2020 Aug 31:ciaa1293. doi: 10.1093/cid/ciaa1293. Online ahead of print.
184. Brennan A, Maskew M, Larson BA,Tsikhutsu I, Bii M, Vezi L, Fox M, **Venter WDF**, Ehrenkranz PD, Rosen S, Prevalence of TB symptoms, diagnosis and treatment among people living with HIV (PLHIV) not on ART presenting at outpatient clinics in South Africa and Kenya: baseline results from a clinical trial
BMJ Open 2020;10:e035794. doi: 10.1136/bmjopen-2019-035794
185. Griesel R, Maartens G, Chirehwa M, Sokhela S, Akpomiemie G, Moorhouse M, **Venter F**, Sinxadi P. CYP2B6 Genotype and Weight Gain Differences Between Dolutegravir and Efavirenz, Clin Infect Dis. 2020 Sep 22:ciaa1073. doi: 10.1093/cid/ciaa1073
186. Draaijer M, Lalla-Edward ST, **Venter WDF,** Vos A., Phone calls to retain research participants and determinants of reachability in an African setting: Observational Study, JMIR Formative Research, JMIR Form Res. 2020 Sep 30;4(9):e19138
187. Connell BJ, Hermans LE, Wensing AMJ, Schellens I, Schipper PJ, van Ham PM, de Jong DTCM, Otto S, Mathe T, Moraba R, Borghans JAM, Papathanasopoulos MA, Kruize Z, **Venter FWD**, Kootstra NA, Tempelman H, Tesselaar K, Nijhuis M, Immune Activation correlates with and predicts CXCR4 co-receptor tropism switch in HIV-1 infection, Nature Scientific Reports, Nature Sci Rep. 2020 Sep 28;10(1):15866
188. Wadley AL, **Venter WDF**, Moorhouse M, et al, High individual pain variability in people living with HIV: a graphical analysis, European Journal of Pain, Eur J Pain. 2020 Sep 16. doi: 10.1002/ejp.1658. Online ahead of print
189. **Venter WDF**, Sokhela S, Simmons B, et al, Dolutegravir with emtricitabine and tenofovir alafenamide or tenofovir disoproxil fumarate versus efavirenz, emtricitabine, and tenofovir disoproxil fumarate for initial treatment of HIV-1 infection (ADVANCE): week 96 results from a randomised, phase 3, non-inferiority trial, Lancet HIV. 2020 Oct;7(10):e666-e676
190. Nel J, Dlamini S, Meintjes G, et al, **Venter WDF**, Woods JF. Southern African HIV Clinicians Society guidelines for antiretroviral therapy in adults: 2020 update South Afr J HIV Med. 2020 Sep 16;21(1):111
191. Chandiwana N, Chersich M, **Venter WDF**, et al, Unexpected Interactions between Dolutegravir and Folate: Randomised Trial Evidence from South Africa, AIDS. 2020 Oct 20. doi: 10.1097/QAD.0000000000002741
192. M Mendelson, J Nel, L Blumberg, S A Mahdi, M Dryden, W Stevens, **WDF Venter**, Long-COVID: An evolving problem with an extensive impact, S Afr Med J. Long-COVID: An evolving problem with an extensive impact. S Afr Med J. 2020 Nov 23;111(1):10-12
193. Ketelaar EJ, Vos AG, Godijk NG, Scheuermaier K, Devillé W, Tempelman H, Coutinho RA, **Venter WDF**, Grobbee DE, Klipstein-Grobusch K. Ideal Cardiovascular Health Index and Its Determinants in a Rural South African Population. Glob Heart. 2020 Nov 25;15(1):76
194. Siedner, M.J., Moorhouse, M.A., Simmons, B. et al. Reduced efficacy of HIV-1 integrase inhibitors in patients with drug resistance mutations in reverse transcriptase. Nat Commun 11, 5922 (2020). https://doi.org/10.1038/s41467-020-19801-x
195. Scheibe AP, Sibeko G, Shelly S, Rossouw T, Zishiri V, **Venter WDF**, Southern African HIV Clinicians Society guidelines for harm reduction, South Afr J HIV Med. 2020 Dec 17;21(1):1161.
196. Gray G, Van der Heever A, Madhi SS, McIntyre J, Kana B, Stevens W, Sanne I, Richards G, Abdullah F, Mendelson M, Dasoo A, Nel J, Wulfsohn A, Blumberg L, **Venter F**, The Scientists' Collective 10-point proposal for equitable and timeous access to COVID-19 vaccine in South Africa. S Afr Med J. 2020 Dec 14;0(0):13163
197. Bekker LG, Brown B, Joseph-Davey D, Gill K, Moorhouse M, Delany-Moretlwe S, Myer L, Orrell C, Rebe K, **Venter WDF**, Wallis CL Southern African guidelines on the safe, easy and effective use of pre-exposure prophylaxis: 2020. South Afr J HIV Med. 2020 Dec 10;21(1):1152.
198. Wadley AL, Iacovides S, Roche J, Scheuermaier K, **Venter WDF**, Vos AG, Lalla-Edward ST. Working nights and lower leisure-time physical activity associate with chronic pain in Southern African long-distance truck drivers: A cross-sectional study. PLoS One. 2020 Dec 3;15(12)

199. Steel HC, Venter **WDF**, et al, Differential responsiveness of the platelet biomarkers, systemic CD40 ligand, CD62P and platelet-derived growth factor-BB, to virally- suppressive antiretroviral therapy, Frontiers in Immunology, Front. Immunol., 29 January 2021 | https://doi.org/10.3389/fimmu.2020.594110
200. Laher A, **Venter W**, Richards G, Paruk F, Profile of presentation of HIV-positive patients to an Emergency Department in Johannesburg, South Africa, Southern African Journal of HIV Medicine, Southern African Journal of HIV Medicine [Online], 22.1 (Jan 2021)
201. Roozen GVT, Meel R, Peper J, **Venter WDF,** et al, Electrocardiographic and echocardiographic abnormalities in urban African people living with HIV in South Africa, PLOSOne, Feb 2021, https://doi.org/10.1371/journal.pone.0244742
202. Roche J, Vos AG, Lalla-Edward ST, **Venter WDF**, Scheuermaier K. Relationship between sleep disorders, HIV status and cardiovascular risk: cross-sectional study of long-haul truck drivers from Southern Africa. Occup Environ Med. 2021 Feb 23:oemed-2020-107208. doi: 10.1136/oemed-2020-107208.
203. Pepperrell T, **Venter WDF**, McCann K, Bosch B, Tibbatts M, Woods J, Sokhela S, Serenata C, Moorhouse M, Qavi A, Hill A. Participants on Dolutegravir Resuppress Human Immunodeficiency Virus RNA After Virologic Failure: Updated Data from the ADVANCE Trial. Clin Infect Dis. 2021 Aug 16;73(4):e1008-e1010. doi: 10.1093/cid/ciab086
204. Fischer AE, **Venter WDF**, Collins S, Carman M, Lalla-Edward ST, The readability of informed consent forms for research studies conducted in South Africa, South African Medical Journal 2021;111(2):180-183. doi: 10.7196/SAMJ.2021.v111i2.14752
205. Majam M, Fischer A, Phiri J, **Venter F**, Lalla-Edward ST. International citizen project to assess early stage adherence to public health measures for COVID-19 in South Africa, PLoS One. 2021 Mar 4;16(3):e0248055. doi: 10.1371/journal.pone.0248055
206. Abrams EJ, Mofenson LM, Pozniak A, Lockman S, Colbers A, Belew Y, Clayden P, Mirochnick M, Siberry GK, Ford N, Khoo S, Renaud F, Vitoria M, **Venter WDF**, Doherty M, Penazzato M; PADO and CADO Experts Groups. Enhanced and Timely Investigation of ARVs for Use in Pregnant Women. J Acquir Immune Defic Syndr. 2021 Apr 15;86(5):607-615. doi: 10.1097/QAI.0000000000002597
207. Majam M, Msolomba V, Scott L, Stevens W, Marange F, Kahamba T, **Venter F**, Conserve DF. Self-Sampling for SARS-CoV-2 Diagnostic Testing by Using Nasal and Saliva Specimens: Protocol for Usability and Clinical Evaluation. JMIR Res Protoc. 2021 May 28;10(5):e24811. doi: 10.2196/24811
208. Steegen K, Moorhouse M, Wensing AM, **Venter WD**, Hans L. Is there a role for doravirine in African HIV treatment programmes? A large observational resistance study in South Africa. J Int AIDS Soc. 2021 May;24(5):e25706. doi: 10.1002/jia2.25706
209. Phillips AN, Bansi-Matharu L, Cambiano V, Ehrenkranz P, Serenata C, **Venter F**, Pett S, Flexner C, Jahn A, Revill P, Garnett GP, The potential role for long-acting injectable cabotegravir / rilpivirine in treatment of HIV in sub Saharan Africa: a modelling analysis, Lancet Glob Health 2021 May;9(5):e620-e627. doi: 10.1016/S2214-109X(21)00025-5
210. Vos AG, Dodd CN, Delemarre EM, Nierkens S, Serenata C, Grobbee DE, Klipstein-Grobusch K, **Venter WDF**, Patterns of immune activation in HIV and non HIV subjects and its relation to cardiovascular disease risk, Front. Immunol., July 2021 | https://doi.org/10.3389/fimmu.2021.647805
211. van Riel SE, Klipstein-Grobusch K, Barth RE, Grobbee DE, Feldman C, Shaddock E, Stacey SL, **Venter WDF**, Vos AG. Predictors of impaired pulmonary function in people living with HIV in an urban African setting. South Afr J HIV Med. 2021 Aug 17;22(1):1252. doi: 10.4102/sajhivmed.v22i1.1252.
212. Cindi Z, Maartens G, Bradford Y, **Venter WDF**, Sokhela S, Chandiwana NC, Haas DW, Sinxadi P. Genetic Associations with Weight Gain among South Africans who Initiated Dolutegravir-Containing and Tenofovir-Containing Regimens. J Acquir Immune Defic Syndr. 2021 Jul 1;87(3):1002-1009. doi: 10.1097/QAI.0000000000002661
213. Roche J, Vos AG, Lalla-Edward ST, Kamerman PR, **Venter WF**, Scheuermaier K. Importance of testing the internal consistency and construct validity of the Pittsburgh Sleep Quality Index (PSQI) in

study groups of day and night shift workers: Example of a sample of long-haul truck drivers in South Africa. Appl Ergon. 2021 Aug 16;98:103557. doi: 10.1016/j.apergo.2021.103557
214. McCann K, Shah S, Hindley L, Hill A, Qavi A, Simmons B, Serenata C, Sokhela S, **Venter WDF**. Implications of weight gain with newer anti-retrovirals: 10-year predictions of cardiovascular disease and diabetes. AIDS. 2021 Aug 1;35(10):1657-1665. doi: 10.1097/QAD.0000000000002930.
215. A. Tomson, C. t. McLachlan, C. Wattrus, ... **WDF. Venter**, de Vries E, et al. Southern African HIV Clinicians Society gender-affirming healthcare guideline for South Africa, Sept 2021 Vol. 22 Issue 1 DOI: 10.4102/sajhivmed.v22i1.1299
216. Hans L, Steegen K, Ketseoglou I, Mahlumba Z, Cassim N, Wiggill T, **Venter WDF**, Stevens W. Preparing for the next pandemic: Lessons from rapid scale-up of SARS-CoV-2 testing in a South African high-throughput automated HIV molecular laboratory. Int J Infect Dis. 2021 Sep;110:1-3. doi: 10.1016/j.ijid.2021.06.019
217. K Dheda, S Charalambous, A S Karat, ..., **F Venter,** ... Churchyard, A position statement and practical guide to the use of particulate filtering facepiece respirators (N95, FFP2, or equivalent) for South African health workers exposed to respiratory pathogens including Mycobacterium tuberculosis and SARS-CoV-2Afr J Thoracic Crit Care Med 2021;27(4): Oct 2021
218. Maskew M, Brennan AT, **Venter WDF**, Fox MP, Vezi L, Rosen S. Retention in care and viral suppression after same-day ART initiation: One-year outcomes of the SLATE I and II individually randomized clinical trials in South Africa. J Int AIDS Soc. 2021 Oct;24(10):e25825. doi: 10.1002/jia2.25825
219. Vos A, **Venter WDF**, Cardiovascular toxicity of contemporary antiretroviral therapy, Curr Opin HIV AIDS. 2021 Nov 1;16(6):286-291. doi: 10.1097/COH.0000000000000702
220. van den Berg OE, Shaddock EJ, Stacey SL, Feldman C, Barth RE, Grobbee DE, **Venter WDF**, Klipstein-Grobusch K, Vos AG. The influence of HIV infection and antiretroviral treatment on pulmonary function in individuals in an urban setting in sub-Saharan Africa .South Afr J HIV Med. 2021 Nov 15;22(1):1312. doi: 10.4102/sajhivmed.v22i1.1312
221. Moodley S, Gray A, Schellack N, **Venter F**, et al, Pharmacist-initiated antiretroviral therapy (PIMART), SAMJ, 111, 12, 1162-1163, Dec. 2021
222. **Venter WDF**, In memoriam: Cecilia Serenata, AIDS. 2021 Dec 15;35(Suppl 2):S111-S112. doi: 10.1097/01.AIDS.0000800580.58165.01
223. McCluskey SM, Pepperrell T, Hill A, **Venter WDF**, Gupta RK, Siedner MJ. Adherence, resistance, and viral suppression on dolutegravir in sub-Saharan Africa: implications for the TLD era, AIDS. 2021 Dec 15;35(Suppl 2):S127-S135. doi: 10.1097/QAD.0000000000003082
224. Asif S, Baxevanidi E, Hill A, **Venter WDF**, Fairlie L, Masenya M, Serenata C, Sokhela S, Chandiwana N, The predicted risk of adverse pregnancy outcomes as a result of treatment-associated obesity in a hypothetical population receiving tenofovir alafenamide/emtricitabine/dolutegravir, tenofovir disoproxil fumarate/emtricitabine/dolutegravir or tenofovir disoproxil fumarate/emtricitabine/efavirenz, AIDS, 2021 Dec 15;35(Suppl 2):S117-S125. doi: 10.1097/QAD.0000000000003020
225. Jamieson L, Serenata C, Makhubele L, Sokhela S, Mashabane N, Akpomiemie G, Johnson LF, **Venter WDF**, Meyer-Rath G. Cost and cost-effectiveness of dolutegravir-based antiretroviral regimens: an economic evaluation of a clinical trial, AIDS, 2021 Dec 15;35(Suppl 2):S173-S182. doi: 10.1097/QAD.0000000000003068
226. Laher AE, Richards GA, Paruk F, **Venter WDF**, ART Non-adherence Among HIV-positive Patients Presenting to an Emergency Department in Johannesburg: Associations and Reasons, S Afr Med J. 2021 Aug 2;111(8):753-758. doi: 10.7196/SAMJ.2021.v111i8.15604
227. **Venter WDF**, Sokhela S, Calmy A, Mkhondwane L, Bosch B, Chandiwana N, et al, Weight gain stopping/switch rules for antiretroviral clinical trials, AIDS. 2021 Dec 15;35(Suppl 2):S183-S188. doi: 10.1097/QAD.0000000000003092
228. **Venter WDF**, Serenata C, Vitoria M, Mkhondwane L, Sikwese K, Pepperrell T, Clayden P, Qavi A, Doherty M, Penazzato M, Hill A, What we have learned from antiretroviral treatment optimization efforts over the last 5 years? AIDS. 2021 Dec 15;35(Suppl 2):S113-S115. doi: 10.1097/QAD.0000000000003081

229. Mendelson M, **Venter F**, Moshabela M, et al, The political theatre of the UK's travel ban on South Africa, Lancet, Dec 2021, doi.org/10.1016/S0140-6736(21)02752-5
230. Gumede SB, de Wit JBF, **Venter WDF**, Lalla-Edward ST, Study protocol: Strengthening understanding of effective adherence strategies for first-line and second-line antiretroviral therapy (ART) in selected rural and urban communities in South Africa, PLOS ONE 16(12): e0261107. https://doi.org/10.1371/journal.pone.0261107
231. Griesel R, Kawuma AN, Wasmann R, Sokhela S, Akpomiemie G, **Venter WDF**, Wiesner L, Denti P, Sinxadi P, Maartens G. Concentration-response relationships of dolutegravir and efavirenz with weight change after starting antiretroviral therapy. Br J Clin Pharmacol. 2021 Dec 26.
232. Laher AE, Paruk F, **Venter WDF**, Ayeni OA, Motara F, Moolla M, Richards GA. Development and internal validation of the HIV In-hospital Mortality Prediction (HIV-IMP) risk score. HIV Med. 2022 Jan;23(1):80-89. doi: 10.1111/hiv.13159.
233. Majam, M, Msolomba V, **Venter F**, Scott LE, Kahamba T, Wendy S. Stevens WS, et al. 2022. Monitored Implementation of COVID-19 Rapid Antigen Screening at Taxi Ranks in Johannesburg, South Africa. Diagnostics 2022 Feb 3;12(2):402. https://doi.org/10.3390/diagnostics12020402
234. Majam M, Conserve DF, Zishiri V, Haile ZT, Tembo A, Phiri J, Hatzold K, Johnson CC, **Venter F**. Implementation of different HIV self-testing models with implications for HIV testing services during the COVID-19 pandemic: study protocol for secondary data analysis of the STAR Initiative in South Africa. BMJ Open. 2021 May 18;11(5):e048585. doi: 10.1136/bmjopen-2020-048585
235. Sussenbach, A., van Gijzel, S., Lalla-Edward, S., **Venter, W.,** Shaddock, E., Feldman, C., Klipstein-Grobusch, K. Vos, A. The influence of smoking and HIV infection on pulmonary function. Southern African Journal of HIV Medicine, 23(1), 2022, doi:https://doi.org/10.4102/sajhivmed.v23i1.1329
236. Hermans LE, Hofstra LM, Schuurman R, Ter Heine R, Burger DM, Talboom SAJ, De Jong D, Tempelman HA, **Venter WDF**, Nijhuis M, Wensing AMJ. HIV-1 pretreatment drug resistance negatively impacts outcomes of first-line antiretroviral treatment - week 96 results from the ITREMA trial. AIDS. 2022 Feb 1. doi: 10.1097/QAD.0000000000003182
237. da Silva J, Siedner M, McCluskey S, Chandiwana N, **Venter F,** Raizes E. Drug resistance and use of long-acting ART. Lancet HIV. 2022 Mar 28:S2352-3018(22)00059-5. doi: 10.1016/S2352-3018(22)00059-5
238. Draaijer M, Scheuermaier K, Lalla-Edward ST, Fischer AE, Grobbee DE, **Venter F**, Vos A. Influence of shift work on cardiovascular disease risk in Southern African long-distance truck drivers: a cross-sectional study. BMJ Open. 2022 Apr 13;12(4):e050645. doi: 10.1136/bmjopen-2021-050645
239. Gumede SB, **Venter F**, de Wit J, Wensing A, Lalla-Edward ST. Antiretroviral therapy uptake and predictors of virological failure in patients with HIV receiving first-line and second-line regimens in Johannesburg, South Africa: a retrospective cohort data analysis, BMJ Open. 2022 Apr 15;12(4):e054019. doi: 10.1136/bmjopen-2021-054019
240. Cindi Z, Kawuma AN, Maartens G, Bradford Y, **Venter F**, Sokhela S, Chandiwana N, Wasmann RE, Denti P, Wiesner L, Ritchie MD, Haas DW, Sinxadi, Pharmacogenetics of dolutegravir plasma exposure among Southern Africans living with HIV, 2022 May 4;jiac174. doi: 10.1093/infdis/jiac174
241. Nel J, **Venter WDF**. Decoding the next SARS-CoV-2 variant. Lancet Glob Health. 2022 Jul;10(7):e928-e929. doi: 10.1016/S2214-109X(22)00199-1. Epub 2022 May
242. **Venter WDF**, Sokhela S, Nel J, Integrase inhibitors hand us a new HIV clinical puzzle, Lancet HIV. 2022 Jun 7:S2352-3018(22)00122-9. doi: 10.1016/S2352-3018(22)00122-9
243. Griesel R, Sinxadi P, Kawuma A, Joska J, Sokhela S, Akpomiemie G, **Venter F**, Denti P, Haas DW, Maartens G, Pharmacokinetic and pharmacogenetic associations with dolutegravir neuropsychiatric adverse events in African populations, J Antimicrob Chemother. 2022 Aug 29:dkac290. doi: 10.1093/jac/dkac290
244. **Venter WDF**, Sokhela S, Calmy A, et al, Response to comments by Taramasso and colleagues on weight gain stopping/switch rules for antiretroviral clinical trials, AIDS, Oct 2022, 36: 13: 1900-1901; doi:10.1097/QAD.0000000000003310

245. Hermans LE, Umunnakwe CN, Lalla-Edward ST, Hebel SK, Tempelman HA, Nijhuis M, **Venter WDF**, Wensing AMJ, Point-Of-Care Tenofovir urine Testing for the Prediction of Treatment Failure and Drug Resistance During Initial Treatment for HIV-1 Infection, Clin Infect Dis. 2022 Sep 22:ciac755. doi: 10.1093/cid/ciac755
246. Sokhela S, Bosch B, Hill A, Simmons B, Woods J, Johnstone H, Akpomiemie G, Ellis L, Owen A, Casas CP, **Venter WDF**, Randomized clinical trial of nitazoxanide or sofosbuvir/daclatasvir for the prevention of SARS CoV-2 infection, J Antimicrob Chemother. 2022 Sep 30;77(10):2706-2712. doi: 10.1093/jac/dkac266.
247. May AK, Seymour H, Etheredge H, Maher H, Nunes MC, Madhi SA, Sokhela SM, **Venter WDF**, et al, Coronavirus Host Genomics Study: South Africa (COVIGen-SA), Global Health, Epidemiology and Genomics, 2022 Oct 6;2022:7405349. doi: 10.1155/2022/7405349.
248. Vojnov L, **Venter WDF**, Isoniazid prophylaxis: highly effective but underutilised to prevent tuberculosis in people living with HIV, LancetGlobalHealth, Vol 10, 11, November 2022, e1549-e1550
249. Tahir IS, Vos AG, Damen JAA, Barth RE, Tempelman HA, Grobbee DE, Scheuermaier K, **Venter WDF**, Klipstein-Grobusch K, Cardiovascular risk prediction in people living with HIV – comparative performance of Framingham, Atherosclerotic Cardiovascular Disease Risk Score and Data Collection on Adverse Events of Anti-HIV Drugs risk prediction models, SAJHIVMed, South Afr J HIV Med. 2022 Nov 15;23(1):1395. doi: 10.4102/sajhivmed.v23i1.1395
250. Wadley A, Kamerman P, Pincus T, Evangeli M, Chinaka T, **Francois Venter WD**, Akpomiemie G, Moorhouse M, Parker R, et al, Slow and steady but not related to HIV stigma: physical activity in South Africans living with HIV and chronic pain, AIDS and Behavior, AIDS Behav. 2022 Nov 27. doi: 10.1007/s10461-022-03928-7
251. Kityo C, Cortes CP, Phanuphak N, Grinsztejn B, **Venter F**, Barriers to Uptake of Long-Acting Antiretroviral Products for Treatment and Prevention of HIV in Low- and Middle-Income Countries (LMICs), Clinical Infectious Diseases, Volume 75, Issue Supplement_4, 1 December 2022, Pages S549–S556, https://doi.org/10.1093/cid/ciac752
252. Mondleki, E, Banda, C, Chandiwana, N, Sokhela, S, Wiesner, L, **Venter, F**, Maartens, G. Sinxadi P, Effect of obesity on dolutegravir exposure in Black Southern African adults living with HIV, Southern African Journal of HIV Medicine, Dec 2022, 23(1), doi:https://doi.org/10.4102/sajhivmed.v23i1.1452
253. Buttenheim AM, Schmucker L, Marcus N, Phatsoane M, Msolomba V, Rhagnath N, Majam M, **Venter F**, Thirumurthy H, Planning and commitment prompts to encourage reporting of HIV self-test results: A cluster randomized pragmatic trial in Tshwane District, South Africa, PLOS Global Public Health, 2022 Oct 24;2(10):e0001196.doi: 10.1371/journal.pgph.0001196
254. Chandiwana N, Kruger C, Johnstone H, Chughlay MF, Ju C, Kim B, Dineka Y, Arbe-Barnes S, Miller R, Owen A, Hill A, Windgassen D, Abla N, Marrast AC, Duparc S, **Francois Venter WD**, Safety and efficacy of four drug regimens versus standard-of-care for the treatment of symptomatic outpatients with COVID-19: A randomised, open-label, multi-arm, phase 2 clinical trial, LanceteBioM, 2022 Dec;86:104322. doi: 10.1016/j.ebiom.2022.104322.
255. Bosch B, Akpomiemie G, Chandiwana N, Sokhela S, Hill A, McCann K, Qavi A, Mirchandani M, **Venter WDF,** Weight and metabolic changes after switching from tenofovir alafenamide (TAF)/emtricitabine (FTC)+dolutegravir (DTG), tenofovir disoproxil fumarate (TDF)/FTC+DTG and TDF/FTC/efavirenz (EFV) to TDF/lamivudine (3TC)/DTG. Clin Infect Dis. 2022 Dec 15:ciac949. doi: 10.1093/cid/ciac949. Online ahead of print
256. HIV Modelling Consortium, Predicted effects of introduction of long-acting injectable cabotegravir pre-exposure prophylaxis in sub-Saharan Africa: a modelling study, LancetHIV, 2023 Jan 12;S2352-3018(22)00365-4.doi: 10.1016/S2352-3018(22)00365-4
257. Sokhela S, Lalla-Edward S, Siedner MJ, Majam M, **Venter WDF**, Roadmap for Achieving Universal Antiretroviral Treatment, Annu Rev Pharmacol Toxicol. 2023 Jan 20;63:99-117. doi: 10.1146/annurev-pharmtox-052020-094321

258. Stone, J., Bothma, R., Gomez, G.B., ...**Venter, W.D.F,** et al, Impact and cost-effectiveness of the national scale-up of HIV pre-exposure prophylaxis among female sex workers in South Africa:a modelling analysis, J Int AIDS Soc., 26: e26063. https://doi.org/10.1002/jia2.26063
259. Levi J, Wang J, **Venter F**, Hill A., Estimated minimum prices and lowest available national prices for anti-obesity medications, Obesity, Obesity (Silver Spring). 2023 Feb 23. doi: 10.1002/oby.2372
260. Brennan AT, Nattey C, Kileel EM, Rosen S, Maskew M, Stokes AC, Fox MP, **Venter WDF**, Change in body weight and risk of hypertension after switching from efavirenz to dolutegravir in adults living with HIV: evidence from routine care in Johannesburg, South Africa, Lancet EClinicalMedicine. 2023 Feb 6;57:101836. doi: 10.1016/j.eclinm.2023.101836
261. Steegen K, Chandiwana N, Sokhela S, **Venter WD**, Hans L, Impact of rilpivirine cross-resistance on long-acting cabotegravir-rilpivirine in low and middle income countries, AIDS, AIDS. 2023 Feb 6. doi: 10.1097/QAD.0000000000003505
262. Kawuma AN, Wasmann RE, Sinxadi P, Sokhela SM, Chandiwana N, **Venter WDF**, Wiesner L, Maartens G, Denti P, Population pharmacokinetics of tenofovir given as either tenofovir disoproxil fumarate or tenofovir alafenamide in an African population, CPT Pharmacometrics Syst Pharmacol. 2023 Apr 4. doi: 10.1002/psp4.12955
263. Mateza S, Bradford Y, Maartens G, Sokhela S, Chandiwana NC, **Venter WDF**, Post FA, Ritchie MD, Haas DW, Sinxadi P, Pharmacogenetics of tenofovir renal toxicity in HIV-positive Southern Africans. Pharmacogenet Genomics. 2023 Apr 24. doi: 10.1097/FPC.0000000000000491. Online ahead of print. PMID: 37099271
264. Zishiri V, Conserve DF, Haile ZT, Corbett E, Hatzold K, Meyer-Rath G, Matsimela K, Sande L, d'Elbee M, Terris-Prestholt F, Johnson CC, Chidarikire T, **Venter F**, Majam M, Secondary distribution of HIV self-test kits by HIV index and antenatal care clients: implementation and costing results from the STAR Initiative in South Africa, BMC Infect Dis. 2023 Jun 1;22(Suppl 1):971. doi: 10.1186/s12879-023-08324-7
265. Cindi Z, Kawuma AN, Maartens G, Bradford Y, Sokhela S, Chandiwana N, **Venter WDF**, Wasmann RE, Denti P, Wiesner L, Ritchie MD, Haas DW, Sinxadi P, Pharmacogenetics of tenofovir clearance among Southern Africans living with HIV, Pharmacogenetics and Genomics, Pharmacogenet Genomics 2023 Jun 1;33(4):79-87. doi: 10.1097/FPC.0000000000000495
266. Nyamuzihwa T, Tembo A, Martyn N, **Venter F**, Maimin J, Houghton J and Lalla-Edward ST (2023) The South African community pharmacy sector—an untapped reservoir for delivering HIV services. Front. Reprod. Health 2023 Jul 5:1173576. doi: 10.3389/frph.2023.1173576
267. Brennan AT, Vetter B, Majam M, T Msolomba V, **Venter F**, Carmona S, Kao K, Gordon A, Meyer-Rath G. Integration of point-of-care screening for type 2 diabetes mellitus and hypertension with COVID-19 rapid antigen screening in Johannesburg, South Africa, PLoS One. 2023 Jul 7;18(7):e0287794. doi: 10.1371/journal.pone.0287794
268. Chandiwana NC, Siedner MJ, Marconi VC, Hill A, Ali MK, Batterham RL, **Venter WD,** Weight gain after HIV therapy initiation: pathophysiology and implications, J Clin Endocrinol Metab. 2023 Jul 12:dgad411. doi: 10.1210/clinem/dgad411
269. Manne-Goehler J, Rahim N, van Empel E, de Vlieg R, Chamberlin G, Ihama A, Castle A, Mabweazara S, **Venter WDF**, Chandiwana N, Levitt NS, Siedner M, Perceptions of Health, Body Size, and Nutritional Risk Factors for Obesity in People with HIV in South Africa, AIDS Behav 2023 Aug 26. doi: 10.1007/s10461-023-04152-7
270. Hans L, Cassim N, Sarang S, Hardie D, Ndlovu S, **Venter WDF,** Da Silva P, Stevens W, HIV Viral Load Testing in the South African Public Health Setting in the Context of Evolving ART Guidelines and Advances in Technology, 2013-2022, Diagnostics (Basel). 2023 Aug 22;13(17):2731. doi: 10.3390/diagnostics13172731.
271. **Venter WDF**, Niyongabo B, TB-HIV co-infection in an era of complex, rapid new drug development, AIDS, Oct 2023, 37:1897–1898
272. Chandiwana N, Kruger C, Richardson N, Nxumalo S, Mashilo N, Dineka Y, Mudau N, Johnstone H, Kim W, Ju C, Arbe-Barnes S, Marrast AC, Flynn J, **Venter WDF**, Community-based management of a five-arm randomised clinical trial in COVID-19 outpatients in South Africa: challenges and opportunities, Trials, 2023 Oct 4;24(1):635. doi: 10.1186/s13063-023-07577-6

273. Horak J, **Venter WDF**, Wattrus C, Papavarnavas N, Howell P, Sorour G, Wallis C, Gill K, Conradie F, Bekker LG, Southern African HIV Clinicians Society 2023 Guideline for post-exposure prophylaxis: Updated recommendations, South Afr J HIV Med. 2023 Sep 28;24(1):1522. doi: 10.4102/sajhivmed.v24i1.1522
274. Brennan AT, Vetter B, Masuku SD, Mtshazo B, Mashabane N, Sokhela S, **Venter WD**, Kao K, Meyer-Rath G, Integration of point-of-care screening for type 2 diabetes mellitus and hypertension into the COVID-19 vaccine programme in Johannesburg, South Africa, BMC Public Health. 2023 Nov 20;23(1):2291. doi: 10.1186/s12889-023-17190-6
275. Cassim N, Hans L, **Venter WDF**, Sarang S, Da Silva P, Stevens WS, Examining the impact of SARS-CoV-2 infection on national HIV virological suppression in South Africa, J Acquir Immune Defic Syndr. 2023 Dec 15;94(5):381-386. doi: 10.1097/QAI.0000000000003307
276. Hill A, **Venter WDF**, Clinical consequences of weight gain during treatment for HIV infection. Curr Opin HIV AIDS. 2023 Nov 7. doi: 10.1097/COH.0000000000000829.
277. The cost of adding rapid screening for diabetes, hypertension, and COVID-19 to COVID-19 vaccination queues in Johannesburg, South Africa, Masuku SD, Brennan AT, Vetter B, **Venter F**, Mtshazo B, Sokhela S, Mashabane N, Kao K, Meyer-Rath G. Res Sq. 2023 Oct 10:rs.3.rs-3393141. doi: 10.21203/rs.3.rs-3393141/v1. Preprint.
278. Mody A, Sohn AH, Iwuji C, Tan RKJ, **Venter** F, Geng EH, HIV epidemiology, prevention, treatment, and implementation strategies for public health, Lancet, Nov 30:S0140-6736(23)01381-8. doi: 10.1016/S0140-6736(23)01381-8
279. Manne-Goehler J, Ali MK, Flood D, Marconi VC, **Venter WDF**, Siedner MJ, From Evidence to Effectiveness: Implications of the Randomized Trial to Prevent Vascular Events in HIV Study for People With Human Immunodeficiency Virus in Low- and Middle-Income Settings, Clin Infect Dis. 2023 Dec 8:ciad702. doi: 10.1093/cid/ciad702
280. Perks M, et al, A Profile of Patients on Protease Inhibitors at a Tertiary Level Antiretroviral Clinic in South Africa, Southern African Journal of HIV Medicine, in press
281. Klipstein-Grobusch et al, No evidence for an association of HIV and Antiviral Treatment with changes in Framingham Cardiovascular Risk Score in the Ndlovu Cohort Study, Journal of the American Heart Association, in press
282. Van Ginkelet al, Trends in BMI in the pre-INSTI period in HIV positive and negative persons in South Africa. South Afr J HIV Med, in press

BOOKS, CHAPTERS AND MONOGRAPHS

- **Venter WDF**, HIV and Cardiology. In: Wilson, D .et al. Oxford handbook of HIV medicine for Southern Africa. Cape Town: Oxford University Press, 2002 (1st edition)
- **Venter WDF**, IM Sanne, Fungal Infections in the ICU In: Feldman C, Sarosi GA, editors, Tropical and Parasitic Infections In the Intensive Care Unit, Springer Science + Business Media, New York, 2005
- **Venter WDF,** H Rees, Health In Africa, In: Mbeki M, Advocates of Change : How to Solve Africa's Problems, Pan Macmillan South Africa, 2011
- Co-editor: Maartens G, Cotton M, Wilson D, **Venter F,** Meyers T, Bekker L,: Oxford handbook of HIV medicine for Southern Africa. Cape Town: Oxford University Press, 2008 (2nd edition), 2012 (3rd edition)
- Murdoch DM, **Venter WD**, Feldman C. The AIDS Epidemic: Treatment and Epidemiology in the 21st Century. Hall JC, Hall BJ, Cockerell CJ, editors. Shelton, Connecticut: PMPH-USA, Ltd.; 2011. The Immune Reconstitution Inflammatory Syndrome (IRIS)
- **Venter WDF**, Chapter 3: HIV Treatment in South Africa: The challenges of an increasingly successful antiretroviral programme, Health Systems Review, 2012/2013
- **Venter WDF,** Chapter 1: The global epidemiology of HIV, in Pulmonary Complications of HIV, European Respiratory Monograph, Nov 2014, 66: 1–11, 10.1183/2312508X.erm6614

- Hunt G, **Venter WDF**, Morris L, Maartens G, Monitoring, Surveillance and Control of HIV drug resistance: the experience of a high burden country, in Antimicrobial Resistance Control 2015, http://www.globalhealthdynamics.co.uk/wp-content/uploads/2015/06/14_hunt-venter-morris-maartens.pdf
- **Venter WDF**, Sanne I. Stavudine. In Kucers' The Use of Antibiotics: A Clinical Review of Antibacterial, Antifungal, Antiparasitic, and Antiviral Drugs, Seventh Edition, CRC Press, 2017, Florida, USA
- Brennan-Ing M, Kaufman JE, Porter KE, MacPhail C, Seeley J, Karpiak SE, **Venter F**, et al, Sexual Health and Behavior Among Older Adults with HIV in Sub-Saharan Africa, In: Brennan-Ing, M., Porter, K.E., Kaufman, J.E., MacPhail, C., Seeley, J. (eds) Aging with HIV in Sub-Saharan Africa pp 55–78, Springer, Cham. https://doi.org/10.1007/978-3-030-96368-2_4

REVIEWER
AIDS
Journal of AIDS
South African Medical Journal
Southern African Journal of HIV Medicine (editorial board)
Cardiovascular Journal of Africa
Bulletin of the World Health Organization
The International Journal of Tuberculosis and Lung Disease
Antiviral Therapy
Clinical Infectious Diseases
New England Journal of Medicine
American Journal of Public Health
PLOS ONE
Journal International AIDS Society (editorial board)
Retrovirology
LancetHIV

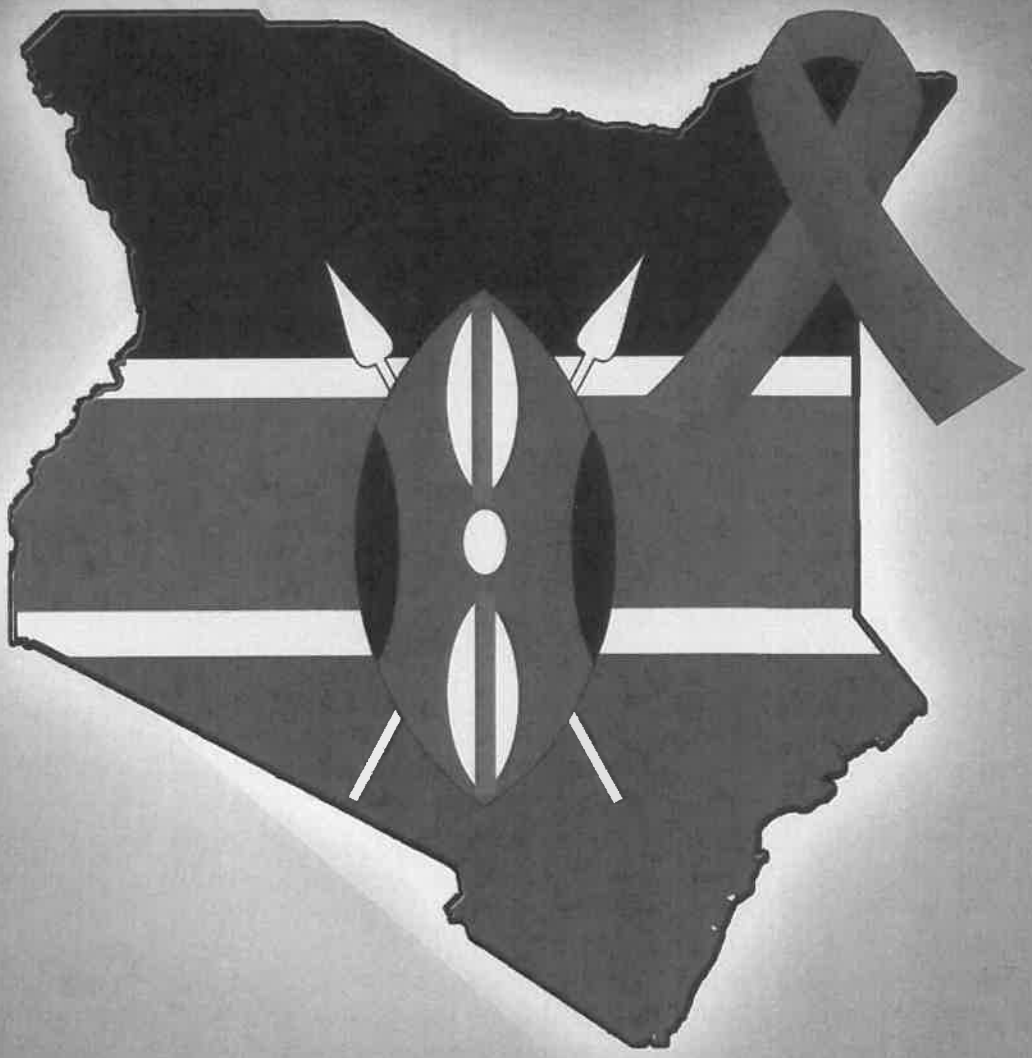
Students (ongoing):
Wellington Maruma

Mmed:
Michelle Perks, Wits
Robyn Bruce, Wits

Students: Completed
PhD:
Samanta Lalla-Edwards, Wits
Gesine Meyer-Rath, LSHTM
David Tumusiime, Wits
Abdullah Laher, Wits

Mmed:
June Fabian, Wits
Deshni Reddy, Wits

"WDFV2"



Kenya HIV Prevention and Treatment Guidelines, 2022

2022 Edition

Kenya HIV Prevention and Treatment Guidelines, 2022 edition contain relevant information required by healthcare providers in the use of ARVs as of the date of issue. All reasonable precautions have been taken by NASCOP to verify the information contained in this guideline document.

For clarifications contact National AIDS and STI Control Program (NASCOP) at P. O. Box 19361 - 00202, Nairobi Kenya, Tel: +254 (020) 2630867, Email: info@nascop.or.ke, Website: www.nascop.or.ke

The recommended citation for this document is:

Ministry of Health, National AIDS & STI Control Program. Kenya HIV Prevention and Treatment Guidelines, 2022 Edition. Nairobi, Kenya: NASCOP, Aug 2022. Print.

Design and Layout: Collins Etemesi - NASCOP
ISBN: 13-978-9966-038-31-9

Acronyms and Abbreviations

Abbreviations and Names of Antiretroviral Drugs	
3TC	Lamivudine
ABC	Abacavir
ATV	Atazanavir
ATV/r	Atazanavir/ritonavir
AZT	Zidovudine
DRV	Darunavir
DRV/r	Darunavir/ritonavir
DTG	Dolutegravir
EFV	Efavirenz
ETR	Etravirine
FTC	Emtricitabine
LPV	Lopinavir
LPV/r	Lopinavir/ritonavir
NVP	Nevirapine
RAL	Raltegravir
RTV	Ritonavir
TDF	Tenofovir Disoproxil Fumarate

Other Acronyms and Abbreviations	
ACE-I	Angiotensin-Converting Enzyme Inhibitor
ADR	Adverse Drug Reaction
AIDS	Acquired Immunodeficiency Syndrome
ALT	Alanine Transaminase
ALP	Alkaline Phosphatase
AHI	Acute Hiv Infection
ANC	Antenatal Care
A&E	Accident And Emergency
ARB	Angiotensin-Receptor Blocker
ART	Antiretroviral Therapy
ARV	Antiretroviral Drug(S)
AST	Aspartate Transaminase
BD	Twice Daily
BF	Breastfeeding
BMI	Body Mass Index
BP	Blood Pressure
CAG	Community Art Groups
CCC	Comprehensive Care Centre
CrCl	Creatinine Clearance

Other Acronyms and Abbreviations	
HTS	HIV Testing Services
ICF	Intensified Case Finding
IEC	Information, Education and Communication
INH	Isoniazid
INSTI	Integrase Strand Transfer Inhibitor
IPD	In-Patient Department
IPT	Isoniazid Preventive Therapy
IPV	Intimate Partner Violence
IRIS	Immune Reconstitution Inflammatory Syndrome
ITN	Insecticide Treated Mosquito Nets
IUD	Intrauterine Device
KEPI	Kenya Expanded Program of Immunization
KS	Kaposi's Sarcoma
LEEP	Loop Electrosurgical Excision Procedure
L&D	Labor And Delivery
LIVES	Listen, Inquiry, Validate, Enhance Safety and Support
LLV	Low Level Viremia
LRF	Laboratory Requisition Form
LP	Lumbar Puncture
MAC	Mycobacterium Avium Complex
MAT	Medically Assisted Therapy
MCH	Maternal Child Health
MNCH/FP	Maternal, Neonatal and Child Health/Family Planning
MDT	Multi-Disciplinary Team
MEC	Medical Eligibility Criteria
MOH	Ministry of Health
MSM	Men Who Have Sex with Men
MUAC	Mid-Upper Arm Circumference
NACS	Nutritional Assessment, Counselling and Support
NASCOP	National AIDS And STI Control Program
NCD	Non-Communicable Diseases
NHRL	National HIV Reference Laboratory
NNRTI	Non-Nucleoside Reverse Transcriptase Inhibitor
NRTI	Nucleoside Reverse Transcriptase Inhibitor
NSP	Needle and Syringe Programmes
NRTI	Nucleotide Reverse Transcriptase Inhibitor
OD	Once Daily

CHV	Community Health Volunteer
CITC	Client-Initiated HIV Testing and Counselling
CM	Cryptococcal Meningitis
CMV	Cytomegalovirus
CNS	Central Nervous System
CPT	Cotrimoxazole Preventive Therapy
CrCl	Creatinine Clearance
CTX	Cotrimoxazole
CYP450	Cytochrome P450
DAAs	Direct Acting Antiviral Therapies
DBS	Dried Blood Spot
DICEs	Drop-In-Centres
DMS	Director of Medical Services
DNA	Deoxyribonucleic acid
DOT	Directly observed therapy
DS	Double strength
DRT	Drug Resistance Testing
ED - PrEP	Event Driven PrEP
EDTA	Ethylenediaminetetraacetic acid
ECP	Emergency contraceptive pill
EID	Early Infant Diagnosis
eMTCT	Elimination of Mother to Child Transmission
EPTB	Extra-pulmonary Tuberculosis
FDA	Food and Drug Administration
FBC	Full Blood Count
FBS	Fasting Blood Sugar
FDC	Fixed Dose Combination
FLP	Fasting Lipid Profile
FP	Family Planning
FTC	Emtriciatabine
GIT	Gastro-intestinal tract
GOK	Government of Kenya
GBV	Gender-Based Violence
Hb	Hemoglobin
HBV	Hepatitis B virus
HBsAg	Hepatitis B Surface Antigen
HCV	Hepatitis C Virus
HCW	Health Care Worker
HEI	HIV Exposed Infant
HIV	Human immunodeficiency Virus
HIVST	HIV Self-testing
OI	Opportunistic Infection
OPD	Outpatient Department
OST	Opioid Substitution Therapy
OVC	Orphans And Vulnerable Children
PCP	Pneumocystis Jirovecii Pneumonia
PCR	Polymerase Chain Reaction
PEP	Post-Exposure Prophylaxis
PrEP	Pre-Exposure Prophylaxis
PGL	Persistent Generalized Lymphadenopathy
PHQ-9	Patient Health Questionnaire-9
PHDP	Positive Health, Dignity, and Prevention
PI	Protease Inhibitor
PITC	Provider Initiated HIV Testing and Counselling
PLHIV	People Living With HIV
PLLV	Persistent Low-level Viremia
PML	Progressive Multifocal Leukoencephalopathy
PMTCT	Prevention of mother-to-child transmission
PPE	Papular Pruritic Eruptions
PrEP	Pre-exposure Prophylaxis
PTB	Pulmonary Tuberculosis
PWID	People Who Inject Drugs
NHCSC	National HIV Clinical Support Centre
RAST	Rapid Assessment Tool
RNA	Ribonucleic Acid
RPR	Rapid Plasma Reagin
sCrAg	Serum Cryptococcal Antigen
SRH	Sexual and Reproductive Health
SS	Single Strength
STI	Sexually Transmitted Infection
TB	Tuberculosis
TB LAM	Tuberculosis Lipoarabinomannan
TDF	Tenofovir
TT	Tetanus Toxoid
TWG	Technical Working Group
ULN	Upper Limit of Normal
UTI	Urinary Tract Infection
VIA	Visual Inspection with Acetic Acid
VILI	Visual Inspection with Lugol's Iodine
VL	Viral Load
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

1. Summary of Key Recommendations

1.1 HIV Testing Services (HTS) and Linkage to Treatment and Prevention

- HIV testing should be voluntary and conducted ethically in an environment where Consent, Confidentiality, Counselling, Correct results, Connection (linkage) and Creating an enabling environment can be assured
- To optimize access to testing services, HIV testing can be conducted in 2 different settings:
  - Facility-based
  - Community-based
- Targeted HIV testing is recommended which involves index client listing of contacts, HIV self-testing and use of HTS screening tool to identify people at risk of HIV infection as eligible for testing
- Serial testing, using approved rapid HIV antibody testing kits, is used to diagnose HIV infection in children older than 18 months, adolescents, and adults. An HIV-positive diagnosis will be made using three consecutive reactive assays

1.2 Initial Evaluation and Follow-up for PLHIV

- Initial clinical evaluation of PLHIV entails CD4 monitoring, which is recommended for:
  - Baseline investigation for all PLHIV
  - Any patient with suspected treatment failure
  - Any patient returning to care after interrupting treatment for >3 months
  - Any patient on fluconazole maintenance therapy or on dapsone as prophylaxis, to determine when prophylaxis can be discontinued
- Advanced HIV Disease is defined as:
  - Adults, adolescents, and children five years and older as having a CD4 cell count of less than 200 cells/mm^3 or
  - WHO clinical stage 3 or 4 disease
  - All children younger than five years
- All PLHIV presenting with Advanced HIV Disease (AHD) should be offered a package of care that includes timely initiation of ART, screening, diagnosis, prophylaxis, and management of opportunistic infections.
- Frequency of routine VL monitoring:
  - For PCR positive HEIs: at baseline (at the time of ART initiation)
  - Age 0-24 years old: 3 months after ART initiation, and then every 6 months
  - Age ≥ 25 years old: 3 months after ART initiation, then at month 12, and then annually

- Pregnant or breastfeeding: at confirmation of pregnancy (if already on ART) or 3 months after ART initiation (if ART initiated during pregnancy/breastfeeding), and then every 6 months until complete cessation of breastfeeding
- Before any drug substitution (if no VL result available from the prior 6 months)
- Three months after any regimen modification (including single-drug substitution)

- PLHIV should receive differentiated care based on initial evaluation (advanced vs. well) and follow up (established vs not established on ART)

1.3 Standard Package of Care for PLHIV

Consists of 8 components:

1. **Antiretroviral Therapy**
   - All PLHIV are eligible for ART irrespective of CD4 cell count or percentage, WHO clinical stage, age, pregnancy status, or comorbidities
   - ART should be initiated as soon as the patient is ready to start, preferably within two weeks from time of HIV diagnosis (except for patients with cryptococcal meningitis or TB meningitis)
2. **Positive Health, Dignity, and Prevention, GBV/IPV & HIV Education and Counselling**
   - All patients should be counselled and supported for disclosure of HIV status; partner/ family testing and engagement; condom use; family planning; sexually transmitted infections screening; treatment adherence; and pre-exposure prophylaxis for HIV-negative sexual partners
   - All females aged 15-49 years and emancipated minors accessing HIV care services should be screened for Intimate Partner Violence (IPV) as part of the standard package of care
   - All PLHIV should be provided with HIV education and counselling
3. **Screening for and Prevention of Specific Opportunistic Infections**

   Cotrimoxazole Preventive Therapy (CPT) is no longer recommended as life-long prophylaxis, and is only recommended in the following sub populations, unless they have an allergy to sulfur drugs or develop toxicity from CPT
   - All HIV Exposed Infants
   - HIV infected children < 15 years of age
   - All PLHIV ≥ 15 years of age:
     - Living in malaria-endemic zones *(Refer to the National Guidelines for the Diagnosis, Treatment and Prevention of Malaria in Kenya for the current Kenya Malaria endemicity map)*
     - Presenting with WHO stage 3 or 4 event, or meeting the AHD criteria
     - Suspected treatment failure
   - All Pregnant and Breast-feeding women

- When dapsone (as a substitute for CPT) is being used as PCP prophylaxis, it is only recommended for patients in WHO Stage 4 and/or absolute CD4 count ≤ 200 cells/mm^3 (or CD4% ≤ 25% for children ≤ 5 years old), and should be discontinued once a patient achieves viral suppression and a sustained CD4 count of > 200 cell/mm^3 (or > 25% for children ≤ 5 years old) for at least 6 months
- All PLHIV should be screened for TB at every visit using the Intensified Case Finding (ICF) tool and assessed for TB Preventive Therapy (TPT) if screened negative for TB
- All adolescent and adult PLHIV with a baseline CD4 count of ≤ 200 cells/mm^3 should be screened for cryptococcal infection using the serum CrAg test

4. Reproductive Health Services

- All PLHIV should be screened for STI at every clinic visit
- Pregnancy status should be determined for all women of reproductive age at every visit and their contraception need determined and met
- All HIV positive women between the ages of 18 - 65 years should be screened for cervical cancer (HPV testing conducted every 2 years or Annually if using VIA-VILI)

5. Screening for and Management of Non-Communicable Diseases

- All PLHIV should be screened for hypertension, diabetes mellitus, dyslipidaemia, and renal disease annually.
- Routine screening should be provided for early detection of cervical cancer, breast cancer, bowel cancer, and prostate cancer

6. Mental Health Screening and Management

- All PLHIV should receive basic screening for depression and anxiety before initiating ART, and annually thereafter, and whenever there is a clinical suspicion
- All PLHIV should be provided for and linked with support structures to maintain general well-being addressing issues that could affect their mental health
- All adults and adolescents should be screened for alcohol and drug use before initiating ART and regularly during follow-up
- All caregivers should also receive baseline and follow-up screening for depression and alcohol/drug use

7. Nutrition Services

- All PLHIV should receive nutritional assessment, counselling, and support tailored to the individual needs of the patients
- All infants irrespective of HIV status should be exclusively breastfed for the first 6 months of life, with timely introduction of appropriate complementary foods after 6 months, and continued breastfeeding up to 24 months or beyond

8. Prevention of Other Infections

- PLHIV (including children) should receive vaccinations as recommended by the National Vaccines and Immunization Program
- All PLHIV should receive vaccination for COVID-19 following national guidelines for age and dosing

1.4 Adherence Preparation, Monitoring and Support

- The adherence preparation, monitoring, and support that a patient requires should be tailored to their level of adherence and the stage of ART initiation and follow-up
- All patients with durable viral suppression (2 consecutive viral load results with <50 copies) should be offered messaging on Undetectable=Untransmittable (U=U).
- Whenever possible, follow-up should be provided by the same care provider or team of care providers (e.g., same clinician and counsellor) at every visit. This is particularly important during the first 3 months in care
- For all children/adolescents, the level of disclosure should be assessed at the first visit. Ongoing care should include a plan for age-appropriate disclosure
- All patients are at risk of new or worsening barriers to adherence, so adherence monitoring, counselling and support should continue despite viral suppression
- Every service delivery point that is providing ARVs for patients (whether ART, PEP, or PrEP) must have a functional system for identifying patients who miss appointments and for taking action within 24 hours of a missed appointment
- In patients failing ART, do not change regimens until the reason/s for treatment failure have been identified and addressed (which should be done urgently using a case-management approach)

1.5 Antiretroviral Therapy for Infants, Children, Adolescents, and Adults

- The goal of ART is to suppress viral replication with the aim of reducing the patient's VL to undetectable levels (Viral Load <50 copies/LDL)
- All individuals with confirmed HIV infection are eligible for ART, irrespective of CD4 count/%, WHO clinical stage, age, pregnancy or breastfeeding status, co-infection status, risk group, or any other criteria, provided that the individual is willing and ready to start ART
- ART should be started in all patients as soon as possible, even on the same day as confirming their HIV diagnosis (and preferably within 2 weeks)
- **Preferred first-line ART for infants, children, adolescents and adults**
    - Birth to 4 weeks: AZT + 3TC + NVP
    - > 4 weeks to < 15 years old
        - < 30 kg: ABC + 3TC + DTG
        - ≥ 30 kg: TDF + 3TC + DTG
    - ≥ 15 years old: TDF + 3TC + DTG
- Children and adolescents who are virally suppressed but are NOT on the preferred first-line ART regimen should be assessed for transition and transitioned to the preferred regimen
- Treatment failure is suspected when a patient has a VL ≥ 1000 copies/ml after at least 3 months of using ART. Treatment failure is only confirmed when VL is ≥ 1,000 copies/ml after assessing for and addressing poor adherence or other reasons for high VL, and then repeating VL after at least 3 months of excellent adherence to allow for viral re-suppression

Summary of Key Recommendations

- Persistent low-level viremia (pLLV) is defined as having VL 200 - 999 copies/ml on two or more consecutive measures. These patients are at increased risk of progression to treatment failure, development of ARV resistance and death and therefore require a similar case management approach as patients with an initial VL ≥ 1,000 copies/ml
- All PLHIV with a detectable VL ≥ 200 copies/ml (unsuppressed): assess for and address potential reasons for viremia, including intensifying adherence support, and repeat the VL **after 3 months of excellent adherence**
    - If the repeat VL is < 200 copies/ml (suppressed) then continue routine monitoring
    - If the repeat VL is ≥ 1,000 copies/ml (suspected treatment failure), prepare for change to an effective regimen (Figure 5.2 and Table 6.10)
    - If the repeat VL is 200 - 999 copies/ml (low level viremia), reassess adherence and other causes of viremia and repeat VL after another 3 months of excellent adherence

1.6 Prevention of Mother to Child Transmission of HIV/Syphilis/HBV

- Prevention of mother-to-child transmission (PMTCT) of HIV, Syphilis and Hepatitis B (triple elimination) should be offered as part of a comprehensive package of fully integrated, routine antenatal care interventions
- All pregnant women, unless known positive, should be counseled and tested for HIV, Syphilis (using the HIV-Syphilis dual test) and HBV during their first ANC visit, and if negative a repeat HIV-Syphilis dual test should be performed in the 3rd trimester.
- **Lifelong ART should be initiated in all pregnant and breastfeeding women living with HIV, regardless of gestational age, WHO clinical stage or CD4 count**
- ART should be started as soon as possible, ideally on the same day HIV diagnosis is made, with ongoing enhanced adherence support
- The preferred first line ART regimen for pregnant and breastfeeding women is TDF + 3TC + DTG
- For pregnant and breastfeeding women newly initiated on ART, obtain VL 3 months after initiation, and then every 6 months until complete cessation of breastfeeding
- For HIV positive women already on ART at the time of confirming pregnancy or breastfeeding, obtain a VL irrespective of when prior VL was done, and then every 6 months until complete cessation of breastfeeding
- For pregnant or breastfeeding women with a VL ≥ 200 copies/ml (unsuppressed): assess for and address potential reasons for viremia, including intensifying adherence support, and repeat the VL **after 3 months of excellent adherence**
    - If the repeat VL is < 200 copies/ml (suppressed) then continue routine monitoring
    - If the repeat VL is ≥ 1,000 copies/ml (treatment failure), prepare for change to an effective regimen
    - If the repeat VL is 200 - 999 copies/ml (low level viremia), reassess adherence and other causes of viremia and consult the Regional or National TWG

- All HIV exposed infants (HEI) should be tested with DNA PCR within 6 weeks of age or first contact thereafter; if negative then another DNA PCR at 6 months, and if negative then repeat DNA PCR at 12 months.
- All HEI should receive infant ARV prophylaxis consisting of 6 weeks of AZT + NVP and thereafter NVP should be continued until 6 weeks after complete cessation of breastfeeding
- All infants irrespective of HIV status should be exclusively breastfed for the first 6 months of life, with timely introduction of appropriate complementary foods after 6 months, and continued breastfeeding up to 24 months or beyond

1.7 TB/HIV Co-infection Prevention and Management

- All healthcare settings should implement TB infection control recommendations to reduce the risk of transmission of TB among patients, visitors and staff
- Symptom-based TB screening using the ICF tool MUST be performed for all PLHIV at every clinic visit
  - Patients who screen negative should be assessed for and provided with TB preventive therapy (TPT)
  - Patients who screen positive (presumptive TB) must complete definitive diagnostic pathways
- **The GeneXpert Ultra MTB/Rif test is the preferred test for diagnosis of TB and rifampicin resistance in all presumptive TB cases**
- TB-LAM can be used as an adjunct rapid point-of-care diagnostic test for PLHIV: with advanced HIV disease (WHO stage 3 or 4 or CD4 count ≤ 200 cells/mm^3 (or CD4% ≤ 25% for children ≤ 5 years)) with presumptive TB, or; any danger signs of severe illness, or; currently admitted to hospital
- Patients diagnosed with TB/HIV co-infection should start anti-TB treatment immediately and initiate ART as soon as anti-TB medications are tolerated, preferably within 2 weeks (unless they have TB meningitis, in which case ART should be deferred for 4 to 8 weeks)
- Patients with TB/HIV co-infection who are already on ART should start anti-TB treatment immediately and continue ART, making any required adjustments to the ART regimen based on known drug-drug interactions and monitoring toxicity
- Always assess for ART failure in patients who develop TB after being on ART for ≥ 6 months

1.8 HBV/HIV and HCV/HIV Co-infection Prevention and Management

- All HIV positive adolescents and adults should be screened for HBV infection, using serum HBsAg, as part of initial evaluation; children who did not complete routine childhood immunizations should also be screened for HBV and vaccinated if negative.
- PLHIV without evidence of hepatitis B infection (HBsAg negative) should be vaccinated against hepatitis B
- The recommended first-line ART for adults with HIV/HBV co-infection is TDF+ 3TC + DTG
- HCV serology should be offered to individuals at risk of HCV infection
- Direct acting antiviral therapies (DAAs) for treatment of HCV have simplified the management of HIV/HCV co-infection

1.9 ARVs for Post-exposure Prophylaxis (PEP)

- PEP should be offered as soon as possible (< 72 hours) after high-risk exposure
- The recommended ARV agents for PEP are
  - <15 years old
    - < 30 kg: ABC + 3TC + DTG
    - ≥ 30 kg: TDF + 3TC + DTG
  - ≥ 15 years old
    - TDF + 3TC + DTG

1.10 Pre-Exposure Prophylaxis (PrEP)

- PrEP should be offered to HIV negative individuals at substantial ongoing risk of HIV infection (including the seronegative partner in a discordant relationship)
- PrEP works if taken as prescribed. However, it does not prevent other STIs or unintended pregnancies, therefore, additional protection should be offered.
- PrEP should only be offered to clients ≥15 years of age who are sexually active after eligibility assessment using the following parameters:
  - Laboratory: HIV negative
  - Medical (for oral PrEP): no contraindication to TDF; no severe renal diseases; weight ≥ 30 kg
  - Client readiness: client must be willing to take PrEP as prescribed, and adhere to associated follow up and HIV testing (at enrollment, at month 1 and thereafter every 3 months)
- The recommended ARV regimen for Oral PrEP is TDF/FTC (alternative TDF/3TC), available in two dosing strategies:
  - Daily oral PrEP: TDF (300 mg) + FTC (200 mg) once daily
  - Event-driven PrEP: Event driven PrEP is where oral PrEP is used in men having sex with men when an isolated sexual act is anticipated. The dose is two pills of TDF/FTC taken between 2 and 24 hours (preferably closer to 24h) before the anticipated sexual act; then, a third pill taken 24 hours after the first two pills; and then a fourth pill taken 24 hours after the third pill ("2+1+1").

1.11 People Who Inject Drugs (PWID) and HIV

- PWID should be offered regular HIV testing and counselling and be linked to comprehensive HIV treatment and prevention services including harm reduction counselling and support
- The recommended first-line ART for adult PWID is TDF + 3TC + DTG
- PWID should be offered screening, diagnosis, treatment and prevention of STIs as part of comprehensive HIV prevention and care
- PWID should have the same access to TB prevention, screening and treatment services as other populations at risk of or living with HIV
- PWID should be screened for HBV (by HBsAg) and HCV (by HCV serology) at first contact
- All PWID should be linked to Needle and Syringe Programs (NSP) to access sterile injecting equipment
- All PWID should be linked to Medically Assisted Therapy (MAT)

2. HIV Testing Services and Linkage to Treatment and Prevention

HIV testing services (HTS) provide the first critical link to comprehensive HIV treatment and prevention services such as voluntary medical male circumcision (VMMC), pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP) and other combination HIV prevention services. In addition, this initial step also provides opportunities to offer other interventions such as sexual and reproductive health services (SRH), TB screening and referral, and substance abuse screening and referral.

HIV testing should be voluntary and conducted ethically in an environment where the six Cs principles of Consent, Confidentiality, Counselling, Correct results, Connection (linkage) to care and other appropriate post-test services and creating an enabling environment are adhered to.

Targeted HIV testing is the major strategic shift, involving index client listing of contacts, HIV self-testing and use of HIV screening tools to identify people at risk of HIV infection as eligible for testing, except in the case of PMTCT and key populations.

2.1 Settings for HIV Testing

In Kenya, HTS is delivered in two broad settings: facility-based and community-based settings

2.1.1 Facility-based testing

- The HTS screening tool should be used to facilitate prioritization of testing for persons at risk of HIV infection; those diagnosed with sexually transmitted infections, with multiple sexual partners, key populations, and those with possible or known HIV exposures, such as sexual or needle sharing partner of a person living with HIV or of a person of unknown HIV status
- Providers should undertake a thorough risk assessment using the validated NASCOP screening tools (Annex 17) to identify clients at risk and those eligible for a HIV test.
- HTS should be offered only to clients who consent
- Clients who are not eligible for testing should receive HIV prevention messages and be offered services as appropriate
- Clients who test HIV positive should be linked to care while those who test negative should be linked to HIV prevention services
- Patients starting HIV care should receive disclosure counselling and support, and be offered family, sexual and needle-sharing partner testing

As much as possible, HIV testing services should be integrated into care pathways at all service delivery points including adult and pediatric inpatient units, outpatient units, maternal and child health clinics, SRH/family planning clinics, TB clinics, specialty clinics, gender-based violence (GBV) care units and service delivery points for key and priority populations.

2.1.2 Community-based testing

Targeted community based HTS offers additional opportunities to identify and link people to HIV treatment and prevention. This setting is especially important for testing children and partners of index clients through index testing, as well as outreach to key and priority populations, orphans, and vulnerable children (OVCs), adolescents, youth and targeted testing in workplaces.

2.2 HTS strategies

The major HTS strategies to identify people living with HIV but unaware of their status are:

2.2.1 HIV Self-Testing (HIVST)

- HIVST allows individuals to collect their own specimen, perform the test, and interpret the results on their own, conducted either within a health facility, at home or in any other convenient place.

HIVST can be conducted with or without direct assistance by a trained person.

- HIVST is a screening test and is not sufficient to make an HIV-positive diagnosis. A reactive (positive) self-test result should therefore be confirmed using the validated national testing algorithm by an HTS-trained service provider.
- HIVST should be performed using MoH approved HIV rapid diagnostic test kits that are either blood-based or oral fluid based.
- HIVST may have the greatest benefit in reaching specific populations such as partners of newly diagnosed PLHIV; partners of pregnant women attending antenatal care (ANC); contacts of patients treated for STIs; hard-to-reach populations such as men, adolescents, and young people, as well as key populations, such as MSM and sex workers.

HIVST is a screening test and does not provide a diagnosis. All reactive (positive) self-test results must be confirmed in a health facility according to nationally set standards

2.2.2 Index Testing referred to as partner testing/partner notification services, is an approach whereby the exposed contacts (i.e., sexual partners, biological children and anyone with whom a needle was shared) of an HIV-positive person (i.e., index client), are elicited and offered HIV testing services

2.2.3 Voluntary Counselling and Testing (VCT): This involves provision of targeted HIV testing to clients who willingly present to HTS facilities for testing for diverse reasons, including self-assessed risk.

2.2.4 Social Network Strategy (SNS)- this involves offering to index clients self-guided options to informally extend links to HIV testing and other services to a **broader set of social-, sexual-, and injecting-network members** who have an elevated risk of HIV infection. The index client for SNS can either be PLHIV or HIV negative persons with increased risk for HIV infection.

Providing targeted HTS for different populations and in different settings increases opportunities for access to knowledge of HIV status and to a range of HIV treatment and prevention services. Table 2.1 summarizes key recommendations for HTS for different sub-populations.

Table 2.1: HTS Recommendations for Different Populations and Settings

Population	Recommendation
Birth testing of infants born to known HIV-positive mothers (Figure 2.2)	• Birth testing (HIV testing of infants at birth or at first contact within 2 weeks after birth) can be conducted where feasible and in settings where return of results is feasible within 24 hours and ART can be initiated immediately*). Infants tested at birth must be tested at the 6 weeks immunization visit regardless of the results of the initial test at birth. • Infants with an initial positive HIV DNA PCR result should be presumed to be HIV infected and started on ART in line with national guidelines, with a new sample for confirmatory HIV DNA PCR and baseline viral load taken at the time of ART initiation **(ART initiation is based on the initial HIV DNA PCR result)**
Infants and children aged less than 18 months (Figure 2.1)	• HIV exposure status of all infants should be established at first contact. • To establish HIV exposure status of a child less than 18 months of age, conduct HIV antibody testing for mothers with unknown status or who previously tested negative during antenatal care at the 6-week immunization visit or first contact. If the mother declines to be tested or is not available for testing, then conduct a rapid HIV antibody test for the child to determine exposure (if antibody test is positive this confirms HIV exposure) • When HIV exposure is confirmed, ARV prophylaxis should be started immediately. • All HEIs should have DNA PCR testing at the 6-week immunization visit or first contact thereafter. • Infants with an initial positive HIV DNA PCR result should be presumed to be HIV infected and started on ART in line with national guidelines, with a new sample for confirmatory HIV DNA PCR and baseline viral load taken at the time of ART initiation **(ART initiation is based on the initial HIV DNA PCR result)** • All HEI with initial HIV negative results should continue infant ARV prophylaxis and be followed as HEIs, including additional PCR testing at 6 months and 12 months, and antibody testing at 18 months and every 6 months during breastfeeding, and at 6 weeks after complete cessation of breastfeeding
Children older than 18 months till age 9 years (Figure 2.3)	• Conduct HIV testing and counselling for all children of adults living with HIV as soon as possible after confirming the HIV positive status of the adult. Within health facilities, testing should be conducted at in-patient wards, nutrition clinics, and all high HIV burden settings.
Adolescents and young people (10 - 24 years) (Figure 2.3)	• Targeted HIV testing services should be offered to adolescents and young people who are screened and found eligible for HIV test. HIV prevention services should be offered to clients who test negative while those who test positive should be linked to HIV care. • Adolescents aged above 10 years, should be tested with the written consent of a parent or guardian, and are also required to give assent. • Adolescents who are emancipated minors irrespective of age, can give their own consent. • All adolescents should be counselled on the potential benefits and risks of disclosure of their HIV status and empowered and supported to determine if, when, how and to whom to disclose. • For sexually active adolescents, HIV testing and counselling should be offered to their partners and children where appropriate. • All uncircumcised adolescent males who test HIV negative should be counselled about the prevention benefits of VMMC and linked to VMMC services if they agree

Table 2.1 Cont.

Pregnant and breastfeeding women	• During the first ANC visit, HIV testing of pregnant women should be done using a dual test for HIV and syphilis, unless the woman is known to be living with HIV. • Women who test negative for both HIV and Syphilis should be offered a repeat HIV-Syphilis dual test in the third trimester. • Prevention services should be offered to all pregnant and breastfeeding women who test HIV negative. They should be screened for eligibility and willingness for PrEP. • At labor and delivery, HIV testing should be done for all women with unknown HIV status and those who previously tested negative (even if tested negative in the third trimester). • All breastfeeding mothers (unless known HIV positive) should be counselled and tested at the 6-week infant immunization visit. The HIV test (if negative) should be repeated every 6 months until complete cessation of breastfeeding. • For mothers considered to be at high risk of HIV infection, retesting postnatally should be done every 3 months; these include mothers categorized as key population; in a HIV discordant relationship, or having ongoing sexual or injecting behavior that places her at risk, including new or multiple sexual partners. • Mothers should be counselled on the schedule for repeat HIV testing in pregnancy and postnatal as part of routine ANC and postnatal education. • All pregnant and breastfeeding women who are not tested, opt-out or decline HIV testing during the first contact should be offered HIV counselling and testing in subsequent visits with appropriate referral and linkage for prevention, care, and support services. • All HIV positive pregnant and breastfeeding women enrolled into care should receive counselling and support (assisted disclosure), case management and follow-up. It should also include linkage to general care for ANC, delivery and post-natal care • All spouses/partners as well as children of pregnant and breastfeeding women testing HIV positive should be offered HIV testing and counselling.
Sexual partners & children of index clients (HIV positive person who is newly diagnosed or already in HIV care)	• All PLHIV enrolled into HIV care should receive disclosure counselling and be supported to disclose their HIV status (assisted disclosure) • HIV testing and counselling (facility-based or community-based) should be encouraged for all partners including sexual partners, needle sharing partners, and children of index clients, with appropriate linkage to treatment and prevention services.

Table 2.1 Cont.

Key and vulnerable populations	• Conduct HIV testing and counselling for all clients from key and vulnerable populations presenting to the health facility irrespective of the reason for their visit, or through targeted outreach and testing at key and vulnerable population service delivery points (e.g., drop-in centers). • Key populations that test negative should be retested quarterly. • Link all who test HIV positive to treatment and prevention services. • Prevention services should be recommended, including consistent and correct use of condoms and use of sterile needles and syringes. They should be screened for eligibility and willingness for PrEP. • All uncircumcised males who test HIV negative should be counselled on the prevention benefits of VMMC and linked to VMMC services if they consent
Targeted HIV testing and counselling of adults	• All adults eligible for testing should be offered HTS and encouraged to know their HIV status and the status of their partners. • For those that test negative, re-testing is recommended if there is a new risk exposure. • HIV positive adults should be counseled for immediate ART initiation. • Link all adults identified as HIV positive to treatment and prevention services. • Clients who are not eligible for testing should receive HIV prevention messages and be offered services, as appropriate. • All males who test HIV negative should be counselled on the prevention benefits of VMMC and linked to VMMC services if they consent

2.3 Package of HIV Testing Services

An HIV testing and counselling session consists of:

- A pre-test session
- HIV testing
- Assessment for other health-related conditions or needs (while HIV tests are running)
- A post-test session (including index testing)
- Referral and linkage to other appropriate health services (as part of the post-test session)

The HIV testing service package is summarized in Table 2.2.

Table 2.2: Summary of HIV Testing Services Package

Pre- Test Counselling Pre-test counselling may be provided to an individual or a couple presenting for HTS. Group information can also be offered during pre-test. The objectives of the pre-test counselling session are to: – Provide information on the benefits of knowing one's HIV status, including outcomes for people on ART and undetectable = Untransmittable (U=U). – Provide an explanation for the HIV testing process including time the session will take, confidentiality, and interpretation of test results – Obtain informed consent for HIV testing. – Explore the client's risk of HIV infection. – Discuss the importance of disclosure to partners and other family members. – Explain the benefits of couple testing and partner services/index testing. Provide information on available post-test services, including referrals for prevention or HIV care services
Perform test. The goal of HIV testing is to: • Provide accurate HIV diagnosis as per the nationally approved testing algorithm • Provide same day HIV test results During the 15 minutes as you wait for the test results: – Discuss Combination Prevention e.g., PrEP, PEP, Risk Reduction, STI treatment, condom information and demonstration, VMMC, Elimination of Mother to Child Transmission of HIV (eMTCT) – Screen, provide information and referrals for; Intimate Partner Violence (IPV), STI and cancer screening, Tuberculosis (TB), Family planning/contraceptive needs, etc. – Establishing number of sexual contacts and biological children for the purpose of index testing. – Document in the HTS, Lab, referral and linkage register (MOH 362). *Discuss further on index testing and HIVST as you perform the second and the third test, as per the national algorithm, for the clients who test positive with the screening test*
Post-test counselling – Check if the client is ready for results and help them to interpret. – Check what the client understands by the results. – Allow the client to share his/her initial reactions and verbalize their initial feelings. – Explore and acknowledge client's immediate feelings and concerns. Offer necessary support

Table 2.2 Cont.

NEGATIVE RESULT	POSITIVE RESULT
– Explain test results. – Review implications of being HIV negative. – Support clients to develop a risk reduction plan (see HTS operational manual) – Provide information on methods to prevent HIV acquisition. – Provide male and/or female condoms, lubricant, and guidance on their use. – Emphasize on importance of knowing the status of sexual partners and information about the availability of partner and couples testing services. – Referral and linkage to relevant HIV prevention services Explain the need for repeat testing for people who test negative but report risky behavior within the prior 4 weeks (i.e., unprotected sex with a partner of unknown status or Known HIV positive status); if they test HIV negative again after 4 weeks and are at ongoing risk of HIV acquisition, they should be advised to return for testing every 3 months	– Review implications of being HIV positive. – Help the index client to cope with emotions arising from the diagnosis. – Discuss immediate concerns and help for the client to decide who in his or her social network may be available to provide immediate support. – Discuss positive living. – Provide clear information on ART and its benefits for maintaining health and reducing the risk of HIV transmission, as well as where and how to access ART – Refer clients who turn HIV positive to CCC for linkage to treatment. – Revisit index testing and HIVST to determine partner notification plan/approach (refer to HTS operational manual and APNS operational Manual). – Discussion of the risks and benefits of disclosure to partners; couples counselling should be offered to support mutual disclosure. Encourage and offer HIV testing for sexual partners, injecting partners, biological children, and other family members, which can be done through couples testing, family testing and/or assisted partner notification service.
Assessment of other health related conditions Assess risk for sexually transmitted infections (STIs) and opportunistic infections that would also require management	
Referral and linkage to care Obtain accurate locator information from the index client (physical location, phone number) Physically escort the client for re-testing and linkage to ART Document the outcomes of partner follow up(s)	
Post-Test Counseling in the Era of Test-and-Treat Post-test counselling should, at a minimum, include three key messages that being the ART treatment preparation process for all PLHIV: – Treatment (called antiretroviral therapy or ART) is available and is recommended for everyone with HIV. – Starting treatment as soon as possible (preferably within two weeks from testing positive for HIV) reduces the chance of your illness getting worse or of passing HIV to others. If you take your ART properly and do not miss pills you can expect to live a long and productive life	

2.4 Age-Specific HIV Testing Algorithms

2.4.1 Early Infant Diagnosis

2.4.1.1 Confirmation of HIV infection in HIV Exposed Infants and Children < 18 Months Old

HIV exposure of an infant or child can occur in utero, at labour and delivery and through breast milk. Confirmation of HIV infection should immediately follow.

All HIV exposed infants (HEI) should be tested with DNA PCR within 6 weeks of age or first contact thereafter; if negative then another DNA PCR at 6 months, and if negative then repeat DNA PCR at 12 months.

If the HEI develops symptoms suggestive of HIV as per WHO staging criteria, an additional DNA PCR test should be conducted immediately.

An antibody test should be performed for all HEI at 18 months of age and every 6 months thereafter during breastfeeding, and at 6 weeks after complete cessation of breastfeeding (Figure 2.1).

HIV Testing Services and Linkage to Treatment and Prevention

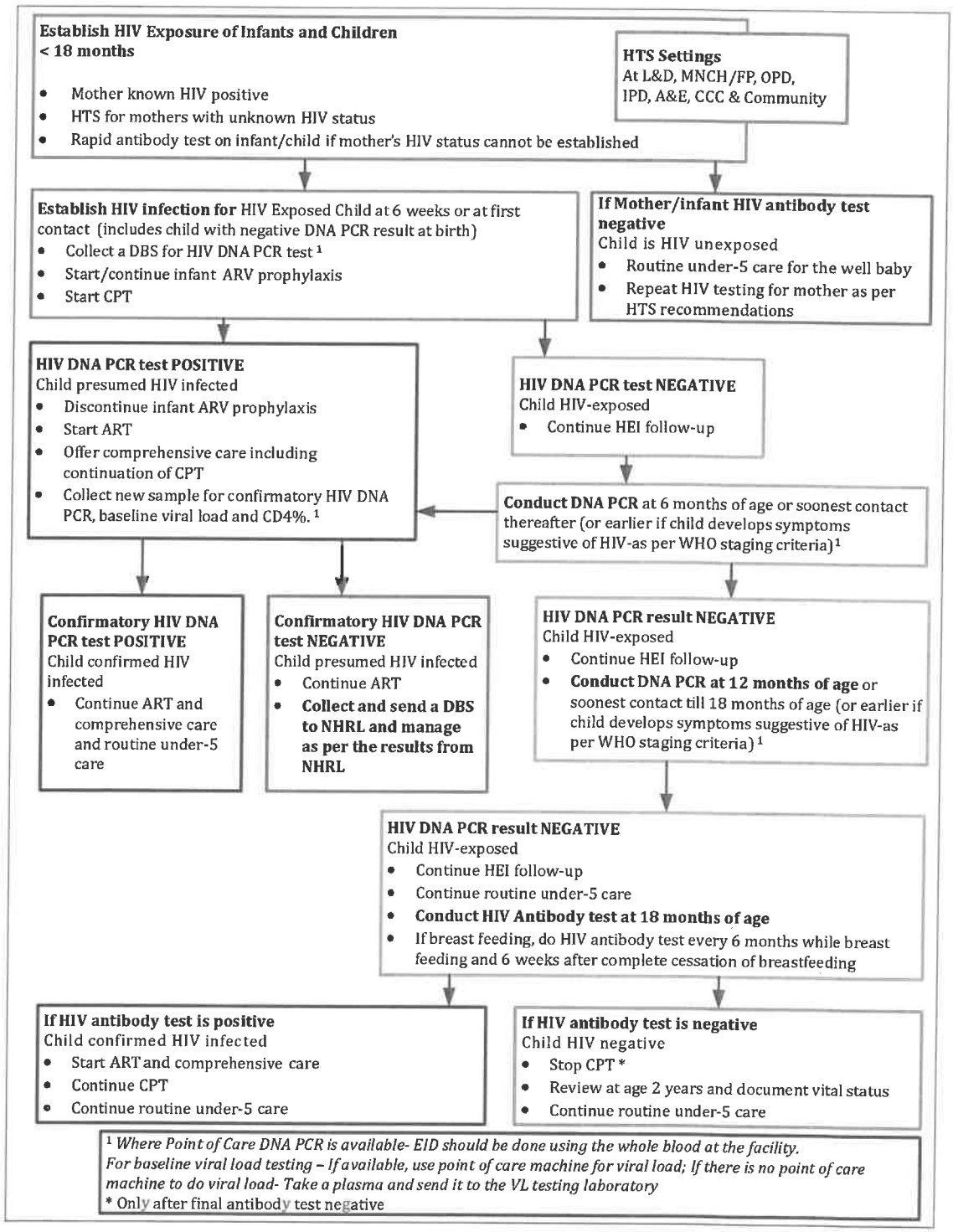


Figure 2.1 Algorithm for Early Infant Diagnosis in Infants and Children < 18 months of age

Presumptive Diagnosis of Severe HIV Disease in Children under 18 Months

Occasionally, children less than 18 months of age present to hospital with severe illness; and a rapid HIV antibody test confirms HIV exposure. Lack of immediate availability of HIV DNA PCR results for confirmation of HIV could result in undue delay in starting life-saving ART. In such children, a presumptive diagnosis of HIV infection can be made using the criteria in Table 2.3. ART can be initiated while awaiting HIV DNA PCR results to confirm HIV infection.

Table 2.3: Presumptive Diagnosis of HIV in children <18 months while awaiting DNA PCR Results

HIV antibody test positive AND symptomatic with;

2 or more of the following:

- Oral candidiasis/thrush
- Severe pneumonia
- Severe sepsis

OR any of the of following:

- Any WHO Clinical Stage 4 condition
- Recent maternal death (if likely to have been HIV-related) or advanced HIV disease in mother
- Child's CD4% < 25%

2.4.1.2 Birth Testing

Birth testing is defined as HIV testing (with DNA PCR) at birth or around birth for infants born to HIV-positive mothers. Birth testing has the potential to improve survival for infants who are infected during pregnancy, around labour and delivery by identifying them early for rapid ART initiation. Do not use cord blood for birth testing as this could result in false positive results.

A DNA PCR test can be offered at birth or around birth where feasible.

ALL children initially tested at birth should be retested at 6 weeks of age and the EID algorithm followed (Figure 2.2.)

Considerations for providing birth testing:

Birth testing may be prioritized for newborns who are at high risk of HIV acquisition including those born to:

- Mothers who seroconvert during pregnancy.
- Mothers who have unsuppressed or unknown viral loads during delivery.
- Mothers who received a HIV positive diagnosis for the first time at or after 28 weeks gestation or during labour and delivery
- Mother on ART for less than 12 weeks prior to delivery

Birth testing should be offered where this is feasible:

- DNA PCR results can be returned the same day e.g., where on site point of care is available.
- ART regimens recommended for neonates as per national guidelines are available and can be initiated immediately.
- Follow-up of the newborn is done to ensure no lost to follow-up.

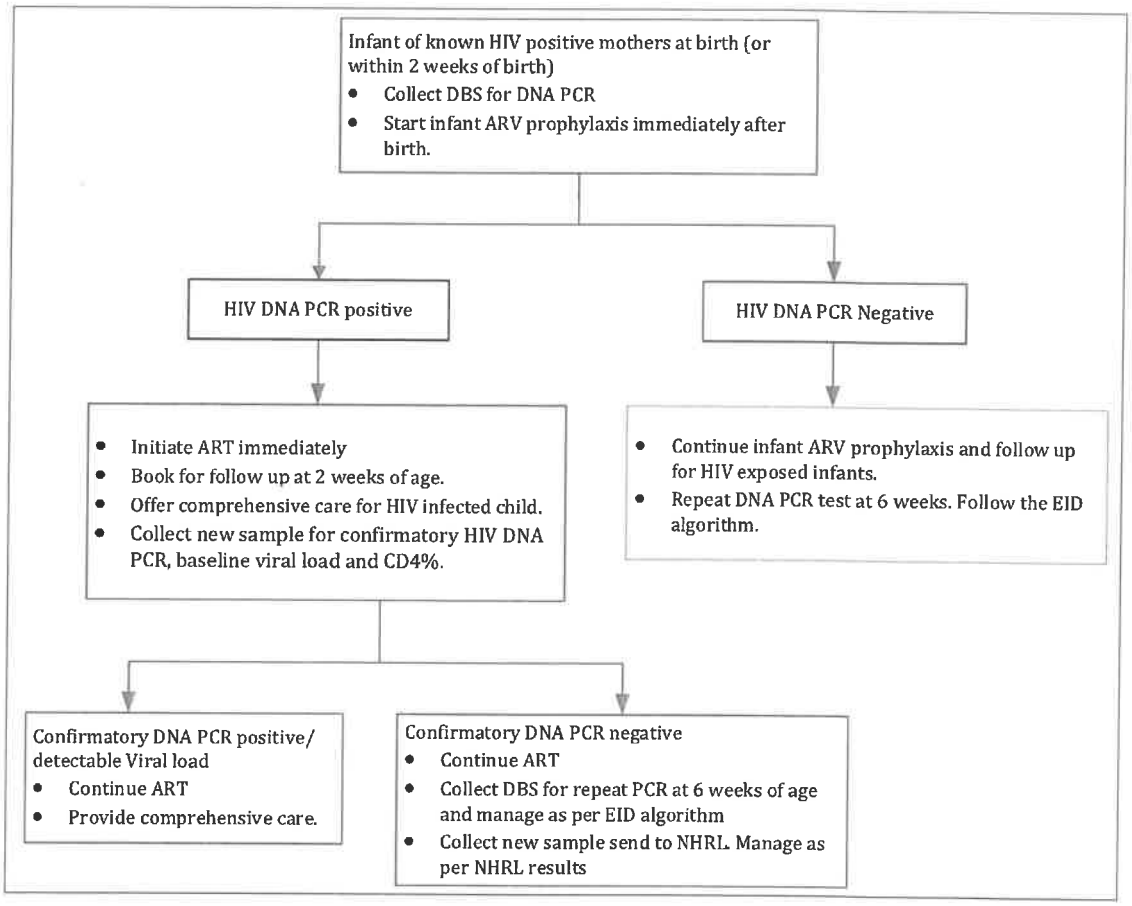


Figure 2.2: Birth Testing Algorithm

2.4.1.3 Use of Point of Care testing for Children

Point-of-care testing occurs at the health facility where care is being provided, with results being returned to the patient or caregiver on the same day as sample collection. Point of care DNA PCR testing for early infant diagnosis of HIV can reduce the turnaround time for testing and return of results and allow immediate initiation of ART among infants. Point of care DNA PCR testing can be used to diagnose HIV infection as well as to confirm positive results.

2.4.2 Diagnosis of HIV Infection in the Older Child (≥ 18 months), Adolescents and Adults

- Serial testing, using approved rapid HIV antibody testing kits, is used to diagnose HIV infection in children older than 18 months, adolescents, and adults, and (refer to Figure 2.3)
- An HIV-positive diagnosis will be made **using three consecutive reactive assays**. This three-test strategy as well as retesting aims to ensure that at least a 99% Positive Predictive Value (PPV) is maintained, and false positive misdiagnosis is avoided.
- Offer adequate information to all clients and obtain consent prior to the HIV test (verbal consent is adequate but should be documented by the health care worker in client records). For children below the age of 14 year who are not emancipated minors, a written consent from the guardian is recommended.
- Individuals 15 years and older and emancipated minors can provide self-consent.
- Clients who test positive should be linked to care and treatment. Counselling support, index and family testing should be offered to these clients.
- Clients who test negative should be counselled on HIV risk reduction behaviors and linked to combination HIV prevention services (such as VMMC, RH/FP, condoms, PrEP, etc.) depending on individual risk profile. Table 2.5 provides recommendations for re-testing those who test HIV negative.

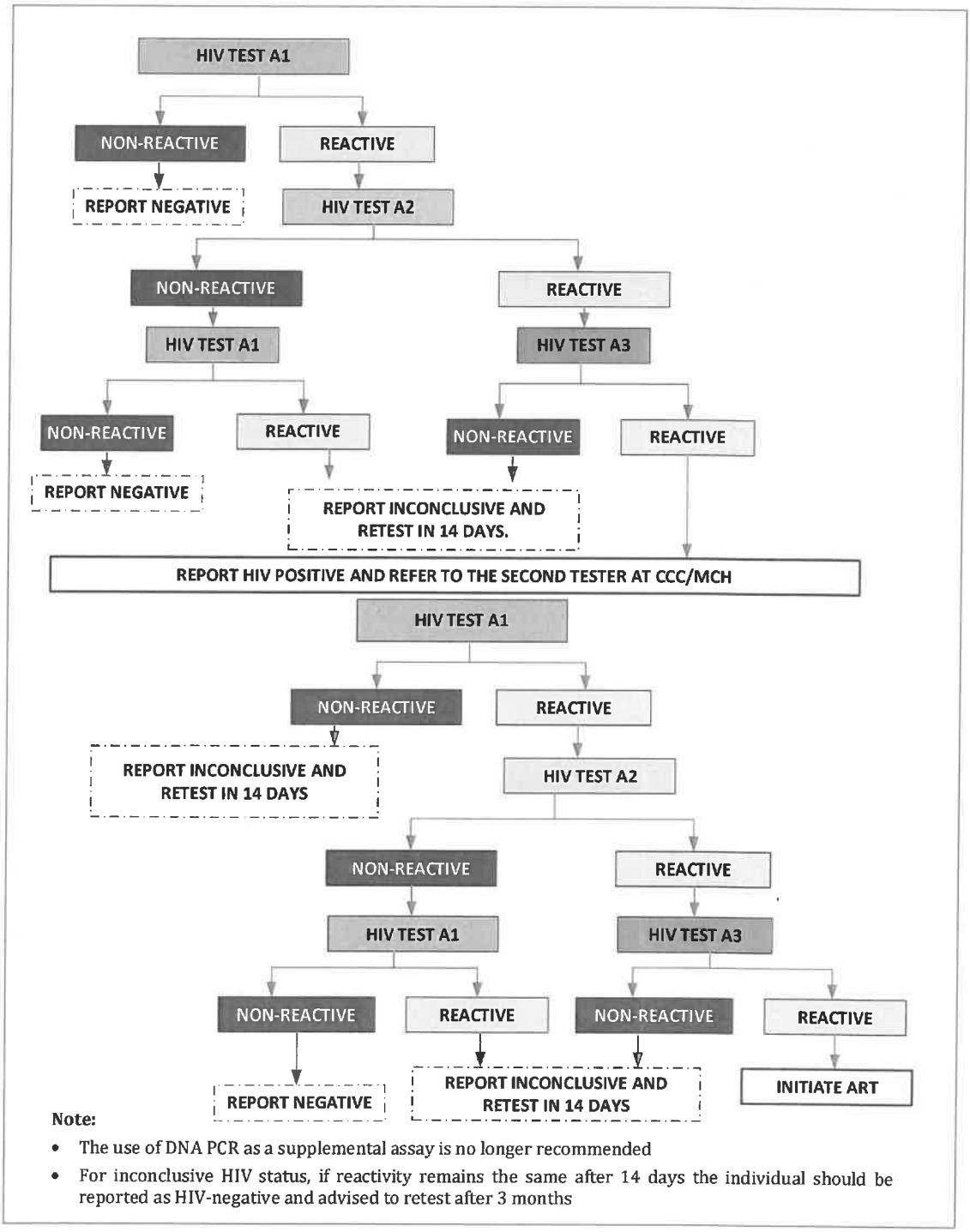
HIV testing algorithm for children >18months, adolescents and adults.

Figure 2.3 illustrates the serial testing algorithm. An HIV-positive diagnosis will be made using three consecutive reactive assays (Figure 2.3). All individuals are first tested on Assay 1 (A1). Anyone with a non-reactive test result (A1−) is reported HIV-negative. Individuals who are reactive on Assay 1 (A1+) will then be tested on a separate and distinct Assay 2 (A2). Individuals who are reactive on both Assay 1 and Assay 2 (A1+; A2+) will then be tested on a separate and distinct Assay 3 (A3). A positive HIV diagnosis is given when Assay 3 is reactive (A1+; A2+; A3+).

If Assay 3 is nonreactive (A1+; A2+; A3−), the status should be reported as HIV-inconclusive, and the individual should be asked to return in 14 days for retesting.

Individuals who are reactive on Assay 1 but non-reactive on Assay 2 (A1+; A2−) should be repeated on Assay 1. If repeat Assay 1 is non-reactive (A1+; A2−; repeat A1−), the status should be reported as HIV-negative. If repeat Assay 1 is reactive (A1+; A2−; repeat A1+), the status should be reported as HIV-inconclusive, and the individual asked to return in 14 days for retesting. **All clients with HIV positive results will be referred to a Comprehensive Care Clinic for retesting prior to initiation of ART**

NOTE: The three-test algorithm will be implemented after identification of the specific assay. Meanwhile, the current algorithm continues being in use (Annex 7). Guidance will be issued before implementation.



Note:

- The use of DNA PCR as a supplemental assay is no longer recommended
- For inconclusive HIV status, if reactivity remains the same after 14 days the individual should be reported as HIV-negative and advised to retest after 3 months

Figure 2.3: HIV Testing Services Algorithm

Results interpretation

RESULTS	INTERPRETATION
A1-	HIV-NEGATIVE
A1+; A2+; A3+	HIV-POSITIVE
A1+; A2-; Repeat A1+	HIV-INCONCLUSIVE (retest after 14 days). If reactivity remains the same after 14 days, the individual should be reported as HIV-negative
A1+; A2-; Repeat A1-	HIV-NEGATIVE
A1+; A2+; A3-	HIV- INCONCLUSIVE (Retest after 14 days). If reactivity remains the same after 14 days, the individual should be reported as HIV-negative

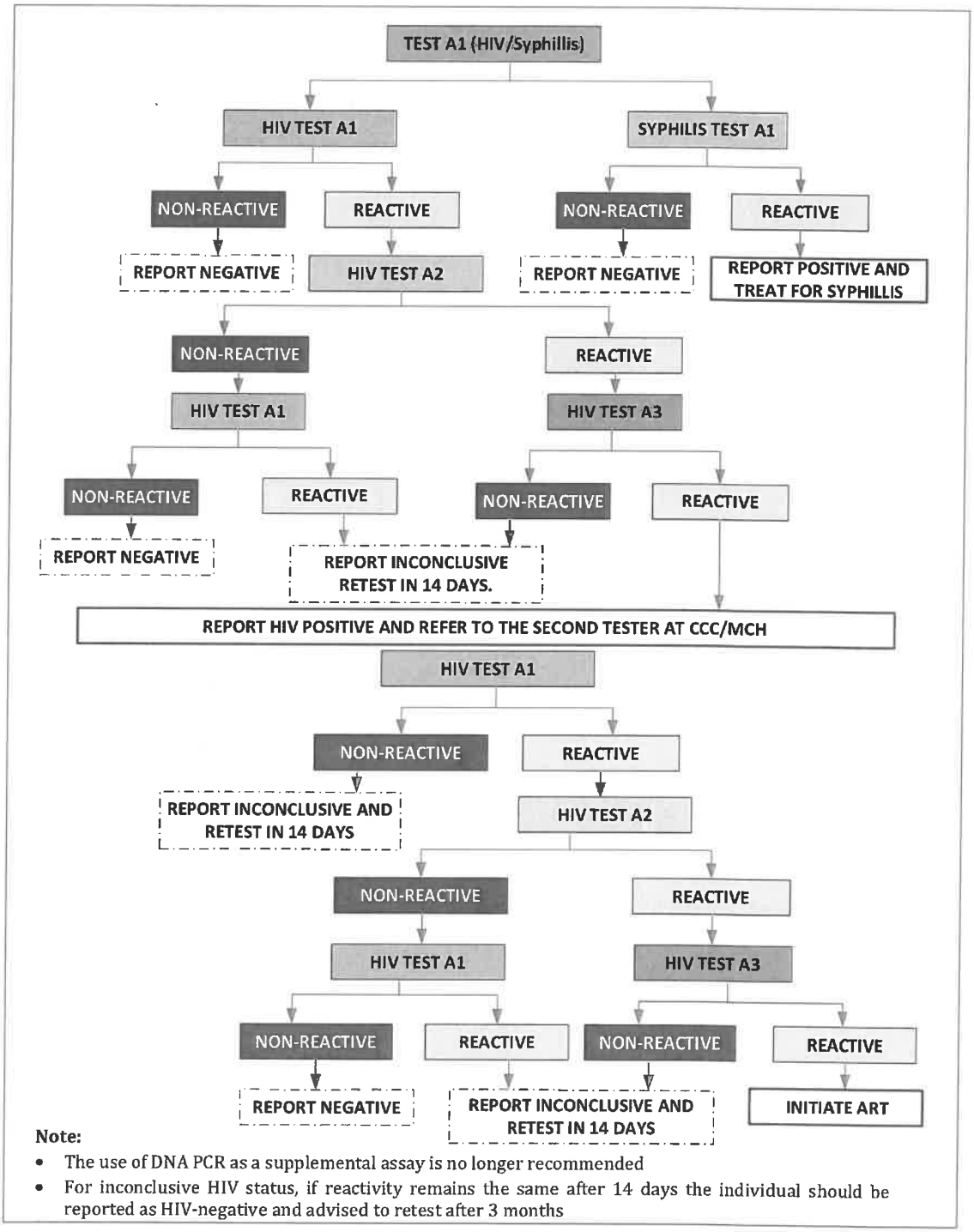
2.4.3 HIV testing for Pregnant Women

For pregnant women, the HIV/syphilis dual test should be used as the A1 test (Figure 2.4). The dual test kit is recommended for:

- Pregnant women during their first ANC, unless the woman is known to be living with HIV.
- For those who test negative for both HIV and Syphilis repeat testing should be conducted in the third trimester using the HIV and syphilis dual test.
- Partners accompanying pregnant women for the first-time during ANC

HIV/Syphilis dual test should not be used for retesting women on ART or with known positive HIV status, or women diagnosed with syphilis during pregnancy.

See Figure 2.4 for the full algorithm when considering HIV and syphilis (TP) results concurrently.



Note:

- The use of DNA PCR as a supplemental assay is no longer recommended
- For inconclusive HIV status, if reactivity remains the same after 14 days the individual should be reported as HIV-negative and advised to retest after 3 months

Figure 2.4 Dual HIV/syphilis Testing Algorithm

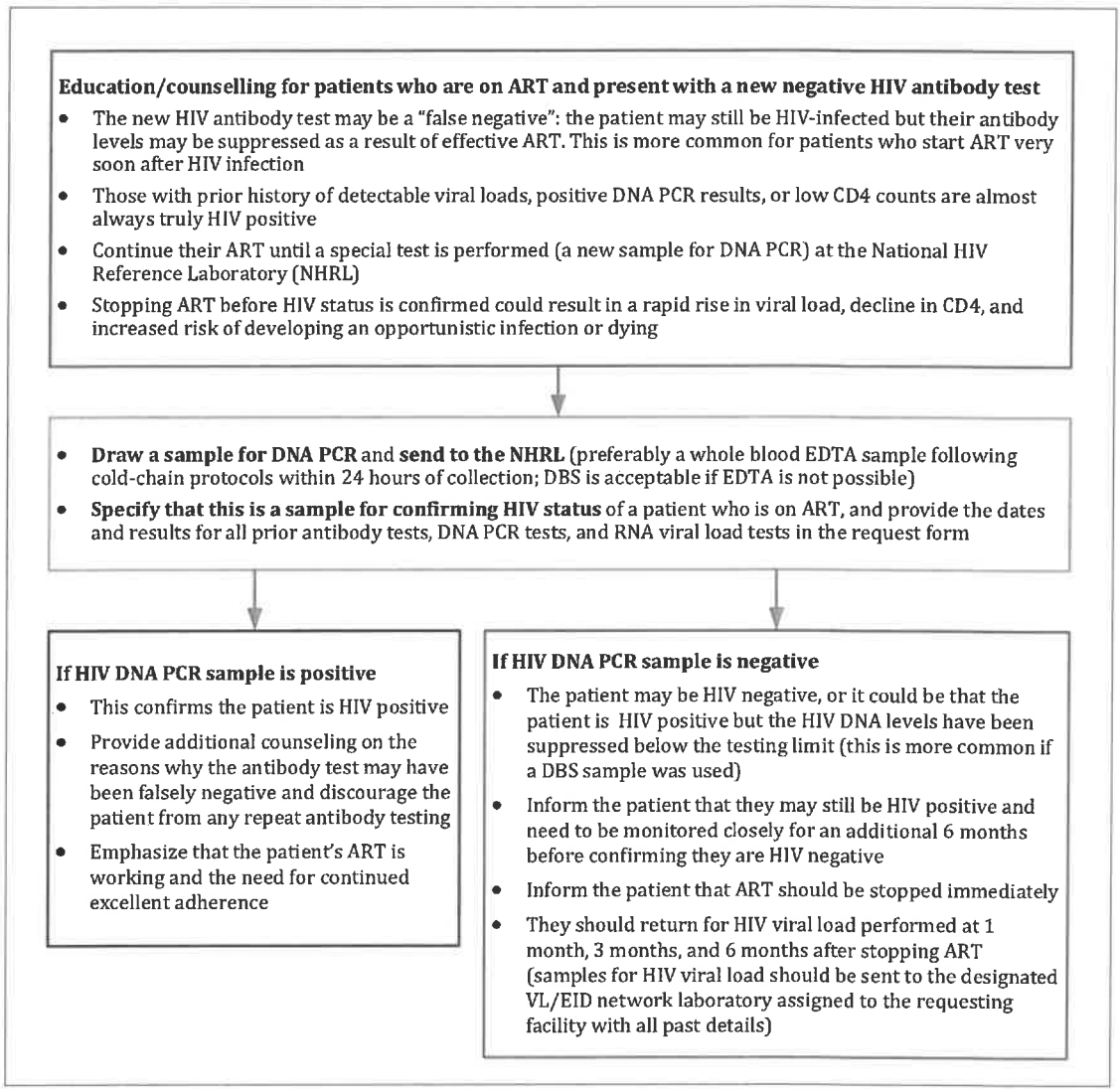


Figure 2.5: Managing Patients on ART Who Present with a New Negative HIV Antibody Test

Table 3.1 Cont.

Summary	List differential diagnosis and management plan for each problem (including investigations, treatment, referrals, and follow-up) • Assign and document the WHO Clinical Stage and manage presenting illnesses • Growth and developmental milestone must be assessed and used for WHO staging in children *Differentiate between patients with advanced disease versus those who are clinically well, to guide acuity of follow-up*

3.3 Initial Laboratory Evaluation of PLHIV

The comprehensiveness of laboratory tests will depend on presence and/or type of suspected concurrent illness. Table 3.2 summarizes the recommended baseline laboratory investigations for all PLHIV. Additional investigations should be based on clinical indication. ART should not be delayed if a laboratory test is not available.

Table 3.2: Baseline Laboratory Investigations for PLHIV

	Test	Comments
HIV Specific	• Confirm and document positive HIV test result	• Positive status should be reconfirmed prior to ART initiation for all patients • Refer to current HIV testing algorithm
	CD4 cell count	• For all patients (CD4% for children ≤ 5 years old) • If CD4 ≤ 200 cells/mm3 in PLHIV >5 years, then laboratories should automatically perform a serum cryptococcal antigen (sCrAg) on the same sample to screen for cryptococcal infection • TB-LAM should also be conducted
	Viral load (HIV-1 RNA)	• Baseline viral load (VL) is recommended for infants after 1st PCR test is positive. Specimen for baseline VL can be drawn at the time of initiating ART; obtaining a VL should not delay ART initiation
	Serum Cryptococcal Antigen (sCrAg)	• Obtain serum CrAg If CD4 ≤ 200 cells/mm3 in patients >5 years as reflex testing by the laboratory • If positive, manage as per the cryptococcal meningitis screening algorithm (Figure 4.1)

Table 3.2 Cont.

Others	Hb (preferably full blood count if available)	• All patients especially if on AZT •
	Pregnancy Test	• Pregnancy status should be determined for all women of reproductive age (based on history of last menstrual period, and if uncertain, irregular, or delayed then a urine pregnancy test should be performed)
	TB- LAM	• Conduct TB-LAM on a urine sample if CD4 ≤ 200 cells/mm3 in PLHIV >5 years, and if CD4% ≤ 25% in children < 5 years • Seriously ill patients
	Urinalysis (for protein & glucose)	• All patients
	Creatinine	○ All patients, especially those starting TDF. Calculate Creatinine Clearance (CrCl), (Annex 15)
	Syphilis serology (VDRL, TPHA, or RPR)	• All patients with a history of being sexually active
	Glucose	• All patients
	Plasma lipid profile	• All patients
	HBsAg	• All adolescent and adult patients (plus children who did not complete routine childhood immunizations)
	HCV antibody	• PWID or for patients with history of injection drug use
	ALT	• Not recommended as baseline investigation unless there is a specific clinical reason (e.g., patient with history of hepatitis, signs or symptoms of liver disease, or risk of liver disease - alcoholics, HBV or HCV infection, hepatotoxic drugs such as fluconazole, etc.)
	HPV testing	• For women of reproductive age between 25-49 years conducted at baseline and every two years (refer to cancer screening guidelines)

It is not possible for ALL facilities providing ART to offer all the laboratory tests recommended for HIV treatment. If a facility does not have on-site capacity to carry out any test, arrangements should be made to transport specimens to a local or regional reference laboratory.

3.4 Management of Patients Who Present with Advanced HIV Disease

The World health organization (WHO) defines AHD for adults, adolescents, and children five years and older as having a CD4 cell count of less than 200 cells/mm3 or WHO clinical stage III or IV disease. All children younger than five years living with HIV who are not already receiving ART and not clinically stable are considered to have AHD.

Advanced HIV Disease can occur in various settings including PLHIV newly presenting to care, those returning to care after treatment interruption and those on ART who have experienced treatment failure.

PLHIV with AHD have immune suppression with reduced ability to fight opportunistic infections (OI), other infectious and non-infectious diseases, and are therefore at increased risk of morbidity and mortality. AHD is also associated with increased health-care costs, use of more health-care services and more frequent monitoring needs. Leading causes of mortality among adults with AHD include immune reconstitution inflammatory syndrome, tuberculosis (TB), severe bacterial infections, cryptococcal disease, histoplasmosis, toxoplasmosis, and Pneumocystis Jirovecii pneumonia amongst others.

CD4 testing criteria to diagnose AHD and determine eligibility for package for care:

- New clients initiating ART:
  - CD4 testing should be conducted as a baseline test for ALL PLHIV

- Patients who are treatment experienced:
  - PLHIV ≥5 years of age and who had previously initiated ART and are reinitiating after >3 months).
  - Individuals who have documented persistent unsuppressed viral load (two viral load VL >1,000 within 3-6 months).

Package of Care for AHD

All PLHIV presenting with Advanced HIV Disease (AHD) should be offered a package of care that includes timely initiation of ART, screening, diagnosis, prophylaxis, and management of opportunistic infections.

Table 3.3 provides a summary of definitions of well versus advanced disease and package of care for each at enrolment.

Initial Evaluation and Follow up

Table 3.3: Differentiated Care Based on Initial Patient Presentation

Adults, adolescents, and children ≥ 5 years who Present with Advanced HIV Disease: WHO Stage 3 or 4, or CD4 count ≤ 200 cell/mm³ All children younger than five years at enrollment into care	
Package of Care	• Standard Package of Care (Chapter 4) • Intensive management of presenting illnesses and malnutrition • Priority for identification, management, and prevention of OIs, including. o GeneXpert ultra for TB diagnosis for all PLHIV with presumptive TB (Figure 8.1) o TB-LAM (Figure 8.2), in addition to GeneXpert ultra, for PLHIV with presumptive TB who ▪ Have CD4 ≤ 200 cells/mm³ and if CD4% ≤ 25% in children < 5 years ▪ Have signs of severe illness, or ▪ Are currently admitted to hospital o Cryptococcal antigen screening for adolescents and adults with CD4 ≤ 200 cells/mm³ or clinical suspicion of meningitis (any age) (Figure 4.1) o Cotrimoxazole Preventive Therapy (CPT) o TB Preventive Therapy (TPT) • Immediate ART initiation unless they are suspected to have TB, TB meningitis, or cryptococcal meningitis;(Table 6.1) • Close monitoring for development of immune reconstitution inflammatory syndrome (Annex 16)
Focus of ART Preparation Counselling	• Immediate ART start is required to prevent further damage to the immune system. • Starting ART soon will decrease risk of disease progression, including wasting and other infections
Frequency of Follow-up	• Weekly follow-up until ART initiation, and then at week 2 and 4 after ART initiation, and then monthly until confirmed viral suppression. • More frequent visits or hospitalization may be required to stabilize acute medical conditions and address psychosocial and other concerns • Referral for management of co-morbidities or concurrent infections may also be needed

Management of Opportunistic Infections in Patients with AHD

Cryptococcal Disease (CM)

Cryptococcal disease is one of the most important opportunistic infections among people living with AHD and is a major contributor to mortality.

Early diagnosis and treatment of cryptococcal meningitis is key to reducing mortality from cryptococcal disease. Health-care professionals should have a low threshold for suspecting cryptococcal meningitis among people with advanced HIV disease.

Screening, prevention and treatment of cryptococcal meningitis is described in **Section 4.33.**

Tuberculosis (TB)

TB is the most frequent life-threatening OI and a leading cause of death among PLHIV. TB remains the leading cause of mortality among PLHIV, despite substantial scale-up of ART, accounting for 30% of the AIDS-related deaths reported.

Screening, prevention and treatment of TB is described in **Chapter 8.**

Table 3.4: Management of patients who are presenting well: WHO Stage 1 or 2, and CD4 count > 200 cell/mm3

Adults, adolescents, and children ≥ 5 years who Present Well: WHO Stage 1 or 2, and CD4 count > 200 cell/mm³	
Focus of ART Preparation Counselling	• ART is the most important treatment to maintain good health and an active life • Starting ART soon will decrease risk of developing wasting and other infections • ART will reduce the risk of transmitting HIV to others
Frequency of Follow-up	• Weekly follow-up until ART initiation, and then at week 2 and 4 after ART initiation, and then monthly until confirmed viral suppression • Additional visits as required to address any medical or psychosocial concerns
Adults, adolescents, and children ≥ 5 years who Present Well: WHO Stage 1 or 2, and CD4 count > 200 cell/mm³	
Location of Services	• Management at any ART service delivery point; all facility levels • Initial management and ART initiation by trained and experienced HCW
Focus of Treatment Preparation Counselling	• ART is the most important treatment to maintain good health and an active life • Starting ART soon will decrease risk of developing wasting and other infections • ART will reduce the risk of transmitting HIV to others

3.5 Follow-up of PLHIV after ART initiation

Follow-up of patients on ART is determined by the duration the patient has been on treatment, how well they understand the treatment and their response to ART. Follow-up includes scheduled clinical appointments, unscheduled clinical assessments for patients with concerns/complaints, routine and as-needed laboratory monitoring.

3.5.1 First 6 months after ART initiation

After ART initiation, patients need to be monitored closely for development of adverse drug events, identify and address barriers to adherence, and development of IRIS. A reasonable follow-up schedule for most patients is 2 weeks and 4 weeks after ART initiation (Table 3.5 and 3.6).

When possible, follow-up for a particular patient should be provided by the same care provider or team of care providers (e.g., same clinician and same counsellor) at every visit. This is particularly important during the first 6 months in care.

3.5.2 Differentiated Service Delivery for Patients beyond the 1st 6 months of ART

Follow up of patients beyond 6 months of ART is described in table 3.5. It also provides the criteria for determining if a patient is established on ART.

In summary:

- Patients who are not established on ART require closer follow-up.
- Patients who are established on ART require less frequent facility follow-up, with up to six months between clinical appointments

Table 3.5: Differentiated Follow-up of Patients Beyond the First 6 Months of ART

Patients NOT established on ART	
Patients with any of the following: • On treatment for < 6 months • Any active OIs (including TB) in the previous 6 months • Poor or questionable adherence to scheduled clinic visits in the previous 6 months. • Most recent VL ≥ 200 copies/ml • Children < 2 years	
Package of Care	• Standard Package of Care • Case management to address reason/s for not being established on ART
Focus of Counselling	• ART is the most important treatment to maintain good health and an active life • ART will reduce the risk of transmitting HIV to others
Frequency of Follow-up	• Every 1-3 months, based on clinical judgment • Additional visits as required to address any medical or psychosocial concerns • If VL is detectable at 3 months they will need additional assessments for and management of the reason/s for detectable viral load, with close follow-up until viral suppression is achieved (Chapter 5). • Patients with confirmed viral suppression can be followed up every 3-6 months based on patient preference and clinician judgment, with additional unscheduled visits any time the patient has a concern.

Table 3.5 Cont.

Patients Established on ART	
Patients established on ART must have achieved ALL the following • On their current ART regimen for ≥ 6 months • Currently no active Illness or in the previous 6 months (patients with well controlled chronic conditions should not be excluded) • Adherent to scheduled clinic visits for the previous 6 months • VL ≤200 copies/ml (LDL) within the last 6 months **Note:** • **This definition should be applied to all populations, including those receiving second- and third-line regimens, those with controlled comorbidities, children above 2 years*, adolescents, pregnant and breastfeeding women, and key populations.** • **The client's category can change at any time so there is a need for a reassessment at each visit. Clients should be categorized at every visit and managed based on their status.**	
Package of Care	• Standard Package of Care • Re-assessment of criteria at every clinical visit
Location of Services	• Clinical review and ART prescription from any ART service delivery point; all facility levels • Distribution of ART between clinical appointments, which can be facility-based or community-based
Focus of Counselling	• Encourage patient to continue with what is working • Reminders that any significant life event or change in daily routine could interfere with adherence
Frequency of Follow-up	• Clinic appointments to be made at 6 months intervals • ART should be offered as refills lasting 3 months, (through fast-track pick-up at facility or through community-based distribution). Patients on injectable contraception should be provided FP through a fast-tracked process between clinic follow-up visits; oral contraceptives and condoms should be distributed with ART • Additional visits as required to address any medical or psychosocial concerns • Closer follow-up may be arranged based on patient preference
* Children below 2 years are excluded as they require frequent dose adjustment	

3.6 Summary of clinical and laboratory monitoring of PLHIV on ART

Table 3.6 summarizes the recommended minimum routine follow-up schedule for PLHIV. Additional clinical and laboratory follow-up should be performed whenever clinically indicated

Table 3.6: Summary of Clinical and Laboratory Monitoring for PLHIV[1]

	Initial Visit	ART preparation	Week (After ART)		Months (after ART)					≥ 6 months
Appointment[2,3]		Every week[4]	2	4	2	3	4	5	6	Every 1-6 months depending on stability
History and physical exam[5]	✓	✓	✓	✓	✓	✓	✓	✓	✓	At each clinical visit
Adherence assessment and support[6]	✓	✓	✓	✓	✓	✓	✓	✓	✓	At each visit
TB Screening	✓	Every visit, using ICF screening tool								
CD4 count	✓	• Baseline, and then only if patient develops treatment failure (to assess for risk of OIs), or if defaults from care (off ART) for at least 6 months • For patients on prophylaxis using dapsone (documented CTX allergy), repeat CD4 every 6 months until CD4 >200 cells/mm^3 for two consecutive measures 6 months apart and VL undetectable, after which dapsone and CD4 monitoring can be discontinued								
HIV Viral Load		• For PCR positive HEIs: baseline at the time of ART initiation • Age 0-24 years: at month 3, then every 6 months • Age ≥ 25 years: at month 3, then month 12, then annually thereafter if suppressed • For all: before any drug substitution for patients on ART for at least 6 months with no valid VL, at month 3 after regimen modification, and then as per population group • Any patient with a detectable VL during routine monitoring, follow viral load monitoring algorithm (Figure 6.6)								
HIV Viral Load (pregnant/ breastfeeding)		• If on ART at time of confirming pregnancy: VL done at confirmation of pregnancy (regardless of when previously done), then every 6 months until complete cessation of breastfeeding • If starting ART during pregnancy or breastfeeding, VL at 3 months after initiation, and then every 6 months until complete cessation of breastfeeding								

Table 3.6 Cont.

CrAg	✓	Baseline for adults and adolescents with CD4 ≤ 200 cells/mm³ (as reflex testing by laboratory), then only if there is clinical suspicion of CM
Hb	✓	Baseline, then symptom directed; if on AZT, baseline then weeks 2, 4, and 12
Pregnancy Status	✓	At every visit for women of reproductive age (by history +/- urine pregnancy test)
Urinalysis (protein & glucose)	✓	Baseline, then annually if on TDF
Creatinine	✓	Baseline, then annually if on TDF
Glucose	✓	Baseline, then annually
Plasma lipid profile	✓	Baseline, then annually
HBsAg	✓	Baseline, followed by immunization for all patients who screen negative (after viral suppression is confirmed)
Syphilis serology (VDRL, TPHA, or RPR)	✓	Baseline, then annually in those at risk and as part of routine ANC profile
Drug Resistance Testing		DRT recommended once treatment failure confirmed on a DTG- or PI-based 1st line regimen, or confirmed treatment failure on 2nd line or subsequent regimens
ALT		Not recommended for routine baseline or follow-up unless specific clinical indication
Cervical Cancer	All women should be screened for cervical cancer following the national guidelines. Using HPV screening conducted every 2 years for HIV positive women in their reproductive age (or annually if using VIA-VILI)	
HCV	Baseline for PWIDs or with a history of injection drug use	

Adolescents: Adolescents require psychosocial support, ongoing adherence assessments and counselling which should be aligned with clinic visits, community follow-up as well as school calendar. Considerations should be factored in during the clinical encounters with more focus to those with adherence and viral suppression challenges. Adolescents and Youth Friendly services that incorporate life skills and extracurricular activities should be integrated where feasible.

Pregnant/breastfeeding women: Pregnant and breastfeeding women who have been established on ART should have their HIV clinic appointments synchronized with Antenatal Care visits and with follow-up of the HIV-exposed infant. Those initiated on ART during pregnancy may need close follow up to support them in adherence, retention and achieving viral suppression. Breast feeding women and their babies will have their clinical visit aligned with the immunization clinics schedule. Psychosocial support groups are encouraged for both pregnant and breastfeeding mothers including peer to peer support.

3.8 ART Prescription, Dispensing, and Distribution for clients established on ART

Patients who are established on ART should be offered ART refills of up to 3 months. The refill of other associated commodities such as cotrimoxazole, TPT and condoms should be aligned to the ART refill schedule. Clients established on ART should receive their ART, CPT, family planning, and any other chronic medicines through a distribution system that minimizes the burden on them (travel costs, waiting times, inconvenience) and burden on the health facility (personnel time, space constraints, etc.). This must be on a voluntary basis (i.e., the client can choose to remain in standard care if they prefer).

The health facility is responsible for ART prescription, dispensing, and distribution for all patients enrolled into care. ART distribution for patients established on ART can take place at the health facility or through a community distribution system, depending on patient preference and health facility systems and resources. **The point of ART dispensing should be based on client ability to access treatment with ease.** Models for ART refills include:

- Facility-based
    - Fast track facility-based refills
    - Facility-based ART distribution groups
- Community-based
    - Community-based ART distribution groups
    - Community ART distribution points
    - Community pharmacy distribution

Facility-based Fast Track System for ART Refills

The facility-based fast track system for ART refills is a simple model implemented at the health facility. The client is still required to come to the clinic every 3 months for ART refill, however the refill appointments require minimal or no waiting time at the clinic. Refer to DSD operational manual for detailed information on community models.

Facility-based ART Distribution Group

Facility-based ART Distribution Groups are a model for ART distribution, whereby a group of PLHIVs meet at a designated location within their health facility for drug refills and dispense drugs to their peers within the group while ensuring peer support and treatment literacy. ART refills are done through the group every 3 months and each client is required to attend their clinical review appointment every 6 months.
This model may provide clients with psychosocial support if they are not already part of a support group. This may also be more convenient for clients who are in urban settings and would not wish to be enrolled in a community-based group. Facility-based groups can be peer or HCW led.

Community-based ART Distribution Models

Clients may receive ART refills through community-based distribution. All clients may also benefit from home visits such as for adherence monitoring and support, on a case-by-case basis.
Clients can receive their ART refill through community-based models such as:

- Community-based ART distribution groups
- Community ART distribution points
- Community pharmacy distribution

Before implementing a community-based ART distribution program, a health facility should work with the CHMT to design a program that meets the criteria listed in Annex 14, and the plan approved by the County HIV Technical Working Group before implementation. Refer to DSD operational manual for detailed information on community models.

4. Standard Package of Care for PLHIV

All PLHIV should receive a package of services that are known to promote health, improve the quality of life, prevent further HIV transmission, and prevent HIV disease progression and mortality.

The standard package of care for PLHIV includes: antiretroviral therapy; Positive Health, Dignity and Prevention (PHDP) services; screening and providing support in cases of gender-based violence (GBV) or intimate-partner violence (IPV); HIV education/counselling; screening and prevention of specific opportunistic infections; reproductive health services; screening for and management of non-communicable diseases; mental health screening and management; nutritional services; and prevention of other infections (Table 4.1).

The standard package of care should always be applied using a patient- and family-centered approach in PLHIV management. Patient-centered care includes: considering the individual patient's health needs; eliciting and addressing the patient's concerns and expectations; involving the patient's (and their family and friends as appropriate) in decision-making, and; respecting the patient's values and preferences. Family-centered care identifies, engages and provides care to all HIV-positive family members, prevents new infections among family members at risk, and promotes family support and awareness.

Table 4.1: Components of the Standard Package of Care for PLHIV

Component of Standard Package of Care	Sub components
Antiretroviral therapy (ART)	• ART initiation • Adherence assessment, counselling and support • Monitoring (clinical and laboratory)
Positive health, dignity and prevention (PHDP); gender-based violence (GBV) and intimate-partner violence (IPV) screening; and HIV education/counselling	• Disclosure • Index testing • Condom use • Family planning • STI screening, prevention, and treatment • Adherence counselling and support • Pre-exposure prophylaxis for HIV-negative sexual partners • GBV/IPV screening and support • HIV education/counselling

Specific opportunistic infection screening and prevention	• Cotrimoxazole preventive therapy
	• Tuberculosis (TB)
	  ○ Intensified case finding
	  ○ TB preventive therapy
	  ○ ART for TB/HIV co-infected patients
	• Cryptococcal meningitis

Reproductive health services	• Sexually transmitted infections screening and management • Family planning and pre-conception services • Maternal healthcare • Cervical cancer screening
Non-communicable diseases (NCD) screening and management	• Hypertension • Diabetes mellitus • Dyslipidemia • Chronic kidney disease • Other NCDs
Mental health screening and management	• Depression • Anxiety • Stress • Trauma • Alcohol and drug use/addiction • Self-care and wellbeing
Nutritional services	• Assessment • Counselling and education • Management and support
Prevention of other infections	• Immunizations • Malaria • Safe water, sanitation and hygiene

Table 4.1 Cont.

Standard Package of Care for HIV-Exposed and HIV-Infected Infants
• Determine HIV status at first contact through HTS/EID and link to HIV care • Provide ARV prophylaxis for all HEIs and ART for all HIV-infected children (**confirming correct weight-based dosing of ARVs at every visit**); perform clinical and laboratory assessment • Provide nutritional assessment, counselling and support (NACS, Section 4.7) and monitor growth and development of the child (Annex 3) • Ensure that all immunizations are provided following the national schedule (Section 4.8.1) • Clinical assessment at every visit, treat infections early, identify, manage and report adverse drug reactions aggressively and refer appropriately where specialized care is required. • Screen for opportunistic infections and provide prophylaxis (cotrimoxazole, TB Preventive Therapy (TPT), deworm every 6 months (starting at 1 year of age) and provide supplemental Vitamin A every 6 months (starting at age 6 months) • Educate the caregiver on all aspects of care for the child including infant feeding, immunizations, personal hygiene, HIV education/counselling, adherence, availability of support for child disclosure, and follow-up requirements • Adherence assessment, counselling and support • Provide age-appropriate psychosocial support for the family and child and refer to community-based support programs as appropriate • Ensure that the caregiver and family members are receiving appropriate care, support and treatment • Provide intensive case management for mother/infant pair until 2 years postpartum; identify defaulters and prioritize this population for tracking • Enroll in Orphans and Vulnerable Children (OVC) program for social protection and other services.

Table 4.1 Cont.

Standard Package of Care for Adolescents Living with HIV
Clinical care • Provide immediate linkage to HIV care • Provide ART to all HIV-infected adolescents • Perform clinical and laboratory assessment • Clinical assessment at every visit, treat infections early and refer appropriately where specialized care is required • Screen for opportunistic infections and provide prophylaxis (cotrimoxazole, TPT) • Provide NACS and monitor growth and development • Provide/refer for HPV vaccine **Adherence and psychosocial support** • Perform a baseline and regular subsequent psychosocial assessment • Assess for and support disclosure of HIV status to the adolescent (Annex 5) • Enroll in age-appropriate psychosocial support groups • Provide treatment literacy • Provide life skills counselling • Provide adherence counselling • Support appropriate transition into adult HIV treatment and prevention
Prevention of HIV transmission • Encourage index testing and support for disclosure • Assess for and manage drug and alcohol use • Perform a sexual risk assessment and STI screening and treatment, and linkage of sexual partner to PrEP where applicable • Assess for and manage IPV • Provide reproductive health services, including pregnancy screening, pregnancy intention assessment, family planning and linkage to PMTCT for pregnant adolescents **Referrals, linkages and support for continuum of care** • Provide intra-facility & inter-facility referrals as needed for specialized care • Link with youth community groups, targeting youth both in and out of school **Other services** legal centers, paralegal services, gender-based violence recovery centers, educational institutions, bursary/scholarship programs, income generating activities, constituency development funds, vocational training centers for skills development, etc.

4.1 Antiretroviral Therapy

ART is recommended for all PLHIV, regardless of WHO stage, CD4 count, age, pregnancy status, or comorbidities/co-infections. Once a diagnosis of HIV infection is confirmed, ART should be initiated as soon as possible (preferably within 2 weeks), once patient readiness has been determined. Other sections of these guidelines deal with initial evaluation and monitoring (Chapter 3), patient preparation and adherence support (Chapter 5), and specific recommended ART regimens (Chapter 6).

4.2 PHDP, GBV/IPV & HIV Education/Counselling

PHDP (Positive Health, Dignity and prevention) is a framework that emphasizes the health and rights of PLHIV, including reducing risk of onward transmission of HIV. Within PHDP are 7 core domains of services that should be provided at the health facility to PLHIV and caregivers (Table 4.2). Complementary community-based PHDP should also be implemented.

Table 4.2: Domains and Components for PHDP Services

PHDP Domain	Components
Disclosure of HIV status	• Assessment of disclosure status, particularly to sexual partners • Assisted disclosure *Note: for children and adolescents, it is also necessary to evaluate for and support age-appropriate HIV disclosure to the child/adolescent (Annex 5)*
Index testing and engagement	• HIV testing of sexual and drug injecting partners • HIV testing of other family members at risk • Enrolment of positive partners/family members into HIV care • Engagement of negative partners and family members in care and support for index patient, and PrEP as appropriate
Condom use	• Risk reduction counseling • Correct and consistent condom use • Provision of condoms at every visit
Family planning	• Assessment of pregnancy intention • Pre-conception counselling • Dual contraception until ready for pregnancy *(See Section 4.4.2 for specific clinical guidelines)*
Sexually transmitted infections (STI)	• Screening for symptoms of STIs • Prevention of STIs *(See Section 4.4.1 for specific clinical guidelines)*
Treatment adherence	• Benefits/importance of: o Adherence to clinical care o Adherence to ART • Messaging on Undetectable=Untransmissible (U=U) *(Chapter 5)*
Pre-exposure prophylaxis	• Assess HIV-negative sexual partners for PrEP *(Chapter 11)*
Additional services that should be offered to PLHIV beyond the above components include screening for GBV and IPV and HIV education/counseling services.	

4.3 Specific Opportunistic Infection Screening and Prevention

4.3.1 Cotrimoxazole Preventive Therapy (CPT)

CPT is no longer recommended as life-long prophylaxis, and is only recommended in the following sub populations, unless they have an allergy to sulfur drugs or develop toxicity from CPT:

- HIV exposed infants
- HIV infected children and adolescents <15 years of age
- PLHIV > 15 years of age:
    - Living in malaria-endemic zones*
    - Presenting with WHO stage 3 or 4 event, or meeting the criteria AHD
    - Suspected treatment failure
- All Pregnant and Breast-feeding women

For HIV exposed and infected infants, CPT should start at 6 weeks of age. CPT is effective in AHD, and preventing specific OIs for patients with low CD4 counts (PCP and toxoplasmosis), as well as reducing the risk of common bacterial infections, sepsis, diarrhea illness and malaria.

**Refer to the National Guidelines for the Diagnosis, Treatment and Prevention of Malaria in Kenya for the current Kenya Malaria endemicity map*

Table 4.3: Co-trimoxazole Preventive therapy

Sub-Population	Starting/Restarting criteria	Ending criteria
HIV exposed Infants	All infants, starting 4-6 weeks after birth	Child is confirmed HIV-negative
HIV-infected children and adolescents ≤ 15 years old	All children	Attains 15 years of age
PLHIV > 15 years old	Suspected treatment failure WHO Clinical Stage 3 and 4	Clinically stable: o On ART for at least 12 months o Showing no signs or symptoms of WHO Clinical Stage 2,3 or 4
HIV-positive Pregnant and breastfeeding women	All	Clinically stable: o On ART for at least 12 months o Showing no signs or symptoms of WHO Clinical Stage 2,3 or 4 o Not pregnant or breastfeeding

Table 4.4: Daily Dose of Cotrimoxazole Preventive Therapy

Weight (kg)	If using oral suspension (240mg per 5ml)	If using single strength tablet 480 mg (SS)	If using double strength tablet 960 mg (DS)
1 – 4	2.5 ml	¼ SS tab	--
5 – 8	5 ml	½ SS tab	¼ DS tab
9 – 16	10 ml	1 SS tab	½ DS tab
17 – 30	15 ml	2 SS tabs	1 DS tab
> 30	20 ml	2 SS tabs	1 DS tab
Adult (any weight)		2 SS tabs	1 DS tab

Note: If CrCl 15-30 ml/min then use 50% of normal recommended dose; if CrCl < 15 ml/min then CTX should be avoided

During pregnancy, CPT should be initiated irrespective of the gestational age and should continue throughout pregnancy and breastfeeding. Additional intermittent preventive therapy (sulfadoxine-pyrimethamine (SP)) for malaria is not required for women already on CPT.

Cotrimoxazole can cause anaemia and neutropenia in some patients, as well as a skin rash.

Management of Patients with Cotrimoxazole Allergy

- A rash may occasionally develop, usually about 7-14 days following initiation of CPT. It is often a relatively mild maculopapular rash with or without pruritus. Infrequently, rash may develop with severe exfoliation of the skin and Stevens-Johnson syndrome. Rash severity should be assessed, with management based on severity (Table 4.5)
- Desensitization is effective in the majority of patients with mild to moderate rash (Table 4.6a). The rapid desensitization regimen (Table 4.6b) can be used in situations where treatment for PCP is needed

Table 4.5: Management of Drug-Associated Skin Rash

Severity	Characteristics	Action
Mild	Dry; erythema +/- fine papules; pruritus; affecting < 50% of body surface area	Continue CTX; close monitoring; symptomatic treatment with antihistamines +/- topical steroids (NOT oral steroids)
Moderate	Dry; erythema +/- fine papules; pruritus; affecting ≥ 50% of body surface area	Stop CTX; symptomatic treatment with antihistamines +/- topical steroids (NOT oral steroids); trial of desensitization after symptoms completely resolved
Severe	Mucosal involvement; blistering; associated fever; any % of body surface area	Stop CTX; admission to hospital for supportive management (IV fluids, wound care, pain control, infection control, monitoring for super-infection); **patient should NEVER be re-challenged with CTX or other sulfa-containing drugs;** document and report adverse event and issue patient alert card

Cotrimoxazole Desensitization Protocols (for patients who have fully recovered from moderate reaction)

Table 4.6a: Standard Cotrimoxazole Desensitization Regimen (8 days)

Day	Dose of TMP/SMX Suspension (40/200 mg per 5ml)
Day 1	0.5 ml
Day 2	1 ml
Day 3	2 ml
Day 4	3 ml
Day 5	4 ml
Day 6	5 ml
Day 7	1 SS tablet
Day 8	2 SS tablets/1 DS tablet per day
Note: For children, continue up until they have reached their recommended weight-based dosage	

Table 4.6b: Rapid Cotrimoxazole Desensitization Regimen (6 hours)

Hour	Dose of TMP/SMX Suspension (40/200 mg per 5ml)
Hour 0	0.5 ml
Hour 1	1 ml
Hour 2	2 ml
Hour 3	3 ml
Hour 4	4 ml
Hour 5	5 ml
Hour 6	1 SS tablet
Note: The rapid desensitization protocol should not be used for children because the cumulative dosage will be too high	

Dapsone as a Substitute for CPT

In situations of severe allergy to cotrimoxazole or when desensitization is not successful, dapsone can be used instead of CTX. It is primarily effective as prophylaxis against PCP but does not have the other prophylactic benefits of cotrimoxazole.

Note:

Dapsone will contribute to anaemia in most patients, and causes haemolytic anaemia in some patients, so patients should have a baseline Hb before starting dapsone and Hb monitored every 1-2 weeks for the first couple of months.

When dapsone (as a substitute for CPT) is being used as PCP prophylaxis, it is only recommended for patients in WHO Stage 4 and/or with absolute CD4 count ≤ 200 cells/mm3 (or CD4 % ≤ 25% for children ≤ 5 years old), and should be discontinued once a patient achieves a sustained CD4 count of > 200 cells/mm3 (or > 25% for children ≤ 5 years old) for at least 6 months.

Dapsone is NOT recommended during breastfeeding.

Dose of Dapsone

- Available as 25 mg and 100 mg tabs
- Children: 2 mg/kg once daily (maximum dose: 100 mg) OR 4 mg/kg once weekly (maximum dose: 200 mg)
- Adults: 100 mg once daily

Support

- Therapeutic and supplementary foods to treat clinical malnutrition (food by prescription, therapeutic feeds, fortified blended flour): Figures 4.3 and 4.4 provide malnutrition management recommendations for adults and children; Table 4.10 provides specific nutritional recommendations for patients with non-communicable diseases
- Exclusive breastfeeding for the first 6 months of life; complementary foods for children aged 6 - 24 months with continued breastfeeding to prevent malnutrition (Table 7.7 provides complementary feeding recommendations)
- Micronutrient supplements to prevent vitamin and mineral deficiencies
- Food security and linkage to HIV sensitive social protection such as household food support, home-based care, agricultural extension services, and economic strengthening and livelihood support

Some aspects of nutrition support (such as prescription of therapeutic and supplementary foods) should be provided by a trained healthcare professional, however all aspects should be promoted and supported at the community level.

Table 4.19: Interpretation of MUAC Results for Children and Pregnant/Lactating Women

MUAC Level by Age (cm)			Classification	Action to Take
6-59 months	5-9 yrs.	10-17 yrs.		
< 11.5	**< 13.5**	**< 14.5 cm**	Severe acute malnutrition	Irrespective of clinical signs, admission (referral) for stabilization/therapeutic rehabilitation
11.5–12.5	**13.5-14.5**	**14.5-18.5**	Moderate acute malnutrition	Admission for supplementary feeding is recommended
12.6–13.5			Mild acute malnutrition	Nutritional education and counselling
> 13.5			Normal	Education and counselling of caregivers
Pregnant and Breastfeeding Women				
≤ 23			Malnourished	Provide nutritional support (Figure 4.3)
> 23			Normal	Education and counselling

Table 4.20: Interpretation of Z-scores for Children

Ratio	Indicator	Z-score	Severity
Weight/Age	Underweight	< - 3	Severe
Height/Age	Stunting	- 3 to - 2	Moderate
Weight/Height	Wasting*	> - 2 to - 1	Mild
		> - 1	Normal
*Children with weight/height z-score of -2 or less should be supported with therapeutic/supplementary foods			

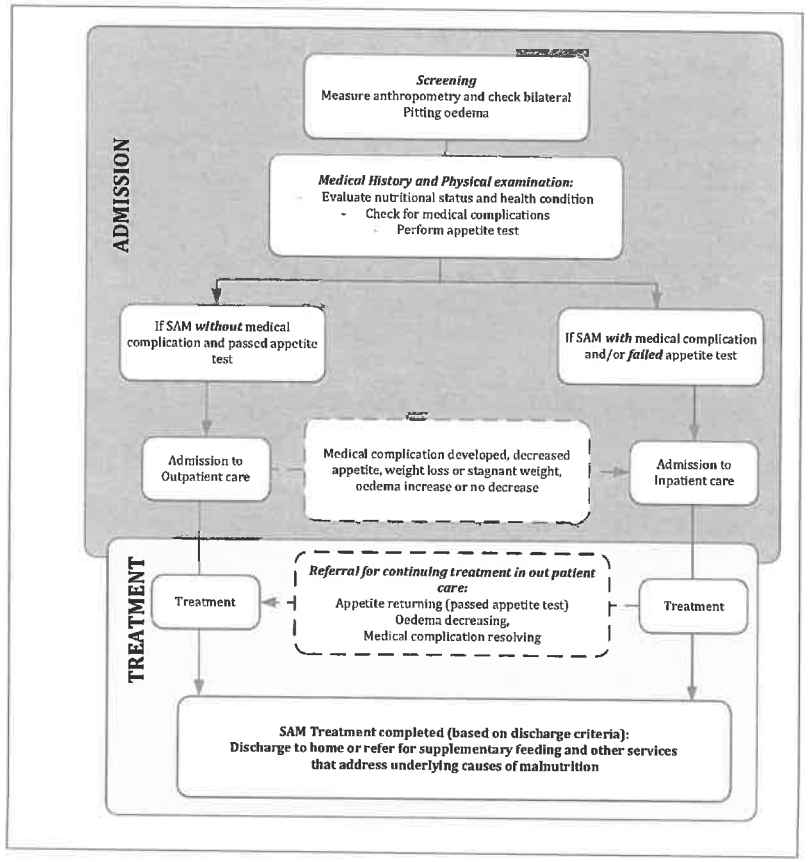


Figure 4.3: Management of Severe Acute Malnutrition in Children

Other medical complications that necessitate hospitalization

In addition to severe bilateral pitting oedema (+++), marasmic kwashiorkor and poor appetite, the following complications necessitate inpatient care:

- ✓ Intractable vomiting
- ✓ Convulsions
- ✓ Lethargy
- ✓ Unconsciousness
- ✓ Lower respiratory tract infection
- ✓ High fever
- ✓ Severe dehydration
- ✓ Severe anaemia
- ✓ Hypoglycaemia
- ✓ Hypothermia
- ✓ Eye signs of vitamin A deficiency
- ✓ Skin lesions

The following complications require referral of patient for further medical evaluation:

- ✓ No appetite (failed appetite test)
- ✓ IMCI danger signs
- ✓ Increase in or newly developed bilateral pitting oedema
- ✓ Weight loss because of diarrhoea (re-feeding or of other origin)
- ✓ Weight loss for three consecutive weeks
- ✓ Static weight (no weight gain) for five consecutive weeks
- ✓ Other signs of failure to respond to treatment

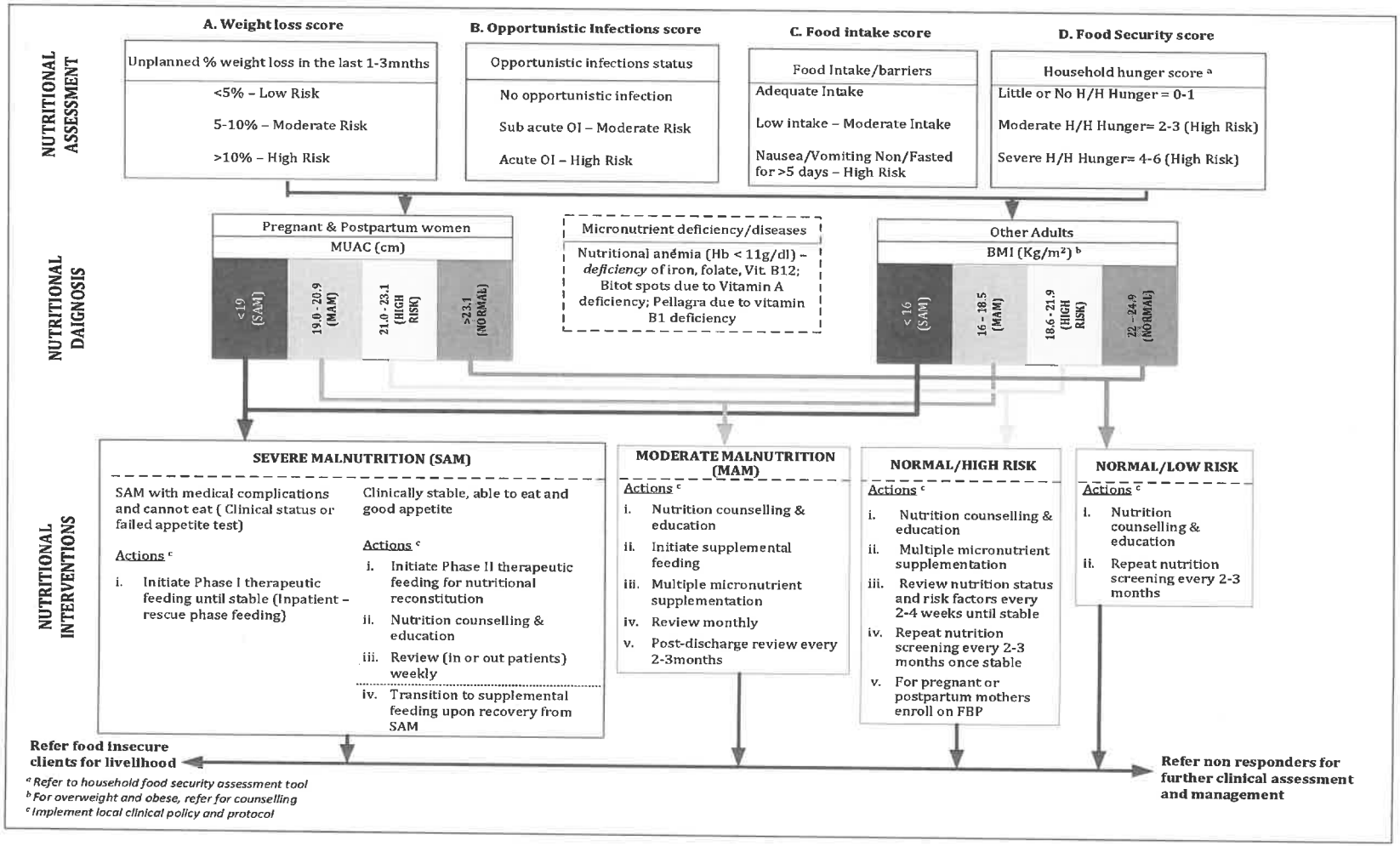


Figure 4.4: Management of Malnutrition in Adults with HIV

Table 4.21: Interpretation of BMI Results for Adults

BMI Level	Classification	Action to Take
< 16	Severe malnutrition	• Refer for facility-based therapeutic intervention; rehabilitation with therapeutic foods; counselling on intake issues and possible metabolic issues • Screen for TB
16.0–18.4	Mild/moderate malnutrition	• Nutritional counselling and supplementary feeding • Screen for TB
18.5–25.0	Normal/ recommended	Nutritional counselling, consistent exercise to build muscles
25.1–30	Overweight	Nutritional counselling to reduce energy intake; aerobic physical activity to reduce weight
>30	Obese	Counselling to change lifestyle and reduce energy intake; aerobic physical activity to reduce weight

4.8 Prevention of Other Infections

4.8.1 Immunizations

All children, regardless of HIV status, should be immunized following the full KEPI schedule, with a few exceptions for infants with severe immunosuppression (Table 4.22). For infants living with HIV and HEIs, an earlier dose of measles vaccines should be given at 6 months of age.

Table 4.22: Kenya Expanded Program on Immunizations 2016 Schedule

Age	Vaccines
Birth	OPV[1], BCG[2]
6 weeks	OPV[3], Pentavalent (DPT-HepB-HiB), Pneumococcal (PCV10), Rotavirus
10 weeks	OPV[3], Pentavalent (DPT-HepB-HiB), Pneumococcal (PCV10), Rotavirus
14 weeks	IPV, Pentavalent (DPT-HepB-HiB), Pneumococcal (PCV10)
6 months	Measles/Rubella (MR) - for HIV exposed and infected infants; Vitamin A
9 months	Measles/Rubella (MR); Vitamin A; Yellow Fever[4]
18 months	Measles/Rubella (MR); Vitamin A
10 years (girls only)	HPV (2 doses at 6 months apart in the general population; 3 doses for PLHIV, at month 0, 1-2, and 6)
11-12 years	Tdap (tetanus, diphtheria and pertussis)

[1]Give OPV to all infants at birth or within the first two weeks of life. If missed in the neonatal period and the child has symptoms of advanced HIV disease (WHO Stage 3 or 4) or severe immunosuppression (CD4% < 25%) then defer BCG until virally suppressed on ART and with immune system recovery

[2]Give BCG to all infants at birth or within the first two weeks of life. If missed in the neonatal period and the child has symptoms of advanced HIV disease (WHO Stage 3 or 4) or severe immunosuppression (CD4% < 25%) then defer BCG until virally suppressed on ART and with immune system recovery. Do not give BCG vaccine to babies born to smear positive mothers. Investigate to rule out TB, give TPT then vaccination done two weeks after completion of TPT

[3]If HIV+ with symptoms of advanced HIV disease (WHO Stage 3 or 4) or severe immunosuppression (CD4% < 25%) then use IPV instead of OPV

[4]Yellow fever vaccine is only routinely used in certain counties as specified by National Vaccines and Immunization Program; defer yellow fever vaccine if symptoms of advanced HIV disease (WHO Stage 3 or 4) or severe immunosuppression (CD4% < 25%), until virally suppressed on ART and with immune system recovery

PLHIV may have an inadequate response to immunizations, particularly before they achieve full viral suppression. The ideal timing, dose, and frequency of re-immunizations for children on ART are not well known. Providers will receive specific guidance or revaccination from the National Vaccines and Immunization Program and NASCOP.

Recommended vaccinations for adolescents and adults living with HIV are listed in Table 4.23.

Table 4.23: Vaccinations in Adolescents and Adults Living with HIV

Infection	Vaccine	Live (Y/N)	Course	Comments
COVID-19	Various	N	Variable	Follow national guidelines on dosing for the specific vaccine available
Hepatitis B	Subunit	N	4 doses (at 0, 1, 2 and 6 months)	Use double dose if non-adjuvanted; use standard dose if adjuvanted
Pneumococcus	Conjugate	N	1 dose (PCV 13)	Preferable to polysaccharide
	Polysaccharide	N	1 dose	Use if >65 years and with co-morbidity other than HIV
Human Papillomavirus (HPV)	Virus-like particles	N	3 doses (at months 0, 1-2, and 6)	All girls at 9-14 years old
Influenza	Inactivated	N	1 dose	Annually
Hepatitis A	Inactivated	N	2 - 3 doses	3 doses if CD4 count < 350 cells/mm^3 at 0, 1 and 6 months. If CD4 count > 350 cells/mm^3, give 2 doses at 0 and 6 months. For those at continued risk, one booster dose every 10 years
Additional Vaccines for Special Circumstances				
Yellow fever	Live attenuated	Y	1 dose	Use only in patients <60 yrs of age **and** CD4 > 200 cells/mm^3
Typhoid	Polysaccharide	N	1 dose	Give the ViCPS parenteral. Repeat every 3 years
Cholera	Subunit	N	2 doses	As indicated (usually in epidemics). 2 oral doses of the non-replicating vaccine given 1-6 weeks apart with a single booster dose at 2 years from primary vaccination

Table 5.9 Cont.

Two weeks after ART initiation	• Review and reinforce the messages delivered at enrolment; confirm the patient's understanding of key messages • Review ART dosing, timing and reminders • Explore any barriers to adherence • Review support systems • Revisit benefits of disclosure, the disclosure plan and progress in aPNS • Document the session in the patient's chart
Four weeks after ART initiation, and further follow-up visits	• Review and reinforce the messages delivered in previous sessions; confirm the patient's understanding of key messages • Review ART dosing, timing and reminders • Explore any barriers to adherence • Review support systems • Revisit benefits of disclosure the disclosure plan, and progress in aPNS • Document the session in the patient's chart

5.3 Adherence Monitoring, Counselling and Support During the First 3 Months of ART

5.3.1 Adherence Monitoring

Once ART has been initiated, adherence should be assessed non-judgmentally by a trained provider during each visit (Table 5.10). The objectives of this assessment are to evaluate and reinforce the patient's adherence to ART, to elicit any barriers to the same, and to develop a plan with the patient/caregiver to address any of the barriers identified. These may include incorrect knowledge of HIV infection and ART, unsupportive psychosocial factors, difficult home or school environment, substance use and poor motivation for taking medication. Patients/caregivers need to be counselled on the importance of being honest about their adherence in order for the healthcare team to serve them better.

Adherence monitoring requires a combination of interventions. At every clinical visit, the MMAS-4 should be administered as well as pill counts. MMAS-8 should be administered any time a healthcare worker suspects adherence problem (e.g., patients with suspected or confirmed treatment failure; patient who misses an appointment).

Table 5.10: Adherence Monitoring Strategies

Adherence Monitoring Strategy	Technique	Frequency
Subjective (self-reported adherence)		
Morisky Medication Adherence Scale-4	Use Table 5.11 to assess adherence using a standardized questionnaire, and take action as required	Every patient, every visit
Morisky Medication Adherence Scale-8	Use Table 5.12 to assess adherence using a standardized questionnaire, and take action as required	Any time a healthcare worker suspects adherence problems (e.g., patients with suspected or confirmed treatment failure; patient who misses an appointment)
Adherence Monitoring Strategy	**Technique**	**Frequency**
Objective		
Pill counts	Ask the patient to bring all their pills with them to follow-up visits. Calculate how many pills should be remaining based on the previous prescription date and amount prescribed, and compare to how many pills are actually remaining. Excess pills are assumed to be missed doses. Use Table 5.13 to calculate adherence rate and take action as required	At every visit until confirmed viral suppression Any time a healthcare worker suspects adherence problems
Pharmacy refill records	Compare drug pick-up date with expected date of pick-up (based on number of pills dispensed at last visit). If drug pick-up date is later than expected, it is assumed the patient is missing doses equivalent to the number of days late	At every drug pick-up Any time a healthcare worker suspects adherence problems
Viral load	Follow the viral load monitoring algorithm (Figure 6.6). Undetectable VL is the best confirmation of adequate adherence	Age 0-24 years: at 3 months after ART initiation and then every 6 months Age ≥ 25 years: at month 3 after ART initiation and month 12 then annually For pregnant and breastfeeding women: at first ANC visit if already on ART, or 3 months after ART initiation if starting ART during pregnancy, and then every 6 months

Table 5:10 Cont.

Home visit	Observe where and how a patient stores and takes their medications and assess if they have extra medications because of missed doses. Home visits may also provide a better understanding of a patient's living situation and specific barriers to adherence. Unscheduled home visits may be more revealing, but should only be conducted if the patient consented to home visits previously (preferably at the time of enrolment or initiation)	For patients with suspected or confirmed treatment failure, patients who default from care, or any time the MDT feels a home visit will contribute to patient management

Accurately assessing adherence requires clinicians to develop a collaborative and non-judgmental relationship with patients. This is best done when one provider follows an individual patient longitudinally. The key to asking patients about their adherence is not in the specifics of the tool used but in taking the time to ask about adherence regularly and doing so in an open and truly inquisitive manner. Otherwise, many patients will simply state what they believe the clinician wants to hear: perfect adherence.

Every provider in each ART service delivery point should receive training and gain confidence in assessing adherence and providing adherence support and counselling to the majority of patients who do not have significant barriers to adherence. However, patients with significant adherence challenges and multiple barriers to adherence should be referred to providers with additional training and time to offer dedicated and enhanced adherence support and counselling. Involving experienced colleagues at the same health facility should be done as soon as a concern is identified, and the patient should be discussed by the MDT to generate as many solutions as possible. Consultation with Mental Health Teams or regional or national mentors may be required for complex situations.

Table 5.11: Morisky Medication Adherence Scale (MMAS-4)

MMAS-4: Ask the patient each question below. Circle the corresponding score for each response. After completion of all questions, add up all the points that you have circled for the total score.		
Question	Yes	No
1. Do you ever forget to take your medicine?	1	0
2. Are you careless at times about taking your medicine?	1	0
3. Sometimes if you feel worse when you take the medicine, do you stop taking it?	1	0
4. When you feel better do you sometimes stop taking your medicine?	1	0
Total Score (sum of all items)		

Interpretation of MMAS-4 Score		
MMAS-4 Score	**Adherence Rating**	**Action Required**
0	Good	Continue with routine monitoring, counselling and support
1-2	Inadequate	• Discuss as an MDT • Assign a case manager • Assess for and address barriers to adherence (Table 5.15) • Engage treatment supporter in adherence counselling sessions • Follow up in 2-4 weeks
3-4	Poor	• Discuss as an MDT • Assign a case manager • Assess for and address barriers to adherence (Table 5.15) • Engage treatment supporter in adherence counselling sessions • Implement DOTs • Follow up in 1-2 weeks

Table 5.12: Morisky Medication Adherence Scale (MMAS-8)

MMAS-8: Ask the patient each question below. Circle the corresponding score for each response. After completion of all questions, add up all the points that you have circled for the total score.		
Question	Yes	No
1. Do you ever forget to take your medicine?	1	0
2. Are you careless at times about taking your medicine?	1	0
3. Sometimes if you feel worse when you take the medicine, do you stop taking it?	1	0
4. When you feel better do you sometimes stop taking your medicine?	1	0
5. Did you take your medicine yesterday?	0	1
6. When you feel like your symptoms are under control, do you sometimes stop taking your medicine?	1	0
7. Taking medication every day is a real inconvenience for some people. Do you ever feel under pressure about sticking to your treatment plan?	1	0
8. How often do you have difficulty remembering to take all your medications? (Please circle the correct number) _____A. Never/Rarely _____B. Once in a while _____C. Sometimes _____D. Usually _____E. All the time	Points: A. 0 B. ¼ C. ½ D. ¾ E. 1	
Total Score (sum of all items)		

Interpretation of MMAS-8 Score		
MMAS-8 Score	Adherence Rating	Action Required
0	Good	Continue with routine monitoring, counselling and support
1-2	Inadequate	• Discuss as an MDT • Assign a case manager • Assess for and address barriers to adherence (Table 5.15) • Engage treatment supporter in adherence counselling sessions • Follow up in 2-4 weeks
3-8	Poor	• Discuss as an MDT • Assign a case manager • Assess for and address barriers to adherence (Table 5.15) • Engage treatment supporter in adherence counselling sessions • Implement DOTs • Follow up in 1-2 weeks

Table 5.13: Adherence Rate Based on Pill Counts

Missed Doses per Month		% Of Medications Taken	Adherence Rating	Action Required (see Table 5.10 for more details)
For once-daily regimen	For BD regimen			
1 dose	1-3 doses	≥ 95%	Good	Continue with routine monitoring, counselling and support
2-4 doses	4-8 doses	85-94%	Inadequate	• Discuss as an MDT • Assign a case manager • Assess for and address barriers to adherence (Table 5.15) • Engage treatment supporter in adherence counselling sessions • Follow up in 2-4 weeks
≥ 5 doses	≥ 9 doses	< 85%	Poor	• Discuss as an MDT • Assign a case manager • Assess for and address barriers to adherence (Table 5.15) • Engage treatment supporter in adherence counselling sessions • Implement DOTs • Follow up in 1-2 weeks

5.3.2 Adherence Counselling and Support During the First 3 Months of ART

All patients recently initiated on ART need careful adherence monitoring and support to ensure they achieve virological suppression. This is particularly important in the context of rapid ART initiation. The intensity of counselling and support are dependent on the patients' level of adherence as assessed by the methods described in section 5.2.1.

Table 5.14 summarizes adherence counselling and support for patients from the time of ART initiation until the 3-month viral load results are available. For patients who have inadequate or poor adherence, Table 5.15 describes the assessment for barriers to adherence.

Table 5.14: Adherence Counselling and Support During the First 3 Months of ART

No adherence concerns (based on adherence assessment and healthcare team opinion)	
Counselling: Group or Individual, at every visit (can be done by any member of the healthcare team, including the clinician)	• Review patient/caregiver HIV knowledge (Table 5.2, Annex 8) and address any gaps • Review patient/caregiver understanding of ART administration (dosing, timing, frequency) and address any gaps • Elicit any concerns the patient/caregiver has about ART, other medications, visit schedule, or health. Address any concerns or engage another care team member who can address them • Explore any major recent or expected changes in the patient's/caregiver's life or daily routine that could disrupt adherence • Update patient locator and contact information
Support	• Encourage the patient/caregiver to continue with the support systems discussed and implemented already • Encourage introduction of additional standard support systems (Table 5.3), including supporting disclosure as needed
Inadequate or poor adherence (based on adherence assessment or healthcare team opinion)	
Counselling: Individual, at every visit until adherence is good (preferably by someone trained on adherence counselling)	• **Assess for and address potential barriers to adherence (Table 5.15)** • Review patient/caregiver HIV knowledge (Table 5.2, Annex 8) and address any gaps • Review patient/caregiver understanding of ART administration (dosing, timing, frequency) and address any gaps • Elicit any concerns the patient/caregiver has about ART, other medications, visit schedule, or health. Address any concerns or engage another care team member who can address them • Explore any major recent or expected changes in the patient's/caregiver's life or daily routine that could disrupt adherence • Update patient locator and contact information
Support	• Review effectiveness of support systems they already have in place • Encourage introduction of additional standard and enhanced support systems (Table 5.3), including supporting disclosure as needed, assigning a case manager and considering DOTs

Adherence Preparation, Monitoring and Support

Table 5.15: Assessment for Barriers to Adherence

Theme	Assessment
Awareness of HIV status	• Has the patient/caregiver accepted HIV status? • For children/adolescents: is age-appropriate disclosure underway/complete?
Understanding of HIV infection and ART	• How HIV affects the body and risk of transmission to sexual partners and children during pregnancy and breastfeeding • ART and how it works • Understanding of side effects and what to do in case of side effects o *"Have you experienced any side effect since your last visit? Has this affected the way you take your medicine?"* • Benefits of adherence • Consequences of non-adherence including drug resistance and treatment failure

Daily routine	• Review the patient's/caregiver's daily routine: *"Tell me about your typical day"*
	• Review how the patient takes medicine or how the caregiver administers it
	  o *"Please tell me how you take each of your medicines?"*
	  o *"How does taking your medicine fit into your daily routine?"*
	• If the patient's/caregiver's daily routine conflicts with medication schedule, work with them to find a new medication schedule that will be more appropriate
	• Remind the patient/caregiver to take/give missed or delayed doses as soon as he/she remembers (up to 12 hours late if on a once-daily regimen, or up to 6 hours late if on a twice- daily regimen). The next dose should be taken at the usual time
	• *"What do you do in case of visits or travel?"*
	• Remind the patient/caregiver to plan travel well, pack sufficient medicine; but should their medication get finished before they return, advise them to visit the closest ART centre and show their appointment card to get a refill
	• For orphans it is critical to assess who the primary caregiver is and their commitment

5.4 Adherence Monitoring, Counselling and Support for Patients with Suppressed Viral Load < 200 copies/ml

Once a patient has confirmed viral suppression (with VL < 50 copies/ml or below the Lower Detection Limit (LDL)) this is confirmation of adequate adherence to ART. The patient can be reassured that they will do well if they continue to adhere. However, all patients are at risk of new or worsening barriers to adherence, so adherence monitoring, counselling and support should continue despite viral suppression, but at a lower intensity and frequency unless concerns are identified (Table 5.16). These patients should also be educated on and assessed for qualification as "stable patient" services such as less frequent facility visits, fast-track or community-based ART distribution, etc. (Table 3.5).

Table 5.16: Adherence Counselling and Support for Patients with Viral Load < 50 copies/ml

No adherence concerns (based on adherence assessment or healthcare team opinion)	
Counselling: Group or individual, every visit (can be done by any member of the healthcare team, including the clinician)	• Elicit any concerns the patient/caregiver has about ART, other medications, visit schedule, or health. Address any concerns or engage another care team member who can address them • Explore any major recent or expected changes in the patient's/caregiver's life or daily routine that could disrupt adherence • Update patient locator and contact information
Support	• Encourage the patient/caregiver to continue with the support systems that are in place already
Inadequate or poor adherence (based on adherence assessment or healthcare team opinion)	
Counselling: Individual, at every visit until adherence is good (preferably by someone trained on adherence counselling)	• **Assess for and address potential barriers to adherence (Table 5.15)** • Review patient/caregiver HIV knowledge (Table 5.2, Annex 8) and address any gaps • Review patient/caregiver understanding of ART administration (dosing, timing, frequency) and address any gaps • Elicit any concerns the patient/caregiver has about ART, other medications, visit schedule, or health. Address any concerns or engage another care team member who can address them • Explore any major recent or expected changes in the patient's/caregiver's life or daily routine that could disrupt adherence • Update patient locator and contact information
Support	• Review effectiveness of support systems the patient already has in place • Encourage introduction of additional standard and enhanced support systems (Table 5.3), including supporting disclosure as needed, assigning a case manager and considering DOTs

Table 5.17 Viral Load Monitoring Cut-Offs

Clinical Definition	Category	Lab Value	Interpretation	Guidance
• **Suppressed**	• LDL	• <50 Copies/ml	• Treatment Goal	• Continue Management
	• Low Risk LLV	• 50 – 199 Copies/ml.	• Stable Client, Untransmissible	• Continue management, remind client of treatment goal • Enroll in DSD
• **Unsuppressed**	• High Risk LLV	• 200-199 Copies/ml	• Increased risk of progression to treatment failure	• Step down from DSD, institute EAC, repeat VL after 3 months of excellent adherence
	• Suspected Treatment Failure	• ≥1000 Copies/ml	• Client at increased risk of morbidity and mortality	• Enroll Client in specialized clinic if available • Conduct EAC • Refer to VL algorithm

5.5 Adherence Monitoring, Counselling and Support for Patients with Unsuppressed Viral Load ≥ 200 copies/ml

Treatment failure should be suspected whenever a patient has been on ART for at least 3 months and has: a viral load ≥ 200 copies/ml; a decline in CD4 count or; any new or worsening clinical condition. Treatment failure is confirmed as per the viral load monitoring algorithm (Figure 6.6). Poor adherence is often the most important factor in developing treatment failure, though there can be other causes. Adherence must be thoroughly assessed and all issues must be addressed before switching patients to the next line of ART. **Do not change regimens until the reason/s for treatment failure have been identified and addressed, and a repeat VL is ≥ 1,000 copies/ml after 3 months of excellent adherence**. For patients with high-risk persistent low-level viremia (VL 200 - 999 copies/ml after additional assessment and intervention), consult the Regional or National HIV Clinical TWG (Uliza Hotline 0726 460 000; https://nhcsc.nascop.org/clinicalform).

5.5.1 Enhanced Adherence Assessments

As soon as treatment failure is suspected the patient/caregiver should be discussed by the facility multi-disciplinary team to develop a plan for assessing barriers to adherence (including scheduling a home visit), and assessing other potential causes of treatment failure (e.g., inadequate dosing/dose adjustments, drug-drug interactions, drug-food interactions, impaired absorption e.g., chronic severe diarrhoea).

All patients with suspected or confirmed treatment failure should have a thorough assessment of potential barriers to adherence (Table 5.15).

If the patient has a caregiver, treatment buddy, and/or spouse/partner who is enrolled in HIV care, that person's file should also be reviewed to confirm their most recent viral load results and adherence.

5.5.2 Enhanced Adherence Counselling

Adherence assessment and enhanced adherence counselling should begin as soon as a detectable viral load (≥ 200 copies/ml) is received, preferably within 2 weeks.

The goal of Enhanced Adherence Counselling is to assess possible barriers to adherence in a non-judgmental way and to help the patient construct an adherence plan with concrete objectives. It is important not to focus solely on knowledge of HIV and ART but also to review psychological, emotional, and socio-economic factors that may contribute to poor adherence. In addition, exploring the patient's motivation for taking medication often highlights reasons for poor adherence.

At least three sessions of Enhanced Adherence Counselling, spaced 2-4 weeks apart, are recommended as the minimum number of sessions, but additional sessions can be added as needed (Table 5.18). If the adherence is evaluated as adequate, a repeat viral load is done after three months of excellent adherence, and another Enhanced Adherence Counselling session is conducted to discuss the viral load results. A detailed content guide for Enhanced Adherence Counselling is provided in Annex 9.

It is preferable to have the patient go through all adherence counselling sessions with the same counsellor in order to provide continuity, and that the session is documented to ensure follow-up of all issues identified.

If adequate adherence cannot be achieved then consult with a senior clinician, discuss as an MDT, or consult the Regional or National TWG.

Table 5.18: Components of Enhanced Adherence Counselling Sessions (Annex 9A for detailed content guide)

Enhanced Adherence Counselling Sessions: Overview	
Session 1	• Review understanding of viral load (VL) and discuss why the patient's VL is high • Review common cognitive, behavioral, emotional and socio-economic barriers to adherence o Stigma and non-disclosure o Loss or grief o Treatment literacy o Medications: dosage, timing, storage o Side effects o Discuss risk reduction (e.g., for substance abuse) o Motivation o Mental health screening (screen for depression using PHQ-9, Table 4.14) o Discuss patient's support systems • Assist patient to develop adherence plan to address the identified issues
Session 2	• Review adherence plan from the first session and discuss any challenges • Identify other possible gaps and issues emerging • Assist patient to modify the adherence plan to address the identified issues
Session 3	• Review adherence plan from the first and second session and discuss any challenges • Identify other possible gaps and issues emerging • Assist patient to modify the adherence plan to address the identified issues • Decision on repeat VL based on current adherence o If the adherence is good: plan repeat VL testing after three months of good adherence and explain possible ways forward, emphasizing role of the patient and the health facility o If adherence challenges persist: consult with a senior clinician, discuss as an MDT, or consult the Regional or National TWG before repeating the VL
Session to Discuss Repeat Viral Load Results	• Discuss result of the second VL test • Plan the way forward: o If VL now < 200 copies/ml: continue current regimen with ongoing enhanced adherence; repeat VL after 6 months o If VL ≥ 1,000: prepare patient for change of regimen (Figure 5.2) o If VL is 200-999 copies/ml: perform another assessment for causes for viremia and address any issues identified; repeat viral load after an additional 3 months of excellent adherence

Table 5.18 Cont.

Other Enhanced Adherence Support Interventions (for patients failing or at high-risk of failing treatment)	
Case management	• Assign a case manager to all children and adolescents (those not achieving optimum treatment outcomes); pregnant women, orphans, patients with alcohol and substance abuse, patients with mental illness, patients with suspected or confirmed treatment failure, and any patients who the healthcare team feels has poor adherence or is at high risk of defaulting from care • The case manager is the link between the patient and the MDT • Roles of the case managers include: o Coordinating multidisciplinary management for patients under case management o Following up on appointment-keeping for their patients o Organizing patient reminders (SMS, calling the day before) and other support systems o Ensuring appropriate defaulter tracing o Coordinating home visits to their patients
Directly observed therapy	• Patients with suspected treatment failure should have DOTs to ensure good adherence before a viral load is repeated to confirm treatment failure • DOTs involve a healthcare provider, family member, treatment supporter or any trained peer observing the patient ingesting their prescribed ART on a daily basis • DOTs can be tapered off once the patient adopts consistent adherence-enhancing behaviours and barriers to adherence are overcome
Home visits	• Observe where and how a patient stores and takes their medications, and assess if they have extra medications because of missed doses • Home visits may also provide a better understanding of a patient's living situation and specific barriers to adherence • Unscheduled home visits may be more revealing, but should only be conducted if the patient consented to home visits previously (preferably at the time of enrolment or initiation)
Monthly "high viral load" clinics	• Patients with suspected treatment failure should be booked for dedicated monthly high viral load clinics • Children and adolescents in school who are unable to attend clinic monthly may attend dedicated monthly clinics during mid-term and school holidays (at least every 6 weeks) • Comprehensive clinical and psychosocial evaluation should be conducted at each visit, appropriate investigations done and any opportunistic infections treated • Enhanced adherence counseling sessions should be conducted at each visit • Support groups for patients with viremia can be timed with "high viral load" clinic days
Special support groups	• For health facilities with several patients who are failing treatment or who are on 2nd line ART, special support groups can be established so these patients can work through their adherence challenges together • Community support groups can also be engaged and linked to the facility for supporting patients with adherence challenges

Adherence support systems will need to be adapted to patients' specific needs and the context (Table 5.18). Special attention needs to be given to children, adolescents, pregnant and breastfeeding women, patients with mental health disorders and substance users.

5.6 Treatment Preparation for 2nd Line or 3rd Line ART

After confirming treatment failure and making the decision to start 2nd line or 3rd line ART (based on discussion as an MDT, and in consultation with the Regional or National HIV Clinical TWG), the patient requires targeted counselling and education to prepare them for the new regimen and to support ongoing adherence (Figure 5.2).

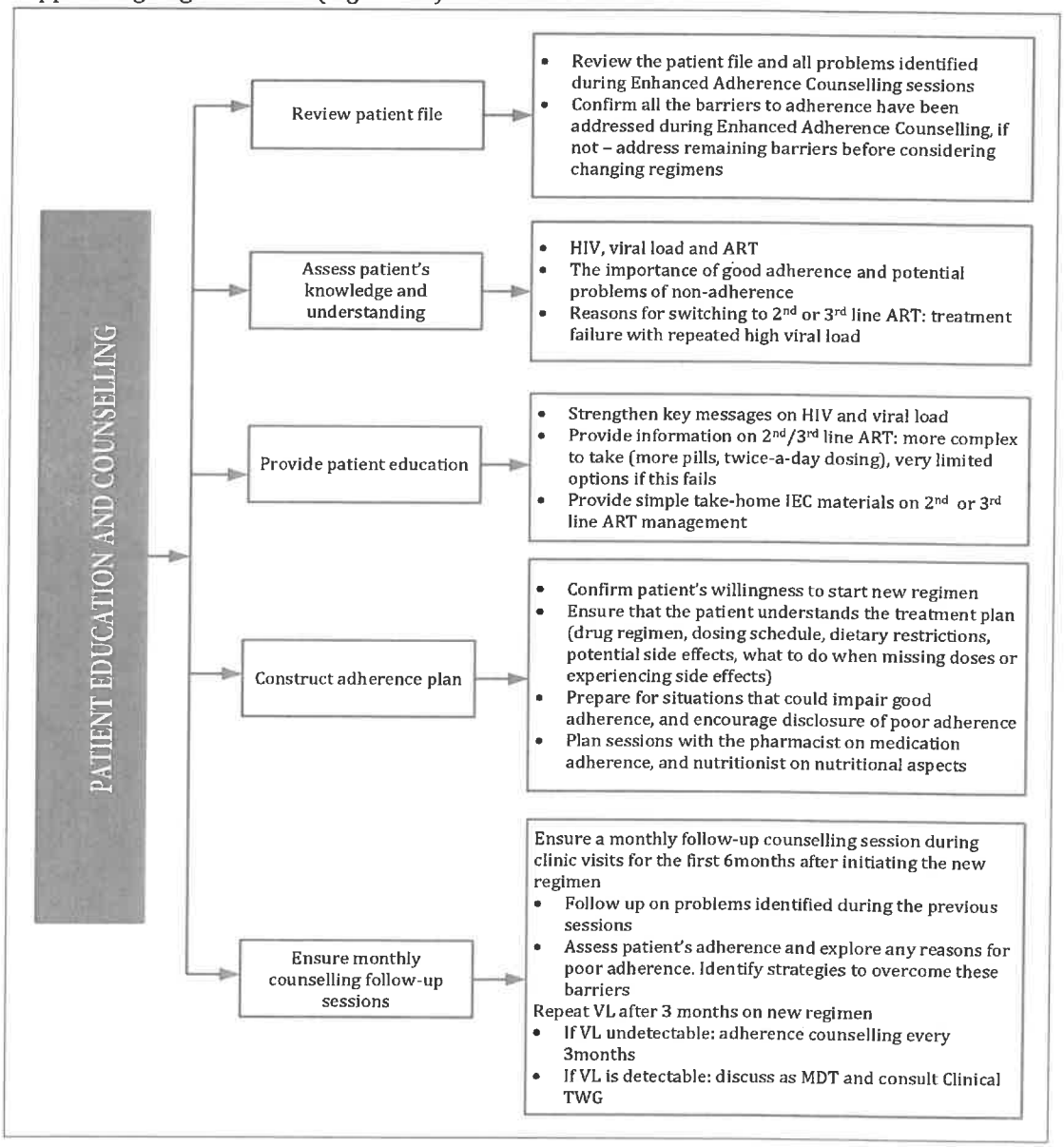


Figure 5.2: Adherence Counselling and Education for Patients Preparing to Initiate 2nd Line or 3rd Line ART

5.7 Identifying, Tracing, and Supporting Patients who Default from Care

Every service delivery point that is providing ARVs for patients (whether ART, PEP, or PrEP) must have a functional system for identifying patients who miss appointments and for taking action within 24 hours of a missed appointment (Figure 5.3).

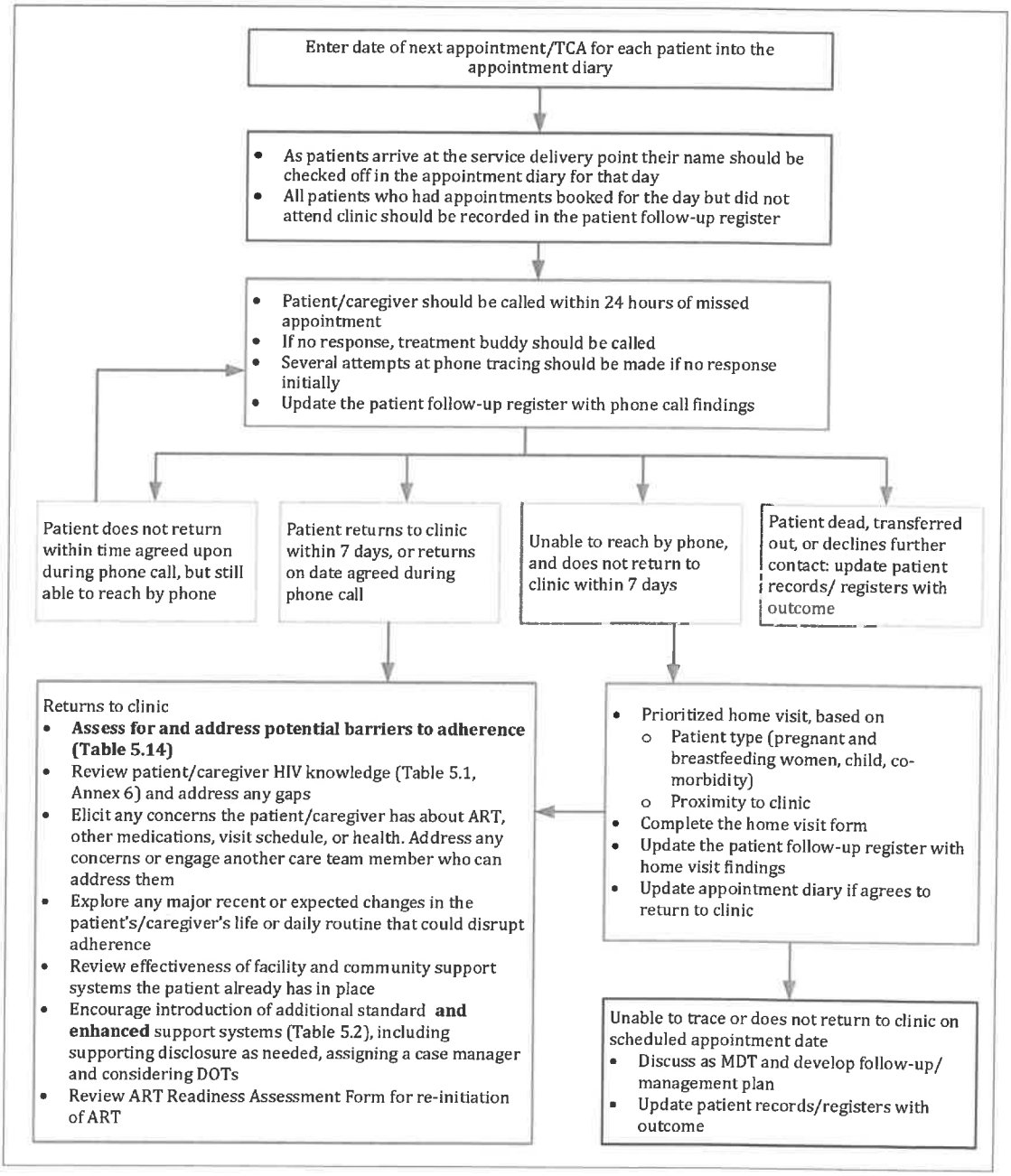


Figure 5.3: Identifying, Tracing and Supporting Patients who Default from Care

6. Antiretroviral Therapy in Infants, Children, Adolescents, and Adults

ART, while very effective in managing HIV disease, does not cure HIV infection. The goal of ART is to suppress viral replication with the aim of reducing the patient's VL to undetectable levels. Uninterrupted ART with ongoing strict adherence will help maintain undetectable VL levels thereby preventing damage to the body's immune system, reducing AIDS-related morbidity and mortality and the risk of sexual and vertical transmission of HIV.

6.1 Eligibility for ART

All individuals with confirmed HIV infection are eligible for ART irrespective of CD4 count, WHO clinical stage, age, pregnancy or breastfeeding status, co-infection status, risk group, or any other criteria.

6.2 Timing of ART Initiation

ART should be started in all patients as soon as possible, preferably within 2 weeks of confirmation of HIV status, and even on the same day as testing positive for HIV if they are ready.

ART Readiness Criteria (Table 5.4) can be used to help determine any issues that need to be addressed around the time of ART initiation. Same-day ART initiation (on the same day as testing HIV-positive) has additional benefits for HIV prevention (e.g., for pregnant and breastfeeding women, and the HIV positive partner in a discordant relationship), and is associated with improved retention, viral suppression, and survival. Special considerations for timing of ART initiation are listed in Table 6.1.

Table 6.1: Special Considerations for Timing of ART Initiation

Population	Timing of ART Initiation	Additional Notes
Pregnant and breastfeeding women	Support ART initiation on the same day as testing positive for HIV	Intensive adherence counselling, support and close follow-up required because of limited time for patient preparation
Infants (< 12 months old)	Support ART initiation on the same day as testing positive for HIV. Treatment should commence following a first positive PCR test. ALWAYS take a sample for a confirmatory PCR test as soon as the first positive PCR result is received, but do not delay ART initiation for the second PCR result	Intensive adherence counselling, support and close follow-up required because of limited time for caregiver preparation
Patients with strong motivation to start ART immediately	Support ART initiation as soon as the patient feels ready, preferably on the same day as testing positive for HIV	Intensive adherence counselling, support and close follow-up required because of limited time for patient preparation
Patients with newly diagnosed TB	Start anti-TB treatment immediately and initiate ART as soon as anti-TB medications are tolerated, preferably within 2 weeks. For TB meningitis delay ART for 4 to 8 weeks	Monitor closely for IRIS (Annex 16)
Patients with cryptococcal meningitis	Defer ART until after completing 5 weeks of CM treatment	Monitor closely for IRIS (Annex 16)
Patients for whom adherence will be particularly challenging	Start ART as soon as possible while implementing additional support systems (e.g., optional enrolment of a PWID into a MAT program; psychiatric treatment for a patient with mental illness; enrolment into an OVC program for orphans etc.)	A case manager should be assigned to all patients with complex adherence challenges
All other patients	Start ART as soon as possible, preferably within 2 weeks, and even on the same day as testing positive for HIV if they are ready	Continued adherence monitoring and support is recommended after ART initiation for all patients

6.3 First-Line ART for Infants, Children, Adolescents and Adults (including Pregnant and Breastfeeding Women)

The recommendations below apply to patients who are starting ART for the first time. Preferred and alternative first line regimens are shown in Tables 6.2 and 6.3. ARVs for infant prophylaxis are presented in the PMTCT chapter in Tables 7.3 to 7.6.

All patients must have their weight documented at every visit. Children and adolescents less than 15 years must have correct weight-based dosing of ARVs confirmed at every visit.

Infants and children depend on their caregivers for adherence to medication. Caregivers should be adequately prepared for their role of administering ARVs to infants and children, including addressing anticipated challenges such as drug palatability. It can be helpful for more than one caregiver to be informed about a child's HIV status and receive instruction on administration of ART.

Caregivers should always be shown and then asked to demonstrate how to measure and administer ARVs. This should be done both at the time of prescribing the ART (by the clinician) and at the time of dispensing the ART. Clinicians should ensure that the caregiver accompanying a child for clinical review is the same caregiver responsible for day-to-day ART administration.

Table 6.2: Preferred First-line ART Regimens and Dosing for Children, Adolescents and Adults [1]

Age	Weight	Preferred Regimen	Dosing[2] (correct weight-based dosing must be confirmed at every visit)
Birth to 4 weeks	Any	AZT + 3TC + NVP[3]	Refer to Annex 10 for weight-based dosing
> 4 weeks to < 15 years	< 30 kg	ABC + 3TC + DTG[4]	Refer to Annex 10 for weight-based dosing
	≥ 30 kg	TDF + 3TC + DTG[5,6]	TDF/3TC/DTG (300/300/50mg): 1 tab once daily
≥ 15 years	Any	TDF + 3TC + DTG[5,6]	TDF/3TC/DTG (300/300/50mg): 1 tab once daily

1 Patients currently on first-line regimens that are not included in the indicated preferred (Table 6.2) or alternative (Table 6.3) regimens should be considered for regimen optimization as per Section 6.5.1

2 See Annex 10 for weight-based dosing of all single-drug and fixed-dose combination formulations

3 Infants who initiate ART at less than 4 weeks of age should initiate on AZT+3TC+NVP irrespective of previous ART exposure; metabolism of other ARVs is not well known for this age group. As soon as these infants become 4 weeks old, they should switch to ABC/3TC+DTG (dosing included in Annex 10). Consult the Regional or National HIV Clinical TWG (Uliza Hotline 0726 460 000, ulizanascop@gmail.com) in case of pre-term infants

4 Once adolescents reach 30 kg, if virally suppressed they should be considered for transition as per Figure 6.2

5 TAF may become the preferred NRTI once fixed-dose combinations are available

6 DTG/3TC dual therapy may be considered for HBV-negative patients once fixed-dose combinations are available

Table 6.3: Use of Alternative ARVs in First-Line Regimens [1]

Age	Weight	Scenario and ARV Affected	Alternative ARV to Use
Birth to 4 weeks	Any	NVP: Develops hypersensitivity reaction	Use RAL granules or LPV/r granules (over 2 weeks of age) or defer ART until 4 weeks of age, then start ABC+3TC+DTG
		AZT: Infant Hb < 9.5 g/dL	Defer ART until 4 weeks of age, then start ABC+3TC+DTG
> 4 weeks to < 15 years	< 30 kg	ABC: Develops ABC hypersensitivity reaction[2]	Use AZT (if Hb ≥ 9.5 g/dL); if Hb < 9.5 g/dL consults Regional or National HIV Clinical TWG (call Uliza Hotline 0726 460 000; ulizanascop@gmail.com)
		DTG: Unable to tolerate	Use LPV/r at standard weight-based BD dosing, if 4-in-1 available this is preferred
		DTG: Currently on rifampicin-containing anti-TB medications	Increase DTG dosing frequency to twice daily for duration of rifampicin-containing TB treatment and for an additional 2 weeks after TB treatment is completed, then revert to once daily dosing[3]
	≥ 30 kg	TDF: Impaired renal function (CrCl ≤ 50 ml/min)	Use ABC[4,5] or TAF (once available)
		DTG: Unable to tolerate	Use EFV (for PWID use ATV/r)
		DTG: Currently on rifampicin-containing anti-TB medications	Give TDF/3TC/DTG FDC morning + DTG 50mg evening for duration of rifampicin-containing TB treatment and for an additional 2 weeks after TB treatment is completed, then revert to TDF/3TC/DTG FDC OD [3]
≥ 15 years	Any	TDF: Impaired renal function (CrCl ≤ 50 ml/min)	Use ABC[4,5] or TAF (once available)
		DTG: Unable to tolerate	Use EFV (for PWID use ATV/r)
		DTG: Currently on rifampicin-containing anti-TB medications	Give TDF/3TC/DTG FDC morning + DTG 50mg evening for duration of rifampicin-containing TB treatment and for an additional 2 weeks after TB treatment is completed, then revert to TDF/3TC/DTG FDC OD [3]

Table 6.3 Cont.

[1] For other scenarios that are not covered in this table, discuss as an MDT and consult the Regional or National HIV Clinical TWG (Uliza Hotline 0726 460 000; https://nhcsc.nascop.org/clinicalform)

[2] ABC hypersensitivity reaction (AHR) is rare in the Kenyan population. Table 6.9 provides the definition and management of AHR

[3] The additional 2 weeks of higher-dose DTG is to counter the ongoing liver enzyme induction effect of rifampicin, which continues for a short period after TB treatment is completed

[4] TAF may become the preferred NRTI once fixed-dose combinations are available

[5] DTG/3TC dual therapy may be considered for HBV-negative patients once fixed-dose combinations are available

6.4 Dosing and Administration of Dolutegravir (DTG)

DTG is preferred in first line ART (in combination with other ARVs) for children, adolescents and adults. DTG is well tolerated, highly efficacious, has a high genetic barrier to resistance and fewer drug-drug interactions.

Table 6.4: Dosing and Administration of Dolutegravir

Recommended Dosing of DTG
• < 20 kg body weight: Use weight-based dosing with dispersible 10mg DTG tablets as per Annex 10 • ≥ 20 kg body weight: DTG 50 mg film-coated tablet once daily, preferably as a morning dose. It is also available as part of FDC. Those unable to swallow the film coated tablets whole refer to Annex 10 • For patients taking rifampicin: Increase DTG dosing frequency to twice daily for duration of rifampicin-containing TB treatment and for an additional 2 weeks after TB treatment is completed, then revert to once daily. (The additional 2 weeks of higher-dose DTG is to counter the ongoing liver enzyme induction effect of rifampicin, which continues for a short period after TB treatment is completed) • For patients with suspected or confirmed INSTI resistance (e.g., patients with prior history of failing a RAL-based regimen): use DTG twice daily • DTG can be taken with or without food
Common Side Effects of DTG
• The most common side effects of DTG are headache, nausea and diarrhea. These side effects usually resolve after continued use for 1-2 weeks. It is critical to inform patients / caregivers about these potential side effects and their temporary nature, and encourage them to continue their ART and consult a HCW if concerned. • Some patients on DTG are more likely to develop insomnia. This may be reduced by taking DTG as a morning dose, or by taking DTG with a low-fat meal or on an empty stomach. • DTG may cause a small rise in serum creatinine levels but this does NOT represent a true decline in renal function. • Integrase inhibitors, including DTG, are associated with increased weight gain. Counsel patients about healthy eating and physical activity and the benefits of maintaining a healthy weight. • All adverse events should be reported through the national pharmacovigilance mechanism. (http://www.pv.pharmacyboardkenya.org/)

Table 6.4 Cont.

Pregnancy Safety of DTG
• DTG is safe during pregnancy and breastfeeding. Pregnancy intention should be discussed with all women initiating ART regardless of regimen. Women who do not wish to become pregnant should be offered appropriate family planning counseling and methods.
Important Drug Interactions with DTG
• Rifampicin o Rifampicin lowers DTG levels: increase DTG to 50 mg twice daily for patients on rifampicin who are ≥ 20 kg in body weight. Children <20 kg taking DTG who require rifampicin should increase their weight-appropriate DTG dose to twice daily. o There are no significant drug interactions between DTG and other currently used anti-TB medications (including for MDR-TB) • Mineral supplements, including: antacids containing calcium, zinc, magnesium or aluminum; iron supplements; prenatal vitamins (which contain iron and calcium) o These supplements decrease the absorption of DTG: administer DTG at least 2 hours before or 6 hours after taking any of these supplements o Dose separation is not required for calcium and iron supplements (including prenatal vitamins) if DTG is taken with a meal o It is critical to educate patients about this important drug interaction because many patients get these supplements and antacids over-the-counter without informing their healthcare provider • Carbamazepine, phenobarbital, phenytoin o These anticonvulsants decrease DTG levels: use a different anticonvulsant if available o If DTG must be co-administered with these drugs then increase to DTG to twice daily, although there is little data to guide this o If valproic acid is available this can be used with DTG without dose adjustment • Metformin o DTG increases levels of metformin; the levels of DTG are not affected: use a lower dose of metformin (often 50% of usual dose) and monitor glycemic control. Use a maximum daily dose of metformin 1 g • Other drug-drug interactions with DTG o See Annex 13C

6.5 Monitoring and Changing ART

The objectives of clinical and laboratory monitoring during ART are to identify and treat inter-current illnesses, assess for and manage adverse drug reactions, and evaluate response to treatment. Routine laboratory monitoring recommendations are described in Table 3.5; however, additional investigations should be ordered whenever there is clinical suspicion for which a laboratory test result may alter patient management.

Indications for changing ART include optimizing therapy for patients who have undetectable viral load, managing adverse drug reactions or toxicity, drug-drug interactions, co-morbidities and treatment failure.

6.5.1 Optimizing Therapy for Patients who have suppressed viral load on First Line ART

Patients who are virally suppressed on first line ART may benefit from regimen optimization even if they are currently tolerating their regimen well and have no drug-drug interactions requiring a change. Regimen modifications may be done for age/weight transitions among children and adolescents <15 years and to simplify a regimen, prevent long-term toxicity and improve cost-effectiveness. Dolutegravir has been shown to have superior tolerability and efficacy compared to efavirenz and lopinavir and is now preferred as part of first line ART for children, adolescents and adults. While most adults in Kenya have switched over to a DTG-containing regimen, proactive switching of children is now also recommended with the availability of a pediatric dispersible dolutegravir tablet.

Children and adolescents with suppressed viral load on first line ART and not on the recommended first line regimen as per Table 6.2 should be considered for optimization as per Figures 6.1 and 6.2, such as when children grow and enter a new weight band. This also includes PLHIV who recently initiated non-standard therapy (less than 3 months ago, before the first VL is due). Decisions on regimen modification should be made following discussion with the patient/caregiver.

Always discuss the possibility of new side effects when changing to a new ARV, particularly side effects common to all ARVs (headache, nausea, diarrhea) and any side effects specific to the new ARV. Reassure patients that most side effects resolve with continued use after 1-2 weeks.

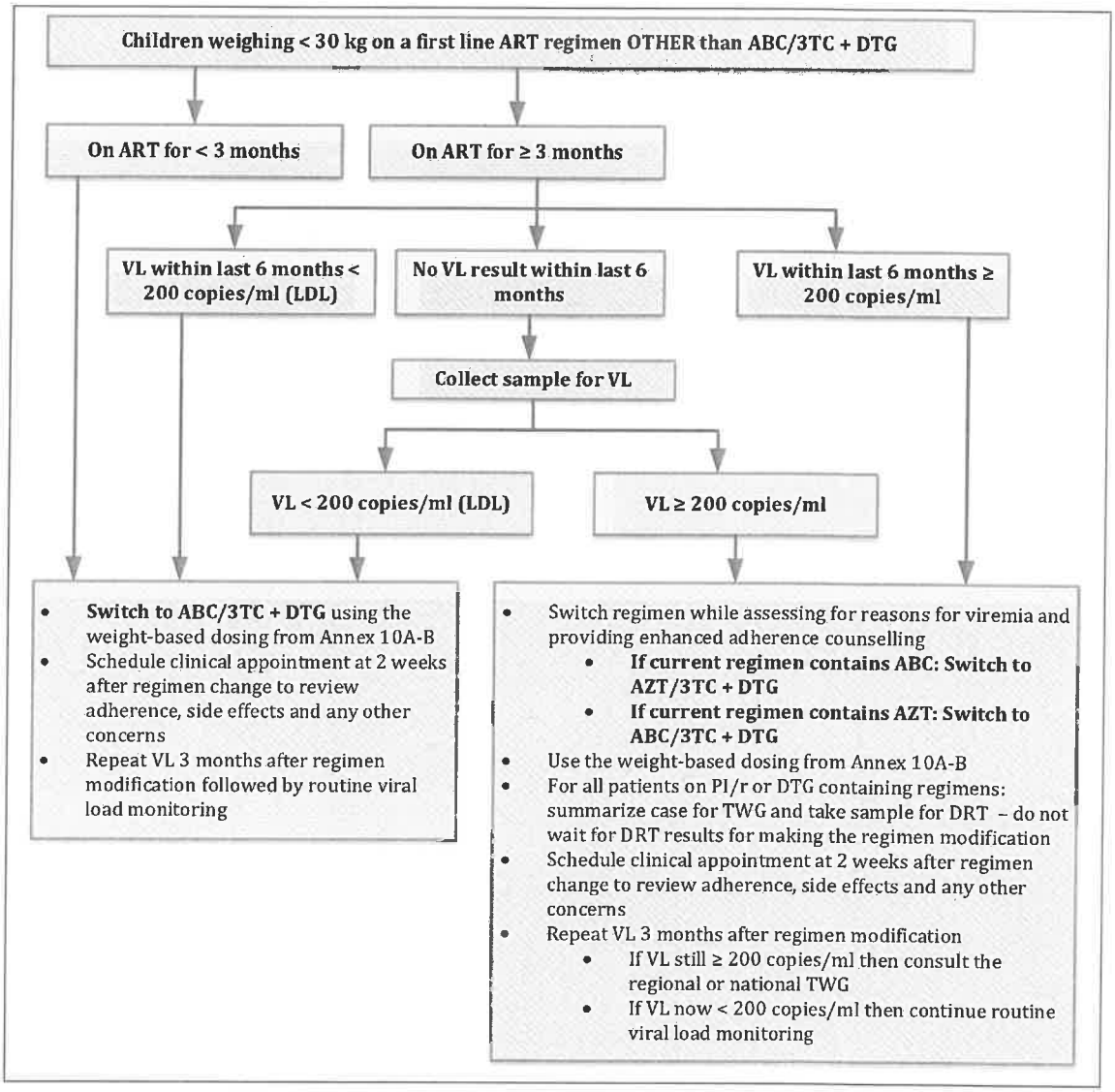


Figure 6.1: Optimizing ART Regimens for Children and adolescents <15 years Weighing < 30 kg on First Line ART

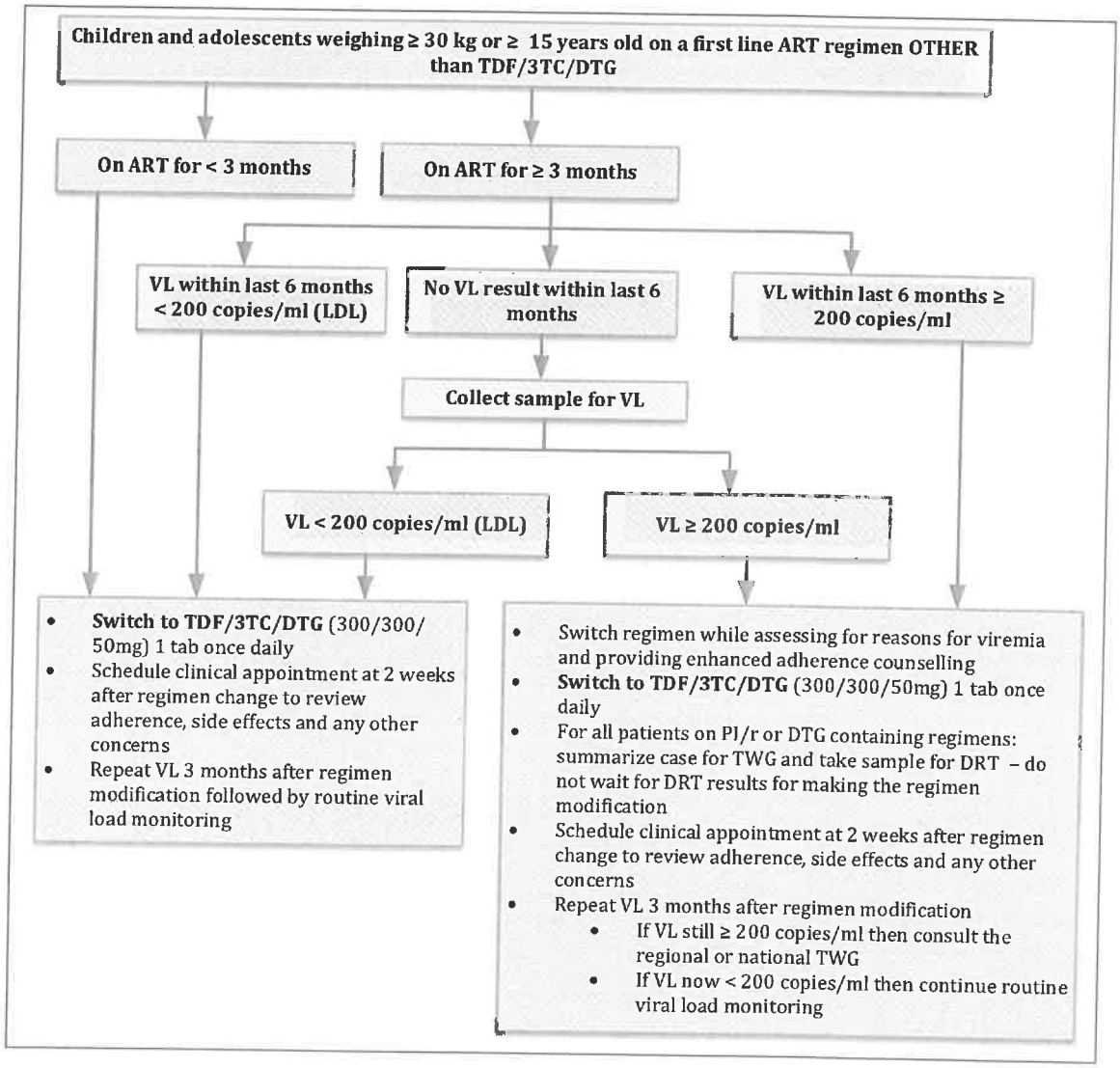


Figure 6.2: Optimizing ART Regimens for Children and Adolescents Weighing ≥ 30 kg or ≥ 15 years old on First Line ART

6.5.2 Changing ARVs Due to Adverse Drug Reactions

Patients starting ART should be educated on the potential side effects of ART and all other prescribed medication. ADRs can have a significant impact on patient adherence and must be identified early and managed aggressively. All ADRs should be reported to the Pharmacy and Poisons Board using existing pharmacovigilance tools (http://www.pv.pharmacyboardkenya.org/). Pharmacovigilance is particularly important for monitoring ADRs associated with any new ARVs that enter the national supply chain, as rare ADRs may appear in routine care, which were not observed in the highly selected patients participating in clinical trials.

The most common significant ADRs associated with ARVs that may require a drug substitution are summarized in Table 6.5. General principles for managing ADRs are outlined in Figure 6.3. Managing specific ADRs is described in Tables 6.6 to 6.9.

Table 6.5: Common Significant Adverse Drug Reactions

ARV Agent	Adverse Drug Reaction	High Risk Situations/Comments
NRTIs		
ABC	ABC hypersensitivity reaction (see Table 6.9)	Do not re-challenge
AZT	Anaemia, neutropenia (See Table 6.7)	Risk factors: CD4 count < 200 cells/mm^3; BMI < 18.5 (or body weight < 50 kg); anaemia at baseline; concurrent use of other drugs with similar ADR (cotrimoxazole, gancyclovir, ribavirin)
	Lactic acidosis	Risk factors: Pregnancy; obesity
	Lipoatrophy	Risk factors: Low CD4 count
TDF	Renal dysfunction (See Figure 6.5)	Risk factors: Underlying renal disease; age > 60 years; BMI < 18.5 (or body weight < 50 kg); diabetes; hypertension; concomitant PI use or nephrotoxic drug Avoid in patients with CrCl< 50ml/minute unless no suitable alternative such as required to treat HIV/HBV co-infection if TAF is not available
TAF	Weight gain	Risk factors: women; concomitant use of INSTIs Provide advice on healthy eating and physical activity to maintain a healthy weight (Table 4.9)
NNRTIs		
All NNRTIs	Rash (NVP>>EFV>ETR)	Manage rash as per Table 4.4
EFV	CNS side-effects	Risk factors: Pre-existing psychiatric disorder
	Gynaecomastia	Switch from EFV to an alternative, and consult if gynecomastia does not improve
NVP	Hepatotoxicity (See Table 6.8)	N/A.
PIs		
All PIs boosted with RTV	GI intolerance (LPV/r>DRV/r>ATV/r)	Consult for recommendation on alternative regimen (R-TWG or Uliza Hotline 0726 460 000, https://nhcsc.nascop.org/clinicalform)
	Dyslipidaemia (LPV/r>DRV/r>ATV/r)	Risk factors: Obesity; sedentary lifestyle; diet high in saturated fats and cholesterol
ATV/r	Hyperbilirubinemia	This only requires drug substitution if cosmetic effect of jaundice is likely to interfere with patient adherence
DRV/r	Rash/hypersensitivity	Risk factors: sulfa allergy
INSTIs		
All INSTIs	Weight gain	Risk factors: women; concomitant use of TAF Provide advice on healthy eating and physical activity to maintain a healthy weight
	Rash/hypersensitivity	Consult (Uliza Hotline 0726 460 000, https://nhcsc.nascop.org/clinicalform)
DTG	Insomnia	Give in the morning; if no improvement then try giving with low fat meal or on empty stomach

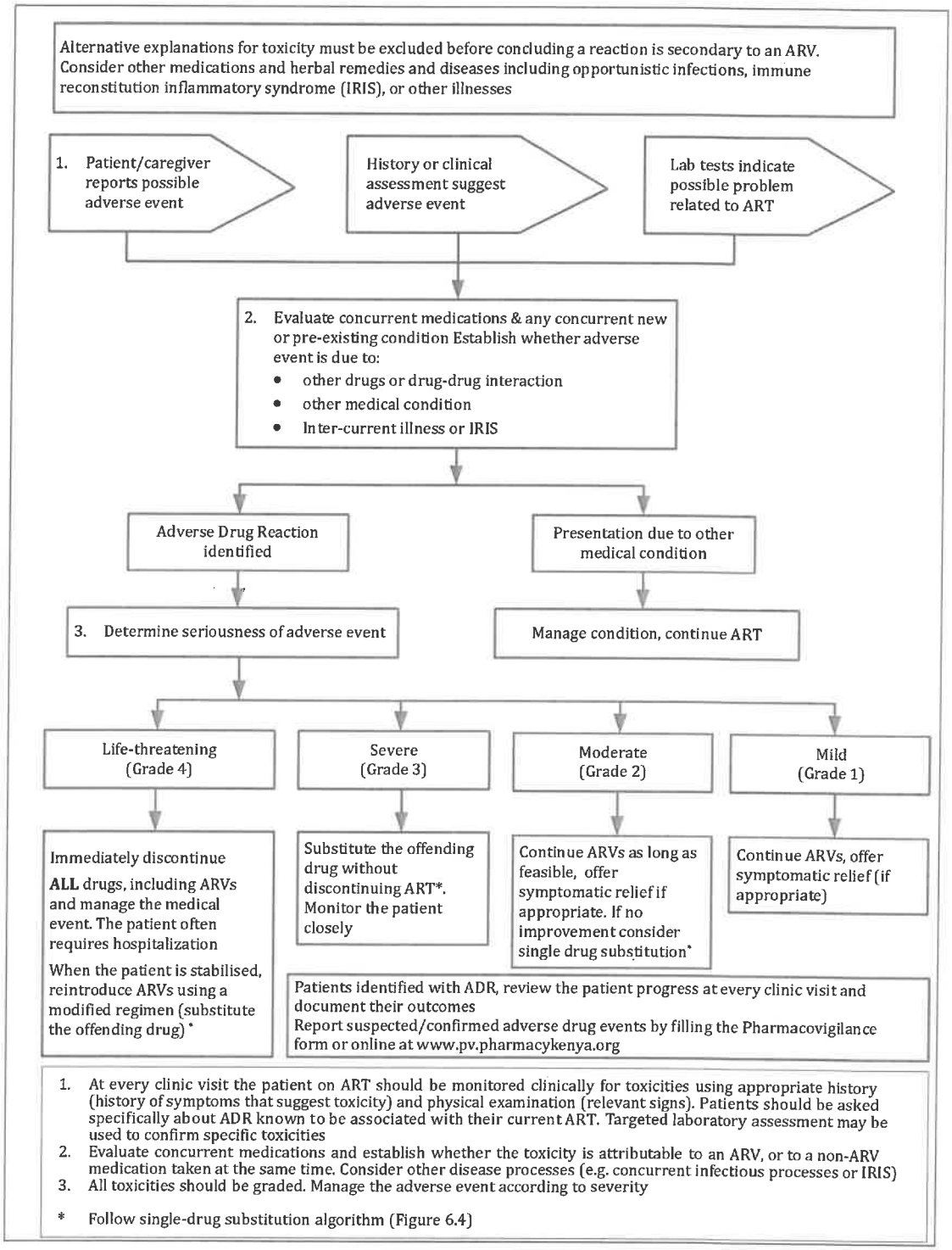


Figure 6.3: General Principles for Managing Adverse Drug Reactions

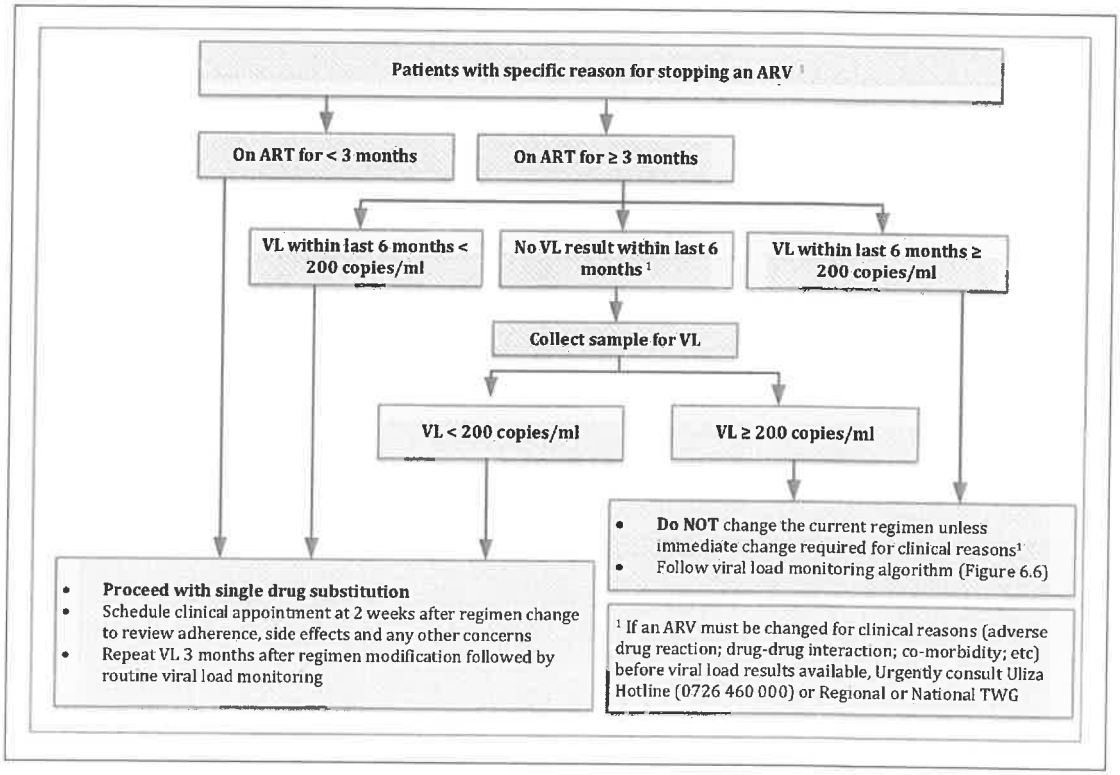


Figure 6.4: Managing Single Drug Substitutions for ART

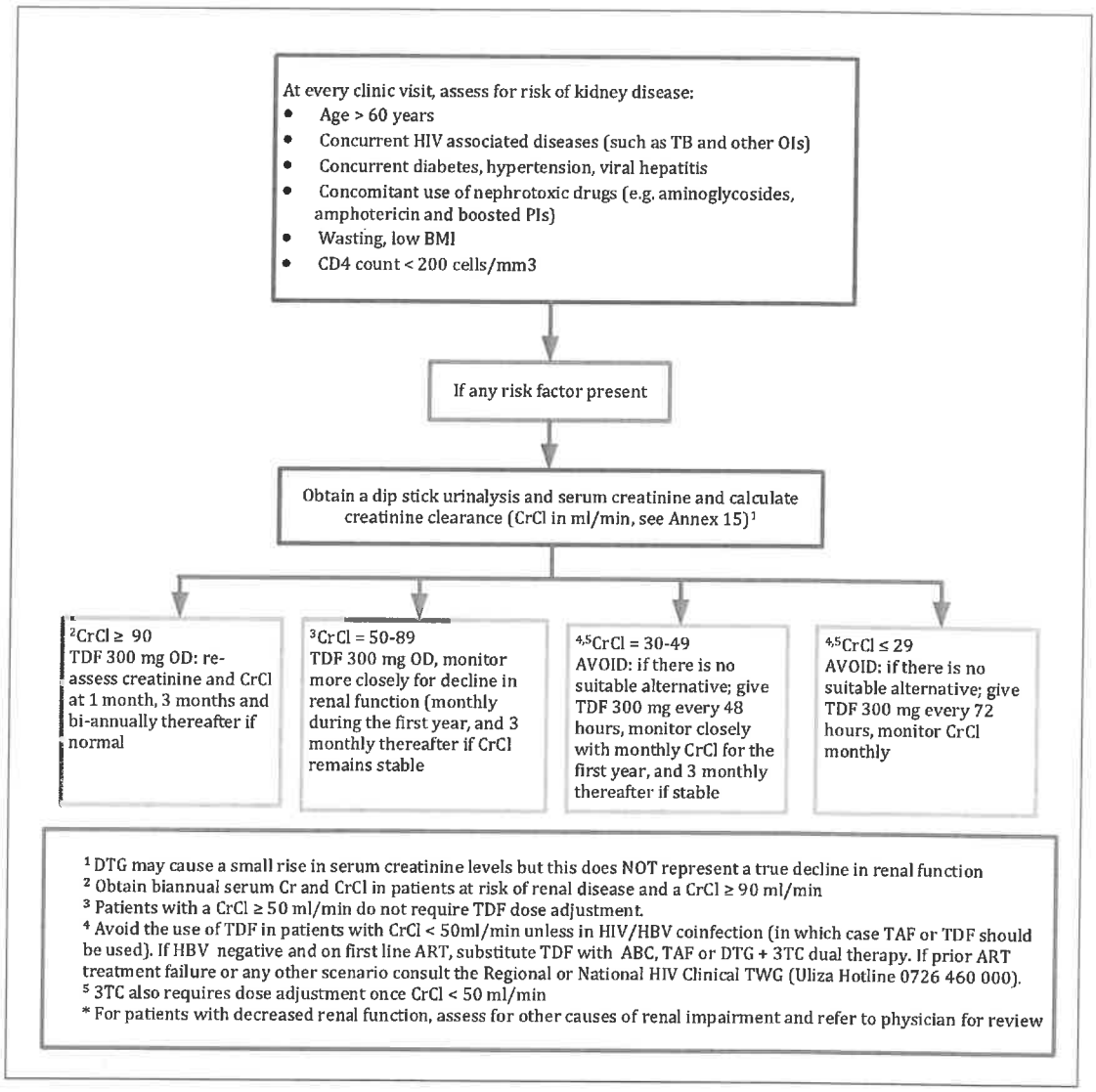


Figure 6.5: Managing TDF-Associated Kidney Toxicity

Table 6.9: Diagnosis and Management of Abacavir Hypersensitivity Reaction

Diagnosis
Within 3 weeks of initiating an ABC-containing regimen, patient develops any 2 of the following symptom groups concurrently • Fever • Erythematous and/or pruritic rash • Respiratory symptoms (shortness of breath and/or sore throat and/or cough) • GI symptoms: nausea and/or vomiting and/or diarrhea • Extreme fatigue and/or body pain preventing normal activities AND: there is not a more likely alternative explanation for the symptoms
Management
• Stop ABC immediately and substitute with an alternative ARV • Patient must NEVER be re-challenged with ABC – a single dose could result in a fatal hypersensitivity reaction • Clearly mark file and educate patient about avoiding ABC in future • Issue an Adverse Event alert card
Note: • ABC hypersensitivity reaction is rare in our population: always consider other more likely possible diagnoses • Symptoms generally get worse within hours after each dose of ABC

6.5.3 Changing ARVs Due to Drug-Drug Interactions

Patients must be asked about other medications (including non-prescription and herbal medicine) they are taking at every visit. Some common drugs have specific drug-drug interactions that may require dose adjustment or substitution of the ARV or the other interacting drugs. Common medications that interact with specific ARVs include: rifampicin, rifabutin, antacids, multivitamin/mineral supplements, methadone, several anti-fungal, anti-convulsant, calcium-channel blockers, some anti-depressants, some statins, and some anti-malarial. Annex 13 provides common drug-drug interactions and management recommendations. It is recommended practice to check for interactions whenever a new medicine is started.

6.5.4 Changing ARVs Due to Treatment Failure

Viral load is the test of choice for monitoring response to ART and identifying treatment failure. **First VL should be performed 3 months after ART initiation for all PLHIV.**

Treatment failure should be suspected when a new or recurrent HIV-associated condition indicating severe immunodeficiency (WHO stage III or IV condition) develops after at least 6 months on ART. Treatment failure should always be confirmed with VL testing.

Frequency of routine VL monitoring for specific populations is:

- Age 0-24 years old: at 3 months after ART initiation and then every 6 months
- Age ≥ 25 years old: at 3 months after ART initiation, then at month 12 and then annually
- Pregnant or breastfeeding: at confirmation of pregnancy (if already on ART) or 3 months after ART initiation (if ART initiated during pregnancy/ breastfeeding), and then every 6 months until cessation of breastfeeding
- Before making any drug substitution (if no VL results from the prior 6 months)
- Three months after any regimen modification (including single-drug substitutions), and then as per population group
- For any patient with a detectable VL follow the viral load monitoring algorithm (Figure 6.6)

Interpreting Viral Load Results and Defining Treatment Failure (Figure 6.6)

The goal for ART is to achieve sustained viral suppression defined as below the Lower Detection Limit (LDL), < 50 copies/ml is considered as suppressed. See Table 5.17

Persistent low-level viremia (PLLV) is defined as having between 200-999 copies/ml on two consecutive measures. These patients are at increased risk of progression to treatment failure, development of resistance and death and therefore require a similar case management approach as patients with VL ≥ 1,000 copies/ml, and consultation with the Regional or National HIV Clinical TWG (Uliza Hotline 0726 460 000; https://nhcsc.nascop.org/clinicalform).

Treatment failure is suspected when a patient has a high VL ≥ 1,000 copies/ml after at least 3 months of using ART. Treatment failure is only confirmed when VL is ≥ 1,000 copies/ml after assessing for and addressing poor adherence or other reasons for high VL, and then repeating VL after at least 3 months of enhanced adherence to allow for viral re-suppression.

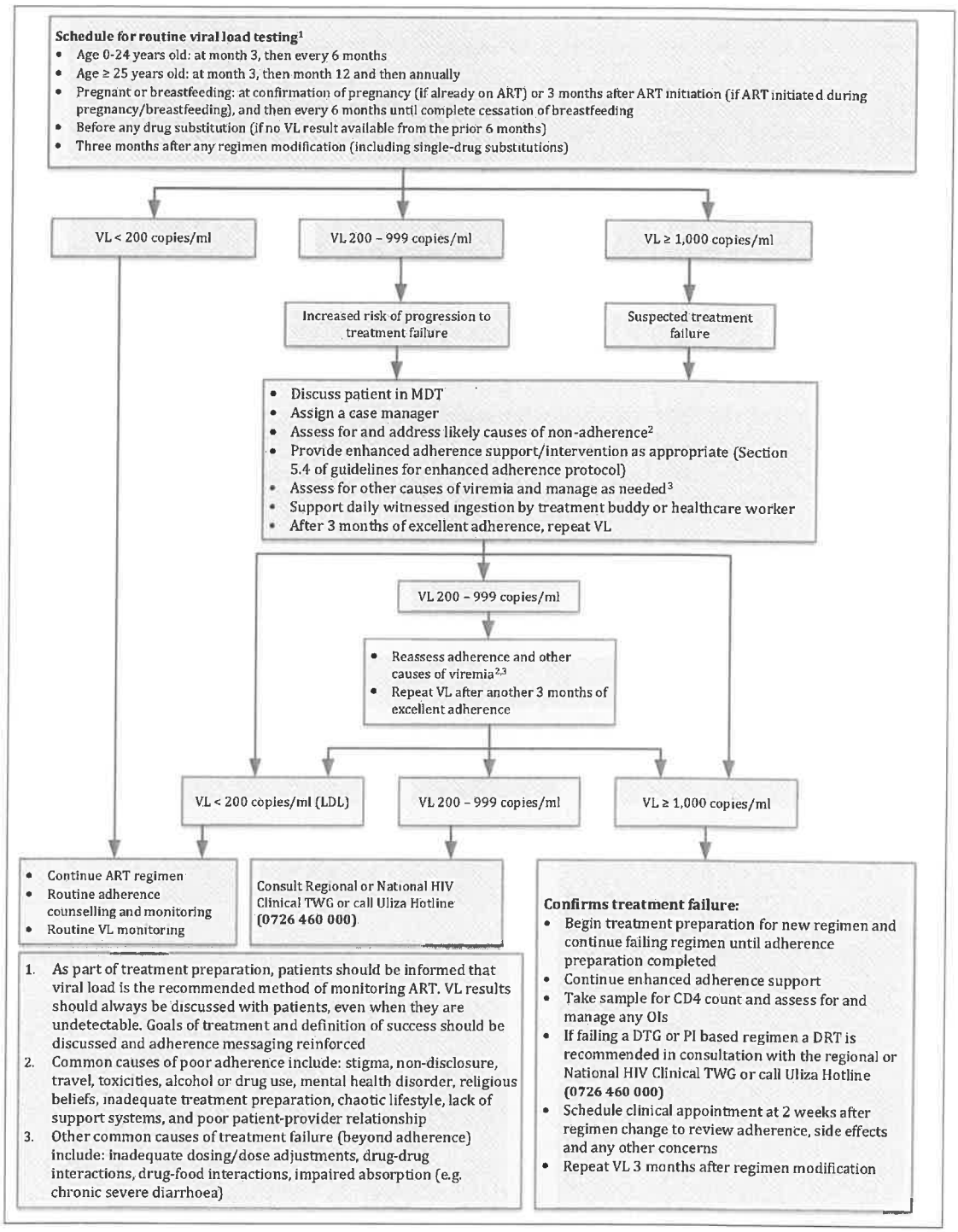


Figure 6.6: Viral Load Monitoring of Patients on ART (1st Line or 2nd Line)

Non-adherence is the most frequent cause of treatment failure. As per the viral load monitoring algorithm, **adherence issues must be addressed BEFORE confirming treatment failure.**

Daily witnessed ingestion by a treatment buddy or healthcare worker is recommended to confirm excellent adherence before repeating the VL. All adherence issues must be resolved before switching to a new regimen otherwise the patient will quickly fail the new regimen as well, and soon run out of viable ART options. **An exception to this may be when the regimen itself is the primary cause of poor adherence** (e.g., side effects from one of the ARVs are not manageable such as severe diarrhea with LPV/r that does not improve with symptom management), in which case the regimen may need to be modified to allow for perfect adherence. This should be done in consultation with the Regional or National HIV Clinical TWG.

Chapter 5 provides detailed guidance on adherence preparation, assessment, and support.

Table 6.10: Recommended Second-line ART Regimens in Infants, Children, Adolescents and Adults, excluding TB/HIV co-infection [1]

Weight/scenario	First-line ART	Second-line ART
< 30 kg	ABC (or AZT) + 3TC + DTG	DRT-based second-line[2,3]
	ABC + 3TC + LPV/r	Take sample for DRT and change to AZT + 3TC + DTG while awaiting DRT results; modify based on DRT results if indicated
	AZT + 3TC + LPV/r	Take sample for DRT and change to ABC + 3TC + DTG while awaiting DRT results; modify based on DRT results if indicated
	ABC + 3TC + EFV	AZT + 3TC + DTG
	AZT + 3TC + EFV	ABC + 3TC + DTG
≥ 30 kg or ≥ 15 years old	TDF (or ABC) + 3TC + DTG (or PI/r)	DRT-based second-line[2]
	TDF (or ABC) + 3TC + EFV	TDF + 3TC + DTG
	AZT + 3TC + EFV	TDF + 3TC + DTG
Pregnant and Breastfeeding women	TDF (or ABC) + 3TC + DTG	Take sample for DRT and change to TDF + 3TC + ATV/r while awaiting DRT results; modify based on DRT results if indicated
	TDF (or ABC) + 3TC + PI/r	Take sample for DRT and change to TDF + 3TC + DTG while awaiting DRT results; modify based on DRT results if indicated
	TDF (or ABC) + 3TC + EFV	TDF + 3TC + DTG
	AZT + 3TC + EFV	TDF + 3TC + DTG
HIV/HBV Co-infection	Always maintain TDF in order to treat the HBV as well as HIV	
TB/HIV Co-infection	Refer to Table 8.8: Recommended ART Regimens for Patients who Develop TB while **Failing** 1st Line ART	

Table 6.10 Cont.

1. If any drug in the recommended 2nd line regimen is contraindicated or previously not tolerated, consult the Regional or National HIV Clinical TWG (Uliza Hotline 0726 460 000; https://nhcsc.nascop.org/clinicalform). Such patients may require DRT to select agents for the second-line ART. Additional drugs may be recommended on a case-by-case basis, including DRV/r, ATV/r, RAL, or ETR
2. Patients failing DTG-based or PI-based first-line regimens should have a Drug Resistance Test (DRT) ordered as soon as treatment failure is confirmed. The patient summary and DRT results should be sent to the Regional or National HIV Clinical TWG (https://nhcsc.nascop.org/clinicalform) or call Uliza Hotline (0726 460 000) to determine the most suitable second-line regimen for the patient. The DRT results will be used to determine if there is true DTG or PI failure or if there is an underlying problem with non-adherence. Daily witnessed ingestion is recommended prior to performing DRT

Important Considerations for First-line Treatment Failure in Children

- Second-line ART in infants and children is more complex to manage. These children and their caregivers should undergo thorough clinical and psychosocial assessment to rule out inter-current illness or non-adherence as the reason for a high viral load
- All children failing first-line should be discussed in the MDT and preferably with an experienced ART provider prior to change of ART to second-line. **However, this should not cause undue delay in switching a failing regimen**
- The choices for infants and children failing an alternative first-line regimen are limited and may need to be discussed with the Regional or National HIV Clinical TWG. Some of these children will require HIV DRT to determine the most suitable second-line regimen

Important considerations for second-line ART Treatment Failure

- Patients failing second-line ART have limited options. ARVs used to construct a third-line regimen are often more expensive, will have increased pill burden and more side effects. These factors will exacerbate pre-existing poor adherence
- Second-line treatment failure should be confirmed by viral load testing following the viral load monitoring algorithm (Figure 6.6)
    - After the first detectable VL (ε 50 copies/ml), assess for and address all causes of poor adherence, and assess for all other possible causes of viremia.
    - These patients should be discussed at an MDT session. Repeat the VL after 3 months of excellent adherence (preferably with daily witnessed ingestion of the ARVs by a treatment buddy, relative, CHV, etc.).
    - If the second VL is still ε 50 copies/ml then continue the failing second-line regimen while reassessing adherence and other causes of viremia, implementing adherence support systems as needed, and then repeat the VL after another 3 months.
    - If viremia continues then consult the Regional or National HIV Clinical TWG (Uliza Hotline 0726 460 000; https://nhcsc.nascop.org/clinicalform) using the national case summary form (Annex 9B). These patients will likely require DRT in order for the TWG to design the most suitable third-line regimen
- Patients failing second-line ART require thorough assessment for barriers to adherence and ongoing enhanced adherence support including
    - Assigning a case manager
    - More frequent adherence counselling by a trained counsellor
    - Assessment and treatment of mental health and substance use disorders
    - Provision of adherence support such as modified directly observed therapy, a treatment supporter, home visits etc.

Table 6.11: Possible Third-line ART in Children, Adolescents and Adults

	Possible 3rd Line Regimen	Comment
Children	DTG + 3TC + DRV/r	Third line ART selection is based on DRT results Note that the Regional or National HIV Clinical TWG may recommend reusing some of the ARVs the patient has already failed, even when resistance is present
	DTG + AZT + 3TC + DRV/r	
	DTG + ABC (or TDF) + 3TC + DRV/r	
	ETV + 3TC + DRV/r	
Adults	DTG + 3TC + DRV/r	
	DTG + AZT + 3TC + DRV/r	
	DTG + TDF + 3TC + DRV/r	
	DTG + TDF (or AZT) + 3TC	
	ETV + 3TC + DRV/r	

7. Prevention of Mother to Child Transmission of HIV/Syphilis/Hepatitis B

Routine antenatal care (ANC) offers an important opportunity to provide high quality combined HIV prevention through targeted health education and counselling; HIV testing for the woman, partners and family members; linkage to HIV prevention and treatment; and to discuss and plan for future conception and contraception needs. Prevention of mother-to-child transmission of HIV (PMTCT)/Syphilis/Hepatitis B should be offered as part of a comprehensive package of fully integrated, routine antenatal care interventions (Table 7.1).

Table 7.1: Essential Package of Antenatal Care

Intervention	Recommendation/Description
Group & Individual Education	Include information on importance of at least 8 ANC visits, details of ANC services (including health checks and treatment of any illness, medical tests including HIV, syphilis testing and hepatitis B, monitoring of maternal and fetal wellbeing, etc.), nutrition, personal care, recognizing and responding to danger signs during pregnancy, birth preparedness including skilled birth attendance, post-natal care including immunization, family planning and maternal and infant nutrition, HIV prevention and treatment (HTS, preventing new infections during pregnancy including PrEP where appropriate, ART for those who are HIV positive, monitoring of ART and ARV prophylaxis and follow-up for HEIs) and triple elimination (preventing HIV/ syphilis/hepatitis B transmission from mother to child).
Counselling	• Pre-conception – Women in reproductive age who are known to be HIV positive should have pregnancy intention assessment visit at every visit. If they desire to become pregnant, pregnancy should be planned i.e., attain viral load suppression, immune reconstitution and have Iron and Folic Acid Supplementation (IFAS) administered prior to conception. • Women who are newly diagnosed with HIV and/or newly initiating ART require more intensive adherence counseling and HIV education, which may include a case manager and/or mentor mother • Birth preparedness: support the pregnant woman and her partner to develop an individual birth plan that includes place of delivery with skilled attendants, emergency transport, birth companionship and readiness for infant care • Pregnancy danger signs: offer information on returning to ANC as soon as possible in case they develop fever, lower abdominal pain, severe headache, swollen feet, convulsions and per vaginal bleeding. • Maternal, infant and young child nutrition (MIYCN): All pregnant women should receive information on proper nutrition during pregnancy and breastfeeding, safe infant feeding and optimal nutrition practices. Promote exclusive breastfeeding for the first 6 months irrespective of HIV status, followed by complementary feeding (Table 7.7). During pregnancy, provide iron, folate and multivitamins; monitor for anemia, advise on adequate caloric intake (HIV positive women require an additional 10% of recommended daily allowance (RDA))

Table 7.1 Cont.

Counselling	• HIV testing services
	  ○ All pregnant women (unless known HIV positive) should be counselled and tested for HIV, syphilis and Hepatitis B during their first ANC visit and if negative, repeat HIV and syphilis testing in the third trimester.
	  ○ All pregnant and breastfeeding mothers with continued HIV risk (Key populations) should be counseled and tested for HIV every 3 months until post-cessation of breastfeeding.
	  ○ Pregnant and breastfeeding mothers should be educated and offered a self-test kit for their sexual partner(s)
	  ○ At Labour and delivery, HIV testing should be done for all women with unknown HIV status or that previously tested negative, even if tested during the third trimester
	  ○ All breastfeeding mothers (unless known HIV positive) should be counselled and tested at the 6-week infant immunization visit. The HIV test (if negative) should be repeated every 6 months until complete cessation of breastfeeding. **Note:** key population mothers (FSWs and PWIDs) get retested every 3 months (Table 2.5)
	  ○ Women should be counselled about the schedule for repeat HIV testing in pregnancy and postnatally as part of routine ANC and postnatal education
	  ○ All pregnant and breastfeeding women who are not tested, opt-out or decline HIV, Syphilis or Hepatitis testing during the first contact should be offered counselling and testing in subsequent visits with appropriate linkage and referral for prevention, care and support services. Daily Witnessed Ingestion (DWI) is advised to support Viral suppression for newly initiated clients and those whose regimens are being switched. This is to support viral suppression among women with high viral load.
	  ○ All HIV positive pregnant and breastfeeding women enrolled into care should receive counselling and support (including assisted disclosure), case management linkage and follow-up for comprehensive treatment and prevention (including lifelong ART)
	  ○ All Syphilis and Hepatitis B positive clients should be given appropriate care as defined in Table 7.3 "triple elimination".
	  ○ All partners of pregnant and breastfeeding women should be offered HIV testing and counselling and all biological children if the mother is HIV positive
	• All pregnant and breastfeeding women should receive information on risk reduction, including PrEP where appropriate
	• Post-partum contraception: counsel on contraception methods and help patient develop a plan for effective contraception from 6-weeks post-partum to avoid unplanned pregnancies

7.1 Antiretroviral Therapy for HIV-positive Pregnant and Breastfeeding Women and Infant Prophylaxis

The goal of ART for HIV positive pregnant women is two-fold: to restore and maintain the mother's immune function and therefore general health, and secondly, to prevent transmission of HIV in utero, at labour and delivery and during breastfeeding. To achieve this goal, the mother must take effective antiretroviral therapy to achieve viral suppression. Table 7.2 summarizes recommendations for use of ART for HIV positive pregnant women.

Table 7.2: Summary of Use of ART for HIV Positive Pregnant and Breastfeeding Women

Overall recommendations	
When to start	ART should be initiated in all pregnant and breastfeeding women living with HIV, regardless of gestation, WHO clinical stage and at any CD4 cell count and continued lifelong. ART should be started, ideally, on same day as HIV diagnosis after readiness assessment with ongoing enhanced adherence support including community-based case management and support.
What to start with (first-line ART)	TDF/3TC/DTG
Infant prophylaxis	• AZT+NVP for 6 weeks, NVP should be continued until 6 weeks after complete cessation of breastfeeding For more comprehensive information Refer to Table 7.3
Monitoring	**Viral load monitoring during pregnancy and breast-feeding (Figure 6.6)** • Whenever possible, use same-day point-of-care methods for viral load testing of pregnant and breastfeeding women to expedite the return of results and clinical decision-making. If this is not available, viral load specimens and results for pregnant and breastfeeding women should be given priority across the laboratory referral process (including specimen collection, testing and return of results). • For pregnant and breastfeeding women newly initiated on ART, obtain VL 3 months after initiation, and then every 6 months until complete cessation of breastfeeding • For HIV positive women already on ART at the time of confirming pregnancy or breastfeeding, obtain a VL irrespective of when prior VL was done, and then every 6 months until complete cessation of breastfeeding • For pregnant or breastfeeding women with a VL ≥ 50 copies/ml: assess for and address potential reasons for viremia, including intensifying adherence support, repeat the VL **after 3 months of excellent adherence, including daily witnessed ingestion, where feasible and appropriate** ○ If the repeat VL is 200 - 999 copies/ml consult the Regional or National HIV Clinical TWG ○ If the repeat VL is ≥ 1,000 copies/ml, change to an effective regimen. Refer to Table 6.10 ○ If the repeat VL is < 200 copies/ml (LDL) then continue routine monitoring

Table 7.2 Cont.

Scenario	
Pre-conception planning for women already on ART (not yet pregnant)	Maintain ART Carry out a VL test if not done in the prior six months to confirm viral suppression (Figure 6.6) Refer to Table 4.8 for pre-conception care for women on ART who desire pregnancy, including laboratory screening, TT immunization, folate, etc.
On ART at the time of confirming pregnancy/breastfeeding	Maintain ART. Carry out a VL at first identification of pregnancy, irrespective of when a prior viral load was done, to confirm viral suppression (Figure 6.6) Manage the baby as HEI (Figure 2.1 for EID, and Table 7.3 for infant prophylaxis)
Not on ART at the time of confirming pregnancy	Prepare the patient and start on ART as soon as possible. ART initiation should occur preferably on the same day HIV infection is confirmed. Perform VL 3 months after ART initiation. Pregnant and breastfeeding women with a history of treatment interruption returning to care should have reasons for interruption assessed and preferentially re-started on a DTG-containing regimen unless the reason for interruption was DTG intolerance or failure. Viral load monitoring in this case should be done after 3 months of initiation and 6 months thereafter until cessation of breastfeeding. Additional adherence support should be made available.
Not on ART during labour and delivery	Start on ART during labour. After delivery, continue treatment preparation and adherence support and continue ART Manage the baby as HEI (Figure 2.1 for EID, and Table 7.3 for infant prophylaxis)
Not on ART during post-partum/breastfeeding	Prepare (readiness assessment) and start on ART as soon as possible preferably on the same day HIV infection is confirmed. Manage the baby as HEI (Figure 2.1 for EID, and Table 7.3 for infant prophylaxis). Adherence support for both mother and infant, consider daily witnessed ingestion (DWI) support.
Managing labour and delivery	Minimize vaginal examinations, use aseptic techniques to conduct delivery, avoid artificial rupture of membranes, monitor labour and avoid prolonged labour by use of the partograph, avoid unnecessary genital tract trauma

Note that certain patient groups e.g., recent HIV infections, pregnant adolescent girls and young women, women with previous children with HIV infection, patients with high viral load at time of pregnancy confirmation, patients with poor social support systems, patients with history of default from care and those with active co-morbidities etc. may require additional adherence and psychosocial support

Table 7.3: ARV Prophylaxis for HIV-Exposed Infants

Infant Scenario	Infant Prophylaxis	Maternal Scenarios
HIV Exposed Infant	• Infant prophylaxis o AZT+NVP for 6 weeks, NVP + cotrimoxazole should be continued until 6 weeks after complete cessation of breastfeeding o Infant prophylaxis can be discontinued after a minimum of 12 weeks on NVP if the child is not breastfeeding (death of mother or separation with mother) o The infant prophylaxis regimen applies to all infants irrespective of age when identifying HIV exposure (e.g., mother diagnosed HIV-positive in the postpartum period) • DBS or whole blood for PCR at 6 weeks or first contact, following EID algorithm (Figure 2.1) • Birth testing (Figure 2.2) may be conducted in sites where point of care has been implemented and when medically indicated	If mother not on ART, initiate ART as soon as possible (preferably same day) If mother is on ART for ≥ 3 months and the VL is ≥ 50 copies/ml, intensify adherence, repeat the VL If VL <50 copies/ml, continue current regimen Follow Viral load algorithm Figure 6.6
TRIPLE ELIMINATION		
CONDITION in mother	INFANT MANAGEMENT	MATERNAL MANAGEMENT
Syphilis-VDRL or diagnosed with Dual kit	Crystalline Penicillin 50,000 IU/kg BD (if <7 days) or TDS if (>7 days old) for a total of 10 days.	Penicillin G 2.4 MU IM Stat or Ceftriaxone 1gm IM daily for 8-10 days in case of penicillin allergy.
Congenital syphilis		
Hepatitis B – HbsAg test	Hepatitis B immunoglobulin 0.5ml IM within 12 hours after birth. Hepatitis B vaccine 0.5ml three doses at birth, 1 month and 6 months.	Refer to viral hepatitis management guidelines

Note: If child has contraindication or unable to tolerate NVP or AZT then give the tolerated drug up to complete cessation of breastfeeding. If the infant is on AZT prophylaxis, give up to a minimum of 12 weeks or until maternal viral load is suppressed. In situations where neither AZT nor NVP are tolerated 3TC may be used as a third option if available.

HIV exposed infants with TB infection, infant prophylaxis should include AZT plus 3TC fixed dose (60/30 mg). For 12 weeks or until maternal viral load is suppressed (3-5.9 – 1 tab BD, 6-9.9kg 1.5tab BD, 10-13.9 kg 2 tabs BD). For more details, refer to Annex 10 A.

After TB treatment, revert to NVP until 6 weeks post cessation of breastfeeding,

HB monitoring should be done to all HEIs on AZT prophylaxis as per the recommendations (Table 6.7: management of AZT associated bone marrow suppression)

Groups considered higher risk for mother to child transmission who may need additional adherence and psychological support include:

- All new HIV positives irrespective of time identified
- HIV positive adolescent Girls and Young Women (AGYW) <19 yrs. including OVC
- VL >200 copies/ml
- Clients with stigma, declining treatment, poor adherence
- PMTCT client with previous HIV infected infant
- Client with active comorbidities - DM, OIs, malnourished (low MUAC), mental health etc.
- Clients who sero-convert during ANC/PNC follow up
- Poor socio-economic and family support structures
- Those who drop off ART
- Key population – FSW, PWID

Alcohol use and brewers/sellers

Table 7.4: Dosing of ARVs for Infant Prophylaxis from Birth to 12 Weeks of Age

Age/Weight	Dosing of NVP (10mg/ml) OD	Dosing of AZT (10mg/ml) BD
Birth to 6 weeks		
Birth weight < 2,000 g	2 mg/kg per dose, OD	4 mg/kg per dose, BD
Birth weight 2,000-2,499 g	10 mg (1 ml), OD	10 mg (1 ml), BD
Birth weight ≥ 2,500 g	15 mg (1.5 ml), OD	15 mg (1.5 ml), BD
> 6 weeks to 12 weeks of age*		
Any weight	20 mg (2 ml), OD	60 mg (6 ml), BD
> 12 weeks (Table 7.5 and 7.6)		

*Dose adjustment required once child reaches 6 weeks of age

If older infant beyond 6 weeks of age is newly identified as HIV exposed infant, should be given AZT+NVP for 6 weeks, NVP + cotrimoxazole should be continued until 6 weeks after complete cessation of breastfeeding

Table 7.5: NVP Dosing for Infant Prophylaxis beyond 12 Weeks of Age *

Age	Dosing of NVP (10mg/ml) Once Daily
12 weeks – 6 months	25 mg (2.5 ml), OD
7 months – 9 months	30 mg (3 ml), OD
10 months – 12 months	40 mg (4 ml), OD
> 12 months	Consult the Regional or National HIV Clinical TWG (Uliza Hotline 0726 460 000; https://nhcsc.nascop.org/clinicalform)

* If child presents to facility late and has to be on AZT and NVP beyond 12 weeks of age

Table 7.6: AZT Dosing for Infant Prophylaxis beyond 12 Weeks of Age *

Weight	Dosing of AZT: (10mg/ml syrup) Twice Daily
3.0-5.9 kg	6 ml, BD
6.0-9.9 kg	9 ml, BD
10.0-13.9 kg	12 ml, BD
14.0-19.9 kg	15 ml, BD

* If child presents to facility late and has to be on AZT and NVP beyond 12 weeks of age

7.4 Infant and Young Child Nutrition in the Context of HIV

- **Exclusive breastfeeding** involves giving the baby only breast milk with no other liquids (including water) or solids for the first six months of life. Giving of vitamins, mineral supplements or medicines are permitted if prescribed.
- **Mixed feeding** is giving other liquids and/or foods together with breast milk to infants under 6 months of age **and is not recommended.** Mixed feeding during this period is associated with significantly higher risk of mother-to-child HIV transmission, diarrhoeal and respiratory tract illnesses, among other consequences and should be prevented

- All infants irrespective of HIV status should be exclusively breastfed for the first 6 months of life, with timely introduction of appropriate complementary foods after 6 months, and continued breastfeeding up to 24 months or beyond.
- Should mothers be physically separated from their infants (back to work), support them to sustain lactation and to exclusively breastfeed including mentorship on expressing breast milk (refer to current MIYCN Policy)
- All mothers, irrespective of HIV status, should be encouraged and supported to exclusively breastfeed for the first six months and continue breastfeeding with appropriate complementary feeding after 6 months, for a period of 24 months or beyond. Breastfeeding should ONLY stop once a nutritionally adequate and safe diet without breast milk can be sustained.
- HIV positive mothers and HIV positive infants should always be on ART and given extra attention for adherence support, VL monitoring and optimal retention in care
- Breastfeeding mothers who do not know their HIV status or who previously tested HIV negative should be encouraged to be retested for HIV at the 6-week immunization visit, and then every 6 months thereafter until complete cessation of breastfeeding (Table 2.5)
- Access for HIV testing and STI/HIV prevention interventions should be reinforced for partners of pregnant and breastfeeding women
- Mothers who are diagnosed with HIV while breastfeeding should immediately start appropriate ART, giving extra attention to adherence support, VL monitoring, and optimal retention in care. The infant should immediately start ARV prophylaxis and receive PCR testing (Table 7.3).
- Mothers who decide to stop breastfeeding at any time should stop gradually within one month (and only when a nutritionally adequate and safe diet without breast milk can be sustained), and HIV positive mothers and HIV positive infants should continue with ART. Continued breastfeeding is recommended for HIV positive infants for as long as the mother is willing and able to do so.
- In special medical circumstances, determined by clinicians, where an infant cannot breastfeed, refer to current MIYCN Policy and Breast Milk Substitute (BMS) Regulation and Control Act, 2012.
- **Complimentary feeding** means giving other foods to complement breast milk after six months of exclusive breastfeeding. Complimentary feeds provide additional nutritional value to meet the child's increasing nutritional needs for growth (Table 7.7). Furthermore, complementary feeding helps the child to gradually become accustomed to eating family foods while breastfeeding continues to be an important source of nutrients. It is worth noting that breastfeeding continues to have child growth/survival benefits for up to two years or longer. Emphasis should be made on consuming all the seven (7) food groups for children in various meals.
    - Cereal/tubers and roots
    - Beans, pulses and nuts
    - Dairy and dairy products
    - Eggs and Flesh (meat/poultry/insects/organ meat)
    - Vitamin A rich food (orange/yellow fruits) and green vegetables
    - Fats and high sugar foods
- Other fruits and vegetables

13. Annexes

Annex 1: WHO Clinical Staging of HIV Infection in Infants and Children

Stage I • Asymptomatic • Persistent generalized lymphadenopathy • (PGL) • Unexplained, asymptomatic hepatosplenomegaly	**Stage II** • Papular pruritic eruptions (PPE) • Seborrheic dermatitis • Fungal nail infections • Angular cheilitis • Linear gingival erythema • Extensive HPV or molluscum infection (>5% of body area/face) • Recurrent oral ulcerations (>2 episodes/ in 6 months) • Parotid enlargement • Herpes zoster (>1 episode/12 months) • Recurrent or chronic upper respiratory infection (URI): otitis media, otorrhea, sinusitis (>2 episodes/6 months)
Stage III • Unexplained moderate malnutrition (-2SD or Z score) not responding to standard therapy • Unexplained persistent diarrhoea (>14 days) • Unexplained persistent fever • (Intermittent or constant, > 1 mo.) • Oral candidiasis (outside neonatal period) • Oral hairy Leucoplakia • Pulmonary tuberculosis • Severe recurrent presumed bacterial pneumonia (>2 episodes/12 months) • Acute necrotizing ulcerative gingivitis/ • periodontitis • Lymphoid interstitial pneumonitis (LIP) • Unexplained anaemia (<8g/dL), neutropenia (<1,000/mm^3), or thrombocytopenia (<30,000/mm^3) for >1 mo. • HIV-related cardiomyopathy • HIV-related nephropathy	**Stage IV** • Unexplained severe wasting or severe malnutrition (-3 SD or Z score) not responding to standard therapy • Pneumocystis pneumonia • Recurrent severe bacterial infections (>2 episodes/12 months, excluding pneumonia) • Chronic orolabial or cutaneous HSV (lasting > 1 mo.) • Extra-pulmonary tuberculosis • Kaposi's sarcoma • Oesophageal candidiasis • CNS toxoplasmosis • Cryptococcal meningitis • Any disseminated endemic mycosis • Cryptosporidiosis or Isosporiasis (with diarrhoea > 1 month) • CMV infection of organ other than liver, spleen, lymph nodes (and onset age >1 month) • Disseminated mycobacterial disease other than tuberculosis • Candida of trachea, bronchi or lungs • Acquired recto-vesicular fistula • Cerebral or B-cell non-Hodgkin's lymphoma • Progressive multifocal leukoencephalopathy PML) • HIV encephalopathy

NOTE: WHO Clinical Staging should be carried out only on children confirmed (by serology or DNA PCR) to be HIV infected

Annex 2: WHO Clinical Staging of HIV Infection in Adolescents and Adults

Stage 1	Stage 2
• Asymptomatic • Persistent Generalized Lymphadenopathy (PGL)	• Moderate unexplained weight loss (< 10% of presumed or measured body weight) • Minor mucocutaneous manifestations (seborrheic dermatitis, papular pruritic eruptions, fungal nail infections, recurrent oral ulcerations, angular cheilitis) • Herpes zoster • Recurrent upper respiratory tract infections (sinusitis, tonsillitis, bronchitis, otitis media, pharyngitis)
Stage 3 • Unexplained severe weight loss (over • 10% of presumed or measured body weight) • Unexplained chronic diarrhoea for longer than one month • Unexplained persistent fever (intermittent or constant for longer than one month) • Persistent oral candidiasis • Oral hairy leukoplakia • Pulmonary tuberculosis • Severe bacterial infections (e.g., pneumonia, empyema, pyomyositis, bone or joint infection, meningitis, bacteraemia) • Acute necrotizing ulcerative stomatitis, gingivitis or periodontitis • Unexplained anaemia (below 8 g/dl), neutropenia (below 0.5 x 109/l) and/or chronic thrombocytopenia (below 50 x 109 /l)	**Stage 4** Conditions where a presumptive diagnosis can be made using clinical signs or simple investigations: • HIV wasting syndrome • Pneumocystis jirovecipneumonia (PCP) • Recurrent severe bacterial pneumonia (≥ 2 episodes within 1 year) • Cryptococcal meningitis • Toxoplasmosis of the brain • Chronic orolabial, genital or ano-rectal herpes simplex infection for > 1 month • Kaposi's sarcoma (KS) • HIV encephalopathy • Extra pulmonary tuberculosis (EPTB) Conditions where confirmatory diagnostic testing is necessary: • Cryptosporidiosis, with diarrhoea > 1 month • Isosporiasis • Cryptococcosis (extra pulmonary) • Disseminated non-tuberculous mycobacterial infection • Cytomegalovirus (CMV) retinitis or infection of the organs (other than liver, spleen, or lymph nodes) • Progressive multifocal leukoencephalopathy (PML) • Any disseminated mycosis (e.g., histoplasmosis, coccidiomycosis) • Candidiasis of the esophagus or airways • Non-typhoid salmonella (NTS) septicaemia • Lymphoma cerebral or B cell Non-Hodgkin's Lymphoma • Invasive cervical cancer • Visceral leishmaniasis • Symptomatic HIV-associated nephropathy or HIV associated cardiomyopathy

Annex 8: HIV Education and Adherence Counselling Content Guide

HIV Education and Adherence Counselling Note: for children/adolescents, the script below should be modified towards the caregiver
Section 1: Introductions, climate setting, and review of objectives for the session
• Ensure privacy and confidentiality • Introductions of all participants • Present the key message for each section using simple terms that the patient will understand, using analogies as appropriate • Use IEC material when available • Ask the patient if they have any questions at the end of each section, and then ask them to explain the main points back to you to confirm understanding • If this is a follow-up session, review what they remember from previous sessions and adapt the session to address their needs
Section 2: HIV
• What is HIV – HIV stands for "Human Immunodeficiency Virus" – HIV is a virus that attacks the body's immune system. The immune system protects the body from infections • How is HIV transmitted – Sexual contact – Needles – Exchange of blood and bodily fluids – Mother-to-child transmission • Why should family members be tested for HIV – Sexual partners are at risk for already having HIV – All children born to HIV positive mothers are at risk for already having HIV – Encouraging partners/children to test for HIV now is the best way to identify HIV early, so they can also get into treatment – Starting treatment early will help them live long and productive lives – Whether they test positive or negative, they can be an important source of support for your own treatment

Annex 8: Cont.

Section 3: Viral load

- What is viral load
  - Viral load is the amount of HIV in your body
  - When your viral load is high it means you have a lot of HIV in your body; this causes damage to your body
  - Viral load is measured by a blood test

- **How often is viral load measured**
  - Viral load is measured after being on treatment for 3 months
  - After 3 months of treatment, we expect the amount of virus in your body to be undetectable; if your VL is detectable then we have to discuss the reasons
  - Having an "undetectable" VL means the test cannot measure the virus in your blood because your ART is working, but it does not mean you are no longer infected with HIV
  - Repeat viral load tests are done depending on how you are doing; if you are doing well on treatment then the viral load is measured again every 6 months (for children/adolescents and pregnant/breastfeeding) or annually
  - For HEI with positive PCR, we also measure viral load at the start of treatment

- **What do viral load measurements mean**
  - After being on treatment for 3 or more months, your viral load should be undetectable
  - If your viral load is undetectable, it means your treatment is working well and you should continue taking it the same; the virus is not damaging your body any more
  - If your viral load is detectable, it means your treatment is not working properly, usually because you have been missing some of your pills; the virus is damaging your body and you and the clinic team will need to work together to figure out how to fix the problem

Section 4: CD4 cells

- **What are CD4 cells**
  - CD4 cells are the immune cells that protect the body from infections
  - CD4 cells are measured through a blood test, called CD4 count. For adults a normal CD4 count is above 500

- **How are CD4 cells affected by HIV**
  - HIV attacks and destroys CD4 cells
  - After years of constant attack from HIV, the CD4 count falls

- **What happens when CD4 cells decrease**
  - When the CD4 count falls too low (usually below 200), diseases called "opportunistic infections" are able to infect the body because the body cannot defend itself
  - Common opportunistic infections include: tuberculosis, pneumonia, skin problems, white spots in the mouth, and chronic diarrhoea

- **How often is CD4 count measured**
  - CD4 count is measured for all patients at the beginning of treatment, to see if you are likely to get any opportunistic infections
  - Once you start treatment for HIV, we do not need to check CD4 count frequently, but we will use the VL test to monitor your response to anti-retroviral treatment

Annex 8: Cont.

Section 5: Antiretroviral therapy (ART)

- What is ART:
  - ART is a combination of 3 or more different medicines
  - ART fights HIV, lowering the amount of virus in the body allowing the body to protect itself against opportunistic infections
  - When the virus level is low then the CD4 count can increase
  - Increased CD4 count means the body is able to protect itself against opportunistic infections

- What are the benefits of ART:
  - After a few weeks of taking ART, you will begin to regain appetite and weight (if it has been affected)
  - Many people report an increase in their energy levels and general sense of well being
  - People can often return to work or school or care for their families
  - With ART, people with HIV can live a long and healthy life if they take it properly

- When is ART started:
  - Everybody with HIV should start ART
  - Even if your CD4 count is high, the virus is doing damage inside of you and needs to be controlled
  - ART should be started as soon as you are ready, preferably within 2 weeks
  - The longer you wait to start ART, the more time the virus can damage your body, increasing your chances of getting sick or even dying
  - Sometimes ART is started a few weeks later if you have certain infections, or if you do not think you are ready to take them properly

- Does ART cure HIV:
  - ART does not cure HIV
  - ART lowers the amount of virus in your body so your body can protect itself from infections
  - It does not remove the virus completely

- Can you still give HIV to others while taking ART:
  - Transmission of HIV is very unlikely once your viral load is undetectable
  - You should practice safer sex to reduce the risk for other infections as well, including disclosure of HIV status to sexual partners and consistent and correct condom use

- How long is ART taken for:
  - ART is a life-long treatment
  - Once you start ART, you need to take it every day for the rest of your life (either once a day, or twice a day, depending on which drugs you are on)
  - You must take the ART as prescribed and never miss a dose otherwise the treatment might fail and the drugs stop working against the virus

Annex 8: Cont.

Section 6: Treatment failure

- **What happens if you stop taking ART:**
  - When you stop taking ART the virus begins to increase in your body very quickly
  - The virus goes back to the same high level it was at before you started ART
- **What happens if you do not take ART regularly:**
  - The virus begins to increase to high levels again
- **What happens if the viral load increases:**
  - When the virus is allowed to increase again, it will also affect your immunity and reduce your CD4 count putting you at risk of opportunistic infections
  - When the virus is allowed to increase again, it can change and get stronger, and becomes resistance to the ART
  - When the virus becomes resistant, the ART does not work against the virus anymore
  - The risk of resistance increases by not taking the ART correctly and by starting and stopping the medications several times
  - When resistance occurs, this is called treatment failure
- **What happens in treatment failure:**
  - The ART no longer works because the virus has become resistant to it
  - If treatment fails, it is necessary to use stronger, more expensive ART, but it still may not work as well
  - With the stronger ART you may need to take more pills every day, and you may have more side effects
  - If you become resistant to the new ART as well, then there may not be any drugs that can work for you, and the virus will increase quickly and your CD4 count will go way down
  - It is essential that you take your ART every day as prescribed so that you do not develop treatment failure, and can live a long and healthy life

Section 7: ART side effects

- **What are the side-effects of ART:**
  - Sometimes people can get side effects from taking ART
  - Side effects vary from person to person
  - Some people have none while other experience mild effects which are unpleasant but often manageable
  - Most side effects occur within the first few weeks of starting ART and then improve after a few weeks or months
  - Some common side effects include:
    - Headache
    - Loss of appetite
    - Skin rash
    - Fatigue
    - Nausea, vomiting, diarrhoea
    - Muscle pains
- **What do you do if you notice any side effects:**
  - If you develop any side effects, you should continue taking your ART as prescribed, without missing any doses, until you discuss with the clinician
  - If the side effects are mild then you can continue taking your ART without missing any doses, and then discuss the side effects with the clinician at your next appointment
  - If the side effects are bothering you too much then return to the clinic immediately, even if you do not have a scheduled appointment, to discuss what to do next; you can also call the clinic if you are not able to make it yourself immediately
  - Severe side effects include rash all over your body, or rash in your mouth or eyes, constant vomiting, inability to eat or retain food, or anything else that makes you think you should stop the ART. If this occurs then contact the clinic immediately
  - The clinician will help you manage the side effects, and occasionally the ART may need to be changed

Annex 8: Cont.

Section 8: Adherence

- What is adherence
  - Following a care plan as agreed with the healthcare team
  - Attending clinic appointments as scheduled
  - Picking up medicines and taking them as prescribed
  - Getting lab tests according to the recommended schedule
  - Following nutritional recommendations
- How should ART be taken
  - You must take the correct dosage. If you take less than the dose prescribed the treatment will not be effective and will result in resistance and treatment failure. Never share your ART with someone else
  - For children, the dosage keeps changing as they grow and gain weight
  - You must take ART the correct time of day:
    - If your ART is supposed to be taken once per day, then pick a time when it will usually be convenient for you to remember, e.g., with breakfast every day.
    - If your ART is supposed to be taken twice per day, then you should set a convenient time to take your drugs approximately 12 hours apart (e.g., 8.00 am and 8.00 pm every day). It does not have to be exactly 12 hours apart if your schedule does not allow; the most important thing is to take them twice per day every day (e.g., you can take it at 6.00 am and 8.00 pm every day)
  - If you miss a dose of ART then take your dose as soon as you remember, as long as it is not within a couple of hours of your next dose, and then return to your regular schedule. Do not take a double-dose of ART to make up for a missed dose
  - You must take ART according to dietary restrictions. Some ART should be taken with food, for some it does not matter, and a few require that you have an empty stomach. These dietary restrictions will be explained to you once your ART regimen is selected
  - It is essential to take ART as prescribed and not miss any doses
  - Some medications (prescription, non-prescription, and herbal) interact with ART and make them ineffective. Be sure to tell your clinician and pharmacist the names of all the medications (including traditional/herbal) that you are taking, and any time you are given new medications. Avoid use of alcohol
- What usually interferes with good adherence (can apply to the patient or to the caregiver)
  - Stigma: it is hard to take ART correctly if you need to hide it because you are worried about people finding out you have HIV
  - Disclosure: it is hard to take ART correctly if the people closest to you, particularly family members and close friends, do not know you have HIV
  - Change in routine: if your daily routine suddenly changes it may be difficult to remember to take your ART at the usual time
  - Travel: frequent travel, or unexpected travel (such as for a funeral) may interfere with taking ART, particularly if you do not have enough drugs with you for the entire trip
  - Alcohol and drug use: it is hard to remember to take ART when under the influence of alcohol or other drugs
  - Caregiver changes: every time a child has a new caregiver, that person needs to learn about how and why ART is taken
  - Side effects: when people get side effects from ART they sometimes stop or reduce the amount of ART they are taking, hoping it will reduce the side effects
  - Pill burden/palatability: sometime the number of pills (or taste of syrups for children) makes it difficult to take ART correctly

Annex 8: Cont.

- Distance: choosing an HIV clinic that is far away from your home can make it difficult to come to appointments and pick drugs regularly
- HIV knowledge: when people do not understand what HIV is, and why ART is important, they may not take their drugs properly. This also applies to children and adolescents, if they have not been told they have HIV and taught what it means
- Mental health disorders: depression and other mental illnesses can make it difficult to take ART correctly
- Religious beliefs: some people stop taking ART after faith-healing, although there has never been a case of someone being cured of HIV this way

• What might make it difficult for you individually to take your ART as prescribed
- Ask the patient: *"Based on what you have learned so far, what challenges do you think you will have taken ART correctly, every day, for the rest of your life?"*
- Discuss strategies to manage any expected barriers to adherence

• What can help you take ART as prescribed
- Disclosure: It is easier to take your ART properly when the people close to you know your HIV status, so you do not have to try and hide your ART or miss doses to avoid being seen. Family and friends can also provide additional support once they are aware you have HIV and understand more about it. We can help you disclose your HIV status to important family members or friends when you are ready
- Treatment supporter: Having a "treatment buddy" can help you take your ART correctly; ask a friend, partner, or family member to remind you to take your ART. If possible, invite that person with you to some of your clinic appointments and counselling sessions so they can learn about ART, the importance of good adherence, side effects, etc.
- SMS reminder system (if SMS reminder system in place at the facility): Receiving a regular SMS, e.g., every week, can help you take your ART correctly. We enroll all our patients into this service for SMS reminders at our clinic, unless you do not want to receive them. The messages simply ask how you are doing, and do not mention HIV, ART, the clinic, or anything else that may reveal your HIV status to others
- Support group: Joining a support group will help you learn from other people how they overcome challenges in living with HIV and taking ART correctly. Some support groups also have economic activities to help increase your income. We have support groups based at the health facility, and there are also support groups in the community
- Other reminders:
  - Set a specific time of day to take your ART
  - Associate your ART with a specific event/s in your daily schedule (e.g., when you eat breakfast and dinner)
  - Set an alarm on your phone or watch

• What happens if you miss an appointment?
  • The healthcare team will be concerned about you, and will try to contact you by phone
    - Confirm patient phone number and consent to call if misses an appointment or any urgent lab results
  • If we cannot contact you by phone, we will try to call your treatment buddy
    - Confirm treatment buddy name and phone number, and consent to call if needed
  • If we cannot reach you or your treatment buddy, we may try and visit you at home, if we have your permission
    - Confirm locator information and consent to perform home visits if needed
  • Once you are back in care, we will work with you to figure out what caused you to miss an appointment and how it can be prevented in the future
• You will not be punished for missing an appointment

Annex 8: Cont.

Section 9: Other medications
• What other medications will you take, in addition to ART: - CPT: all PLHIV should take cotrimoxazole preventive therapy once per day, in order to reduce the chance of getting other infections such as pneumonia, malaria, and diarrhoea - TPT: all PLHIV should receive 6 months of isoniazid preventive therapy (or another approved TPT regimen), unless they have active TB disease, in order to prevent development of TB • Other medications may be recommended for specific conditions
Section 10: Nutrition
• Why is nutrition important: - When the viral load is high, your body uses a lot of energy trying to fight the virus - If your nutrition is poor, you have more chance of getting other infections as well - You need to eat well so your body has everything it needs to fight HIV, and look healthy • What can you do to improve your nutrition? - Eat a balanced diet from a variety of foods. - Try not to eat a lot of sugar, red meat, or fatty/fried foods - Try to eat plenty of whole grains, vegetables, fruit, beans, and fish - Drink plenty of clean safe water - Physical activity and exercise is encouraged.
Section 11: Follow-up
• How often will you need to come to the clinic - Before starting ART: you should come to the clinic at least every week in order to get you prepared for ART so you can start as soon as possible - Soon after starting ART: after you start ART you should come to the clinic in 2 weeks in order to see if you have had any trouble taking your pills or have developed any side effects; then you can be seen after another two weeks for the same; then every month until your first viral load test - Once you have been on ART for a while: if your first viral load (after 3 months) is undetectable then you can be seen every 1-6 months depending on other factors that will be discussed with the clinician - Unscheduled visits: if you ever have any concerns, feel unwell, or need to speak with any of the clinic team then you can call or come to the clinic, even if you do not have an appointment scheduled for that day • What will we be checking for during your clinic visits - At each visit you will be asked if you have had any illnesses since the last visit, if you have had any trouble taking your ART, and if you are experiencing any side effects. You may need a physical exam or blood tests at some visits
Section 12: ART readiness assessment
• Are you ready to start ART today? - Complete the ART Readiness Assessment (Table 5.4) for each patient to see if they should start ART today, and if not, to identify what issues need to be addressed before starting ART

Annex 8: Cont.

Section 13: Management plan

• Which investigations will you have today
  - See Table 3.2 and Table 3.5 for recommended baseline and follow-up investigations respectively
• Which medications will you start today
  - May include: ART; CPT; TPT; other
• What else is required as you start or as you prepare to start ART
  - May include: assisted disclosure; support group referral; engagement of a treatment buddy; drug and alcohol counselling; depression management; referrals; other
  - For patients not starting ART today, management plan should include specific strategies to address any issues preventing/delaying ART initiation
• When should you return to the clinic
  - Book appointment date for next visit, preferably with the same healthcare worker

Annex 9A: Cont.

Referrals and Networking

- Review the patient's file to determine if they have been referred to other services. This includes referrals to social services, support groups, psychology services, nutrition services, medical clinics, substance abuse groups, etc.
- Ask the patient if they attended the appointments, check in on their experience with the referral services and re-organize referrals as necessary
- Determine if the patient could benefit from a home visit

Develop Adherence Plan

- Go through each of the adherence challenges identified during the session and assist the patient to develop a plan that addresses each of the issues. It is important to let the patient come up with the solutions so that they can own them
- Some examples of addressing adherence challenges:
  - Behavioural barriers: using a reminder tool; using a pill box; redefining the medication schedule to fit with the patient's daily schedule; keeping an emergency dose of drugs when away from home
  - Refer to clinician in case of side effects
  - Socio-economical barriers: move on to disclosure process; identify a treatment buddy; join a support group; refer to CBO/NGO to learn about income generating activities
  - Emotional barriers: emotional support or refer to clinician for mental health management

Agree on a follow-up date for the next session

Session 2 (usually 2 weeks after Session 1, preferably with the same provider)

Review Adherence Plan

- Ask the patient if he/she thinks adherence has improved since the last visit. Enquire in a friendly way if any doses have been missed
- Review the patient's barriers to adherence documented during the first session and if strategies identified have been taken up. If not, discuss why

Identify Any New Issues

- Discuss specific reasons why the patient may have missed their pills or a clinic appointment since the last counselling session, and determine if it is a new issue that wasn't addressed during the first session
- Discuss if other issues have come up because of implementing the adherence plan (e.g., perhaps the disclosure process had unintended results)

Referrals and Networking

- Follow-up on any referrals made during the previous session
- Determine if the patient could benefit from a home visit

Develop Adherence Plan

- Go through each of the adherence challenges identified during the session and assist the patient to modify their original adherence plan to address each of the issues. It is important to let the patient come up with the solutions so that they own them
- Give another short motivational speech on how you believe in the patient! You know they can do this! Together you will make sure that they suppress their viral load!!
- Agree on a follow-up date for the next session

Annex 9A: Cont.

Session 3 (usually 2 weeks after Session 2, preferably with the same provider)

Review Adherence Plan

- Ask the patient if he/she thinks adherence has improved since the last visit. Enquire in a friendly way if any doses have been missed
- Review the patient's barriers to adherence documented during the first session and if strategies identified have been taken up. If not, discuss why

Identify Any New Issues

- Discuss specific reasons why the patient may have missed their pills or a clinic appointment since the last counselling session, and determine if it is a new issue that wasn't addressed during the first session
- Discuss if other issues have come up because of implementing the adherence plan (e.g., perhaps the disclosure process had unintended results)

Referrals and Networking

- Follow-up on any referrals made during the previous session
- Determine if the patient could benefit from a home visit

Develop Adherence Plan

- Go through each of the adherence challenges identified during the session and assist the patient to modify their original adherence plan to address each of the issues. It is important to let the patient come up with the solutions so that they own them
- Give another short motivational speech on how you believe in the patient! You know they can do this! Together you will make sure that they suppress their viral load!!
- Agree on a follow-up date for the next session

Repeat Viral Load

- If the adherence is good: plan for the next VL testing after 3 months and explain possible ways forward, emphasizing the roles of the patient, the support systems and the health facility. You can continue follow-up adherence counselling sessions during the 3-month period if you and the patient think there would be a benefit to them

"If your results come back and your VL is undetectable then you will be able to continue with same ART. If your viral load is still greater than 1,000 copies/ml then you will need to switch to a new regimen, probably after doing some additional testing to see which regimen may work best for you. If your viral load is detectable but less than 1,000 copies/ml we will discuss options, including changing regimens or continuing to monitor." (Adapt to individual patient/context)

- If adherence challenges persist: plan further Enhanced Adherence Counselling Sessions before repeating the VL

Annex 9A: Cont.

Session to Discuss Repeat Viral Load Results (after the repeat VL results are back, preferably with the same provider)

Discuss Viral Load Results

- If suppressed (VL < 50 copies/ml) CONGRATULATE the patient!!!
  - Explain the way forward: will continue with same ART regimen and repeat the VL again in 6 months
- If viral load is ≥ 1,000 copies/ml
  - Explain the way forward: will probably need to switch to a new ART regimen after discussing as an MDT, and additional testing to see which regimen may work for the patient
  - Summarize the case with the MDT; if the patient cannot switch to standard 2nd line ART, or is failing 2nd line ART, forward to the Regional or National HIV Clinical Technical Working Group for next steps
- If viral load is 50 - 999 copies/ml
  - Explain the way forward: will reassess barriers to adherence, support systems, and other reasons for viremia; once reason/s for viremia have been addressed then will repeat the viral load after another 3 months of excellent adherence

Annex 9 E: Management Protocol for Patients Switching to 3rd Line ART

Management Protocol for patients switching to 3rd line ART

Pre – Initiation MDT Meeting

- Confirm what 3rd line ARV regimen is prescribed, its availability and the management plan
- Assign a case manager to patient

Initiation of 3rd Line ART

- **Triage**
  - Record vital signs and take actions as needed
- **Adherence support**
  - Conduct patient education on the new ART regimen: Treatment goals, dosing, drug interactions and potential side effects and adverse events
  - Conduct adherence assessment and counselling
  - Link patient to adherence support systems
- **Clinical assessment**
  - Take history and conduct physical examination
  - Complete clinical encounter form and MOH 257 (Green Card)
  - Manage any co-infection and co-morbidities
  - Review for potential drug interactions and contraindications
  - Conduct adherence assessment and review adherence support systems including daily witnessed ingestion plan
  - Reinforce patient education messages on new regimen
    - Currently limited future treatment options
    - Need for perfect adherence (>95%)
    - Dosing schedule and timing
    - Potential side effects and what the patient should do
  - Prescribe new regimen for 2 weeks
  - Confirm dosing as per the weight (for ≤15)
  - Continue other medication e.g., CPT, OI treatment etc.
- **Dispensing**
  - Confirm ARV dosing as per the weight (for ≤15)
  - Conduct medication use counselling
  - Dispense 3rd Line ARVs for 2 weeks
  - Check for possible drug interaction
- **Community follow up**
  - Link all patients to support group, CHV/CHA
  - Plan for home visits as required

Annex 9 E: cont.

Patient Follow Up after Treatment Initiation

- **Frequency**
  - First follow-up should be within 2 weeks of initiation of 3rd line ART
  - Subsequent visits should be monthly (or more frequent) until confirmed viral suppression at 6 months
  - Thereafter, follow-up can be 1-3 monthly
- **Triage**
  - Record vital signs and take action as needed
- Adherence Support (adherence should be reinforced during every clinic visit, in addition to enhanced adherence counselling sessions)
  - Review and address knowledge deficits on new regimen
  - Confirm understanding of adherence, conduct adherence assessment, and reinforce key adherence messages
  - Document reasons for missed doses and manage obstacles to perfect adherence. Review and reinforce adherence support systems
- **Clinical Assessment**
  - Take history and conduct physical examination
  - Complete Clinical Encounter Form and MOH 257 (blue card)
  - Manage any co-infections and co-morbidities
  - Evaluate for potential drug interactions
  - Evaluate for and manage any drug side effects and adverse events
  - Conduct adherence assessment and review adherence support systems
  - Reinforce patient education messages on new regimen
    - Review and address knowledge gaps on ART regimen
    - Need for perfect adherence (>95%)
    - Dosing schedule and timing
    - Potential side effects and what the patient should do
  - Prescribe 3rd line ARVs
- **Viral load should be conducted 3 months after change of regimen**
- **Dispensing**
  - Confirm ARV dosing as per the weight
  - Conduct medication use counselling
  - Dispense 3rd line ARVs
- **Community Follow up**
  - Review linkage to community adherence support systems
  - Conduct home visits as required
  - Continue DOTS
- **NOTE: 3rd line annual report with viral load, adherence, and outcomes to be sent to NASCOP**

Annex 10 A: Dosing of Solid and Liquid Formulations for Twice-Daily Dosing in Infants and Children 4 Weeks of Age and Older [1]

Drug	Strength of 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		20–24.9 kg			25–34.9 kg	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		AM	PM
AZT/3TC	Tablet (dispersible) 60/30 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	300 /150 mg	1	1
AZT/3TC/NVP[2]	Tablet (dispersible) 60/30 mg/50 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	300 /150 /200 mg	1	1
ABC/3TC	Tablet (dispersible) 120/60 mg	0.5	0.5	0.5	1	1	1	1	1.5	1.5	1.5	600 /300 mg	0.5	0.5
ABC/3TC/LPV/r	30/15/40/10 mg	2	2	3	3	4	4	5	5	6	6			
SOLID SINGLE FORMULATIONS														
AZT	Tablet (dispersible) 60 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	300 mg	1	1
ABC	Tablet (dispersible) 60 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	300 mg	1	1
NVP[2]	Tablet (dispersible) 50 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	200 mg	1	1
	Tablet 200 mg	–	–	–	–	0.5	0.5	1	0.5	1	0.5	200 mg	1	1
LPV/r[3]	Tablet 100/25 mg	–	–	–	–	2	1	2	2	2	2	100/25 mg	3	3
	Tablet 200/50 mg	–	–	–	–	–	–	1	1	1	1	200/50 mg	2	1
	Granules[4] 40/10 mg per sachet	2	2	3	3	4	4	5	5	6	6			
DRV[5]	Tablet 75 mg	–	–	–	–	3	3	5	5	5	5			
RAL[6]	Chewable tablets 25 mg	–	–	–	–	3	3	4	4	6	6	400 mg	1	1
	Chewable tablets 100 mg	–	–	–	–	–	–	1	1	1.5	1.5	400 mg	1	1
	Granules (100 mg/sachet)	0.25	0.25	0.5	0.5	–	–	–	–	–	–		–	–
LIQUID SINGLE FORMULATIONS														
AZT	10 mg/ml	6 ml	6 ml	9 ml	9 ml	12 ml	12 ml	–	–	–	–	–	–	–
ABC	20 mg/ml	3 ml	3 ml	4 ml	4 ml	6 ml	6 ml	–	–	–	–	–	–	–
3TC	10 mg/ml	3 ml	3 ml	4 ml	4 ml	6 ml	6 ml	–	–	–	–	–	–	–
NVP[2]	10 mg/ml	5 ml	5 ml	8 ml	8 ml	10 ml	10 ml	–	–	–	–	–	–	–
DRV[5]	100 mg/ml	–	–	–	–	2.5 ml	2.5 ml	3.5 ml	3.5 ml	–	–			

Notes

[1] For infants younger than 4 weeks of age refer to Table 10C for more accurate dosing information

[2] NVP dose escalation with half dose for 2 weeks when initiating ART is still recommended for infants > 2 weeks of age and not already on NVP prophylaxis to avoid toxicity from high initial NVP levels. HEI already on NVP prophylaxis who are confirmed positive can initiate full dose (twice daily) NVP without dose escalation

[3] The LPV/r heat-stable tablet formulation must be swallowed whole and should not be split, chewed, dissolved or crushed. The adult 200/50 mg tablet may be used for patients 14-24.9kg (1 tab am and 1 tab pm) and for patients 25-34.9kg (2 tabs am and 1 tab pm) who are able to swallow them whole. The 100/25 mg tablet is smaller than the adult formulation and may be used by children of lower weight bands able to swallow tablets whole.

[4] LPV/r granule formulation can be used in infants over 2 weeks of age. Transition to tablets as soon as a child is able to swallow tablets whole. The 4-in-1 ABC/3TC/LPV/r may be used after 1 month of age if the combination is appropriate and once it becomes available.

[5] DRV must be administered with 0.5 ml of RTV 80 mg/mL oral suspension if less than 15 kg and with RTV 50 mg solid formulation in children 15 to 30 kg

[6]RAL granules are approved for use in newborn children, however the administration procedure is complex and the formulation has very limited availability. If this RAL must be used, consult the regional/national clinical support center

Annex 10 B: Simplified Dosing of Child-Friendly Solid and Oral Liquid Formulations for Once-Daily Dosing in Infants and Children 4 Weeks of Age and Older[1]

Drug	Strength of 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	20–24.9 kg		25–34.9 kg
EFV[2]	Tablet (scored) 200 mg	–	–	1	1.5	1.5	200 mg	2
ABC/3TC	Tablet (dispersible) 120/60 mg	1	1.5	2	2.5	3	600 mg/300 mg	1
DTG	Tablet (dispersible) 10 mg	0.5	1.5	2	2.5	3[3]		
DTG	Tablet 50 mg	-	-	-	-	1	50 mg	1
DTG/TDF/ 3TC		-	-	-	-	-	50/300/300	1
ATV[4]	Capsules 100 mg	–	–	1	2	2	300 mg	2 (100 mg) or 1 (300 mg)
TDF[5]	Oral powder 40 mg/scoop	–	–	3	–	–	300 mg	1 (200 mg)[d] or 1 (300 mg)
	Tablets 150 mg or 200 mg	–	–	–	1 (150 mg)	1 (200 mg)		

Notes

[1]For infants younger than 4 weeks of age refer to Table 10C for more accurate dosing information

[2]EFV is not recommended for children younger than 3 years and weighing less than 10 kg. Where there are no suitable alternatives, EFV may be used in children less than 3 years weighing more than 3.5 kg (3.5-5 kg two 50 mg capsules; 5-7.5 kg three 50 mg capsules; 7.5-15 kg one 200 mg capsule).

[3]DTG dispersible tablets have higher bioavailability than film tablets and doses are not interchangeable. Children can transition to the 50 mg film tablet once they reach 20 kg. If unable to swallow the tablets whole, the dispersible tablets may be given at a dose of 30 mg daily.

[4]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. ATV powder formulation enables administration of ATV to infants and children as young as 3 months. Infants and children 5-10 kg should be given 200 mg of ATV powder (4 packets, 50 mg/ packet) with 80 mg of RTV oral solution (1 ml)

[5]TDF is can be used in children 2 years and older. Target dose: 8 mg/kg or 200 mg/m^2 (maximum 300 m

Annex 10 C: Drug Dosing of Liquid Formulations for Twice-Daily Dosing in Infants Less than 4 Weeks of Age

Drug	Strength of oral liquid	2-3 kg	3-4 kg	4-5 kg
AZT	10 mg/mL	1 mL	1.5 mL	2 mL
NVP[1]	10 mg/mL	1.5 mL	2 mL	3 mL
3TC	10 mg/mL	0.5 mL	0.8 mL	1 mL

Notes [1] NVP for treatment can be initiated with twice daily dosing for infants < 2 weeks of age (they do not require once-daily lead-in dosing)

Annex 10 D: Simplified Dosing of INH and CTX Prophylaxis for Infants and Children Who Are at Least 4 Weeks of Age

Drug	Strength of tablet or oral liquid	Number of tablets or ml by weight band once daily					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**	**20–24.9 kg**		**25–34.9 kg**
INH	100 mg	0.5	1	1.5	2	2.5	300 mg	1
CTX	Suspension 200/40 per 5 ml	2.5 ml	5 ml	5 ml	10 ml	10 ml	–	–
	Tablets (dispersible) 100/20 mg	1	2	2	4	4	–	–
	Tablets (scored) 400/80 mg	–	0.5	0.5	1	1	400 mg/80 mg	2
	Tablets (scored) 800/160 mg	–	–	–	0.5	0.5	800 mg/160 mg	1

Annex 10 F: Ritonavir Dosing for Super-Boosting LPV/r in Children Taking Rifampicin

Dosing for RTV super-boosting of LPV/r for children receiving rifampicin-containing TB treatment*

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		10–13.9 kg		14–19.9 kg		20–24.9 kg			25–34.9 kg	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		AM	PM
For children able to swallow tablets														
LPV/r[b]	Tablet 100/25 mg	–	–	–	–	2	1	2	2	2	2	100/25 mg	3	3
RTV	Tablet 100 mg	–	–	–	–	1	1	1	2	1	2	100 mg	2	2
	Tablet 50 mg	–	–	–	–	2	2	3	3	3	3			
	Tablet 25 mg	–	–	–	–	4	4	6	6	6	6			
For children unable to swallow tablets														
LPV/r	Oral solution 80/20 mg/ml	1 ml	1 ml	1.5 ml	1.5 ml	2 ml	2 ml	2.5 ml	2.5 ml	3 ml	3 ml	-	-	-
	Pellets 40 mg/10 mg	2	2	3	3	4	4	5	5	6	6	-	-	-
	Granules 40 mg/10 mg sachet	2	2	3	3	4	4	5	5	6	6	-	-	-
RTV[e]	Oral solution 80 mg/ml	0.8 ml	0.8 ml	1.2 ml	1.2 ml	1.5 ml	1.5 ml	2 ml	2 ml	2.3 ml	2.3 ml	-	-	-
	Powder 100 mg/packet	-	-	1	1	1	1	1	2	1	2	-	-	-

[a] Suggested RT V dose for super-boosting to achieve the same dose as LPV in mg, in a ratio equal or approaching to 1:1. This dosing approach is supported by a study which explored this approach in young children receiving LPV/r[12].

[b] 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).

[c] LPV/r liquid requires a cold chain during transport and storage.

[d] 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/iattfactsheet-lopinavir-ritonavir/en/. The dosing schedule provided applies to equivalent solid dosage forms that may become available such as LPV/r granules, which are approved by US FDA for use from 2 weeks of life.

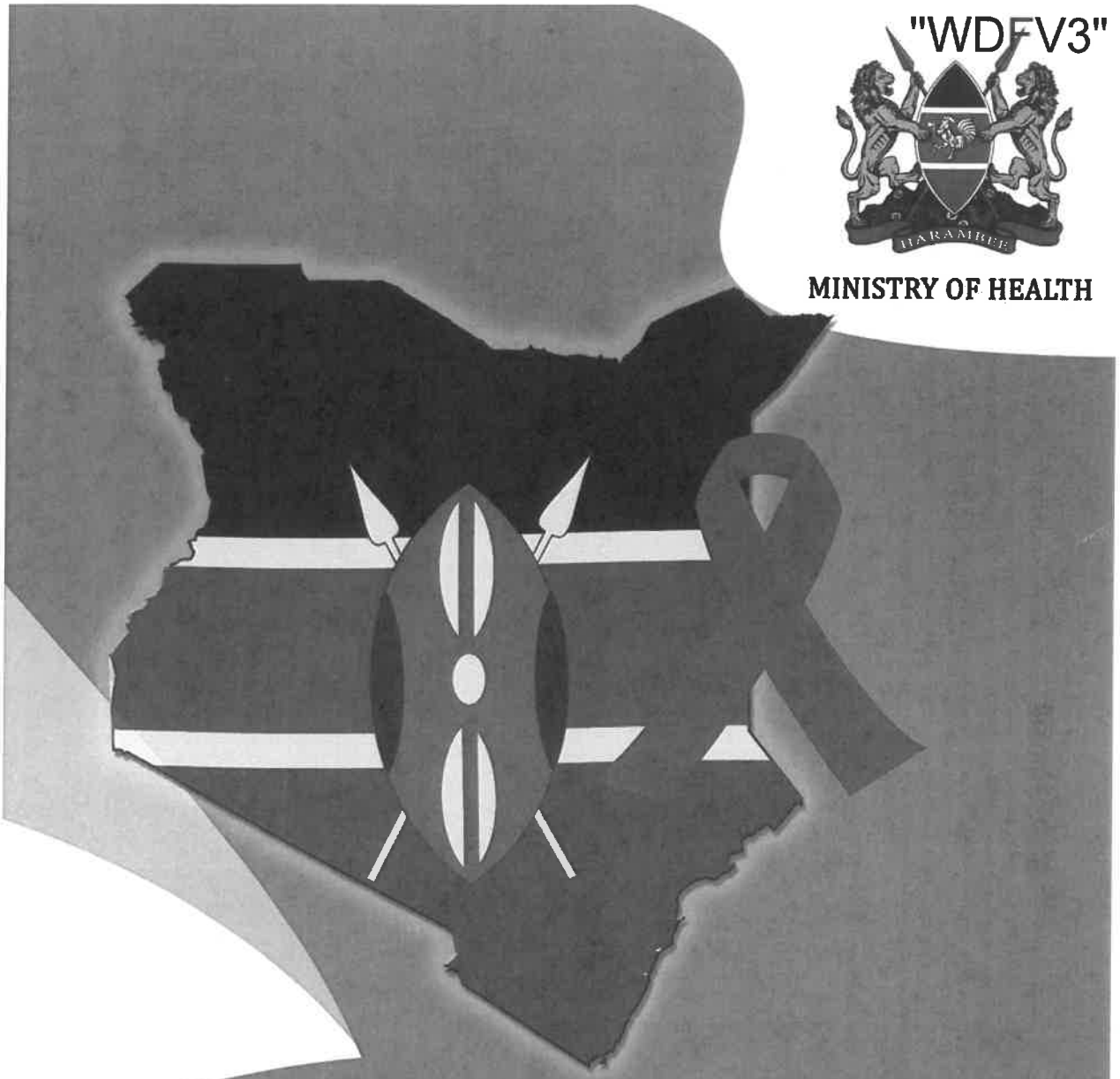
[e] RT V oral solution dosing is based on the dosing tested in the trial that supports the use of super boosting

Annex 11: Overlapping toxicities between ARVs

Bone marrow suppression	Peripheral neuropathy	Pancreatitis	Nephrotoxicity	Hepatotoxicity	Rash	Diarrhoea	Ocular effects
Amphotericin B Cotrimoxazole Dapsone Flucytosine Ganciclovir Hydroxyurea Interferon- Primaquine Pyrimethamine Zidovudine	Didanosine Isoniazid Vincristine	Didanosine Lamivudine (esp. in children) Stavudine Cotrimoxazole Ritonavir Pentamidine	Acyclovir Adefovir high dose Aminoglycosides Amphotericin B Cidofovir Foscarnet Pentamidine Tenofovir	Abacavir Atazanavir Atovaquone Cotrimoxazole Dapsone Efavirenz Nevirapine Sulfadiazine Voriconazole	Abacavir Atazanavir Atovaquone Cotrimoxazole Dapsone Efavirenz Nevirapine Sulfadiazine Voriconazole	Atovaquone Clindamycin LPV/r Ritonavir	Cidofovir Ethambutol Linezolid Rifabutin Voriconazole

"WDFV3"

MINISTRY OF HEALTH



Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV in Kenya

2018 Edition

The Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV Infection in Kenya 2018 edition contain relevant information required by healthcare providers in the use of ARVs as of the date of issue. All reasonable precautions have been taken by NASCOP to verify the information contained in this guideline document.

For clarifications contact National AIDS and STI Control Program (NASCOP) at P. O. Box 19361 - 00202, Nairobi Kenya, Tel: +254 (020) 2630867, Email: info@nascop.or.ke, Website: www.nascop.or.ke

The recommended citation for this document is:

Ministry of Health, National AIDS & STI Control Program. Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV Infection in Kenya 2018 Edition. Nairobi, Kenya: NASCOP, August 2018. Print.

Design and Layout: Collins Etemesi - NASCOP

ISBN: 13-978-9966-038-31-9

Acronyms and Abbreviations

Abbreviations and Names of Antiretroviral Drugs

3TC	Lamivudine
ABC	Abacavir
ATV	Atazanavir
ATV/r	Atazanavir/ritonavir
AZT	Zidovudine
DRV	Darunavir
DRV/r	Darunavir/ritonavir
DTG	Dolutegravir
EFV	Efavirenz
ETR	Etravirine
FTC	Emtricitabine
LPV	Lopinavir
LPV/r	Lopinavir/ritonavir
NVP	Nevirapine
RAL	Raltegravir
RTV	Ritonavir
TDF	Tenofovir Disoproxil Fumarate

Other Acronyms and Abbreviations

ACE-I	Angiotensin-converting enzyme inhibitor
ADR	Adverse drug reaction
AIDS	Acquired immunodeficiency syndrome
ALT	Alanine transaminase
ALP	Alkaline Phosphatase
ANC	Antenatal care
A&E	Accident and Emergency
ARB	Angiotensin-receptor blocker
ART	Antiretroviral therapy
ARV	Antiretroviral drug(s)
AST	Aspartate transaminase
BD	Twice daily
BF	Breastfeeding
BMI	Body Mass Index
BP	Blood Pressure
CAG	Community ART Groups
CCC	Comprehensive Care Centre
CHV	Community Health Volunteer
CITC	Client-initiated HIV testing and counselling
CM	Cryptococcal meningitis
CMV	Cytomegalovirus
CNS	Central nervous system
CPT	Cotrimoxazole Preventive Therapy
CrCl	Creatinine Clearance
CTX	Cotrimoxazole
CYP450	Cytochrome P450
DAAs	Direct acting antiviral therapies
DBS	Dried Blood Spot
DMS	Director of Medical Services

DNA	Deoxyribonucleic acid
DOT	Directly observed therapy
DS	Double strength
DRT	Drug Resistance Testing
ECP	Emergency contraceptive pill
EID	Early Infant Diagnosis
eMTCT	Elimination of Mother to Child Transmission
EPTB	Extra-pulmonary Tuberculosis
FBC	Full Blood Count
FBS	Fasting Blood Sugar
FDC	Fixed Dose Combination
FLP	Fasting Lipid Profile
FP	Family Planning
GIT	Gastro-intestinal tract
GOK	Government of Kenya
GBV	Gender-Based Violence
Hb	Hemoglobin
HBV	Hepatitis B virus
HBsAg	Hepatitis B surface antigen
HCV	Hepatitis C virus
HCW	Health Care Worker
HEI	HIV Exposed Infant
HIV	Human immunodeficiency virus
HIVST	HIV self-testing
HTS	HIV Testing Services
ICF	Intensified case finding
IEC	Information, education and communication
INH	Isoniazid
INSTI	Integrase Strand Transfer Inhibitor
IPD	In-Patient Department
IPT	Isoniazid Preventive Therapy
IRIS	Immune Reconstitution Inflammatory Syndrome
ITN	Insecticide treated mosquito nets
IUD	Intrauterine device
KEPI	Kenya Expanded Program of Immunization
KS	Kaposi's sarcoma
LEEP	Loop electrosurgical excision procedure
L&D	Labor and Delivery
LLV	Low Level Viremia
LP	Lumbar Puncture
MAC	Mycobacterium Avium Complex
MAT	Medically Assisted Therapy
MNCH/FP	Maternal, neonatal and child health/family planning
MDT	Multi-disciplinary team
MEC	Medical Eligibility Criteria
MOH	Ministry of Health
MSM	Men who have sex with men
MUAC	Mid-upper arm circumference
NACS	Nutritional Assessment, Counselling and Support
NASCOP	National AIDS and STI Control Program

NCD	Non-Communicable Diseases
NHRL	National HIV Reference Laboratory
NNRTI	Non-nucleoside reverse transcriptase inhibitor
NRTI	Nucleoside reverse transcriptase inhibitor
NSP	Needle and syringe programmes
NRTI	Nucleotide reverse transcriptase inhibitor
OD	Once daily
OI	Opportunistic infection
OPD	Outpatient department
OST	Opioid substitution therapy
OVC	Orphans and vulnerable children
PCP	Pneumocystis jirovecii pneumonia
PCR	Polymerase chain reaction
PEP	Post-exposure prophylaxis
PGL	Persistent generalized lymphadenopathy
PHQ-9	Patient Health Questionnaire-9
PHDP	Positive Health, Dignity, and Prevention
PI	Protease inhibitor
PITC	Provider initiated HIV testing and counselling
PLHIV	People living with HIV
PLLV	Persistent low-level viremia
PML	Progressive multifocal leukoencephalopathy
PMTCT	Prevention of mother-to-child transmission
PPE	Papular pruritic eruptions
PrEP	Pre-exposure prophylaxis
PTB	Pulmonary tuberculosis
PWID	People who inject drugs
NHCSC	National HIV Clinical Support Centre
RNA	Ribonucleic acid
RPR	Rapid Plasma Reagin
sCrAg	Serum cryptococcal antigen
SRH	Sexual and Reproductive Health
SS	Single strength
STI	Sexually transmitted infection
TB	Tuberculosis
TT	Tetanus Toxoid
TWG	Technical Working Group
ULN	Upper Limit of Normal
VIA	Visual Inspection with Acetic Acid
VILI	Visual Inspection with Lugol's Iodine
VL	Viral Load
VMMC	Voluntary Medical Male Circumcision

1. Summary of Key Recommendations

1.1. HIV Testing Services (HTS) and Linkage to Treatment and Prevention

- HIV testing should be voluntary and conducted ethically in an environment where Consent, Confidentiality, Counselling, Correct results and Connection (linkage) can be assured
- To optimize access to testing services, HIV testing can be conducted in 3 different settings
    - Facility-based
    - Community-based
    - Self-testing
- All HIV-exposed infants (HEI) should have DNA PCR at 6 weeks and if negative repeat at 6 months and 12 months. An antibody test should be done at 18 months and then repeated every 6 months during breastfeeding. The final antibody test should be performed 6 weeks after complete cessation of breastfeeding
- The package of HIV testing services consists of
    - A pre-test session
    - HIV test
    - Assessment for other health-related conditions or needs (while HIV tests are running)
    - A post-test session (includes assisted partner notification services (aPNS) and child testing)
    - Referral and linkage to other appropriate health services (as part of the post-test session)
- HTS providers should adopt the 6 approaches which are known to improve linkage to treatment and prevention
    - Provide information
    - Support disclosure
    - Address barriers to linkage
    - Establish systems to facilitate linkage
    - Coordinate and integrate service
    - Document actions (using linkage registers)

1.2. Initial Evaluation and Follow-up for PLHIV

- Initial clinical evaluation of PLHIV entails
    - Providing counseling, assessing for ART readiness, and providing/linking to psychosocial support
    - Taking a complete medical history
    - Conducting a thorough physical examination
    - Appropriate laboratory investigations, although laboratory assessment is not a prerequisite to ART initiation
- CD4 monitoring, which is recommended for
    - Baseline investigation for all PLHIV
    - Any patient with suspected treatment failure
    - Any patient on fluconazole maintenance therapy or on dapsone as prophylaxis, to determine when prophylaxis can be discontinued

- Frequency of routine VL monitoring
  - For PCR positive HEIs: at baseline at the time of ART initiation
  - Age 0-24 years old: every 6 months
  - Age ≥ 25 years old: at month 6, 12, and then annually
  - Pregnant or breastfeeding: at confirmation of pregnancy (if already on ART) or 3 months after ART initiation (if ART initiated during pregnancy/breastfeeding), and then every 6 months until complete cessation of breastfeeding
  - Before any drug substitution (if no VL result available from the prior 6 months)
  - Three months after any regimen modification (including single-drug substitutions)
- PLHIV should receive differentiated care based on initial evaluation (advanced vs. well) and follow up (unstable vs. stable)

1.3. Standard Package of Care for PLHIV

Consists of 8 components:

1. Antiretroviral Therapy
   - All PLHIV are eligible for ART irrespective of CD4 cell count or percentage, WHO clinical stage, age, pregnancy status, or comorbidities
   - ART should be initiated as soon as the patient is ready to start, preferably within two weeks from time of HIV diagnosis (except for patients with cryptococcal meningitis or TB meningitis)

2. Positive Health, Dignity, and Prevention, GBV/IPV & Health Education and Counselling
   - All patients should be counselled and supported for disclosure of HIV status; partner/ family testing and engagement; condom use; family planning; sexually transmitted infections screening; and treatment adherence services
   - All females aged 15-49 years and emancipated minors accessing HIV care services should be screened for Intimate Partner Violence (IPV) as part of the standard package of care
   - All PLHIV should be provided with HIV education and counselling

3. Screening for and Prevention of Specific Opportunistic Infections
   - All PLHIV should receive lifelong cotrimoxazole preventive therapy (CPT) unless they have allergy to sulfa drugs or develop toxicity from CPT
   - During pregnancy, CPT should be initiated irrespective of the gestational age and should continue throughout pregnancy, breastfeeding, and thereafter for life
   - When dapsone (as a substitute for CPT) is being used as PCP prophylaxis, it is only recommended for patients in WHO Stage 4 and/or absolute CD4 count ≤ 200 cells/mm^3 (or CD4% ≤ 25% for children ≤ 5 years old), and should be discontinued once a patient achieves viral suppression and a sustained CD4 count of > 200 cell/mm^3 (or > 25% for children ≤ 5 years old) for at least 6 months
   - All PLHIV should be screened for TB at every visit using the Intensified Case Finding (ICF) tool and assessed for Isoniazid Preventive Therapy (IPT) if screened negative for TB
   - All adolescent and adult PLHIV with a baseline CD4 count of ≤ 200 cells/mm^3 should be screened for cryptococcal infection using the serum CrAg test

4. Reproductive Health Services
   - All PLHIV should be screened for STI at every clinic visit
   - Pregnancy status should be determined for all women of reproductive age at every visit and their contraception need determined and met
   - All HIV positive women between the ages of 18 - 65 years should be screened for cervical cancer

5. Screening for and Management of Non-Communicable Diseases
   - All PLHIV should be screened for hypertension, diabetes mellitus, dyslipidaemia, and renal disease
   - Lifestyle modifications are always the first line of prevention and management for hypertension, diabetes mellitus, and dyslipidaemia

6. Mental Health Screening and Management
   - All PLHIV should receive basic screening for depression before initiating ART, and annually thereafter, and whenever there is a clinical suspicion
   - All adults, adolescents should be screened for alcohol and drug use before initiating ART and regularly during follow-up
   - All caregivers should also receive baseline and follow-up screening for depression and alcohol/drug use

7. Nutrition Services
   - All PLHIV should receive nutritional assessment, counselling, and support tailored to the individual needs of the patients
   - All infants irrespective of HIV status should be exclusively breastfed for the first 6 months of life, with timely introduction of appropriate complementary foods after 6 months, and continued breastfeeding up to 24 months or beyond

8. Prevention of Other Infections
   - PLHIV (including children) should receive vaccinations as recommended by the National Vaccines and Immunization Programme

1.4. Adherence Preparation, Monitoring and Support

- The adherence preparation, monitoring, and support that a patient requires should be tailored to their level of adherence and the stage of ART initiation and follow-up
- Whenever possible, follow-up should be provided by the same care provider or team of care providers (e.g. same clinician and counsellor) at every visit. This is particularly important during the first 6 months in care
- For all children/adolescents, the level of disclosure should be assessed at the first visit. Ongoing care should include a plan for age-appropriate disclosure
- All patients are at risk of new or worsening barriers to adherence, so adherence monitoring, counselling and support should continue despite viral suppression
- Every service delivery point that is providing ARVs for patients (whether ART, PEP, or PrEP) must have a functional system for identifying patients who miss appointments and for taking action within 24 hours of a missed appointment
- In patients failing ART, do not change regimens until the reason/s for treatment failure have been identified and addressed (which should be done urgently using a case-management approach)

1.5. Antiretroviral Therapy in Infants, Children, Adolescents, and Adults

- The goal of ART is to suppress viral replication with the aim of reducing the patient's VL to undetectable levels
- **All individuals with confirmed HIV infection are eligible for ART, irrespective of CD4 count/%, WHO clinical stage, age, pregnancy or breastfeeding status, co-infection status, risk group, or any other criteria, provided that the individual is willing and ready to take ART and adhere to follow-up recommendations**
- ART should be started in all patients as soon as possible (preferably within 2 weeks of confirmation of HIV status)
- **Preferred first-line ART for infants, children, adolescents and adults**
    - Birth to 4 weeks: AZT + 3TC + NVP
    - 4 weeks - < 3 years: ABC + 3TC + LPV/r
    - 3 - 14 years (and < 35 kg body weight): ABC + 3TC + EFV
    - ≥ 15 years (or ≥ 35 kg body weight): TDF + 3TC + DTG (or TDF + 3TC + EFV for women and adolescent girls of childbearing potential)
- Adolescents who are virally suppressed on first line ABC + 3TC + EFV should transition to TDF + 3TC + DTG once they reach a weight of 35 kg or an age above 15 years to reduce pill burden and improve regimen durability and tolerability
- All patients **who are virally suppressed on a first line regimen** should be considered for optimization towards the current recommended first line regimen
- Treatment failure is suspected when a patient has a high VL ≥ 1,000 copies/ml after at least 6 months of using ART
- Treatment failure is only confirmed when VL is ≥ 1,000 copies/ml after assessing for and addressing poor adherence or other reasons for high VL, and then repeating VL after at least 3 months of excellent adherence to allow for viral re-suppression
- Persistent low-level viremia (PLLV) is defined as having a detectable VL (above the LDL value) but < 1,000 copies/ml on two or more consecutive measures. These patients are at increased risk of progression to treatment failure, development of ARV resistance and death and therefore require a similar case management approach as patients with VL ≥ 1,000 copies/ml
- All PLHIV with a detectable VL (any value above LDL): assess for and address potential reasons for viremia, including intensifying adherence support, repeat the VL **after 3 months of excellent adherence**
    - If the repeat VL is ≥ 1,000 copies/ml, change to an effective regimen
    - If the repeat VL is detectable but < 1,000 copies/ml consult the Regional or National HIV Clinical TWG
    - If the repeat VL is undetectable then continue routine monitoring

1.6. Prevention of Mother to Child Transmission of HIV

- Prevention of mother-to-child transmission of HIV (PMTCT) should be offered as part of a comprehensive package of fully integrated, routine antenatal care interventions
- **Lifelong ART should be initiated in all pregnant and breastfeeding women living with HIV, regardless of gestational age, WHO clinical stage and at any CD4 count**
- ART should be started, ideally, on the same day as HIV diagnosis is made with ongoing enhanced adherence support
- The preferred first line ART regimen for pregnant and breastfeeding women is TDF + 3TC + EFV
- Pregnant and breastfeeding women who are virally suppressed on a different first-line regimen should continue their current regimen until complete cessation of breastfeeding, after which they can be considered for regimen optimization
- For pregnant and breastfeeding women newly initiated on ART, obtain VL 3 months after initiation, and then every 6 months until complete cessation of breastfeeding
- For HIV positive women already on ART at the time of confirming pregnancy or breastfeeding, obtain a VL irrespective of when prior VL was done, and then every 6 months until complete cessation of breastfeeding
- For pregnant or breastfeeding women with a detectable VL (any value above LDL): assess for and address potential reasons for viremia, including intensifying adherence support, repeat the VL **after 3 months of excellent adherence**
  - If the repeat VL is ≥ 1,000 copies/ml, change to an effective regimen
  - If the repeat VL is detectable but < 1,000 copies/ml consult the Regional or National HIV Clinical TWG
  - If the repeat VL is undetectable then continue routine monitoring
- All HEI should receive infant ARV prophylaxis consisting of 6 weeks of AZT + NVP and thereafter NVP should be continued until 6 weeks after complete cessation of breastfeeding
- All infants irrespective of HIV status should be exclusively breastfed for the first 6 months of life, with timely introduction of appropriate complementary foods after 6 months, and continued breastfeeding up to 24 months or beyond

1.7. TB/HIV Co-infection Prevention and Management

- All healthcare settings should implement TB infection control recommendations to reduce the risk of transmission of TB among patients, visitors and staff
- Symptom-based TB screening using the ICF tool MUST be performed for all PLHIV at every clinic visit
    - Patients who are screened negative should be evaluated for isoniazid preventive therapy (IPT)
    - Patients who are screened positive (presumptive TB) must complete definitive diagnostic pathways
        - **The GeneXpert MTB/Rif test is the preferred test for diagnosis of TB and rifampicin resistance in all presumptive TB cases**
        - TB-LAM can be used as an adjunct rapid point-of-care diagnostic test for all PLHIV: with advanced HIV disease (WHO stage 3 or 4 or CD4 count ≤ 200 cells/mm^3 (or CD4% ≤ 25% for children ≤ 5 years)) with presumed TB, or; any danger signs of severe illness, or; currently admitted to hospital
- Those who are diagnosed with TB/HIV co-infection should be on CPT as part of the comprehensive package of care for TB/HIV co-infection
- Patients diagnosed with TB/HIV co-infection should start anti-TB treatment immediately and initiate ART as soon as anti-TB medications are tolerated, preferably within 2 weeks
- Patients with TB/HIV co-infection who are already on ART should start anti-TB treatment immediately and continue ART, making any required adjustments to the ART regimen based on known drug-drug interactions
- Always assess for ART failure in patients who develop TB after being on ART for ≥ 6 months

1.8. HBV/HIV and HCV/HIV Co-infection Prevention and Management

- All HIV positive adolescents and adults should be screened for HBV infection, using serum HBsAg, as part of initial evaluation; children who did not complete routine childhood immunizations should also be screened for HBV
- PLHIV without evidence of hepatitis B infection (HBsAg negative) should be vaccinated against hepatitis B
- The recommended first-line ART for adults with HIV/HBV co-infection is TDF + 3TC + DTG (or TDF + 3TC + EFV for women and adolescent girls of childbearing potential)
- HCV serology should be offered to individuals at risk of HCV infection
- Direct acting antiviral therapies (DAAs) for treatment of HCV have simplified the management of HIV/HCV co-infection

1.9. ARVs for Post-exposure Prophylaxis (PEP)

- PEP should be offered as soon as possible (< 72 hours) after high risk exposure
- The recommended ARV agents for PEP are
    - 0-14 years (and < 35 kg): ABC + 3TC + LPV/r
    - ≥ 15 years old (**or** ≥ 35 kg): TDF + 3TC + DTG (or TDF + 3TC + ATV/r for women and adolescent girls of childbearing potential)

1.10. Oral Pre-Exposure Prophylaxis (PrEP)

- Oral PrEP should be offered to HIV negative individuals at substantial ongoing risk of HIV infection (including the seronegative partner in a discordant relationship)
- The recommended ARV regimen for use as PrEP is: TDF (300 mg) + FTC (200 mg) once daily
- PrEP does not eliminate the risk of HIV infection and it does not prevent STIs or unintended pregnancies
- PrEP should only be offered after assessment to establish eligibility, readiness for effective use, required follow-up (including HIV testing every 3 months) and absence of contraindications to TDF and/or FTC

1.11. People Who Inject Drugs (PWID) and HIV

- PWID should be offered regular HIV testing and counselling and be linked to comprehensive HIV treatment and prevention services including harm reduction counselling and support
- The recommended first-line ART for adult PWID is TDF + 3TC + DTG (or TDF + 3TC + ATV/r for women and adolescent girls of childbearing potential)
- PWID should be offered screening, diagnosis, treatment and prevention of STIs as part of comprehensive HIV prevention and care
- PWID should have the same access to TB prevention, screening and treatment services as other populations at risk of or living with HIV
- PWID should be screened for HBV (by HBsAg) and HCV (by HCV serology) at first contact
- All PWID should be linked to Needle and Syringe Programmes (NSP) to access sterile injecting equipment
- All PWID should be linked to Medically Assisted Therapy (MAT)

2. HIV Testing Services and Linkage to Treatment and Prevention

HIV testing services (HTS) provides the first critical link to comprehensive HIV treatment and prevention. Additionally, this initial step provides opportunities to offer other interventions such as sexual and reproductive health services, TB screening and referral, substance abuse screening and referral, information and referral for voluntary medical male circumcision, pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP) and other combination HIV prevention services.

HIV testing should be voluntary and conducted ethically in an environment where the five Cs of Consent, Confidentiality, Counselling, Correct results and Connection (linkage) can be assured.
For detailed recommendations refer to the national HTS guideline.

2.1. Settings for HIV Testing

Facility-based testing

- **Routine provider-initiated HIV testing and counselling (PITC) should be offered to ALL clients (including infants, children, adolescents and adults) visiting health facilities regardless of the reasons for contact with the health facility, using an opt-out approach**
- As much as possible, PITC should be integrated into care pathways at all service delivery points including adult and Paediatric inpatient units, outpatient units, maternal and child health clinics, SRH/FP clinics, TB clinics, specialty clinics, GBV care units and service delivery points for key and priority populations. Patients starting HIV care should receive disclosure counselling and support followed by family testing

Community-based testing

- Targeted community-based HTS offers additional opportunities to identify and link people to treatment and prevention. This setting is especially important for testing children and partners of index clients through family-based testing and counselling; assisted partner notification services; outreach to key populations as well as orphans and vulnerable children (OVCs), and; adolescents

HIV self-testing (HIVST)

- HIVST allows individuals to collect their own specimen, perform the test, and interpret the results on their own. If positive, a confirmatory test must be performed by a trained HTS provider (facility-based or community-based) following the national testing algorithm
- Uptake of HIVST is improved with availability of easy-to-use testing methods such as oral/ saliva-based tests. These can be issued from health facilities and pharmacies or through outreach programs
- HIVST may have the greatest benefit in reaching specific populations such as partners of newly diagnosed PLHIV; key populations; partners of pregnant women attending ANC; contacts of patients treated for STIs; highly stigmatized populations; healthcare workers; and frequent re-testers

Providing HTS for different populations and in different settings (Table 2.1) increases opportunities for access to knowledge of HIV status and to a range of HIV treatment and prevention services.

Table 2.1: Recommendations for HTS for Different Populations and Settings

Population	Recommendation
Birth testing of infants born to known HIV- positive mothers (Figure 2.2)	• Birth testing (HIV testing of infants at birth or at first contact within 2 weeks after birth) is undergoing a pilot and further implementation guidance will be provided based on the pilot results
HIV testing and counselling of infants and children aged less than 18 months (Figure 2.1)	• HIV exposure status of all infants should be established at first contact • To establish HIV exposure status of a child less than 18 months of age, conduct HIV antibody testing for mothers with unknown status or who previously tested negative during antenatal care at the 6-week immunization visit or first contact. If the mother declines to be tested or is not available for testing, then conduct a rapid HIV antibody test for the child to determine exposure (if antibody test is positive this confirms HIV exposure) • When HIV exposure is confirmed, ARV prophylaxis should be started immediately • **All HEIs should have DNA PCR testing at the 6 week immunization visit or first contact thereafter** • Infants with an initial positive HIV DNA PCR result should be presumed to be HIV infected and started on ART in line with national guidelines, **with a confirmatory HIV DNA PCR and baseline viral load taken at the time of ART initiation** (ART initiation is based on the first result) • All HEI with initial negative results should continue infant ARV prophylaxis and be followed as HEIs, including additional PCR testing at 6 months and 12 months, and antibody testing at 18 months and every 6 months during breastfeeding, and also 6 weeks after complete cessation of breastfeeding
HIV testing and counselling of children older than 18 months till age 9 years (Figure 2.3)	• Conduct HIV testing and counselling (with parental consent) for all children of unknown HIV status presenting to the health facility irrespective of reason for their visit to the health facility. If the child is known to be HIV negative from previous testing and has no new risk factors/ exposures then repeat testing is not required until adolescence • Conduct HIV testing and counselling for all children of HIV infected adults as soon as possible, within one month of confirming the HIV positive status of the adult
HIV testing and counselling of adolescents (10 - 19 years) (Figure 2.3)	• Conduct HIV testing and counselling for all adolescents presenting to the health facility irrespective of reason for their visit to the health facility. Adolescents aged 15 years and above and emancipated minors can provide self-consent. For younger adolescents, obtain their assent and parental/caregiver consent • For those that test negative, re-testing should be recommended annually unless there is a new exposure risk • Link HIV-negative adolescents to comprehensive HIV prevention services based on risk assessment • Link all adolescents identified as HIV positive to treatment and prevention services • All adolescents should be counselled about the potential benefits and risks of disclosure of their HIV status and empowered and supported to determine if, when, how and to whom to disclose • For sexually active adolescents with partners, HIV testing and counselling should be offered to their partners (and their children for HIV positive adolescents) • All uncircumcised adolescent males who test HIV negative should be counselled about the prevention benefits of VMMC and linked to VMMC services if they agree

Table 2.1: Recommendations for HTS in Different Settings (continued)

Scenario	Recommendation
HIV testing and counselling for pregnant and breastfeeding women	• All pregnant women (unless known HIV positive) should be counselled and tested for HIV during their first ANC visit and if negative, repeat testing in the third trimester • At labour and delivery, HIV testing should be done for all women with unknown HIV status and previously tested negative (even if tested negative in third trimester) • All breastfeeding mothers (unless known HIV positive) should be counselled and tested at the 6-week infant immunization visit. The HIV test (if negative) should be repeated every 6 months until complete cessation of breastfeeding (Table 2.4) • Mothers should be counselled about the schedule for repeat HIV testing in pregnancy and postnatal as part of routine ANC and postnatal education • All pregnant and breastfeeding women who are not tested, opt-out or decline HIV testing during the first contact should be offered HIV counselling and testing in subsequent visits with appropriate referral and linkage for prevention, care and support services • All HIV positive pregnant and breastfeeding women enrolled into care should receive counselling and support (assisted disclosure), case managed linkage and follow-up • All spouses/partners of pregnant and breastfeeding women should be offered HIV testing and counselling, as well as all children if the mother is HIV positive
HIV testing and counselling of sexual partners & children of index clients (HIV positive person who is newly diagnosed or already in HIV care) (Figure 2.4)	• All PLHIV enrolled into HIV care should receive disclosure counselling and be supported to disclose their HIV status (assisted disclosure) • HIV testing and counselling should be encouraged (facility-based or community-based) for all partners and children of index clients, with linkage to treatment and prevention services as appropriate
HIV testing and counselling of key and vulnerable populations	• Conduct HIV testing and counselling for all clients from key and vulnerable populations presenting to the health facility irrespective of the reason for their visit to the health facility, or through targeted outreach testing, or through testing at key and vulnerable population service delivery points (e.g. drop-in centres) • For key populations that test negative, re-testing should be recommended every 3 months • Link all who test HIV positive to treatment and prevention services • For sexually active adults with partners, HIV testing and counselling should be offered to their partners (and their children for those that are HIV positive) • All uncircumcised adult males who test HIV negative should be counselled about the prevention benefits of VMMC and linked to VMMC services if they agree
HIV testing and counselling of adults	• Conduct HIV testing and counselling for all adults presenting to the health facility irrespective of reason for their visit to the health facility • For those that test negative, re-testing should be recommended annually unless there is a new risk exposure • HIV positive adults should be counseled for ART initiation • Link all adults identified as HIV positive to treatment and prevention services • For sexually active adults with partners, HIV testing and counselling should be offered to their partners (and their children for those that are HIV positive) • All adult males who test HIV negative should be counselled about the prevention benefits of VMMC and linked to VMMC services if they agree

Settings	Recommendations
Community-based testing	• Targeted community-based HIV testing and counselling can be especially useful for children and partners of index clients; adolescents; as well as for outreach to key populations (sex workers, truckers, MSM, and PWID) and OVCs • All HTS clients should be linked to HIV treatment and prevention services
HIV self-testing (HIVST)	• HIVST can be offered to any adult or adolescent who wants to know their HIV status outside of a formal HTS setting, usually in private • HIVST may have the greatest benefit in reaching specific populations, such as: men; partner testing for ANC attendees; contacts of patients treated for STIs; highly stigmatized populations; healthcare workers; frequent re-testers; etc. • If positive, a confirmatory test must be performed by a trained HTS provider (facility-based or community-based) following the national testing algorithms • Assisted HIVST is recommended for adolescents: the adolescent is issued with the self-testing kit and guided by a trained tester, through the process of taking the test and interpreting the results, and then assisted with linkage to prevention and/or treatment services
Opt-out testing	• Opt-out HIV testing is the expected approach for all healthcare service delivery points (e.g. TB clinic, MCH, OPD, IPD, etc) except for early infant diagnosis, which is considered required testing • For early infant diagnosis, HIV testing of the parents follows an opt-out approach, but if the mother declines testing for herself (or is not available for testing) then testing of the infant is required

2.2. Age-Specific HIV Testing Algorithms

2.2.1. Early Infant Diagnosis

HIV Exposed Infant

HIV infection of an infant or child can occur in utero, at labour and delivery and through breast milk. HIV exposure of ALL children aged <18 months old should be ascertained at first contact. A positive HIV antibody test in a child younger than 18 months of age confirms HIV exposure.

Confirmation of HIV infection in HIV Exposed Infants and Children < 18 Months Old

All HEI should be tested with DNA PCR within 6 weeks of age or first contact thereafter; if negative then another DNA PCR at 6 months, and if negative then repeat DNA PCR again at 12 months. **This replaces previous guidelines to perform antibody testing for infants at 9 months.** An antibody test should be performed for all HEI at 18 months old and every 6 months thereafter during breastfeeding, and also 6 weeks after complete cessation of breastfeeding (Figure 2.1).

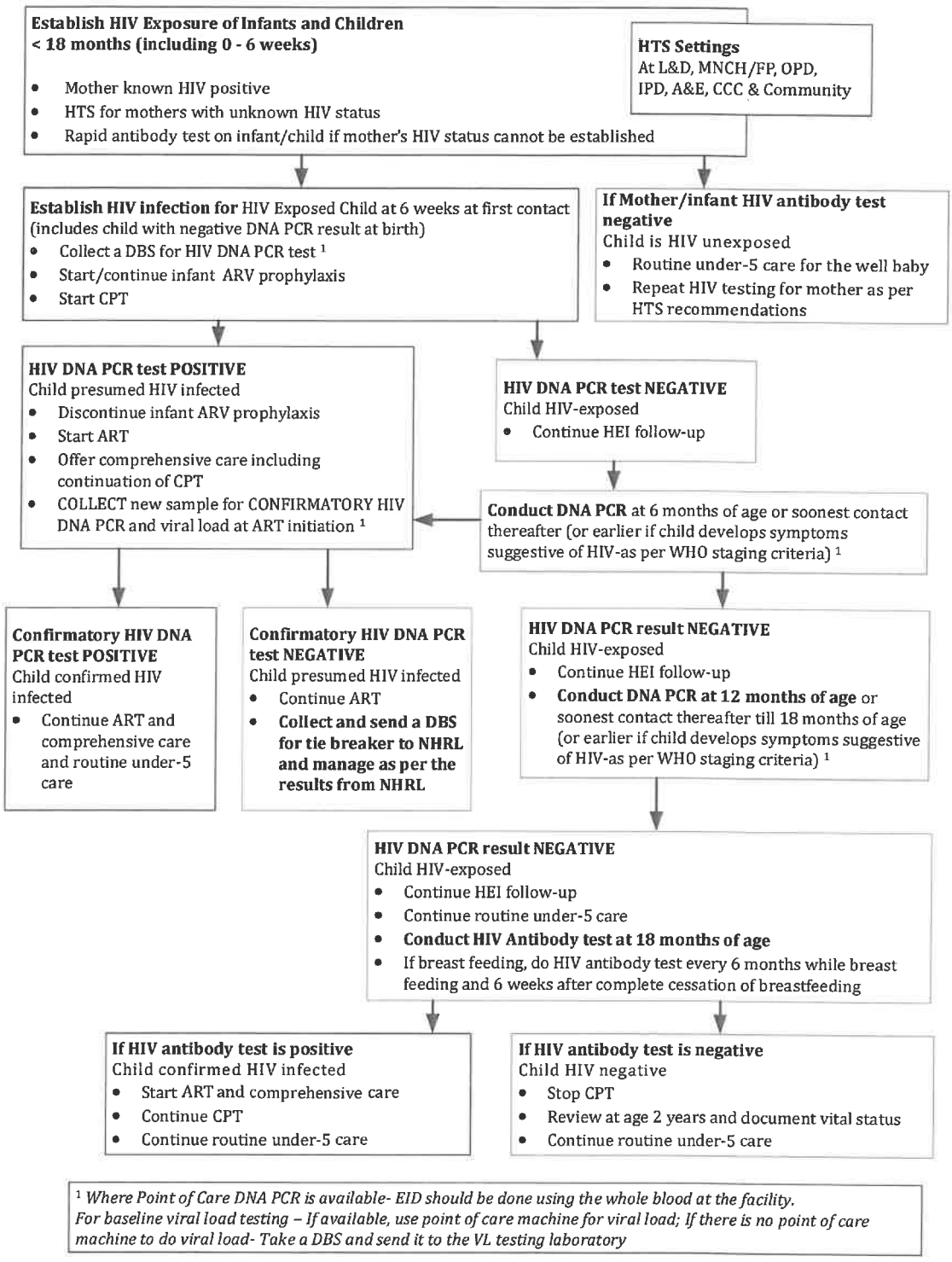


Figure 2.1 Algorithm for Early Infant Diagnosis in Infants and Children < 18 months of age

Presumptive Diagnosis of Severe HIV Disease in Children under 18 Months

Occasionally, children less than 18 months of age present to hospital with severe illness; and a rapid HIV antibody test confirms HIV exposure. Lack of immediate availability of HIV DNA PCR results for confirmation of HIV could result in undue delay in starting life-saving ART. In such children, a presumptive diagnosis of HIV infection can be made using the criteria in Table 2.2. ART can be initiated while awaiting HIV DNA PCR results to confirm HIV infection.

Table 2.2: Presumptive Diagnosis of HIV in children <18 months while awaiting DNA PCR Results

Child < 18 months of age; HIV antibody test positive and symptomatic with:
2 or more of the following:

- Oral candidiasis/thrush
- Severe pneumonia
- Severe sepsis

OR, any of the following

- Any WHO Clinical Stage 4 condition
- Recent maternal death (if likely to be have been HIV-related) or advanced HIV disease in mother
- Child's CD4% < 25%

2.2.2. Birth Testing

Birth testing is defined as HIV testing (with DNA PCR) at birth or first contact within 4 weeks after birth, for infants born to known HIV-positive mothers. Birth testing has the potential to greatly improve survival for infants who are infected during pregnancy and around labour and delivery by identifying them early for rapid ART initiation.

The national program is conducting a pilot for birth testing in select counties where all HEI will have a DNA PCR HIV test done. This pilot will inform operational guidance for scale up of birth testing nationally.

The following testing algorithm is being used during the pilot (Figure 2.2).

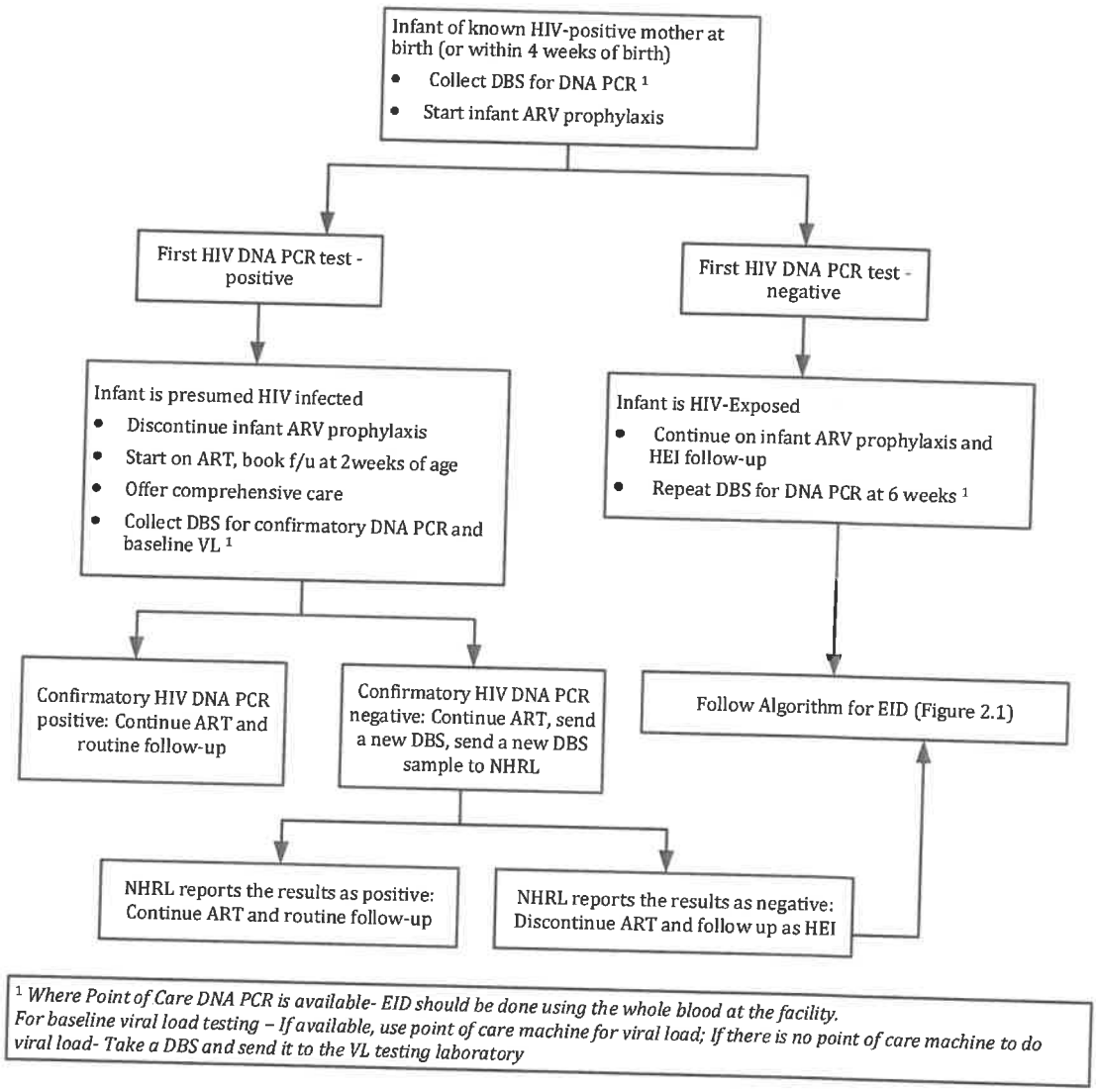


Figure 2.2: Birth Testing Algorithm

2.2.3. Diagnosis of HIV Infection in the Older Child (≥ 18 months), Adolescents and Adults

Serial testing, using approved rapid HIV antibody testing kits, is used to diagnose HIV infection in children older than 18 months, adults and adolescents (refer to Figure 2.3)

- Offer adequate information to all clients and obtain consent prior to the HIV test (verbal consent is adequate, but should be documented). Individuals 15 years and older and emancipated minors can provide self-consent. Clients who opt-out (i.e. refuse to test) should be counselled and continuously offered PITC with each visit and/or referred for community-based testing and/or offered HIV self-testing
- Clients who test HIV negative should be assessed and counselled on HIV risk reduction behaviors and linked to combination HIV prevention services (such as VMMC, RH/FP, condoms, PrEP, etc.) depending on individual risk profile. Table 2.4 provides recommendations for re-testing those who test HIV negative

For breastfed HEIs older than 18 months, the HIV antibody test should be performed every 6 months during breastfeeding and at least 6 weeks after complete cessation of breastfeeding (to factor in the window period of an infection that may occur around the time of cessation of breastfeeding).

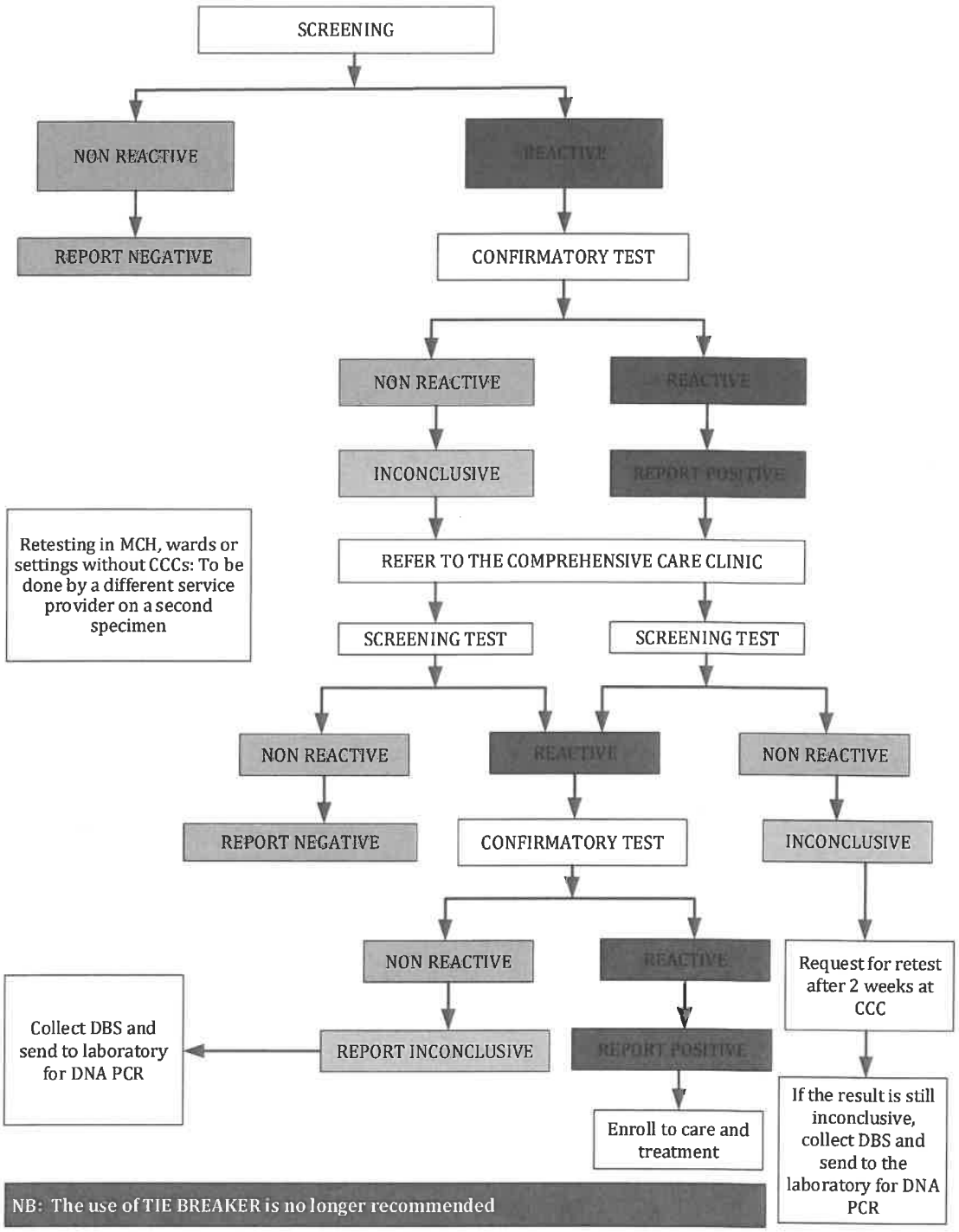


Figure 2.3: HIV Testing Services Algorithm

2.3. Package of HIV Testing Services

An HIV testing and counselling session consists of

- A pre-test session
- HIV test
- Assessment for other health-related conditions or needs (while HIV tests are running)
- A post-test session (including assisted partner notification services (aPNS) and child testing)
- Referral and linkage to other appropriate health services (as part of the post-test session)

The HIV testing service package is summarized in Table 2.3.

Table 2.3: Summary of HIV Testing Services Package

1. Pre- Test Information
• Introduction (Provider & Client) and provider role in HTS
• Contracting with the client
• Time the session likely to take
• Assure client confidentiality/shared confidentiality
  o Talk about the records and information to be gathered by the provider
• Benefit of HIV testing (to individuals, sexual partners and families)
• Consenting for the HIV services
• HIV package provided
  o HIV Combination Prevention
  o Assisted Partner Notification Services (aPNS) and HIV Self-Testing (HIVST)
  o Referral to HIV care and treatment and other integrated services

2. Pre-Test Counseling • HIV information • Risk assessment and reduction • Need for disclosure and importance to reach out to partners for HTS • Benefit of aPNS and HIVST • Discuss aPNS and HIVST, how it is related to HIV prevention, care and treatment services • Client preparation, testing process & interpretation of test results • Interpretation of test results using charts

3. Perform test
• During the 15 minutes as you wait for the test results
  o Discuss Combination Prevention e.g. PrEP, Risk Reduction, STI treatment, condom information & demonstration, Voluntary Medical Male Circumcision (VMMC), Elimination of Mother To Child Transmission of HIV (eMTCT)
  o Screen for and provide information and referrals for; Intimate Partner Violence (IPV), STI and cancer screening, Tuberculosis (TB), Family planning/contraceptive needs, etc.
  o Establishing number of sexual contacts and children
  o Document in the MOH 362
• ***Discus further on aPNS and HIVST as the confirmatory test is running for the clients who test positive with the screening test***

4. POST TEST COUNSELLING • Check if client is ready for results and help them to interpret • Check what the client understands by the results • Allow the client to share his/her initial reactions and verbalize their initial feelings • Explore and acknowledge client's immediate feelings and concerns • Offer necessary support

NEGATIVE RESULT	POSITIVE RESULT
• Review implications of being HIV negative and help client develop a risk reduction plan (see HTS guidelines) • Revisit aPNS and HIVST to determine partner notification plan/approach • Linkage to other HIV prevention initiatives • Client-specific recommendations for re-testing (Table 2.4) • Encourage disclosure of HIV negative status with sexual partner and need for couple counselling	• Review implications of being HIV positive and help index client develop a risk reduction plan • Discuss positive living • Review and support disclosure • Revisit aPNS and HIVST to determine partner notification plan/approach: o Provider referral o Contract referral o Client referral – provide the referral slip/s • Document details of index client in the HTS tracking log & fill referral forms & HIVST reporting tool • Collect all the PNS and HIVST related information about partners/contacts
5. Assessment of other health related conditions • Conduct assessment for risk during aPNS and HIVST including intimate partner violence (IPV) • Assess risk for sexually transmitted infections (STIs) and opportunistic infections that would also require notification	
6. Referral and linkage to care • Physically escort the client for re-testing and linkage to ART/care • Obtain accurate locator information from the index client (physical location, phone number) • **Document the outcomes of partner follow up(s)**	

Post-Test Counseling in the Era of Test-and-Treat

Post-test counselling should, at a minimum, include three key messages that being the ART treatment preparation process for all PLHIV:

- Treatment (called antiretroviral therapy or ART) is available and is recommended for everyone with HIV
- Starting treatment as soon as possible (preferably within two weeks from testing positive for HIV) reduces the chance of your illness getting worse or of passing HIV to others
- If you take your ART properly and do not miss pills you can expect to live a long and productive life

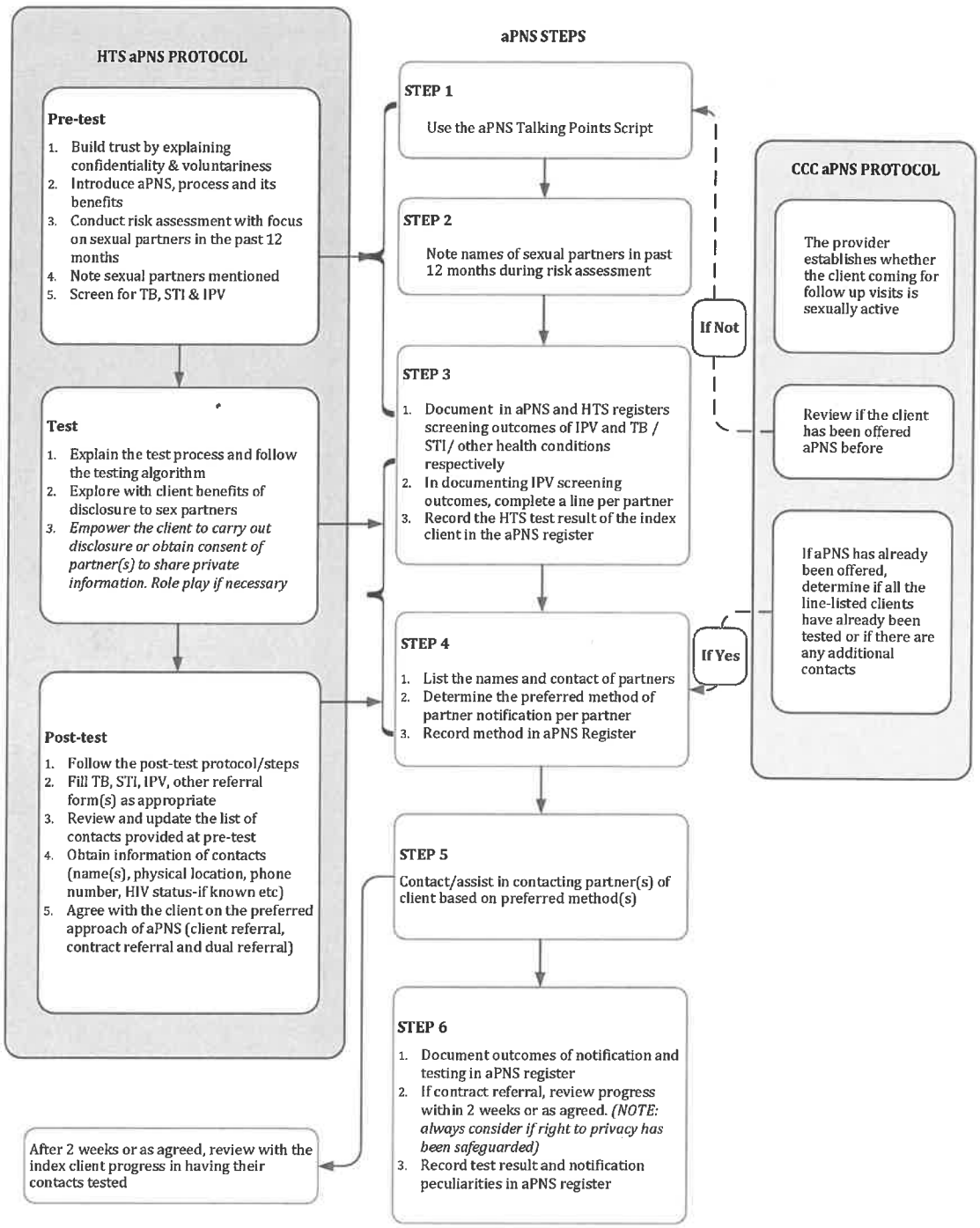


Figure 2.4: Assisted Partner Notification Services and Index Testing Algorithm

Table 2.4: Recommendations for Retesting HIV Negative Clients

Scenario/Population	Recommendation for Re-testing
General population	Re-test **at least annually** (for children, re-testing is only required if there is a new exposure)
Key populations (PWID, SW, MSM)	Re-test every 3 months in case of frequent instances of high risk exposure
Negative partner in discordant union	Re-test every 3 months until HIV-positive partner achieves viral suppression. Once viral suppression is confirmed re-testing can be performed every 6 months. Other prevention services should still be recommended, including consistent and correct use of condoms. Assess for eligibility and willingness for PrEP
Pregnant women	All pregnant women should be retested in the third trimester. At labour and delivery, HIV testing should be done for all women with unknown HIV status and previously tested negative (even if tested negative in third trimester)
Breastfeeding mothers	Re-test after delivery at the 6 week infant immunization visit, and then every 6 months until complete cessation of breastfeeding
HIV exposed infants	All HEI should have DNA PCR testing at 6 weeks, 6 months, and 12 months, and then HIV antibody testing at 18 months and then every 6 months thereafter if they continue breastfeeding. All HEI should have HIV antibody testing 6 weeks after complete cessation of breastfeeding
Persons who had a recent (e.g. less than a month) specific exposure incidence	Test at initial presentation and re-test at 12 weeks and then as per risk group
Patients with a confirmed or suspected STI	Test at initial presentation and re-test at 12 weeks and then as per risk group
Individuals on pre-exposure Prophylaxis (PrEP)	Re-test every 3 months

2.4. Linkage from HIV Testing to Treatment and Prevention

Every effort should be made to ensure patients with confirmed HIV infection are linked to treatment and prevention expeditiously. The HTS providers should manage this process actively by employing approaches known to improve linkage to care (Table 2.5) including: providing information, disclosure, addressing barriers to linkage, establishing systems to facilitate linkage, care coordination and integration, and using a linkage register.

Table 2.5: Approaches to Improve Linkage to Treatment and Prevention

Strategy	Action
Information	• Quality post-test counselling should include information about the nature and availability of additional HIV-related services, description of the next steps in treatment and prevention including entire treatment plan and follow-up visits and schedule • The benefits of immediate assessment and early initiation of ART should be emphasized • Involve the patient in the decision-making process regarding treatment and prevention (especially where and when to start ART)
Disclosure	• Disclosure to a trusted 'significant other' promotes linkage and adherence to treatment • Encourage and help the patient to discuss HIV status with a trusted friend or close relative • Encourage adolescents to identify and invite a supportive adult or friend to support them
Barriers to Linkage	• During post-test counselling, identify and address any barriers to linkage
Systems to Facilitate Linkage	• The HTS provider is responsible for linkage into care • Same day enrolment into care is expected • Linkage should be done to on-site treatment and prevention services through patient escorts. Where this is not possible (due to patient preference or the services are not available), the testing facility should book the appointment with the receiving facility and follow-up to ensure the patient registers at the receiving facility. Provide the patient with referral information, referral form and contact details of the facility • Deploy retention and loss-to-follow up tracking system to ensure linkage is successful. These include enlisting the help of peer or buddy systems, SMS reminders, phone calls and community outreach workers to escort HIV positive clients to enrolment • Early preparation and assessment for ART, with early initiation of ART strengthens engagement in care
Care Coordination and Integration	• Coordinate and treat mother-baby pairs, partners and families together. Integrate common services offered to PLHIV (TB diagnosis and treatment, SRH/FP, cervical cancer screening, nutrition etc.) • Where referrals are necessary, such referrals should be coordinated (communication and documentation between referring and receiving service delivery points)
Linkage Register	• Maintain a linkage register at all testing points in the facility and community • Track and report on progress with linkage on a monthly basis • Discuss linkage at MDT meetings

2.5. Approach to Patients on ART with a Discrepant HIV Test Result

HIV testing should not be performed for patients who are already enrolled into HIV care and on ART. However, some patients self-refer for HIV antibody testing without disclosing that they are known HIV positive and on ART. Figure 2.5 provides recommendations on managing patients who have a non-reactive antibody test while on ART.

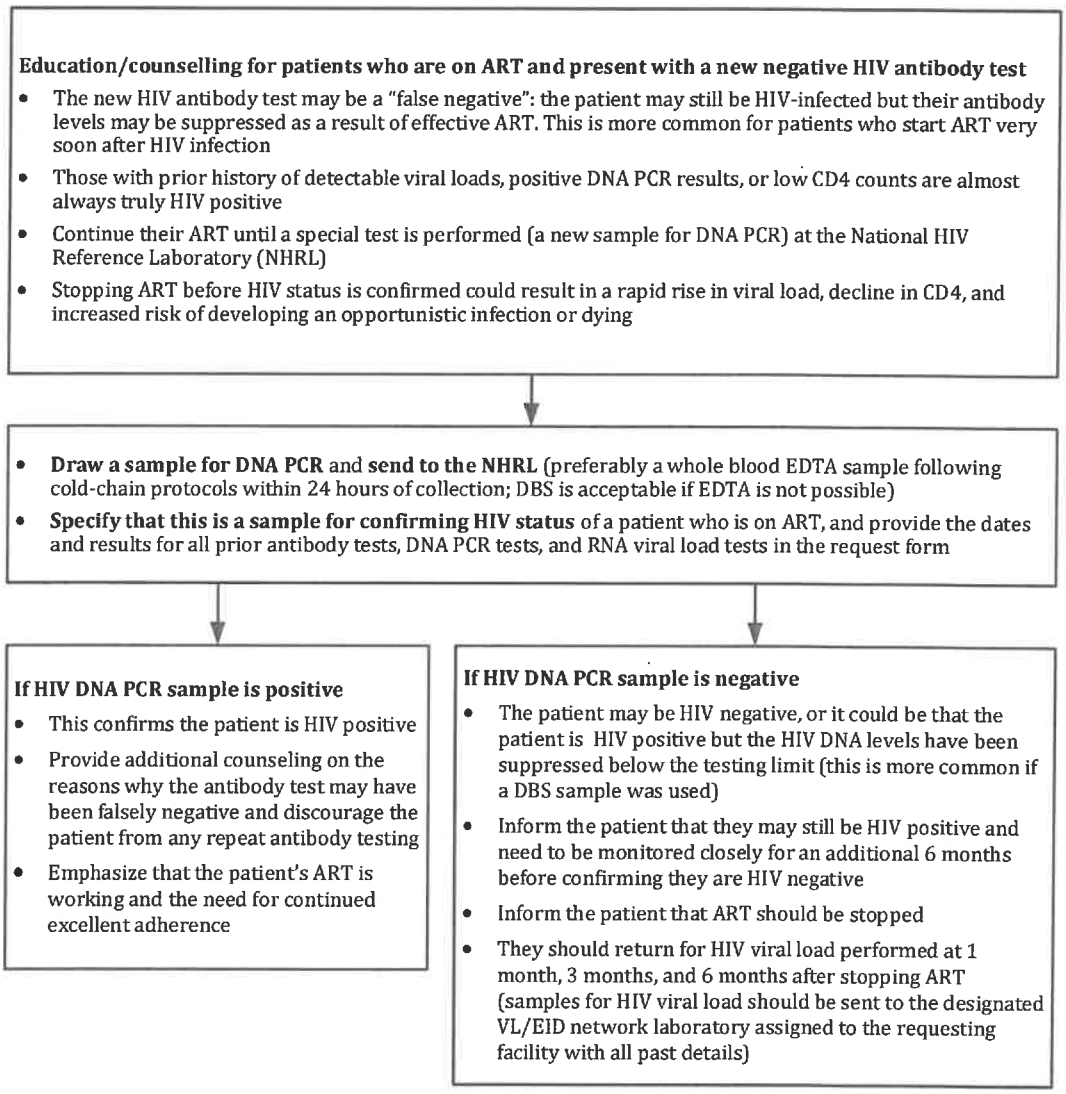


Figure 2.5: Managing Patients on ART Who Present with a New Negative HIV Antibody Test

3. Initial Evaluation and Follow-up for PLHIV

All PLHIV are eligible for ART irrespective of CD4 cell count or percentage, WHO clinical stage, age, pregnancy status, or comorbidities. ART should be initiated as soon as the patient is ready to start, preferably within two weeks from time of HIV diagnosis.

In order to provide targeted services based on clinical presentation, during the initial evaluation all PLHIV should be categorized as presenting with advanced HIV disease or as presenting well (Table 3.3). Patients with advanced disease require more intensive evaluation for and management of OIs, and once ART is started they are at higher risk for developing immune reconstitution inflammatory syndrome (IRIS, Annex 16).

Similarly, after at least 12 months on ART, PLHIV should be categorized as being either stable or unstable (clinically, virologically and psychosocially) in order to best meet the specific needs of each patient for treatment and follow-up and improve patient outcomes. Differentiated care minimizes inconvenience and unnecessarily frequent follow-up, thus reducing costs and time related to clinic visits. It also allows resources to be focused on those patients who require additional attention (Table 3.5).

3.1. Initial Clinical Evaluation of PLHIV

All patients enrolling into HIV care should have a complete medical history taken, a thorough physical examination and appropriate laboratory investigations. Findings from this initial evaluation should be documented legibly in a retrievable health record management format (electronic or paper-based) to facilitate long-term follow-up of the patient. Table 3.1 summarizes important aspects of the initial medical history and physical examination for PLHIV. Additional history should be taken and physical examination performed when clinically indicated.

Table 3.1: Initial Clinical Evaluation for PLHIV (History and Physical Examination)

History		Comments
Current and past medical history	The initial visit provides the opportunity to establish a meaningful patient-provider relationship; the clinician should elicit concerns and expectations with open, non-judgmental and clear communication	
	• Presenting complaints/current symptoms • Include symptoms of TB and TB contacts	• Inquire about symptoms due to co-existing HIV-related and non-HIV-related disease and co-morbidities that will require immediate intervention • Completion of the Intensified Case Finding (ICF) tool
	• Date of first positive HIV test • Past and current co-morbidities (e.g. TB, cryptococcal meningitis, hypertension, diabetes, kidney and liver disease) • Current medications, including herbs • Drug allergies, especially sulfa allergy • ARV exposure history • History of hospitalizations • Family history of chronic disease or cancer	• Document history of TB • Document previous or current ARV use (including for PMTCT, PEP, PrEP and ART) • Establish current medications (prescription, non-prescription, and herbal) likely to adversely interact with ARVs • Establish reasons for hospitalizations
Psychosocial history	• Education, employment, family, marital status • Past treatment for mental illnesses; current symptoms of depression • Disclosure and self-stigma • Substance use including alcohol, tobacco, miraa (khat), marijuana, narcotics, injection drug use • Nutritional history and adequacy of nutritional intake and household food security	• Establish and document social support structures • Establish possible presence of mental health concerns • Encourage disclosure to trusted close relations/friends and sexual partners • Elicit and begin to address possible barriers to adherence • Link to additional facility and community support resources, including psychosocial support groups, peer mentors, harm reduction services for PWIDs, etc
Sexual and reproductive history	• Past history of STIs • Current symptoms of STIs • Sexual practices • Partner HIV status and disclosure to sexual partner(s) • Pregnancy history and age of all living children • Menstrual history, family planning and plans for pregnancy • History of cervical cancer screening	• Discuss secondary prevention and avoidance of re-infection with STIs • HIV and ART status of sexual partner/s • Discuss pregnancy intention and contraception needs • Encourage contact tracing and HIV testing for sexual partners and all children of HIV-infected women and all children whose mothers' HIV status is unknown

Table 3.1 (Continued): Initial Clinical Evaluation for PLHIV (History and Physical Examination)

Physical Examination		Comments
General impression, vital signs and anthropometric measurements	Assess general mood, measure and record weight, height, MUAC (in children and pregnant women), temperature, pulse rate, BP, respiratory rate, pulse oximetry (if patient has respiratory complaints or has difficulty in breathing)	• Calculate BMI as: Weight (kg)/ Height^2(m) • Use z-scores for children • Monitor growth trends for children
General examination	Conjunctiva and palms for pallor or jaundice; swollen lymph nodes (cervical, axillary, inguinal); mouth (for Kaposi's sarcoma (KS) lesions, oral hairy leucoplakia, candidiasis, tooth decay); skin (for drug eruptions, herpes zoster, dermatitis, pruritic papular eruptions (PPE), folliculitis, fungal infections, molluscum, and KS)	• Prompt treatment of inter-current illness contributes towards success of ART and reduction in early morbidity and mortality • Asymmetric or rapidly enlarging lymph nodes will require fine needle aspiration cytology or biopsy • Cervical cancer screening (if not done in the past year), and appropriate management • Monitoring developmental milestones for children
Systemic examination	Central Nervous System (focal defects, retina); Mental State Examination (for mental status); abdomen (for liver or splenic enlargement); respiratory (for dullness to percussion; crackles or wheezes); cardiovascular (for peripheral pulses, oedema, heart sounds); if specific symptoms: genitourinary/ anorectal system (for ulcers, discharge, condylomata/warts, prostate examination for men ≥ 45 years of age). Speculum examination with cervical cancer screening for females	
Summary	Problem list with differential diagnosis and management plan for each problem (including investigations, treatment, referrals, and follow-up)	• Assign and document the initial WHO Clinical Stage and manage presenting illnesses • Growth and developmental milestone must be assessed and used for WHO staging in children • Differentiate between patients with advanced disease versus those who are clinically well, to guide acuity of follow-up
NOTE: Laboratory assessment is not a prerequisite to ART initiation. It should not cause a delay in starting ART		

3.2 Initial Laboratory Evaluation of PLHIV

The comprehensiveness of laboratory tests will depend on presence and/or type of suspected concurrent illness. Table 3.2 summarizes the recommended baseline laboratory investigations for all PLHIV.

Additional investigations should be based on clinical indication. ART should not be delayed if a laboratory test is not available.

Table 3.2: Baseline Laboratory Investigations for PLHIV

	Test	Comments
HIV specific	Confirm and document positive HIV test result	• Refer to Figure 2.3
	CD4 cell count	• **Recommended at baseline for all patients** (CD4% for children ≤ 5 years old) • If CD4 ≤ 200 cells/mm^3 (for adults and adolescents) then laboratory should automatically perform a serum cryptococcal antigen (sCrAg) on the same sample to screen for cryptococcal infection
	Viral load (HIV-1 RNA)	• Baseline viral load (VL) is only recommended for HEIs after 1st PCR test is positive. Specimen for baseline VL can be drawn at the time of initiating ART; obtaining a VL should not delay ART initiation
	Serum Cryptococcal Antigen (sCrAg)	• Obtain serum CrAg in all adults and adolescents with a CD4 count ≤ 200 cells/mm^3. This should be done as reflex testing by the laboratory • If positive, manage as per the cryptococcal meningitis screening algorithm (Figure 4.1)
	HIV Drug Resistance Testing (DRT)	• Not currently recommended as a baseline investigation
Others	Hb (preferably full blood count if available)	• Recommended for all patients • If baseline Hb < 9.5 g/dL then AZT should be avoided
	Pregnancy status	• Pregnancy status should be determined for all women of reproductive age (based on history of last menstrual period, and if uncertain, irregular, or delayed then a urine pregnancy test should be performed)
	Urinalysis (for protein & glucose)	• Recommended for all patients
	Creatinine	• Recommended for all patients • Calculate Creatinine Clearance (CrCl), Annex 15 o If HBV negative and CrCL ≤ 50 ml/min then TDF should be avoided (Table 6.7) o If HBV positive and CrCl ≤ 50 ml/min then TDF should still be used (Table 9.3) o CrCl is also used for dose adjustment of NRTIs, CTX and fluconazole (Table 6.7)
	Syphilis serology (VDRL, TPHA, or RPR)	• Recommended for all PLHIV with a history of being sexually active

Table 3.2: (continued): Baseline Laboratory Investigations for PLHIV

	Glucose	• Recommended for all patients
	Plasma lipid profile	• Recommended for all patients
	HBsAg	• Recommended for all adolescent and adult PLHIV (plus children who did not complete routine childhood immunizations) • If negative, patients should be immunized for HBV as soon as they achieve confirmed viral suppression (see Section 4.8.1 and Section 9) • If positive refer to Section 9 for management of HIV/HBV co-infection
	HCV antibody	• Recommended for PWID or for patients with history of injection drug use
	ALT	• Not a recommended as baseline investigation unless there is a specific clinical reason (e.g. patient with history of hepatitis, signs or symptoms of liver disease, or risk of liver disease - alcoholics, HBV or HCV infection, hepatotoxic drugs such as fluconazole, etc)

It is not possible for ALL facilities providing ART to offer all the laboratory tests recommended for HIV treatment. If a facility does not have on-site capacity to carry out any particular test, arrangements should be made to transport specimens to a local or regional reference laboratory.

3.3. Differentiated Care for Patients who Present with Advanced HIV Disease versus those who Present Well

Patients who present with advanced disease may require a different level of care than those who present while still clinically well.

Table 3.3: Differentiated Care Based on Initial Patient Presentation

Patients who Present with Advanced HIV Disease: WHO Stage 3 or 4, or CD4 count ≤ 200 cell/mm^3 (or CD4% ≤ 25% for children ≤ 5 years old)	

Package of Care	• Standard Package of Care (Section 4)
	• Intensive management of presenting illnesses and malnutrition
	• Priority for identification, management and prevention of OIs, including
	  ○ GeneXpert for TB diagnosis for all PLHIV with presumptive TB (Figure 8.2)
	  ○ TB-LAM (Figure 8.3), in addition to GeneXpert, for PLHIV with presumptive TB who
	  ▪ Have advanced HIV, or
	  ▪ Have signs of severe illness, or
	  ▪ Are currently admitted to hospital
	  ○ Cryptococcal antigen screening for adolescents and adults with CD4 ≤ 200 cells/mm^3 or clinical suspicion of meningitis (any age) (Figure 4.1)
	  ○ Cotrimoxazole Preventive Therapy (CPT)
	  ○ Isoniazid Preventive Therapy (IPT)
	• Priority for ART initiation (caution if suspected or confirmed TB, TB meningitis, or cryptococcal meningitis; Table 6.1)
	• Close monitoring for development of immune reconstitution inflammatory syndrome (IRIS, Annex 16)

Location of Services	• Management at any ART service delivery point; all facility levels; home visits may be required if unable to come to facility • Initial management and ART initiation by trained and experienced HCW • Consultation with MDT, TWG, mentors, and senior clinicians as needed (including telephone consultation with Uliza! Clinicians' HIV Toll-free Hotline (0800724848)) • Referral to a higher-level facility when feasible if consultation is not adequate to stabilize the patient
Focus of Treatment Preparation Counselling	• ART is required to prevent further damage to the immune system • Starting ART soon will decrease risk of disease progression, including wasting and other infections • ART is the most important treatment to restore health • ART will reduce the risk of transmitting HIV to others
Frequency of Follow-up	• Weekly follow-up until ART initiation, and then at week 2 and 4 after ART initiation, and then monthly until confirmed viral suppression • More frequent visits or hospitalization may be required to stabilize acute medical conditions and address psychosocial and other concerns
Patients who Present Well: WHO Stage 1 or 2, and CD4 count > 200 cell/mm^3 (or CD4% > 25% for children ≤ 5 years old)	
Package of Care	• Standard Package of Care (Section 4) • Same-day or rapid ART initiation (as soon as patient is ready, preferably within 2 weeks)
Location of Services	• Management at any ART service delivery point; all facility levels • Initial management and ART initiation by trained and experienced HCW
Focus of Treatment Preparation Counselling	• ART is the most important treatment to maintain good health and an active life • Starting ART soon will decrease risk of developing wasting and other infections • ART will reduce the risk of transmitting HIV to others
Frequency of Follow-up	• Weekly follow-up until ART initiation, and then at week 2 and 4 after ART initiation, and then monthly until confirmed viral suppression • Additional visits as required to address any medical or psychosocial concerns

3.4. Follow-up of PLHIV during the First Year of ART

Follow-up of patients on ART is determined by the duration the patient has been on treatment, how well they understand the treatment and their response to ART. Follow-up includes scheduled clinical appointments, unscheduled clinical assessments for patients with concerns/complaints, and routine and as-needed laboratory monitoring.

In order to initiate all PLHIV on ART within the shortest time possible (preferably within 2 weeks), newly enrolled patients should be seen in clinic every week until ART initiation.

After ART initiation, patients need to be monitored closely for development of adverse drug events, identify and address barriers to adherence, and development of IRIS (particularly for those who initiate ART with advanced HIV disease). A reasonable follow-up schedule for most patients is: 2 weeks and 4 weeks after ART initiation, then monthly until viral suppression is confirmed (Table 3.4). If VL is detectable at 6 months they will need additional assessments for and management of the reason/s for detectable viral load, with close follow-up until viral suppression is achieved (Section 5). Patients with confirmed viral suppression can be followed-up every 1-3 months based on patient preference and clinician judgment, with additional unscheduled visits any time the

patient has a concern. Clinical follow-up can be spaced further apart once the patient has been on ART for a year or more and meets the criteria as "stable" (Section 3.5). Children and adolescents should be followed up at least every 1-3 months.

When possible, follow-up for a particular patient should be provided by the same care provider or team of care providers (e.g. same clinician and same counsellor) at every visit. This is particularly important during the first 6 months in care.

Table 3.4 summarizes the recommended minimum routine follow-up schedule for PLHIV, however, additional clinical and laboratory follow-up should be performed whenever clinically indicated (based on history and physical examination, when the results of the investigations have the potential to change clinical management).

Table 3.4: Summary of Clinical and Laboratory Monitoring for PLHIV[1]

	Initial Visit	ART preparation	Week (after ART)		Months (after ART)					≥ 12 months
Appointment[2]		Every week[3]	2	4	2	3	4	5	6	Every 1-3 months, depending on stability	Every 3-6 months if stable[4]
History and physical exam[5]	✓	✓	✓	✓	✓	✓	✓	✓	✓	At each visit	At each clinical visit
Adherence assessment and support[6]	✓	✓	✓	✓	✓	✓	✓	✓	✓	At each visit	At each visit
TB Screening	✓	Every visit, using ICF screening tool									
CD4 count	✓	• Baseline, and then only if develops treatment failure (to assess for risk of OIs), or if defaults from care (off ART) for at least 6 months • For patients on secondary prophylaxis for cryptococcal meningitis (CM), repeat CD4 every 6 months until CD4 >100 cells/mm^3 for two consecutive measures 6 months apart and VL undetectable, after which CM prophylaxis and CD4 monitoring can be discontinued • For patients on prophylaxis using dapsone (documented CTX allergy), repeat CD4 every 6 months until CD4 >200 cells/mm^3 for two consecutive measures 6 months apart and VL undetectable, after which dapsone and CD4 monitoring can be discontinued									
HIV Viral Load		• For PCR positive HEIs: baseline at the time of ART initiation • Age 0-24 years: every 6 months • Age ≥ 25 years: at month 6 after ART initiation and month 12 then annually thereafter • For all: before any drug substitution for patients on ART for at least 6 months with no VL results from the last 6 months • For all: after any regimen change (including single drug substitutions), perform VL at months 3 after regimen modification, and then as per population group • For all: any patient with a detectable VL during routine monitoring, follow viral load monitoring algorithm (Figure 6.5)									
HIV Viral Load (pregnant/ breastfeeding)		• If on ART at time of confirming pregnancy: VL done at confirmation of pregnancy (regardless of when previously done), then every 6 months until complete cessation of breastfeeding • If starting ART during pregnancy or breastfeeding, VL at 3 months after initiation, and then every 6 months until complete cessation of breastfeeding • For all: any patient with a detectable VL during routine monitoring, follow viral load monitoring algorithm (Figure 6.5)									

CrAg	✓	Baseline for adults and adolescents with CD4 ≤ 200 cells/mm^3 (as reflex testing by laboratory), then only if clinical suspicion of CM
Hb	✓	Baseline then symptom directed; if on AZT, baseline then weeks 2, 4, and 12
Pregnancy Status	✓	At every visit for women of reproductive age (by history +/- urine pregnancy test)
Urinalysis (protein & glucose)	✓	Baseline, then annually if on TDF
Creatinine	✓	Baseline, then annually if on TDF
Glucose	✓	Baseline, then annually
Plasma lipid profile	✓	Baseline, then annually
HBsAg	✓	Baseline, followed by immunization for all patients who screen negative (after viral suppression is confirmed)
Syphilis serology (VDRL, TPHA, or RPR)	✓	Baseline, then annually in those at risk and as part of routine ANC profile
Drug Resistance Testing		Not recommended at baseline; DRT recommended once treatment failure confirmed on a PI-based 1st line regimen, or failure on 2nd line or subsequent regimens
ALT		Not recommended for routine baseline or follow-up unless specific clinical indication
Cervical Cancer	All women should be screened for cervical cancer following the national guidelines	
HCV	Baseline for PWIDs or with a history of injection drug use	

[1] Recommended investigation should not delay ART initiation

[2] This is the minimum recommended appointment schedule. Clinicians and patients should be encouraged to schedule additional appointments as needed. Patients should be encouraged to return to the HIV clinic for unscheduled appointment whenever an acute issue arises, instead of seeking care at another facility. Early after initiation of ART, **and after any regimen modification**, every appointment should include:

- Continued adherence counselling and support (started at the initial visit)
- Assessment of adherence and correct storage of medication
- Assessment for and management of early side effects of the drugs, and patient counselling on the same

[3] All PLHIV qualify for ART and should be initiated within 2 weeks, as soon as they meet ART readiness criteria. For patients who do not start ART on the same day as enrollment into HIV care, they should be followed up every week until ART initiation to address whatever issues are delaying ART initiation, for ongoing management of acute medical issues and for treatment preparation and ART readiness assessment

[4] See section 3.5 for appointment spacing for patients who are stable on ART

[5] In children and adolescents, weight and height should be measured and recorded at every visit, with weight-based dosing of ARVs confirmed at every visit.
In adults, weight and height should be measured at the initial visit to calculate BMI, and thereafter, weight should be measured at every visit to update the BMI calculation. BP, temperature and respiratory rate should also be measured and recorded at every visit. Measure and record oxygen saturation (by pulse oximetry) in patients with respiratory complaints

[6] The first 2-4 visits are critical for assessing and supporting adherence to ART, managing adverse drug reactions and treating any acute illnesses including IRIS. Adherence should be assessed at every contact with the clinic. See Section 5 for specific adherence preparation, monitoring and support procedures for each visit

Laboratory tests, though desirable, are not a pre-requisite for initiation and routine monitoring of ART. Targeted laboratory tests may be necessary to identify and manage inter-current diseases or adverse drug reactions.

3.5. Follow-up of PLHIV beyond the First Year of ART

3.5.1. Differentiated Care for Stable and Unstable Patients beyond the First Year of ART

After the first year of ART, most patients will have developed good adherence habits, have adequate coping mechanisms and support systems in place, and will have achieved full virological suppression. With their improved self-care, these "stable patients" require less frequent facility follow-up and monitoring than other patients, allowing facility resources to be focused on patients who have not achieved these milestones, as well as focus on those newly enrolling into HIV care (Table 3.5). Less intense follow-up for stable patients may also decongest health facilities, reduce patient costs and inconvenience, and improve quality of care by allowing more time for sick and/or unstable patients.

- Unstable patients require closer follow-up to address the issues that are leading them to be categorized as unstable
- Stable patients require less frequent facility follow-up, with up to six months between clinic appointments

Table 3.5: Differentiated Follow-up of Patients Beyond the First Year of ART

Unstable Patients	
Unstable Patients (any of the following) • On their current ART regimen for < 12 months • Any active OIs (including TB) in the previous 6 months • Poor or questionable adherence to scheduled clinic visits in the previous 6 months • Most recent VL: detectable (including low-level viremia and VL ≥ 1,000 copies/ml) • Has not completed 6 months of IPT • Pregnant or breastfeeding • BMI < 18.5 • Age < 20 years • Healthcare team has concerns about providing longer follow-up intervals for the patient* **Note: children and adolescents may be clinically stable, however follow-up appointment intervals beyond 3 months, when allowed, must take into consideration the need for weight-based dose adjustments, close monitoring of support systems, and the stability of caregivers.**	
Package of Care	• Standard Package of Care (Section 4) • Case management to address reason/s for not meeting stable eligibility criteria
Location of Services	• Management at any ART service delivery point; all facility levels • Consultation with MDT, CSC, mentors, and senior clinicians as needed (including telephone consultation with Uliza! Toll-free Hotline 0800-72-48-48) • Referral to a higher-level facility if consultation is not adequate to stabilize the patient
Focus of Counselling	• ART is the most important treatment to improve health and return to an active life • Targeted counselling to address reason/s they have not met stable eligibility criteria
Frequency of Follow-up	• Every 1-3 months, based on clinical judgment and the specific reason/s they have not met stable eligibility criteria • Additional visits as required to address any medical or psychosocial concerns

Stable Patients	
Stable Patients (must have achieved ALL of the following) • On their current ART regimen for ≥ 12 months • No active OIs (including TB) in the previous 6 months • Adherent to scheduled clinic visits for the previous 6 months • Most recent VL: undetectable (LDL) • Has completed 6 months of IPT • Non-pregnant/not breastfeeding • BMI ≥ 18.5 • Age ≥ 20 years • Healthcare team does not have concerns about providing longer follow-up intervals for the patient* **Note: some patients may not meet all eligibility criteria but could benefit from specific aspects of the stable-patient package of care, such as community-based ART delivery (e.g. patients with disabilities)**	
Package of Care	• Standard Package of Care (Section 4) • Viral load monitoring (and any other routine investigations) timed to coincide with patient appointments (e.g. the annual VL can be drawn 2-4 weeks before the patient's clinical follow-up visit so that the results are ready for discussion and decision-making during the visit) Re-assessment of criteria as a stable patient at every visit (and move to "unstable" category if any criteria not met)
Location of Services	• Clinical review and ART prescription from any ART service delivery point; all facility levels • Fast-track distribution of ART between clinical appointments, which can be facility-based or community-based
Focus of Counselling	• Encourage patient to continue with what is working; they are doing well • Reminders that any significant life event or change in daily routine could interfere with adherence
Frequency of Follow-up	• Maximum of 6-month intervals between clinical review • ART can be distributed for up to 3 months (through fast-track pick-up at facility or through community-based distribution) between clinical review appointments • Patients on injectable contraception should be provided FP through a fast-tracked process between clinical follow-up visits; oral contraceptives and condoms should be distributed with ART • Additional visits as required to address any medical or psychosocial concerns • Closer follow-up based on patient preference

*The healthcare team can consider other criteria such as mental illness, alcohol or substance abuse, unstable co-morbid conditions, inadequate support systems, etc., if they feel the patient requires closer follow-up, despite meeting the other criteria listed

3.5.2. Differentiated Care for Children, Adolescents and Pregnant/breastfeeding Women

Children, adolescents and pregnant/breastfeeding women should not be excluded from differentiated care (DC). The "stable/unstable" criteria in Table 3.5 are used to identify patients who qualify for longer follow-up periods vs. those that may benefit from closer follow-up.

For caregivers/parents who are enrolled in DC as stable patients, their children or adolescents who also meet "stable" patient criteria (other than the age criteria) can be considered eligible for DC. This should follow a family-centered approach in which the family is given aligned appointments with longer prescription periods.

As part of the case-management approach for children and adolescents, appointment spacing must be determined based on the specific needs and situation of the individual. For example, children and adolescents may need their ART refills and clinical reviews harmonized with school holidays.

Children require close monitoring of growth and developmental milestones, and weight-based dose adjustments of their ART and CPT (although this becomes less frequent beyond 2 years of age). If enrolled as stable patients with less frequent appointments, weight monitoring and dose adjustments should be incorporated in both the facility and community models (e.g. by using portable weighing scales if out of the health facility).

Adolescents have unique challenges with adherence related to their psychological development and social support systems. For those enrolled as stable patients with less frequent appointments, psychosocial support and ongoing adherence assessments and counseling should be aligned with clinic visits and community follow-up.

Pregnant/breastfeeding women may be clinically stable but it is recommended that their HIV clinic appointments are integrated with Focused Antenatal Care visits and with follow-up of the HIV-exposed infant.

3.5.3. ART Prescription, Dispensing, and Distribution for Stable Patients

ART should only be dispensed for up to 3 months at a time, to control for national and facility supply chains, safe drug storage and conditions that may reduce expiration period.

ART Refill Prescriptions for Stable Patients

For stable patients returning for clinical assessments more than 3 months apart, ART, CPT and condoms (and any other medications, such as oral contraceptive pills) should be dispensed for 3 months only; for stable patients an additional prescription should be provided to last until the next clinic visit (ART refill prescription).

To dispense/distribute ART refills outside of clinical follow-up appointments the health facility must have a system in place to track ART refills, and identify patients who default from the ART refill or receive the ART refill late (e.g. ART Refill Diary, similar to an appointment diary).

ART Refill Dispensing for Stable Patients

- ART can only be dispensed by a licensed healthcare professional
- ART can be dispensed in quantities of up to 3 months based on a valid prescription, and documented using the Pharmacy Dispensing Tool
- Dispensing of ART refills (prescriptions outside of the clinical follow-up appointments) must be accompanied by completion of the ART Distribution Form (Table 3.6)

ART Refill Distribution for Stable Patients

- ART for distribution must be **dispensed** (pre-packaged for individual patients) by a healthcare professional, as described above, and documented in the Pharmacy Dispensing Tool, with additional documentation of the person distributing the refill
- ART refills can be distributed by healthcare professionals or trained lay health workers (peer educators, community health volunteers, treatment supporters, etc.)
- ART can be distributed in quantities of up to 3 months
- Distribution of ART refills, whether facility-based or community-based, must be accompanied by completion of the ART Distribution Form

Table 3.6 (Continued): ART Distribution Form for Stable Patients

Patient review checklist *(if yes to any of the questions below, confirm they have enough ART until they can reach the clinic and refer back to clinic for further evaluation; book appointment and notify clinic)*				Complete at time of distribution
Any missed doses of ARVs since last clinic visit: ☐Yes ☐No If yes, how many missed doses: _____				
Any current/worsening symptoms:				
Fatigue: ☐Yes ☐No Cough: ☐Yes ☐No	Fever: ☐Yes ☐No Rash: ☐Yes ☐No	Nausea/vomiting: ☐Yes ☐No Genital sore/discharge: ☐Yes ☐No	Diarrhea: ☐Yes ☐No Other:	
Any new medications prescribed from outside of the HIV clinic: ☐Yes ☐No If yes, specify:				
Family planning: ☐Yes ☐No Method used:		Pregnancy status: ☐Pregnant ☐Not Pregnant ☐Not Sure		
Referred to clinic: ☐Yes ☐No If yes, appointment date: DD____ MM____ YYYY _____				
Signature of patient upon receipt of the ART:				

ART Refill Distribution Points for Stable Patients

The health facility is responsible for ART prescription, dispensing, and distribution for all patients enrolled into care. ART distribution for stable patients can take place at the health facility or through a community distribution system, depending on patient preference and health facility systems and resources. **No patient should be pressured into receiving ART at a community-based distribution point or through a fast-track process.**

Models of ART refill distribution for stable patients are summarized in Tables 3.7 and 3.8.

Table 3.7: Facility-based ART Refill Distribution for Stable Patients

Facility-based ART Refill Distribution for Stable Patients
• Facility-based ART refill distribution for stable patients should involve a fast-tracked process to minimize patient waiting times, preferably with medications pre-packed and patient labeled • Each facility must clearly define its fast track process and communicate this to staff and patients; the process should be reviewed quarterly for quality (waiting times, patient satisfaction, compliance to criteria (follow-up intervals; unstable patients are not fast-tracked), etc.) • The fast-track refill pick-up may operate during normal hours as well as on designated out-of-hours times/days (e.g. early mornings, weekends) • **If the patient has any concerns they should be encouraged to call the facility or come for an unscheduled visit** • If the patient has any red-flags raised on the ART Distribution Form they should be referred to the clinician for review • The Pharmacy Dispensing Tool, ART Distribution Form and ART Refill Diary are the minimum documentation that must be completed during the refill. The Pharmacy Dispensing Tool must be updated by a healthcare profession; the ART Distribution Form and ART Refill Diary can be completed by a healthcare professional or a trained lay health worker at the facility
Examples
• Patient goes directly to the pharmacy window to pick up ART refill, without stopping at reception, triage, etc.; ART Distribution Form and ART Refill Diary completed at the pharmacy window • Facility-based peer educator or CHV operates a fast-track distribution room at the facility: pharmacy dispenses and pre-packs ART for patients who are scheduled for refills for the day; peer educator/CHV takes all the patient packs for the day to a distribution room; peer educator/CHV distributes ART as patients arrive for refills, with completion of the ART Distribution Form and updating of the ART Refill Diary

Table 3.8: Community-based ART Refill Distribution for Stable Patients

Community-based ART Refill Distribution for Stable Patients
• Community-based ART distribution for patients can take various forms depending on the health facility resources and systems, community-based support structures, and patient preferences • **Patient must voluntarily enroll into any community-based refill distribution program** • Each patient must specify who is allowed to distribute the ART to them (or who can pick up the ART refill on their behalf; if someone is picking up the ART on their behalf, that person must bring the patient card and prescription to the facility at the time of refill pick-up) • If patient has any concerns they should be encouraged to call the facility or come for an unscheduled visit • If the patient has any red-flags raised on the ART Distribution Form they should be referred to the clinician for review • A system for communication between the distributor and facility must be clearly defined (e.g. reporting any problems identified during distribution, failure to deliver the ART, etc.) • The Pharmacy Dispensing Tool, ART Distribution Form and ART Refill Diary are the minimum documentation that must be completed each time a patient receives their ART refill. The Pharmacy Dispensing Tool must be updated by a healthcare professional; the ART Distribution Form and ART Refill Diary can be completed by a healthcare professional or a trained lay health worker
Examples
• CHVs are assigned specific patients; CHVs distribute ART and complete the ART Distribution Form during home visits; home visit/refill schedule is coordinated by the pharmacy team; CHVs maintain ART Refill Diary; Pharmacy Dispensing Tool updated at the facility • Community ART Groups (CAGs) are formed (preferably self-formed by patients); each CAG consists of around 6 patients; every month a different member picks up pre-packed ART for all other group members (patient packs that are dispensed from pharmacy); facility visit for ART pick-up coincides with that patient's 6-monthly clinical follow-up visit; person picking/distributing ART for the month completes the ART Distribution Form with each CAG member; ART Refill Diary and Pharmacy Dispensing Tool updated at the facility

Before implementing a community-based ART distribution program, a health facility must work with the CHMT to design a program that meets the criteria listed in Table 3.9, and the plan must be approved by the County HIV Technical Working Group before implementation (Annex 14).

Table 3.9: Criteria for a Health Facility to Implement a Community-Based ART Distribution Program

Health facilities should meet the following criteria before implementing a community-based ART distribution program*:

Leadership
• Community-based ART distribution plan reviewed and approved by the CHMT/County HIV TWG
• Focal person at facility identified to oversee community-based ART distribution
Finance
• Has sufficient financial resources to implement and monitor community-based ART distribution
Human Resources
• Has identified appropriate personnel for distributing ART, which could include
  o Healthcare professionals
  o Lay health workers/peers
• Has capacity to train and supervise ART distributors on the following minimum competencies
  o Modes of transmission of HIV
  o Basics of ART
  o Adherence requirements and support systems
  o Common and serious side effects of ART
  o Completion of the ART Distribution Form
Service Delivery
• Uptake of routine VL monitoring is ≥ 90%
• Has functional system in place for fast-tracked facility-based ART distribution for stable patients
Commodity Management
• Currently has ≥ 3 months stock of ARV on site
• Has capacity (including personnel and supplies) to pre-pack and label individual patient medications (including ART, CPT, condoms, and any other medications) for all patients who will receive community-based ART
Health Information Systems
• Has a functioning system in place to monitor and report patient-level outcomes (including retention, viral suppression, and mortality)
• Has capacity to monitor and report on community-based ART distribution outcomes, including collecting and compiling ART Distribution Forms for monthly summary reports
 	
*None of these criteria are absolute requirements for implementation of community-based ART distribution; implementation can be considered even if some criteria are not met, as long as a plan is in place to address and monitor gaps

4. Standard Package of Care for PLHIV

All PLHIV should receive a package of services that are known to promote health, improve the quality of life, prevent further HIV transmission, and prevent HIV disease progression and mortality.

The standard package of care for PLHIV includes: antiretroviral therapy; Positive Health, Dignity and Prevention (PHDP) services; screening and providing support in cases of gender-based violence (GBV) or intimate-partner violence (IPV); screening and prevention of specific opportunistic infections; reproductive health services; screening for and management of non-communicable diseases; mental health screening and management; nutritional services; and prevention of other infections (Table 4.1).

The standard package of care should always be applied using a patient- and family-centered approach. Patient-centered care includes: considering the individual patient's health needs; eliciting and addressing the patient's concerns and expectations; involving the patient's (and their family and friends as appropriate) in decision-making, and; respecting the patient's values and preferences. Family-centered care identifies, engages and provides care to all HIV-positive family members, prevents new infections among family members at risk, and promotes family support and awareness.

Table 4.1: Components of the Standard Package of Care for PLHIV

Component of Standard Package of Care	Subcomponents
Antiretroviral therapy (ART)	• Patient preparation • ART • Monitoring (clinical and laboratory)
Positive health, dignity and prevention; gender-based violence (GBV) and intimate-partner violence (IPV) screening; and HIV education/counselling	• Positive health, dignity and prevention components o Disclosure o Partner/family testing o Condom use o Family planning o STI screening, prevention, and treatment o Adherence counselling and support • GBV/IPV screening and support • HIV education/counselling
Specific opportunistic infection screening and prevention	• Cotrimoxazole preventive therapy • Tuberculosis (TB) o Intensified case finding o Isoniazid preventive therapy o ART for TB/HIV co-infected patients • Cryptococcal meningitis
Reproductive health services	• Sexually transmitted infections screening and management • Family planning and pre-conception services • Maternal healthcare • Cervical cancer screening
Non-communicable diseases screening and management	• Hypertension • Diabetes mellitus • Dyslipidaemia • Chronic kidney disease • Other NCDs
Mental health screening and management	• Depression • Alcohol and drug use/addiction
Nutritional services	• Assessment • Counselling and education • Management and support
Prevention of other infections	• Immunizations • Malaria • Safe water, sanitation and hygiene

Table 4.1 (continued): Components of the Standard Package of Care for PLHIV

Standard Package of Care for HIV-Exposed and HIV-Infected Infants

- Determine HIV status at first contact through HTS/EID and link to HIV care
- Provide ARV prophylaxis for all HEIs and ART for all HIV-infected children (**confirming correct weight-based dosing of ARVs at every visit**); perform baseline clinical and laboratory assessment
- Provide nutritional assessment, counselling and support (NACS, Section 4.7) and monitor growth and development of the child (Annex 3)
- Ensure that all immunizations are provided following the national schedule (Section 4.8.1)
- Assess clinically at every visit, treat infections early, identify and manage adverse drug reactions aggressively and refer appropriately where specialized care is required
- Screen for opportunistic infections and provide prophylaxis (cotrimoxazole, isoniazid), deworm every 6 months (starting at 1 year of age) and provide supplemental Vitamin A every 6 months (starting at age 6 months)
- Educate the caregiver on all aspects of care for the child including infant feeding, immunizations, personal hygiene, adherence, child disclosure, and follow-up requirements
- Provide age-appropriate psychosocial support for the family and child and refer to community-based support programmes as appropriate
- Ensure that the caregiver and family members are receiving appropriate care, support and treatment
- Provide intensive case management for mother/infant pair until 2 years postpartum; identify defaulters and prioritize this population for tracking

Standard Package of Care for Adolescents Living with HIV

Clinical care
- Provide immediate linkage to HIV care
- Provide ART to all HIV-infected adolescents
- Perform baseline clinical and laboratory assessment
- Assess clinically at every visit, treat infections early and refer appropriately where specialized care is required
- Screen for opportunistic infections and provide prophylaxis (cotrimoxazole, isoniazid)
- Provide NACS and monitor growth and development
- Provide/refer for HPV vaccine

Adherence and psychosocial support
- Perform a baseline psychosocial assessment
- Assess for and support disclosure of HIV status to the adolescent (Annex 5)
- Enrol in age-appropriate psychosocial support groups
- Provide treatment literacy and life skills counselling
- Provide adherence counselling
- Support appropriate transition into adult HIV treatment and prevention

Prevention of HIV transmission
- Encourage partner/family testing and support for disclosure
- Assess for and manage drug and alcohol use
- Perform a sexual risk assessment and STI screening and treatment, and linkage of sexual partner to PrEP where applicable
- Assess for and manage intimate-partner violence
- Provide reproductive health services, including pregnancy screening, pregnancy intention assessment, family planning and linkage to PMTCT for pregnant adolescents

Referrals, linkages and support for continuum of care
- Provide intra-facility & inter-facility referrals as needed e.g. for specialized care
- Link with youth community groups, targeting youth both in and out of school
- Link to other services: legal centers, paralegal services, gender-based violence recovery centers, educational institutions, bursary/scholarship programs, income generating activities, constituency development funds, vocational training centers for skills development, etc.

The *"Adolescent Package of Care in Kenya, 2014"* has detailed job aids for every step of the continuum of care of adolescents living with HIV.

4.1. Antiretroviral Therapy

ART is recommended for all PLHIV, regardless of WHO stage, CD4 count, age, pregnancy status, or comorbidities/co-infections. Once a diagnosis of HIV infection is confirmed, ART should be initiated within the shortest time possible (preferably within 2 weeks), once patient readiness has been determined. Other sections of these guidelines deal with initial evaluation and monitoring (Section 3), patient preparation and adherence support (Section 5), and specific recommended ART regimens (Section 6).

4.2. PHDP, GBV/IPV & Health Education/Counselling

PHDP is a framework that emphasizes the health and rights of PLHIV, including reducing risk of onward transmission of HIV. Within PHDP are 6 core domains of services that should be provided at the health facility to PLHIV and caregivers (Table 4.2). Complementary community-based PHDP should also be implemented.

Table 4.2: Domains and Components for PHDP Services

PHDP Domain	Components
Disclosure of HIV status	• Assessment of disclosure status, particularly to sexual partners • Assisted disclosure Note: for children and adolescents, it is also necessary to evaluate for and support age-appropriate HIV disclosure to the child/adolescent
Partner/family testing and engagement	• HIV testing of sexual partners and drug injection partners • HIV testing of other family members at risk • Enrolment of positive partners/family members into HIV care • Engagement of negative partners and family members in care and support for index patient
Condom use	• Risk reduction counseling • Correct and consistent condom use • Provision of condoms at every visit
Family planning	• Assessment of pregnancy intention • Pre-conception counselling • Dual contraception until ready for pregnancy (see Section 4.4.2, Reproductive Health Services for specific clinical guidelines)
Sexually transmitted infections	• Screening for symptoms of STIs • Prevention of STIs (see Section 4.4.1, Reproductive Health Services for specific clinical guidelines)
Treatment adherence	• Benefits/importance of: o Adherence to clinical care o Adherence to ART (see Section 5, Adherence Preparation, Monitoring and Support for specific tools and protocols)

Additional services that should be offered to PLHIV beyond the above components include screening for GBV and IPV and health education/counseling services.

HIV education and counselling can be offered in multiple settings, including: facility-based individual, couples, family, and/or group counselling, and through community-based counselling and peer support groups.

4.3. Specific Opportunistic Infection Screening and Prevention

4.3.1. Cotrimoxazole Preventive Therapy (CPT)

All PLHIV should receive lifelong CPT (Table 4.3) unless they have an allergy to sulfa drugs or develop toxicity from CPT. For HIV exposed and infected infants, CPT should start at 6 weeks of age. CPT is effective in preventing specific OIs for patients with low CD4 counts (PCP and toxoplasmosis), as well as reducing the risk of common bacterial infections, sepsis, diarrhoeal illness and malaria.

Table 4.3: Daily Dose of Cotrimoxazole Preventive Therapy

Weight (kg)	If using oral suspension (240mg per 5ml)	If using single strength tablet 480	If using double strength tablet 960 mg
1 – 4	2.5 ml	¼ SS tab	--
5 – 8	5 ml	½ SS tab	¼ DS tab
9 – 16	10 ml	1 SS tab	½ DS tab
17 – 30	15 ml	2 SS tabs	1 DS tab
> 30	20 ml	2 SS tabs	1 DS tab
Adult (any weight)		2 SS tabs	1 DS tab

Note: If CrCl 15-30 ml/min then use 50% of normal recommended dose; if CrCl < 15 ml/min then CTX should be avoided

During pregnancy, CPT should be initiated irrespective of the gestational age and should continue throughout pregnancy, breastfeeding, and thereafter for life. Additional intermittent preventive therapy (sulfadoxine-pyrimethamine (SP)) for malaria is not required in women already on CPT.

Cotrimoxazole can cause anaemia and neutropenia in some patients, as well as a skin rash.

Management of Patients with Cotrimoxazole Allergy

- A rash may occasionally develop, usually about 7-14 days following initiation of CPT. It is often a relatively mild maculopapular rash with or without pruritus. Infrequently, rash may develop with severe exfoliation of the skin and Stevens-Johnson syndrome. Rash severity should be assessed, with management based on severity (Table 4.4)
- Desensitization is effective in the majority of patients with mild to moderate rash (Table 4.5). The rapid desensitization regimen (Table 4.6) can be used in situations where treatment for PCP is needed

Table 4.4: Management of Drug-Associated Skin Rash

Severity	Characteristics	Action
Mild	Dry; erythema +/- fine papules; pruritus; affecting < 50% of body surface area	Continue CTX; close monitoring; symptomatic treatment with antihistamines +/- topical steroids (NOT oral steroids)
Moderate	Dry; erythema +/- fine papules; pruritus; affecting ≥ 50% of body surface area	Stop CTX; symptomatic treatment with antihistamines +/- topical steroids (NOT oral steroids); trial of desensitization after symptoms completely resolved
Severe	Mucosal involvement; blistering; associated fever; any % of body surface area	Stop CTX; admission to hospital for supportive management (IV fluids, wound care, pain control, infection control, monitoring for super-infection); **patient should NEVER be re-challenged with CTX or other sulfa-containing drugs;** document and report adverse event and issue patient alert card

Cotrimoxazole Desensitization Protocols (for patients who have fully recovered from moderate reaction)

Table 4.6: Standard Cotrimoxazole Desensitization Regimen (8 days)

Day	Dose of TMP/SMX Suspension (40/200 mg per 5ml)
Day 1	0.5 ml
Day 2	1 ml
Day 3	2 ml
Day 4	3 ml
Day 5	4 ml
Day 6	5 ml
Day 7	1 SS tablet
Day 8	2 SS tablets/1 DS tablet per day
Note: For children, continue up until they have reached their recommended weight-based dosage	

Table 4.5: Rapid Cotrimoxazole Desensitization Regimen (6 hours)

Hour	Dose of P/SMX Suspension (40/200 mg per 5ml)
Hour 0	0.5 ml
Hour 1	1 ml
Hour 2	2 ml
Hour 3	3 ml
Hour 4	4 ml
Hour 5	5 ml
Hour 6	1 SS tablet
Note: The rapid desensitization protocol should not be used for children because the cumulative dosage will be too high	

Dapsone as a Substitute for CPT

In situations of severe allergy to cotrimoxazole or when desensitization is not successful, dapsone can be used instead of CTX. It is primarily effective as prophylaxis against PCP but does not have the other prophylactic benefits of cotrimoxazole.

Dapsone will contribute to anaemia in most patients, and causes haemolytic anaemia in some patients, so patients should have a baseline Hb before starting dapsone and Hb monitored every 1-2 weeks for the first couple of months. Dapsone is not recommended during breastfeeding.

When dapsone (as a substitute for CPT) is being used as PCP prophylaxis, it is only recommended for patients in WHO Stage 4 and/or with absolute CD4 count ≤ 200 cells/mm^3 (or CD4 % ≤ 25% for children ≤ 5 years old), and should be discontinued once a patient achieves a sustained CD4 count of > 200 cells/mm^3 (or > 25% for children ≤ 5 years old) for at least 6 months.

5. Adherence Preparation, Monitoring and Support

The individual and population benefits of ART are dependent on high levels of adherence to the prescribed medication, the accompanying medical advice and the follow-up plans. Adherence-enhancing strategies should be implemented beginning at the point of HIV diagnosis (as part of post-test counselling and linkage), continued during initial evaluation, and thereafter during the entire follow-up period for ART.

To avoid treatment failure and the need to switch patients to 2nd or 3rd line ART, it is key to have an adherence support strategy in place before ART initiation, anticipating common and individual barriers to good adherence. **Prevention of treatment failure starts before ART initiation.** This is particularly important with the current recommendation that all PLHIV qualify for ART, and ART should be initiated within 2 weeks of diagnosis. Adherence preparation must begin at time of HIV testing, and close follow-up is required after ART initiation.

The adherence preparation, monitoring, and support that a patient requires should be tailored to their level of adherence, the stage of ART initiation, and the follow-up stage that they are at (Figure 5.1).

Whenever possible, follow-up should be provided by the same care provider or team of care providers (e.g. same clinician and same counsellor) at every visit. This is particularly important during the first 6 months of HIV care.

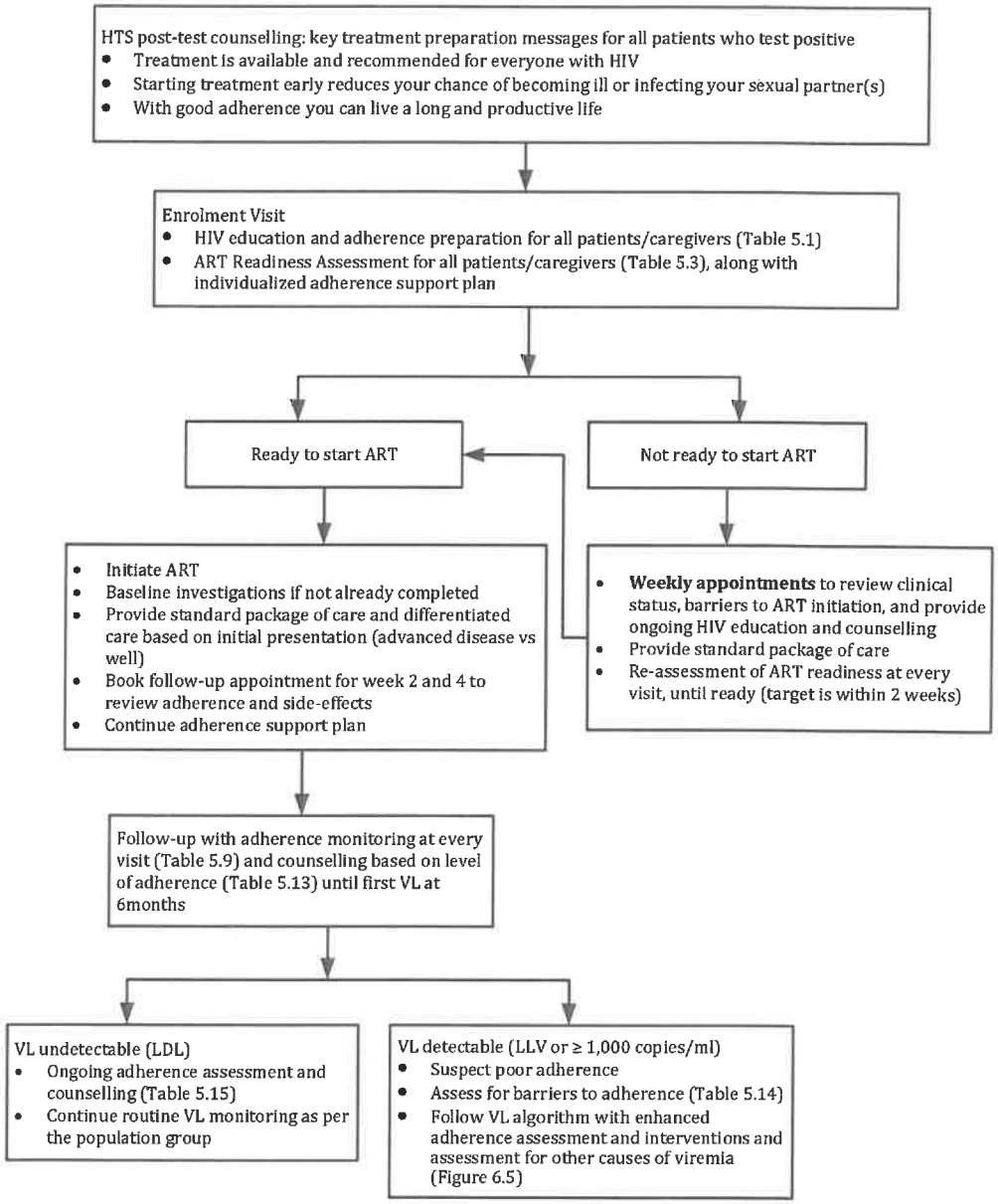


Figure 5.1: Adherence Preparation, Monitoring and Support until Viral Load after 6 Months on ART

Adherence is most difficult during the first few months of treatment: the patient is not yet in the habit of taking their medications every day, they are not familiar with common side-effects, and they have more challenges with disclosure and stigma, all of which can interfere with adherence. Poor adherence within the first few months of therapy is also the most risky period for development of resistance mutations, when the viral load is still high.

For these reasons, adherence preparation, monitoring and support must be emphasized during the first six months of ART until the patient achieves full virological suppression, after which adherence monitoring and support can continue at lower intensity.

Patient preparation and counselling should be a collaborative process between the provider and the patient or caregiver, to enable the patient to initiate and continue lifelong treatment. This is best done when the same adherence counsellor follows an individual patient throughout the preparation, initiation, and early ART period.

ART can be initiated concurrently with the first adherence counselling session, even during the enrolment visit, especially for infants and for pregnant women. This may also apply to patients with a good understanding of HIV and ART and strong motivation for immediate ART initiation. In these scenarios, closer counselling and support must be continued during the early follow-up visits.

Each member of the multidisciplinary team should have the requisite training to provide treatment education and offer appropriate support to address potential barriers to adherence. Treatment preparation and support can be offered at triage, consultation, pharmacy or any other clinic station where confidentiality and privacy is assured and providers are adequately trained. It should also be incorporated into health talks, peer support group activities, and group counselling sessions.

Before commencement of a counseling session, the counselor should ensure that adequate space is available to conduct the counseling, that confidentiality can be maintained, and that tools such as psychosocial assessment forms, treatment literacy flip charts, PHDP flip charts, and tools to document the counseling sessions are available.

Persons living positively (adolescent and adult peer educators who can share personal experiences when needed) should be incorporated to support patient education as indicated in the operational guidance below.

Operational Guidance: Meaningful Involvement of People Living with HIV
For best patient outcomes, PLHIV themselves should be engaged to lead facility-based and community-based HIV education and support systems. They are often referred to as "peer educators", "mentor mothers", and "lay health workers" in these roles. PLHIV have successfully and significantly contributed to: improving identification of people at risk for HIV or infected with HIV; increasing linkage from testing to treatment; reducing onward transmission of HIV; providing psychosocial support, and improving adherence and retention to care and ART.

Identifying PLHIV to offer peer-led patient support
- PLHIV on ART for ≥ 1 year
- Good adherence and undetectable VL
- Positive attitude and interest in supporting peers

Preparing and supporting PLHIV to play a role in patient support systems
- **Must be trained for the role they are expected to provide**
- Must have job aids and IEC material appropriate for their role
- Must be supervised by healthcare professionals

Potential roles for PLHIV include
- Providing HIV testing services
- Acting as peer linkage supporters
- Leading or contributing to facility-based or community-based support groups
- Providing individual or group HIV education
- Providing individual or group adherence counselling
- Distribution of ART refills for stable patients

Compensation for PLHIV who contribute to patient support systems
- Recognition (e.g. ID badges; certificates of service; acknowledgement at community forums)
- Training opportunities with certification
- Financial compensation (e.g. stipends; transportation allowances; salaries)
- Priority consideration for employment opportunities

5.1. ART Adherence Preparation and Support

Preparation for ART begins at the time of HIV diagnosis and continues until initiation of ART.

5.1.1. Treatment Preparation as Part of HIV Testing Services

With the current treatment guidelines recommendation that all PLHIV qualify for ART, post-test counselling by the HTS provider should now include three key messages that begin the ART treatment preparation process for all PLHIV

- Treatment (called antiretroviral therapy (ART)) is available and is recommended for everyone with HIV
- Starting treatment as soon as possible (preferably within two weeks of testing positive for HIV) reduces the chance of your illness getting worse or of passing HIV to others
- If you take your ART properly and do not miss pills you can expect to live a long and productive life

5.1.2 ART Treatment Preparation

ART treatment preparation involves HIV education and counselling, including a discussion of support systems to overcome possible barriers to adherence. The education and counseling sessions should be documented in patient charts.

HIV Education and Counselling

HIV education and adherence preparation should be a standard component of the enrolment visit. Prior to ART initiation, all patients/caregivers must be provided with enough information to make an informed choice about ART initiation and adherence (Table 5.1), including for patients who initiate ART during the enrolment visit. A detailed content guide for HIV education and adherence counselling is provided in Annex 8. This information can be provided through group or individual counselling. The ART Readiness Assessment and the management plan should be completed for each patient individually (Table 5.3).

Table 5.1: Components of HIV Education and Adherence Counselling (see Annex 8B for detailed content guide)

Component	Questions to be Covered
HIV	• What is HIV • How is HIV transmitted • Why should partners and family members be tested for HIV
Viral load	• What is viral load • How often is viral load measured • What do viral load measurements mean, including the goal of achieving viral suppression
CD4 cells	• What are CD4 cells • How are CD4 cells affected by HIV • What happens when CD4 cells decrease • How often is CD4 cell count measured
Antiretroviral therapy (ART)	• What is ART • What are the benefits of ART • When is ART started • Does ART cure HIV • Can you still give HIV to others while taking ART • How long is ART taken
Treatment failure	• What happens if you stop taking ART • What happens if you do not take ART regularly • What happens if the viral load increases • What happens in treatment failure
ART side effects	• What are the side-effects of ART • What should you do if you notice any side effects
Adherence	• What is adherence • How should ART be taken • What usually interferes with good adherence • What might make it difficult for you individually to take your ART as prescribed • What can help you take ART as prescribed • What happens if you miss an appointment
Other medications	• What other medications will you take, in addition to ART (e.g. CPT, IPT)

Nutrition	• Why is nutrition important • What can you do to improve your nutrition
Follow-up	• How often will you need to come to clinic • What will we be checking for during your clinic visits
ART readiness assessment	• Are you ready to start ART today
Management plan	• Which investigations will you have today • Which medications will you start today • What else is required as you start or as you prepare to start ART • When should you return to the clinic

Adherence Support

Psychosocial support for PLHIV and their families is essential for their well-being and good health outcomes. HIV affects virtually every aspect of one's life, as well as the lives of those close to them. PLHIV need psychological and social support to deal with various issues that are common to chronic illness as well as those that are unique to HIV. These include stigma, bereavement, self-image, loss of earning capacity, life skills, and chronic illness, among others. Providing psychosocial support entails identifying any needs that they may have and addressing them. In some cases, some of these needs can be anticipated and addressed even before they come to play in the individual's life.

The individualized patient management plan should include establishing appropriate adherence support interventions (Table 5.2).

Table 5.2: Adherence Support and Retention Interventions

Standard Adherence Support Interventions	
Structural interventions	• Conduct a baseline psychosocial assessment to explore the various aspects of the client's life that may influence their adherence to treatment and prevention, and their general well-being and tease out issues that need to be explored in detail during the counselling session e.g. disclosure, family planning, living circumstances • Use a multidisciplinary team approach to develop and implement treatment plans for each patient • Engage peer educators to lead HIV education and support services • Adequately prepare and assess the patient's readiness to initiate and continue with ART • Implement a system for identifying and taking action when patients miss an appointment • Formalize a system for providing health talks and treatment literacy classes for patients • Formalize a system for linking patients to community-based resources, including: community support groups, religious groups, CBOs, groups supporting income-generating activities, organizations providing food support, NEPHAK, child welfare societies, community health volunteers/units, schools, children's homes

HIV education and counselling	• Remind the patient about HIV disease, how ART works, the importance of high level adherence and the consequences of non-adherence
	  ○ Risk of ill health caused by HIV
	  ○ Role of ART in restoring and maintaining good health
	  ○ Link between adherence and viral load, CD4 and health
	  ○ Side effects of medications and how to avoid, recognize and manage them. Manage side effects aggressively
	  ○ Address misconceptions and beliefs about HIV and ART
	• Discuss and agree on a treatment plan with the patient. Gain commitment from the patient to follow through
	• Discuss use of alcohol and drugs and how to prevent these from affecting the treatment plan
	• It is important to maintain a non-judgmental attitude, establish trust with parents/caregivers, and involve the child as they mature

Disclosure and stigma	• Respect patient privacy and confidentiality • Discuss with the patient the role of disclosure to close family members/trusted friend in promoting adherence • Offer to facilitate disclosure • For children/adolescents, discuss age-appropriate disclosure with the caregiver and offer to support the process (Annex 5) • Conduct stigma assessment and support appropriately
Treatment supporter	• Encourage the patient to identify a treatment supporter/buddy who will provide the patient with encouragement and social support and even remind the patient to take medication • Invite the treatment supporter to at least one of the adherence counselling sessions • Obtain consent from the patient to contact the treatment supporter if needed

Support group	• Link the patient to psychosocial support groups and other community-based support mechanisms (preferably through direct introduction)
	  ○ Support groups give confidence and encouragement and promote positive attitude towards HIV status and may promote disclosure
	  ○ Support groups offer opportunities for additional counselling and experience sharing and are an avenue for developing/strengthening life skills
	  ○ Some support groups engage in economic empowerment activities
	  ○ Support groups can be used for ART distribution to improve convenience to the patient
	• Develop population-specific support groups when possible (e.g. youth groups with peer educators for adolescents; children's clubs; caregiver support groups)
	• MDT members should be patrons to the support groups, to guide activities in line with intended objectives
	For more information, refer to the National Guidelines for the Formation and Management of Support Groups, 2013

SMS reminder system	• Enroll patients into an automated SMS reminder system with their consent • Review the type of messages the patient may receive, the frequency of messages, and any actions the patient should take when receiving the message • Ensure the system and messages maintain patient privacy and confidentiality
Other reminder strategies	• Encourage patient/caregiver to set a specific time of day to take ART, and to associate ART time with a specific event/s in their daily schedule • Encourage patient/caregiver to set an alarm on their phone

5.1.3. Age-Specific Treatment Preparation and Support

Treatment preparation must be customized to the patient's age, gender, needs and clinical status: for patients who present with advanced/symptomatic disease, the focus is on getting better; for patients who present clinically well, the focus is on staying healthy. Specific needs for children, adolescents, caregivers and men should also be taken into consideration.

The HIV education and counselling sessions should be provided at every visit until the patient is ready and willing to start ART, as determined using the ART Readiness Assessment Form (Table 5.3). Each repeat session should begin with a review of what the patient remembers from the previous session as well as any key issues the counsellor documented in the patient's chart, so the session can be customized to meet their needs. ART preparation should not take more than 1-2 weeks except for special circumstances such as with uncontrolled mental health issues or untreated drug addictions. However, once the patient has initiated ART, continued HIV education, counselling and adherence support must be provided. The counselling sessions should preferably be conducted by the same counsellor, peer educator, social worker, nurse, community health volunteer, and/or clinician who is professionally certified to counsel based on a NASCOP curriculum, and they possess the requisite competencies to provide quality counselling. In order to prepare children and adolescents for ART, the counsellor should be trained in providing psychosocial support to this age group.

Table 5.8: Treatment Preparation and Support for Adults

Visit	Standard of care
At enrolment into HIV care	Use the 5As (Assess, Assist, Advice, Agree, Arrange) • Perform a psychosocial assessment to evaluate adherence boosters and barriers e.g. mental, emotional and social status assessments; refer for appropriate care if mental disorder diagnosed • Identify a treatment buddy (family member, friend, peer educator, community health volunteer, etc) and involve them in HIV education and adherence counselling • Provide HIV education and counselling to caregiver (and child as appropriate for age) as outlined in Table 5.1 • Identify and establish appropriate adherence support interventions (Table 5.2), including linkage to a support group • Discuss benefits of disclosure of HIV status to a trusted family member/friend; how to disclose; and establish a disclosure plan • Discuss importance of child and sexual partner testing as well as assisted partner notification services (aPNS) • Discus prevention methods such as condoms, PrEP, PEP, STI screening and treatment • Conduct an assessment of readiness to initiate ART (Table 5.3); ART should be initiated same day or the date of initiation agreed upon • Review ART dosing and timing • Conclude the session by agreeing on a treatment and follow-up plan • Where ART is initiated at enrolment, book the patient to return within two weeks. Those unwilling to initiate should return weekly for further counselling on barriers to initiation (Annex 9C) • Document session in the patient's chart
Two weeks after ART initiation	• Review and reinforce the messages delivered at enrolment; confirm the patient's understanding of key messages • Review ART dosing, timing and reminders • Explore any barriers to adherence • Review support systems • Revisit benefits of disclosure, the disclosure plan and progress in aPNS • Document the session in the patient's chart
Four weeks after ART initiation, and further follow-up visits	• Review and reinforce the messages delivered in previous sessions; confirm the patient's understanding of key messages • Review ART dosing, timing and reminders • Explore any barriers to adherence • Review support systems • Revisit benefits of disclosure the disclosure plan, and progress in aPNS • Document the session in the patient's chart

5.2. Adherence Monitoring, Counselling and Support During the First 6 Months of ART

5.2.1. Adherence Monitoring

Once ART has been initiated, adherence should be assessed non-judgmentally by a trained provider during each visit (Table 5.9). The objectives of this assessment are to evaluate and reinforce the patient's adherence to ART, to elicit any barriers to the same, and to develop a plan with the patient/caregiver to address any of the barriers identified. These may include incorrect knowledge of HIV infection and ART, unsupportive psychosocial factors, difficult home or school environment, substance use and poor motivation for taking medication. Patients/caregivers need to be counselled on the importance of being honest about their adherence in order for the healthcare team to serve them better.

Adherence monitoring requires a combination of interventions. At every clinical visit, the MMAS-4 should be administered as well as pill counts. MMAS-8 should be administered any time a healthcare worker suspects adherence problem (e.g. patients with suspected or confirmed treatment failure; patient who misses an appointment).

Table 5.9: Adherence Monitoring Strategies

Adherence Monitoring Strategy	Technique	Frequency
Subjective (self-reported adherence)		
Morisky Medication Adherence Scale-4	Use Table 5.10 to assess adherence using a standardized questionnaire, and take action as required	Every patient, every visit
Morisky Medication Adherence Scale-8	Use Table 5.11 to assess adherence using a standardized questionnaire, and take action as required	Any time a healthcare worker suspects adherence problems (e.g. patients with suspected or confirmed treatment failure; patient who misses an appointment)
Adherence Monitoring Strategy	**Technique**	**Frequency**
Objective		
Pill counts	Ask the patient to bring all their pills with them to follow-up visits. Calculate how many pills should be remaining based on the previous prescription date and amount prescribed, and compare to how many pills are actually remaining. Excess pills are assumed to be missed doses. Use Table 5.12 to calculate adherence rate and take action as required	• At every visit until confirmed viral suppression • Any time a healthcare worker suspects adherence problems
Pharmacy refill records	Compare drug pick-up date with expected date of pick-up (based on number of pills dispensed at last visit). If drug pick-up date is later than expected, it is assumed the patient is missing doses equivalent to the number of days late	• At every drug pick-up • Any time a healthcare worker suspects adherence problems
Viral load	Follow the viral load monitoring algorithm (Figure 6.5). Undetectable VL is the best available confirmation of adequate adherence	• Age 0-24 years: every 6 months • Age ≥ 25 years: at month 6 after ART initiation and month 12 then annually • For pregnant and breastfeeding women: at first ANC visit if already on ART, or 3 months after ART initiation if starting ART during pregnancy, and then every 6 months

Home visit	Observe where and how a patient stores and takes their medications and assess if they have extra medications because of missed doses. Home visits may also provide a better understanding of a patient's living situation and specific barriers to adherence. Unscheduled home visits may be more revealing, but should only be conducted if the patient consented to home visits previously (preferably at the time of enrolment or initiation)	For patients with suspected or confirmed treatment failure, patients who default from care, or any time the MDT feels a home visit will contribute to patient management

Accurately assessing adherence requires clinicians to develop a collaborative and non-judgmental relationship with patients. This is best done when one provider follows an individual patient longitudinally. The key to asking patients about their adherence is not in the specifics of the tool used but in taking the time to ask about adherence regularly and doing so in an open and truly inquisitive manner. Otherwise, many patients will simply state what they believe the clinician wants to hear: perfect adherence.

Every provider in each ART service delivery point should receive training and gain confidence in assessing adherence and providing adherence support and counselling to the majority of patients who do not have significant barriers to adherence. However, patients with significant adherence challenges and multiple barriers to adherence should be referred to providers with additional training and time to offer dedicated and enhanced adherence support and counselling. Involving experienced colleagues at the same health facility should be done as soon as a concern is identified, and the patient should be discussed by the MDT to generate as many solutions as possible. Consultation with Mental Health Teams or regional or national mentors may be required for complex situations.

Mental Health Screening	• Screen patient/caregiver for depression using the PHQ-9 (Table 4.14) and manage/refer as required
Referrals	• Establish if the patient has been referred to other services (including nutrition, psychosocial support services, other medical clinics, substance use treatment, etc) • Did he/she attend the appointments? What was his/her experience? Do the referrals need to be re-organized?

5.3. Adherence Monitoring, Counselling and Support for Patients with Undetectable Viral Load (LDL)

Once a patient has confirmed viral suppression (with VL below the Lower Detection Limit (LDL)) this is confirmation of adequate adherence to ART. The patient can be reassured that they will do well if they continue to adhere. However, **all patients are at risk of new or worsening barriers to adherence, so adherence monitoring, counselling and support should continue despite viral suppression, but at a lower intensity and frequency unless concerns are identified (Table 5.15).** These patients should also be educated on and assessed for qualification as "stable patient" services such as less frequent facility visits, fast-track or community-based ART distribution, etc (Table 3.5).

Table 5.15: Adherence Counselling and Support for Patients with Undetectable Viral Load

No adherence concerns (based on adherence assessment or healthcare team opinion)	
Counselling: Group or individual, every visit (can be done by any member of the healthcare team, including the clinician)	• Elicit any concerns the patient/caregiver has about ART, other medications, visit schedule, or health. Address any concerns or engage another care team member who can address them • Explore any major recent or expected changes in the patient's/caregiver's life or daily routine that could disrupt adherence • Update patient locator and contact information
Support	• Encourage the patient/caregiver to continue with the support systems that are in place already
Inadequate or poor adherence (based on adherence assessment or healthcare team opinion)	
Counselling: Individual, at every visit until adherence is good (preferably by someone trained on adherence counselling)	• **Assess for and address potential barriers to adherence (Table 5.14)** • Review patient/caregiver HIV knowledge (Table 5.1, Annex 8) and address any gaps • Review patient/caregiver understanding of ART administration (dosing, timing, frequency) and address any gaps • Elicit any concerns the patient/caregiver has about ART, other medications, visit schedule, or health. Address any concerns or engage another care team member who can address them • Explore any major recent or expected changes in the patient's/caregiver's life or daily routine that could disrupt adherence • Update patient locator and contact information
Support	• Review effectiveness of support systems the patient already has in place • Encourage introduction of additional standard and enhanced support systems (Table 5.2), including supporting disclosure as needed, assigning a case manager and considering DOTs

5.4. Adherence Monitoring, Counselling and Support for Patients with Detectable Viral Load

Treatment failure should be suspected whenever a patient has been on ART for at least 6 months and has: a detectable viral load; a decline in CD4 count or; any new or worsening clinical condition. Treatment failure is confirmed as per the viral load monitoring algorithm (Figure 6.5). Poor adherence is often the most important factor in developing treatment failure, though there can be other causes. Adherence must be thoroughly assessed and all issues must be addressed before switching patients to the next line of ART. **Do not change regimens until the reason/s for treatment failure have been identified and addressed, and a repeat VL is ≥ 1,000 copies/ml after 3 months of good adherence.** For patients with persistent low-level viremia (detectable VL but < 1,000 copies/ml), consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com).

5.4.1 Enhanced Adherence Assessments

As soon as treatment failure is suspected the patient/caregiver should be discussed by the facility multi-disciplinary team to develop a plan for assessing barriers to adherence (including scheduling a home visit), and assessing other potential causes of treatment failure (e.g. inadequate dosing/dose adjustments, drug-drug interactions, drug-food interactions, impaired absorption e.g. chronic severe diarrhoea).

Patients with suspected or confirmed treatment failure should undergo adherence assessments as described in Table 5.10, including the MMAS-8 and the home visit. If the patient has a caregiver, treatment buddy, and/or spouse/partner who is enrolled in HIV care, that person's file should also be reviewed to confirm their most recent viral load results and adherence.
All patients with suspected or confirmed treatment failure should have a thorough assessment of potential barriers to adherence (Table 5.14).

5.4.2. Enhanced Adherence Counselling

The goal of Enhanced Adherence Counselling is to assess possible barriers to adherence in a non-judgmental way and to help the patient construct an adherence plan with concrete objectives. It is important not to focus solely on knowledge of HIV and ART but also to review psychological, emotional, and socio-economic factors that may contribute to poor adherence. In addition, exploring the patient's motivation for taking medication often highlights reasons for poor adherence.

Three sessions of Enhanced Adherence Counselling are recommended as the minimum number of sessions, but additional sessions can be added as needed (Table 5.16). If the adherence is evaluated as adequate, a repeat viral load is done after three months of good adherence, and another Enhanced Adherence Counselling session is conducted to discuss the viral load results. A detailed content guide for Enhanced Adherence Counselling is provided in Annex 9.

It is preferable to have the patient go through all adherence counselling sessions with the same counsellor in order to provide continuity, and that the session is documented to ensure follow-up of all issues identified.

Table 5.16: Components of Enhanced Adherence Counselling Sessions (Annex 9A for detailed content guide)

Enhanced Adherence Counselling Sessions: Overview	

Session 1	• Review understanding of viral load (VL) and discuss why the patient's VL is high
	• Review cognitive, behavioral, emotional and socio-economic barriers to adherence
	  ○ Treatment literacy
	  ○ Medications: dosage, timing, storage
	  ○ Side effects
	  ○ Discuss risk reduction (e.g. for substance abuse)
	  ○ Motivation
	  ○ Mental health screening (screen for depression using PHQ-9, Table 4.14)
	  ○ Discuss patient's support systems
	• Referrals and networking
	• Assist patient to develop adherence plan to address the identified issues

Session 2	• Review adherence plan from the first session and discuss any challenges • Identify other possible gaps and issues emerging • Referrals and networking • Assist patient to modify the adherence plan to address the identified issues

Session 3	• Review adherence plan from the first and second session and discuss any challenges
	• Identify other possible gaps and issues emerging
	• Assist patient to modify the adherence plan to address the identified issues
	• Decision on repeat VL based on current adherence
	  ○ If the adherence is good: plan repeat VL testing after three months of good adherence and explain possible ways forward, emphasizing role of the patient and the health facility
	  ○ If adherence challenges persist: plan further Enhanced Adherence Counselling sessions before repeating the VL

Session to Discuss Repeat Viral Load Results	• Discuss result of the second VL test
	• Plan the way forward:
	  ○ If VL now undetectable: continue current regimen with enhanced adherence, repeat VL after 6 months
	  ○ If VL ≥ 1,000: prepare patient for change of regimen (Figure 5.2)
	  ○ If VL is detectable but < 1,000: may continue to monitor or may prepare for change of regimen, pending MDT discussion and consultation with Regional or National HIV Clinical TWG

Enhanced Adherence Support Interventions (for patients failing or at high-risk of failing treatment)	

Case management	• Assign a case manager to all children and adolescents (those not achieving optimum treatment outcomes); pregnant women, orphans, patients with alcohol and substance abuse, patients with mental illness, patients with suspected or confirmed treatment failure, and any patients who the healthcare team feels has poor adherence or is at high risk of defaulting from care
	• The case manager is the link between the patient and the MDT
	• Roles of the case managers include:
	  ○ Coordinating multidisciplinary management for patients under case management
	  ○ Following up on appointment-keeping for their patients
	  ○ Organizing patient reminders (SMS, calling the day before) and other support systems
	  ○ Ensuring appropriate defaulter tracing
	  ○ Coordinating home visits to their patients

Directly observed therapy	• Patients with suspected treatment failure should have DOTs to ensure good adherence before a viral load is repeated to confirm treatment failure • DOTs involves a healthcare provider, family member, treatment supporter or any trained peer observing the patient ingesting their prescribed ART on a daily basis • DOTs can be tapered off once the patient adopts consistent adherence-enhancing behaviours and barriers to adherence are overcome

6. Antiretroviral Therapy in Infants, Children, Adolescents, and Adults

ART, while very effective in managing HIV disease, cannot cure HIV infection. The goal of ART is to suppress viral replication with the aim of reducing the patient's VL to undetectable levels. Uninterrupted ART with ongoing strict adherence will help maintain undetectable VL levels thereby preventing damage to the body's immune system and restoring and maintaining healthy living, as well as reducing the risk of sexual and vertical transmission of HIV.

6.1. Eligibility for ART

All individuals with confirmed HIV infection are eligible for ART irrespective of CD4 cell levels, WHO clinical stage, age, pregnancy or breastfeeding status, co-infection status, risk group, or any other criteria.

6.2. Timing of ART Initiation

ART should be started in all patients as soon as possible, preferably within 2 weeks of confirmation of HIV status.

ART can be initiated as soon as patients meet the ART Readiness Criteria (Table 5.3), even on the same day as testing positive for HIV. ART initiation on the same day as testing HIV-positive has additional benefits for HIV prevention (e.g. for pregnant and breastfeeding women, and the HIV positive partner in a discordant relationship), and is associated with improved retention, viral suppression, and survival. Special considerations for timing of ART initiation are listed in Table 6.1.

Table 6.1: Special Considerations for Timing of ART Initiation

Population	Timing of ART Initiation	Comments
Pregnant and breastfeeding women	Support ART initiation on the same day as testing positive for HIV	Intensive adherence counselling and close follow-up required because of limited time for patient preparation
Infants (< 12 months old)	Support ART initiation on the same day as testing positive for HIV	Intensive adherence counselling and close follow-up required because of limited time for caregiver preparation
Patients with strong motivation to start ART immediately	Support ART initiation as soon as they meet ART Readiness Assessment criteria, even if on the same day as testing positive for HIV	Intensive adherence counselling and close follow-up required because of limited time for patient preparation
Patients with newly diagnosed TB	Start anti-TB treatment immediately and initiate ART as soon as anti-TB medications are tolerated, preferably within 2 weeks. For TB meningitis consider delaying ART for up to 8 weeks	Monitor closely for IRIS (Annex 16)
Patients with cryptococcal meningitis	Defer ART until after completing 5 weeks of CM treatment and symptoms have resolved	Monitor closely for IRIS (Annex 16)

Patients for whom adherence will be particularly challenging	Start ART as soon as adequate support systems are in place for adherence (e.g. enrolling a PWIDs into a methadone program; psychiatric treatment for a patient with mental illness; caregiver identified for an orphan)	A case manager should be assigned to all patients with complex adherence challenges
All other patients	Start ART within 2 weeks of HIV diagnosis, once they meet ART Readiness Assessment criteria	Adequate ART preparation, and continued adherence monitoring and support is recommended after ART initiation for all patients

6.3. First-Line ART for Infants, Children, Adolescents and Adults (including Pregnant and Breastfeeding Women)

The recommendations below apply to patients who are starting ART for the first time. Preferred and alternative first line regimens are shown in Tables 6.2 and 6.3. ARVs for infant prophylaxis are presented in Tables 7.3 to 7.6.

All patients must have their weight documented at every visit. Children and adolescents must have correct weight-based dosing of ARVs confirmed at every visit.

Infants and children depend on their caregivers for adherence to medication. Caregivers should be adequately prepared for their role of administering ARVs to infants and children, including addressing anticipated challenges such as drug palatability.

Caregivers should always be shown and then asked to demonstrate how to measure and administer ARVs. This should be done at the time of prescribing the ART (by the clinician) and at the time of dispensing the ART.

Table 6.2: Preferred First-line ART Regimens and Dosing for Children, Adolescents and Adults [1]

Age	Preferred Regimen	Dosing[2] (correct weight-based dosing must be confirmed at every visit)
Birth - 4 weeks	AZT + 3TC + NVP[3]	Refer to Annex 10C for weight-based dosing
4 weeks - < 3 years	ABC + 3TC + LPV/r[4,5]	**3-5.9kg**: ABC/3TC (120/60mg): 0.5 tab BD, **plus** LPV/r (80/20mg/ml): 1 ml BD
		6-9.9kg: ABC/3TC (120/60mg): 0.5 tab AM and 1 tab PM, **plus** LPV/r (80/20mg/ml): 1.5 ml BD
		10-13.9kg: ABC/3TC (120/60mg): 1 tab BD, **plus** LPV/r (80/20mg/ml): 2 ml BD, **or** LPV/r (100/25mg): 2 tabs AM and 1 tab PM
		14-19.9kg: ABC/3TC (120/60mg): 1 tab AM and 1.5 tabs PM, **plus** LPV/r (80/20mg/ml): 2.5 ml BD, **or** LPV/r (100/25mg): 2 tab BD
3 - 14 years (and < 35 kg body weight)	ABC + 3TC + EFV[6,7]	**10-13.9kg**: ABC/3TC (120/60mg): 2 tabs once daily, **plus** EFV (200mg): 1 tab once daily
		14-19.9kg: ABC/3TC (120/60mg): 2.5 tabs once daily, **plus** EFV (200mg): 1.5 tabs once daily
		20-24.9kg: ABC/3TC (120/60mg): 3 tabs once daily, **plus** EFV (200mg): 1.5 tabs once daily
		25-34.9kg: ABC/3TC (600/300mg): 1 tab once daily, **plus** EFV (200mg): 2 tabs once daily
≥ 15 years (**or** ≥ 35 kg body weight)	TDF + 3TC + DTG[8] **or** TDF + 3TC + EFV[9]	TDF/3TC/DTG (300/300/50mg): 1 tab once daily **or** TDF/3TC/EFV (300/300/400mg): 1 tab once daily

1 Patients currently on regimens that are not included in the indicated preferred (Table 6.2) or alternative (Table 6.3) regimens should be considered for regimen optimization as per Section 6.5.1
2 See Annex 10A-C for weight-based dosing of all single-drug and fixed-dose combination formulations
3 Infants who initiate ART at less than 4 weeks of age should initiate on AZT+3TC+NVP irrespective of previous NVP exposure; metabolism of other ARVs is not well known for this age group. As soon as these infants become 4 weeks old, they should switch to ABC/3TC+LPV/r. This may become available as a 4-drug FDC (dosing included in Annex 10A). Consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48, ulizanascop@gmail.com) in case of pre-term infants
4 Once pediatric formulations of DTG become available it may replace LPV/r and EFV for children
5 ABC/3TC 120/60mg can also be administered once daily (refer to Annex 10B)
6 An ABC/3TC/EFV (150mg/75mg/150mg) FDC is expected to become available soon
7 Once adolescents reach 15 years or 35 kg, if virally suppressed they should be considered for transition as per Figure 6.1 and Table 6.4
8 DTG is not currently recommended for women and adolescent girls of childbearing potential because of possible risk of birth defects when DTG is used around the time of conception. Women who are on effective contraception may opt to use DTG and should be supported in their decision
9 Female PWID/HIV of childbearing potential, use TDF + 3TC + ATV/r as preferred first line ART

Table 6.3: Use of Alternative ARVs in First-Line Regimens [1]

Age	Scenario and ARV Affected	Alternative ARV to Use
< 4 weeks	NVP: Develops hypersensitivity reaction	Use RAL
	AZT: Infant Hb < 9.5 g/dL	Defer ART until 4 weeks of age, then start ABC+3TC+LPV/r
4 weeks - < 3 years	ABC: Develops ABC hypersensitivity reaction[2]	Use AZT (if Hb ≥ 9.5 g/dL); if Hb < 9.5 g/dL consults Regional or National HIV Clinical TWG (call 0800 72 48 48; ulizanascop@gmail.com)
	LPV/r: Unable to tolerate LPV/r	The alternative regimen is RAL at x2 standard weight-based BD dosing until 2 weeks after TB treatment then continue with RAL standard weight-based BD dosing
	LPV/r: Currently on anti-TB medications	For children ≥ 2 year who cannot tolerate LPV/r + RTV (usually because of GI side-effects), the alternative regimen is RAL at x2 standard weight-based BD dosing until 2 weeks after TB treatment then continue with RAL standard weight-based BD dosing
	For children whose mother is on PI-based regimen at time of suspected transmission	Consult Regional or National HIV Clinical TWG (call 0800 72 48 48; ulizanascop@gmail.com)
3 - 14 years (and < 35 kg body weight)	ABC: Develops ABC hypersensitivity reaction[2]	Use AZT (if Hb ≥ 9.5 g/dL); if Hb < 9.5 g/dL consults Regional or National HIV Clinical TWG (call 0800 72 48 48; ulizanascop@gmail.com)
	EFV: Unable to tolerate EFV (severe CNS side effects or moderate-severe rash); psychiatric history	Use LPV/r
≥ 15 years (or ≥ 35 kg body weight)	TDF: Impaired renal function (CrCl ≤ 50 ml/min)	Use ABC
	DTG: Unable to tolerate DTG	Use EFV (for PWID who cannot tolerate DTG use ATV/r)
	DTG: Currently on anti-TB medications	Give TDF/3TC/DTG FDC am + DTG 50 mg pm for duration of rifampicin-containing TB treatment and for an additional 2weeks after TB treatment is completed then revert to TDF/3TC/DTG FDC OD [4]
	EFV 400 mg: Currently on anti-TB medications	Give TDF/3TC/EFV 400 mg FDC + EFV 200 mg for duration of rifampicin-containing TB treatment and for an additional 2weeks after TB treatment is completed then revert to TDF/3TC/EFV 400 mg FDC OD [4]
	EFV (for women and adolescent girls of childbearing potential) Unable to tolerate EFV (severe CNS side effects or moderate-severe rash); psychiatric history	Use ATV/r

1 For other scenarios that are not covered in this table, discuss as an MDT and consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com)
2 ABC hypersensitivity reaction (AHR) is rare in the Kenyan population. Table 6.10 provides the definition and management of AHR
3 Use "super-boosted" LPV/r by adding additional ritonavir suspension to manage the drug interaction between LPV/r and rifampicin (see Table 8.8 for dosing recommendations). **Two weeks after TB treatment is completed the child should go back to standard LPV/r dosing.** For children who cannot tolerate LPV/r + RTV (usually because of GI side-effects), the alternative regimen is Raltegravir and continue with this regimen after TB treatment
4 The additional 2 weeks of higher-dose DTG is to counter the ongoing liver enzyme induction effect of rifampicin, which continues for a short period after TB treatment is completed

6.4. Dosing and Administration of Dolutegravir (DTG)

DTG is preferred in first line ART in combination with two other ARVs for adolescents and adults. DTG is not recommended for women and adolescent girls of childbearing potential. Women and adolescent girls who are on effective contraception may opt to use DTG and should be support in their decision. DTG is well tolerated, has a high genetic barrier to resistance and fewer drug-drug interactions.

Table 6.4: Dosing and Administration of Dolutegravir

Recommended Dosing of DTG
• ≥ 15 years (**or** ≥ 35 kg body weight): DTG 50 mg once daily, preferably as a morning dose • For patients taking rifampicin: increase dose to DTG 50 mg twice daily until 2 weeks after completion of TB treatment, then reduce to DTG 50 mg once daily again (the additional 2 weeks of higher-dose DTG is to counter the ongoing liver enzyme induction effect of rifampicin, which continues for a short period after TB treatment is completed) • For patients with suspected or confirmed INSTI resistance (e.g. patients with prior history of failing a RAL-based regimen): use DTG 50 mg twice daily • DTG can be taken with or without food • Dosing guidance for children and adolescents < 35 kg will be provided once appropriate formulations are available
Common Side Effects of DTG
• The most common side effects of DTG are headache, nausea and diarrhea. These side effects usually resolve after continued use for 1-2 weeks. It is critical to inform patients about these potential side effects and their temporary nature, and encourage them to continue their ART and consult a HCW if concerned • Some patients on DTG are more likely to develop insomnia. This may be reduced by taking DTG as a morning dose, or by taking DTG with a low-fat meal or on an empty stomach • DTG may cause a small rise in serum creatinine levels but this does NOT represent a true decline in renal function • All adverse events should be reported through the national pharmacovigilance mechanism (http://www.pv.pharmacyboardkenya.org/)
Pregnancy Safety of DTG
• DTG may be associated with increased risk of neural tube defects if taken around the time of conception. This potential risk is still under evaluation, but to be cautious DTG is not currently recommended for women with any childbearing potential • DTG is safe during pregnancy and breastfeeding if initiated 8 weeks after conception (although women need to be counseled on the risk of becoming pregnant while breastfeeding and provided with effective contraception)

Important Drug Interactions with DTG

- Rifampicin
  - Rifampicin lowers DTG levels: increase DTG to 50 mg twice daily for patients on rifampicin
  - There are no significant drug interactions between DTG and other currently used anti-TB medications (including for MDR-TB)
- Mineral supplements, including: antacids containing calcium, zinc, magnesium or aluminum; iron supplements; prenatal vitamins (which contain iron and calcium)
  - These supplements decrease the absorption of DTG: administer DTG at least 2 hours before or 6 hours after taking any of these supplements
  - Dose separation is not required for calcium and iron supplements (including prenatal vitamins) if DTG is taken with a meal
  - **It is critical to educate patients about this important drug interaction because many patients get these supplements and antacids over-the-counter without informing their healthcare provider**
- Carbamazepine, phenobarbital, phenytoin
  - These anticonvulsants decrease DTG levels: use a different anticonvulsant if available
  - If DTG must be co-administered with these drugs then increase to DTG 50 mg twice daily, although there is little data to guide this
- Metformin
  - DTG increases levels of metformin; the levels of DTG are not affected: use a lower dose of metformin (often 50% of usual dose) and monitor glycemic control. Use a maximum daily dose of metformin 1 g
- Other drug-drug interactions with DTG
  - See Annex 13C

Contraindications for use of DTG

- DTG is not currently recommended for women and adolescent girls of childbearing potential
- DTG is contraindicated for any patient with a history of hypersensitivity reaction to DTG
- DTG is not currently recommended for patients with end-stage renal disease or end-stage liver disease because it has not been evaluated in these populations

6.5. Monitoring and Changing ART

The objectives of clinical and laboratory monitoring during ART are to identify and treat inter-current illnesses, assess for and manage adverse drug reactions, and evaluate response to treatment. Routine laboratory monitoring recommendations are described in Table 3.4; however, additional investigations should be ordered whenever there is clinical suspicion for which a laboratory test result may alter patient management.

Indications for changing ART include optimizing therapy for patients who have undetectable viral load, managing adverse drug reactions or toxicity, drug-drug interactions, co-morbidity and treatment failure, and responding to pregnancy intention.

6.5.1. Optimizing Therapy for Patients who have undetectable viral load on First Line ART

Patients who are virally suppressed on first line ART may benefit from regimen modification even if they are currently tolerating their regimen well and have no drug-drug interactions requiring a change. Regimen modifications may be done for age/weight transitions among children and adolescents and to simplify a regimen, prevent long-term toxicity and improve cost-effectiveness.

Adolescents and adults with undetectable viral load on first line ART and not on the recommended first line regimen as per Table 6.2 should be considered for optimization as per Figure 6.1 and Table 6.5. This also includes PLHIV who recently initiated non-standard therapy (less than 6 months ago, before the first VL is due). Decisions on regimen modification should be made following discussion with the patient and be based on their informed preferences.

Always discuss the possibility of new side effects when changing to a new ARV, particularly side effects common to all ARVs (headache, nausea, diarrhea) and any side effects specific to the new ARV. Reassure patients that most side effects resolve with continued use after 1-2 weeks.

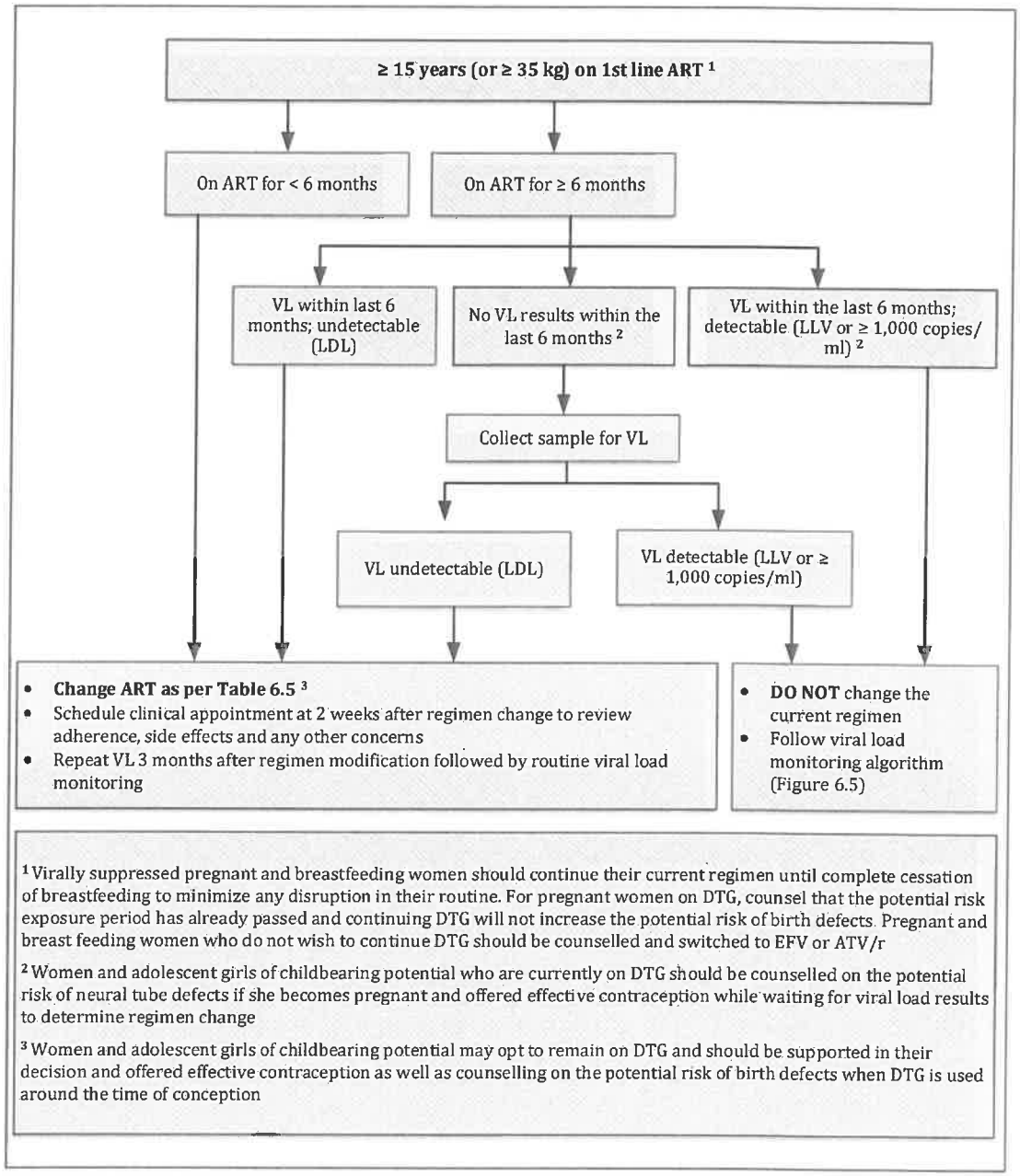


Figure 6.1: Optimizing ART Regimens for Adolescents and Adults (≥ 15 years) on First Line ART

Table 6.5: Optimizing ART Regimens for Adults who are Virally Suppressed on First Line ART [1,2]

Current ARV that is being changed	Preferred ARV to switch to	Alternative, if contraindication or intolerance to preferred ARV[3]
EFV	DTG (if currently on rifampicin-containing TB treatment then continue EFV until TB treatment is completed before switching to DTG)	Continue on EFV
NVP	DTG	Switch to ATV/r
LPV/r	DTG	Switch to ATV/r
ATV/r	DTG	Continue on ATV/r
DTG (among women and adolescent girls of childbearing potential)[4]	EFV	Switch to ATV/r
AZT	TDF	If pre-existing renal disease (with eGFR < 50 ml/min): switch to ABC instead of TDF[5]

1 If there are no VL results within the last 6 months then perform VL to confirm suppression; if VL is detectable then manage as suspected treatment failure as per Figure 6.5. Repeat VL three months after any change in ART regimen to confirm viral suppression is maintained

2 Virally suppressed pregnant and breastfeeding women should continue their current regimen until complete cessation of breastfeeding to minimize any disruption in their routine. After complete cessation of breastfeeding, counsel on ART optimization as per this table

3 For any patient with a contraindication or intolerance to a recommended and alternative ARV then consult the Regional or National HIV Clinical TWG for guidance (Uliza Toll-free Hotline 0800 72 48 48, ulizanascop@gmail.com)

4 DTG is not recommended for women and adolescent girls of childbearing potential who are not on effective contraception because of possible risk of birth defects when DTG is used around the time of conception.

5 TDF + 3TC should be used despite renal impairment (with renal dose adjustments) for patients who have HIV/HBV co-infection as per Section 9.1.3 (HBV/HIV Co-infection)

6.5.2. Changing ARVs Due to Adverse Drug Reactions

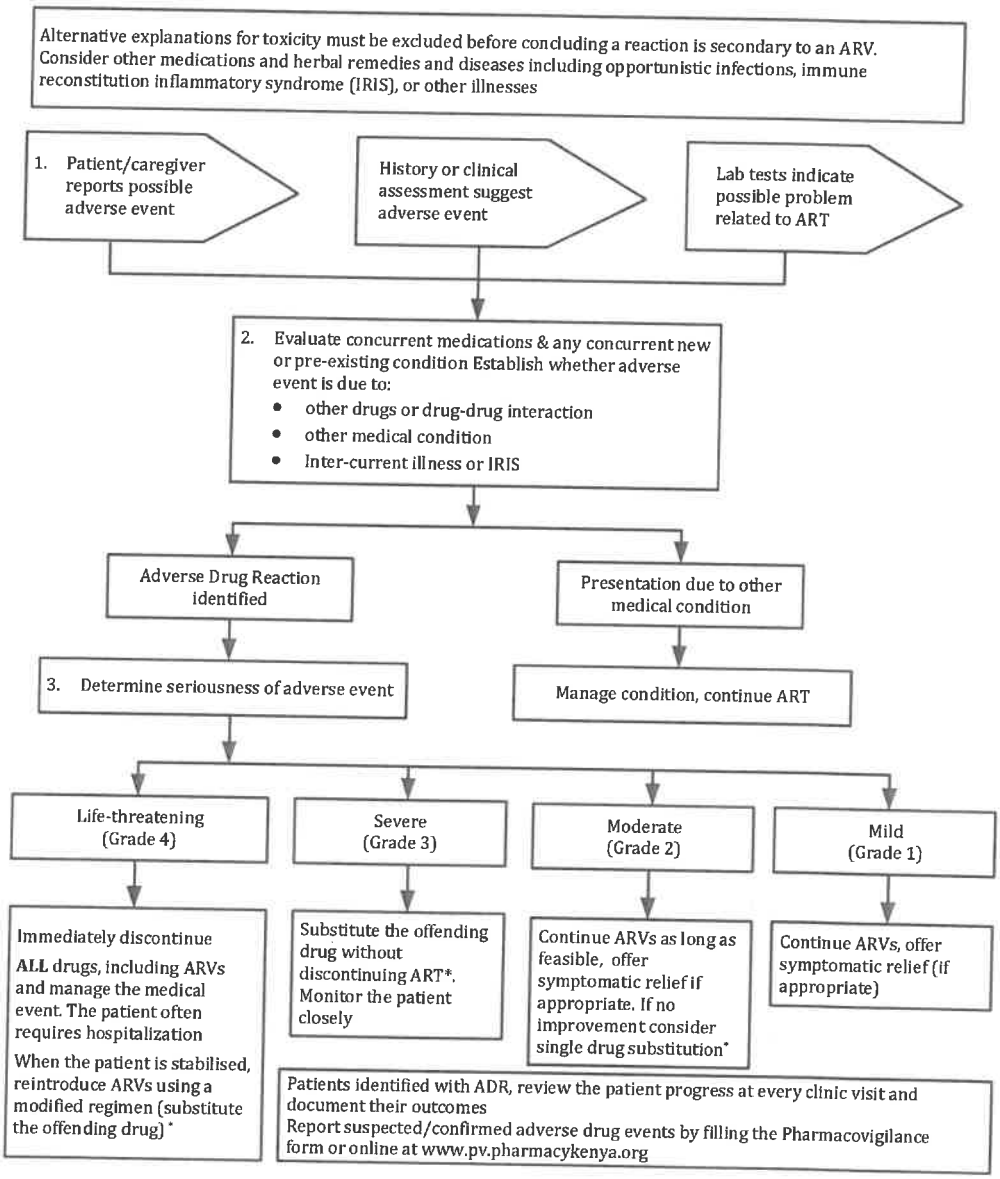
Patients starting ART should be educated on the potential side effects of ART and all other prescribed medication.

ADRs can have a significant impact on patient adherence and must be identified early and managed aggressively. All ADRs should be reported to the Pharmacy and Poisons Board using existing pharmacovigilance tools (http://www.pv.pharmacyboardkenya.org/). Pharmacovigilance is particularly important for monitoring ADRs associated with DTG, as this is a drug for which there is limited experience in Kenya. While clinical trials have shown DTG to be better tolerated and more effective than EFV, rare ADRs may appear in routine care in new settings, which were not observed in the highly selected patients participating in clinical trials.

The most common significant ADRs associated with ARVs that may require a drug substitution are summarized in Table 6.6. General principles for managing ADRs are outlined in Figure 6.2. Managing specific ADRs is described in Tables 6.7 to 6.10.

Table 6.6: Common Significant Adverse Drug Reactions

ARV Agent	Adverse Drug Reaction	High Risk Situations/Comments
NRTIs		
ABC	ABC hypersensitivity reaction (see Table 6.10)	Do not re-challenge
AZT	Anaemia, neutropenia (see Table 6.8)	Risk factors: CD4 count < 200 cells/mm^3; BMI < 18.5 (or body weight < 50 kg); anaemia at baseline; concurrent use of other drugs with similar ADR (cotrimoxazole, gancyclovir, ribavirin)
	Lactic acidosis	Risk factors: Pregnancy; obesity
	Lipoatrophy	Risk factors: Low CD4 count
TDF	Renal dysfunction (see Figure 6.4)	Risk factors: Underlying renal disease; age > 40 years; BMI < 18.5 (or body weight < 50 kg); diabetes; hypertension; concomitant PI use or nephrotoxic drug
NNRTIs		
All NNRTIs	Rash/hypersensitivity (NVP>>EFV>ETR)	Risk factors: for NVP hypersensitivity, women with CD4 count > 250 cells/mm^3, men with CD4 count > 400 cells/mm^3 Manage rash as per Table 4.4
EFV	CNS side-effects	Risk factors: Pre-existing psychiatric disorder
	Gynaecomastia	Switch from EFV to an alternative, and consult if gynecomastia does not improve
NVP	Hepatotoxicity (see Table 6.9)	Risk factors: HBV or HCV co-infection; concomitant use of hepatotoxic drugs; women with CD4 count > 250 cells/ mm^3; men with CD4 count > 400 cells/mm^3
PIs		
All PIs boosted with RTV	GI intolerance (LPV/r>DRV/r>ATV/r)	Consult
	Dyslipidaemia (LPV/r>DRV/r>ATV/r)	Risk factors: Obesity; sedentary lifestyle; diet high in saturated fats and cholesterol
ATV/r	Hyperbilirubinemia	This only requires drug substitution if cosmetic effect of jaundice is likely to interfere with patient adherence
DRV/r	Rash/hypersensitivity	Risk factors: sulfa allergy
INSTIs		
DTG	Insomnia	Give in the morning; if no improvement then try giving with low fat meal or on empty stomach
All INSTIs	Rash/hypersensitivity	Consult



1. At every clinic visit the patient on ART should be monitored clinically for toxicities using appropriate history (history of symptoms that suggest toxicity) and physical examination (relevant signs). Patients should be asked specifically about ADR known to be associated with their current ART. Targeted laboratory assessment may be used to confirm specific toxicities
2. Evaluate concurrent medications and establish whether the toxicity is attributable to an ARV, or to a non-ARV medication taken at the same time. Consider other disease processes (e.g. concurrent infectious processes or IRIS)
3. All toxicities should be graded. Manage the adverse event according to severity

* Follow single-drug substitution algorithm (Figure 6.3)

Figure 6.2: General Principles for Managing Adverse Drug Reactions

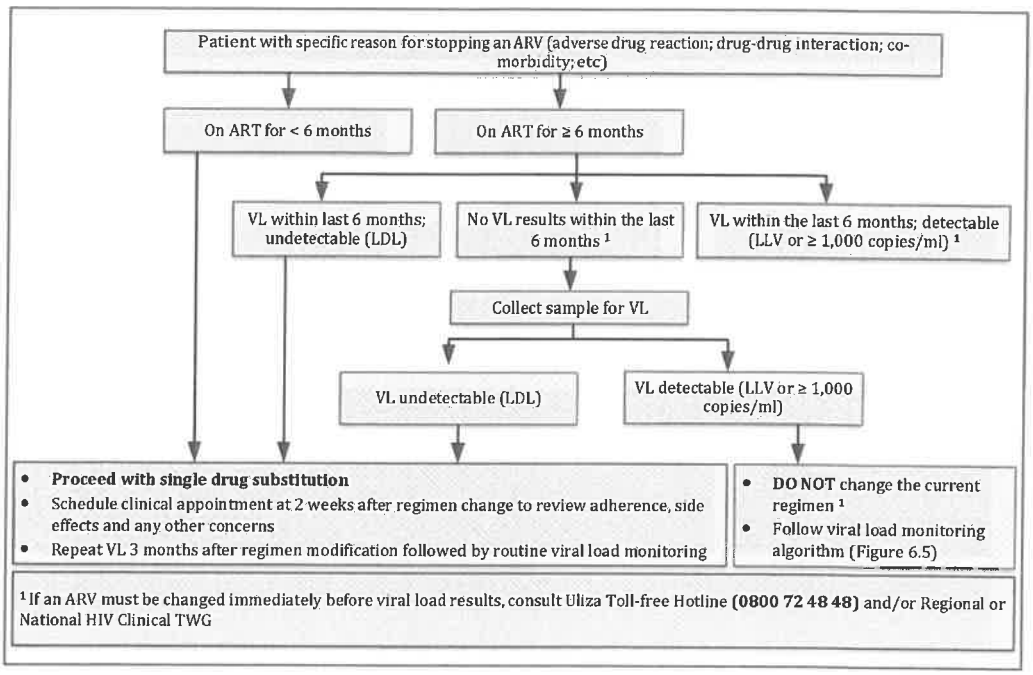
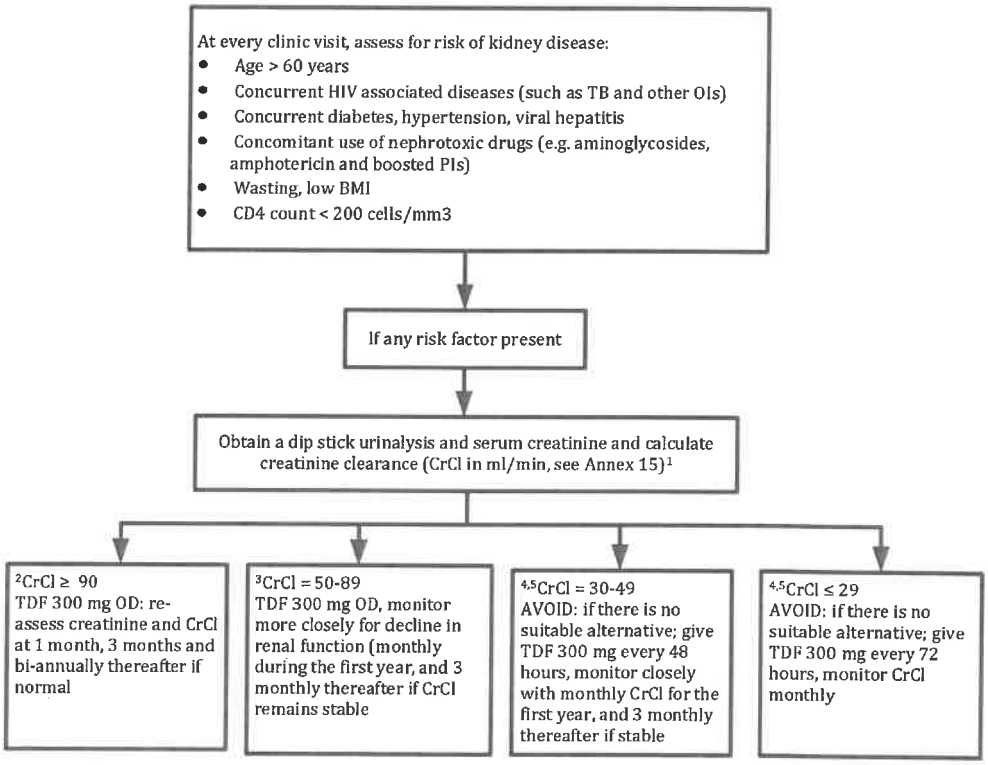


Figure 6.3: Managing Single Drug Substitutions for ART



[1] DTG may cause a small rise in serum creatinine levels but this does NOT represent a true decline in renal function
[2] Obtain biannual serum Cr and CrCl in patients at risk of renal disease and a CrCl ≥ 90 ml/min
[3] Patients with a CrCl ≥ 50 ml/min do not require TDF dose adjustment.
[4] AVOID the use of TDF in patients with CrCl < 50 ml/min unless there are no suitable alternatives, for example in HIV/HBV co-infection
[5] 3TC also required dose adjustment once CrCl < 50 ml/min

Figure 6.4: Managing TDF-Associated Kidney Toxicity

Table 6.7: ARV, CTX and Fluconazole Adjustments in Renal and Hepatic Impairment[1]

Drug	CrCl (ml/min)		Haemodialysis	Liver impairment
	10-50	<10		
ABC	No change			Reduce adult dose to 200 mg BD for moderate to severe liver impairment. AVOID in severe hepatic impairment
AZT	No change	300 mg/day	300 mg/day	Reduce dose by 50% or double interval of administration in moderate to severe impairment
TDF[2]	AVOID	AVOID	300 mg every 7 days	No change
3TC	150 mg OD	50 mg OD	50 mg first dose, then 25 mg daily	No change
LPV RTV ATV DRV	No change			No change, use with caution in moderate to severe impairment
RAL DTG	No change			No change in mild to moderate impairment. Use with caution in severe impairment
EFV	No change			Use with caution in mild to moderate liver impairment, avoid in severe impairment
NVP	No change			AVOID
ETV	No change			Use with caution in severe liver impairment
CTX	If CrCl > 30 ml/min then no dose adjustment required; if 15-30 ml/min then use 50% of normal recommended dose; if CrCl < 15 ml/min then CTX should be avoided			Use with caution in mild to moderate liver impairment, avoid in severe impairment
Fluconazole	If CrCl ≤ 50 ml/min then use 50% of normal recommended dose (no dose adjustment required for CrCl > 50 ml/min)			Use with caution

[1] Patients with evidence of renal or hepatic impairment should have access to regular monitoring of renal and liver function

[2] TDF and renal impairment:

- In acute kidney injury (AKI), interrupt TDF administration until the cause of AKI is established and corrected. Patients with baseline CrCl of ≤ 50 mL/min should not be initiated on TDF; patients who develop renal impairment (CrCL ≤ 50 mL/min) while on TDF should be switched to an alternate ARV (preferably ABC) following the single drug substitution algorithm (Figure 6.3)
- For patients with HBV co-infection, the benefit of TDF for treating HBV often outweighs the risks of renal impairment, so more severe levels of renal impairment are tolerated. See Table 9.3 for TDF dose adjustments for patients with HBV/HIV co-infection. These patients should be managed in consultation with an experienced clinician

Table 6.8: Management of AZT-Associated Bone Marrow Suppression

Test	Result	Action
Hb (g/dL)	> 8.5 (and decrease from pre-AZT baseline)	Retain AZT, repeat Hb at week 1, 2, 4 and 12 (if accessing follow-up Hb is difficult then consider substituting to an alternative ARV immediately)
	≤ 8.5	Switch from AZT to an alternative ARV
Neutrophils (x 10^9/L)	1.0 – 1.5 (and decrease from pre-AZT baseline, if available)	If receiving cotrimoxazole consider withholding unless essential. Retain AZT, repeat at week 1, 2, 4 and 12 (if accessing follow-up neutrophils is difficult then consider switching to an alternative ARV immediately)
	≤ 1.0	Switch from AZT to an alternative ARV

Note:

- Patients with baseline Hb of < 9.5 g/dL should not be initiated on AZT; patients who develop anaemia while on AZT should be managed as per this table
- AZT-associated bone marrow suppression occurs early in the course of treatment, usually within 3 months of initiating ART
- All patients with anaemia and/or neutropenia, whether on AZT or not, should be evaluated for other likely causes of anaemia/neutropenia and managed appropriately

Table 6.9: Management of Drug-Related Hepatotoxicity

ALT	**<2.5 x Upper Limit of Normal (ULN)**	**2.5 – 5 x ULN**	**> 5 x ULN**
Action	Retain regimen, repeat in 2 weeks	Retain regimen, repeat in 1 week	Discontinue offending drug/s

Note: All patients with acute increase in liver enzymes should be evaluated for other likely causes of hepatitis/hepatotoxicity and managed appropriately

Table 6.10: Diagnosis and Management of Abacavir Hypersensitivity Reaction

Diagnosis
Within 8 weeks of initiating an ABC-containing regimen, patient develops any 2 of the following symptom groups concurrently • Fever • Erythematous and/or pruritic rash • Respiratory symptoms (shortness of breath and/or sore throat and/or cough) • GI symptoms: nausea and/or vomiting and/or diarrhea • Extreme fatigue and/or body pain preventing normal activities AND: there is not a more likely alternative explanation for the symptoms
Management
• Stop ABC immediately and substitute with an alternative ARV • Patient must NEVER be re-challenged with ABC – a single dose could result in a fatal hypersensitivity Reaction. Issue an alert card. • Clearly mark file and educate patient about avoiding ABC in future

Note:

- ABC hypersensitivity reaction is rare in our population: always consider other more likely possible diagnoses
- Symptoms generally get worse within hours after each dose of ABC

6.5.3. Changing ARVs Due to Drug-Drug Interactions

Patients must be asked about other medications (including non-prescription and herbal medicine) they are taking at every visit. Some common drugs have specific drug-drug interactions that may require dose adjustment or substitution of the ARV or the other interacting drugs. Common medications that interact with specific ARVs include: rifampicin, rifabutin, antacids, multivitamin/mineral supplements, methadone, several anti-fungals, anti-convulsants, calcium-channel blockers, some anti-depressants, some statins, and some anti-malarials. Annex 13 provides common drug-drug interactions and management recommendations.

6.5.4. Changing ARVs Due to Treatment Failure

Viral load is the test of choice for monitoring response to ART and identifying treatment failure. Frequency of routine VL monitoring for specific populations is:

- Age 0-24 years old: every 6 months
- Age ≥ 25 years old: at 6 months after ART initiation, then at 12 months and then annually
- Pregnant or breastfeeding: at confirmation of pregnancy (if already on ART) or 3 months after ART initiation (if ART initiated during pregnancy/ breastfeeding), and then every 6 months until cessation of breastfeeding
- Before making any drug substitution (if no VL results from the prior 6 months)
- 3 months after any regimen modification (including single-drug substitutions), and then as per population group
- For any patient with a detectable VL follow the viral load monitoring algorithm (Figure 6.5)

Interpreting Viral Load Results and Defining Treatment Failure
The goal for ART is to achieve sustained viral suppression defined as below the Lower Detection Limit (LDL). The specific LDL value depends on the specimen type and assay used to measure VL.

Persistent low-level viremia (PLLV) is defined as having a detectable VL (above the LDL value but < 1,000 copies/ml) on two consecutive measures. These patients are at increased risk of progression to treatment failure, development of resistance and death and therefore require a similar case management approach as patients with VL ≥ 1,000 copies/ml (Figure 6.5)

Treatment failure is suspected when a patient has a high VL ≥ 1,000 copies/ml after at least 6 months of using ART. Treatment failure is only confirmed when VL is ≥ 1,000 copies/ml after assessing for and addressing poor adherence or other reasons for high VL, and then repeating VL after at least 3 months of excellent adherence to allow for viral re-suppression (Figure 6.5).

Note: Treatment failure should be suspected when a new or recurrent HIV associated condition indicating severe immunodeficiency (WHO stage III or IV condition) develops after at least 6 months on ART (excluding IRIS occurring after initiation of ART), or when CD4 count fails to rise as expected or when CD4 count drops while on ART. Treatment failure should always be confirmed with VL testing.

Clinical and immunological criteria for identifying treatment failure have low sensitivity and specificity for diagnosing treatment failure. Every effort should be made to obtain a viral load test.

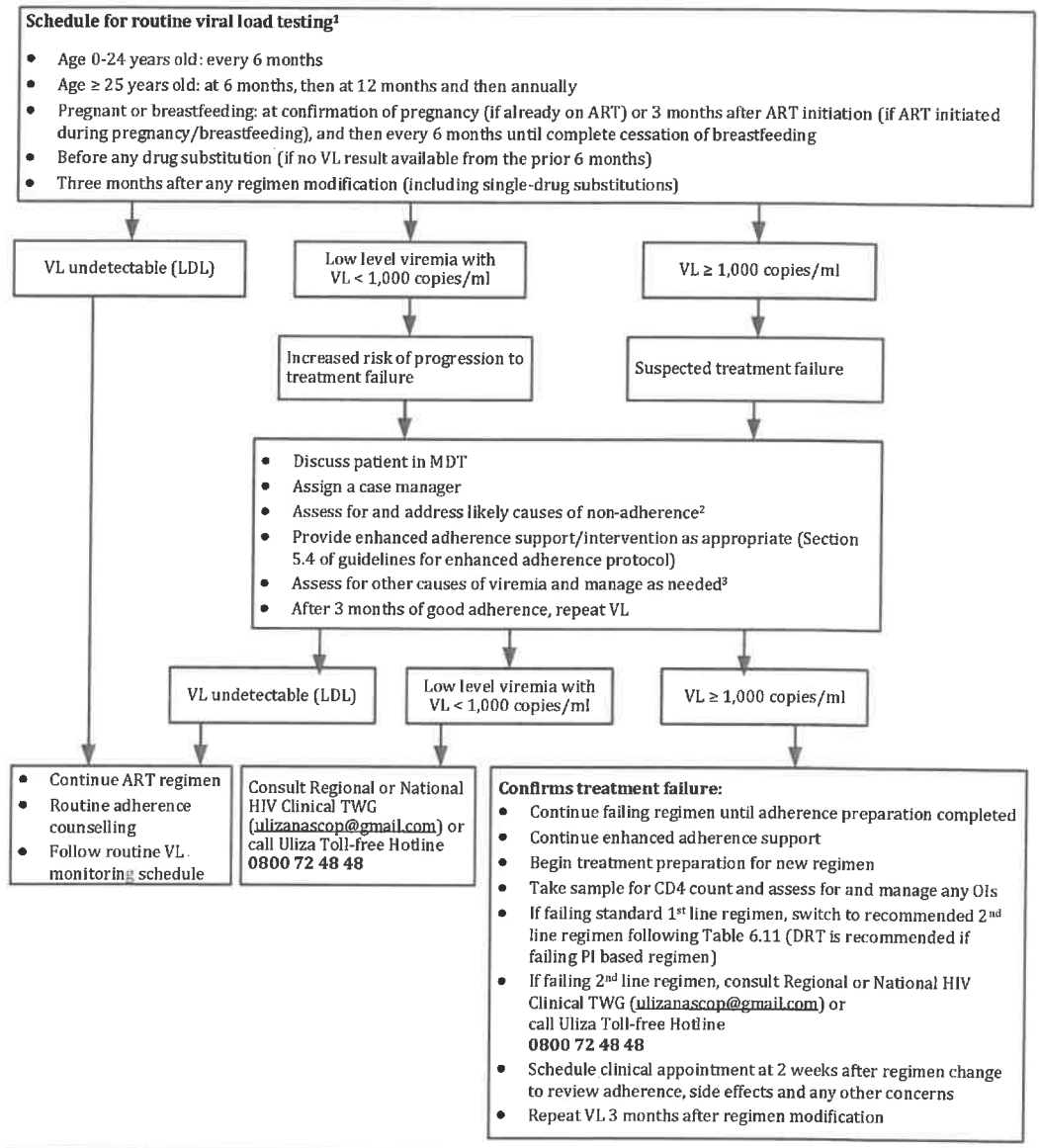


Figure 6.5: Viral Load Monitoring of Patients on ART (1st Line or 2nd Line)

Non-adherence is the most frequent cause of treatment failure. As per the viral load monitoring algorithm (Figure 6.5), **adherence issues must be addressed BEFORE confirming treatment failure**. All adherence issues must be resolved before switching to a new regimen otherwise the patient will quickly fail the new regimen as well, and soon run out of viable ART options. An exception to this may be when the regimen itself is the primary cause of poor adherence (e.g. side effects from one of the ARVs are not manageable such as severe diarrhea with LPV/r that does not improve with symptom management), in which case the regimen may need to be modified to allow for perfect adherence. This should be done in consultation with the Regional or National HIV Clinical TWG.

Section 5 provides detailed guidelines on adherence preparation, assessment, and support.

Table 6.11: Recommended Second-line ART Regimens in Infants, Children, Adolescents and Adults, excluding TB/HIV co-infection [1]

Age/Scenario	First-line ART	Second-line ART
< 3 years	ABC (or AZT) + 3TC + LPV/r	DRT-based 2nd line[2]
	ABC + 3TC + NVP (or RAL)	AZT + 3TC + LPV/r
	AZT + 3TC + NVP (or RAL)	ABC + 3TC + LPV/r
3 - 14 years (and < 35 kg body weight)	ABC + 3TC + EFV (or RAL)	AZT + 3TC + LPV/r
	AZT + 3TC + EFV (or RAL)	ABC + 3TC + LPV/r
	ABC (or AZT) + 3TC + LPV/r	DRT-based 2nd line[2]
≥ 15 years (**or** ≥ 35 kg)	TDF (or ABC) + 3TC + DTG (or EFV)	AZT + 3TC + ATV/r[3]
	AZT + 3TC + DTG (or EFV)	TDF + 3TC + ATV/r[3]
	TDF (or ABC or AZT) + 3TC + ATV/r (or LPV/r)	DRT-based 2nd line[2]
Pregnant or Breastfeeding	TDF (or ABC) + 3TC + DTG (or EFV)	AZT + 3TC + ATV/r[3]
	AZT + 3TC + DTG (or EFV)	TDF + 3TC + ATV/r[3]
	TDF (or ABC) + 3TC + ATV/r (or LPV/r)	Take sample for DRT and change to AZT + 3TC + DRV/r + RAL; modify based on DRT results
	AZT + 3TC + ATV/r (or LPV/r)	Take sample for DRT and change to TDF + 3TC + DRV/r + RAL; modify based on DRT results
HIV/HBV Co-infection	Always maintain TDF in second-line instead of switching to a different NRTI and instead of adding an additional NRTI (e.g. if patient with HBV/HIV is failing TDF/3TC/DTG then switch to TDF/3TC+ATV/r)	
Contraindication to Recommended Second-line NRTI	Continue the first-line NRTIs while changing the other component to the recommended second-line ARV (e.g. if patient with anemia is failing TDF/3TC/DTG then switch to TDF/3TC+ATV/r)	
TB/HIV Co-infection	Refer to Table 8.7: Recommended ART Regimens for Patients who Develop TB while **Failing** 1st Line ART	

[1] If any drug in the recommended 2nd line regimen is contraindicated or not tolerated, consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com). Such patients may require DRT to select agents for the second-line ART. Additional drugs may be recommended on a case-by-case basis, including RAL, DTG, ETR, or DRV/r

[2] Patients failing PI-based first-line regimens should have a Drug Resistance Test (DRT) ordered as soon as treatment failure is confirmed. The patient summary and DRT results should be sent to the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com) to determine the most suitable second-line regimen for the patient. The DRT results will be used to determine if a PI will still be effective in 2nd line

[3] For patients who have a contraindication or intolerance to ATV/r, substitution with LPV/r can be considered

Important Considerations for First-line Treatment Failure in Children

- Second-line ART in infants and children is more complex to manage. These children and their caregivers should undergo thorough clinical and psychosocial assessment to rule out inter-current illness or non-adherence as the reason for a high viral load
- All children failing first-line should be discussed in the MDT and preferably with an experienced ART provider prior to change of ART to second-line. **However, this should not cause undue delay in switching a failing regimen**
- The choices for infants and children failing an alternative first-line regimen are limited and may need to be discussed with the Regional or National HIV Clinical TWG. Some of these children will require HIV DRT to determine the most suitable second-line regimen

Second-line ART Treatment Failure

The following general principles apply to managing patients failing 2nd line ART

- Patients failing second-line ART have limited options left. Agents used to construct a third-line regimen are often more expensive, will have increased pill burden and more side effects. These factors will exacerbate pre-existing poor adherence
- Second-line treatment failure should be confirmed by viral load testing following the viral load monitoring algorithm (Figure 6.5): after the first detectable VL (above LDL), assess for and address all causes of poor adherence, assess for all other possible causes of viremia. These patients should be discussed at an MDT session. Repeat the VL after 3 months of good adherence (preferably with daily witnessed ingestion of the ARVs by a treatment buddy, relative, CHV, etc). If the second VL is still is detectable (above LDL) then continue the failing second-line regimen and consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com) using the national case summary form (Annex 9B). These patients will likely require DRT in order for the TWG to design the most suitable third-line regimen
- Patients failing second-line ART require thorough assessment for barriers to adherence and ongoing enhanced adherence support including
    - Assigning a case manager
    - More frequent adherence counselling by a trained counsellor
    - Assessment and treatment of mental health and substance use disorders
    - Provision of adherence support such as modified directly observed therapy, a treatment supporter, home visits etc.

Table 6.12: Possible Third-line ART in Children, Adolescents and Adults

	Possible 3rd Line Regimen	Comment
Children	RAL (or DTG) + 3TC + DRV/r	DTG can be substituted for RAL in children once pediatric formulations of DTG are available and weight-based dosing bands are defined Regional or National HIV Clinical TWG may recommend reusing some of the ARVs the patient has already failed, even when resistance is present
	AZT + RAL (or DTG) + 3TC + DRV/r	
	ABC (or TDF) + RAL (or DTG) + 3TC + DRV/r	
	ETV + 3TC + DRV/r	
Adults	DTG + 3TC + DRV/r	
	DTG + AZT + 3TC + DRV/r	
	DTG + TDF + 3TC + DRV/r	
	DTG + TDF (or AZT) + 3TC	
	ETV + 3TC + DRV/r	

7. Prevention of Mother to Child Transmission of HIV

Routine antenatal care (ANC) offers an important opportunity to provide high quality combined HIV prevention through targeted health education and counselling; HIV testing for the woman, partners and family members; linkage to HIV prevention and treatment; and to discuss and plan for future contraception needs. Prevention of mother-to-child transmission of HIV (PMTCT) should be offered as part of a comprehensive package of fully integrated, routine antenatal care interventions (Table 7.1).

Table 7.1: Essential Package of Antenatal Care

Intervention	Recommendation/Description
Group & Individual Education	Include information on importance of at least 4 ANC visits, details of ANC services (including health checks and treatment of any illness, medical tests including HIV testing, monitoring of maternal and fetal wellbeing, etc.), nutrition, personal care, recognizing and responding to danger signs during pregnancy, birth preparedness including skilled birth attendance, post-natal care including immunization, family planning and maternal and infant nutrition, HIV prevention and treatment (HTS, preventing new infections during pregnancy, ART for those who are HIV positive, monitoring of ART and ARV prophylaxis and follow-up for HEIs)
Counselling	• Women who are newly diagnosed with HIV and/or newly initiating ART may require more intensive adherence counseling and HIV education, which may include a case manager and/or mentor mother • Birth preparedness: support the pregnant woman and her partner to develop an individual birth plan that includes place of delivery with skilled attendants, emergency transport, birth companionship and readiness for infant care • Pregnancy danger signs: offer information on returning to ANC as soon as possible in case they develop fever, lower abdominal pain, severe headache, swollen feet, convulsions • Maternal, infant and young child nutrition (MIYCN): All pregnant women should receive information on proper nutrition during pregnancy and breastfeeding, safe infant feeding and optimal nutrition practices. Promote exclusive breastfeeding for the first 6 months irrespective of HIV status, followed by complementary feeding (Table 7.7). During pregnancy, provide iron, folate and multivitamins; monitor for anaemia, advise on adequate caloric intake (HIV positive women require an additional 10% of recommended daily allowance (RDA)) • HIV testing services o All pregnant women (unless known HIV positive) should be counselled and tested for HIV during their first ANC visit and if negative, repeat testing in the third trimester o At labour and delivery, HIV testing should be done for all women with unknown HIV status or those previously tested negatives, even if tested during the third trimester o All breastfeeding mothers (unless known HIV positive) should be counselled and tested at the 6-week infant immunization visit. The HIV test (if negative) should be every 6 months until complete cessation of breastfeeding (refer to Table 2.4) o Mothers should be counselled about the schedule for repeat HIV testing in pregnancy and postnatally as part of routine ANC and postnatal education o All pregnant and breastfeeding women who are not tested, opt-out or decline HIV testing during the first contact should be offered HIV counselling and testing in subsequent visits with appropriate linkage and referral for prevention, care and support services o All HIV positive and breastfeeding women enrolled into care should receive counselling and support (including assisted disclosure), case managed linkage and follow-up for comprehensive treatment and prevention (including lifelong ART) o All spouses/partners of pregnant and breastfeeding women should be offered HIV testing and counselling and all children if the mother is HIV positive • All pregnant women should receive information on risk reduction • Post-partum contraception: counsel on contraception methods and help patient develop a plan for effective contraception to avoid unplanned pregnancies

Table 7.1: Essential Package of Antenatal Care (Continued)

Intervention	Recommendation/Description
PHDP, IPV and HIV education/ counselling	For HIV positive women, encourage and support disclosure of HIV status, partner/ family testing, condom use, post-partum contraception, STI screening, prevention, and treatment, adherence counselling and support, assessment for and prevention of Intimate Partner Violence (IPV) and continued HIV education/counselling
Clinical Evaluation	• History - including medical, obstetric and psychosocial history. Use of medication including herbal remedies, drug allergies • TB screening: All women presenting to ANC should be screened for TB infection using the symptom-based TB screening tool (Section 8) • Reproductive tract infections: screen for STI (abnormal genital discharge, genital ulcers, and history of pelvic inflammatory disease). Manage a positive screen as recommended for syndromic management of STIs • Physical examination - perform obstetric examination including vital signs, breast examination, abdominal and foetal examination, speculum and bimanual examination, cervical cancer screening, STI screening • For HIV positive women, obtain and record additional information using MOH 257
Antenatal Profile	Syphilis testing, Hb, HBsAg, blood group and rhesus, urinalysis, rapid HIV test for the pregnant woman and her partner, and if TB symptom screening positive, sputum for GeneXpert and smear microscopy
Additional tests for HIV positive	Refer to section 3
Offer appropriate preventive and treatment services	• Maternal TT immunization • Iron, folate and multivitamins • Syndromic STI treatment if indicated • Malarial prophylaxis (Note: women who are on CPT do not require SP) • Insecticide-treated nets • For HIV positive pregnant women: Start or continue lifelong ART (Section 6), IPT (isoniazid 300 mg once daily for 6 months) and CPT. Perform VL for women starting ANC while on ART

7.1. Antiretroviral Therapy for HIV-positive Pregnant Women and Infant Prophylaxis

The goal of ART for HIV positive pregnant women is two-fold: to restore and maintain the mother's immune function and therefore general health, and secondly, to prevent transmission of HIV in utero, at labour and delivery and during breastfeeding. To achieve this goal, the mother must take effective antiretroviral therapy to achieve viral suppression. Table 7.2 summarizes recommendations for use of ART for HIV positive pregnant women.

Table 7.2: Summary of Use of ART for HIV Positive Pregnant and Breastfeeding Women

Overall recommendations	
When to start	Same as for non-pregnant adults (section 6): ART should be initiated in all pregnant and breastfeeding women living with HIV, regardless of gestation, WHO clinical stage and at any CD4 cell count and continued lifelong. ART should be started, ideally, on same day as HIV diagnosis with ongoing enhanced adherence support including community-based case management and support
What to start with (first-line ART)	Start on TDF/3TC/EFV
Infant prophylaxis	Refer to Table 7.3
Monitoring	Review monthly until after delivery. Offer adherence support **Viral load monitoring during pregnancy and breast-feeding (Figure 6.5)** • For pregnant and breastfeeding women newly initiated on ART, obtain VL 3 months after initiation, and then every 6 months until complete cessation of breastfeeding • For HIV positive women already on ART at the time of confirming pregnancy or breastfeeding, obtain a VL irrespective of when prior VL was done, and then every 6 months until complete cessation of breastfeeding • For pregnant or breastfeeding women with a detectable VL (any value above LDL): assess for and address potential reasons for viremia, including intensifying adherence support, repeat the VL **after 3 months of excellent adherence** o If the repeat VL is ≥ 1,000 copies/ml, change to an effective regimen o If the repeat VL is detectable but < 1,000 copies/ml consult the Regional or National HIV Clinical TWG o If the repeat VL is undetectable then continue routine monitoring
Scenario	
Pre-conception planning for women already on ART (not yet pregnant)	Maintain ART unless using an ARV that is contraindicated in pregnancy (Note: DTG is not recommended in women and adolescent girls of childbearing potential because of potential risk of neural tube defects) Carry out a VL if not done in the prior six months to confirm viral suppression (Figure 6.5) Refer to Table 4.8 for pre-conception care for women on ART who desire pregnancy, including laboratory screening, TT immunization, folate, etc.
On ART at the time of confirming pregnancy/breastfeeding	Maintain ART unless using an ARV that is contraindicated in pregnancy (Note: DTG is not recommended in women and adolescent girls of childbearing potential because of potential risk of neural tube defects) If a woman is already on DTG at the time of identifying pregnancy she should continue the regimen until complete cessation of breastfeeding unless there is another reason to switch Carry out a VL at the time of identifying pregnancy, irrespective of when a prior viral load was done, to confirm viral suppression (Figure 6.5) Manage the baby as HEI (Figure 2.1 for EID, and Table 7.3 for infant prophylaxis)
Not on ART at the time of confirming pregnancy	Prepare the patient and start on ART as soon as possible (Note: DTG is not currently recommended for women of childbearing potential) Preferably on the same day HIV infection is confirmed. Perform VL 3 months after ART initiation
Not on ART at during labour and delivery	Start on ART during labour (Note: : DTG is not recommended in women and adolescent girls of childbearing potential because of potential risk of neural tube defects) After delivery, continue treatment preparation and support and continue ART Manage the baby as HEI (Figure 2.1 for EID, and Table 7.3 for infant prophylaxis)

Not on ART during post-partum/breastfeeding	Prepare and start on ART as soon as possible preferably on the same day HIV infection is confirmed (Note: DTG is not recommended in women and adolescent girls of childbearing potential because of potential risk of neural tube defects) Manage the baby as HEI (Figure 2.1 for EID, and Table 7.3 for infant prophylaxis)
Managing labour and delivery	Minimize vaginal examinations, use aseptic techniques to conduct delivery, avoid artificial rupture of membranes, monitor labour and avoid prolonged labour by use of the partograph, avoid unnecessary genital tract trauma Where available, consider elective caesarean section prior to onset of labour if the VL in late pregnancy (after 36 weeks gestation) is ≥ 1,000 copies/ml

Table 7.3: ARV Prophylaxis for HIV-Exposed Infants

Infant Scenario	Infant Prophylaxis	Maternal Scenarios
HIV Exposed Infant	• Infant prophylaxis o AZT+NVP for 6 weeks, NVP should be continued until 6 weeks after complete cessation of breastfeeding o Infant prophylaxis can be discontinued after a minimum of 12 weeks on NVP if the child is not breastfeeding (death of mother or separation with mother) o The infant prophylaxis regimen applies to all infants irrespective of age when identifying HIV exposure (e.g. mother diagnosed HIV-positive in the postpartum period) • DBS or whole blood for PCR at 6 weeks at first contact, following EID algorithm (Figure 2.1)	If mother not on ART, initiate ART as soon as possible (preferably same day) If mother is on ART for ≥ 3 months and the VL is detectable, intensify adherence, repeat the VL **after 3 months of excellent adherence** and if VL ≥ 1,000 copies/ml, change to an effective regimen. If detectable but < 1,000 copies/ml consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com)
Note: If child has contraindication or unable to tolerate NVP or AZT then give tolerated drug to complete a minimum of 12 weeks of infant prophylaxis and continue until maternal viral load suppression is confirmed.		

Table 7.4: Dosing of ARVs for Infant Prophylaxis from Birth to 12 Weeks of Age

Age/Weight	Dosing of NVP (10mg/ml) OD	Dosing of AZT (10mg/ml) BD
Birth to 6 weeks		
Birth weight < 2,000 g	2 mg/kg per dose, OD	4 mg/kg per dose, BD
Birth weight 2,000-2,499 g	10 mg (1 ml), OD	10 mg (1 ml), BD
Birth weight ≥ 2,500 g	15 mg (1.5 ml), OD	15 mg (1.5 ml), BD
> 6 weeks to 12 weeks of age*		
Any weight	20 mg (2 ml), OD	60 mg (6 ml), BD
> 12 weeks (Table 7.5 and 7.6)		

*Dose adjustment required once child reaches 6 weeks of age

Table 7.5: NVP Dosing for Infant Prophylaxis beyond 12 Weeks of Age *

Age	Dosing of NVP (10mg/ml) Once Daily
12 weeks – 6 months	25 mg (2.5 ml), OD
7 months – 9 months	30 mg (3 ml), OD
10 months – 12 months	40 mg (4 ml), OD
> 12 months	Consult the Regional or National HIV Clinical TWG (Uliza Toll-free Hotline 0800 72 48 48; ulizanascop@gmail.com)

* If child presents to facility late and has to be on AZT and NVP beyond 12 weeks of age

Table 7.6: AZT Dosing for Infant Prophylaxis beyond 12 Weeks of Age *

Weight	Dosing of AZT: (10mg/ml syrup) Twice Daily
3.0-5.9 kg	6 ml, BD
6.0-9.9 kg	9 ml, BD
10.0-13.9 kg	12 ml, BD
14.0-19.9 kg	15 ml, BD

* If child presents to facility late and has to be on AZT and NVP beyond 12 weeks of age

7.2. Infant and Young Child Nutrition in the Context of HIV

- **Exclusive breastfeeding** involves giving the baby only breast milk with no other liquids (including water) or solids for the first six months of life. Giving of vitamins, mineral supplements or medicines are permitted if prescribed by a clinician
- **Mixed feeding** is giving other liquids and/or foods together with breast milk to infants under 6 months of age **and is not recommended.** Mixed feeding during this period is associated with significantly higher risk of mother-to-child HIV transmission, diarrhoeal and respiratory tract illnesses, among other consequences and should be prevented
- All infants irrespective of HIV status should be exclusively breastfed for the first 6 months of life, with timely introduction of appropriate complementary foods after 6 months, and continued breastfeeding up to 24 months or beyond
- All mothers, irrespective of HIV status, should be encouraged and supported to exclusively breastfeed for the first six months and continue breastfeeding with appropriate complementary feeding after 6 months, for a period of 24 months and beyond. Breastfeeding should ONLY stop once a nutritionally adequate and safe diet without breast milk can be sustained
- HIV positive mothers and HIV positive infants should always be on ART and given extra attention for adherence support, VL monitoring and optimal retention in care
- Breastfeeding mothers who do not know their HIV status or who previously tested HIV negative should be encouraged to be retested for HIV at the 6-week immunization visit, and then every 6 months thereafter until complete cessation of breastfeeding (Table 2.4)
- Access for HIV testing and STI/HIV prevention interventions should be reinforced for partners of pregnant and breastfeeding women
- Mothers who are diagnosed with HIV while breastfeeding should immediately start appropriate ART, giving extra attention to adherence support, VL monitoring, and optimal retention in care. The infant should immediately start ARV prophylaxis and receive PCR testing

- Mothers who decide to stop breastfeeding at any time should stop gradually within one month (and only when a nutritionally adequate and safe diet without breast milk can be sustained), and HIV positive mothers and HIV positive infants should continue with ART
- In special medical circumstances, determined by clinicians, where an infant cannot breastfeed, refer to current MIYCN Policy and Breast Milk Substitute (BMS) Regulation and Control Act, 2012

Complimentary feeding means giving other foods to complement breast milk after six months of exclusive breastfeeding. Complimentary feeds provide additional nutritional value to meet the child's increasing nutritional needs for growth. Furthermore, complementary feeding helps the child to gradually become accustomed to eating family foods while breastfeeding continues to be an important source of nutrients. Exclusive breastfeeding should continue up to 6 months of age. Complementary feeding should be introduced after 6 months as child continues breastfeeding (Table 7.7). It is worth noting that breastfeeding continues to have child growth/survival benefits for up to two years or longer.

Table 7.7: Complementary Foods for Children 6-24 Months Old

Foods to Offer			
Age	Texture	Frequency	Amount of food per meal
6 months	Start with thick porridge or well mashed foods	2 times per day	2 tablespoons each feed, increasing to 3 table spoons in the 3rd to 4th week
7-8 months	Mashed/pureed family foods By 8 months can begin finger foods	3 meals per day, plus frequent breastfeeds	Increase amount gradually to ½ of a 250 ml cup Use a separate plate/bowl
9-11 months	Finely chopped or mashed foods, and foods that baby can pick up	3 meals and 1 snack, plus frequent breastfeeds	¾ of a 250 ml cup/bowl Use a separate plate/bowl
12-23 months	Cut food into small, soft pieces that child can pick up, chew and swallow comfortably	3 meals and 2 snacks, plus breastfeeds	One 250ml cup/bowl Use a separate plate/bowl
24-59 months	Cut food into small, soft pieces that child can pick up, chew and swallow comfortably	3 meals and 2 snacks, plus breastfeeds if still breastfeeding	1 ½ - 2 cups of 250ml cup/bowl Use a separate plate/bowl

Annex 10 A: Dosing of Solid and Liquid Formulations for Twice-Daily Dosing in Infants and Children 4 Weeks of Age and Older [1]

Drug	Strength of 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		20–24.9 kg			25–34.9 kg	
		AM	PM	AM	PM	AM	PM	AM	PM	AM	PM		AM	PM
AZT/3TC	Tablet (dispersible) 60/30 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	300 /150 mg	1	1
AZT/3TC/NVP[2]	Tablet (dispersible) 60/30 mg/50 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	300 /150 /200 mg	1	1
ABC/3TC	Tablet (dispersible) 60/30 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	600 /300 mg	0.5	0.5
ABC/3TC	Tablet (dispersible) 120/60 mg	0.5	0.5	0.5	1	1	1	1	1.5	1.5	1.5	600 /300 mg	0.5	0.5
ABC/3TC/LPV/r	30/15/40/10 mg	2	2	3	3	4	4	5	5	6	6			
SOLID SINGLE FORMULATIONS														
AZT	Tablet (dispersible) 60 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	300 mg	1	1
ABC	Tablet (dispersible) 60 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	300 mg	1	1
NVP[2]	Tablet (dispersible) 50 mg	1	1	1.5	1.5	2	2	2.5	2.5	3	3	200 mg	1	1
	Tablet 200 mg	–	–	–	–	0.5	0.5	1	0.5	1	0.5	200 mg	1	1
LPV/r[3]	Tablet 100/25 mg	–	–	–	–	2	1	2	2	2	2	100/25 mg	3	3
	Tablet 200/50 mg	–	–	–	–	–	–	1	1	1	1	200/50 mg	2	1
	Pellets[4] 40/10 mg	2	2	3	3	4	4	5	5	6	6			
DRV[5]	Tablet 75 mg	–	–	–	–	3	3	5	5	5	5			
RAL[6]	Chewable tablets 25 mg	–	–	–	–	3	3	4	4	6	6	400 mg	1	1
	Chewable tablets 100 mg	–	–	–	–	–	–	1	1	1.5	1.5	400 mg	1	1
	Granules (100 mg/sachet)	0.25	0.25	0.5	0.5	–	–	–	–	–	–		–	–
LIQUID SINGLE FORMULATIONS														
AZT	10 mg/ml	6 ml	6 ml	9 ml	9 ml	12 ml	12 ml	–	–	–	–	–	–	–
ABC	20 mg/ml	3 ml	3 ml	4 ml	4 ml	6 ml	6 ml	–	–	–	–	–	–	–
3TC	10 mg/ml	3 ml	3 ml	4 ml	4 ml	6 ml	6 ml	–	–	–	–	–	–	–
NVP[2]	10 mg/ml	5 ml	5 ml	8 ml	8 ml	10 ml	10 ml	–	–	–	–	–	–	–
LPV/r[3]	80/20 mg/ml	1 ml	1 ml	1.5 ml	1.5 ml	2 ml	2 ml	2.5 ml	2.5 ml	3 ml	3 ml	–	–	–
DRV[5]	100 mg/ml	–	–	–	–	2.5 ml	2.5 ml	3.5 ml	3.5 ml	–	–			

Notes

[1] For infants younger than 4 weeks of age refer to Table 10C for more accurate dosing information

[2] NVP dose escalation with half dose for 2 weeks when initiating ART is still recommended for infants > 2 weeks of age and not already on NVP prophylaxis to avoid toxicity from high initial NVP levels. HEI already on NVP prophylaxis who are confirmed positive can initiate full dose (twice daily) NVP without dose escalation

[3] LPV/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. The adult 200/50 mg tablet could be used for patients 14-24.9kg (1 tab am and 1 tab pm) and for patients 25-34.9kg (2 tabs am and 1 tab pm). The 100/25 mg tablet is smaller than the adult formulation and may be used by children of lower weight bands able to swallow tablets.

[4] LPV/r pellets formulation should not be used in infants younger than 3 months and should not be used by children able to swallow tablets.

[5] DRV must be administered with 0.5 ml of RTV 80 mg/mL oral suspension if less than 15 kg and with RTV 50 mg solid formulation in children 15 to 30 kg

[6] RAL granules are approved for used in children as young as 4 weeks, however feasibility and acceptability of such formulations has not been widely investigated. Additional guidance will be provided as evidence becomes available. If this RAL must be used, consult the regional/national clinical support center

Annex 10 B: Simplified Dosing of Child-Friendly Solid and Oral Liquid Formulations for Once-Daily Dosing in Infants and Children 4 Weeks of Age and Older

Drug	Strength of 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	20–24.9 kg		25–34.9 kg
EFV[2]	Tablet (scored) 200 mg	–	–	1	1.5	1.5	200 mg	2
ABC/3TC	Tablet (dispersible) 60/30 mg	2	3	4	5	6	600 mg/300 mg	1
ABC/3TC	Tablet (dispersible) 120/60 mg	1	1.5	2	2.5	3	600 mg/300 mg	1
ATV[3]	Capsules 100 mg	–	–	1	2	2	300 mg	2 (100 mg) or 1 (300 mg)
TDF[4]	Oral powder 40 mg/scoop	–	–	3	–	–	300 mg	1 (200 mg) [d] or 1 (300 mg)
	Tablets 150 mg or 200 mg	–	–	–	1 (150	1 (200		

Notes [1]For infants younger than 4 weeks of age refer to Table 10C for more accurate dosing information

[2]EFV is not recommended for children younger than 3 years and weighing less than 10 kg. Where there are no suitable alternatives, EFV may be used in children less than 3 years weighing more than 3.5 kg (3.5-5 kg two 50 mg capsules; 5-7.5 kg three 50 mg capsules; 7.5-15 kg one 200 mg capsule). A pediatric triple FDC containing ABC/3TC/EFV (150/75/150 mg) will be available soon, which can replace the use of single and dual formulations where appropriate.

[3]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. ATV powder formulation enables administration of ATV to infants and children as young as 3 months. Infants and children 5-10 kg should be given 200 mg of ATV powder (4 packets, 50 mg/ packet) with 80 mg of RTV oral solution (1 ml)

[4]TDF is can be used in children 2 years and older. Target dose: 8 mg/kg or 200 mg/m^2 (maximum 300 mg)

Annex 10 C: Drug Dosing of Liquid Formulations for Twice-Daily Dosing in Infants Less than 4 Weeks of Age

Drug	Strength of oral liquid	2-3 kg	3-4 kg	4-5 kg
AZT	10 mg/mL	1 mL	1.5 mL	2 mL
NVP[1]	10 mg/mL	1.5 mL	2 mL	3 mL
3TC	10 mg/mL	0.5 mL	0.8 mL	1 mL
LPV/r[2]	80/20 mg/mL	0.6 mL	0.8 mL	1 mL

Notes [1] NVP for treatment can be initiated with twice daily dosing for infants < 2 weeks of age (they do not require once-daily lead-in dosing)

[2] 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

Annex 10 D: Simplified Dosing of INH and CTX Prophylaxis for Infants and Children Who Are at Least 4 Weeks of Age

Drug	Strength of tablet or oral liquid	Number of tablets or ml by weight band once daily					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	20–24.9 kg		25–34.9 kg
INH	100 mg	0.5	1	1.5	2	2.5	300 mg	1
CTX	Suspension 200/40 per 5 ml	2.5 ml	5 ml	5 ml	10 ml	10 ml	–	–
	Tablets (dispersible) 100/20 mg	1	2	2	4	4	–	–
	Tablets (scored) 400/80 mg	–	0.5	0.5	1	1	400 mg/80 mg	2
	Tablets (scored) 800/160 mg	–	–	–	0.5	0.5	800 mg/160 mg	1

Annex 11: Drug-drug Interactions: Overlapping Drug Toxicity

Bone marrow suppression	Peripheral neuropathy	Pancreatitis	Nephrotoxicity	Hepatotoxicity	Rash	Diarrhoea	Ocular effects
Amphotericin B Cotrimoxazole Dapsone Flucytosine Ganciclovir Hydroxyurea Interferon- Primaquine Pyrimethamine Zidovudine	Didanosine Isoniazid Vincristine	Didanosine Lamivudine (esp in children) Stavudine Cotrimoxazole Ritonavir Pentamidine	Acyclovir Adefovir high dose Aminoglycosides Amphotericin B Cidofovir Foscarnet Pentamidine Tenofovir	Abacavir Atazanavir Atovaquone Cotrimoxazole Dapsone Efavirenz Nevirapine Sulfadiazine Voriconazole	Abacavir Atazanavir Atovaquone Cotrimoxazole Dapsone Efavirenz Nevirapine Sulfadiazine Voriconazole	Atovaquone Clindamycin LPV/r Ritonavir	Cidofovir Ethambutol Linezolid Rifabutin Voriconazole

NOTARIAL CERTIFICATE

I, the undersigned,

GIULIANA VISAGIE

Notary Public, practicing at Johannesburg in the Province of Gauteng, Republic of South Africa, do hereby verify and attest to whom it may concern that the attached expert affidavit in the matter of:

FA – 1st Petitioner
BK – 2nd Petitioner
CNN – 3rd Petitioner
Patricia Asero Ochieng – 4th Petitioner
Ambassador for Youth and Adolescents Reproductive Health Programme (Ayarhep)- 5th Petitioner
Kenya Legal and Ethical Issues Network on HIV/AIDS (Kelin) – 6th Petitioner
Katiba Institute – 7th Petitioner

Versus

The Hon. Attorney General – 1st Respondent
Cabinet Secretary for Health – 2nd Respondent
Kenya Medical Supplies Authority – 3rd Respondent

Was signed before me by **Willem Daniel Francois Venter**, on 29 January 2024, in proof of which I issue this certificate in my capacity as Notary Public and attach my notarial seal.

THIS DONE and SIGNED at JOHANNESBURG on this 29th day of JANUARY 2024.

NOTARY PUBLIC