The Western Cape Consolidated Guidelines for HIV Treatment: Prevention of Mother- to- Child Transmission of HIV (PMTCT), Children, Adolescents and Adults.

2018 (Amended Version)
The Western Cape Consolidated Guidelines for HIV Treatment: Prevention of Mother-to-Child Transmission of HIV (PMTCT), Children, Adolescents and Adults

Compiled by

Provincial Government of the Western Cape - Department of Health, HIV/AIDS/STI/TB (HAST) Directorate

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The WC guidelines are based on SA National consolidated guidelines for the prevention of mother-to-child transmission of HIV (PMTCT) and the management of HIV in children, adolescents and adults dated 24th December 2014

Acknowledgement goes to members of the Adult and Paediatric HAST policy advisory groups and the Medicines Information Centre, UCT for their valuable input and comment.
## Summary of Changes in New Consolidated Guidelines

| New eligibility criteria for ART | All HIV positive clients eligible for same day initiation of ART irrespective of CD4 count |
| Rifabutin dosage when used with protease inhibitor | Rifabutin adjusted dose when prescribed with Ritonavir boosted protease inhibitors (Lopinavir or Atazanavir or Darunavir) changed to 150mg capsule orally once a day for 6 months of TB treatment (section 6.2.1) |
| Infant feeding | Mothers known to be HIV infected to exclusively breastfeed their infants for six months and continue breastfeeding until 24 months of age (section 3.3) |
| Extended use of Atazanavir for children and adolescents | Atazanavir available for children > 6 years and ≥15kg for adverse effects related to lopinavir/ritonavir such as hyperlipidemia, severe GIT side effects > 6 weeks and simplification of regimen to a once-a-day regimen |
| Use of NHLS reported creatinine clearance/ eGFR for baseline test & monitoring in adults on tenofovir | The NHLS uses the MDRD formula to calculate creatinine clearance for patients > 18 years and reports eGFR. This is an acceptable approximation of creatinine clearance and can also be used. |
| New section on management of patients returning to care or transferring in to a facility | Guidelines for re-starting treatment for patients returning to care after a period of treatment interruption and for those who transfer in to a facility from another facility (sections 5.4 and 5.5) |
| New recommendation for prevention of paradoxical TB IRIS | Guidelines for the prevention of paradoxical TB IRIS in patients initiating ART while on TB treatment (section 6.1.1) |
| Change in recommendation: Standard ART regimens for Infants, Children & Early Adolescents | Stavudine phased out. If failing a stavudine containing 1st line NNRTI-based regimen, can change to Zidovudine + Lamivudine + Lopinavir/ritonavir (section 4.3) |
| Closer monitoring of unsuppressed viral loads in third trimester of pregnancy | Viral load must be repeated after 1 month if unsuppressed in third trimester. Magnitude of log drops will be used to assess eligibility to switch regimens. |
| Change in HIV-PCR testing schedule for HIV-exposed neonates | Routine HIV-PCR at birth for all HIV-exposed neonates, with repeat at 10 weeks if result is negative. PCR testing will no longer be done at 6 weeks. |
| Initial positive HIV-PCR test result in infants<18 months to be confirmed with second HIV-PCR test | Use of viral load test to confirm HIV-PCR result no longer recommended. |
| HIV testing in infants | Do HIV-PCR test at 18 weeks old if Nevirapine given until 12 weeks. |
| Change in indication for resistance testing in infants | Newly diagnosed infant < 2 years of age not on ART yet, whose mothers received PI-based ART during pregnancy and/or breastfeeding. |
| Baseline viral load testing in children & early adolescents newly diagnosed with HIV no longer recommended | Viral load monitoring to start at month 4 after initiation of ART. |
| Monitor CD4 count annually in children<5 years | Routine monitoring until CD4 ≥500 copies/ml. |
| Phasing out of routine monitoring of CD4 counts in older children, adolescents and adults | CD4 counts to be monitored until one year after initiation of ART, then stopped if CD4 ≥200 copies/ml. |
| Monitoring of total cholesterol/triglycerides on Lopinavir/ritonavir-based regimens | In children & early adolescents: at baseline then annually. In late adolescents & adults: at baseline, month 3, then annually only if clinically indicated. |
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**Western Cape Government Health**

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Acronym glossary

3TC  Lamivudine
ABC  Abacavir
AIDS  Acquired Immune Deficiency Syndrome
ALT  Alanine Aminotransferase
ART  Antiretroviral Treatment ARV Antiretroviral
ATV/r  Atazanavir/ritonavir
AZT  Zidovudine
BMI  Body mass index
CD4  Cluster of Differentiation 4
CM  Cryptococcal meningitis
Cr  Creatinine
CrCl  Creatinine clearance
DDI  Didanosine
DRV/r  Darunavir/ritonavir d4T Stavudine
DNA PCR  DNA Polymerase Chain Reaction
DTG  Dolutegravir
eGFR  Estimated glomerular filtration rate
EFV  Efavirenz
ETR  Etravirine
FBC  Full Blood Count
FDC  Fixed dose combination
FTC  Emtricitabine
GFR  Glomerular filtration rate
Hb  Haemoglobin
HBsAg  Hepatitis B Surface Antigen
HIV  Human Immunodeficiency Virus
HTS  HIV Testing Services
InSTI  Integrase strand transfer inhibitor
IPT  Isoniazid Preventive Therapy
IRIS  Immune Reconstitution Inflammatory Syndrome
LPV/r  Lopinavir/ritonavir
MCH  Maternal and Child Health
MDR/XDR-TB  Multi-Drug Resistant/Extensively Drug Resistant Tuberculosis
NRTI  Nucleoside/ Nucleotide reverse transcriptase inhibitor
NNRTI  Non-nucleoside reverse transcriptase inhibitor
NVP  Nevirapine
PHC  Primary Health Care
PI  Protease inhibitor
PLHIV  People Living With HIV/AIDS
PMTCT  Prevention of mother to child transmission
RAL  Raltegravir
SRH  Sexual and Reproductive Health
TB  Tuberculosis
TBM  Tuberculous meningitis
TDF  Tenofovir
TST  Tuberculin skin test
VL  Viral load
WHO  World Health Organization
WCC  White Cell Count
1. INTRODUCTION

1.1 Background

The Western Cape ART and PMTCT guidelines of April 2015 were consolidated to facilitate harmonisation of treatment across the life course. Treatment regimens were simplified to promote adherence and reduce side-effects. Guidelines for initiation of ART in patients with TB and treatment of cryptococcal meningitis were included, as well as indications for the use of IPT (Isoniazid Preventive Therapy) and CPT (Cotrimoxazole Preventive Therapy). In September 2016, the Universal Test & Treat policy was adopted in South Africa, after studies (HPTN052, Temprano and START) found a reduction in serious morbidity of 44–57 % in PLHIV initiating ART early in the course of their disease. Early initiation of ART also has the benefit of reducing transmission of HIV to uninfected partners of people living with HIV (PLHIV).

The National Strategic Plan on HIV, STIs and TB (NSP 2017 -2022) was launched on 31 March 2017. This five-year strategic plan provides a roadmap for the next stage of the journey towards a future where HIV, STIs and TB are no longer public health problems. The NSP calls for a 60% reduction in new HIV infections by 2022. For the Western Cape, that means reducing new HIV infections from 19000 per annum to less than 8000 per annum by 2022. Similarly the NSP calls for a 30% reduction in new TB infections and in the Western Cape this will mean reducing from 43 000 TB cases per annum to less than 30 000 per annum by 2022.

The targets for Goal 2 are aligned to the 90-90-90 strategies for HIV and TB, which are:

- 90% of Persons living with HIV to know their status
- 90% of those who know their status to be initiated on ART
- 90% of those on ART to have a suppressed viral load
- 90% of all people who need TB treatment are diagnosed and receive appropriate therapy
- 90% of people in key and vulnerable populations are diagnosed and receive appropriate therapy
- 90% treatment success rate for drug-sensitive TB
- 75% treatment success rate for drug-resistant TB

The key population groups for HIV services are young women and girls in the age group 15-24 years; people living close to national roads and in informal settlements; young people not attending school and girls who drop out of school before matriculating; people from low socioeconomic groups; uncircumcised men; persons with disabilities and mental disorders; sex workers and their clients; people who abuse alcohol and illegal substances and men who have sex with men and transgender persons. In addition, it recognises that TB is a major cause of morbidity and mortality in PLHIV, which has led to the adoption of an integrated HIV and TB treatment strategy.

In striving to achieve the goals of Healthcare 2030, the Western Cape has committed to achieving universal quality patient-centered care, that will support adherence of patients on chronic medication. Strategies for providing integrated health services incorporating mental health (MH), non-communicable diseases (NCDs), HIV and tuberculosis (TB) are being evaluated. In addition, patients with chronic diseases who are stable on treatment, will be offered alternate methods to access medication.
1.2 Goals of the Western Cape ART Programme

- Save lives and improve the quality of life of people living with HIV
- Achieve best health outcomes in the most cost-efficient manner
- Integrate services for HIV, TB, Mental Health, Sexual Reproductive Health, Non Communicable Diseases and Wellness
- Diagnose HIV earlier and start ART
- Prevent HIV disease progression
- Avert AIDS-related deaths
- Retain patients on lifelong therapy
- Prevent new infections among children, adolescents and adults
- Mitigate the impact of HIV and AIDS

1.3 Objectives

- Ensure timely initiation of ARVs for treatment and prevention according to the Presidential mandates
- Contribute to strengthening of the public and private health sectors’ capacity to deliver high quality integrated health and wellness services
- Ensure continuum of care
- Minimize unnecessary medicine toxicities
- Improve clinical outcomes, promote adherence and improve retention of patients in care
- Optimize the benefits of treatment as prevention by increasing ART coverage
- Simplify guidance for health workers to improve the quality of care for all PLHIV and HIV-exposed infants
- Supporting those who are HIV negative to remain HIV negative by encouraging the use of combination-prevention strategies such as condom use, MMC and six monthly HTS.

1.4 Specific Objectives

To prioritise initiation of antiretroviral treatment for:
- Patients with CD4 counts ≤ 350 cells/mm$^3$ or with severe HIV disease (WHO stage 3 or 4)
- Patients co-infected with Tuberculosis (TB)
- Pregnant and breastfeeding women
- To test all HIV exposed children under five years and treat all those found to be infected with HIV
- To promote viral load testing as a preferred approach for monitoring ART success and diagnosing treatment failure
- To standardise first and second line therapy for children, adolescents and adults and reinforce the use of fixed dose combination ART as first line therapy
- To strengthen capacity of nurses to initiate and manage ART for adults patients by increasing the number of authorized Nurse Initiated and Managed ART (NIMART) trained nurses and NIMART mentors
- To increase the number of patients receiving treatment in ARV Clubs in order to manage large numbers of stable patients on life-long ART safely and efficiently
2. ART IN PREGNANT AND BREASTFEEDING WOMEN

2.1 HIV Testing During Pregnancy and Breastfeeding

All newly diagnosed pregnant or breastfeeding clients with an unknown or previously negative HIV status must receive HIV Testing Services (HTS) on the same day that they present to the healthcare facility. If they present with their partners, they may be offered couples HTS as an option, but this should not delay same-day testing. Clients who are not known HIV positive and that are within one year post-partum should be offered HCT as individuals or couples. If they test HIV positive, they should be initiated on ART according to adult guidelines.

Pregnant women who test HIV negative at the initial test must be offered repeat HIV testing at every antenatal appointment. It is essential that HIV testing is repeated at least at the following times:

- Around 20 weeks gestation (second trimester)
- Around 32 weeks gestation (third trimester)
- In labour/immediately after delivery
- At 6 weeks after delivery (EPI visit)
- Every 3 months while breastfeeding (ideally linked to contraceptive or baby wellness visits)

Explain and reinforce the importance of repeat testing at every visit. Clients should understand that retesting is done to detect seroconversion or new infection during pregnancy or breastfeeding, which carries a high risk of HIV transmission to the infant.

Pregnant women who present for antenatal booking in the third trimester must be managed carefully. A full antenatal assessment and HCT must be done on the same day if they have an unknown HIV status or have tested HIV negative previously. Known HIV positive clients on ART must have a viral load test done on the same day, and they must be given an appointment to return for the result. Those who have interrupted treatment on ART must be counselled. A baseline viral load must be done and they must be restarted on ART immediately. They should be referred to a medical officer if there are any other medical concerns, such as symptoms of TB or other opportunistic infections.

2.2 Initiation of ART During Pregnancy and Breastfeeding

All newly diagnosed HIV positive pregnant or breastfeeding women must be initiated on ART on the same day (if ART service available, no suspicion of TB and patient readiness has been confirmed) in order to minimise the risk of transmission of HIV to their babies. Known HIV-positive women who are not yet on ART must also be initiated at the first visit. They must receive post-test counselling with support for disclosure to a supportive partner, family member or friend, followed by a session of pre-ART and adherence counselling.

The management of pregnant or breastfeeding women eligible for ART is summarised in table1. Refer all unbooked pregnant clients for antenatal booking as soon as possible. Infants of breastfeeding mothers must be clinically assessed for signs of HIV or HIV-related infection and referred for HIV testing and Post-Exposure Prophylaxis (PEP) (see section 3). Clients must be seen 1 week after initiating ART in order to review blood results, enquire about side-effects and provide adherence support. Confirm that the pregnant client has booked for antenatal care and record starting date of ART and treatment regimen in antenatal booklet if possible.
Table 1: Management of pregnant or breastfeeding clients who are newly diagnosed HIV-positive or known HIV-positive but not yet on ART

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<th>On Same Day as HIV Positive Diagnosis</th>
<th>At One-week Follow-up Visit</th>
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<td>HIV and pre-ART counselling</td>
<td>HIV and ARV counselling</td>
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<td>Adherence counselling</td>
<td>Adherence counselling</td>
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<tr>
<td>CD4 count</td>
<td>Review CD4 results: stop Cotrimoxazole prophylaxis if CD4 &gt;200 and no TB.</td>
</tr>
<tr>
<td>Serum Creatinine + enquire about history of renal disease</td>
<td>Review Creatinine results If Serum Creatinine ≥85 (if pregnant) or CrCl &lt;60ml/min (if breastfeeding): → Avoid Tenofovir, switch to Abacavir + Lamivudine + Efavirenz</td>
</tr>
<tr>
<td>WHO staging</td>
<td>Confirm WHO staging</td>
</tr>
<tr>
<td>TB symptom screening &amp; enquire about TB contacts. If symptomatic or history of contact, delay initiation of ART and refer for sputum test.</td>
<td>Review results of sputum test if done at previous visit. If no TB present, start ART. If TB present, refer for TB treatment and delay ART initiation for 2 weeks.</td>
</tr>
<tr>
<td>RPR and STI screening</td>
<td>STI screening, review RPR result. Treat if necessary.</td>
</tr>
<tr>
<td>Hb</td>
<td>Review Hb result.</td>
</tr>
<tr>
<td>Screen for chronic diseases</td>
<td></td>
</tr>
<tr>
<td>If active psychiatric disorder present, start Zidovudine 300mg every 12 hours if Hb &gt;8g/dl and refer urgently.</td>
<td></td>
</tr>
<tr>
<td>If history of renal disease, start Zidovudine 300mg every 12 hours if Hb &gt;8g/dl and refer urgently to MO.</td>
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<tr>
<td>If no contraindications and no suspicion of TB, initiate ART with Tenofovir + Emtricitabine + Efavirenz as Fixed Dose Combination (FDC). If weight &lt;40kg, reduce dose of Efavirenz to 400mg</td>
<td>Monitor for side-effects of rash, dizziness, nausea, provide reassurance and advice.</td>
</tr>
<tr>
<td>If no ART service available, start Zidovudine 300mg every 12 hours in pregnant women if Hb&gt;8g/dl and refer to ART site urgently. If breastfeeding, do not give Zidovudine and refer to ART site urgently.</td>
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<td>Give Cotrimoxazole prophylaxis (CPT) - refer to section 8.</td>
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Box 1: Management of clients testing HIV-positive during labour/delivery

- During labour or delivery, clients with no record of a previous HIV test result, or who have tested HIV negative during pregnancy, must be tested for HIV.
- If she tests HIV-positive, she will be eligible for ARVs.
- If she tests HIV-negative, the HIV test must be repeated 6 weeks post-partum.
- Give Nevirapine 200mg [sdNVP] stat + Truvada® [Tenofovir 300mg / Emtricitabine 200mg] stat + Zidovudine 300mg every 3 hours for the duration of labour
- Initiate Tenofovir + Emtricitabine + Efavirenz as Fixed Dose Combination [FDC] the next day if no contraindications and no suspicion of TB.
- Refer for ART counselling and adherence support.
- Schedule follow-up visit within one week.

2.3 Monitoring of Pregnant and Breastfeeding Women on ART

Close monitoring of Viral load (VL) is required in order to reduce the risk of HIV transmission to infants. Ensure that clients understand the purpose of regular VL monitoring. Algorithms for VL monitoring and management of unsuppressed VL’s in pregnant and breastfeeding women are illustrated below in figure 1 and 2.

Monitor safety blood tests according to standard adult recommendations (refer to section 5.6).
### 2.3.1 Viral Load Monitoring During Pregnancy

#### Newly diagnosed HIV/ Known HIV positive but not yet on ART

- Initiate FDC the same day, if no contraindications
- If contraindications to Tenofovir or Efavirenz, initiate alternative regimen

**VL after 3 months on ART**

- **VL < 400 copies/ml**
  - Continue current ART regimen
  - Repeat 3 months later
  - Emphasise importance of adherence

- **VL 400-1000 copies/ml**
  - Provide intensive adherence counselling

- **VL > 1000 copies/ml**
  - Provide intensive adherence counselling

* log drop means a 10 fold drop i.e. divide the VL count by 10. Use log drop to interpret VL if repeated < 3 months after first unsuppressed VL done.

#### ART-experienced client defaulting ART

- Discuss with experienced HIV clinician as soon as possible and re-start ART as recommended
- Emphasise importance of adherence

**Client on ART**

- Perform VL at the same visit unless documented evidence of VL within the last 3 months.
- Emphasise importance of adherence

#### Client on ART

- Refer to section 5

**VL after 3 months on ART**

- **VL < 400 copies/ml**
  - Continue current ART regimen
  - Repeat 3 months later
  - Emphasise importance of adherence

- **VL 400-1000 copies/ml**
  - Provide intensive adherence counselling

- **VL > 1000 copies/ml**
  - If <28 weeks gestation: Repeat VL 3 months after previous test
  - OR If ≥28 weeks gestation: Repeat VL at 1 month after initiation of intensive adherence counselling

* If gestation ≥28 weeks and VL >1000 copies/ml BUT ≥ 1 log drop* in VL

**If gestation <28 weeks and VL > 1000 copies/ml or if gestation ≥ 28 weeks and <1 log drop* in VL**

- If client is on 1st line regimen, switch to 2nd line regimen as per adult ART guidelines
- If client is on 2nd line regimen, consult an expert for advice as soon as possible.

- Infant must be managed as high-risk HIV exposure post-delivery – eligible for dual PEP and birth PCR

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**Figure 1: Viral load monitoring during pregnancy**
2.3.2 Viral Load Monitoring During Breastfeeding

**Newly diagnosed HIV during breastfeeding**
- Initiate FDC the same day, if no contraindications
- If contraindications to Tenofovir or Efavirenz, initiate alternative regimen

**Breastfeeding ARTheraputically experienced client defaulting ART**
- Re-start previous regimen on same day
- Emphasise importance of adherence

**Breastfeeding client on ART**
- Review last VL result
- Repeat VL if not done in previous 6 months
- Emphasise importance of adherence

*Do VL 3 months later*
*Review VL result within 2 weeks*

**VL < 400 copies/ml**
- Continue current ART regimen
- Repeat VL every 3 months while breastfeeding
- Emphasise importance of adherence

**VL 400-1000 copies/ml**
- If on 1st line ART and this is not the first documented VL > 1000 copies/ml result, switch to 2nd line ART regimen on same day.

**VL > 1000 copies/ml**
- If on 2nd line ART, consult medical officer. Give adherence support. Refer to sect 3.3 & 5.9.

If VL 400-1000, consult an expert

**VL < 400 copies/ml**
- Provide intensive adherence counselling and emphasise the importance of exclusive breastfeeding

**VL > 1000 copies/ml**
- Switch to 2nd line ART regimen

**Repeat VL 3 months later**

**If VL 400-1000, consult an expert**

**VL > 1000 copies/ml**
- Review VL result within 2 weeks
- VL <1000 copies/ml
- Repeat VL every 3 months while breastfeeding

**Repeat VL 3 months later**

**Repeat VL 3 months later**

**Repeat VL 3 months later**

**Repeat VL within 2 weeks**

*Figure 2: Viral load monitoring during breastfeeding*
3. CARE OF THE HIV-EXPOSED INFANT

3.1 HIV Testing in HIV-exposed Infants

Infants of HIV-infected mothers may be at risk of acquiring HIV during the labour and delivery process and during breastfeeding. HIV testing during and after the period of exposure is necessary to diagnose HIV infection early and initiate ART. HIV counselling and consent is always required from parents or primary caregivers of infants before HIV testing can be done.

Table 2: HIV testing in HIV-exposed infants

<table>
<thead>
<tr>
<th>Time of HIV test</th>
<th>Who should be tested</th>
<th>Which test should be used</th>
</tr>
</thead>
<tbody>
<tr>
<td>At birth (within 48h)</td>
<td>All HIV-exposed infants Abandoned newborns/orphans (HIV-exposure confirmed with Rapid Determine® test)</td>
<td>HIV PCR test If positive, confirm with a 2nd HIV PCR test</td>
</tr>
<tr>
<td>At 10 weeks</td>
<td>All HIV-exposed infants not on ART (irrespective of feeding choice)</td>
<td>HIV PCR test If positive, confirm with a 2nd HIV PCR test</td>
</tr>
<tr>
<td>Around 18 weeks</td>
<td>Breastfeeding HIV-exposed infants who received NVP for 12 weeks then stopped *If NVP is extended beyond 12 weeks, do this test 6 weeks after final NVP</td>
<td>HIV PCR test If positive, confirm with a 2nd HIV PCR test</td>
</tr>
<tr>
<td>At 9 months (immunization visit)</td>
<td>All HIV-exposed infants not on ART (irrespective of feeding choice)</td>
<td>Rapid HIV antibody screening test If positive, do an HIV PCR test If positive, confirm with a 2nd HIV PCR test</td>
</tr>
<tr>
<td>Around 18 months</td>
<td>All HIV-exposed infants not on ART (irrespective of feeding choice)</td>
<td>Rapid HIV antibody screening test If positive, confirm with rapid HIV antibody confirmatory test If results are indeterminate, do HIV ELISA test</td>
</tr>
<tr>
<td>At any time</td>
<td>All infants with: • Mothers who are newly diagnosed HIV positive while breastfeeding • Clinical features suggestive of HIV infection • Acute, severe illness • IMCI classification of Suspected symptomatic HIV infection • IMCI classification of Possible HIV infection • TB diagnosis or history of TB treatment • Risk of sexual assault • Wet-nursed or breastfed by a woman with unknown or HIV-positive status • Children considered for fostering or adoption • Family and social history: • Parental request to test the child • Father or sibling with HIV infection • Testing of all siblings if mother diagnosed HIV positive • Death of mother, father or sibling • When the mother’s HIV status is unknown</td>
<td>Test depends on the infant’s age: &lt;9 months HIV PCR test If positive, confirm with a 2nd HIV PCR test 9-&lt;18 months Rapid HIV antibody screening test, if positive, do an HIV PCR test If positive, confirm with a 2nd HIV PCR test ≥18 months Rapid HIV antibody screening test If positive, confirm with rapid HIV antibody confirmatory test If results are indeterminate, do HIV ELISA test</td>
</tr>
<tr>
<td>6 weeks after final breastfeed</td>
<td>All HIV-exposed infants who were breastfed</td>
<td>See Above</td>
</tr>
</tbody>
</table>

6 weeks after final breastfeed

Test depends on the infant’s age:

<9 months
HIV PCR test If positive, confirm with a 2nd HIV PCR test

9-<18 months
Rapid HIV antibody screening test, if positive, do an HIV PCR test If positive, confirm with a 2nd HIV PCR test

≥18 months
Rapid HIV antibody screening test If positive, confirm with rapid HIV antibody confirmatory test If results are indeterminate, do HIV ELISA test
3.2 Post-Exposure Prophylaxis (PEP) in HIV-Exposed Infants

Parents and primary care-givers of infants must be counselled about the role of ARVs in preventing transmission of HIV. Administration of medication to infants should be demonstrated, and the importance of giving it every day for the duration specified should be emphasized. They should be encouraged to return for assistance if any side effects or problems administering medication are experienced.

Table 3: Post-exposure prophylaxis (PEP) in HIV-exposed infants

<table>
<thead>
<tr>
<th>Subgroup of HIV-exposed infants</th>
<th>ARVs for PEP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Low risk of HIV transmission at birth:</strong></td>
<td>Nevirapine daily for 6 weeks (regardless of feeding choice)</td>
</tr>
<tr>
<td>- Mother on ART with documented VL &lt;1000 copies/ml &lt;12 weeks before delivery</td>
<td>Do HIV PCR* at birth or at first presentation to facility. If positive, do confirmatory PCR and transition to ART. If negative, repeat PCR at 10 weeks and 6 weeks after final breastfeed.</td>
</tr>
<tr>
<td><strong>2. High risk of HIV transmission at birth:</strong></td>
<td>If breastfeeding:</td>
</tr>
<tr>
<td>- Mother on ART with most recent VL ≥1000 copies/ml</td>
<td>Nevirapine daily for at least 12 weeks + Zidovudine twice daily for 6 weeks (Only stop NVP once maternal VL &lt;1000 copies/ml)</td>
</tr>
<tr>
<td>- Mother on ART with VL unknown &lt;12 weeks before delivery**</td>
<td>If formula feeding:</td>
</tr>
<tr>
<td>- Mother newly diagnosed HIV-positive during labour or &lt;72 hours postpartum</td>
<td>Nevirapine daily for 6 weeks + Zidovudine twice daily for 6 weeks</td>
</tr>
<tr>
<td>- Increased risk of HIV transmission during labour and delivery (irrespective of maternal VL):</td>
<td>Do HIV PCR* at birth or at first presentation to facility. If positive, do confirmatory PCR and transition to ART. If negative, repeat PCR at 10 weeks, around 18 weeks (6 weeks after stopping NVP) and 6 weeks after final breastfeed.</td>
</tr>
<tr>
<td>- Clinical chorioamnionitis</td>
<td>Nevirapine daily for at least 12 weeks (Only stop NVP once maternal VL &lt;1000 copies/ml. Provide intensive adherence support. If failing 1st line ART, repeat VL after 3 months. Switch to 2nd line ART if VL still &gt;1000 copies/ml. If failing 2nd line ART, stop breastfeeding and manage according to adult ART guidelines.)</td>
</tr>
<tr>
<td>- Spontaneous preterm labour (&lt;37 weeks gestation)</td>
<td>Nevirapine daily for at least 12 weeks + Zidovudine twice daily for 6 weeks (Only stop NVP once maternal VL &lt;1000 copies/ml)</td>
</tr>
<tr>
<td>- Prolonged rupture of membranes &gt;18 hours</td>
<td>Start Cotrimoxazole prophylaxis if ≥4 weeks old. Do HIV PCR*. If positive, do confirmatory PCR and transition to ART. If negative, repeat PCR 6 weeks after stopping NVP and 6 weeks after final breastfeed.</td>
</tr>
<tr>
<td>- Unknown maternal HIV status or abandoned/orphaned infant (exposure confirmed with rapid HIV antibody test)</td>
<td></td>
</tr>
<tr>
<td><strong>3. Increased risk of HIV transmission during breastfeeding</strong>*</td>
<td>Nevirapine daily for at least 12 weeks (Only stop NVP once maternal VL &lt;1000 copies/ml)</td>
</tr>
<tr>
<td>- Mother on ART with most recent VL ≥1000 copies/ml</td>
<td>Nevirapine daily for at least 12 weeks + Zidovudine twice daily for 6 weeks (Only stop NVP once maternal VL &lt;1000 copies/ml)</td>
</tr>
<tr>
<td>- Mother not on ART:</td>
<td>Start Cotrimoxazole prophylaxis if ≥4 weeks old. Do HIV PCR*. If positive, do confirmatory PCR and transition to ART. If negative, repeat PCR 6 weeks after stopping NVP and 6 weeks after final breastfeed.</td>
</tr>
<tr>
<td>- Newly diagnosed HIV-positive while breastfeeding</td>
<td>Nevirapine daily for at least 12 weeks + Zidovudine twice daily for 6 weeks</td>
</tr>
<tr>
<td>- Previously diagnosed HIV-positive but not initiated on ART or discontinued ART</td>
<td></td>
</tr>
</tbody>
</table>

#Refer to Tables 4, 5 & 6 for PEP dosing

*If result indeterminate, refer to Annexure 12 for further management.

**Do VL during labour or at delivery if possible, manage as low risk of transmission if VL <1000 copies/ml

***Applicable to infants ≤12 months old. Breastfeeding is not recommended >12 months if maternal VL is not suppressed. Consult a Paediatrician if further advice is required.
• Administer the first dose of oral PEP to the newborn as soon as possible after birth (preferably within 1 hour of birth) (refer to table 4 & 5 for dosing).
• Neonates who are nil per mouth (NPO) Necrotizing Enterocolitis (NEC), intestinal anomaly/obstruction) should receive intravenous Zidovudine (AZT) until oral feeding and PEP is tolerated (refer to table 6).
• At discharge, provide PEP for the first 6 weeks and advise mothers that they will receive more Nevirapine (NVP) at the next visit.
• Infants who have suspected AZT-related anaemia/neutropaenia from prolonged foetal (in utero) exposure to AZT should be referred for investigation and further management.
• Infants who do not tolerate NVP or develop NVP toxicity should be switched to oral AZT for 4 weeks. Additional measures (optimised maternal ART/heat treatment of breast milk) will be required for prophylaxis during breastfeeding.
• Transition infants who test HIV positive at birth from PEP to ART (refer to annexure 1).
• Fast track infants who test HIV positive at a later stage for ART (refer to section 4).
### Table 4: Oral dosing of Zidovudine for PEP in HIV-exposed infants

<table>
<thead>
<tr>
<th>Birth weight / gestational age</th>
<th>Age at exposure</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>If gestational age &lt;35 weeks</td>
<td>Birth to 6 weeks</td>
<td>2 mg/kg/dose 12 hourly (0.2 ml/kg/dose 12 hourly)</td>
</tr>
<tr>
<td>&lt;3 kg and &gt;35 weeks</td>
<td>Birth to 6 weeks</td>
<td>4 mg/kg/dose 12 hourly (0.4 ml/kg/dose 12 hourly)</td>
</tr>
<tr>
<td>&gt;3 kg and &gt;35 weeks</td>
<td>Birth to 6 weeks</td>
<td>12 mg 12 hourly (1.2 ml 12 hourly)</td>
</tr>
<tr>
<td>&gt;3 kg</td>
<td>&gt;6 weeks</td>
<td>Dose according to weight-based dosing chart (2013)</td>
</tr>
</tbody>
</table>

### Table 5: Oral dosing of Nevirapine for PEP in HIV-exposed infants

<table>
<thead>
<tr>
<th>Birth Weight</th>
<th>Age at exposure</th>
<th>Daily Dosage</th>
<th>Daily Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2.0 kg</td>
<td>Birth to 2 weeks</td>
<td>2 mg/kg</td>
<td>0.2 ml/kg</td>
</tr>
<tr>
<td></td>
<td>2 to 6 weeks</td>
<td>4 mg/kg</td>
<td>0.4 ml/kg</td>
</tr>
<tr>
<td>2.0 – 2.5 kg</td>
<td>Birth to 6 weeks</td>
<td>10 mg</td>
<td>1 ml</td>
</tr>
<tr>
<td>&gt;2.5 kg</td>
<td>Birth to 6 weeks</td>
<td>15 mg</td>
<td>1.5 ml</td>
</tr>
</tbody>
</table>

*Consider dose of 4 mg/kg if still an in-patient and weighs <2 kg at 6-12 weeks. Also consider weight-based dosing if severely underweight for age at discharge.*

### Table 6: Intravenous dosing of Zidovudine for PEP in HIV-exposed infants

<table>
<thead>
<tr>
<th>Intravenous Dose of Zidovudine (AZT) (10 mg/ml in 200 mg vial)</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥35 weeks gestation</td>
<td>1.5 mg/kg/dose 6 hourly</td>
</tr>
<tr>
<td>&lt;35 weeks gestation</td>
<td>1.5 mg/kg/dose 12 hourly</td>
</tr>
</tbody>
</table>

Once full enteral feeds are tolerated, resume oral NVP. At discharge, provide NVP.
3.3 Infant feeding

All pregnant women (HIV-positive, HIV-negative or with unknown HIV status) should receive at least four antenatal counselling sessions on infant feeding. Please refer to Circular H166/2012: Infant feeding counselling guideline for detailed information on the stepwise approach for infant feeding counselling.

Counsel and support mothers known to be HIV infected to exclusively breastfeed their infants for six months and continue breastfeeding until 24 months of age, with appropriate complementary feeding whilst taking antiretroviral treatment as prescribed. ART reduces the risk of postnatal HIV transmission in the context of mixed feeding. Although exclusive breastfeeding is recommended, practising mixed feeding is not a reason to stop breastfeeding if the mother is on ART. Mothers living with HIV and healthcare workers can be reassured that shorter duration of breastfeeding of less than 24 months is better than never initiating breastfeeding at all.

The most important benefit of exclusive breastfeeding is the reduction in the risk of HIV transmission and improved child survival. Mothers must be counselled about the risks of mixed feeding including the risk of gastroenteritis associated with the use of bottles, teats and pacifiers to their infants during their first six months of life.

Mothers should also be intensively counselled about the importance of long-term adherence to ART and provided with adherence support where issues or barriers are identified. All HIV-exposed infants must be provided with prophylactic NVP alone or in combination with AZT where applicable. Infants who are growth faltering or are at high risk of poor growth should be referred for appropriate nutritional care and support.

HIV-positive mothers who decide not to breastfeed their infants (after appropriate counselling and education) should understand that formula is not routinely provided as part of the PMTCT programme. Counsel these mothers on appropriate exclusive formula feeding in amount and frequency, safe preparation, storage and feeding mechanism, including a back demonstration to confirm that they understand how to safely prepare and feed infant formula. They should be able to provide adequate formula for their infants as a replacement feed to their HIV uninfected infants when specific conditions are met:

Box 2: Conditions for replacement infant feeding

1. Safe water and sanitation are assured at the household level and in the community, and
2. The mother or other caregiver can reliably provide sufficient infant formula to support normal growth and development of the infant, and
3. The mother or caregiver can prepare it cleanly and frequently enough so that it is safe and carry a low risk of diarrhoea and malnutrition, and
4. The mother or caregiver can, in the first six months, exclusively give infant formula, and
5. The family is supportive of this practice, and
6. The mother or caregiver can access health care that offers comprehensive child health services.
The only approved HIV-related medical condition (National Department of Health) where infant formula may still be provided is when a mother has been on second or third-line ART for at least 3 months and has a viral load above 1000 copies/ml. Mothers who are too ill to breastfeed (e.g. MDR TB) will also be provided with infant formula.

If an infant tests HIV-positive, encourage breastfeeding for 2 years and longer as extended breastfeeding is better for an HIV-infected infant’s health, nutrition and survival. Emphasize the importance of continuing infant and maternal ART and monitoring viral loads regularly. Remind mothers that growth monitoring enables early intervention and it is very important to record weight of child monthly in the first two years of life and three-monthly thereafter until they turn 5 years old.

All healthcare providers caring for mothers, infants, and young children should fully adhere with all the provisions of the South African Regulations Relating to Foodstuffs for Infants and Young Children (R 991).
4. ART IN INFANTS, CHILDREN AND EARLY ADOLESCENTS (10-15 YEARS OLD)

4.1 Eligibility Criteria and Timing of Initiation of ART

Eligibility criteria for initiating ART in infants, children and early adolescents who are newly diagnosed with HIV are shown in box 3. Those who are eligible should have developmental and clinical assessments, TB screening and staging before initiating ART. Caregivers must receive counselling on how to administer medication, monitor side-effects and deal with challenges to adherence. Eligible children should be started on ART as soon as possible. Patients may be fast-tracked for ART under certain circumstances (refer to box 3). Infants < 2 years of age who are newly diagnosed as HIV positive are eligible for genotype resistance testing if their mothers were exposed to PI-based ART during pregnancy or breastfeeding.

Box 3: Eligibility criteria for ART and fast-tracking of ART

<table>
<thead>
<tr>
<th>Eligibility for starting ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>All HIV-positive children irrespective of CD4 or clinical staging</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients requiring fast tracking (i.e. start ART within 7 days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children less than 1 year of age</td>
</tr>
<tr>
<td>WHO clinical Stage 4</td>
</tr>
<tr>
<td>MDR or XDR-TB</td>
</tr>
<tr>
<td>CD4 count ≤200 cells/mm³ or ≤15%</td>
</tr>
</tbody>
</table>
## 4.2 Monitoring of Infants, Children & Early Adolescents on ART

### At Initial Diagnosis of HIV

<table>
<thead>
<tr>
<th>Test/Treatment</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirm HIV status</td>
<td>Ensure that Western Cape testing algorithm has been followed</td>
</tr>
<tr>
<td>Document weight, height, head circumference (&lt;2yrs) and development</td>
<td>To monitor growth and development and identify eligibility for ART</td>
</tr>
<tr>
<td>Screen for TB symptoms or contacts</td>
<td>To identify TB/HIV co-infection &amp; eligibility for IPT</td>
</tr>
<tr>
<td>WHO Clinical Staging (≥ 5 yrs)</td>
<td>Baseline assessment</td>
</tr>
<tr>
<td>CD4 count</td>
<td>Children &lt;5 years: DO NOT wait for CD4 count to start ART</td>
</tr>
<tr>
<td>FBC + differential WCC</td>
<td>To detect anaemia, neutropaenia, thrombocytopaenia</td>
</tr>
<tr>
<td>Neurocognitive developmental assessments</td>
<td>With appropriate available tool (refer to annexure 2)</td>
</tr>
</tbody>
</table>

### At Routine Follow-Up Visits for those not yet started on ART

<table>
<thead>
<tr>
<th>Test/Treatment</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Document weight, height, head circumference (&lt;2 years) and development</td>
<td>To monitor growth and development</td>
</tr>
<tr>
<td>Repeat CD4 count every 6 months</td>
<td>To determine if patient is stable</td>
</tr>
<tr>
<td>WHO clinical staging</td>
<td>To determine if patient is stable</td>
</tr>
<tr>
<td>ALT (if jaundiced or on TB treatment)</td>
<td>To assess for liver dysfunction</td>
</tr>
<tr>
<td>Neurocognitive developmental assessments</td>
<td>With appropriate available tool (refer to annexure 2)</td>
</tr>
</tbody>
</table>

### Prior to initiation of ART

<table>
<thead>
<tr>
<th>Test/Treatment</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>FBC</td>
<td>If less than 8g/dl start ART and discuss with specialist</td>
</tr>
<tr>
<td>CD4 count (if not performed in last 6 months)</td>
<td>Baseline assessment</td>
</tr>
<tr>
<td>Cholesterol + Triglyceride if on PI-based regimen</td>
<td>Baseline assessment</td>
</tr>
<tr>
<td>ALT (if jaundiced or on TB treatment)</td>
<td>To assess for liver dysfunction</td>
</tr>
<tr>
<td>Neurocognitive developmental assessments</td>
<td>With appropriate available tool (refer to annexure 2)</td>
</tr>
</tbody>
</table>

### On ART

<table>
<thead>
<tr>
<th>Test/Treatment</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height, weight, head circumference (&lt;2yrs) and development</td>
<td>To monitor growth and developmental stages</td>
</tr>
<tr>
<td>Clinical assessment</td>
<td>To monitor response to ART and manage side effects</td>
</tr>
<tr>
<td>CD4: All at month 12</td>
<td>To monitor susceptibility to opportunistic infections and eligibility for Cotrimoxazole Preventive Therapy (CPT) [Refer to section 8]</td>
</tr>
<tr>
<td>Then: Children &lt;5 years: every 12 months Children &gt;5 years: If CD4 &lt; 200 cells/mm³ repeat 6 monthly until &gt; 200 cells/mm³</td>
<td></td>
</tr>
<tr>
<td>If CD4 &gt; 200 cells can stop monitoring routinely</td>
<td></td>
</tr>
<tr>
<td>VL: All at month 4 and 12</td>
<td>To monitor virological response to ART</td>
</tr>
<tr>
<td>Then - children &lt;5 years: 6 monthly - children &gt;5 years: every 12 months</td>
<td>To identify treatment failure and problems with adherence</td>
</tr>
<tr>
<td>Hb and differential WCC at month 1, 2, 3 and 6 months if on AZT</td>
<td>To identify Zidovudine-related anaemia</td>
</tr>
<tr>
<td>Cholesterol + Triglycerides at 1 year and then every 12 months if on PI-based regimen</td>
<td>To monitor for PI-related metabolic side-effects</td>
</tr>
<tr>
<td>Advise dietary modification and refer for appropriate management if hyperlipidaemia present Consider switch to Atazanavir/r if &gt;6 years old and ≥ 15kg</td>
<td></td>
</tr>
<tr>
<td>Neurocognitive developmental assessments</td>
<td>With appropriate available tool (refer to annexure 2)</td>
</tr>
</tbody>
</table>

*Refer to Annexure 5 & 6 for standard drug dosages. Refer to Annexure 11 for reporting of adverse drug reactions*
### 4.3 Standard ART regimens for Infants, Children & Early Adolescents

**Table 8: Standard ART regimens for infants, children and early adolescents**

<table>
<thead>
<tr>
<th>1st Line Regimens*</th>
<th>2nd Line Regimen* (&lt;15 years and &lt;40kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neonates (infants &lt;4 weeks old)</td>
<td>Refer to Annexure 3 for initiation of ART in infants ≤4 weeks old. Consult an expert for advice if necessary.</td>
</tr>
<tr>
<td>All infants ≥4 weeks old and children under 3 years (or &lt;10kg)</td>
<td>Abacavir + Lamivudine + Lopinavir/Ritonavir</td>
</tr>
<tr>
<td>Children ≥ 3 years (or ≥ 10kg):</td>
<td></td>
</tr>
<tr>
<td>• NOT exposed to Nevirapine during PMTCT</td>
<td></td>
</tr>
<tr>
<td>• EXPOSED to Nevirapine during PMTCT for 6 weeks or longer</td>
<td>Abacavir + Lamivudine + Efavirenz</td>
</tr>
<tr>
<td>Children who started on Abacavir + Lamivudine + Lopinavir/ritonavir before 3 years must remain on same regimen</td>
<td></td>
</tr>
<tr>
<td>Weight &lt; 40kg or age &lt; 15 years</td>
<td>Abacavir + Lamivudine + Efavirenz</td>
</tr>
<tr>
<td>Children on Stavudine</td>
<td>Change Stavudine to Abacavir if viral load &lt;40 copies/ml</td>
</tr>
<tr>
<td>If viral load &gt;1000 copies/ml manage as treatment failure</td>
<td></td>
</tr>
<tr>
<td>If viral load between 40 – 1000 copies/ml – consult expert for advice</td>
<td></td>
</tr>
<tr>
<td>Children on Didanosine</td>
<td>Change all Didanosine to Abacavir regardless of VL</td>
</tr>
<tr>
<td>Adverse effects related to Lopinavir/ritonavir:</td>
<td></td>
</tr>
<tr>
<td>• Hyperlipidaemia</td>
<td></td>
</tr>
<tr>
<td>• Severe gastrointestinal side effects &gt; 6 weeks</td>
<td></td>
</tr>
<tr>
<td>• Simplification to a once daily regimen</td>
<td>From 6 years and ≥ 1.5kg: Switch Lopinavir/ritonavir to Atazanavir/ritonavir</td>
</tr>
<tr>
<td>15 – 20kg</td>
<td>Atazanavir 150mg/ritonavir 100mg</td>
</tr>
<tr>
<td>20 – 40kg</td>
<td>Atazanavir 200mg/ritonavir 100mg</td>
</tr>
<tr>
<td>&gt;40kg</td>
<td>Atazanavir 300mg/ritonavir 100mg</td>
</tr>
</tbody>
</table>

**Recommended 2nd line regimen:**

Abacavir + Lamivudine + Efavirenz (or Nevirapine)

Stavudine + Lamivudine + Efavirenz (or Nevirapine)

Zidovudine + Lamivudine + Lopinavir/ritonavir OR Zidovudine + Abacavir + Lopinavir/ritonavir

If Zidovudine contra-indicated, change to Abacavir

**Adverse effects related to Lopinavir/ritonavir:**

From 6 years and ≥ 1.5kg: Switch Lopinavir/ritonavir to Atazanavir/ritonavir

<table>
<thead>
<tr>
<th>3rd Line Regimens*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failing any 2nd line regimen (see WC circular H158/2014)</td>
</tr>
<tr>
<td>• Infants &lt; 2 years of age who are newly diagnosed as HIV positive if their mothers were exposed to PI-based ART during pregnancy or breastfeeding.</td>
</tr>
<tr>
<td>• Patients on a PI regimen with virological non-suppression defined as at least three viral load measurements of ≥1000 copies/ml (≥log 3) at least 8-12 weeks apart after adherence has been addressed.</td>
</tr>
<tr>
<td>o Children (&lt;15 years of age): receiving PI regimen for at least 1 year</td>
</tr>
</tbody>
</table>

*Refer to Annexure 5&6 for standard drug dosages. Refer to Annexure 11 for reporting of adverse drug reactions.
4.4 Transition from Paediatric/ Early Adolescent ART regimens to Late Adolescent/ Adult ART regimens

Late adolescents with an undetectable VL (<40 copies/ml) and no side-effects on Abacavir + Lamivudine + Efavirenz, can remain on the same regimen until they become eligible for Tenofovir + Emtricitabine + Efavirenz (provide as Fixed Dose Combination [FDC]) at 15 years old and weight ≥ 40 kg.

- When an adolescent with an undetectable VL (within the last 8 weeks) reaches 15 years and 40 kg, a creatinine clearance (CrCl) and urine dipstix should be performed.
  - The Schwartz formula should be used to calculate CrCl if <16 years:
    \[ \text{CrCl} = \frac{\text{height [cm] \times 40 \text{ creatinine [\mu mol/l]}}}{\text{creatinine [\mu mol/l]}} \]
  - If the CrCl is >80 and no proteinuria on urine dipstix, then the patient must be switched to FDC (TDF + FTC + EFV).
  - If the CrCl is <80 or >1+ Proteinuria on urine dipstix then refer to an expert for advice before switching.
  - If the HIV VL is between 50-1000 copies/ml, give adherence support and repeat after 6 months. If still 50-1000, consult an expert for advice.
  - If the HIV VL is >1000 copies/ml, give adherence support and repeat VL after 3 months. If still >1000 copies/ml, treat as virological failure.
5. ART IN LATE ADOLESCENTS (15-19 YEARS OLD) AND ADULTS

5.1 Eligibility Criteria and Timing of Initiation of ART

Box 4: Eligibility criteria for ART and fast-tracking in late adolescents & adults

<table>
<thead>
<tr>
<th>Eligibility for starting ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>• All newly diagnosed HIV-positive adolescents and adults are eligible to start lifelong ART regardless of CD4 count. They should be initiated within 7 days of diagnosis or on the same day if feasible, as early starting of ART is associated with better health outcomes</td>
</tr>
<tr>
<td>• Prioritise those with CD4 &lt;350 cells/mm³ or advanced HIV disease</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Patients requiring fast tracking</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV positive women who are pregnant or breastfeeding</td>
</tr>
<tr>
<td>OR</td>
</tr>
<tr>
<td>OR</td>
</tr>
<tr>
<td>Initiate SAME day as eligibility established (if active TB infection and Cryptococcal meningitis excluded)</td>
</tr>
<tr>
<td>Patients with TB/HIV co-morbidity with a CD4 &lt; 50</td>
</tr>
<tr>
<td>Within 2 weeks of commencement of TB treatment</td>
</tr>
</tbody>
</table>

Box 5: Management of patients not yet started on ART

• Counsel patient on the benefits of ART and encourage initiation of ART within 7 days
• Provide support for disclosure and partner notification. Discuss option of couples counselling and HTS for partner
• Perform TB screening and enquire about TB contacts.
• Initiate IPT if eligible.
• Screen for and manage sexually transmitted infections (STI’s).
• Do Pap smear for women at diagnosis, and repeat every 3 years if no abnormalities detected.
• Advise how to avoid HIV transmission to sexual partners and children.
• Screen for and manage non-communicable diseases
• Provide information and counselling related to fertility, including family planning and conception counselling as needed.
• Provide counselling on nutrition and healthy lifestyle
• Repeat CD4 6 monthly until ART is initiated.
5.2 Initiation of ART in HIV Positive Partners in Serodiscordant Couples

Box 6: Approach to ART in serodiscordant couples

<table>
<thead>
<tr>
<th>Importance of ART in Serodiscordant Couples</th>
</tr>
</thead>
<tbody>
<tr>
<td>• A couple is defined as two people involved in an ongoing sexual relationship.</td>
</tr>
<tr>
<td>• A serodiscordant couple is one in which one partner is HIV-positive and the other is HIV-negative.</td>
</tr>
<tr>
<td>• Research shows that about half of all people infected with HIV are in serodiscordant couples.</td>
</tr>
<tr>
<td>• HIV transmission to HIV-negative partners in serodiscordant couples can effectively be prevented by the use of ART by their HIV-positive partners.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Approach to ART in Serodiscordant Couples</th>
</tr>
</thead>
<tbody>
<tr>
<td>• All patients presenting for HTS should be offered the option of couples HTS.</td>
</tr>
<tr>
<td>• Pregnant women must be tested on the day pregnancy is confirmed; therefore do not postpone testing until the partner is available. If the partner is present, offer same-day couples counselling and HTS. If unavailable, make effort to test the partner as soon as possible and offer the option of couples HTS for repeat tests. If the patient tests HIV-positive at any stage, she is immediately eligible for ART (see PMTCT section). Partners who test HIV-positive should be offered ART if the pregnant/breastfeeding patient’s HIV test is negative.</td>
</tr>
<tr>
<td>• All patients who test HIV-positive after HTS should receive post-test counselling with support for disclosure to their partners.</td>
</tr>
<tr>
<td>• Pre-ART counselling should include information about the benefits and risks of ART. Couples should be advised to continue using condoms, and to repeat HTS for the HIV-negative partner every 6 months.</td>
</tr>
<tr>
<td>• Patients on ART and their partners should be encouraged to access available health services for TB screening, NCD screening, treatment of STI’s, family planning and conception counselling.</td>
</tr>
</tbody>
</table>

5.3 Strategies to Promote Adherence in Late Adolescents & Adults on ART

• Pre-ART adherence counselling should be offered to all clients.
• Disclosure to supportive family or friends should be encouraged.
• Discuss minor/transient side effects with the client.
• Monitor adherence and offer adherence support at every visit.
• Aim for adherence of >95% of doses taken.
• Patients who miss appointments are more likely to have poor adherence, and therefore require additional adherence support.
• Manage prolonged side effects or adverse effects appropriately.
• Identify threats to adherence such as substance abuse, food insecurity and gender-based violence and refer appropriately.
• Patients with issues about stigma, non-disclosure and poor adherence should be referred for ongoing counselling.
• Patients should be informed about ART Adherence Clubs, and should be enrolled in these clubs as soon as they are eligible, if feasible.
5.4 Management of patients returning to care after period of treatment interruption

- If a patient has interrupted treatment or if the treatment history is unknown, take a full history to establish the cause of the interruption and manage accordingly.
  - If it is due to social or psychological factors, address these and refer if indicated.
  - If the patient interrupted treatment as a result of side effects or toxicity, evaluate other drug choices and offer appropriate options.

- If a patient has interrupted treatment on a specific regimen, and is clinically stable, he/she should be continued on the same regimen.

- However, if patient was in a 1st line regimen before treatment interruption, **consider starting a 2nd line regimen if**:
  - There is a history of multiple treatment interruptions and resistance to the regimen is considered likely, or
  - The patient is now very ill with an AIDS-defining condition and a CD4 count < 50, this carries a high risk of mortality.
  - Consult a medical officer if unsure of which regimen to restart.

- If re-starting on 1st or 2nd line regimen after treatment interruption, do VL after 3 months.
- If VL<400 copies/ml, continue current ART regimen.
- If VL between 400-1000, repeat after 6 months. If still in same range, consult an expert.
- If VL ≥1000 repeat after 3 months. If second VL≥1000, switch to 2nd line ART if failing 1st line and consider HIV genotyping if failing 2nd line ART regimen.
- If patient is pregnant - refer to figure 1 (section 2.3.1).
5.5 Management of patients transferring into a facility from another facility

- Establish the clinical history from the patient and review any documents available.
- Try to establish which regimen the patient is currently on and the treatment duration. Review any previous CD4/VL/other blood test results.
- If unable to access blood results, do CD4, VL and monitoring bloods. Screen for TB, STI and NCDs.
- Continue previous/most appropriate regimen.
- Give patient appointment to follow up for blood results.

NB: If NVP is restarted after an interruption of >1 week, re-commence with the 2 week lead-in dose and check the ALT if the patient becomes symptomatic.

5.6 Monitoring of Late Adolescents & Adults on ART

Table 9: Monitoring in late adolescents & adults on ART

<table>
<thead>
<tr>
<th>At initial Diagnosis of HIV</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirm HIV status</td>
<td>To confirm HIV positive status in clients who present without documented proof of positive HIV status. Ensure that Western Cape testing algorithm has been followed</td>
</tr>
<tr>
<td>Baseline CD4 count and WHO clinical staging</td>
<td>To assess eligibility for: • fast-tracking (CD4 ≤200/ stage 3 + 4) • prioritisation (CD4 ≤350) • Cotrimoxazole prophylactic treatment (CPT) (CD4 &lt; 200) (Refer to section 8) • CrAg or CLAT (CD4 &lt; 100) (Refer to section 9)</td>
</tr>
<tr>
<td>Screen for pregnancy or ask if planning to conceive</td>
<td>To identify pregnant women eligible for ART, opportunity to offer appropriate family planning/conception counselling</td>
</tr>
<tr>
<td>Screen for TB symptoms</td>
<td>To identify TB/HIV co-infection (refer to WC TB screening tool - annexure 8)</td>
</tr>
<tr>
<td>Mantoux test (TST) (if available)</td>
<td>Assess need for IPT</td>
</tr>
<tr>
<td>Screening for STI’s and syphilis</td>
<td>To manage STI’s and provide counselling on prevention of STI’s and condom use</td>
</tr>
<tr>
<td>Assessment of major non-communicable diseases</td>
<td>To identify any concomitant chronic disease</td>
</tr>
<tr>
<td>Weight and Height in adolescents</td>
<td>To determine appropriate ART regimen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>At Routine Follow-Up Visits for those not yet started on ART</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Repeat CD4 count and clinical staging every 6 months</td>
<td>To determine eligibility for ART</td>
</tr>
<tr>
<td>Screen for TB symptoms at every visit to identify TB suspects Offer IPT if no TB symptoms (refer to section 7)</td>
<td>To identify TB/HIV co-infection To treat latent TB infection</td>
</tr>
<tr>
<td>Prior to initiation of ART</td>
<td>Purpose</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Cryptococcal antigen (CrAg): If baseline CD4&lt;100 cells/mm³ (reflex test done routinely by lab if CD4&lt;100)</td>
<td>To identify patients who require treatment or prophylaxis for Cryptococcal Meningitis (CM) (refer to section 9)</td>
</tr>
<tr>
<td>Serum creatinine for clients initiating on Tenofovir</td>
<td>To detect renal insufficiency - calculate creatinine clearance (CrCl) as shown below:</td>
</tr>
<tr>
<td></td>
<td><strong>If &lt; 16 years:</strong> the following formula should be used:</td>
</tr>
</tbody>
</table>
|  | \[
| CrCl [ml/min] = \frac{\text{height [cm]}}{\text{serum creat [µmol/l]}} \times 40
|  |
|  | **If ≥ 16 years,** use adult formula |
|  | \[
| CrCl [ml/min] = \frac{(140 - \text{age}) \times \text{Wt (kg)}}{\text{serum creat (µmol / l)}}
<p>|  | <strong>Females: multiply CrCl by 0.85</strong> |
|  | In adolescents &lt;16 years: |
|  | DO NOT use TDF if CrCl ≤ 80. |
|  | In adults/ adolescents ≥16 years: |
|  | DO NOT use TDF if CrCl ≤ 50. |
|  | If the CrCl is abnormal: |
|  | Check urine dipstick for proteinuria and repeat serum creatinine after 1 month. Refer to experienced clinician if renal dysfunction persistent. |
|  | In pregnant women: |
|  | DO NOT use TDF if serum creatinine ≥ 85 µmol/l |
|  | Refer to section 5.6 for alternate regimens. Doses of ARV’s may need to be adjusted for renal impairment. Refer to annexure 6. |
| Hb and differential WCC: for clients initiating on Zidovudine | To detect anaemia/neutropaenia |
|  | Do not use AZT if Hb ≤ 8 g/dl |
| ALT: for clients initiating on Nevirapine | To detect liver dysfunction |
| Fasting cholesterol and triglycerides for clients initiating Lopinavir/ritonavir | To identify clients with contraindications to LPV/r or at risk of LPV/r related hyperlipidaemia. If total cholesterol &gt;6mmol/L or triglycerides &gt;5mmol/L, consider using Atazanavir/r instead of LPV/r. |</p>
<table>
<thead>
<tr>
<th>On ART</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CD4 at month 12</strong></td>
<td>To monitor susceptibility to opportunistic infections. Stop prophylactic cotrimoxazole if CD4 &gt; 200 cells/mm³ and no concurrent stage 3/4 infection present.</td>
</tr>
<tr>
<td>If CD4 &lt; 200 cells/mm³ repeat annually until &gt; 200 cells/mm³ then stop monitoring CD4 routinely.</td>
<td></td>
</tr>
<tr>
<td>If CD4 &gt; 200 cells/mm³ stop monitoring CD4 routinely.</td>
<td></td>
</tr>
<tr>
<td><strong>VL on 1st line regimen: at month 4, month 12 and then annually</strong></td>
<td>To monitor response to treatment and detect treatment failure</td>
</tr>
<tr>
<td><strong>VL on 2nd and 3rd line regimens: at month 6, month 12 and then annually</strong></td>
<td></td>
</tr>
<tr>
<td>If on DR-TB treatment: repeat VL every 6 months until DR-TB treatment completed.</td>
<td></td>
</tr>
<tr>
<td>If VL 400-1000 copies/ml, repeat after 6 months. If unchanged, consult a specialist for advice.</td>
<td></td>
</tr>
<tr>
<td>If VL &gt; 1000, repeat within 3 months (2 months after adherence intervention).</td>
<td></td>
</tr>
<tr>
<td>If second VL &gt; 1000 copies/ml, manage as virological failure (refer to section 5.8)</td>
<td></td>
</tr>
<tr>
<td>If pregnant or breastfeeding, refer to PMTCT guideline [section 2] for VL monitoring</td>
<td></td>
</tr>
<tr>
<td><strong>Serum creatinine: at month 1, 4, 12 and then annually if on Tenofovir</strong></td>
<td>To detect TDF toxicity- calculate CrCl (see formulae above) or use laboratory reported eGFR</td>
</tr>
<tr>
<td><strong>ALT:</strong></td>
<td>To detect NVP or EFV toxicity</td>
</tr>
<tr>
<td>If on Nevirapine or Efavirenz and develops rash or symp- toms suggestive of hepatitis</td>
<td></td>
</tr>
<tr>
<td>If on TB treatment and Lopinavir/ritonavir</td>
<td></td>
</tr>
<tr>
<td><strong>HB and differential WCC: at month 1, 2, 3 and 6 if on Zidovudine</strong></td>
<td>To detect Zidovudine toxicity</td>
</tr>
<tr>
<td><strong>Fasting cholesterol and triglycerides at month 3 on Lopinavir/ritonavir.</strong></td>
<td>To detect Lopinavir /ritonavir toxicity</td>
</tr>
<tr>
<td>Repeat annually only if clinically indicated.</td>
<td>If total cholesterol &gt; 6mmol/l or triglycerides &gt; 5mmol/l, consider switch to Atazanavir/r. Management of hyperlipidaemia should include dietary modification and statins if indicated, refer to doctor.</td>
</tr>
<tr>
<td><strong>HBsAg</strong></td>
<td>To identify hepatitis B co-infection in patients on TDF switching to 2nd line regimens so that TDF can be retained in the second line regimen.</td>
</tr>
</tbody>
</table>

Serum creatinine: at month 1, 4, 12 and then annually if on Tenofovir

ALT:
- If on Nevirapine or Efavirenz and develops rash or symptoms suggestive of hepatitis
- If on TB treatment and Lopinavir/ritonavir

HB and differential WCC: at month 1, 2, 3 and 6 if on Zidovudine

Fasting cholesterol and triglycerides at month 3 on Lopinavir/ritonavir.
- Repeat annually only if clinically indicated.

HBsAg

To monitor susceptibility to opportunistic infections. Stop prophylactic cotrimoxazole if CD4 > 200 cells/mm³ and no concurrent stage 3/4 infection present.

To monitor response to treatment and detect treatment failure.

To detect TDF toxicity- calculate CrCl (see formulae above) or use laboratory reported eGFR.

To detect NVP or EFV toxicity.

At weekly intervals, check ALT and increase LPV/r to 3 and then 4 tablets every 12 hours if ALT < 50.
- If ALT < 50 on 4 tablets every 12 hours: check ALT monthly for duration of TB treatment.
- If ALT > 199 and client well: continue treatment and repeat in a week.
- If ALT > 200 or unwell: stop ART and refer on the same day.
  - Reduce LPV/r to standard dose 2 weeks after TB treatment is completed.

To detect Zidovudine toxicity.

To detect Lopinavir /ritonavir toxicity.
- If total cholesterol > 6mmol/l or triglycerides > 5mmol/l, consider switch to Atazanavir/r.
  - Management of hyperlipidaemia should include dietary modification and statins if indicated, refer to doctor.

To identify hepatitis B co-infection in patients on TDF switching to 2nd line regimens so that TDF can be retained in the second line regimen.
### 5.7 Standard 1st Line Drug Regimens for ART in Late Adolescents & Adults

#### Table 10: Standard 1st line ART regimens for late adolescents & adults

<table>
<thead>
<tr>
<th>Indications</th>
<th>Regimen</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation of ART in pregnant or breastfeeding women, late adolescents and adults</td>
<td>Tenofovir + Emtricitabine (or Lamivudine) + Efavirenz</td>
<td>Use TDF in adolescents only if ≥15 years old AND ≥40kg AND CrCl ≥ 80 (see section 5.4 for formula to calculate CrCl)</td>
</tr>
<tr>
<td>Contraindications to Tenofovir</td>
<td>Abacavir + Lamivudine + Efavirenz</td>
<td>Renal disease (CrCl ≤ 50 ml/min in adults or CrCl &lt;80ml/min in late adolescents) or use laboratory reported eGFR Concurrent use of other nephrotoxic drugs e.g. aminoglycosides (Kanamycin) for MDR-TB Pregnant women: Cr &gt; 85μmol/l</td>
</tr>
<tr>
<td>Contraindications to Tenofovir and Abacavir</td>
<td>Zidovudine + Lamivudine + Efavirenz</td>
<td>Renal disease [CrCl ≤ 50 ml/min] or the concurrent use of other nephrotoxic drugs e.g. aminoglycosides (Kanamycin) and hypersensitivity to Abacavir</td>
</tr>
<tr>
<td>Contraindications to Tenofovir, Abacavir and Zidovudine</td>
<td>Stavudine + Lamivudine + Efavirenz</td>
<td>Renal disease [CrCl ≤ 50 ml/min] or the concurrent use of other nephrotoxic drugs e.g. aminoglycosides (Kanamycin), hypersensitivity to ABC and severe anaemia (Hb ≤ 8 g/dl)</td>
</tr>
<tr>
<td>Currently on Stavudine-based regimen</td>
<td>Tenofovir + Emtricitabine (or Lamivudine) + Efavirenz or Nevirapine</td>
<td>Switch to Tenofovir-based regimen if virologically suppressed and CrCl &gt;50ml/min. If CrCl reduced, consider substitution with Abacavir. If VL &gt;1000 copies/ml, manage as virological failure and consider switching to 2nd line regimen</td>
</tr>
<tr>
<td>Contraindications to Efavirenz</td>
<td>Tenofovir + Emtricitabine (or Lamivudine) + Nevirapine OR Lopinavir/ritonavir</td>
<td>Psychiatric co-morbidity or intolerance to Efavirenz e.g. shift workers. Patients should not be initiated on NVP if: - Female with an initial CD4 &gt; 250 cells/mm³ - Males with an initial CD4 &gt; 400 cells/mm³ - Use Lopinavir/ritonavir instead</td>
</tr>
<tr>
<td>Late adolescents ≥15 years with weight &lt;40kg</td>
<td>Abacavir + Lamivudine + Efavirenz</td>
<td>If adolescent weight &lt;40kg, align with paediatric regimen No motivation required</td>
</tr>
</tbody>
</table>

*Refer to Annexure 7 & 8 for standard drug dosages, side-effect profiles and drug-dosing in renal dysfunction. Refer to Annexure 11 for reporting of adverse drug reactions.*
5.8 Standard 2nd Line drug regimens for ART in Late Adolescents & Adults

- Virological failure in a patient on a 1st line regimen is diagnosed when VL>1000 copies/ml on two separate occasions 2-3 months apart. This is an indication to switch to a 2nd line regimen.
- If a patient is on a Tenofovir and Lamivudine/Emtricitabine based regimen, check Hepatitis B status before switching regimens to establish if Tenofovir must be retained.
- If a patient is pregnant or breastfeeding, switch regimens on same day, but retain Tenofovir and Lamivudine/Emtricitabine in the new regimen until Hepatitis B status is known.
- The choice of ARV’s in the 2nd line regimen will depend on composition of the 1st line regimen- refer to table 11.

Table 11: Standard 2nd line ART regimens for late adolescents & adults

<table>
<thead>
<tr>
<th>2nd Line Regimens*</th>
<th>Indications</th>
<th>Regimen</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failing on Tenofovir-based regimen with HBsAg positive</td>
<td>Tenofovir + Zidovudine + Lamivudine/ Emtricitabine + Lopinavir/ ritonavir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failing on Tenofovir-based regimen with HBsAg negative</td>
<td>Zidovudine + Lamivudine + Lopinavir/ ritonavir</td>
<td>If HB &lt; 8,</td>
<td></td>
</tr>
<tr>
<td>Failing on Abacavir-based regimen</td>
<td>Zidovudine + Lamivudine + Lopinavir/ ritonavir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failing on Tenofovir or Abacavir-based regimen with contraindication to Zidovudine</td>
<td>Stavudine (if not available tenofovir OR abacavir) + Lamivudine (emtricitabine) + Lopinavir/ ritonavir</td>
<td>Severe anaemia (Hb ≤ 8 g/dl). If not due to AZT, introduce AZT when Hb recovers</td>
<td></td>
</tr>
<tr>
<td>Failing on a Stavudine- or Zidovudine-based regimen</td>
<td>Tenofovir + Lamivudine/ Emtricitabine + Lopinavir/ ritonavir</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Failing on a Stavudine- or Zidovudine-based regimen with contraindication to Tenofovir</td>
<td>Abacavir + Lamivudine + Lopinavir/ ritonavir</td>
<td>Renal disease [CrCl ≤ 50 ml/min] or the concurrent use of other nephrotoxic drugs e.g. aminoglycosides (Kanamycin) No motivation required</td>
<td></td>
</tr>
</tbody>
</table>

Adverse effects related to Lopinavir/ritonavir
- Hyperlipidaemia: Total Cholesterol >6mmol/l fasting triglycerides >5mmol/l
- Cardiovascular event risk > 20%
- Established clinical cardiovascular disease
- Severe gastrointestinal side effects > 6 weeks

Switch Lopinavir/ ritonavir to Atazanavir/ ritonavir No motivation required

Advise dietary modifications and refer to doctor.

*Refer to Annexure 7&8 for standard drug dosages, side-effect profiles and drug-dosing in renal dysfunction. Refer to Annexure 11 for reporting of adverse drug reactions.
5.9 Third Line Drug Regimens for ART in Late Adolescents & Adults

If a patient has virological failure on a 2nd line regimen, a decision to switch to a 3rd line regimen will be based on the results of genotype resistance testing (Provincial circular H158/2014). Access to 3rd line ART will be managed centrally by the HAST Directorate at the Provincial Department of Health (refer to annexure 8 for application forms). There is no empiric 3rd line regimen and consideration of an appropriate regimen will be individualised according to the results of the genotypic resistance test and a complete drug history.

Resistance tests are costly and studies show that most patients failing Ritonavir-boosted Protease Inhibitors (PIs) do not have PI resistance mutations. The provision of 3rd line drugs will be limited to patients with intermediate or high level PI resistance on genotyping. Resistance testing will only be offered to patients with good adherence, assessed objectively by means of pharmacy scripting refills and the completed adherence evaluation form, submitted along with the application.

Indications for resistance testing in adults and adolescents:

- Patients on a PI regimen with virological non-suppression defined as at least three viral load measurements of ≥1000 copies/ml (≥log 3) at least 2-3 months apart, and
- Must be receiving PI regimen for at least 2 years

ARV’s in 3rd line regimens* may include boosted Darunavir, Raltegravir, Dolutegravir or Etravirine according to genotype interpretation and patient history.

*Refer to Annexure 7&8 for standard drug dosages, side-effect profiles and drug-dosing in renal dysfunction. Refer to Annexure 11 for reporting of adverse drug reactions.
5.10  Indications for Referral to a Medical Officer

- Baseline creatinine clearance less than 50 ml/min
- Increase in serum creatinine after initiation of Tenofovir
- Decrease in Hb after initiation of Zidovudine
- Poor response to TB treatment or suspicion of TB IRIS
- Change in clinical stage of disease while on ART
- Any clinical suspicion of drug-induced liver injury (DILI) relating to efavirenz, TB drugs or any of the other ART drugs (persistent nausea, abdominal discomfort or jaundice)
- Clinical signs of possible meningitis: e.g. confusion; headaches
- Psychiatric illness

5.11  Family Planning and Reproductive Choices for Patients on ART

Discuss family planning and contraceptive options with all clients on ART. Advocate for the use of dual protection if no pregnancy is planned.

For women planning a pregnancy:

- Enquire about the HIV status of the partner - if unknown, advise HTS and offer couple’s counselling. If partner is HIV-positive, refer him to doctor to optimise HIV management.
- Check patient’s general health, review WHO stage and latest blood test results.
- Screen for TB and STI.
- Review latest Pap smear result or refer for Pap smear if not done in preceding three years.
- Optimise HIV management, refer to medical officer if most recent viral load >1000 or any other medical problems present.
6. MANAGEMENT OF PATIENTS CO-INFECTED WITH TUBERCULOSIS (TB)

HIV-infected people have an increased risk of developing TB disease compared to people not infected with HIV. They should be screened for TB symptoms at every clinic visit (refer to annexure 9 for adult TB screening tool). Patients co-infected with TB are eligible for lifelong ART regardless of CD4 count.

Suspect TB if any of the following symptoms are present:

- Cough ≥2 weeks
- Blood-stained sputum
- Fever
- Drenching night sweats
- Unexplained weight loss
- Loss of appetite, malaise, tiredness
- Chest pain on breathing

In children - suspect TB if the following are present:

- Any symptoms of TB as listed above
- Failure to thrive
- Clinical signs suggestive of TB
- Positive TST
- Chest X-ray findings suggestive of TB

6.1 Management of the patient that presents with TB before commencing ART

- All patients who are HIV positive and on TB treatment are eligible for ART regardless of CD4 count. (Refer to table 12 for timing of ART initiation)
- Patients with a CD4 count <50 should be initiated on ART within two weeks of starting treatment (unless they have TB meningitis or cryptococcal meningitis)
- All TB patients with CD4 >50 should start ART between 2-8 weeks after starting TB treatment, as soon as they are stable and tolerating their TB medication
- Efavirenz-based regimens are generally preferred to Nevirapine-based regimens in adolescents and adults with active TB on 1st line ART regimens.
- The importance of keeping patients in care should be considered and patients should be offered adherence support at every visit.

<table>
<thead>
<tr>
<th>TB diagnosed before starting ART</th>
<th>CD4 &lt;50 or stage 4 HIV clinically</th>
<th>CD4 &gt;50</th>
<th>TB meningitis / Cryptococcal meningitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate ART within 2 weeks of starting TB treatment</td>
<td>Initiate ART between 2-8 weeks of starting TB treatment, as soon as the patient is stable and tolerating their TB medication</td>
<td>Initiate ART between 4-6 weeks of starting TB treatment</td>
<td></td>
</tr>
</tbody>
</table>
6.1.1 Prevention of Paradoxical TB Immune Reconstitution Inflammatory Syndrome (TB-IRIS)

TB Immune Reconstitution Inflammatory Syndrome (TB-IRIS) occurs in 8-54% of patients initiating ART while on treatment for TB. Patients present within 1-3 weeks of starting ART with recurrent or worsening symptoms and inflammatory features of TB, after showing signs of improvement prior to starting ART. TB-IRIS symptoms may last for 2-3 months.

The earlier a patient starts ART, the higher the risk of developing TB-IRIS. But concern about TB-IRIS is NOT a reason to delay ART in patients with low CD4 counts; early ART in such patients reduces mortality. Patients with CD4 count<100 are at higher risk of developing TB-IRIS compared to patients with a higher CD4 count.

A recent study found that prophylactic prednisone may reduce the incidence of TB-IRIS in certain patients. In the study the incidence of TB-IRIS was 30% lower in participants who received prednisone compared to those who received placebo (i.e. prednisone reduced the risk but did not prevent all cases).

**Guideline for use of prophylactic prednisone to prevent TB-IRIS:**

**Eligible patients:**

- HIV-infected 18 years or older
- Diagnosed with TB within the last month
- Symptoms improving on TB treatment
- CD4 ≤ 100
- Not yet on ART

**Exclusions:**
- Rifampicin resistant TB
- Kaposi’s Sarcoma
- Hepatitis BsAg +ve
- Poor clinical response to TB treatment

**Dosage & duration of prophylactic prednisone**

- Start prednisone on the same day as ART
- 40mg daily orally for 2 weeks, followed by
- 20mg daily orally for 2 weeks then stop.

Any patient who experiences deterioration in their clinical condition after initiation of ART should be referred to an experienced clinician immediately for further management. The deterioration could be due to TB-IRIS, drug side effect, drug-resistant TB or another infection, and such patients need urgent assessment.
### 6.2 Management of the patient that presents with TB while on ART

#### Table 13: Management of Patients who Develop TB while on ART

<table>
<thead>
<tr>
<th></th>
<th><strong>TB develops while on ART</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Children &amp; Early Adolescents</strong></td>
<td></td>
</tr>
<tr>
<td>NNRTI-based regimen</td>
<td>Maintain the same regimen</td>
</tr>
<tr>
<td>PI-based regimen</td>
<td>Boost doses of Ritonavir for duration of TB treatment (refer to annexure 5)</td>
</tr>
</tbody>
</table>

**Late Adolescents & Adults**

<table>
<thead>
<tr>
<th></th>
<th><strong>NNRTI-based regimen</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maintain the same regimen</td>
</tr>
</tbody>
</table>

**PI-based regimen**

Adjust doses of Lopinavir/ritonavir as follows:
- Check ALT at baseline.
- If ALT <50, increase from 2 tablets every 12 hours to 3 tablets every 12 hours.
- Check ALT after 1 week.
- If ALT <50, increase from 3 tablets every 12 hours to 4 tablets every 12 hours.
- Check ALT after 1 week.
- If ALT <50 on 4 tablets every 12 hours: check ALT monthly for duration of TB treatment
- If ALT 50 - 199 and client well: continue treatment and repeat in a week.
- If ALT >200 or unwell: stop ART and refer on the same day.

Reduce Lopinavir/ritonavir to standard dose 2 weeks after TB treatment is completed.
6.2.1 Drug Interactions with ART and TB Treatment

Rifampicin

- There are significant drug interactions between Rifampicin and certain ARVs, therefore substitute Rifampicin with Rifabutin in the following patients:
  - Adult patients on Lopinavir boosted with ritonavir, who are initiated on concomitant Rifampicin-based TB treatment and are unable to tolerate double dose LPV/r due to severe GIT side effects or hepatitis.
  - Adult patients on Atazanavir boosted with ritonavir, who require initiation of rifampicin-containing TB treatment.
  - Adult patients on Darunavir boosted with ritonavir, who require initiation of Rifampicin-containing TB treatment.
- Rifabutin must be initiated by an Infectious Disease specialist or experienced TB doctor.
- Doses may need to be adjusted—refer to table 14.
- Rifabutin’s main active metabolite is increased about tenfold when given with protease inhibitors compared with the usual dose of 300 mg daily. The 150 mg daily rifabutin dose with protease inhibitors might increase the risk of toxicity (especially uveitis, neutropenia, and hepatitis), which is related to concentrations and thought to be due in part to the rifabutin metabolite.
- Patients on Darunavir boosted with ritonavir in combination with Etravirine requiring Rifamycin-containing TB treatment should not be started on Rifampicin or Rifabutin. Refer to an HIV specialist for guidance on anti-TB and ART regimen.
- Dosage of Dolutegravir must be doubled whilst patients are on rifampicin

Table 14: Dose adjustments of Rifabutin for patients on ART

<table>
<thead>
<tr>
<th>Dose Adjustments of Rifabutin for Patients on ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rifabutin standard dose</td>
</tr>
<tr>
<td>Rifabutin adjusted dose when prescribed with Ritonavir boosted protease inhibitors (Lopinavir or Atazanavir or Darunavir)</td>
</tr>
</tbody>
</table>
**Bedaquiline**

- Avoid concurrent use with efavirenz as it can decrease bedaquiline AUC by 50%
  - Replace with nevirapine if VL suppressed and baseline CD4 < 250 in females and CD4 < 400 in males, otherwise switch to a boosted PI. May switch back to efavirenz based regimen when the course of bedaquiline is completed and VL remains suppressed
  - Replace with boosted PI if VL unsuppressed and virological failure suspected
- Avoid concurrent use with etravirine

**Linezolid**

- Avoid concurrent use of zidovudine
  - Additive mitochondrial and haematotoxicity if used with Zidovudine
  - Replace with abacavir for duration of treatment with Linezolid
- Monitor FBC monthly

**Kanamycin**

- Avoid concurrent use of Tenofovir due to additive nephrotoxicity
  - Replace with abacavir until treatment with Kanamycin is completed
- Monitor renal function as lamivudine dosage might need adjustment accordingly (refer to Annexure 8)
7. **ISONIAZID PREVENTIVE THERAPY (IPT) FOR TREATMENT OF LATENT TB INFECTION IN HIV INFECTED PATIENTS**

- All patients in HIV care must be screened for active TB at every clinic visit and started on ART if eligible.
- IPT is an effective intervention for preventing the development of active TB disease in clients with latent TB infection.

7.1 **IPT in Children & Early Adolescents**

- **Indications:**
  - All asymptomatic children <5 years of age or HIV infected irrespective of age in close contact with an infectious pulmonary TB case and a clinically normal chest X-ray.
  - HIV infected children 5-14 years without history of close contact but TST positive.
  - Newborn infants of mothers with active TB should be managed in line with the National TB guidelines. Infants should be monitored for active TB disease during prophylaxis and if asymptomatic for TB after 6 months, should be given BCG.
- Children who are re-exposed to TB following completion of IPT must repeat the course of therapy. This is not dependent on the interval between completion of treatment and re-exposure.
- Pre-exposure IPT is not recommended in HIV infected children.
- Children who have successfully completed TB treatment should not routinely receive IPT. In the event of a new adult infectious TB source case, refer to an expert for advice.
- Refer to an expert if:
  - there was close contact with a known drug resistant TB source case
  - there was close contact with a contact of a known drug resistant TB source case
  - there was close contact with a TB source case who has failed standard TB treatment
- **Dosing:** Isoniazid 10mg/kg/day (maximum 300mg every 24 hours) with Pyridoxine: <5 years - 12.5 mg every 24 hours
  - >5 years - 25 mg every 24 hours
- **Duration of IPT:** 6 months
7.2 IPT in Late Adolescents & Adults

- All HIV infected late adolescents and adults should be assessed for IPT unless the following contraindications are present:
  - Active TB (suspected or confirmed)
  - Known or suspected hypersensitivity to INH
  - Chronic or acute liver disease
  - History of excessive alcohol use >28 units per week in men or >21 units per week in women
  - Severe peripheral neuropathy
  - Patients who have completed MDR- or XDR-TB treatment

- IPT is safe to use in pregnant or breastfeeding women.
- HIV- infected patients who were on drug-sensitive TB treatment previously may be started on IPT immediately after successful completion of a course of treatment.

How to Initiate and Manage IPT:

- If available, perform a Tuberculin Skin Test (TST).
- If the TST is positive, give IPT for a period of 36 months.
- If the TST is negative, give IPT for 12 months if the client is on ART.
- If not yet on ART, do not start IPT.
- If TST is not available, follow recommendations in table 14. TST should be done as soon as it becomes available.
- Dosing: Isoniazid 5mg/kg/day (maximum 300mg every 24 hours), with Pyridoxine 25mg every 24 hours.
- Screen clients on IPT for symptoms of active TB and side-effects of treatment at every clinic visit for duration of treatment.
- There is currently no evidence for repeating IPT in those who have completed 36 months or extending IPT beyond 36 months.

Table 15: Summary of recommendations for IPT in late adolescents & adults

<table>
<thead>
<tr>
<th>Summary Recommendations for IPT</th>
<th>On ART</th>
<th>If deferring ART</th>
</tr>
</thead>
<tbody>
<tr>
<td>TST not available</td>
<td>IPT for 12 months</td>
<td>IPT for 6 months**</td>
</tr>
<tr>
<td>TST negative</td>
<td>IPT for 12 months</td>
<td>No IPT</td>
</tr>
<tr>
<td>TST positive</td>
<td>IPT for at least 36 months</td>
<td>IPT for at least 36 months</td>
</tr>
</tbody>
</table>

**note importance of doing TST within 6 months while on IPT. If TST positive, extend to 36 months. If TST negative, stop IPT.
8. COTRIMOXAZOLE PREVENTIVE THERAPY (CPT)

8.1 CPT in Children & Early Adolescents

- CPT provides protection against *Pneumocystis jiroveci* pneumonia (PCP), toxoplasmosis, malaria and other bacterial infections.

- Indications for CPT:
  - HIV-exposed infants <1 year - start at 4-6 weeks. Discontinue CPT once HIV infection is excluded by testing 6 weeks after final breastfeed
  - HIV-positive infants <1 year regardless of CD4 count
  - HIV-positive children 1-5 years with WHO stage 2, 3 or 4; CD4 <25% or <500. Discontinue CPT if CD4 >500 on two consecutive occasions 3-6 months apart. If previous PCP: stop at 5 years old
  - HIV-positive children >5 years with WHO stage 3 or 4 or CD4 <200. Discontinue CPT if CD4 >200 on two consecutive occasions 3-6 months apart.
  - Co-infection with TB

- Contraindications: Known or suspected hypersensitivity to Sulphonamides/Trimethoprim

- Recommended doses as per weight (see table 16)

- Common side-effects: Maculopapular rash/ hypersensitivity reaction - can be mild or severe (Stevens Johnson syndrome) - refer to experienced clinician for management.

- Dapsone can be used in patients with mild reactions to CPT. Recommended dose is 2 mg/kg/day or 4 mg/kg/week. **Do not use Dapsone if reaction was severe.**

Table 16: Paediatric dosing table for Cotrimoxazole Preventive Therapy (CPT)

<table>
<thead>
<tr>
<th>Age or Weight of Child</th>
<th>Dose</th>
<th>Suspension (200mg SMX/40mg TMP, 5ml)</th>
<th>Single strength tablet (400mg SMX/80mg TMP)</th>
<th>Double strength tablet (800mg SMX/160mg TMP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;6 months or &lt;5kg</td>
<td>100mg SMX/20mg TMP</td>
<td>2.5ml</td>
<td>¼ tablet</td>
<td>-</td>
</tr>
<tr>
<td>6 months – 5 years or 5 – 15kg</td>
<td>200mg SMX/40mg TMP</td>
<td>5ml</td>
<td>½ tablet</td>
<td>-</td>
</tr>
<tr>
<td>6 – 14 years or 15 – 30kg</td>
<td>400mg SMX/80mg TMP</td>
<td>10ml</td>
<td>1 tablet</td>
<td>½ tablet</td>
</tr>
<tr>
<td>&gt;14 years or &gt;30kg</td>
<td>800mg SMX/160mg TMP</td>
<td>-</td>
<td>2 tablets</td>
<td>1 tablet</td>
</tr>
</tbody>
</table>
8.2 CPT in Late Adolescents & Adults on ART

- Indications for CPT:
  - CD4 <200
  - Co-infection with TB
  - Any WHO stage 3 or 4 condition
- CPT is safe to use in pregnancy and breastfeeding.
- Recommended dose of CPT: Cotrimoxazole 160/800mg daily
- Contraindications and side effects as per children (see above)
- Dosage adjustment in renal impairment:
  - If CrCl 10-50: reduce dose to Cotrimoxazole 80/400mg daily
  - If CrCl <10: reduce dose to Cotrimoxazole 80/400mg three times per week
- Alternative to CPT: Dapsone 100mg daily for clients with mild hypersensitivity to Cotrimoxazole. **Do not use Dapsone if reaction was severe.**
9. CRYPTOCOCCAL SCREENING AND TREATMENT

9.1 Cryptococcal Prophylactic Treatment in Children & Early Adolescents

- Cryptococcal screening is not performed routinely in children and early adolescents
- Those who are diagnosed and treated for Cryptococcal Meningitis should continue prophylactic treatment while on ART as follows:
  - Children <2 years old must continue Fluconazole prophylaxis until they are 2 years old
  - Children 2-5 years old must receive Fluconazole prophylaxis for a minimum period of 1 year.
  - Stop Fluconazole when CD4 >750 cells/mm³ on at least two occasions.
  - Children >5 years old must receive Fluconazole prophylaxis for a minimum period of 1 year.
  - Stop Fluconazole when CD4 >200 cells/mm³ on at least two occasions.

9.2 Cryptococcal Screening and Treatment in Late Adolescents & Adults

- Cryptococcal menigitis (CM) is a serious opportunistic infection that can affect HIV-positive people with CD4 counts <100.
- A cryptococcal antigen test (CrAg or CLAT) should be performed on all late adolescents and adults with CD4 <100 before initiation of ART.
- Patients with previous diagnosis of CM do not need to be screened.
- Review result within a week.
- Management of patients with CrAg/CLAT positive result (see figure 3):
  - If symptoms of CM present-
    - Start Fluconazole 1200 mg daily and admit to hospital for a lumbar puncture (LP)
    - If CM is confirmed on LP, patients must be treated with intravenous Amphotericin B and oral Fluconazole 800mg daily in hospital for 2 weeks, followed by Fluconazole 400mg daily for 2 months, then 200mg daily.
    - Delay ART initiation by 4-6 weeks.
  - If asymptomatic for CM or symptomatic patients with LP not suggestive of CM-
    - Give oral Fluconazole 800mg daily for 2 weeks, followed by Fluconazole 400mg daily for 2 months, then 200mg daily. ART may be started 2 weeks after initiation of Fluconazole prophylaxis.

- Duration of treatment:
  - Continue Fluconazole for minimum of 1 year in total and discontinue when the patient has two CD4 counts >200 taken at least 6 months apart
- Precautions:
  - Pregnant women with CrAg/CLAT positive must be discussed with a specialist before Fluconazole is prescribed.
  - Monitor ALT in patients on Fluconazole with clinical liver disease
- Patients with CrAg/CLAT negative result do not require Fluconazole prophylaxis and can be started on ART immediately.
Cryptococcal antigen (CrAg/CLAT) screening
(CD4+ T-lymphocyte count <100 cells/mm³)

CrAg/CLAT -ve

- Contact patient for urgent follow-up
- Screen for symptoms of cryptococcal meningitis (CM)*
- Check for special situations**

Symptomatic for CM

Start Fluconazole 1200 mg and refer immediately for lumbar puncture (LP)

LP confirmed CM

Amphotericin B plus Fluconazole 800 mg daily for 2 weeks in hospital

Start ART after 4-6 weeks of antifungal therapy

No CM on LP

Fluconazole 800 mg daily for 2 weeks as outpatient

Start ART after 2 weeks of antifungal therapy

CrAg/CLAT -ve

Initiate ART
Do not give Fluconazole

Figure 3: Simplified Algorithm for Cryptococcal screening and treatment in late adolescents and adults

*Symptomatic for CM either of the following is present:
1. Headache
2. Confusion

**Special situations include:
- Prior cryptococcal meningitis
- Pregnancy or breastfeeding mothers
- Clinical liver disease

***A lumbar puncture may be considered if available.

Fluconazole 400 mg daily for 2 months, then 200 mg daily
Continue Fluconazole for minimum of 1 year in total and discontinue when patient has had two CD4 counts >200 taken at least 6 months apart
10. REPORTING OF ADVERSE DRUG REACTIONS (ADR’S)

- Pharmacovigilance is an essential component of the ART programme which monitors the safety, efficacy and rationality of drug usage.

- The Medicines Control Council (MCC) defines an adverse drug reaction or adverse reaction as a response to a medicine that is noxious and unintended, including lack of efficacy, which occurs at any dosage and can also result from an overdose, misuse or abuse of a medication.

- All healthcare workers, including doctors, dentists, pharmacists, nurses and other professionals are encouraged to report all suspected adverse reactions to medicines, especially when the reaction is not in the package insert and is potentially serious of clinically significant.

- All reports of ADR’s are investigated and entered into a provincial database. This information is used to reduce the risks associated with ART and other medicines used in the ART programme and to improve the quality of patient care.

- Consider the following factors when suspecting an ADR:
  - What is the nature of the reaction?
  - Did the reaction occur within a reasonable time to suggest a relationship to starting treatment with the suspected medicine?
  - Is the reaction known to occur with the particular medicine as stated in the package insert or other reference?
  - Did the patient recover when the suspected medicine was stopped?
  - Did the patient take the medicine again after it had been stopped? If so, did the reaction occur again?
  - Can this reaction be explained by other causes?

- Report the following ADR’s:
  - All ADR’s to newly marketed drugs or new drugs added to the EDL
  - All serious reactions and interactions
  - ADR’s that are not clearly stated in the package insert
  - All adverse reactions or poisonings to traditional or herbal remedies

- Report even if you are not certain that the medicine caused the event

- Report suspected product quality problems:
  - Suspected contamination
  - Questionable stability
  - Defective components
  - Poor packaging or labelling
  - Therapeutic failures

- How to report an ADR:
  - Fill in an adverse drug reaction/product quality report form (refer to annexure 11) and submit to pharmacist for forwarding to the MIC Fax: 021 448 0503 | Email: jackie.jones@uct.ac.za.
  - The Western Cape Department of Health has developed a module, Adverse Drug Reactions, on the Provincial Central Repository, Sinjani, to capture this form electronically. Sinjani is accessible from any computer connected to the PGWC network: https://sinjani.pgwc.gov.za/live/
  - This link is also accessible under “Applications” on the Western Cape intranet: http://intrawp.pgwc.gov.za/Applications.asp
Annexure 1: PMTCT Algorithm

**MOTHER**

**First HIV test during pregnancy**

- **HIV positive**
  - Initiate lifelong ART
  - If same day: ART
  - If not same day: AZT prophylaxis + refer

- **HIV negative**
  - Re-test at around 20 weeks
    - **Positive**
    - **Negative**
  - Re-test at around 32 weeks
    - **Positive**
    - **Negative**

**ANTENATAL**

- **Known HIV positive on ART**
  - Check adherence

- **Known HIV positive not on ART**
  - If ART
    - Continue ART

  - If not on ART
    - If not on ART
      - If on ART
        - Diagnosis in labour/ AZT prophylaxis
      - Re-test in labour
    - If ART
      - Stat dose NVP
      - Stat dose TDF/FTC
      - Stat AZT & three-hourly

**INTRAPARTUM**

- **If ART**
  - Continue ART

- **If not on ART**
  - Initiate ART
    - If same day: initiate ART & provide contraception
    - If not same day: Refer for urgent ART & provide contraception

**AFTER DELIVERY**

**HIV-EXPOSED INFANT**

- **HIV-exposed infants: mother’s HIV status known or exposure confirmed with Rapid Determine® test**

**BIRTH/DISCHARGE**

- **Do routine birth PCR**
  - **Positive**
    - Transition to ART and do confirmatory PCR
  - **Negative**
    - Continue PEP

- **Initiate PEP**
  - **Low risk: NVP for 6 weeks**
    - (mother on ART with VL < 1000)
  - **High risk: Dual PEP with NVP & AZT**
    - (mother on ART with VL >1000 or unknown, mother not on ART, intrapartum risk factors)

- **If breastfed:**
  - NVP for at least 12 weeks + AZT for 6 weeks
  - Cont NVP until maternal VL <1000

- **If formula fed:**
  - NVP for 6 weeks
  - AZT for 6 weeks

- **Fast track for ART and continue CPT**

- **If breastfeeding repeat PCR around 18 weeks if NVP 12 wks. If NVP extended HIV test* 6 wks after NVP stop:**

- **Do routine birth PCR**
  - **Positive**
    - Stop CPT if formula feeding
    - Continue CPT if breastfeeding
  - **Negative**
    - If breastfeeding repeat PCR around 18 weeks if NVP 12 wks. If NVP extended HIV test* 6 wks after NVP stop.

- **Stop CPT if breastfeeding**

- **9 MONTHS**

- **18 MONTHS**

- **Repeat HIV PCR test at 10 weeks & Initiate CPT at 4-6 weeks**

**4-10 WEEKS**

- **Re-test breastfeeding mothers at 6 weeks postpartum and three-monthly thereafter for the duration of breastfeeding**

- **Negative**

- **Positive**
  - Re-test at around 32 weeks
  - **Positive**
  - **Negative**

- **Rapid HIV test at 18 months**

**18 MONTHS**

- **Positive**
  - Transition to ART and do confirmatory PCR
  - **Negative**
  - Continue CPT if breastfeeding

**<9 months:**

- HIV PCR test and confirm positive result with another HIV PCR test

**9-18 months:**

- Determine rapid HIV test. If positive: HIV PCR and confirm positive result with another HIV PCR test

**218 months:**

- Test as per adult testing algorithm

*Infant testing*
## Annexure 2: Neurodevelopmental Screening Tool for Children

<table>
<thead>
<tr>
<th>VISION AND ADAPTIVE</th>
<th>HEARING AND COMMUNICATION</th>
<th>MOTOR DEVELOPMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Always ask</strong></td>
<td>Can your child see?</td>
<td>Can your child hear and communicate as other children?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Does your child do the same things as other children of the same age?</td>
</tr>
<tr>
<td><strong>14 weeks</strong></td>
<td>Baby follows close objects with eyes?</td>
<td>Baby responds to sound by stopping sucking, blinking or turning?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child lifts head when held against Shoulder</td>
</tr>
<tr>
<td><strong>6 months</strong></td>
<td>Baby recognises familiar faces</td>
<td>Child turns head to look for sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child holds a toy in each hand</td>
</tr>
<tr>
<td><strong>9 months</strong></td>
<td>Child’s eyes focus on far objects. Eyes move well together. (No squint)</td>
<td>Child turns when called</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child sits and plays without support</td>
</tr>
<tr>
<td><strong>18 Months</strong></td>
<td>Child looks at small things and pictures</td>
<td>Child points to 3 simple objects. Child uses at least 3 words other than names. Child understand simple commands</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child walks well</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child uses finger to feed</td>
</tr>
<tr>
<td><strong>3 years</strong></td>
<td>Sees small shapes clearly at 6 metres</td>
<td>Child speaks in simple 3 word sentences</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Child runs well and climbs on things</td>
</tr>
<tr>
<td><strong>5 – 6 years: School readiness</strong></td>
<td>No problem with vision, Use a Snellen E chart to check</td>
<td>Speak in full sentences and interact with children and adults</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hops on one foot.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Able to draw a stick person.</td>
</tr>
</tbody>
</table>

**REFER**

Refer the child to the next level of care if child has not achieved the developmental milestone. Refer motor problem to Occupational Therapist/ Physiotherapist and hearing and speech problem to Speech Therapist/ Audiologist if you have the services at your facilities.
Annexure 3: Algorithm for Initiation and Management of ART in Newly Diagnosed HIV-positive Infants <4 weeks old*

1. **Birth HIV PCR test**
   - Initial counselling for mother/caregiver on positive birth HIV PCR & starting ART

2. **Indeterminate result**: Refer to separate guideline

3. **Positive Birth HIV PCR test**
   - Actively trace and link to care

4. **Baseline Assessment for neonate ≥2.25 kg**
   - Clinical review
     - Bloods: confirmatory HIV PCR, CD4 count/%
     - FBC/diff, ALT
     - (Genotype if mother is failing 2nd/3rd line ART)
   - Start ART on same day² (if oral feeding is established)
     - AZT (4mg/kg/dose BD)
     - 3TC (2mg/kg/dose BD)
     - NVP (6mg/kg/dose BD)

5. **Review at 1 week of treatment**: Clinical review & counselling
   - Check blood results

6. **Review at 2 weeks of treatment**: Clinical review & counselling

7. **Review at 1 month of treatment**: Clinical review & counselling
   - Bloods: FBC/diff, cholesterol + triglycerides
   - Start co-trimoxazole prophylaxis

8. **Adjust medication**
   - If ≥ 3kg:
     - Switch NVP to LPV/r (Kaletra) and AZT to ABC
     - Dose ABC, 3TC, LPV/r as per Paed dosing chart³
   - If still < 3kg:
     - Switch NVP to LPV/r (Kaletra): 1ml BD
     - Dose AZT 12mg/kg/dose BD, 3TC 4mg/kg/dose BD

9. **Review monthly until 6 months of treatment**: Adjust medication using dosing chart³
   - Month 4: Do VL

10. **VL lower than detectable limit**: Continue ABC, 3TC, LPV/r.
    - Review monthly until 1 year and repeat VL, CD4, cholesterol + triglycerides

11. **VL detectable**: Continue ABC, 3TC, LPV/r. Adherence strengthening. Review monthly. Repeat VL after 3 months. If VL still detectable, discuss with paediatrician

*Note that this protocol is meant as a clinical guide, and there is allowance for flexibility after discussion with an expert.

*Refer to documents below where numbered in the protocol:
1. Managing Indeterminate HIV PCR test results guideline- Annexure 12
2. ARV dosage chart if <28 days of age- annexure 4
3. SA NDOH paediatric ARV dosing chart- Annexure 5

Footnotes:
²If oral feeding is established
³Advising on breastfeeding
⁴If still < 3kg: assess failure to thrive; discuss with a paediatrician if questions / concerns

**Note**
- Birth HIV PCR test
- Positive Birth HIV PCR test
- Actively trace and link to care
### Annexure 4: ARV drug dosing chart for children <28 days of age and weighing ≥2.5 kg at birth

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Lamivudine (3TC)</th>
<th>Zidovudine (AZT)</th>
<th>Nevirapine (NVP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥2.5-&lt;3.0</td>
<td>2mg/kg/dose</td>
<td>4mg/kg/dose</td>
<td>6mg/kg/dose</td>
</tr>
<tr>
<td></td>
<td>TWICE daily (BD)</td>
<td>TWICE daily (BD)</td>
<td>TWICE daily (BD)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Available formulation</th>
<th>10mg/ml</th>
<th>10mg/ml</th>
<th>10mg/ml</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Weight (kg)</th>
<th>Dose in ml</th>
<th>Dose in mg</th>
<th>Dose in ml</th>
<th>Dose in mg</th>
<th>Dose in ml</th>
<th>Dose in mg</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥2.5-&lt;3.0</td>
<td>0.6 ml BD</td>
<td>6 mg BD</td>
<td>1.2 ml BD</td>
<td>12 mg BD</td>
<td>1.8 ml BD</td>
<td>18 mg BD</td>
</tr>
<tr>
<td>≥3.0-&lt;3.5</td>
<td>0.7 ml BD</td>
<td>7 mg BD</td>
<td>1.4 ml BD</td>
<td>14 mg BD</td>
<td>2.1 ml BD</td>
<td>21 mg BD</td>
</tr>
<tr>
<td>≥3.5-&lt;4.0</td>
<td>0.8 ml BD</td>
<td>8 mg BD</td>
<td>1.6 ml BD</td>
<td>16 mg BD</td>
<td>2.4 ml BD</td>
<td>24 mg BD</td>
</tr>
<tr>
<td>≥4.0-&lt;4.5</td>
<td>0.9 ml BD</td>
<td>9 mg BD</td>
<td>1.8 ml BD</td>
<td>18 mg BD</td>
<td>2.7 ml BD</td>
<td>27 mg BD</td>
</tr>
<tr>
<td>≥4.5-&lt;5.5</td>
<td>1.0 ml BD</td>
<td>10 mg BD</td>
<td>2.0 ml BD</td>
<td>20 mg BD</td>
<td>3.0 ml BD</td>
<td>30 mg BD</td>
</tr>
<tr>
<td>≥5.5-&lt;6.5</td>
<td>1.2 ml BD</td>
<td>12 mg BD</td>
<td>2.4 ml BD</td>
<td>24 mg BD</td>
<td>3.6 ml BD</td>
<td>36 mg BD</td>
</tr>
</tbody>
</table>

Caregivers who will be administering ARV medication to the child must be supplied with a syringe (1ml or 2ml) for each of the 3 ARVs and shown how to prepare and administer the correct dose. If possible, bottles and syringes should be colour coded with stickers and a sticker of the relevant colour used to mark the correct dose on the syringe.
## Annexure 5: Dosing of 1st and 2nd line ARVs in Children & Early Adolescents

<table>
<thead>
<tr>
<th>Drug</th>
<th>Initial Dose</th>
<th>Maintenance Dose</th>
<th>Available Formulations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lopinavir/ritonavir (LPV/r)</strong></td>
<td>2g/0.2g 2hr tds</td>
<td>1g/0.1g qd</td>
<td>Cap, STR, KAP, PO, PEG/PED, Dosing disk, oral syringe, PEG/PO, PEG/PED/PO, PEG/PED/MCT, PEG/PED/MCT/Cornstarch</td>
</tr>
<tr>
<td><strong>Tenofovir/emtricitabine (TDF/FTC)</strong></td>
<td>1g/0.5g qd</td>
<td>1g/0.5g qd</td>
<td>Capsule, STR, KAP, PO, PEG/PED, Dosing disk, oral syringe, PEG/PO, PEG/PED/PO, PEG/PED/MCT, PEG/PED/MCT/Cornstarch</td>
</tr>
<tr>
<td><strong>Efavirenz</strong></td>
<td>600mg 2hr tds</td>
<td>600mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Nevirapine</strong></td>
<td>200mg 2hr tds</td>
<td>200mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Zidovudine</strong></td>
<td>300mg 2hr tds</td>
<td>300mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Abacavir</strong></td>
<td>300mg 2hr tds</td>
<td>300mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Didanosine</strong></td>
<td>250mg 2hr tds</td>
<td>250mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Stavudine</strong></td>
<td>40mg 2hr tds</td>
<td>40mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Lamivudine</strong></td>
<td>150mg 2hr tds</td>
<td>150mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Emtricitabine</strong></td>
<td>200mg 2hr tds</td>
<td>200mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Tenofovir alafenamide (TAF)</strong></td>
<td>300mg 2hr tds</td>
<td>300mg 2hr tds</td>
<td>Capsule</td>
</tr>
<tr>
<td><strong>Tenofurib (TDF)</strong></td>
<td>300mg 2hr tds</td>
<td>300mg 2hr tds</td>
<td>Capsule</td>
</tr>
<tr>
<td><strong>Elvitegravir/cobicistat (E/C)</strong></td>
<td>400mg 2hr tds</td>
<td>400mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Raltegravir</strong></td>
<td>400mg 2hr tds</td>
<td>400mg 2hr tds</td>
<td>Tablet</td>
</tr>
<tr>
<td><strong>Rilpivirine</strong></td>
<td>250mg 2hr tds</td>
<td>250mg 2hr tds</td>
<td>Tablet</td>
</tr>
</tbody>
</table>

*Please consult with a clinician experienced in pediatric HIV care before prescribing.*
Annexure 6: Dosing of 3rd line ARVs in Children & Early Adolescents

1. Darunavir (DRV) and Ritonavir (RTV)

- Formulations available:
  - Tablets: 75 mg, 150 mg, 600 mg
  - Oral suspension: 100 mg/ml (Not yet registered in SA, available on compassionate use access from manufacturer with MCC Sec 21 approval)
- Children <3 years of age OR <10kg: DRV is not recommended

Children $\geq$3 - <18 years of age AND $\geq$10 kg

<table>
<thead>
<tr>
<th>Weight band (kg)</th>
<th>Dose of Darunavir and Ritonavir: administer doses in table below twice daily with food</th>
<th>Special considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 - &lt;11</td>
<td>DRV 200mg (2.0 ml) + RTV 32 mg (0.4 ml)</td>
<td></td>
</tr>
<tr>
<td>11 - &lt;12</td>
<td>DRV 220mg (2.2 ml) + RTV 32 mg (0.4 ml)</td>
<td></td>
</tr>
<tr>
<td>12 - &lt;13</td>
<td>DRV 240 mg (2.4 ml) + RTV 40 mg (0.5 ml)</td>
<td></td>
</tr>
<tr>
<td>13 - &lt;14</td>
<td>DRV 260 mg (2.6 ml) + RTV 40 mg (0.5 ml)</td>
<td></td>
</tr>
<tr>
<td>14 - &lt;15</td>
<td>DRV 280 mg (2.8 ml) + RTV 48 mg (0.6 ml)</td>
<td></td>
</tr>
<tr>
<td>15 - &lt;30</td>
<td>DRV 375 mg (combination of 2 x 150 mg + 1 x 75 mg tablets or 3.8 ml) + RTV 48 mg (0.6 ml)</td>
<td>Should only be used of patient is resistant to Lopinavir Children &lt;3 years of age OR &lt;10kg; DRV is not recommended</td>
</tr>
<tr>
<td>30 - &lt;40</td>
<td>DRV 450 mg (combination of 3 x 150 mg tablets or 4.6 ml) + RTV 100 mg capsule (or 1.25 ml)</td>
<td></td>
</tr>
<tr>
<td>$\geq$40</td>
<td>DRV 600 mg (1 x 600 mg tablet or 6 ml) + RTV 100 mg capsule (or 1.25 ml)</td>
<td></td>
</tr>
</tbody>
</table>

- Adolescent (aged $\geq$18 years of age)/ adult dose (treatment experienced with $\geq$1 DRV resistance-associated mutation):
  DRV 600 mg + RTV 100 mg both twice daily with food

2. Raltegravir (RAL)

- Formulations available:
  - Film-coated tablets: 400 mg
  - Chewable tablets: 25 mg, 100 mg (scored, dividable)
  - Note: Film-coated tablets and chewable are NOT interchangeable
  - For oral suspension: single use packet of 100 mg (Not yet registered in SA, available on compassionate use access from manufacturer with MCC Sec 21 approval)
### Children ≥4 weeks of age AND weighing ≥3 kg - <20 kg: dosing of oral suspension

<table>
<thead>
<tr>
<th>Weight band (kg)</th>
<th>Dose of Raltegravir</th>
<th>Special considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - &lt;4</td>
<td>1 ml (20mg) twice daily</td>
<td>Film-coated tablets, chewable tablets and oral suspension are not interchangeable.</td>
</tr>
<tr>
<td>4 - &lt;6</td>
<td>1.5 ml (30 mg) twice daily</td>
<td>Should only be considered for salvage therapy.</td>
</tr>
<tr>
<td>6 - &lt;8</td>
<td>2 ml (40 mg) twice daily</td>
<td>Should not be added as the only active drug to a failing regimen.</td>
</tr>
<tr>
<td>8 - &lt;11</td>
<td>3 ml (60 mg) twice daily</td>
<td>Can be used in children from 4 weeks and ≥3kg.</td>
</tr>
<tr>
<td>11 - &lt;14</td>
<td>4 ml (80 mg) twice daily</td>
<td>Children can remain on oral suspension as long as their weight is &lt;20kg</td>
</tr>
<tr>
<td>14 - &lt;20</td>
<td>5 ml (100 mg) twice daily</td>
<td></td>
</tr>
</tbody>
</table>

### Children ≥2 - <6 years of age: dosing of chewable tablets:

<table>
<thead>
<tr>
<th>Weight band (kg)</th>
<th>Dose of Raltegravir</th>
<th>Number of chewable tablets</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 - &lt;10</td>
<td>50 mg twice daily</td>
<td>0.5 x 10 0 mg twice daily</td>
</tr>
<tr>
<td>10 - &lt;14</td>
<td>75 mg twice daily</td>
<td>3 x 25 mg twice daily</td>
</tr>
<tr>
<td>14 - &lt;20</td>
<td>100 mg twice daily</td>
<td>1 x 100 mg twice daily</td>
</tr>
<tr>
<td>20 - &lt;28</td>
<td>150 mg twice daily</td>
<td>1.5 x 100 mg twice daily</td>
</tr>
<tr>
<td>28 - &lt;40</td>
<td>200 mg twice daily</td>
<td>2 x 100 mg twice daily</td>
</tr>
<tr>
<td>≥40</td>
<td>300 mg twice daily</td>
<td>3 x 100 mg twice daily</td>
</tr>
</tbody>
</table>

- Children ≥2 - <12 years of age: Two dosing options:
  1. If < 25 kg body weight, chewable tablets by weight-based dosing chart above to maximum of 300 mg twice daily
  2. If ≥ 25 kg body weight, 400 mg film-coated tablet twice daily
- Adolescent (aged ≥12 years of age) / adult dose: 400 mg film-coated tablet twice daily
3. Dolutegravir (DTG)

- Formulations available:
  Tablets: 10mg, 25 mg (not yet registered in SA), 50 mg (registered with MCC); combination tablet containing abacavir 600mg, lamivudine 300mg, dolutegravir 50mg (available in private sector)
- Children <12 years of age: not recommended

Children ≥12 years of age AND ≥40 kg:

<table>
<thead>
<tr>
<th>Weight band (kg)</th>
<th>Dose of Dolutegravir</th>
<th>Special considerations</th>
</tr>
</thead>
</table>
| Children ≥ 12 years and ≥ 40kg   | 50mg once a day       | Children <12 years of age: not recommended
|                                  |                      | Should be taken 2 hours before or 6 hours after taking cation-containing antacids or laxatives, sucralfate, oral iron supplements, oral calcium supplements, or buffered medications
|                                  |                      | Dose adjustment required when used with rifampicin                                      |

4. Etravirine (ETR)

- Formulations available:
  Tablets: 25 mg (Not yet registered in SA, available on compassionate use access from manufacturer with MCC Sec 21 approval)
  100 mg (registered with MCC)
- Children <6 years of age: not recommended

Children ≥6 - <18 years of age AND ≥16 kg:

<table>
<thead>
<tr>
<th>Weight band (kg)</th>
<th>Dose of Etravirine</th>
<th>Special considerations</th>
</tr>
</thead>
</table>
| 16 - <20         | 100 mg twice daily | Should only be considered for salvage therapy
| 20 - <25         | 125 mg twice daily | Children <6 years of age: not recommended
| 25 - <30         | 150 mg twice daily | To be taken after a meal
| ≥30              | 200 mg twice daily |                                                                                         |
# Annexure 7: Dosing of ARVs in Late Adolescents & Adults

<table>
<thead>
<tr>
<th>Drug</th>
<th>Standard Dose</th>
<th>Side-effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nucleoside &amp; Nucleotide Reverse Transcriptase Inhibitors (NRTI's)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abacavir (ABC)</td>
<td>300mg twice daily or 600mg daily</td>
<td>Hypersensitivity reaction (most common in first 6 weeks of therapy- do not rechallenge)</td>
</tr>
<tr>
<td>Tenofovir (TDF)</td>
<td>300mg daily</td>
<td>Nephrotoxicity</td>
</tr>
<tr>
<td>Lamivudine (3TC)</td>
<td>150mg twice daily or 300mg daily</td>
<td>Well tolerated, rarely pure red cell aplasia</td>
</tr>
<tr>
<td>Emtricitabine (FTC)</td>
<td>200mg daily</td>
<td>Hyperpigmentation(palms/soles)</td>
</tr>
<tr>
<td>Zidovudine (AZT)</td>
<td>300mg twice daily</td>
<td>Headache, nausea, neutropaenia, anaemia, lipoatrophy</td>
</tr>
<tr>
<td>Stavudine (d4T)</td>
<td>30mg twice daily</td>
<td>Peripheral neuropathy, lipoatrophy, hyperlactataemia</td>
</tr>
<tr>
<td><strong>Non- Nucleoside Reverse Transcriptase Inhibitors (NNRTI's)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nevirapine (NVP)</td>
<td>200mg daily X14 days, then 200mg twice daily</td>
<td>Rash (including Stevens-Johnson syndrome), hepatitis</td>
</tr>
<tr>
<td>Efavirenz (EFV)</td>
<td>600mg at night daily (If &lt;40kg, 400mg at night daily)</td>
<td>Rash, hepatitis, CNS effects, gynaecomastia, potentially serious DILI</td>
</tr>
<tr>
<td>Etravirine (ETR)</td>
<td>200mg daily after meals</td>
<td>Rash, hepatitis</td>
</tr>
<tr>
<td><strong>Protease Inhibitors (PI's)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lopinavir/ritonavir (LPV/r)</td>
<td>200/50mg tabs 2 tablets twice daily with food</td>
<td>Nausea, diarrhoea, dyslipidaemia</td>
</tr>
<tr>
<td>Atazanavir (ATZ)</td>
<td>300mg daily plus Ritonavir 100mg with food</td>
<td>Jaundice (due to unconjugated hyperbilirubinaemia), dyslipidaemia</td>
</tr>
<tr>
<td>Darunavir (DRV)</td>
<td>600mg twice daily plus Ritonavir 100mg with food</td>
<td>Diarrhoea, nausea, rash, dyslipidaemia (low potential)</td>
</tr>
<tr>
<td><strong>Integrase Strand Transfer Inhibitors (InSTI's)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Raltegravir (RAL)</td>
<td>400mg twice daily</td>
<td>Rash (including Stevens- Johnson), hepatitis, nausea, diarrhoea</td>
</tr>
<tr>
<td>Dolutegravir (DTG)</td>
<td>50mg every 24 hours (integrase inhibitor naive) or 50mg every 12 hours (patients with integrase resistance and patients on rifampicin)</td>
<td>Hypersensitivity reaction, hepatitis, CNS effects (insomnia)</td>
</tr>
</tbody>
</table>
## Annexure 8: Dosing of ARVs in Adults with Renal Impairment

<table>
<thead>
<tr>
<th>Drug</th>
<th>Creatinine Clearance (CrCl)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10-50ml/min</td>
</tr>
<tr>
<td><strong>Nucleoside &amp; Nucleotide Reverse Transcriptase Inhibitors (NRTI’s)</strong></td>
<td></td>
</tr>
<tr>
<td>Stavudine (d4T)</td>
<td>15mg twice daily</td>
</tr>
<tr>
<td>Lamivudine (3TC)</td>
<td>150mg daily</td>
</tr>
<tr>
<td>Zidovudine (AZT)</td>
<td>300mg twice daily</td>
</tr>
<tr>
<td>Tenofovir (TDF)</td>
<td>AVOID</td>
</tr>
<tr>
<td>Abacavir (ABC)</td>
<td>No dose adjustment required</td>
</tr>
<tr>
<td><strong>NNRTI’s Non- Nucleoside Reverse Transcriptase Inhibitors (NNRTI’s)</strong></td>
<td></td>
</tr>
<tr>
<td>Efavirenz (EFV)</td>
<td>No dose adjustment required</td>
</tr>
<tr>
<td>Nevirapine (NVP)</td>
<td>No dose adjustment required</td>
</tr>
<tr>
<td>Etravirine (ETR)</td>
<td>No dose adjustment required</td>
</tr>
<tr>
<td><strong>Protease Inhibitors (PI’s)</strong></td>
<td></td>
</tr>
<tr>
<td>Lopinavir / Ritonavir (LPV/r)</td>
<td>No dose adjustment required</td>
</tr>
<tr>
<td>Atazanavir (ATZ)</td>
<td>No dose adjustment required</td>
</tr>
<tr>
<td>Darunavir (DRV)</td>
<td>No dose adjustment required</td>
</tr>
<tr>
<td><strong>Integrase Strand Transfer Inhibitors (InSTI’s)</strong></td>
<td></td>
</tr>
<tr>
<td>Raltegravir (RAL)</td>
<td>No dose adjustment required</td>
</tr>
<tr>
<td>Dolutegravir (DTG)</td>
<td>No dose adjustment required</td>
</tr>
</tbody>
</table>

### Simplified modified Cockcroft and Gault formula to calculate Creatinine Clearance (CrCl) in Adults/Adolescents >16years:

\[
\text{CrCl [ml/min]} = \frac{(140 - \text{age} \times \text{Wt (kg)}}{\text{Serum Cr (\mu/ml/L)}}
\]

For women: multiply by 0.85

The NHLS uses the MDRD formula to calculate creatinine clearance for patients > 18 years and reports eGFR. This is an acceptable approximation of creatinine clearance and can also be used.
# Annexure 9: Applications for 3rd Line ART Regimens

## REQUEST FOR THIRD LINE ANTIRETROVIRAL THERAPY

<table>
<thead>
<tr>
<th><strong>PATIENT DETAILS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient First Name</td>
</tr>
<tr>
<td>Patient Surname</td>
</tr>
<tr>
<td>Date of Birth</td>
</tr>
<tr>
<td>Day/month/year</td>
</tr>
<tr>
<td>Patient number</td>
</tr>
<tr>
<td>Identity number</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Gender M/F</td>
</tr>
<tr>
<td>Weight (kg)</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
</tr>
<tr>
<td>Height (child)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>FACILITY DETAILS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Name</td>
</tr>
<tr>
<td>Authorised Prescriber</td>
</tr>
<tr>
<td>Contact Number</td>
</tr>
<tr>
<td>Email Address</td>
</tr>
<tr>
<td>Date</td>
</tr>
<tr>
<td>Signature of Authorised Prescriber</td>
</tr>
</tbody>
</table>

**Past medication history:**

<table>
<thead>
<tr>
<th>Date started</th>
<th>Regimen</th>
<th>Reason for discontinuation</th>
<th>Concurrent TB therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date stopped</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Reason for discontinuation codes: SE = Side effect, AL = Allergy, FC = Formulary change, NC = Non adherent*

Current regimen

Has adherence been assessed? y/n

What is the adherence level?
**Children: PMTCT history**

- Was the mother on therapy during pregnancy or breastfeeding?
- What treatment did the mother take and for how long?
- Was child breastfed?
- Did child receive any ARV at birth/after birth/ and during breastfeeding? State ARV and duration.

<table>
<thead>
<tr>
<th>CD 4 count</th>
<th>Viral load</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Last 3 CD 4 counts results:</strong></td>
<td><strong>Children CD4%</strong></td>
</tr>
<tr>
<td>Date:</td>
<td></td>
</tr>
<tr>
<td>Date:</td>
<td></td>
</tr>
<tr>
<td>Date:</td>
<td></td>
</tr>
</tbody>
</table>

**Laboratory Resistance test attached:** y/n

**Most recent available tests:**

- **Hb (g/dL)**
- **ALT (U/L)**
- **Creatinine (µmol/L)**
- **Creatinine Clearance (mL/min/1.73 m²)**
- **White cell count (x 10⁹/L)**
- **Neutrophil count (x 10⁹/L)**
- **Hepatitis B status?**

**Concomitant medication and indication**

**Children:** Is child able to swallow a tablet? y/n

**For office use only:**

- **Date received:**
- **Recommendation:**

- **Date:**
ADHERENCE TO TREATMENT ASSESSMENT FORM

Patient name: ____________________________________ Date: __________________________

Clinician’s name: ________________________________

Ask the client the following set of questions and make comments below each question. If the client is a child or adolescent, these questions need to be asked to the caregiver:

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Explain how you take your ART – what time and how many tablets each time</td>
</tr>
<tr>
<td>2.</td>
<td>Have you forgotten to take your ART? If yes, how many doses have you missed since your last appointment?</td>
</tr>
<tr>
<td>3.</td>
<td>What were the reasons for you not remembering to take your ART? What do you do to remember to take your medication and not forget?</td>
</tr>
<tr>
<td>4.</td>
<td>What do you do when you miss a dose of your ART? Do you take the dose when you remember or wait until it’s time for the next dose?</td>
</tr>
<tr>
<td>5.</td>
<td>Tell me 3 reasons why you want to adhere to your ART (why you take your tablets)?</td>
</tr>
<tr>
<td>6.</td>
<td>Have you disclosed your HIV status to someone? If so, do you have a treatment supporter?</td>
</tr>
</tbody>
</table>
7. Do you have extra tablets stored in case you run out before you can go back to your clinic? What do you do if you plan to travel?

8. How do you get to the clinic each month? Do you have a backup plan to get to the clinic if needed?

9. Are you having any side effects from your tablets? Are you worried about taking your tablets?

10. Are you taking any other medication? If yes, what are you taking and how many pills?

11. Have you had problems swallowing your tablets, or do you vomit after taking the tablets? If yes, how often do you struggle to swallow the medication?

12. How do you plan to make sure you take your ART if you use alcohol or drugs?

13. Do you know what an undetectable viral load is? Do you know what a high viral load is? Why do you think your viral load is high?

This adherence assessment tool must accompany the “Request for third line antiretroviral therapy” application form. If poor adherence is detected from the questions above, clinicians should increase tailored adherence support that assists the client in addressing the reasons for poor adherence.
## TB Suspect Screening Tool

For TB suspects, contacts, prophylaxis in HIV. To be used as part of PALSA Plus based screening.

### Patient Personal Details
- **Name:**
- **Surname:**
- **Address:**
- **Foster number:**
- **Clinic:**
- **Date of Birth:**
- **Contact No:**

### TB History
- **Previous TB:**
- **Y**
- **N**
- **Year:**
- **Clinic:**
- **Previous treatment outcome:**
- **Cure:**
- **Complete:**
- **Default:**
- **Failure:**
- **Transfer:**
- **Previous MDR-TB:**
- **Y**
- **N**
- **Outcome:**
- **Default:**
- **Failure:**
- **Cure:**

### History of Contact
- **Known contact with confirmed TB patient:**
- **Y**
- **N**
- **MDR/XDR contact:**
- **Y**
- **N**
- **Name:**
- **Clinic:**
- **MDR/XDR contact resistance pattern:**

### Exposure Risk
- **Health worker:**
- **Y**
- **N**
- **Other:**
- **Y**
- **N**
- **Mines / Quarry / Sandblasting:**
- **Y**
- **N**
- **Prisoner:**
- **Y**
- **N**

### TB Symptoms
#### Adults
- **Cough > 2 weeks:**
- **Y**
- **N**
- **Drenching night sweats:**
- **Y**
- **N**
- **Fatigue:**
- **Y**
- **N**
- **Blood stained sputum:**
- **Y**
- **N**
- **Fevers > 2 weeks:**
- **Y**
- **N**
- **Weight loss:**
- **Y**
- **N**
- **Chest pain on breathing:**
- **Y**
- **N**

#### Children < 8 years
- **Cough/wheeze > 2 weeks:**
- **Y**
- **N**
- **Fatigue (child does not play):**
- **Y**
- **N**
- **Weight loss:**
- **Y**
- **N**
- **Not gaining weight (failure to thrive):**
- **Y**
- **N**

### HCT
- **HIV:**
- **Pos:**
- **Neg:**
- **Refused:**
- **CD4 result:**
- **ART:**
- **Y**
- **N**
- **ARV start date:**

### Observations
- **Weight:**
- **kg**
- **Failure to thrive (check growth curve in RTH Card):**
- **Y**
- **N**
- **Temperature:**
- **C**
- **Neck stiffness:**
- **Y**
- **N**
- **Respiratory rate:**
- **/min**
- **Visible masses:**
- **Neck/axilla/groin:**
- **Y**
- **N**
- **BP:**
- **mmHg**
- **Pulse:**
- **/min**

### TB Skin Test
- **Minute:**
- **Date read:**
- **Result:**

### Sputum Bacteriology
- **Specimen:**
- **Test:**
- **Date:**
- **Lab no:**
- **Result:**
- **DST Ref (S-R):**
- **INH (S-R):**

<table>
<thead>
<tr>
<th>Test</th>
<th>Date</th>
<th>Lab no</th>
<th>Result</th>
<th>DST Ref (S-R)</th>
<th>INH (S-R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>3.</td>
<td></td>
<td></td>
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<tr>
<td>4.</td>
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<td></td>
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<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Antibiotic
- **Name antibiotic:**
- **Y**
- **N**
- **Date:**

### Nurse-Based Diagnosis and Action
#### Adult NO TB
- **Prophylaxis not required:**
- **Unconfirmed TB & still symptomatic:**
- **Refer to Medical Officer**

#### Child < 5 years and/or HIV
- **+ve NO TB:**
- **Prophylaxis required:**
- **Confirmed TB (Notify & treat for TB):**
- **Confirmed DR-TB refer to Medical Officer**

### Name & Signature (PN/MO)
- **Date:**
- **Follow up Date:**
- **Date:**

---

**Annexure 10: TB Suspect Screening Tool**

Revised 15 April 2013

Ref: CT/TB 5.05
**Western Cape Government Health**

Annexure 11: WC Adverse Drug Reaction Reporting Form

<table>
<thead>
<tr>
<th>Patient Initials</th>
<th>DOB:</th>
<th>Gender:</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight (kg):</td>
<td>Height (cm):</td>
<td>Starting CD4 (if HIV+):</td>
<td>Current CD4 (if HIV+):</td>
<td></td>
</tr>
<tr>
<td>Pregnant? Yes No Unknown N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment facility name:</td>
<td>Folder no:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District/sub-district:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICD 10 code(s) or disease(s):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MEDICATION HISTORY (circle suspected medicines)**

<table>
<thead>
<tr>
<th>Medicine</th>
<th>Dose</th>
<th>Date Started</th>
<th>Date stopped</th>
</tr>
</thead>
</table>

**ADVERSE REACTION DETAILS**

- Anaemia requiring transfusion
- Cholestatic hepatitis
- Congenital anomaly/ Pregnancy exposure/ foetal death
- Gynaecomastia
- Hypersensitivity reaction
- Hyperuricaemia
- Lactic acidosis:
- Lipatrophy:
- Lipohypertrophy:
- Neutropenia:
- Other:

Description of reaction: Date event started:

Investigations (including other relevant medical history):

Management of adverse event:

**OUTCOME**

<table>
<thead>
<tr>
<th>Died</th>
<th>Recovered</th>
<th>Not yet recovered</th>
<th>Permanent damage/ disability</th>
<th>Hospitised</th>
<th>Regimen change - specify:</th>
</tr>
</thead>
</table>

Other outcome - specify:

**REPORTING DOCTOR / PHARMACIST / PROFESSIONAL NURSE**

Name: Qualifications:

Email: Tel: Cell:

Signature: Date completed:

Please include additional information that you may deem necessary in your report (use additional paper)

**OFFICE USE ONLY:** Database reference no: Submit to Manager: Pharmaceutical Services
STANDARD OPERATING PROCEDURE

Title: Managing INDETERMINATE HIV PCR Test Results

Document number: 001
Version number: 001

Written by: Prof. Gayle Sherman, Dr Ahmad Haeri Mazanderani
Reviewed by: Dr Sergio Carmona, Dr Marvin Hsiao, Dr Karl Technau, Dr Leon Levin, Prof Mark Cotton, Prof Brian Eley, Dr Max Kroon, Prof Ute Feucht, Dr Lee Fairlie, Dr Catherine Wedderburn, Dr Ute Hallbauer, Dr David Moore, Prof Landon Myer, Prof Theunis Avenant, Dr Nicolette du Plessis and Members of the NHLS Virology Expert Committee

Active from: 1 August 2015

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Summary

- The laboratory diagnosis of HIV in infants <18 months of age requires two HIV PCR positive results, each on a separate specimen, as per National HIV Paediatric testing guidelines of 1 June 2015 (alternatively, one HIV PCR positive result in association with an HIV viral load that is detectable on a separate specimen is also diagnostic of HIV)

- An HIV PCR result can be positive, negative or indeterminate

- An indeterminate HIV PCR result means that the test is inconclusive (i.e. it is not clearly positive or negative) and requires immediate FURTHER TESTING to determine whether the infant is HIV infected or not and REFERRAL.

- Repeat HIV PCR and HIV viral load testing needs to be performed as a matter of urgency and the patient managed accordingly (see Flow Diagram Scenario A for managing initial HIV PCR indeterminate cases and Flow Diagram Scenario B for managing confirmatory HIV PCR indeterminate cases)

- Infants in which the diagnosis of HIV remains inconclusive or where discordant results have been obtained (i.e. a positive HIV PCR followed by a negative HIV PCR and undetectable HIV viral load) need to be managed by a multidisciplinary team and should be discussed as a matter of urgency with a specialist clinician and pathologist (see contact details below). Repeat HIV testing and clinical monitoring is required until an HIV status is established

- It is important to remember that infants cannot be considered HIV-uninfected unless repeat testing occurs at least 4 weeks after infant prophylaxis (or cART has been discontinued), and six weeks after cessation of breastfeeding

- Counseling the mother/primary caregiver regarding the indeterminate result is of paramount importance to ensure successful follow-up and arriving at a definitive diagnosis (see COUNSELING box below)
Flow Diagram A:

**SCENARIO A:**
1st HIV PCR test Indeterminate

**Repeat HIV PCR and HIV VL and refer immediately**

**A1**

**Evidence of HIV:**
HIV PCR positive and/or HIV VL detectable (at any level)

**Infant likely HIV-infected:**
Virologist to review Ct & RFI of initial indeterminate.
If repeat HIV PCR and HIV VL required, consider timing of the testing in relation to infant prophylaxis and breastfeeding

Initiate cART once HIV infection confirmed on 2 separate samples

**A2**

**No evidence of HIV:**
HIV PCR negative or Indeterminate AND HIV VL undetectable

**Complete infant prophylaxis course:**
Ensure close clinical follow up. Repeat HIV PCR and HIV VL ±4 weeks later, and if negative/undetectable repeat HIV PCR 6 weeks after cessation of breastfeeding

Have a low threshold for repeat HIV testing if infant becomes symptomatic

Consider HIV-uninfected only if HIV PCR negative and HIV VL undetectable after ±4 weeks of stopping infant prophylaxis and 6 weeks after cessation of breastfeeding
Flow Diagram B:

**SCENARIO B:**
1st HIV PCR Positive. 2nd HIV PCR Indeterminate (Ct & RFI reviewed)
cART already initiated

**Repeat HIV PCR and HIV VL and refer immediately**

**B1**
*Evidence of HIV:*
HIV PCR Positive and/or HIV VL Detectable (at any level)

*Infant is HIV infected:*
Continue cART

**B2**
*HIV PCR Indeterminate*
HIV PCR result remains Indeterminate

*Discuss with clinical virologist:*
Review Ct & RFI to decide whether infant is HIV-infected or requires additional HIV PCR and VL testing.

**B3**
*No evidence of HIV:*
HIV PCR Negative AND HIV VL Undetectable

*If unable to confirm HIV Positive with repeat testing, consider monitored infant cART interruption in consultation with a paediatrician:*
Monitor closely with HIV PCR and HIV VL after withdrawal of cART at ±4 weeks, 3 months, and 3 monthly thereafter until off ARVs for 18 months
Introduction

According to the National HIV Paediatric testing guidelines of 1 June 2015, all HIV-exposed infants should be tested for HIV infection, using a molecular based assay such as PCR (polymerase chain reaction), at birth, 10 weeks of age and 6 weeks after stopping breastfeeding if still under 18 months of age at that time. In children receiving prolonged nevirapine prophylaxis to 12 weeks of age, an additional HIV PCR test is required at 18 weeks (or 14 weeks of age in some provinces).

The most common specimen collected from an infant is capillary whole blood from a heel prick spotted onto a cotton based paper card, which is dried at the site of collection. This is known as a dried blood spot (DBS) and requires three full spots per card. EDTA (purple top tube) anti-coagulated whole blood is also suitable and can replace a DBS; the minimum volume is 250µl (0.25mL).

The HIV PCR results should generally be available within THREE working days of reaching the nearest NHLS PCR laboratory.

Reporting of an HIV PCR result has 4 options:

1) POSITIVE, meaning that HIV is detected in the sample,

2) NEGATIVE, meaning that HIV is not detected in the sample,

3) INDETERMINATE result or

4) OTHER results e.g. ‘insufficient sample’; ‘clerical error’; ‘invalid result’, etc. These infants require submission of a repeat sample for HIV PCR as soon as possible.

Purpose

This SOP provides guidance for NHLS laboratory staff and the relevant clinical care providers on managing INDETERMINATE HIV PCR results.

Definitions:

ART: Antiretroviral therapy

cART: Combination antiretroviral therapy

Ct: Cycle threshold

NDoH: National Department of Health

DBS: Dried Blood Spot

DCST: District Clinical Specialist Team paediatrician or paediatric nurse

EDTA tube: Blood collection tube with a purple top to prevent coagulation

EID: Early Infant Diagnosis

HAST: HIV AIDS STD
HIV: Human Immunodeficiency Virus
NHLS: National Health Laboratory Service
Lab: EID NHLS laboratory
LIS: Laboratory Information System
MCDS: Minimal Clinical Data Set
NVP: Nevirapine
PCR: Polymerase chain reaction
PMTCT: Prevention of mother-to-child transmission
RFI: Relative fluorescence intensity
RTHB: Road to Health Booklet
SOP: Standard Operating Procedure
TAT: Turnaround time
VL: Viral load

Responsibilities

Clinical care givers

1. Identify HIV-exposed neonates or infants
2. Counsel the care provider and obtain consent for testing
3. Collect the blood specimen as required
4. Complete the NHLS request form with complete minimal clinical data set (MCDS) to ensure results can be returned accurately to the correct clinician in time and that there is a record of the parent's/caregiver's physical address and telephone contact numbers to link infants to care. Ensure the NHLS requisition barcode sticker is placed into the infant's RTHB for ease of tracing the PCR result.
5. For a follow-up specimen, please specify all previous HIV PCR and HIV VL results on the request form with either the laboratory barcode or episode number.

Pathologist and lab staff

1. Provide HIV PCR results within the agreed TAT
2. Review results according to the corresponding SOP and authorize results
3. Prioritize indeterminate HIV PCR results since these infants may be HIV infected and run the risk of increased morbidity and mortality due to delayed cART initiation or unnecessary cART in an uninfected infant
4. Ensure there is a record-keeping system for all indeterminate HIV PCR results
5. Ensure there is a notification system for the relevant clinical staff for all indeterminate HIV PCR results
Procedures:

What does an indeterminate HIV PCR test result mean?

An indeterminate result means that

- The HIV PCR test is inconclusive *i.e.* it is not clearly positive or negative
- Either HIV is present at very low levels that can only just be detected or HIV is absent.

Either way, **urgent repeat** HIV testing is essential to establish the child’s HIV status. Such children may either be HIV-infected or uninfected on additional testing. Repeat blood samples should preferably be EDTA (purple top) anti-coagulated whole blood for HIV PCR **AND** HIV VL. If this is not possible, submit DBS for repeat HIV PCR testing and refer immediately for EDTA whole blood sampling for HIV VL testing.

**Indeterminate** results occur infrequently (in less than 1% of all HIV PCR tests) but are problematic to manage. Uncertainty of the infant’s HIV infection status can result in poor outcomes *e.g.* lifelong treatment in HIV-uninfected infants, or morbidity and mortality due to delayed treatment in HIV-infected infants.

An **HIV-infected child** has at least TWO positive HIV virological assays (either an HIV PCR or HIV VL) on TWO separate samples.

An **HIV-uninfected child** has a negative HIV virological assay on a sample taken ±4 weeks after all infant ARV prophylaxis has been discontinued provided that no breastfeeding has occurred in the last 6 weeks. These children require follow up testing as per the national guidelines.

Responding to indeterminate results requires a multidisciplinary approach from clinicians and pathologists. Depending on the referral structures in each district, the primary clinician should urgently seek advice for each case from more specialized clinicians (*e.g.* DCST paediatricians, paediatric infectious disease specialists) and pathologists based at the NHLS HIV PCR laboratories as well as PMTCT/HAST program managers.

Every primary clinician should have contact details of specialist clinicians, program managers and their NHLS virology laboratory from the outset. Accurate completion of the NHLS requisition form with patient and clinician contact details facilitates this multidisciplinary approach and should include at least the following: clinic/hospital name, name and surname of patient, date of birth, sex, file number, patient address and contact details, specimen type and collection date, and the health care workers name, registration number and contact details [refer to the Minimal Clinical Data Set – MCDS SOP]. Please take special care to ensure that the details on the request form reflect those on the specimen (*i.e.* ensure that the name, surname and barcode on the form and on the specimen are the same).
**Figure 1:** Example of an NHLS request form

![Example of an NHLS request form](image_url)

### Actions

**The actions required by Clinical Staff:**

The actions required following an indeterminate result are described in two broad scenarios A and B (see flow diagram above).

**Scenario A:** The first HIV PCR test has an **indeterminate** result:

**Action:** Repeat an HIV PCR **AND** HIV VL test immediately and refer (as per national guidelines page 27). Do not await the repeat HIV PCR and VL results before referring (see ‘Referrals’ section below).

**A1:** The repeat HIV PCR is positive and/or HIV VL is detectable (*i.e.* any value above the detection limit of the assay): the child is likely HIV infected. Infant cART initiation should not be delayed by further testing. Although these cases require a confirmatory HIV PCR and/or VL to definitively establish a positive HIV infection status, the clinical team must consider each case individually. In some cases an indeterminate HIV PCR result (depending on Ct/RFI values) followed by a positive HIV PCR and/or detectable HIV VL result may be enough to establish a diagnosis of HIV infection. If not, confirmatory HIV PCR and HIV VL tests are required.

**Action:** cART initiation following submission of specimen for confirmatory HIV PCR and HIV VL if necessary.
A2: The repeat HIV PCR is negative or indeterminate again **AND** the HIV VL is undetectable: HIV infection cannot be excluded in the presence of antiretroviral prophylaxis (e.g. daily NVP) or within 4 weeks of discontinuing prophylaxis.

**Action:** Complete the infant ART prophylaxis course (i.e. infant NVP syrup, usually for 6 weeks) and repeat HIV PCR **AND** HIV VL 4 weeks later. Monitor the child clinically every 2 weeks. If the child becomes symptomatic for HIV infection, repeat testing immediately. Healthcare workers should have a low threshold for repeat HIV PCR testing at any opportunity before 10-18 weeks.

**Scenario B:** The first HIV PCR is **positive** but the second, confirmatory HIV PCR is **indeterminate**:

**Action:** Repeat the HIV PCR **AND** HIV VL test immediately and refer. Do not await the repeat HIV PCR and VL results before referring (see ‘Referrals’ section below).

**B1:** The repeat HIV PCR is positive and/or HIV VL is detectable (i.e. any value above the detection limit of the assay): the child is confirmed HIV-infected because HIV would have been detected twice on separate samples.

**Action:** Continue cART.

**B2:** The repeat HIV PCR is indeterminate and HIV VL is undetectable.

**Action:** Review the Ct and RFI in consultation with a clinical virologist to decide whether the infant can be considered HIV-infected or whether HIV PCR and HIV VL require repeating.

**B3:** The repeat HIV PCR is negative **AND** the HIV VL undetectable: HIV infection cannot be excluded in the presence of antiretroviral prophylaxis (daily NVP) or cART if already initiated.

**Action:** The best approach for these infants should be determined within the multidisciplinary team. It is vital to keep the patient’s caregiver informed and supported (see ‘Counselling Suggestions’ below) and the patient kept in close clinical follow up. The same approach should be followed for infants with repeatedly indeterminate HIV PCR results.

In all cases, a clear plan should be documented, communicated and adhered to. If the diagnosis remains unclear despite all attempts to resolve, the last resort is a monitored treatment interruption, if treatment has been started, with follow-up testing at one month, three months, and three monthly thereafter for a minimum of 18 months off ART.
**The actions required by Pathologist and Laboratory staff**

**HIV VIROLOGY LABORATORIES**

Indeterminate results, currently defined as Ct >33 and/or RFI <5, should be treated as urgent and only authorized after careful review by a virology registrar or consultant. The Ct & RFI values should be documented on the LIS. Consider:

- TRAK search to identify previous HIV PCR and HIV VL test result(s)
- Contact clinician who sent the HIV PCR test and/or designated centralized responsible person for district or province (e.g. paediatric infectious disease specialist/PMTCT coordinator/DCST paediatrician) to discuss case and request repeat samples as soon as possible
- Repeat HIV PCR test **AND** HIV VL (if possible on DBS) on the ‘indeterminate’ sample after alerting the field i.e. don’t delay result in laboratory
- Where clinicians cannot be reached, kindly refer these cases and all available information to Drs Gayle Sherman (gayles@nicd.ac.za) or Ahmad Haeri Mazanderani (ahmadh@nicd.ac.za).

**References:**

REFERRALS:

Referrals can mean seeking advice from clinicians and/or virologists or sending the patient to a specialist referral center urgently.

1. NHLS laboratories and virologist contact details

**Groote Schuur EID lab, Western Cape (0214045254/ 0214045202)**
Dr Marvin Hsiao (0214045200/ 0834451592 after hours)

**Tygerberg EID lab, Western Cape (0219389355/ 0219389557)**
Dr Jean Maritz (0219389057/ 0833633736 after hours)

**Dora Nginza EID Lab, Eastern Cape (0414644635)**
Dr Howard Newman (0413956152/ 0832646070 after hours)

**Umtata EID lab, Eastern Cape (0413956152)**
Dr Howard Newman (0413956152/ 0832646070 after hours)

**Universitas EID lab, Free State and Northern Cape (0514053162)**
Dr Daniel Morobadi (0514053162/ 0823134770 after hours)

**Inkosi Albert Luthuli Central Hospital EID Lab, KwaZulu Natal (0312402800)**
Dr Kerusha Govender (0312402822/ 0837799199 after hours)

**Tshwane Academic Division EID lab, Gauteng (0123192257)**
Dr Ahmad Haeri Mazanderani (0123192670/ 0826428609 after hours)

**Charlotte Maxeke Johannesburg Academic EID Lab, Gauteng (0114898809)**
Dr Lucia Hans (0114898408/ 0842068074 after hours)

**Chris Hani Baragwanath Academic EID Lab, Gauteng (0114898708)**
Dr Jeannette Wadula (0114898726/ 0828035699 after hours)

2. Contact details for treating paediatric clinicians; DCST paediatricians or paediatric nurses; PMTCT or HAST managers & co-ordinators

Every facility should have the contact details of clinicians or mentors who can assist with management of complex paediatric HIV cases. Alternatively, facilities should consult their NHLS HIV PCR laboratory virologists.

3. Telephonic helplines

Right to Care Paediatric HIV Helpline 083 3526642

National HIV & TB Health Care Workers Hotline 0800 212 506
COUNSELING SUGGESTIONS for HIV PCR indeterminate results

The mother/primary caregiver should be consulted regarding decisions about cART initiation. Any decision must consider the practical implications of where and how treatment will be continued. Infant feeding should be carefully discussed considering that breastfeeding improves outcome in HIV-infected infants. Maternal adherence to ART during breastfeeding should be stressed. All cases should urgently be brought to the attention of the relevant HIV clinic. Engagement of the family should be encouraged but the mother should guide the level of family involvement. Monitor the mother’s well-being including adequate ART care and monitoring, TB screening and adequate psychosocial support. It is important to document discussions with the mother in the infant’s bed letter and RTHB. The mother should have the clinic contact numbers and clinical course and decisions should be documented in the infant’s road to health booklet to facilitate communication between different health care providers.

Where possible, to improve compliance, aim for continuity of care at a single facility preferably with a single healthcare worker.

The guiding principles of counseling in these cases should include:

1. The mother/primary caregiver must be involved with honest and frank information at every stage.

2. The message must be communicated that there is a team involved with the infant’s care, that guidelines and resources exist to determine the final outcome. However, the length of this process is uncertain. Follow-up care and clear communication, both verbal and written, is critical especially for mobile mothers.

3. The team may not know the answer to the diagnostic dilemma at present but is aware how stressful this is and will undertake to find the solution in consultation with the mother and the necessary experts. At this stage it is critical that the follow-up care is monitored and tracked to reassure the mother/family that somebody is pursuing the problem. In the absence of a clear answer this should provide some level of relief.

4. A clear plan should be documented, communicated and adhered to. In the event of an unclear diagnosis despite all attempts to come to a clear solution, the last resort will be a monitored treatment interruption, if the infant is on cART, with follow-up testing at one month, three months, and three monthly thereafter for a minimum of 18 months off ART.

Note that these families need increased adherence support as they may be confused by the indeterminate results and the lack of a final confirmed diagnosis may contribute to poor adherence to ART.
REFERENCES


Additional information and/or copies of this document, please contact:

Western Cape Government Health

P.O. Box 2060, Cape Town, 8000

Website: www.westerncape.gov.za

This publication is also available for download, go to http://www.westerncape.gov.za/health