Antiretroviral therapy

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Who qualifies for ART?

Medical criteria (refer Appendix 1A/B for WHO clinical staging system for HIV-infected children)

Table 1: Criteria for initiating ART

<table>
<thead>
<tr>
<th>Age</th>
<th>Eligibility criteria for ART</th>
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</thead>
<tbody>
<tr>
<td>Less than 12 months old</td>
<td>All children</td>
</tr>
<tr>
<td>1 – 5 years old</td>
<td>WHO stage 3 &amp; 4 OR CD4 ≤ 25% OR CD4 absolute count ≤ 750 cells/mm³</td>
</tr>
<tr>
<td>More than 5 years old</td>
<td>WHO stage 3 &amp; 4 OR CD4 ≤ 350 cells/mm³</td>
</tr>
</tbody>
</table>

Social criteria

Mandatory

- A reliable parent / caregiver who is fully counselled and able to administer medication to the child

Desirable

- Disclosure to another adult living in the same household is encouraged so that there is someone else who may help with the administration of the child’s ART
- Disclosure to the child in an age and developmentally-appropriate manner in discussion with caregiver/family (Refer to Appendix 2 for guidance on early disclosure 5-7 years, partial disclosure 8-11 years, full disclosure 11+ years)
- A fully counselled additional household caregiver who is prepared to administer the child’s medication
- A caregiver who is able to attend the ART clinic on a regular basis
- A caregiver who has previously demonstrated his / her ability to attend the health system regularly

Procedures for initiating ART

Pre-ART assessment

The following evaluations should be part of the pre-treatment assessment:
Complete clinical assessment
- Neurodevelopmental assessment
- Measure weight, length/height, and head circumference, and determine nutritional status
- Stage the HIV infection using the WHO clinical staging classification (refer Appendix 1A/B)
- Screening for active TB and exposure to TB (refer: Diagnosis of TB)
- Identify other medical conditions that may impact on ART e.g. hepatitis, opportunistic infections, pregnancy in adolescents
- Complete blood tests: FBC & differential count, alanine aminotransferase (ALT) if indicated, CD4 count & percentage and viral load
- Complete ART booklet
- Arrange 3 structured counselling sessions with a Wola Nani counsellor (ext 5001)

Initiating ART in children admitted to RCWMCH

The majority of children requiring ART at RCWMCH are newly diagnosed infants, and children with advanced HIV infection (WHO stages 3 & 4). There is a relative urgency in initiating ART in these children to prevent undue mortality. These children should ideally be started within 2 weeks of confirming the HIV diagnosis. Consequently, ± 85% of children are started on ART during hospital admission, including 15-20% in the intensive care setting.

Approach to ART:

1. All ART-naive HIV-infected children < 12 months of age and those with advanced diseases (WHO stage 4 and most children with WHO stage 3 disease) are started on ART before discharge, usually within 1-2 weeks of admission
2. All children admitted to the ICU are commenced on ART as soon as the diagnosis of HIV infection is confirmed, and the caregiver has received post-test counselling and been informed of the urgency to start ART. The pre-initiation counselling is then completed before discharge
3. Stable HIV-infected children > 12 months of age who meet the criteria for starting ART can be started in the outpatient setting, ideally at the local community ART clinic. Children who require specialised care may be commenced at the Infectious Diseases Clinic (IDC), RCWMCH

Our experience since implementing this approach in 2007 is that the vast majority of children respond and few children initiated on ART under these conditions develop severe IRIS events.

Inpatient enrolments

Treatment decisions are made on a daily basis by the on-call senior registrar or during weekly ID ward rounds on Monday afternoon between 14h00 and 16h00. A Wola Nani counsellor attends ward rounds and the ID social worker is available for consultation. This should facilitate counselling of caregivers and address potential social problems.

1. The ward registrar should identify children eligible for ART and co-ordinate the preparation of patients and caregivers. The child should be clinically staged (Appendix 1A/B), a recent CD4 count and percentage done and the ART booklet completed (Appendix 2). All children being considered for ART should be screened for active TB (Contact history, current medical history, growth assessment, Mantoux & CXR) The child is then presented by the ward registrar or medical officer to the ID senior registrar or at the ID ward round (Monday afternoon). The completed ART booklet, recent CD4, FBC, differential count and ALT results, and a recent CXR and Mantoux test result should be available.
2. During the discussion the senior registrar or ID team will confirm whether the child qualifies for ART and whether ART should be initiated during the current admission or in the outpatient setting, or whether the child should be referred to a nominated community clinic for ART or routine follow-up.
3. If it is decided that the child be referred to a community ART clinic the ward doctors should explain the decision to the caregiver, arrange an appointment telephonically (refer Appendix 3 for contact details) and complete the appropriate referral form (Appendices 4 or 5) before discharge.
4. Once a decision is taken to start a child on ART at RCWMCH the caregiver MUST complete the three-session structured treatment readiness programme directed by one of the Wola Nani counsellors (Appendix 6) [A Wola Nani counsellor may be contacted on extension: 5001].
Ideally, only when the counselling programme has been satisfactorily completed should ART be started. There are situations e.g. in the ICU where ART is commenced in parallel with the counselling programme. However, the caregiver MUST complete the programme before the child is discharged. Counselling may be augmented with educational material.

5. The ward registrar/medical officer should inform the caregiver about the decision and arrange a baseline viral load. The blood sample for viral load (1ml EDTA plasma [purple top tube]) MUST be sent before the first dose of antiretrovirals is administered. The ART data form (Appendix 7) is completed by a member of the ID team.

6. Antiretroviral therapy is then commenced as soon as possible. The initial antiretroviral prescription is checked and counter-signed by an Infectious Diseases service doctor authorising their use. Any attending clinician may sign-off successive prescriptions.

7. The ward doctors should arrange the follow-up appointment at the Infectious Diseases clinic [extension: 5613 or 5517] or community clinic and, at discharge, write the date of the next appointment on the pharmacy prescription sheet below the prescription, to ensure that adequate medication is provided until the clinic appointment.

8. A number of institutions in the Cape Town Metropole provide medium to long term residential care for convalescent children and/or children who lack caregivers, including HIV-infected children on ART (Appendix 8).

Ambulatory patients

1. Children who may benefit from antiretroviral therapy are identified by the attending doctor / nurse-practitioner through clinical staging and CD4 evaluation. The ART booklet is completed (Appendix 2), FBC, differential count and ALT results, and a recent CXR and Mantoux test are reviewed. If all these are satisfactory and active TB is deemed unlikely the caregiver is informed of the decision to initiate ART.

2. If it is decided that the child should be referred to a community ART site to start treatment, the caregiver is informed, an appointment is arranged telephonically (refer Appendix 3 for contact details), and the referral form (Appendix 5) completed.

3. Once a decision is taken to start a child on ART at RCWMCH the caregiver MUST complete the three-session structured treatment readiness programme directed by one of the Wola Nani counsellors (Appendix 6) [A Wola Nani counsellor may be contacted on extension: 5001]. Ideally, only when the counselling programme has been satisfactorily completed should ART be started. There are situations where ART can be commenced in parallel with the counselling programme. However, the caregiver MUST complete the programme. Counselling may be augmented with educational material.

4. Blood for baseline viral load (1ml EDTA plasma [purple top tube]) MUST be sent before the first dose of antiretrovirals is administered and the ART data form (Appendix 7) completed.

5. Antiretroviral therapy should be commenced as soon as possible by the attending clinic doctor / nurse practitioner and follow-up appointments arranged (refer to section entitled: Routine Follow-up & Monitoring).

Drug Therapy

First line therapy

Unless contraindicated, all children should commence on one of the following two regimens:

Children < 3 years old or < 10 kg, and older children exposed to perinatal nevirapine:

Abacavir [ABC], with
Lamivudine [3TC], and
Lopinavir / ritonavir [LPV/r]

Children >3 years old or > 10 kg who were never exposed to perinatal nevirapine:

Abacavir [ABC], with
Lamivudine [3TC], and
Efavirenz [EFV]

Medication modification

- Switch to tablets or capsules from syrups or solutions as soon as possible.
- Children may occasionally need to change a drug from the first-line regimen to one from the second-line regimen, because of intolerance or a serious adverse reaction. Swapping limits the patient's second-line treatment options. The decision to swap MUST be made by a doctor with antiretroviral experience.
- If intolerance develops to lopinavir / ritonavir (e.g. severe persistent vomiting), consider switching to efavirenz (if >10 kg body weight/3 years of age and not previously exposed to perinatal nevirapine).
- Remember to recalculate doses at each clinic visit according to current body weight and/or body surface area.
- Regimen modification in children established on a protease inhibitor-based first line regimen once they reach 3 years of age or 10 kg body weight:
  - In children who were not exposed to nevirapine during a PMTCT programme but treated with LPV/r, the PI should be changed to efavirenz, if the recent viral load (last VL done within the previous 2 months) is undetectable. In those children who do not have an undetectable viral load or are < 3 years of age, continue with the original regimen until the criteria for changing from first to second line therapy are fulfilled (refer Indications for changing ART)
- For children on stavudine with no side-effects continue stavudine. Abacavir should be substituted if lipodystrophy develops.

Prescribing information

Refer to Appendix 9 for pharmacy considerations and Appendix 10, the weight-based dosing table for the preferred dosing recommendations.

**ABACAVIR [ABC]**

**Formulations**
- Oral solution: 20mg/ml
- Tablets: 300mg; not scored but can be halved for administration

**Dosage**
- Paediatrics: 8mg/kg/dose twice daily
- Adult: 300mg twice daily

**Major toxicities**
- More common: fever, rash, nausea, vomiting and diarrhoea
- Elevated liver enzymes, lactic acidosis, sleep disorders
- Hypersensitivity reaction in <5 % of patients (refer Chapter 7 for details)

**Special Instructions**
- Rechallenge is strictly contraindicated in patients whom have experienced a hypersensitivity reaction to abacavir. Any signs of hypersensitivity in patients should be reported immediately by caregiver to doctor. Please inform the duty ID registrar or consultant who will be able to advise on management.
- Abacavir should be discontinued in patients whom have developed lactic acidosis.
- Solution is stable for 2 months at room temperature once the bottle is opened.

**LAMIVUDINE [3TC]**

**Formulations**
- Oral solution: 10 mg/ml
- Tablets: 150 mg; scored - can be halved for dosing (75mg) and administration

**Dosage**
- Paediatric dose: 4 mg per kg body weight twice daily
- Adolescent / adult dose: 150 mg twice daily or 300 mg once daily

**Major toxicities**
- More common: headache, fatigue, nausea, diarrhoea, skin rash, abdominal pain
- Less common: pancreatitis, peripheral neuropathy, decreased neutrophil count, increased liver enzymes. Lactic acidosis and severe hepatomegaly with steatosis, including fatal cases have been reported.
**Special instructions & stability**
Can be administered with or without food
Oral solution may be stored at room temperature

**STAVUDINE [d4T]**

**Formulations**
Oral Solution (powder for reconstitution): 1 mg/ml
Capsules: 15, 20, 30 mg

**Dosage**
Paediatric dose: 1 mg per kg body weight twice daily (up to 25 kg):
Adolescent / adult dose: >25 kg: 30 mg twice daily

**Major toxicities**
More common: headaches, gastrointestinal disturbances, rashes.
Less common: lipoatrophy/lopodystrophy, peripheral neuropathy and pancreatitis. Lactic acidosis and severe hepatomegaly with steatosis, including fatal cases have been reported.
Rare: increased liver enzymes

**Drug interactions**
Should not be administered in combination with AZT

**Special instructions & stability**
May be administered with or without food
Oral solution: powder for reconstitution: add 202 ml water; oral solution must be kept refrigerated; stable for 30 days with refrigeration
For younger children or those who have difficulty swallowing, capsules may be opened and the contents dispersed in water (solution is stable for 24 hrs)

**ZIDOVUDINE [AZT]**

**Formulations**
Oral solution: 10 mg/ml
Capsules: 100 mg
Tablets: 300 mg; unscored but can be halved for administration

**Dosage**
**Premature infant dose for prevention of transmission or treatment** (standard neonate dose may be excessive in premature infants):
1.5 mg/kg of body weight (intravenous) or 2 mg/kg of body weight (oral) every 12 hours, increased to every 8 hours at 2 weeks of age (neonates ≥30 weeks gestational age) or at 4 weeks of age (neonates <30 weeks gestational age)

**Neonate/Infant dose (<6 weeks) for prevention of transmission or treatment:**
**Oral:** 2 mg/kg of body weight every 6 hours
**Intravenous:** 1.5 mg/kg of body weight every 6 hours

**Pediatric dose (6 weeks to <18 years):**
**Body surface area dosing:**
Oral: 180–240 mg/m2 of body surface area every 12 hours

Adolescent / adult dose: 300 mg twice daily

**Major toxicities**
More common: haematological toxicity including granulocytopenia and anaemia, and headache
Less common: myopathy, myositis, and liver toxicity
Unusual (or severe): Lactic acidosis, severe hepatomegaly with steatosis, including fatal cases

**Special instructions & stability**
May be administered with or without food
Oral solution may be stored at room temperature
Capsules (100 mg) may be considered in older children/adolescents
Decrease dose in patients with renal failure (refer below)
Reduced dosage may be indicated in patients with substantial hepatic dysfunction

**DIDANOSINE [ddl]**

*Formulations*
Tablets: 25, 50, 100 mg
Enteric coated didanosine: 250 mg, 400 mg

*Dosage*
Neonatal / infant (<90 days of age): 50 mg/m² twice daily
Paediatric dose: 120 mg/m² twice daily
Adolescent / adult dose:
<60 kg, 125 mg twice daily or 250 mg daily
≥ 60 kg, 200 mg twice daily or 400 mg daily

*Major toxicities*
More common: peripheral neuropathy, diarrhoea, headache, anxiety, restlessness, insomnia
Less common (more severe): pancreatitis
Rare: anaemia, leucopenia, thrombocytopenia, seizures, hypersensitivity reactions, lactic acidosis

*Special instructions & stability*
Food decreases absorption. ddl should be administered on its own on an empty stomach at least 30 mins before or 2 hours after a meal. To ensure a sufficient amount of antacid is received, each dose must be given as 1 tablet for children < 1 year, 2 tablets for children > 1 year with a maximum of 4 tablets per dose. Didanosine tablets may be crushed and dissolved in 30ml of water (15ml per tablet), or they may be chewed but many children do not like the taste. Store at room temperature i.e. < 25°C

**TENOFOVIR (TDF)**

*Formulations*
Tablets: 300 mg

*Dosage*
Neonatal / infant DOSE: Not approved for use
Paediatric dose: 300 mg daily for children aged 12 years or more
Adolescent / adult dose: 300 mg daily

*Major toxicities*
More common: nausea, diarrhoea, vomiting, flatulence
Less common (more severe): renal impairment, lactic acidosis, severe hepatomegaly with steatosis, TDF-induced bone toxicity (osteomalacia, reduced bone density)

*Special instructions & stability*
TDF can be administered without regard to food; high-fat meal enhances absorption
Patients should be screened for HBV infection before TDF is prescribed
Severe hepatic dysfunction may occur when TDF is discontinued in HIV/HBV co-infected patients; therefore monitor ALT for several months after discontinuation or avoid discontinuation in HIV/HBV co-infected patients

**EFAVIRENZ [EFV]**

*Formulations*
Capsules: 50, 200 mg
Tablets: 600 mg

*Dosage*
Paediatric dose: According to 2010 revised WHO dosing recommendations the following weight band dosing is recommended:
10 – 13.9 kg: 200 mg once daily
14 – 24.9 kg: 300 mg once daily
25 – 34.9 kg: 400 mg once daily
≥ 35 kg: 600 mg once daily

**Major toxicities**
More common: skin rash, CNS problems primarily in adults (somnolence, insomnia, abnormal dreams, confusion, impaired concentration, agitation. Hallucinations, euphoria), increased liver enzymes

**Special instructions & stability**
May be administered with or without food but avoid giving with fatty food. Evening (bedtime) dosing is recommended to reduce problems related to CNS adverse effects. EFV is potentially teratogenic. Therefore it should be avoided in adolescent girls who are at risk of becoming pregnant.

For younger children or those who have difficulty swallowing, capsules may be opened and the contents dispersed in water or sprinkled onto a small amount of food and immediately ingested (granules have peppery taste). Tablets are film-coated and must be swallowed whole and not chewed, divided or crushed.

**NEVIRAPINE [NVP]**

**Formulations**
Oral solution: 10 mg/ml
Tablets: 200 mg; scored and can be halved for dosing (100mg) and administration

**Dosage**
Paediatric dose: 150-200 mg/m² daily for first 14 days, increased to 150-200 mg/m² twice daily thereafter if no rash or severe adverse events.

Adolescent / adult dose: 200 mg daily for 14 days followed by 200 mg twice daily

**Major toxicities**
More common: skin rash (may be severe and life-threatening), fever, nausea, headache, abnormal liver functions
Less common: fatigue, granulocytopenia, gastrointestinal intolerance, peripheral neuropathy and hepatitis

**Special instructions and stability**
May be administered with or without food
Oral solution may be stored at room temperature (below 25°C) but not refrigerated
Patients and caregivers should notify the doctor promptly if any rash appears. An isolated rash may be monitored while the patient remains on once daily dosing. A severe rash or rash accompanied by constitutional symptoms or abnormal liver function tests is an indication to discontinue NVP and not re-challenge.

NVP is generally not used in paediatric ART regimens in the public sector. It is used in preference to EFV in adult ART regimens in South Africa. Therefore children transitioned to adult care may be switched from EFV to NVP.

**LOPINAVIR (LPV) / RITONAVIR (RTV) [LPV/r]**

**Formulations**
Oral solution: 1ml = 80 mg LPV / 20 mg RTV
Tablets (Aluvia): 200 mg LPV / 50 mg RTV; 100 mg LPV / 25 mg RTV

**Dosage**
Children < 6 months of age:
300 mg/m² LPV / 75 mg/m² RTV twice daily to a maximum of 400mg / 100mg twice daily, with food

Paediatric dose: 230 - 300mg/m² LPV / 57.5 - 75 mg/m² RTV twice daily to a maximum of 400mg / 100mg twice daily, with food

Adult dose: 400mg / 100mg twice daily, with food
Co-administration with efavirenz or nevirapine: increase the dose to 300mg/m² LPV / 75mg/m² RTV twice daily to a maximum of 533mg / 133mg twice daily. In treatment-experienced patients where reduced susceptibility to lopinavir is suspected, the higher dosage is recommended.

Co-administration with rifampicin-based anti-tuberculosis therapy:
Usual LPV/r dose (230 - 300mg/m² LPV / 57.5 - 75 mg/m² RTV twice daily) and prescribe additional ritonavir (to make LPV:RTV ratio 1:1).
Additional ritonavir dose: 0.75 x LPV/r [LPV component] dose in mg, then rounded up to the nearest 0.1ml and given twice daily (may be mixed with Kaletra at the time of administration). This is termed ‘super-boosted Kaletra’. Refer to the dosing table for weight-based recommendations for extra ritonavir.

Major toxicities
More common: diarrhoea, headache, asthenia, nausea and vomiting, and rash
Less common (more severe): fat redistribution, lipid abnormalities
Rare: spontaneous bleeding episodes in haemophiliacs, pancreatitis, hyperglycaemia, ketoacidosis, diabetes, hepatitis

Special instructions and stability
Administer with food. High fat meal increases absorption
Oral solution should be refrigerated but may be kept at room temperature (up to 25°C) if used within 42 days

RITONAVIR [RTV]
Within the public sector, RTV is used exclusively to boost LPV/r in children co-treated with rifampicin-containing anti-tuberculosis therapy. Additional ritonavir is given to give a lopinavir : ritonavir ratio of 1 : 1 [refer below]

Formulations
Oral solution: 80 mg/ml
Soft capsules: 100 mg

Dosage for super-boosting LPV/r
Paediatric dose: 0.75 X LPV/r [LPV component] dose in mg, then round up to the nearest 0.1 ml administered twice daily from the commencement of anti-tuberculosis therapy until 2 weeks after complete cessation of rifampicin. Alternatively, refer to the dosing table at the end of the chapter for weight-based guided RTV dosing.

Major toxicities
More common: nausea, vomiting, diarrhoea, headache, abdominal pain, anorexia
Less common: circumoral paraesthesia, increased liver enzymes
Rare: spontaneous bleeding in haemophiliacs, pancreatitis, increased levels of triglycerides and cholesterol, hyperglycaemia, ketoacidosis, diabetes, and hepatitis

Special instructions and stability
Administration with food increases absorption
To improve tolerance: mix oral solution with milk, chocolate milk, or vanilla or chocolate pudding or ice cream. Coat the mouth with peanut butter before administration.

Additional pharmacological considerations

I. Calculating body surface area (m²)
The following formula may be used to calculate dosages according to body surface area. This is particularly useful with certain antiretroviral agents in children with a mass of < 3 kg:

\[
\text{Mass (kg)} \times \text{Length (cm)} \div 3600
\]
II. Dosages during adolescence

- For adolescents in early puberty (Tanner stage I - III) weight or body surface area-based dosing using paediatric guidelines is recommended
- For adolescents in later puberty (Tanner stage IV - V) use adult guidelines

III. Combining ART with anti-tuberculosis medication

Refer: Treatment of HIV-TB coinfection

IV. NRTI dosing in setting of impaired renal function

Dose reduction and/or adjustment of dosing frequency are recommended for patients with renal impairment who are receiving NRTIs. Dose adjustments are generally required when the glomerular filtration rate (GFR) falls below 50 ml/minute/1.73m². **Dosages of NNRTIs and PIs do not require adjustment in the presence of renal insufficiency.** Recommendations for children have been extrapolated from adult guidelines.

The following formula may be used for estimating the approximate GFR:

\[
GFR \text{ (ml/minute/1.73m}^2\text{)} = 36.5 \times \text{height (cm)} / \text{Creatinine (µmol/L)}
\]

**Abacavir**

An adult study indicated that pharmacokinetic profiles are similar in patients with and without renal insufficiency. Therefore dosage adjustments are not necessary in the presence of renal insufficiency.

**Lamivudine**

### Table 2: Guidelines for adjusting the dose of lamivudine in children aged >3 months - 15 years with renal insufficiency

<table>
<thead>
<tr>
<th>Creatinine clearance (ml/min/1.73m²)</th>
<th>Suggested paediatric dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;50</td>
<td>4 mg/kg 12 hrly (max: 150mg 12 hrly)</td>
</tr>
<tr>
<td>30-49</td>
<td>4 mg/kg load then 4 mg/kg 24 hrly</td>
</tr>
<tr>
<td>15-29</td>
<td>4 mg/kg load then 2.6 mg/kg 24 hrly</td>
</tr>
<tr>
<td>5-15</td>
<td>4 mg/kg load then 1.3 mg/kg 24 hrly</td>
</tr>
<tr>
<td>&lt;5</td>
<td>1.3 mg/kg load then 0.7 mg/kg 24 hrly</td>
</tr>
</tbody>
</table>

**Stavudine**

Impaired renal function and is based on body mass and creatinine clearance. In the absence of specific paediatric data, doses in children with renal impairment may be extrapolated from those recommended for adults as follows:

### Table 3: Guidelines for adjusting the dose of stavudine in children aged >3 months - 15 years with renal insufficiency

<table>
<thead>
<tr>
<th>Creatinine clearance (ml/min/1.73m²)</th>
<th>Suggested paediatric dosing</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;50</td>
<td>1 mg/kg 12 hrly (max: 30 mg 12 hrly)</td>
</tr>
<tr>
<td>25-50</td>
<td>0.5 mg/kg 12 hrly</td>
</tr>
<tr>
<td>10-25</td>
<td>0.5 mg every 24 hrs</td>
</tr>
</tbody>
</table>

* Insufficient data exists to recommend a dose for patients with creatinine clearance less than 10 ml/min/1.73m²

**Zidovudine**

Creatinine clearance (ml/min/1.73m²)

- 10-50 ml/min/1.73m²: 75% of dose
- <10 ml/min/1.73m²: 50% of dose
Didanosine
Creatinine clearance (ml/min/1.73m²)
10-50 ml/min/1.73m²: dose interval 24 hrs
<10 ml/min/1.73m²: 50% of dose 24 hrly

Tenofovir
Tenofovir may induce renal toxicity. Consequently, tenofovir is contraindicated if the GFR falls below 50 ml/min/1.73m²

V. Co-administration of anticonvulsant therapy
Co-administration of anticonvulsants remains a therapeutic challenge because information on the interaction with antiretroviral agents is limited. Anticonvulsants and antiretroviral agents can interact through multiple mechanisms including (1) competition for protein binding, (2) increased or decreased liver metabolism and (3) increased viral replication. The ideal anticonvulsant should have a minimal effect on all these mechanisms.

The main concern is drugs metabolised in the liver by the cytochrome P450 enzyme system as alteration in levels of both anticonvulsants and antiretroviral agents may occur leading to toxic or sub-therapeutic drug levels. This particularly pertains to the NNRTIs and PIs. The older anticonvulsants including phenobarbitone, phenytoin and carbamazepine should not be used.

Sodium valproate is the preferred first line anticonvulant for HIV-infected children co-treated with ART. Sodium valproate is metabolised by glucuronyl transferase and displays limited induction or inhibition of the cytochrome P450 system except for CYP2C9 which sodium valproate inhibits. Consequently the metabolism of the NNRTIs and PIs is not altered. Sodium valproate may increase the concentration of zidovudine but the clinical significance of this effect is unknown. Sodium valproate may also increase the replication of HIV in vitro. Despite these concerns sodium valproate remains the ‘best’ first line option.

Table 4: Approach to switching anticonvulsant therapy to sodium valproate

<table>
<thead>
<tr>
<th>1. Anticonvulsant-naive child</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Commence sodium valproate: Suspension 10 mg/kg/day in 3 divided doses or Epilim CR tablets 10 mg/kg/day in 2 divided doses; increase to a maximum of 40 mg/kg/day according to therapeutic response; usual dose: 20-30 mg/kg/day</td>
</tr>
<tr>
<td>• Initiate ART according to standard guidelines</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Patient is a known epileptic on one anticonvulsant agent but ART-naive</th>
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<tbody>
<tr>
<td>Sodium valproate (always dose 8 hourly if using syrup, or 12 hourly if using Epilim CR tablets)</td>
</tr>
<tr>
<td>Week 1 10 mg/kg/day</td>
</tr>
<tr>
<td>Week 2 15 mg/kg/day</td>
</tr>
<tr>
<td>Week 3 20 mg/kg/day</td>
</tr>
<tr>
<td>Week 4 25 mg/kg/day</td>
</tr>
<tr>
<td>Week 5 30 mg/kg/day</td>
</tr>
<tr>
<td>Week 6 30 mg/kg/day</td>
</tr>
</tbody>
</table>

Additional treatment options
Newer anticonvulsants such as gabapentin, lamotrigine and and levetiracetam do not affect cytochrome P450 function, and are potential alternatives in children not well maintained on sodium valproate. The neurology service should be consulted should the patient be poorly controlled.
Inhibition of cytochrome P450 system

Ritonavir is the only PI that inhibits the cytochrome P450 system. Although full-dose ritonavir is not used in public sector 1st & 2nd line regimens, additional ritonavir is used in combination with lopinavir/ritonavir in children on TB treatment. Inhibition of cytochrome P450 function may cause decreased metabolism and increased levels of anticonvulsants such as carbamazepine and phenobarbitone. There have been isolated case reports documenting toxic side effects of anticonvulsants following addition of PIs. This may be particularly important in children who have TBM (or other forms of TB) who present with seizures and get repeated doses of phenobarbitone. One should be aware that even normal doses of phenobarbitone may lead to side effects such as decreased level of consciousness in children who already have abnormal neurology.

Approach to a child on ART presenting with a seizure / status epilepticus

Treat according to the existing standard protocol. Although benzodiazepines & phenobarbitone may interact with antiretroviral metabolism the acute, potentially life threatening problem must be treated optimally. There are currently no viable alternatives to the current protocol:

- Administer an initial dose of benzodiazepine (rectal diazepam 0.5mg/kg or IV lorazepam 0.1mg/kg)
- If the seizure continues give a loading dose of phenobarbitone (20mg/kg)
- If seizures are ongoing administer further doses of phenobarbitone
- If maintenance therapy is required, sodium valproate should be prescribed in consultation with the neurology service; maintenance phenobarbitone therapy should not be given

VI. General / prescribing considerations

All patients on ART should return left-over medication at every visit. This will enable adherence to be calculated and non-adherence addressed regularly. The attending clinician should fill in the remaining amounts of medication on the ARV script at each clinic visit. The attending pharmacist should do this when processing repeat prescriptions outside clinic appointments. All ARV’s, cotrimoxazole and multivitamins of children in ambulatory care MUST be written up on a specific ARV chart, the back of which allows for additional medication. Refer to Appendix 9 for pharmacy guidelines.

Routine monitoring & follow-up

Clinical Monitoring

The frequency of visits for clinical monitoring is as follows:

- Ideally the first visit should take place 2 weeks after initiating therapy. This appointment should focus on ensuring that medicines are being correctly administered and stored, and strengthening adherence
- For infants: monthly follow-up visits focusing on the clinical progress of the child should occur for the first 6 months on ART, thereafter clinical appointments may be spaced at 2-3 monthly intervals provided that the child is adherent and clinically stable
- For older children: initiate monthly follow-up visits for the first 3 months. Thereafter, if the child is adherent and clinically stable, appointments may be spaced at 2-3 month intervals

At each visit:

- Greet the family, establish which language they would prefer during the consultation and determine whether or not they would prefer the presence of a counsellor. Introduce the counsellor and or visitors / training staff to the caregiver by name
- Plot physical growth (weight, length/height, and head circumference), and accordingly adjust the doses of antiretroviral drugs
- Check the immunizations on the Road-to-Health card and update if necessary
- Update all previous results on the ART chart and discuss these results with the caregiver
• Determine physical condition of the child
• Address ongoing medical problems, including nutritional, skin and dental problems and organ-specific complications of HIV infection
• Treat intercurrent infections, if present
• Check the doses of the drugs, and discuss new medication doses with caregiver
• Monitor neurodevelopmental progress at 3-6-month intervals in younger children
• Enquire about the health and medical care of the caregiver as well as the rest of the family members. Make appointments for siblings and caregivers not yet diagnosed or treated (refer chapter 18).
• Discuss and assist with issues of disclosure, alternative caregivers, family dynamics, safe sex, family planning, death and bereavement
• Disclosure to the child must be appropriate to the developmental stage of the child. Reinforce to the caregiver the importance of gradual disclosure in stages; we recommend full disclosure by about age 12.
• Arrange referral to dietitian if the child is failing to thrive or crossing percentile lines. Arrange physiotherapy, occupational therapy, speech therapy, developmental clinic or other specialist appointments as required
• Arrange referral of patient and family to community clinic for ongoing antiretroviral therapy where feasible
• Establish whether the family is receiving a grant(s) and complete a new grant application if indicated. Children with mental or physical disability qualify for a care dependency grant
• Blood tests as indicated should be done at the end of the consultation (unless fasted and blood tests taken on arrival at clinic).
• Conduct an adherence check e.g. complete pill counts and / or drug volume checks
• Generally supply medications at 1 or 2 monthly intervals (responsibility of pharmacy), even though the clinic appointments may be more widely spaced
• Refer to pharmacy for medication - direct patients to the pharmacy early during the day so that their medication can be processed while they are receiving counseling, dietary advice, physiotherapy etc.

Adherence Monitoring & education

Greater than 95% adherence to the drug regimen will ensure a good virological response and prevent the emergence of viral resistance. For a child taking medication twice daily, omitting more than 1 dose in 10 days implies <95%, or suboptimal, adherence.

Good relations and communication between healthcare providers (i.e., counsellors, nurses, and doctors) and the caregiver helps to encourage optimal adherence. Ideally, one healthcare provider should treat the child so that a long-term relationship can develop with the family.

Regular adherence checks and appropriate counselling (e.g. reinforcement of good practices, clarification of drug administration instructions & storage issues, and correction of mistakes) will increase the chances of caregivers and children maintaining optimal adherence.

Laboratory Monitoring

The following table summarises the laboratory monitoring of children on ART as recommended by the National Department of Health:
Table 5: Routine laboratory monitoring tests in children on ART

<table>
<thead>
<tr>
<th>Test</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD4 count &amp; percentage</td>
<td>At initiation</td>
</tr>
<tr>
<td></td>
<td>After six months, after 1 year, then annually</td>
</tr>
<tr>
<td>Viral load</td>
<td>At initiation</td>
</tr>
<tr>
<td></td>
<td>After six months, after 1 year, then annually</td>
</tr>
<tr>
<td></td>
<td>See viral load monitoring &amp; action for interpretation (below)</td>
</tr>
<tr>
<td></td>
<td>For children with unsuppressed VLs, more frequent VL monitoring is required, refer table 6.6</td>
</tr>
<tr>
<td>FBC &amp; differential count</td>
<td>For all children at baseline</td>
</tr>
<tr>
<td></td>
<td>Repeat as clinically indicated to determine response to treatment</td>
</tr>
<tr>
<td></td>
<td>e.g. response to elemental iron</td>
</tr>
<tr>
<td></td>
<td>If child is on AZT: baseline, 1mo, 2mo, 3mo and then annually</td>
</tr>
<tr>
<td>LDL cholesterol &amp; triglycerides</td>
<td>Children on LPV/r: annual random lipids</td>
</tr>
<tr>
<td></td>
<td>Fasting lipid levels should be done if LDL cholesterol and triglycerides are &gt; 4.4 mmol/l and 5.0 mmol/l respectively</td>
</tr>
<tr>
<td>ALT</td>
<td>For child on NVP: baseline and repeat if rash or jaundice develops</td>
</tr>
<tr>
<td></td>
<td>For child on/commencing TB treatment: baseline, and repeat if baseline level increased, or jaundice or persistent vomiting develops</td>
</tr>
</tbody>
</table>

Clinical signs of a favourable response to ART

- Increased awareness in surroundings, people, improved play
- Decreased frequency of infections (bacterial infections, thrush, and/or other opportunistic infections)
- Resolution of organ-specific complications e.g. discontinuation of supplemental oxygen in children with chronic lung disease, increasing platelet count in children with thrombocytopenia
- Improved growth in children who previously failed to grow
- Improvement in neurological signs or neurodevelopment

Indications for changing from 1st to 2nd line ART

A decision to change from 1st to 2nd line therapy should be based on viral load criteria.

Table 6: Virological monitoring & guidelines for managing an unsuppressed viral load

<table>
<thead>
<tr>
<th>Viral load (VL)</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 400 copies/ml</td>
<td>6-monthly VL monitoring during the year of ART, then annually, and routine adherence support</td>
</tr>
<tr>
<td>400 – 1000 copies/ml</td>
<td>Repeat VL in 6 months Step up adherence support</td>
</tr>
<tr>
<td>&gt; 1000 copies/ml</td>
<td>Step up adherence support Repeat VL within 3 months</td>
</tr>
<tr>
<td></td>
<td>● If VL &lt; 400 copies/ml, repeat after 6 months and then return to routine monitoring frequency</td>
</tr>
<tr>
<td></td>
<td>● If VL between 400 and 1000 copies/ml, continue adherence support and repeat VL after 6 months</td>
</tr>
<tr>
<td></td>
<td>● If VL &gt; 1000 copies/ml despite adherence support AND child is on NNTRI-based regimen,</td>
</tr>
</tbody>
</table>
switch to 2nd line therapy only if adherence is > 80%

- If VL > 1000 copies/ml and the child is on a PI-based regimen:
  Reinforce adherence (it is very difficult to fail a PI-based regimen unless the child previously received an unboosted PI

Switch to 2nd line therapy if VL > 5000 copies/ml only if adherence is > 80% and consider drug resistance testing if available

If the child received an unboosted PI in the past do resistance testing if available and change to 2nd line therapy if VL > 1000 copies/ml

### Second line regimens

<table>
<thead>
<tr>
<th>Failed regimen</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any regimen containing LPV/r</td>
<td>Refer below</td>
</tr>
<tr>
<td>ABC / 3TC / EFV</td>
<td>Change to: AZT / ddI / LPV/r</td>
</tr>
<tr>
<td>AZT or ddI regimen without LPV/r</td>
<td>ABC / 3TC / LPV/r</td>
</tr>
</tbody>
</table>

HIV-infected children who fail perinatal NVP prophylaxis and are subsequently commenced on first line regimens containing LPV/r are extremely challenging to manage when they ultimately fail first line therapy. Ideally the selection of a 2nd line regimen should be based on viral resistance testing which is not available in the public sector. There are currently no satisfactory therapeutic options in the public sector. However the following may be considered:

1. Continuation of the failing LPV/r-containing regimen once virological failure has occurred because the regimen may still be capable of suppressing the replication of wild-type virus while at the same time allowing the replication of biologically less-fit resistant mutants which cause less immunological damage. Hence administration of the failing regimen should slow down the rate of progression to immunological and ultimately clinical failure.

2. Switching to a NNRTI-containing regimen

3. Switching to a holding regimen of lamivudine monotherapy

4. In future effective 2nd line options may include darunavir or raltegravir combined with an optimised background regimen consisting of at least two of any paediatric-approved NRTIs, NNRTIs (including etravirine) or entry inhibitors to which the viral population is responsive.

### Key references


APPENDIX 1 A: Clinical Staging of HIV for Infants & Children with Established HIV Infection (WHO, 2010)

Name: ___________________________ Folder number: _______________________
Date of birth: _____________________

Stage every 6 months or more frequently if the patient is clinically unstable

<table>
<thead>
<tr>
<th>DATE</th>
<th>STAGE ONE</th>
<th>STAGE TWO</th>
<th>STAGE THREE</th>
<th>STAGE FOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Asymptomatic</td>
<td>Persistent generalised lymphadenopathy</td>
<td>Unexplained moderate malnutrition not adequately responding to standard therapy</td>
<td>Unexplained severe malnutrition</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unexplained persistent diarrhoea (≥ 14 days)</td>
<td>Pneumocystis pneumonia</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unexplained persistent fever (&gt;37.5°C, &gt; 1 month)</td>
<td>Recurrent severe bacterial infections (excl. pneumonia)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Persistent oral candidiasis (after first 6 weeks of life)</td>
<td>Chronic herpes simplex infection (oral or skin for &gt; 1 month, or visceral at any site)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute necrotizing ulcerative gingivitis /stomatitis/ periodontitis</td>
<td>Extrapulmonary TB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lymph node TB</td>
<td>Kaposis sarcoma</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pulmonary TB</td>
<td>Oesophageal candidiasis (or candida of trachea, bronchi or lungs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Symptomatic lymphoid interstitial pneumonitis (LIP)</td>
<td>CNS toxoplasmosis outside neonatal period</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Chronic HIV-associated lung disease incl. bronchiectasis</td>
<td>HIV encephalopathy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Unexplained anaemia (&lt; 8g/dl), neutropenia (&lt;0.5 x10^9/L), or chronic thrombocytopenia (&lt; 50 x10^9/L)</td>
<td>CMV infection (retinitis or another organ; age &gt; 1 month)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HIV-associated rectovaginal fistula</td>
<td>Extrapulmonary cryptococcosis including meningitis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acquired HIV-associated retinopathy</td>
<td>Any disseminated endemic mycosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HIV associated cardiomyopathy</td>
<td>Chronic cryptosporidiosis (with diarrhoea) / Isosporiasis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HIV associated nephropathy</td>
<td>Disseminated non-tuberculous mycobacteria infection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Extrapulmonary Kaposi sarcoma</td>
<td>Cerebral or B-cell non-Hodgkin lymphoma</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Any disseminated endemic mycosis</td>
<td>Progressive multifocal leuencephalopathy (PML)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HIV associated cardiomyopathy</td>
<td>HIV associated nephropathy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>HIV associated retinopathy</td>
<td>Acquired HIV-associated rectovaginal fistula</td>
</tr>
</tbody>
</table>
APPENDIX 1 B: PRESumptive and Definitive Criteria for Recognizing HIV-Related Clinical Events in Infants & Children with Established HIV Infection (WHO 2010)

<table>
<thead>
<tr>
<th>CLINICAL EVENT</th>
<th>CLINICAL DIAGNOSIS</th>
<th>DEFINITIVE DIAGNOSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLINICAL STAGE 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asymptomatic</td>
<td>No HIV related symptoms reported and no signs on examination</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Persistent generalized lymphadenopathy (PGL)</td>
<td>Persistent swollen or enlarged lymph nodes &gt;1 cm at two or more non-contiguous sites, without known cause</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td><strong>CLINICAL STAGE 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unexplained persistent Hepatosplenomegaly</td>
<td>Enlarged liver and spleen without obvious cause</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Papular pruritic eruptions</td>
<td>Papular pruritic vesicular lesions</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Fungal nail infections</td>
<td>Fungal paronychia (painful and swollen nail bed) or onycholysis (painless separation of the nail from the nail bed). Proximal white subungual onchomycosis is uncommon without immunodeficiency.</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Angular cheilitis</td>
<td>Splits or cracks on lips at the angle of the mouth with depigmentation, usually responding to antifungal treatment but may recur.</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Lineal gingival Erythema (LGE)</td>
<td>Erythematous band that follows the contour of the free gingival line; may be associated with spontaneous bleeding</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Extensive wart virus infection</td>
<td>Characteristic warty skin lesions; small fleshy grainy bumps, often rough, flat on sole of feet (plantar warts); facial, more than 5% of body area or disfiguring.</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Extensive molluscum contagiosum infection</td>
<td>Characteristic skin lesions: small flesh-coloured, pearly or pink, dome-shaped or umbilicated growths, may be inflamed or red; facial, more than 5% of body area or disfiguring. Giant molluscum may indicate advanced immunodeficiency.</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Recurrent oral ulcerations (two or more in six months)</td>
<td>Aphthous ulceration, typically with a halo of inflammation &amp; yellow-grey pseudomembrane.</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Unexplained parotid enlargement</td>
<td>Asymptomatic bilateral swelling that may spontaneously resolve and recur, in absence of other known cause, usually painless.</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Herpes zoster</td>
<td>Painful rash with fluid-filled blisters, dermatomal distribution, can be haemorrhagic on erythematous background, and can become large and confluent. Does not cross the midline.</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Recurrent upper respiratory tract infection (URTI)</td>
<td>Current event with at least one episode in past 6 months. Symptom complex; fever with unilateral face pain and nasal discharge (sinusitis) or painful swollen eardrum (otitis</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Clinical Stage 3</td>
<td>Unexplained Moderate Malnutrition</td>
<td>Unexplained Persistent Diarrhoea</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Weight loss: low weight-for-age, up to −2 standard deviations (SDs), not explained by poor or inadequate feeding and or other infections, and not adequately responding to standard management</td>
<td>Documented loss of body weight of -2 SD, failure to gain weight on standard management and no other cause identified during investigation</td>
<td>Unexplained persistent (14 days or more) diarrhoea (loose or watery stool, three or more times daily), not responding to standard treatment</td>
</tr>
<tr>
<td>Unexplained Persistent Diarrhoea</td>
<td>Unexplained Persistent Diarrhoea (loose or watery stool, three or more times daily), not responding to standard treatment</td>
<td>Confirmed by stools observed and documented as unformed. Culture and microscopy reveal no pathogens</td>
</tr>
<tr>
<td>Oral Candida (After First 6 Weeks of Life)</td>
<td>Persistent or recurring creamy white to yellow soft small plaques which can be scraped off (pseudomembranous), or red patches on tongue, palate or lining of mouth, usually painful or tender (erythematous form)</td>
<td>Microscopy or culture</td>
</tr>
<tr>
<td>Oral Hairy Leukoplakia</td>
<td>Fine small linear patches on lateral borders of tongue, generally bilaterally, which do not scrape off</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Lymph Node TB</td>
<td>Non-acute, painless “cold” enlargement of lymph nodes, usually matted, localized to one region. May have draining sinuses. Response to standard anti-TB treatment in one month.</td>
<td>Histology or isolation of <em>M. tuberculosis</em> from fine needle aspirate</td>
</tr>
<tr>
<td>Pulmonary TB</td>
<td>Nonspecific symptoms, e.g. chronic cough, fever, night sweats, anorexia and weight loss. In the older child also productive cough and haemoptysis. Abnormal CXR.</td>
<td>Isolation of <em>M. tuberculosis</em> on sputum or culture</td>
</tr>
<tr>
<td>Severe Recurrent Bacterial Pneumonia</td>
<td>Cough with fast breathing, chest indrawing, nasal flaring, wheezing, and grunting. Crackles or consolidation on auscultation. Responds to course of antibiotics. Current episode plus one or more in previous 6 months.</td>
<td>Isolation of bacteria from appropriate clinical specimens (induced sputum, bronchoalveolar lavage [BAL], lung aspirate)</td>
</tr>
<tr>
<td>Acute Necrotizing Ulcerative Gingivitis or Stomatitis, or Acute Necrotizing Ulcerative Periodontitis</td>
<td>Severe pain, ulcerated gingival papillae, loosening of teeth, spontaneous bleeding, bad odour, and rapid loss of bone and/or soft tissue.</td>
<td>Clinical diagnosis</td>
</tr>
<tr>
<td>Symptomatic Lymphoid Interstitial Pneumonitis (LIP)</td>
<td>No presumptive clinical diagnosis</td>
<td>CXR: bilateral reticulonodular interstitial pulmonary infiltrates present for more than two months with no response to antibiotic treatment and no other pathogen found. Oxygen saturation persistently &lt;90%. May present with</td>
</tr>
<tr>
<td>Condition</td>
<td>Description</td>
<td>Confirmation</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Chronic HIV-associated lung disease</strong></td>
<td>History of cough productive of copious amounts of purulent sputum (bronchiectasis only), with or without clubbing, hantosis, and crepitations and/or wheezes on auscultation; confirmed by CXR may show honeycomb appearance (small cysts) and/or persistent areas of opacification and/or widespread lung destruction, with fibrosis and loss of volume.</td>
<td></td>
</tr>
<tr>
<td><strong>Unexplained anaemia (&lt;8g/dl), or neutropenia (&lt;0.5 x 10^9/L) or chronic thrombocytopenia (&lt;50 x 10^9/L)</strong></td>
<td>No presumptive clinical diagnosis</td>
<td>Laboratory testing, not explained by other non-HIV conditions, or not responding to standard therapy with haematinics, antimalarials or anthelmintics as outlined in IMCI.</td>
</tr>
<tr>
<td><strong>CLINICAL STAGE 4</strong></td>
<td>Persistent weight loss not explained by poor or inadequate feeding, other infections not adequately responding in two weeks to standard therapy. Characterized by: visible severe wasting of muscles, with or without oedema of both feet, and/or weight-for-height of ~3 SDs, as defined by WHO IMCI guidelines. confirmed by documented weight loss of &gt;-3 SD +/- oedema.</td>
<td></td>
</tr>
<tr>
<td><strong>Pneumocystis pneumonia (PCP)</strong></td>
<td>Dry cough, progressive difficulty in breathing, cyanosis, tachypnoea and fever; chest indrawing or stridor. (Severe or very severe pneumonia as in IMCI). Usually of rapid onset especially in infants under six months of age. Response to high-dose co-trimoxazole +/- prednisolone. confirmed by: CXR typical bilateral perihilar diffuse infiltrates: microscopy of induced sputum or BAL or nasopharyngeal aspirate (NPA).</td>
<td></td>
</tr>
<tr>
<td><strong>Recurrent severe bacterial infection</strong></td>
<td>Fever accompanied by specific symptoms or signs that localize infection. Responds to antibiotics. Current episode plus one or more in previous 6 months. confirmed by culture of appropriate clinical specimen.</td>
<td></td>
</tr>
<tr>
<td><strong>Chronic herpes simplex infection; (orolabial or cutaneous of more than one month’s duration or visceral at any site)</strong></td>
<td>Severe and progressive painful orolabial, genital, or anorectal lesions caused by HSV infection present for more than one month. confirmed by culture and/or histology.</td>
<td></td>
</tr>
<tr>
<td><strong>Oesophageal candida (or candida of trachea, bronchi or lungs)</strong></td>
<td>Chest pain and dysphagia (difficulty in swallowing, odynophagia (pain on swallowing food and fluids), or retrosternal pain worse on swallowing (food and fluids); responds to specific treatment. In young children, suspect particularly if oral candida observed and food refusal occurs and/or difficulties/crying when feeding. confirmed by macroscopic appearance at endoscopy, microscopy of specimen from tissue or macroscopic appearance at bronchoscopy or histology.</td>
<td></td>
</tr>
<tr>
<td><strong>Extrapulmonary/disseminated TB</strong></td>
<td>Systemic illness usually with prolonged fever, night sweats, weight loss. Clinical features of organs involved, e.g. focal lymphadenopathy, cold abscess, sterile pyuria, pericarditis, ascites, pleural effusion, meningitis, arthritis, orchitis. positive microscopy showing AFB or culture of Mycobacterium tuberculosis from blood or other relevant specimen except sputum or BAL. Biopsy and histology.</td>
<td></td>
</tr>
<tr>
<td><strong>Kaposi sarcoma</strong></td>
<td>Typical appearance in skin or oropharynx of persistent, initially flat, patches with a pink or blood-bruise colour, skin lesions that usually</td>
<td>Macroscopic appearance or by histology: - Typical red-purple lesions seen on bronchoscopy or endoscopy;</td>
</tr>
<tr>
<td>Problem</td>
<td>Clinical Findings</td>
<td>Diagnostic Tests</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CMV retinitis or CMV infection affecting another organ, with onset at age &gt; 1 month</td>
<td>Retinitis only&lt;br&gt;CMV retinitis may be diagnosed by experienced clinicians: progressive floaters in field of vision, light flashes and scotoma; typical eye lesions on serial fundoscopic examination; discrete patches of retinal whitening with distinct borders, spreading centrifugally, often following blood vessels, associated with retinal vasculitis, haemorrhage and necrosis</td>
<td>Definitive diagnosis required for other sites. Histology or CMV demonstrated in CSF by culture or DNA-PCR</td>
</tr>
<tr>
<td>CNS toxoplasmosis with onset at age &gt; 1 month.</td>
<td>Fever, headache, focal neurological signs, convulsions. Usually responds within 10 days to specific therapy</td>
<td>Positive serum toxoplasma antibody and if available, neuroimaging showing single/multiple mass lesions</td>
</tr>
<tr>
<td>Extrapulmonary cryptococcosis including meningitis</td>
<td>Meningitis: usually sub acute, fever with increasing severe headache, meningism, confusion, behavioural changes that responds to cryptococcal therapy</td>
<td>Isolation of Cryptococcus neoformans from extrapulmonary site or positive cryptococcal antigen tests (CRAG) in CSF or blood</td>
</tr>
<tr>
<td>HIV encephalopathy</td>
<td>At least one of the following, progressing over at least two months in the absence of another illness: &lt;br&gt;- Failure to attain, or loss of, developmental milestones, loss of intellectual ability; or &lt;br&gt;- Progressive impaired brain growth demonstrated by stagnation of head circumference; or &lt;br&gt;- Acquired symmetric motor deficit accompanied by two or more of the following: paresis, pathological reflexes, ataxia, gait disturbances</td>
<td>Confirmed by brain CT scan or MRI demonstrating atrophy and basal ganglia calcification and excluding other causes</td>
</tr>
<tr>
<td>Disseminated mycosis (coccidiomycosis, histoplasmosis, penicilliosis)</td>
<td>No presumptive clinical diagnosis</td>
<td>Diagnosed by: &lt;br&gt;Histology: usually granuloma formation. &lt;br&gt;Isolation: antigen detection from affected tissue; culture or microscopy from clinical specimen or blood culture</td>
</tr>
<tr>
<td>Disseminated mycobacteriosis, other than TB</td>
<td>No presumptive clinical diagnosis</td>
<td>Nonspecific clinical symptoms including progressive weight loss, fever, anaemia, night sweats, fatigue or diarrhoea; plus culture of atypical mycobacteria species from stool, blood, body fluid or other body tissue, excluding lung.</td>
</tr>
<tr>
<td>Chronic cryptosporidiosis</td>
<td>No presumptive clinical diagnosis</td>
<td>Confirmed in children with chronic diarrhoea by microscopic examination</td>
</tr>
<tr>
<td>Chronic Isospora</td>
<td>No presumptive clinical diagnosis</td>
<td>Confirmed in children with chronic diarrhoea by microscopic examination</td>
</tr>
<tr>
<td>Cerebral or B cell non-Hodgkin lymphoma</td>
<td>No presumptive clinical diagnosis</td>
<td>Diagnosed by CNS imaging: at least one lesion with mass effect on brain scan; histology of relevant specimen</td>
</tr>
<tr>
<td>Progressive multi-focal leukoencephalopathy (PML)</td>
<td>No presumptive clinical diagnosis</td>
<td>Diagnosed by MRI or CT scan, and biopsy. Viral PCR for John-Cunningham virus</td>
</tr>
</tbody>
</table>
Appendix 2: ART Booklet

Date of completion: ___/___/____ (dd/mm/yyyy)  ARV Start date: ___/___/____

Name: ___________________________________________  Hospital: _____________

Folder no: ___________________________  M / F  Ward: ______ / clinic

DOB: ___/___/_____

Name of Primary caregiver: ___________________________  Relation: ________________

Other caregiver: ___________________________  Relation: ________________

Residential address: ___________________________  Other address: ___________________________

Tel: _____________________________________  Tel: __________________

Medical information

Weight: ______ (kg) Length/height: ___________________________ (cm) BSA: ______ (m²)

HIV diagnosis:  Test: _______ where: __________ Date: __________

CD4 (absolute): __________  CD4%: __________ Date: __________

WHO Stage

Staging condition/events:  Other significant ongoing medical problems:

__________________________________________  ______________________________________
__________________________________________  ______________________________________
__________________________________________  ______________________________________

Immunisations up to date?  Y / N  PCP prophylaxis?  Y / N

Development:  Normal / Abnormal:

TB diagnosis  None □ Previous □ Current TB diagnosis: PTB □ EPTB □ __________

Date Rx started: __________  Rx site __________

Definite / Probable TB diagnosis

Symptoms:  Y / N  TB contact Y / N  Suggestive  CXR Y / N  Mantoux:  neg / pos : ____mm

smear/culture:  pos / neg  Date: __________  Sensitivity: __________

Other investigations: ____________________________________________

Maternal health screen  Alive?  Y / N  Date of death: __________

HIV diagnosis when: __________ Date: __________

CD4: __________ Date: __________

MTCT Drugs (mother):  None □  NVP □  AZT/ NVP □  HAART □

MTCT Drugs (Infant):  None □  NVP □  Duration: __________

TB treatment:  None □ Previous □ Present □ month __ Rx at _______ (clinic)

ARV treatment:  Y / N  Start date: __________ from __________ (site)
Social Record and Screening

1. **Family Details**

Name of current caregiver: ___________________ Relation: __________

Age: ________ Literate? (Including numeric): Y / N

Parents married or still involved? Y / N

Father’s name: ____________________________

Number of children: _____ Father’s HIV status: _________________

Details of siblings: Supportive? Y / N

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

Has the primary caregiver disclosed HIV status? Y / N  To whom? __________

Other significant family details (e.g. alcohol abuse, violence etc):

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________

2. **Household details**

Safe water supply? Y / N  Functioning fridge? Y / N  TB contacts Y / N

Type of dwelling: Formal / informal

Number of adults in the household: _____ Number of other children: _______

Disclosure to household? Y / N

Who will be responsible for administering ARV’s to the child? ______________

Other household members who are willing or able to support ARV treatment? Y / N

Details: _________________________________________________________________

____________________________________________________________________

____________________________________________________________________

3. **Household income**  (Estimate amount:: R________ pm)

Is the primary caregiver employed? Y / N ____________________________

Who financially supports the primary caregiver? ____________________________

Grant(s): Child support ( ) Y / N  Applied for? Y / N when: _______

Care dependency Y / N  Applied for? Y / N when: _______

Other: ________________________________

____________________________________________________________________

*Other significant social comments:

____________________________________________________________________

____________________________________________________________________

____________________________________________________________________
**ART counselling must emphasize the following:**
- A life-long commitment and need for ART
- The implications of sub-optimal therapy
- The importance of informing IDC staff if caregivers anticipate travelling away from Cape Town or not attending future appointments

<table>
<thead>
<tr>
<th>Tick(✓)</th>
<th>Procedure/ Test</th>
<th>Name of Dr/ Sr/ Counsellor</th>
<th>Date</th>
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<td><strong>Counselling by ward/ IDC/ OPD staff</strong></td>
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<td><strong>ALT</strong></td>
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<td><strong>Baseline CXR &lt; 6 weeks before starting ART</strong></td>
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*Viral Load and Fasting lipids ARE NOT* routine baseline investigations.
Paediatric Antiretroviral Treatment Literacy: Counsellor’s Checklist

Name of Child: ________________________________
Hospital Folder No: __________________________

Caregiver Name: ______________________________
Relationship to Child (e.g. mother, grandmother): ______________________
Contact number: ______________________________

COUNSELLING SESSION 1
Date: ________________________________
Counsellor’s name: ______________________________

Introduction to Health Care Team and functions

Caregiver & household details
1. Primary caregiver(s) …………………………………………
2. Age of the child ………………………………………………
3. Who looks after the child during the day …………………
4. Household routine during the week ……………………
5. Household routine during the weekends …………………

Caregiver beliefs
1. Discuss what the caregiver thinks about ARVs for children ………
2. Discuss what the caregiver believes about the child’s needs for ARV…

General HIV/AIDS knowledge and understanding
1. How children get HIV infection …………………………………
2. What HIV does to the body ……………………………………
3. Difference between HIV infection & AIDS …………………
4. Testing for HIV infection in children ……………………
5. CD4 counts …………………………………………………
6. Viral loads …………………………………………………
7. Lifelong antiretroviral treatment ……………………………

COUNSELLING SESSION 2
Date: ________________________________
Counsellor’s name: ______________________________

Antiretroviral treatment
1. When ARVs are started in children ……………………………
2. How ARVs work against the virus ……………………………

Adherence
1. What adherence means and why it is important ………………
2. Things that help adherence …………………………………
   Disclosure to a treatment assistant? ………………………
   Disclosure to the child (if applicable) ………………………
3. Things that interfere with good adherence …………………
   Caregiver not receiving health care ………………………
   Lack of a household routine ……………………………
   Substance abuse ………………………………………


Home visit done  Yes [ ] No [ ] Date: __________________

Details: ____________________________________________________________

____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

Report* to clinician: ___________________ (Clinician’s name) Date: ______

COUNSELLING SESSION 3
Date: __________________
Counsellor’s name: _______________________

ARV Regimen: __________________________ ARV Start Date: ____________
1. __________________________
2. __________________________
3. __________________________

1. Knowing the child’s ARVs ………………………………………… [ ]
2. Correct dosing at regular times……………………………………… [ ]
3. Any specific food requirements explained………………………… [ ]
4. Discuss refrigeration requirements and practice …………………… [ ]
5. Demonstrate opening of child-proof medicine caps ………………… [ ]
6. Demonstrate use of syringes ………………………………………… [ ]
7. Demonstrate opening of capsules & mixing contents with water ….. [ ]
8. Discuss swallowing of capsules (older children) …………………… [ ]
9. Potential side-effects of ARVs ………………………………………… [ ]
10. Emphasize that ART is lifelong & adherence to treatment very important [ ]

Counselling sessions completed:  Yes [ ] No [ ]
If No (give reasons)
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

*Note: The counsellor should bring any issue to the attention of the attending doctor which they think will influence the child’s adherence to ARVs.

General comments from the counsellor on caregiver readiness for ART __________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
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____________________________________________________________________

25
### The Disclosure Ladder

#### TEENAGER
**11+ years**
**FULL DISCLOSURE**
**DEVELOPMENTAL LEVEL**
- Understands future consequences of actions
- Increasing need to make own decisions
- Sexual development
- Dependence on carer decreases
- Importance of relationships with friends increases

#### WHAT TO EXPLAIN:
- Review her understanding of health, medicines, sexual development, HIV infection, STIs etc.
- Need to understand responsibility for not transmitting HIV
- Prepare, equip and encourage her towards direct involvement in disclosure and decisions for her life

#### AIM
- Full disclosure and knowledge about transmission with understanding and confidence.

#### SCHOOL GOING CHILD
**8-11 years**
**PARTIAL DISCLOSURE**
**DEVELOPMENTAL LEVEL**
- Able to hold onto ideas and apply them to new situations
- Understands past present and future
- Social and moral awareness of their behaviour
- Beginning to be more curious and take some control over their lives

#### WHAT TO EXPLAIN:
- Information about our defences - immune system.
- Viruses are clever "baddies" which can damage our immunity
- White blood cells "goodies" = CD4 cells
- Naming of virus as HIV
- Help the child work out who she feels safe discussing this information with

#### AIM
- Naming of infection as HIV

#### YOUNG CHILD
**5-7 years**
**EARLY DISCLOSURE**
**DEVELOPMENTAL LEVEL**
- Concrete based ideas possible - real events in present and past but little understanding of future
- Take lead from parent or carer
- Beginning to link medicines and health

#### WHAT TO EXPLAIN:
- Introduce ideas of good health and hygiene by eating healthy food, exercise, looking after teeth etc.
- Medicines help to keep body healthy and strong
- Introduce idea of goodies (soldiers or blood cells) / baddies (germs) in the body / blood

#### AIM
- Understand that medicines support the body to keep well

#### VERY YOUNG
**0-4 years**
**NO DISCLOSURE YET**
**DEVELOPMENTAL LEVEL**
- Depends on adult for all needs and information
- Child needs comfort, support and security to develop a sense of belonging

#### WHAT TO EXPLAIN:
- Child too young for direct information about HIV but explain to carer about how HIV can affect child
- Ideas to help carer support child taking medicine
- Congratulate child on taking medicine

#### AIM
- Build up confidence of child in health workers and a rhythm of medicine taking

---

With acknowledgements to Kidzpositive™ and Kimesh Naidoo, KZN DOH
## Appendix 3: Paediatric ARV Treatment Sites

<table>
<thead>
<tr>
<th>District</th>
<th>Sub-District</th>
<th>Facility</th>
<th>Address</th>
<th>Contact Details</th>
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<td><strong>Metro</strong></td>
<td>Eastern</td>
<td>Eerste River Hospital</td>
<td>1 Humboldt Avenue, Eerste River</td>
<td>021 902 8000 021 904 1021</td>
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<tr>
<td><strong>Metro</strong></td>
<td>Eastern</td>
<td>Helderberg Hospital</td>
<td>Lourens Ford Street, Somerset West</td>
<td>021 850 4700 021 850 4712</td>
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<tr>
<td><strong>Metro</strong></td>
<td>Eastern</td>
<td>Ikwhezi Clinic</td>
<td>Simon Street Nomzame, Lwandle</td>
<td>021 845 7556 021 845 7557</td>
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<td><strong>Metro</strong></td>
<td>Khayelitsha</td>
<td>Kuyasa Clinic</td>
<td>Ntlazana Street, Khayelitsha</td>
<td>021 363 0271 021 363 0272 021 363 0273 021 363 0274 Clinic on Wednesday and Thursday</td>
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<tr>
<td><strong>Metro</strong></td>
<td>Khayelitsha</td>
<td>Matthew Goniwe CHC</td>
<td>9 Kwahlaza Road, Makhaza, Khayelitsha</td>
<td>021 362 6100 021 362 6101 021 362 6018</td>
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<td>Khayelitsha</td>
<td>Michael Mpongwana CHC</td>
<td>Steve Biko Road, Harare, Khayelitsha</td>
<td>021 361 3353 Clinic on Wednesday</td>
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<td>Nolungile CHC</td>
<td>Lawrence Road, Site C, Khayelitsha</td>
<td>021 387 1107 021 387 1200 Clinic on Friday</td>
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<td>Site B CHC</td>
<td>Lwandle Road, Site B, Khayelisha</td>
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<td>Klipfontein</td>
<td>Gugulethu CHC (Hannan Crusaid)</td>
<td>NY 3, Gugulethu</td>
<td>021 633 5963 Clinic on Wednesday</td>
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<td>021 637 8036</td>
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<td><strong>Metro</strong></td>
<td>Mitchell’s Plain</td>
<td>Crossroads CHC</td>
<td>Lansdowne Road, Crossroads</td>
<td>021 386 1121 021 386 8796 Clinic on Monday</td>
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<td>Mitchell’s Plain</td>
<td>Mitchell’s Plain CHC</td>
<td>1st Avenue, Eastridge, Mitchell’s Plain</td>
<td>021 392 5161 Clinic on Friday</td>
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<tr>
<td>Region</td>
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<td>False Bay Hospital 17&quot; Avenue, Fish Hoek</td>
<td>021 782 1121</td>
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<td>Hout Bay Clinic Imizamo Yetho, Main Road, Hout Bay</td>
<td>021 790 1720</td>
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<td>Masiphumelele CHC Pokela Road, Masiphumelele</td>
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<td>Albow Gardens Clinic Koeberg Road, Brooklyn</td>
<td>021 510 6326</td>
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<td>Metro</td>
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<td>Brooklyn Chest Hospital Stanberry Road, Ysterplaat, Cape Town</td>
<td>021 508 7400 021 5087432 – Ward Contact – Dr Willemse Cell 082 937 4490</td>
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<td>Metro</td>
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<td>Du Noon Clinic 57 Mnandi Road, Du Noon</td>
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<td>Metro</td>
<td>Western</td>
<td>Groote Schuur Hospital Main Road, Observatory</td>
<td>021 404 5329 021 404 4468 021 404 6191</td>
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<td>New Somerset Hospital Beach Road, Greenpoint</td>
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<td>021 6585 111 (Exchange) 021 6585 613 (Direct line)</td>
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<td>021 461 1124</td>
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<td>Durbanville CHC De Villiers Street, Durbanville</td>
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<td>Central Karoo</td>
<td>Prins-Albert</td>
<td>Prins-Albert CHC</td>
<td>Lower Market Street, Prins-Albert</td>
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<tr>
<td>Eden</td>
<td>Bitou</td>
<td>Plettenberg Bay CHC</td>
<td>Marine Drive, Plettenberg Bay</td>
<td>044 501 3200</td>
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<tr>
<td>Eden</td>
<td>George</td>
<td>George Clinic/Harry Comay TB Clinic</td>
<td>Sandkraal Road, George Industria</td>
<td>044 875 9086 044 801 9373</td>
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<td>Eden</td>
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<td>Eden</td>
<td>Hessaqua</td>
<td>Riversdale Clinic</td>
<td>Hospital Street, Riversdale</td>
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<td>Eden</td>
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<td>Eden</td>
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<td>Eden</td>
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<td>Oudtshoorn Hospital</td>
<td>Park Road, Oudtshoorn</td>
<td>044 272 8921</td>
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<tr>
<td>Gauteng</td>
<td>Johannesburg</td>
<td>Baragwanath Hospital</td>
<td>Contact – Dr David Moore Cell 083 297 2468 <a href="mailto:david.moore@wits.ac.za">david.moore@wits.ac.za</a></td>
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<td>Contact – Dr Lee Fairlee Cell 082 7809 997 Landline 011 9339 844</td>
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<td><a href="mailto:LeeEl@witsecho.org.za">LeeEl@witsecho.org.za</a></td>
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<td>Contact – Dr Lizelle Keet Cell 082 9407 431</td>
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<tr>
<td>Eastern Cape</td>
<td>Port Elizabeth</td>
<td>Dora Ngiza</td>
<td>041 406 4448 Contact – Dr Andile Nxele <a href="mailto:mahlubandile@gmail.com">mahlubandile@gmail.com</a></td>
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<td></td>
<td>East London</td>
<td>Frere Hospital</td>
<td>043 709 1111 Clinics-Mon &amp; Tues, 3rd floor POPD</td>
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<td>Butterworth</td>
<td>Butterfly Hospital</td>
<td>Sophila Clinic Butterworth Hospital</td>
<td>047 491 4161</td>
<td>Contact - Dr Mayekiso Clinic on Tuesday</td>
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<tr>
<td>Eastern Cape</td>
<td>Stutterheim</td>
<td>Stutterheim Hospital</td>
<td>043 683 1313</td>
<td>Contact – Dr Friend</td>
</tr>
<tr>
<td>King William’s Town</td>
<td>Grey Hospital</td>
<td></td>
<td>043 643 3300</td>
<td>Clinic on Tuesday, ARV unit, 2nd floor</td>
</tr>
<tr>
<td>KwaZulu Natal</td>
<td>Ethekwini/ South Coast</td>
<td>Nelson R Mandela School of Medicine</td>
<td>031 260 3438</td>
<td>Contacts – Prof Bobat/ Dr Mohern Archary/ Dr K L Naidoo</td>
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<tr>
<td></td>
<td>Ngwelezane Lower Umfolzi Complex</td>
<td></td>
<td>035 9028 509</td>
<td>Contact – Dr Nomonde Bengu</td>
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<tr>
<td></td>
<td>PMB Metropolitan Complex</td>
<td></td>
<td>033 395 4264</td>
<td>Contacts – Dr Malini Krishna/ Dr Sue Purchase</td>
</tr>
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Appendix 4: Referral to Primary Health Care Clinic of HIV+ children NOT on Antiretroviral therapy

From: __________________________
Red Cross Children’s Hospital
Klipfontein Road
Rondebosch 7700
Tel: (021) 6585111

Dr /Sr. __________________________
Contact no: _______________________
Date: ________________________

To: __________________________

WHO Stage: _______ Weight: ___kg
CD4 / %: __________
Date: __________

The above patient has attended our department and is referred to you for on-going Primary healthcare, as they DO NOT presently need Antiretroviral Therapy (HAART).

Current and on-going medical problems:
________________________________________________________________________
________________________________________________________________________

Please continue providing routine primary care including: immunisations, Vitamin A / multivitamin supplementation, nutrition, growth and developmental monitoring.

The following medications should be provided continuously:

1. Co-trimoxazole __________ mls __________ times daily (Mon, Wed, Fri)
2. Multivitamins __________ mls once daily
3. Other: __________________________________________________________

Unless indicated sooner, he/she must be reviewed in ______ month’s time at __________ for clinical staging and repeat CD4 count. In the event of any intercurrent illness, please refer appropriately along the normal referral channels.

NEXT appointment(s): Date: _____________ where: _____________

Thank you for your assistance and co-operation.

Yours sincerely

________________________________________
Appendix 5: Referral of HIV+ patients for antiretroviral therapy

From: ______________________(Dept) Dr /Sr. __________________________
Red Cross Children’s Hospital Contact no: _______________________
Klipfontein Road Date: _______________________
Rondebosch 7700
Tel: (021)6585111

To: __________________________ Appointment date:
____________________________

Primary caregiver: __________________
Relation: __________________________
Address: __________________________

Tel: __________________________

Patient sticker

Thank you for taking over the management of the above patient referred to you to:

☐ Start Antiretroviral Therapy ☐ Continue Antiretroviral Therapy

.started: _______________

Medical Summary

| Weight: _____kg | Height: _______ cm |

1. HIV diagnosis (Elisa / p24Ag / PCR) ______________ (date) ______________ (where)
2. Modified WHO Stage: ____________________________
3. Staging condition(s): __________________________

| Latest Blood Results |

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<th>CD4/%</th>
<th>CD4 ct.</th>
<th>VL</th>
<th>log_{10}VL</th>
<th>WCC</th>
<th>Hb</th>
<th>MCV</th>
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4. Other ongoing medical / social problems:

________________________________________________________________________
________________________________________________________________________

Medication: ARV’s

1. _______________ Other _______________
2. __________________
3. __________________

Further remarks / comments:
________________________________________________________________________
________________________________________________________________________

Future appointments (if applicable):
________________________________________________________________________

________________________________________________________________________

Yours sincerely __________________________ Copies of clinical progress sheets are attached for patients on ART

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<th>CD4 ct.</th>
<th>VL</th>
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Appendix 6: Antiretroviral treatment literacy for caregivers of children on treatment: A counsellor’s guide

Introduction

Counsellors play a very important role in helping prepare caregivers and families whose children are starting antiretroviral treatment.

These guidelines have been developed to assist counsellors in this process.

The counsellor’s role is to gain the trust of the caregiver, provide information on HIV/AIDS and treatment in children, assess whether the caregiver is likely to be responsible in giving the child treatment, and to build up the confidence of the caregiver in her/his ability to look after and treat the child.

Treatment-readiness counselling includes the practical demonstration of how to prepare and administer the specific antiretroviral medications selected for a particular child. This gives the caregiver an opportunity to practise preparing the medications with the assistance of the counsellor and to discuss any difficulties with this process.

COUNSELLING SESSION 1

Objectives

In this session the counsellor should aim to establish a friendly and supportive relationship with the caregiver and child. There are three main objectives:

a) to familiarise the caregiver and child with the health care team and their various functions
b) to familiarise herself with the family structure and routine
c) to provide the caregiver with a basic understanding about HIV/AIDS in children including the tests that are used in diagnosis and treatment.

Introduction to the Health Care Team and their relationship with the client

- The clerk will receive your folder and prepare it for the nurse/doctor. The clerk may help with giving your next appointment.
- A nurse will record the child’s weight and height and do blood tests on the child if necessary.
- A counsellor will prepare you for giving ARVs to the child, give support, offer advice.
- A doctor – will examine and treat the child for any problems, prescribe the ARV medicines and change them if necessary.
- A pharmacist will give the ARVs and explain how to take them. The pharmacist will also ask you to return all your unused medicine to ensure that the child is being given the correct doses. If you have any questions about the medicines you must always feel free to ask the pharmacist.
- A dietician will give advice about a healthy eating plan for your child and also prescribe supplements if the child needs it.

Caregiver & household details

6. **Who is the person who looks after the child every day (primary caregiver)?**
   E.g.: mother, father, grandmother, aunt, foster parent, other person. If the caregiver is not the mother or father, find out why the child is not being cared for by the parents. If the child is having contact with the parents, find out more about this.

7. **Find out the age of the child**
   This will guide you as to whether the child is likely to be completely dependent on the caregiver for taking medication correctly; whether the child can be taught to start swallowing pills; and what the child may understand about illness and medicines.

8. **Find out who looks after the child during the day**
   Is it the primary caregiver or someone else? Does the child go to crèche or school? Does the child live with someone else during the week and go home on weekends?

9. **Find out what the household routine is during the week**
What time does the child wake up and have breakfast? Who sees to this? What is the evening routine – supper, bedtime etc?

10. Find out what the household routine is during the weekends as it affects the child and primary caregiver.

Does the child stay somewhere else at weekends? Who is the primary caregiver on weekends? What time does the child wake up and have breakfast? Who sees to this? What is the evening routine – supper, bedtime etc?

Emphasize the importance of establishing a routine (fixed time) around the daily activities at home in relation to children. It makes children feel safe when things happen at more or less the same time each day and treatment will be easier if there are other routines in place.

General HIV/AIDS knowledge and understanding

1. Explore the caregiver’s understanding of how children become infected with HIV, provide correct information and correct any misconceptions.

HIV infection can pass from a pregnant woman to her child either during pregnancy, birth or breastfeeding (including “wet nursing”: someone other than the mother of the child who breastfeeding the child). However, children who are sexually abused may be infected this way. Emphasize that HIV is a “germ” and not caused by witchcraft.

2. Discuss what HIV does to the body?

White blood cells help to fight infections in the body. HIV destroys these white blood cells. The body is then less able to fight infections. This starts happening before a person with HIV actually feels sick. Later, the person will get many infections such as chest infections, skin infections, diarrhoea and TB. Eventually the body becomes so weak that it can no longer fight the infections and the person may die.

3. Discuss the difference between HIV infection & AIDS

Explain that people living with HIV infection may look and feel completely well. HIV infection progresses in the body from stage 1, in which no physical problems are felt by the person, to AIDS, in which there may be repeated serious infections, loss of weight and other illnesses (stage 4). In adults, it may even take 5-10 years for HIV infection to progress to AIDS but children often progress to AIDS much more quickly. Antiretroviral treatment stops HIV infection from progressing to AIDS. HIV infection may be spread from one person to another through unprotected sex, or from mother to child, at any time after HIV infection has occurred.

4. Discuss testing and diagnosis of HIV infection in children

Children with suspected HIV infection or children born to women who test positive for HIV during their pregnancy can be tested as early as 6 -14 weeks of age. This needs a different test from the one used in older children and adults; it is called a PCR test. Blood is taken from the baby and tested for HIV. If the child tests HIV negative and the mother is still breastfeeding, the child will need to have another HIV test at least 6 weeks after stopping breastfeeding. If the child tests HIV positive, a CD4 count and viral load test can be done.

5. Discuss what a CD4 count is

A CD4 count is a blood test to show the strength of a person’s immune system. A high count means that the immune system is still strong enough to fight most common illnesses. A low CD4 count means that the body’s defence system is weakened and the body is open to many illnesses. This test will be repeated every 6 months during ARV treatment to check if the immune system is getting stronger again. Explain that the doctor will report the child’s CD4 result in percentage. This is different to the result given in adults which is expressed in general numbers.

6. Discuss what a viral load is

A viral load is a blood test to show the amount of virus in the blood of a person with HIV infection. The viral load in children with HIV infection may be very high (millions of copies of virus in each teaspoon of blood) before antiretroviral treatment is started. Successful treatment is able to bring down the amount of virus in the blood to a very low level - so low that the virus will not show up on the test (less than 50 copies of virus per millilitre of blood). The treatment does not get rid of the virus completely but can stop the virus from making more copies of itself. This test will be repeated every 6 months during treatment.
7. **Explore whether the caregiver understands that the child will be started on antiretroviral treatment and that this treatment is lifelong.**

   It is very important for the caregiver to understand that antiretroviral treatment does not cure the child of HIV infection but can keep the infection from getting worse and making the child weaker. Unlike many other treatments (such as for TB), ARV treatment must be continued for a person’s whole life. If the treatment is given properly, the child can remain healthy for many years. If the treatment is stopped or not given to the child correctly, HIV infection will get worse and the child may become sicker and die.

---

**COUNSELLING SESSION 2**

**Objectives**

The two main objectives are:

a) to give the caregiver an understanding about ARV treatment in general

b) to discuss adherence to treatment.

It is important to listen to what the caregiver expects and fears about the treatment.

**Antiretroviral treatment**

4. Discuss when children with HIV infection will start ARVs.

   Antiretroviral treatment is only used when HIV infection has progressed to stage 3 or 4 or if the CD4 count is low. Some babies and children will already be in stage 3 or 4 when they first get sick and need to start treatment sooner than other children.

   Before starting antiretroviral treatment, doctors and counsellors need to be sure that the caregiver:

   - Understands and accepts that the child has HIV infection
   - Has shown that they are able to bring the child to the clinic regularly for appointments.
   - Is willing to take responsibility for giving medication to the child every day.
   - Understands how to give the treatment correctly to the child and that the treatment is lifelong.
   - Has the opportunity to join a support group.

   It is preferable that

   - The caregiver has at least begun the process of disclosure of the HIV status to the child in an age-appropriate manner
   - The caregiver has disclosed the HIV status of the child to someone else who is able to take care of the child and give the medicine if necessary (secondary caregiver).
   - The caregiver has shown that they can give other medications to the child such as co-trimoxazole or TB drugs.
   - The caregiver has also been tested for HIV infection. If the caregiver has HIV infection, he/she should know their CD4 count and be attending an HIV clinic.

2. Discuss how ARVs works against the virus

   Antiretroviral treatment can kill most of the HIV in the body but cannot cure the body from HIV completely. If the treatment is used correctly, the body’s immune system becomes strong again and protects the person from most infections and diseases. There are many different ARVs but they work best when three or more ARVs are taken together. The three different ARVs work together so it’s better to take all or none rather than some of the treatment. Missing doses of medicine or stopping any of the treatment will allow the HIV to grow in the body again.

**Adherence to treatment**

| Adherence means ensuring that the child always gets the medication at the right time in the right dose as prescribed |

Giving a child medication twice a day every day for months and years is a very big responsibility. At times, it may seem an impossible task and nobody can always achieve perfect adherence. One of
the aims of this session is to try to allow caregivers to feel supported in the task of doing the best they can in treating their child.

1. **Discuss the importance of adherence with the caregiver.**
   ART does not cure HIV infection but keeps the virus level under control in the body. Therefore it is necessary to continue the treatment for the rest of the child’s life. Over time, the virus is able to build up resistance to the ARVs and the treatment may no longer work well. The body may then become weak and develop AIDS. This can happen much more quickly if the medication is not given correctly or if even a few doses of medication are missed. At the moment, there are only two good ARV regimens (first-line and second-line) available to children and adults. The aim is to remain on the first-line regimen for as long as possible while it is able to keep the virus level under control. If the virus level is not under control, it may be necessary to switch to three different ARV medications (second-line treatment).

2. **Discuss things that help adherence**
   - **Caregiver self-care:** the caregiver should take care of his/her own health and well-being. Caregivers who are also living with HIV infection should be attending an HIV clinic so that they can receive health care and treatment if necessary. For many caregivers, attending a support group is a helpful way to learn from others.
   - **Keeping a routine:** giving medication to the child should be built into the daily life of the family. It is easier to give it correctly if there is a regular routine at home e.g. the child wakes, eats, sleeps at a similar time each day etc.
   - **Disclosure of the child’s HIV status:** Disclosure of the child’s HIV status to another person who is supportive and helpful is very important for ensuring that the child receives this life-saving medication correctly.

When the primary caregiver is unavailable, whoever takes care of the child should understand exactly how to give the medication and know the importance of giving the medication.

If the child is at the age where they can understand about illness and medication, the importance of them taking medication for their illness should be discussed with the child over time. For very young children, telling stories about the virus and taking medicines is one way of allowing a more open discussion of the child’s HIV status later when the time is right.

3. **Discuss things that interfere with good adherence:**
   - **Substance or alcohol abuse by the caregiver** – leads to disruption in the daily routine and “forgetting” to give the medication.
   - **Physical or mental health problems of the primary caregiver** – the caregiver may be too unwell to remember to give medication or be hospitalised. The child may then be left in the care of those who do not know how to give ART or the importance of giving it. The caregiver may also experience anxiety or depression which may interfere with caring for the child. The caregiver can be encouraged to get assistance from friends or family and be referred for health care.
   - **Refusal to take medication by the child** - it may become a very difficult experience for both the caregiver and child. If the caregiver feels stressed by these difficulties, she/he may be tempted to skip doses of the child’s medication. This can often be overcome by providing practical advice and counselling on tips for medication administration or a discussion on disclosure of the child’s health or HIV status (depending on the age of the child).
   - **‘Running out of medication’** – this should never happen. The caregiver should learn to recognise when the medication is running low and ensure they get more medication from the clinic BEFORE any one of the medications runs out. This is very important if the child and caregiver are travelling away from home e.g. to the Eastern Cape, and will not easily be able to get hold of medication.

| Disclosure of the child’s HIV status to another person who is supportive and helpful is very important for ensuring that the child receives this life-saving medication correctly. |

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COUNSELLING SESSION 3

Objectives

The session may be done on the day of starting antiretroviral treatment. The caregiver must be equipped with the practical skills and confidence to administer medication to the child. The two main objectives are:

a) to demonstrate how to prepare and administer the medication allowing the caregiver to practice this process

b) to discuss possible side effects and problems that may arise after starting treatment.

Note: The counsellor should now check with the doctor which antiretroviral drugs the child will be starting. Use the appropriate demonstration box to teach the caregiver how to prepare the medicines for the child and give time for discussion and questions.

1. Emphasize the importance of giving the child the correct amount of medication at the right time every day

Explain that the doctor and pharmacist will show the caregiver the exact dose of each medication to be given to the child and how to draw it up into the syringe. The doctor may change the doses at each clinic visit as the child grows and gains weight.

The caregiver should try to give the medication at the same time every day (morning and evening e.g. 7am and 7pm). If this time is accidentally ‘forgotten’ or ‘missed’, the medication should still be given late and not left out altogether. Work out with the caregiver what kind of reminder tool they will use e.g. cell phone alarm, watch, clock.

Allow the caregiver to figure out with you how they plan to fit giving the medication to the child into their daily life:

a) in the morning
b) at night
c) at weekends
d) when they’re away from home

5. Discuss the importance of the caregiver knowing the child’s ARV treatment

It is important that the caregiver tells the nurse or doctor at the clinic or hospital that the child is taking antiretroviral treatment. The caregiver should be able to give the name of each medicine, and the correct dose for each medicine. All the medicines should always be taken with the child to the hospital or clinic in case the child is admitted to hospital.

3. Discuss possible side-effects of ARVs and what to do

Emphasise to the caregiver that most children will have no side-effects from the medications. Depending on which medications the child is receiving, some children may develop rash, vomiting or diarrhoea. Emphasise that these will usually pass after about 1-2 weeks. These complaints may also result from HIV infection itself. If the child vomits or spits out any of the medications (e.g. Kaletra) the full dose of the medications given must be repeated.

More serious side effects are monitored by blood-tests – to see if there are effects on the liver (hepatitis) or blood (anaemia). This monitoring will be done regularly by the clinic (approx. 3-6 monthly depending on the treatment regimen) for as long as the child is taking ARVs (life-long). If the caregiver is concerned about the child’s condition, they should contact the clinic or bring the child to the hospital.

4. Problems after starting ARV treatment and changing treatment regimens

Some children may become unwell during the first few weeks after starting ARVs and may require further tests (e.g. for TB) or even be admitted to hospital. This can happen even though the child’s immune system is getting stronger on the treatment.

The doctor may decide to change the ARVs to a different treatment regimen. Before changing treatment the doctor and counsellor must be sure that the ARVs are being given correctly and doses are not being missed. As there are not many different ARVs available to children we must aim for the first-line treatment to work for the child for as long as possible.
What the caregiver should remember once the child starts ARVs.

- Learn the names and doses of the ARVs
- Always bring back ARV containers to each clinic or pharmacy visit. (only unopened containers and containers currently being used, empty containers may be thrown away at home)
- Keep appointments for pharmacy repeats and clinic follow-up. Sometimes you may be expected to just collect medicines and not bring the child for a check-up.
- If you think that the medications will run out before the next appointment, you should come to the hospital anyway to collect more medication.
- Do not continue giving some medication if you’ve run out of any – get to the clinic or hospital for more as soon as possible.
- Always bring ARVs with the child if the child is taken to the clinic or hospital because the child is ill.
- Do not stop the ARVs for any reason without first discussing it with the doctor – your child’s life may depend on it!

COUNSELLING GUIDELINES ON MEDICATION

First-line regimens

1. For children <3 years of age or <10 kg body weight or children who received nevirapine (NVP) on PMTCT programme:
   - Abacavir (ABC) solution / tablets +
   - Lamivudine (3TC) solution / tablets +
   - Kaletra (KLT) solution or Aluvia (ALV) tablets

2. For children ≥3 years of age and ≥10 kg body weight and did not receive nevirapine (NVP) on PMTCT programme:
   - Abacavir (ABC) solution / tablets +
   - Lamivudine (3TC) solution / tablets +
   - Efavirenz (EFV) capsules / tablets

Second-line regimens

1. Following KLT / ALV-based first-line regimen, second-line regimen will be guided by expert advice and / or viral resistance testing

2. Following ABC + 3TC + EFV in first-line regimen:
   - Zidovudine (AZT) solution / capsules / tablets +
   - Didanosine (ddI) tablets / capsules +
   - Kaletra (KLT) solution or Aluvia (ALV) tablets

3. Following stavudine (d4T) or AZT + 3TC + EFV or nevirapine (NVP) in first-line regimen:
   - Zidovudine (AZT) solution / capsules / tablets +
   - Lamivudine (3TC) solution or tablets +
   - Kaletra (KLT) solution or Aluvia (ALV) tablets

Points to emphasise

1. Indicate the names of the medications to the caregiver (use “abacavir”, “lamivudine”, “zidovudine”, “stavudine”, “didanosine”, “Kaletra”, “Aluvia”, “ritonavir”, ), showing where the names appear on the bottles. Explain the colour coding system for the different medications and syringes.

2. All three of the prescribed medications are to be given every day of the week. Efavirenz is given once a day in the evening. All other medications are given twice a day in the morning and in the evening as near to the same time each day as possible (e.g. 7am and 7pm). If the normal time for medication is missed the medications should still be given ‘late’.
3. If any of the medications are going to run out before the next clinic appointment is due, the caregiver must come to the clinic before the appointment and get more medication so as to avoid any interruption in treatment.

4. Ensure that the caregiver is able to open the bottles of medication which have child-proof caps (e.g. Kaletra) and can demonstrate this to you.

5. Show the caregiver how to insert and use the syringe adaptors for the lamivudine and zidovudine bottles that allow the dose of medication to be drawn into the syringe directly from the bottle. For Kaletra and ritonavir it is necessary to carefully pour medication into the small plastic cup and then draw it into the syringe or administer directly from the cup, although this may result in spills. Make sure that the caregiver can read the measurements on the syringe and understands what the lines mean.

6. Unused bottles of abacavir, lamivudine, zidovudine, Kaletra and ritonavir (opened and unopened) should be brought to each clinic visit.

7. The caregiver should be made aware that Kaletra and ritonavir have a very bitter taste and many children have difficulty swallowing the medication for the first few days or weeks. This may result in refusal to take the medication, crying and conflict around medication times. Offer the caregiver strategies to help with this situation should it arise e.g. giving a sweeter medication such as lamivudine followed by Kaletra or ritonavir; mixing all 3 medications together in the plastic cup and giving this in one syringe; giving the child something sweet (e.g. jam, peanut butter) or cold (e.g. ice) in the mouth before and/or after the dose to hide the bitter taste. It may help to give the bad tasting medicine first and ensure that the child has swallowed and is not going to vomit or spit it out before administering the rest.

8. If the child spits out or vomits medication within about 30 minutes of it being given, the full doses of all medications given must be repeated. The caregiver should inform the doctor if the child is having problems with persistent vomiting of medications.

9. Kaletra solution should ideally be given with fat-containing food (e.g. milk or bread & butter) to increase the absorption of the medication into the body. Advise the caregiver to first give the child something to eat and then the Kaletra.

10. For children who are not yet able to swallow efavirenz capsules, the capsules may be opened and the powder dispersed in 5ml of water in the small plastic cup provided. The mixture should be made up at the time of giving the medication and not stored for later use. This mixture can be administered directly from the cup or drawn up into the syringe. Make sure the caregiver knows to boil and cool all water that is given to the baby or young child for bottle milk feeds or medicine! This is to ensure that the water is clean.

11. From the age of about 5-6 years children should be shown and encouraged to swallow whole capsules with a cup of water. It helps to practice with vitamins or sweets (e.g. Jelly beans). When the child has mastered this, it is useful to practise with empty capsules starting with the smallest (efavirenz 50mg) and only allowing the child to swallow full unopened capsules when the caregiver is sure that they are able to swallow the capsules easily.

12. For children on didanosine, caregivers need to understand that this medication must be given by itself on an empty stomach, at least 30 minutes before food or drink. Discuss with the caregiver how they will arrange the timing of this in the morning and evening e.g. child wakes up at 06h00, takes didanosine tablets at 06h30 and eats breakfast after 07h00 and takes zidovudine and Kaletra with breakfast. Didanosine tablets must be crushed and dissolved in 30ml of water (15ml per tablet), or they may be chewed but many children do not like the taste. Note: It is important to advise the caregiver not to be rushed when giving the child medicines but to take the time to feel comfortable with the process. This will help the child feel safe and less anxious about taking bad tasting medicines.
Appendix 7: DATASHEET: 1  2  3  4  5  6  7  8

Name: ___________________________ Start of HAART: ___________
Folder number: ___________________
DOB:_____________________________
Current contact details (primary caregiver):_____________________________________

<table>
<thead>
<tr>
<th>Date</th>
<th>Age (mo)</th>
<th>Months on HAART</th>
<th>Mass (kg)</th>
<th>Length (cm)</th>
<th>S. area (m²)</th>
<th>CD4 count (x 10^9/L)</th>
<th>CD4 %</th>
<th>Viral load (copies/mL)</th>
<th>Log VL</th>
<th>WCC</th>
<th>Neutrophils (x 10^9/L)</th>
<th>Hb</th>
<th>MCV</th>
<th>RDW</th>
<th>Platelets</th>
<th>ALT/AST</th>
<th>Cholesterol</th>
<th>Triglycerides</th>
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ARV Drugs

<table>
<thead>
<tr>
<th>Month of TB Rx</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

______________________________

TB diagnosis: Date ___________ PTB / EPTB Definite / Probable TB _____________

Symptoms Y / N TB contact Y / N suggestive CXR Y / N Mantoux or Tine: pos/ neg smear/culture: pos / neg Date: _____________
Other investigations: ________________________________

41
**Appendix 8: Care facilities for HIV affected or infected children in the Cape Town Region**

<table>
<thead>
<tr>
<th>Institution</th>
<th>Facility type</th>
<th>Location</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>St Joseph’s Home (Sunflower ward)</td>
<td>Short- medium term residential</td>
<td>Montana</td>
<td>021 934-0352</td>
</tr>
<tr>
<td>Sarah Fox Convalescent Home</td>
<td>Short- medium term residential</td>
<td>Athlone</td>
<td>021 637-1302</td>
</tr>
<tr>
<td>Themba Care</td>
<td>Short-medium term residential</td>
<td>Athlone Bridgetown</td>
<td>021 637-8337</td>
</tr>
<tr>
<td>Fikelela Place of Safety</td>
<td>NGO Short- medium term residential</td>
<td>Christmas Tinto Str,eet Mandela Park Khayelitsha</td>
<td>021 367-0089</td>
</tr>
<tr>
<td>Home from Home community houses</td>
<td>Long term residential</td>
<td>Khayelitsha and other areas</td>
<td>082-421-4618/021 761-7251</td>
</tr>
<tr>
<td>Beautiful Gate</td>
<td>Long term residential</td>
<td>Lower Crossroads</td>
<td>021 370-2500</td>
</tr>
<tr>
<td>Little Angels</td>
<td>Short term residential</td>
<td>Tokai</td>
<td>021 712-6169</td>
</tr>
<tr>
<td>Christine Revel</td>
<td>Medium term residential; children &lt;5yrs old</td>
<td>Athlone</td>
<td>021 697-1748</td>
</tr>
<tr>
<td>Cotlands</td>
<td>NGO maximum stay 1 year</td>
<td>Somerset West</td>
<td>021 852-3527</td>
</tr>
<tr>
<td>Nomzamo Place of Safety</td>
<td>NGO</td>
<td>Langa</td>
<td>021 694-0443</td>
</tr>
<tr>
<td>St Ann’s Home</td>
<td>NGO</td>
<td>Woodstock 48 BalfourRd</td>
<td>021 448-6792</td>
</tr>
<tr>
<td>Baphumelele Place of Safety</td>
<td>NGO</td>
<td>Khayelitsha Dabula Street, Site B Khayalitsha</td>
<td>021 361-9070</td>
</tr>
<tr>
<td>Sivenathi Home</td>
<td>NGO; children &gt;3 years old</td>
<td>Blackhealth</td>
<td>021 905-6048</td>
</tr>
<tr>
<td>Lizo Nobanda Community House</td>
<td>Day Care Centre; children 0-6 yrsold</td>
<td>Harare Khayelitsha</td>
<td>021 363-0412</td>
</tr>
<tr>
<td>Heaven’s Nest</td>
<td>Medium term residential; children 6 months - 8 years old</td>
<td>Ottery</td>
<td>021 703-9781</td>
</tr>
<tr>
<td>Tenderton Place of Safety</td>
<td>Medium term residential; children 6-12 years old</td>
<td>Wynberg</td>
<td>021 761-2554</td>
</tr>
<tr>
<td>Bowy House</td>
<td>Short to long term residential; children up to 6 years old</td>
<td>Paarl</td>
<td>021 863-4544/021 863-3890</td>
</tr>
</tbody>
</table>
Appendix 9: Pharmacy requirements & considerations

- The pharmacy requires the following information on all prescriptions:
  - Date of current prescription.
  - Current mass and body surface area (BSA).
  - Next clinic appointment date and number of medication repeats if next appointment is in more than 4 weeks time. (Stable/compliant patients under home care could receive their full months of treatment until their next clinic appointment date. These should be specified.)
  - Indicate if patient has a different clinic appointment (other than IDC); the following month i.e. physiotherapy, GIT, etc.
  - Current prescription based on current weight or BSA, indicating dose (in mg) and frequency (od or bd).
  - Indicate an adjustment in dose by means of an arrow up or down next to specific medications. Pharmacy will issue new labels and counsel if you indicate this clearly.
  - Indicate the amount of medication returned. Be as specific as possible i.e. count tablets and estimate amount of liquid preparations (1/3 or 2/3 or full bottle). It is then possible to calculate actual use, expected use and % adherence for capsules or tablets.
  - Indicate whether other medication has been prescribed on a separate prescription chart (yes/no box) and whether any other adjustments have been made to chronic medication e.g. stopping bactrim prophylaxis or TB treatment, changing treatment regimens etc.
  - Please remember to sign the script and print your name to facilitate any queries or concerns by pharmacy.
- **Remember**
  - Stavudine suspension already mixed is unstable outside a refrigerator. Patients should be instructed to leave those at home but to tell the doctor how much is left. Discard any mixed suspension brought in for the day.
  - Kaletra suspension and capsules are stable for 42 days outside a refrigerator and must be discarded thereafter.
  - Ritonavir suspension and capsules are stable for 30 days outside a refrigerator and must be discarded thereafter.
  - Ritonavir suspension has a very short shelf-life before reaching the expiry date and this should be considered when selecting follow-up appointment dates.
  - Abacavir suspension is stable for 60 days at room temperature once opened and should be discarded thereafter. All new patients receiving Abacavir must get an “ALERT CARD” stating the possible side-effects as well as emergency contact numbers in situations where patients do experience these side-effects.
  - Returned medicines should be kept with the patient until the new medicines are physically dispensed.
  - New patients or those with adherence issues requiring additional counselling by pharmacy should be clearly indicated by writing this on the ARV prescription chart.
  - All antiretrovirals will be issued by pharmacy with appropriate syringes, medicine measures, measuring cups etc. all clearly marked with stickers indicating correct dosages.
  - Every antiretroviral suspension approved by PAWC is allocated a colour. Every bottle issued to a patient will be marked with this specific colour and clearly annotated on the relevant syringe to facilitate easy administration by the care-giver.

<table>
<thead>
<tr>
<th>Medication</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stavudine</td>
<td>Pink</td>
</tr>
<tr>
<td>Lamivudine</td>
<td>Yellow</td>
</tr>
<tr>
<td>Zidovudine</td>
<td>Orange</td>
</tr>
<tr>
<td>Abacavir</td>
<td>Red</td>
</tr>
<tr>
<td>Nevirapine</td>
<td>Blue</td>
</tr>
<tr>
<td>Kaletra (Lopinavir/ritonavir)</td>
<td>Purple</td>
</tr>
<tr>
<td>Ritonavir</td>
<td>Green</td>
</tr>
</tbody>
</table>

Table: Antiretroviral oral solutions and their corresponding colour codes
Appendix 10:

Antiretroviral Drug Dosing Chart for Children (2011)

<table>
<thead>
<tr>
<th>Target dose</th>
<th>stavudine (d4T)</th>
<th>lamivudine (3TC)</th>
<th>didanosine (ddI)</th>
<th>didanosine (ddI)</th>
<th>tenofovir (FTC)</th>
<th>emtricitabine (FTC)</th>
<th>efavirenz (EFV)</th>
<th>nevirapine (NVP)</th>
<th>zidovudine/ lamivudine (LPW reported)</th>
<th>efavirenz/ nevirapine (EFV/ NVP)</th>
<th>co-infections</th>
<th>multi-vitamins</th>
<th>Target dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available formulations</td>
<td>Salts, liquid (6 months to 11 years)</td>
<td>Salts, liquid (6 months to 11 years)</td>
<td>Salts, liquid (6 months to 11 years)</td>
<td>Salts, liquid (6 months to 11 years)</td>
<td>Salts, liquid (6 months to 11 years)</td>
<td>Salts, liquid (6 months to 11 years)</td>
<td>Salts, liquid (6 months to 11 years)</td>
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<td>Salts, liquid (6 months to 11 years)</td>
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<td>Salts, liquid (6 months to 11 years)</td>
<td>Salts, liquid (6 months to 11 years)</td>
<td>Salts, liquid (6 months to 11 years)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>WL (kg)</th>
<th>0-10</th>
<th>10-15</th>
<th>15-20</th>
<th>20-25</th>
<th>&gt;25</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-100</td>
<td>2.5 mg</td>
<td>2.5 mg</td>
<td>2.5 mg</td>
<td>2.5 mg</td>
<td>2.5 mg</td>
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</tbody>
</table>

Consult with a clinician experienced in paediatrics HIV for dosing for metastatic illness of age and weight, weight >10 kg | 2.5 mg | 2.5 mg | 2.5 mg | 2.5 mg | 2.5 mg |

BMI (kg/m²) | <10 | 10-15 | 15-20 | 20-25 | >25 |
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<tbody>
<tr>
<td>0-100</td>
<td>2.5 mg</td>
<td>2.5 mg</td>
<td>2.5 mg</td>
<td>2.5 mg</td>
<td>2.5 mg</td>
</tr>
</tbody>
</table>


Body Surface Area (BSA) m² = \[\frac{\text{Mass (kg) + Weight (lbs)}}{3600}\]