Treating children

Helena Rabie

Department of Pediatrics and Child Health,
Stellenbosch University, Tygerberg Children’s Hospital
Mom 36 years old
- Failing 1\textsuperscript{st} line TDF/FDC/EFV
  - CD4: 26 cells/mm\textsuperscript{3}
  - VL Log 5.3 HIV RNA copies/mm\textsuperscript{3}
- Switched to LPV/r-based 2\textsuperscript{nd} line regimen at 37 weeks gestation
- New TB diagnosis made 3 days prior to delivery
- Choosing to breastfeed

Baby 1.8 kg
- Term but very small for gestation
- Ongoing HIV exposure through breast feeding
  - PEP and PrEP
- Exposed to tuberculosis
  - Needs prevention
- **Confirmed HIV infection**
  - PCR +ve on day 2
- **Presumptive diagnosis of TB at 3 weeks of age**
Baby M

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Dose and formulations for all ages needed

- Size - algometric scaling
- Physiology – age and gestation
- Formulations are not “equal”
  - Liquids vs dispersible tablets
Traditional study process

- Develop pediatric study
  - Descending age cohort
  - Bio-equivalence of formulations

- Develop weight band dosing

- Develop the FDC
  - Issues around co-formulating medications

- Study FDC

- To Market with FDC

Adult compound
Safe and effective

Processes to ensure children are studied

To market with single drug formulations for all ages

Adapted from Penazzato CID 2017
Traditional study process

Develop pediatric study
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What can we use to manage children?

**FOR NEONATES**
- AZT: Term & preterm infants
- 3TC: Term infants
- FTC: Term infants
- RAL: Term Infants
- NVP: Term -2 Weeks
- LPV/r: Term - 2 Weeks (42 completed weeks)

**1 MONTH TO 3 YEARS**
- ABC: 3 Months
- TDF: 2 Years
- ATV: 3 Months + 5Kg

**OLDER THAN 3 YEARS**
- TAF: > 35Kg
- EFV: 10Kg
- RIL: 12 Years, 35Kg
- ETR: 6 Years, 16 Kg
- DTG: 30Kg
- EVT: 35Kg
- DRV: 10Kg
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## Regimens recommended by WHO till July 2018

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<tr>
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<th>Preferred First regimen</th>
<th>Second regimen</th>
<th>Third regimen</th>
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<tbody>
<tr>
<td>Adolescents</td>
<td>TDF + 3TC/FTC + EFV</td>
<td>2 NRTIs + ATV/r or LPV/r 2 NRTIs + DTG</td>
<td>DTG + 2 NRTIs DRV/r + 2 NRTIs DRV/r + DTG + 1-2 NRTIs</td>
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<tr>
<td>Children ≥ 3</td>
<td>ABC + 3TC + EFV</td>
<td>2 NRTIs + ATV/r or LPV/r</td>
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<td>Children &lt; 3</td>
<td>ABC + 3TC + LPV/r AZT + 3TC + LPV/r</td>
<td>&lt;3 years: 2 NRTIs + RAL &gt;3 years: 2 NRTIs + EFV or RAL</td>
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- **Dosing & regimen in neonates separate**
- **No FDC**
- **Poor harmonization between**
  - Children
  - Adults, adolescents and children
  - Countries

**Solid LPV/r only now rolled out**
# Regimens currently recommended by WHO

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Better harmonization between
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Baby M

Mom 36 years
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• Dose increases
  • Weight

• Formulation changes
  • Liquid to solid
  • All not equal

• Simplification
  • New drugs and formulations, weight increases

• Toxicity
  • Acute / chronic

• Failure

• The unforeseen
What do we need to think about when we switch?

• Why?
• Age
• Weight
• Co-morbidity – In particular TB
• Viral load?
• Formulations available
• Ease of use
• Drug interactions
### Antiretroviral Drug Dosing Chart for Children 2013

Compiled by the Child and Adolescent Committee of the SA HIV Clinicians Society in collaboration with the Department of Health

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<tr>
<td><strong>Cotrimoxazole Dose</strong></td>
<td>2 cap pm OR 1 cap pm OR ½ tab pm</td>
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<td>2.5 ml bd</td>
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#### Available Formulations

**Currently available tablet formulations of abacavir (except 60mg), efavirenz, LPV/rtv and AZT must be swallowed whole and NOT chewed, divided or crushed.**

### Formulations Available

- **1x300mg**
- **300mg (not scored)**
- **ABS/3TC (3TC)**
- **Lamivudine (3TC)**
- **Efavirenz (EFV)**
- **Didanosine (ddI)**
- **Nevirapine (NNRTI)**
- **Zidovudine (AZT)**

#### Available Formulations

- **35-39.9**
- **25-29.9**
- **23-24.9**
- **20-22.9**
- **17-19.9**
- **14-16.9**
- **11-13.9**
- **10-10.9**
- **<9**

#### Target Doses

- **300/150mg/dose**
- **200/50mg/dose**
- **100/25mg/dose**

#### By weight band (mg/kg)

- **≥20**
- **15-19.9**
- **10-14.9**
- **<10**

#### Dosing:

- **ONCE daily**
- **TWICE daily**

## Notes

- **Avoid LPV/rtv solution in any full term infant <14 days of age and any premature infant <14 days after their due date of delivery (40 weeks post conception) or obtain expert advice.**
- **Children 25-34.9kg may also be dosed with LPV/rtv 200/50mg adult tabs: 2 tabs am; 1 tab pm**
- **Consult with a clinician experienced in paediatric ARV prescribing for neonates (<28 days of age) and infants weighing <3kg**

## Drug Formulas

- **Sol. 80/20mg/ml**
- **Caps. 50, 200mg**
- **Caps. 100mg**
- **Paeds tabs. 100mg (scored dispersible)**
- **Caps. 25mg (SC)**
- **300mg (not scored), Tabs 100mg (scored)**
- **Caps. 150mg (scored), (3TC)**
- **Paeds Tabs 100/50 mg**
- **Paeds Tabs 200mg (scored)**
- **1x250mg EC cap od**

## Weight (kg) and Dosing

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For baby M

1. AZT, 3TC, NVP (RAL) The initial regimen for most young infants. Dosing age-based and weight-based

2. AZT, 3TC, LPV/r (RAL) At 42 completed weeks we can start LPV/r

3. ABC, 3TC, LPV/r (RAL) We can start ABC? 
   Children still require rifampicin-based TB therapy with ART

4. 
Solids are coming

A 10 kg toddler needs:

- LPV/r: 4 capsules x2/day
- ABC/3TC 60/30mg: 4 /day

Can we get to daily dosing using preferred agents?

It will not be 1 pill for most children before they reach 25Kg
Other switches

• Class switch for simplification – make sure patient is suppressed
• Drug switch for simplification – LPV/r to atazanavir – Consider resistance
• Remember the basic rules
  • Even if you are 14 you may not weigh 40!
  • No unboosted PI to children
• New(er) drugs
  • Dolutegravir
  • TAF
  • Etc etc