PAEDIATRIC TREATMENT & FORMULATIONS

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Differences in settings

**Well Resourced**
- Many drug choices
- Liquids and adult tablets
- Dose by BSA or weight
- Monitoring for toxicity, CD4/VL, resistance
- Doctor-lead
- Few infants
  - ART naïve or heavily exposed in utero

**Resource limited**
- Limited choice
- Adult and paediatric Fixed dose combination drugs
- Use WHO dosing tables
- Limited or no monitoring
- Few doctors
- Large numbers of all ages
  - Difficult early diagnosis
  - Single-dose NVP exposure
Since 2006, A Number of New Services Have Become Available to Help Scale Up Pediatric ART

- Increasing access to early infant diagnosis
- WHO guidelines changed to early treatment for infants based on CHER study
- Improvements in the range of pediatric fixed dose combination products
- Simplified approaches to dosing in children
This Has Resulted in Significant Increases
in Global Pediatric Treatment Numbers

Combined pediatric treatment numbers from 20 countries
with highest burden of disease

Source: UNICEF Stocktaking Report 2009
But…Global Progress Masks Individual Country Performance: Some Lag Far Behind

By 2009 many countries had achieved >50% of need met. BUT this changed with the new guidelines…

CHAI/UNITAID data Dec 2009
Key issues in 2010 Pediatric Guidelines

- When to test, and what to test with
- When to start
- What to start with
- TB and HIV – when to start ART after TB treatment
- Lab monitoring
- What to use for second line
- Considerations for Adolescents
- Adherence
- Nutrition
- Resistance and “after second line”
2010: When to Start in Children?

- For children **24 months or older**, all with WHO Stage 3 or 4 disease should start ART irrespective of CD4 count/%.

- For children with WHO Stage 1 or 2 disease:
  - 24 to <59 months, CD4 < 750 cells/μL or <25% (lowest)
  - >5 years, threshold same as adults: <350 cells/μL
## Reality: Children in Low-Resource Countries Who Receive ART are Starting Treatment When Older, Already Severely Immune Deficient, Wasted and Advanced Disease

<table>
<thead>
<tr>
<th>Study</th>
<th>baseline Median Age</th>
<th>baseline Median CD4</th>
<th>baseline Median WAZ</th>
<th>WHO Stage 3/4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Davies/S Africa</td>
<td>3.9 yrs</td>
<td>12%</td>
<td>-1.9</td>
<td>50%</td>
</tr>
<tr>
<td>2010 N=6,078 1999-2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>McConnell/Thailand</td>
<td>7.3 yrs</td>
<td>5%</td>
<td>-2.0</td>
<td>51%</td>
</tr>
<tr>
<td>2010 N=3,409 2000-2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Janssen/S Africa</td>
<td>6.2 yrs</td>
<td>17%</td>
<td>-1.8</td>
<td>67%</td>
</tr>
<tr>
<td>2010 N=447 2004-2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anaky/Cote d’Ivoire</td>
<td>5.3 yrs</td>
<td>11%</td>
<td>-3.0</td>
<td>43%</td>
</tr>
<tr>
<td>Sauvageot/MSF (focus &lt;5 yrs)</td>
<td>2.6 yrs</td>
<td>82% “severe”</td>
<td>-2.3</td>
<td>68%</td>
</tr>
<tr>
<td>2010 N=3,936 2002-2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yotebieng/S Africa</td>
<td>9.2 yrs</td>
<td>82% “severe”</td>
<td>50% &lt;-2.0</td>
<td>67%</td>
</tr>
<tr>
<td>2010 N=1,394 2004-2008</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rajasekaran/India</td>
<td>7.6 yrs</td>
<td>14%</td>
<td>76% &lt;-2.0</td>
<td>98%</td>
</tr>
</tbody>
</table>
## What to Start With?

<table>
<thead>
<tr>
<th>Condition</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2 years, known PMTCT NNRTI-exposure:</td>
<td>2 NRTIs + LPV/r (if available)</td>
</tr>
<tr>
<td></td>
<td>(Strong for &lt;12 months, Conditional 12-24 months)</td>
</tr>
<tr>
<td></td>
<td>If no LPV/r, then initiate NVP (something is better than nothing)</td>
</tr>
<tr>
<td>&lt;2 years no/unknown NNRTI exposure:</td>
<td>2 NRTIs + NVP (no=Strong; unknown=Conditional)</td>
</tr>
<tr>
<td>&gt;2 years but under 3 years:</td>
<td>2 NRTIs + NVP (Strong)</td>
</tr>
<tr>
<td>All others (irrespective of NVP exposure):</td>
<td>2 NRTIs + NVP or EFV (Strong)</td>
</tr>
<tr>
<td></td>
<td>EFV preferred for TB co-treatment (Conditional)</td>
</tr>
<tr>
<td>Under 3 years and needs TB treatment:</td>
<td>2 NRTIs + NVP (200mg/m²)</td>
</tr>
<tr>
<td></td>
<td>or AZT/d4T + 3TC + ABC (Conditional)</td>
</tr>
<tr>
<td>Preferential order of NRTIs:</td>
<td>AZT/3TC → ABC/3TC → d4T/3TC (Conditional)</td>
</tr>
<tr>
<td>Adolescent &gt;12 years with hepatitis B requiring treatment:</td>
<td>TDF + 3TC/FTC + EFV/NVP (Conditional)</td>
</tr>
<tr>
<td></td>
<td>(Can take FDC of TDF + FTC/3TC + EFV if this is available)</td>
</tr>
</tbody>
</table>
Implications - What to Start Changes

- Adults – are moving to TDF-based regimens, and away from d4t; however, bone toxicity in younger children remains a concern (use in older adolescents, as with HBV, can be considered).

- Children – there is good efficacy data on ABC, but cost and availability preclude wider use.

- Unclear rates of d4T toxicity in children - reported less than for adults but does occur; phase out of d4T except special circumstances.

- Difficulty with LPV/r in children <2 yrs (liquid, refrigeration, cost).

- Children still have limited access to FDCs.
TB and HIV in Children

For children diagnosed with TB and HIV

Any child with active TB disease should begin TB treatment immediately, and start ART as soon as tolerated in the first 8 weeks of TB therapy, irrespective of CD4 count and clinical stage (Strong)

**BENEFITS**
- Reduced HIV and TB mortality
- Reduced TB transmission and recurrence
- Possible increased retention by avoiding loss to follow up between TB treatment and ART initiation

**RISKS**
- More IRIS if treatment commenced close together
- High pill burden (TB and ART regimen)
- Toxicity
- Drug-drug interactions with increased risk of resistance due to sub-therapeutic ARV drug levels

<table>
<thead>
<tr>
<th>Age</th>
<th>Preferred Regimen (Conditional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 3 years</td>
<td>NVP (200 mg/m²) + 2 NRTIs</td>
</tr>
<tr>
<td></td>
<td>(or Triple NRTIs: AZT/d4T + 3TC + ABC)</td>
</tr>
<tr>
<td>≥3 years</td>
<td>EFV + 2 NRTIs</td>
</tr>
<tr>
<td>&lt;2 years &amp; PMTCT NNRTI-exposed</td>
<td>Triple NRTIs: AZT/d4T + 3TC + ABC</td>
</tr>
</tbody>
</table>
For Children Already on ART Who Develop TB

- Anti-TB therapy should be started immediately on TB diagnosis; ART should be continued.

- Adjust ART drug regimen as needed to decrease the potential for toxicities and drug interactions:
  
  - If child ≥ 3 years and on 2 NRTIs + NVP, substitute EFV for NVP
  
  - If child < 3 years and on 2 NRTIs + NVP, ensure NVP given at upper end of dosing (200mg/m²)
  
  - If child is on LPV/r, consider adding RTV to a 1:1 ratio of LPV:RTV to achieve the full therapeutic dose of RTV
ART Monitoring in Children: CD4 Count

- CD4 should be measured at the time of diagnosis and every 6 months. (Strong)
- Increased frequency of monitoring as CD4 approaches treatment threshold in children over 2 years. (Strong)
- CD4 should be measured prior to starting ART. (Strong)
- Follow-up routine CD4 monitoring should be every 6 months after initiation. (Conditional)
- Directed CD4 monitoring is recommended if new clinical staging events occur. (Strong)
- Where capacity for CD4 measurement limited, target CD4 to assess significance of clinical events. (Conditional)
ART Monitoring in Children: Viral Load

- Viral load determination is desirable but not essential prior to starting ART. (Strong)

- Targeted viral load should be assessed to confirm clinical or immunologic failure where possible, prior to switching a treatment regimen. (Conditional)
Laboratory Parameters for Monitoring Children at Baseline, Before and During ART

<table>
<thead>
<tr>
<th>Laboratory tests for diagnosis and monitoring</th>
<th>Baseline (at entry into care)</th>
<th>At initiation of first-line or second-line ART regimen</th>
<th>Every six months</th>
<th>As required or symptom-directed</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV diagnostic testing</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemoglobin&lt;sup&gt;a&lt;/sup&gt;</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WBC and differential count</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>%CD4+ or absolute CD4 cell count&lt;sup&gt;b&lt;/sup&gt;</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Pregnancy testing in adolescent girls</td>
<td></td>
<td>✓&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td>✓&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Full chemistry (including, but not restricted to, liver enzymes, renal function, glucose, lipids, amylase, lipase and serum electrolytes)&lt;sup&gt;e&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV VL measurement&lt;sup&gt;f, g&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Ol screening (where possible)</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. If on AZT, Hb check at 8 weeks after starting ART recommended
b. If not on ART, monitor CD4 q 6 months. In children with clinical events or approaching threshold, increase frequency
c. Pregnancy testing if adolescent female starting EFV
d. Pregnant adolescents should receive ARV for prophylaxis of PMTCT if not yet requiring treatment
e. Routine monitoring of chemistries (esp. lipid, LFT, renal) should be considered for children on 2nd line therapy.
f. Viral load not a prerequisite for starting or monitoring ART at present. Consider targeted viral load to confirm clinical or immune failure
g. Viral load should be assessed if possible in children with NNRTI exposure for PMTCT who are placed on NNRTI-based ART
When to Switch?

- A switch to 2nd line is recommended if after at least 24 weeks on ART in a treatment adherent child there is:
  - **Clinical failure:** appearance or reappearance of WHO stage 3 or 4 event *(Conditional)*
  - **Immune failure:** developing or returning to the following age-related thresholds *(Conditional)*:
    - CD4 <200 or <10% for child ≥2 to < 5 years
    - CD4 <100 for child ≥5 years
  - **Viral failure:** persistent HIV RNA >5,000 copies/mL *(Conditional)*
Determining When to Switch Based on Clinical Grounds
(No Viral Load Available)

After at least 6 months of therapy and adherent

New stage 3 or 4 event

Treat OI

No CD4

24-59 mo – CD4 ≤ 10 % or 200 cells/μL
>5 yr – CD4 ≤ 100 cells/μL

Improve with treatment – no switch

No improvement with treatment - SWITCH

Meet immune failure criteria - SWITCH

CD4 testing

Do not meet immune failure criteria - no SWITCH
Determining When to Switch Based on Clinical/Immune Grounds (With Viral Load Available)

VL > 5,000 copies/ml

- After at least 6 months of therapy and adherent
- 24-59 mo – CD4 ≤ 10% or 200 cells/μL
- >5 yr – CD4 < 100 cells/μL

- VL < 1,000 unlikely failure
- VL 1,000-4,999 continue regimen but monitor closely and check adherence

Clinical and/or immunologic failure

Clinical Failure

- CD4 confirmation
- VL > 5,000 copies/ml
- Meet immune treatment failure criteria - SWITCH
- Do not meet immune treatment failure criteria - No SWITCH

Immunologic Failure

- CD4 confirmation
- VL if immune failure confirmed
- Meet viral load criteria - SWITCH
- Do not meet viral load criteria - NO SWITCH
Second-Line Options are Simpler and Directed by the Choice of First-Line Regimen

1st

- AZT + 3TC + NVP
- d4T + EFV

ABC + 3TC + NVP

2nd

(All Strong)

- ABC + 3TC + LPV/r
- AZT + 3TC + LPV/r

ABC and ddl are an alternative

ATV/r can be used in children age >6 yrs

AZT and ddl are an alternative
For Children Who Start on LPV/r or Triple NRTI as First-Line Therapy, Second Line Options are Less Clear

<table>
<thead>
<tr>
<th>First-Line</th>
<th>Second-Line (Strong)</th>
<th>Alternative Second-Line</th>
</tr>
</thead>
<tbody>
<tr>
<td>LPV/r</td>
<td>NVP or EFV</td>
<td>RTV-boosted PI (e.g. DRV/rtv)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>First-Line</th>
<th>Second-Line (Strong)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triple NRTI: AZT/d4T + 3TC+ ABC</td>
<td>ddl + EFV or NVP + LPV/rtv</td>
</tr>
</tbody>
</table>
Implications – Second Line Changes

• In general, instead of 2 new NRTI when switch, change 1 NRTI (e.g., AZT to ABC and visa versa) and keep 3TC along with change in drug class (eg, NNRTI to PI).

• ddI is alternative second-line (due to formulation, access, expense issues).

• Alternative PI is ATV/rtv if age >6 years.

• Studies to better define second-line therapy when initial therapy is a protease inhibitor or triple NRTI are needed.
Barriers to ARV access for children

- Limited access to infant diagnosis
- Lack of appropriate ARV formulations
- Inexperience in treating children
- Limited or no monitoring

Should this be a barrier?
What are the key gaps for children with HIV?

- Increasing numbers of children needing and taking ARVs, predominantly first-line
- Key barrier is access to appropriate formulations
- **Solid Fixed Dose Combinations (FDCs)** most desirable (dispersible scored)
  - Ease of administration by carers and healthcare workers
  - 6X Less costly than syrups
  - Transportation easier
  - Shelf-life longer
Successful management of suspected abacavir hypersensitivity among African children in the ARRC trial

- Possible 52 SAE/HSR reports on 1,207 children on ART (ABC, 3TC, NVP/EFZ ± ZDV) & cotrimoxazole prophylaxis. Most 1st 12 wks
- *ABC permanently discontinued in only 7 cases;*
- *Only 3 considered possible ABC-HSR on independent review*
- Suspected ABC-HSR was rare 3/1207 (0.2%)
- Successful management in resource-limited setting despite concurrent NVP/cotrimoxazole
CHAPAS 3 (Zambia/Uganda), Toxicity, Pharmacokinetics, adherence/acceptability

Aged 1 month – 13 years (N=420)
Strata 1: ART Naive about to start ART with 2NRTIs + NNRTI (N=210)
Strata 2: stable (Viral load <50) on first line d4T regimen for ≥2 yrs (N=210)

RANDOMISE*

Arm A
d4T+3TC+NNRTI (N=140)

Arm B
ZDV+3TC+NNRTI (N=140)

Arm C
ABC+3TC+NNRTI (N=140)

4-Year study
PK SUBSTUDIES
TOXICITY ENDPOINTS
Detailed lipodystrophy and cardiovascular substudies
Primary Objectives

1. Compare toxicity (grade 2/3/4 clinical and grade 3 (confirmed) or 4 (any) lab adverse events) of d4T, ABC, ZDV arms in both ART naïve and ART experienced children
   - Most common AEs: anaemia, neutropenia, lipodystrophy/lipoatrophy, mitochondrial disease, peripheral neuropathy and hypersensitivity reactions

2. Determine the plasma pharmacokinetics of:
   - ZDV, 3TC and ABC taken as twice daily new fixed dose combination tablets
   - New EFV 600mg scored tablets taken once daily
CHAPAS 2 Trial

funded by Monument Trust, UK and Drugs for Neglected Diseases initiative (DNDI)

(co-enrolment with ARROW Trial in Uganda)
CHAPAS 2 Trial
What are the Questions and Kaletra in Children

- Do we have enough PK data?
  - More data needed in infants
  - Few PK data in Africans

- At what age can tablets be taken? How well are they tolerated?
  - Must not be crushed/split (loose 40% bioavailability)
  - Smaller than adult tablets but more of them!

- New Sprinkle (40/10mg)
  - bioequivalence data vs tablets and syrup
  - PK in children
  - Tolerability/acceptability
Lopinavir/ritonavir kaletra/aluvia (LPV/r co-formulated)

Abbott:
- Adult tablet 200/50mg - unscored
- Syrup (80mg LPV / 20mg rit)
  - Expense (syrups 6-fold cost of tablets)
  - Should be kept in fridge
- ‘baby’ pill 100/25mg
  - Heat stable
  - Not scored and should not be crushed/broken as loose
  - bioavailability

Generics (CIPLA):
- Adult tablet (200/50mg – submitted to FDA)
- Syrup (80/20mg per ml)
- ‘baby pill’ – 100/25mg
- Granulate in a sachet (100/25mg)
# Lopinavir/ritonavir - LPV/r

**Kaletra - Lopinavir / Ritonavir - Aluvia**

<table>
<thead>
<tr>
<th>Formulation</th>
<th>Daily ADULT equivalent dose</th>
<th>Lopinavir</th>
<th>Ritonavir</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adult Tabs</td>
<td>2 tabs BD</td>
<td>200mg</td>
<td>50mg</td>
</tr>
<tr>
<td>Paeds Tabs</td>
<td>4 tabs BD</td>
<td>100mg</td>
<td>25mg</td>
</tr>
<tr>
<td>liquid</td>
<td>5 mls BD</td>
<td>80mg/ml</td>
<td>20mg/ml</td>
</tr>
</tbody>
</table>
Lopinavir/ritonavir - LPV/r Sprinkle

40mg LPV/10mg Rit

Capsules to be emptied and taken with food

- Right size capsules
- What food to take drugs with
  - Especially in infants
CHAPAS 2 Design I

**Aged 4-12 years**
- Needing or already on kaletra
- AND can swallow tablets
  - (n = 24)

**3-12 months**
- exposed to pMTCT
- Needing or on kaletra syrup
  - (n = 16)

**Randomise**

- **Arm 1**
  - Wk 4
    - LPV/r tablets
      - (n = 12) PK
    - Wk 8
      - LPV/r sprinkle
        - (n = 12) PK

- **Arm 2**
  - LPV/r sprinkle
    - (n = 12) PK

- **Arm 3**
  - LPV/r syrup
    - (n = 16) PK
CHAPAS 2 new Cohort (1-4 year-olds)

aged 1-4 years
Needing or already on kaletra syrup (n = 24)

Randomise

Arm 4
LPV/r syrup (n = 12)
PK
Wk 4
LPV/r sprinkle (n = 12)
PK
Wk 8

Arm 5
LPV/r sprinkle (n = 12)
PK
LPV/r syrup (n = 12)
PK
Primary Objectives CHAPAS 2

In HIV-infected African children:

• Aged 4-12 years:
  To determine the pharmacokinetics (PK) of ritonavir-boosted-lopinavir (LPV/r) as sprinkle formulation and as tablet combination, both BID with food

• Aged 3-12 months and 1-4 years:
  To determine the pharmacokinetics (PK) of ritonavir-boosted-lopinavir (LPV/r) as sprinkle formulation and syrup formulation (Abbott Pharmaceuticals), both with food
Secondary Objectives

• To compare the acceptability and formulation preferences of children and carers
  – After each formulation (weeks 4 and 8) and at 12 weeks after ‘preferred’ chosen formulation at week 8
  – Tablets vs sprinkle in older children
  – Liquid versus sprinkle in younger children

• To ‘score’ ease of administration of formulation by independent observer on PK days when intake observed
  – On subset of children/infants

• To evaluate the effects of age, sex, severity of illness and anthropometric measurements (weight-for-age, height-for-age, BMI, middle upper arm circumference (MUAC) and malnutrition indices) on pharmacokinetic parameters
  – Specifically, to examine whether malnutrition modifies the pharmacokinetic characteristics of boosted PIs.
CHAPAS 2 Update

• All children enrolled and completed both PK days for <12 months and 4 years+ cohorts:
  – Samples currently being analysed
  – Acceptability data being analysed
  – Late breaker planned for IAS

• New cohort of 1-4 year-olds about to open:
  – Ethics approval obtained
CHALLENGES OF INITIATING ANTIRETROVIRAL THERAPY EARLY
Challenge 1. High mortality in infants

- Infants die before HIV diagnosis
- 30% by 1 year; 50% by 2 years
- CD4 cell% may be normal
- Die from common childhood diseases

(Newell et al 2004)
Challenge 2.
Infant HIV diagnosis

HIV-1 DNA PCR:

- Requires specialized equipment
- Expensive and requires technical expertise
- Reference labs are few and in urban centres
- Transport of specimens and results leads to delays
Challenge 3: Availability of paediatric antiretroviral drugs

- Fewer approved paediatric antiretroviral drugs
- Limited fixed dose combination regimens
- Low cost 1st line regimen of stavudine, lamivudine and nevirapine was changed
- Exposure to Nevirapine (NVP) at birth for PMTCT
  - Lopinavir/ritonavir is recommended as 1st line in NVP exposed infants
The ARROW Trial
Anti Retroviral Research fOr Watoto

A randomised management trial for HIV-infected children in Africa:

Four randomisations:

1. monitoring practice
2. ART strategies (4-drug induction-maintenance vs 3-drug)
3. Stopping cotrimoxazole (>2 years ART)
4. Once vs twice daily 3TC+Abacavir

• 1200 children, 5-year trial; unblinding started on 16th March 2012
• Uganda and Zimbabwe

New scored tablets from GSK

www.arrowtrial.org
Acceptability Questionnaire: syrups vs tablets

- Questionnaires from 186 (79%) children changing formulation:
  - Just before changing and 8 weeks later
  - Median age of children: 2.9 years (IQR 2.4, 3.4)

- At baseline, 77% carers reported problems using syrups
  - Number, weight, transportation of bottles
Problems with syrups and tablets in ARROW Trial
Abacavir, lamivudine, nevirapine or efavirenz

Percentage reporting problems 'often' or 'sometimes'
by problem type, after syrups, 8 and 24 weeks of tablets
Challenge 4: Administration of antiretroviral therapy

- Antiretroviral drugs prescribed by weight or surface area

- Children improve: gain weight

- As they grow: increase in height and weight

- Administration of drugs: dependant on the care giver
Challenge 5: Lack of disclosure

- **Unknown HIV status**
  - Leads to poor adherence

- **Child counseling requires special skills**
  - Limited skilled health workers

- **Adolescents are unique**
  - Multiple psychosocial issues

When to disclose?

There is no “right” age for disclosure!!!!

Disclosure is a process and should involve the guardian/care giver
Challenge 6: Stigma

• Diagnosis of HIV in child
  – Identify the family as HIV infected

• Mothers not willing to disclose
  – Potential violence and abandonment
  – Withdrawal of socio-economic support

• Mothers reluctant to test for HIV or enroll in PMTCT
  – Limited partner or family support
Challenge 7: Poverty and transport challenges

- Distance from health center
- Access to transportation for all family members
- Missing one day of wages for clinic visit
Challenge 8: Toxicities

Ref. Piloya T- Dissertation 2009
Severe gynaecomastia in a 12 yr old boy on cART in ARROW
OPPORTUNITIES to increase access to early ART initiation in African children

- Maintaining adherence
- Ensuring that PMTCT happens and promoting virtual elimination of paediatric HIV
- As children grow into adolescents and then adults, breaking the HIV transmission cycle
Task shifting to lower cadre staff

‘Traditional’ model vs Task shift model

**Traditional**
- Initial consultation/clinical evaluation
- Ordering lab tests / radiology
- Assessment of ART eligibility
- Initial ART prescription
- Toxicity management
- Treatment failure management
- Referral to tertiary care
- Triage of returning patients
- Consultation for stable patients
- ART prescription refills
- Registration
- Phlebotomy
- Pharmacy dispensation
- Education and counseling
- adherence counseling
- Vitals, height, weight

**Task-Shifting**
- Clinical Officers
- Nurses
- Peer Educators

ZAMBIA

Morris MB et al BMC Health Serv Res. 2009
Conclusions

• Multiple challenges to early initiation of antiretroviral therapy in African children

• Scaling up PMTCT with integration into MCNH services is critical

• Successful strategies need to be scaled up

• HIV infected infants in Africa should ALSO be given the chance to LIVE!
Need for appropriate ARV Formulations for kids in resource-limited settings
“The availability of low cost, high quality, child friendly ARV formulations, particularly FDC products, has had significant impact on the scale up of ART for children. WHO strongly endorses the use of these products, and encourages the continued development of improved formulations appropriate for paediatric use.”

- WHO guidelines 2010
Special Thanks

- Lynne M. Mofenson, M.D.
- Philippa Musoke, M.D.
- Diana Gibb, M.D.
- ARROW Trial
- CHAPAS Trials