Getting to zero new infections in children: what will it take?

Dr Lee Fairlie
27 September 2014
Content

• What will it take from us individually?
• Back to basics
• Pressure points for PMTCT
• What else do we need?
• Conclusions
What will it take from us???

• A good attitude
• Hard work
• Dedication
• An ongoing effort to teach and a desire to learn
• Change management processes
• Commitment to strengthen the health system 1 person at a time
“You must be the change you wish to see in the world.”

Mahatma Gandhi
START WITH THE BASICS...
**Figure 1: Four Prongs to Eliminate Mother-to-Child Transmission of HIV and Improve Maternal Health**

- **Prong 1**: Primary prevention of HIV among women of childbearing age
- **Prong 2**: Prevention of unintended pregnancies among women living with HIV
- **Prong 3**: Prevention of HIV from a woman living with HIV to her infant
- **Prong 4**: Provision of appropriate treatment, care and support to women, children living with HIV and their families

Focus of this framework – contribution of prongs 1 and 2 to MTCT elimination

**Preventing HIV and Unintended Pregnancies: Strategic Framework 2011–2015**
### HIV Incidence 2012 by age and sex

<table>
<thead>
<tr>
<th>Age groups (years)</th>
<th>Sex</th>
<th>HIV incidence % (95% CI)</th>
<th>Estimated number of new infections (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2+</td>
<td>Total</td>
<td>1.07 (0.87–1.27)</td>
<td>469,000 (381,000–557,000)</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>0.71 (0.57–0.85)</td>
<td>151,000 (121,000–181,000)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>1.46 (1.18–1.84)</td>
<td>318,000 (257,000–401,000)</td>
</tr>
<tr>
<td>2–14</td>
<td>Total</td>
<td>0.25 (0.21–0.29)</td>
<td>29,000 (24,000–34,000)</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>No incident cases found</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>0.49 (0.39–0.59)</td>
<td>29,000 (23,000–35,000)</td>
</tr>
<tr>
<td>15–24</td>
<td>Total</td>
<td>1.49 (1.21–1.88)</td>
<td>139,000 (113,000–175,000)</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>0.55 (0.45–0.65)</td>
<td>26,000 (21,000–31,000)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.54 (2.04–3.04)</td>
<td>113,000 (91,000–135,000)</td>
</tr>
<tr>
<td>25+</td>
<td>Total</td>
<td>1.41 (1.15–1.67)</td>
<td>300,000 (245,000–355,000)</td>
</tr>
<tr>
<td></td>
<td>Male</td>
<td>1.21 (0.97–1.45)</td>
<td>145,000 (116,000–174,000)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>2.28 (1.84–2.74)</td>
<td>251,000 (203,000–302,000)</td>
</tr>
</tbody>
</table>

A quarter of all new HIV infections in this age group
Incidence 4 times higher in females than in males 15-24y
Maternal SRH

• Overall the couple year protection rate has increased from 26.3% (2002/3) to 37.8% (2013/4)
• Injectables account for about 47% of the couple year protection rate
• Cervical screening rate in 2012/2013 55.4% (> National target of 54%)
Map 1: Couple year protection rate by district, 2012/13
Male condom distribution rate: Number of condoms/male > 15 years
REGARDING EMTCT PRACTICES.....
HIV testing in pregnancy

Figure 2: HIV prevalence trends among antenatal women, South Africa, 1990 to 2012. (Source: NDoH, 2013)
We have excellent guidelines

• BUT.....

• They need to be followed closely

• They are sometimes complicated and misunderstood

• There needs to be ongoing training with reinforcement and evaluation to ensure that they are understood

• Numerous pressure points that require focus to eliminate MTCT
Where are the pressure points antenatally??

- Early booking
  - < 20 weeks

- Testing in pregnancy
  - First visit
  - Every 3 months if negative

- PMTCT access
  - cART
  - CD4
What are the pressure points postnatally??

**Infant**
- Birth testing
- Infant feeding
- Infant prophylaxis
- Infant testing
- Infant access to ART if +

- High risk infants
- EBF
- NVP 6-12 weeks
- High risk infants
- Birth 6 weeks
- Urgent < 12 months
- All < 5 years

**Woman**
- Maternal contraception and SRH
- Maternal retention on cART
- Maternal Viral suppression
- Maternal re-testing if negative

- FP
- PAP smear
- STI
- New guidelines VL testing for all
- Tracing mechanisms
- 3 monthly

RHI
Early bookings

Issues:

• Booking at GPs - Unclear if HIV testing and full PMTCT package offered
• Poor referral mechanisms between GPs and ANC
• Some facilities turn clients away without offering HIV testing and FDC where appropriate
• Lack of resources at facilities
• Cultural reasons for late booking
• Data recording - PMTCT policy requires HIV-positive pregnant women book before 14 wks gestation - yet DHIS data records booking before 20 weeks
1/3 of districts reach National average of 44%
19/52 districts below 50 % (National target)
Interventions for Early Booking

• Increasing early attendance requires interventions at both the individual and community levels to raise demand for services
• Changes in attitudes towards health-care services
• Changes in organization of ANC services to boost early uptake
  – e.g. CHWs to recruit women in the community
HIV Testing in Pregnancy

Figure 5  PMTCT service uptake (PMTCT cascade) in South Africa

<table>
<thead>
<tr>
<th>% ALL MOTHERS</th>
<th>% MOTHERS REPORTED HIV-POSITIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>% ANC HIV Test</td>
<td>98.28</td>
</tr>
<tr>
<td>% Tested who received results</td>
<td>99.28</td>
</tr>
<tr>
<td>% Mothers who report being HIV-positive</td>
<td>29.59</td>
</tr>
<tr>
<td>% Received CD4 Test</td>
<td>77.43</td>
</tr>
<tr>
<td>% Mother &amp; infant received ARV Prophylaxis / Mother on HAART*</td>
<td>51.95</td>
</tr>
<tr>
<td>% Intended to obtain infant PCR test</td>
<td>38.46</td>
</tr>
</tbody>
</table>
Access to PMTCT

- UNAIDS: 234,955 pregnant women received ART for PMTCT 2012
- 83% [75%-90%] need met
HIV re-testing during pregnancy 3 monthly

- National target 70%
- Generally falling below this
- Increases risks for MTCT
Matlosana has improved from 41.9% in Q1 to 58.5% in Q3.

**Wits RHI DKK team**
# DKK ANC HIV retest positivity rate

**Oct 13 – June 14**

<table>
<thead>
<tr>
<th></th>
<th>Maquassi</th>
<th>Matlosana</th>
<th>Tlokwe</th>
<th>Ventersdorp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qrt 1</td>
<td>4.8</td>
<td>5.8</td>
<td>2.3</td>
<td>4.2</td>
</tr>
<tr>
<td>Qrt 2</td>
<td>3.4</td>
<td>2.8</td>
<td>3.6</td>
<td>3.1</td>
</tr>
<tr>
<td>Qrt 3</td>
<td>2.8</td>
<td>2.1</td>
<td>0.7</td>
<td>7.1</td>
</tr>
</tbody>
</table>

Source: DHIS June 2014

Wits RHI DKK team
Infant feeding

- 89% of women receive feeding counselling
- 4-8 weeks: 35.5% exclusive breastfeeding significant increase from 20.4% reported in 2010
- 47.1% reported avoiding breastmilk (reduction from the 61.5% in 2010)
- Horwood: 58.9% adult and 50% adolescent women EBF
Birth testing

Perform DNA PCR testing on all HIV-exposed low birth weight infants (< 2.5 kg) at birth and if positive, start cART. If negative, repeat DNA PCR at 6 weeks, and if negative again, perform an ELISA/rapid test on HIV at 18 months of age.

• Need to consider birth PCR in other high risk newborns such as where mother unbooked/presented late/in labour or has an elevated VL/low CD4 count
Infant prophylaxis

• Daily NVP for 6-12 weeks
• BUT the question is around high risk infants:

Kaletra:
• Black box warning in under 14 days of age (post conception)
• Prems need to wait until term + 14 days before starting Kaletra according to FDA
• 42.4% (v/v) alcohol and 15.3% (w/v) propylene glycol, risk multi-organ toxicity

NVP:
• Potential resistance issues; decreased effectiveness in young children regardless of exposure

NRTIs
• No dose for ABC in < 3 months
• Should use AZT/3TC as backbone
Early diagnosis of HIV-infection in infants at 6 weeks of age by province for the month of Jul 2014 vs Jul 2013 (LY)

1. Province data
<table>
<thead>
<tr>
<th>Province</th>
<th>&lt; 2 Mo Pos PCR Tests</th>
<th>Estimated Coverage for Early Diagnosis (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current</td>
<td>YTD</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>EC</td>
<td>40</td>
</tr>
<tr>
<td>Free State</td>
<td>FS</td>
<td>13</td>
</tr>
<tr>
<td>Gauteng</td>
<td>GP</td>
<td>73</td>
</tr>
<tr>
<td>KwaZulu-Natal</td>
<td>KZN</td>
<td>69</td>
</tr>
<tr>
<td>Limpopo</td>
<td>LP</td>
<td>45</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>MP</td>
<td>43</td>
</tr>
<tr>
<td>North West</td>
<td>NW</td>
<td>30</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>NC</td>
<td>12</td>
</tr>
<tr>
<td>Western Cape</td>
<td>WC</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>353</td>
<td>2,146</td>
</tr>
</tbody>
</table>

YTD - Year to Date  
LY - Last Year  

NHLS data July 2014
Infant testing: 6 week transmission

• 6 weeks: NHLS data shows that PMTCT practices successful provided HIV infected mothers access and are retained in care
• BUT need to be aware of high risk populations such as adolescents
• Horwood 2008/9 et al: Infants infected with HIV higher amongst adolescent mothers (35/325, 10.8%) compared to adult mothers (185/2800, 6.6%)

Horwood et al. PLoS ONE. 2013
Map 5: Percentage PCR tests under 2 months positive by district (NHLS data), 2012/13
Table 4: HIV prevalence estimates among antenatal women by province, 2010 to 2012. (Source: NDoH, 2013)

<table>
<thead>
<tr>
<th>Province</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>% Prev.</td>
<td>95% CI</td>
</tr>
<tr>
<td>South Africa</td>
<td>32 225</td>
<td>30.2</td>
<td>29.4 – 30.9</td>
</tr>
<tr>
<td>Eastern Cape</td>
<td>3 994</td>
<td>29.9</td>
<td>28.2 – 31.7</td>
</tr>
<tr>
<td>Free State</td>
<td>2 223</td>
<td>30.6</td>
<td>28.3 – 33.0</td>
</tr>
<tr>
<td>Gauteng</td>
<td>6 714</td>
<td>30.4</td>
<td>29.1 – 31.8</td>
</tr>
<tr>
<td>KwaZulu-Natal</td>
<td>6 887</td>
<td>39.5</td>
<td>38.0 – 41.0</td>
</tr>
<tr>
<td>Limpopo</td>
<td>3 117</td>
<td>21.9</td>
<td>20.3 – 23.6</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>2 202</td>
<td>35.1</td>
<td>32.6 – 37.7</td>
</tr>
<tr>
<td>North-West</td>
<td>1 963</td>
<td>29.6</td>
<td>27.3 – 31.9</td>
</tr>
<tr>
<td>Northern Cape</td>
<td>1 144</td>
<td>18.4</td>
<td>16.1 – 21.1</td>
</tr>
<tr>
<td>Western Cape</td>
<td>3 981</td>
<td>18.5</td>
<td>15.1 – 22.5</td>
</tr>
</tbody>
</table>

Note: The area with the 2nd lowest ANC prevalence has the highest HIV PCR + rate: We must beware of complacency in these areas!!!
18 month testing

- Kheth’Impilo (KI): KwaZulu-Natal, Mpumalanga and the Eastern Cape
- 64.5% reduction in 18-month HIV test positivity declining from 10.7% to 3.8%
- Relative proportion of children receiving 18-month HIV tests versus 6-week PCR tests was low, but improved during the last quarter from 19.1% to 24.4%
- HPTN 046: 18 month transmission 2.2% in 6m NVP arm; 3.1% 6 week NVP arm
- 9 month testing: WHO guidelines, not yet SA

Fowler. *JAIDS*. 2014
# 18 month testing

**Table 3.22: HIV sero-discordance between mother-and-child pairs for children in 0–2 age group, South Africa 2012**

<table>
<thead>
<tr>
<th>HIV status</th>
<th>Mother HIV positive</th>
<th>Mother HIV negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child HIV positive</td>
<td>4.3% (1.7–7.0) n=10</td>
<td>0.2% n=1</td>
<td>11</td>
</tr>
<tr>
<td>Child HIV negative</td>
<td>95.7% (93–98.3) n=220</td>
<td>99.8% (99.5–1) n=624</td>
<td>844</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>230</strong></td>
<td><strong>625</strong></td>
<td><strong>855</strong></td>
</tr>
</tbody>
</table>

**Table 3.23: HIV sero-discordancy between mother-and-child pairs in which children were younger than 10 years old, South Africa 2012**

<table>
<thead>
<tr>
<th>HIV status</th>
<th>Mother HIV positive</th>
<th>Mother HIV negative</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child HIV positive</td>
<td>6.2% (4.5–7.9) n=47</td>
<td>0.2% n=5</td>
<td>52</td>
</tr>
<tr>
<td>Child HIV negative</td>
<td>93.8% (92.1–95.5) n=712</td>
<td>99.8% (99.5–100) n=2,060</td>
<td>2,772</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>759</strong></td>
<td><strong>2,065</strong></td>
<td><strong>2,824</strong></td>
</tr>
</tbody>
</table>
### DKK Infant Antibody HIV test around 18 months positive rate
#### Oct 13 – June 14

<table>
<thead>
<tr>
<th>Location</th>
<th>Qrt 1</th>
<th>Qrt 2</th>
<th>Qrt 3</th>
<th>Source: DHIS June 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maquassi</td>
<td>2</td>
<td>0</td>
<td>3.9</td>
<td>3.8</td>
</tr>
<tr>
<td>Matlosana</td>
<td>3.8</td>
<td>6.1</td>
<td>4.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Tlokwe</td>
<td>0</td>
<td>0</td>
<td>1.2</td>
<td>1.6</td>
</tr>
<tr>
<td>Ventersdorp</td>
<td>1.6</td>
<td>4.3</td>
<td>4.9</td>
<td>4.9</td>
</tr>
</tbody>
</table>

**Notes:**
- Qrt = Quarter
- DKK =District KwaZulu-Natal
- HIV = Human Immunodeficiency Virus

Wits RHI DKK team
Infant access to cART if +

- 148,342 children were on cART 2012/3
- Estimated need is 220,000 (UNAIDS 2012)
- 63% of children needing cART access it
### Baseline Characteristics (n=4945)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Overall</th>
<th>2004-2009</th>
<th>2010-2012</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (months), median (IQR)</td>
<td>5.9 (3.7; 8.7)</td>
<td>6.1 (3.8; 8.9)</td>
<td>5.4 (3.4; 8.4)</td>
<td>0.0000</td>
</tr>
<tr>
<td>WHO stage 3 or 4, n (%)</td>
<td>3327 (76.5%)</td>
<td>2605 (81.2%)</td>
<td>722 (63.4%)</td>
<td>0.0000</td>
</tr>
<tr>
<td>CD4 Percentage, median (IQR)</td>
<td>18.5 (12; 26)</td>
<td>18 (11.5; 24.9)</td>
<td>20.7 (13.6; 28.4)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Severe Immunosuppression (WHO 2006), n (%)</td>
<td>3063 (87.2%)</td>
<td>2336 (89.2%)</td>
<td>727 (81.3%)</td>
<td>0.0000</td>
</tr>
<tr>
<td>WAZ category ≤ -3 (severely underweight), n (%)</td>
<td>1586 (41.8%)</td>
<td>1242 (44.5%)</td>
<td>344 (34.2%)</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

| First ART Drug, n (%)                   |                  |                  |                  |          |
| Stavudine                               | 3242 (69.7%)     |                  |                  |          |
| Zidovudine                              | 705 (15.2%)      |                  |                  |          |
| Abacavir                                | 693 (14.9%)      |                  |                  |          |

| 3rd ART drug, n (%)                     |                  |                  |                  |          |
| Protease Inhibitor                      | 3171 (68.1%)     |                  |                  |          |

| PMTCT exposed, n (%)                    |                  |                  |                  |          |
|                                         | 948 (57.9%)       |                  |                  |          |
Maternal retention in care and VL suppression

- High loss to follow up rate post delivery and breastfeeding with option B
- A pooled analysis, estimate of 73.5% of pregnant women with adequate (>80%) ART adherence
- Proportion higher during the antepartum (75.7%) compared to postpartum (53.0%) Need to address these issues before introducing option B+
- Programmatically in SA: VL suppression rates not known as currently not part of guidelines-> cART as prophylaxis only

Maternal 3 monthly HIV testing

- Mozambique: Post partum HIV acquisition: incidence 3.2/100 woman years
- Highest incidence 4.9/100 woman-years in 18-19 year olds
- In newly infected, transmission rate 21%
- EPI visits ideal time for retesting but not routine currently

De Schacht. JIAS. 2014
WHAT ELSE DO WE NEED???
• Good data
• Need to evaluate our progress critically and not get to zero just because we have no stats available!
• Need to document best practices especially with implementing:
  - option B+
  - 9 month testing in infants
  - Adherence tools and aids
• Probably need increased resources such as counsellors to ensure that HIV testing is done during ANC and PNC for both women and child; data capturers etc.
Conclusions

• Getting to zero will need a combined effort but also each person realizing their part
• We need to remember basics and primarily intensify efforts around preventing HIV infection and unintended pregnancy
• We need to intensify our efforts around the poor performing areas of the programme
• We need to plan ahead for B+
• We need to think creatively about adherence in pregnant and breastfeeding women
• The guidelines are excellent BUT they need to be implemented (and understood) and we need data to evaluate them!
Acknowledgements

- NHLS for the EID data
- IeDEA and Drs M Porter and MA Davies
- Dr N Chandiwana
- Dr G Kgosana