Achieving NSP targets on PMTCT: lessons learnt from 7 years of experience

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History

- 2000 - National Department of Health decided to implement two pilot PMTCT sites per Province
- 2001 – PMTCT programme launched
- 2002 – Interim evaluation
- 2003 – Follow-up evaluation
- 2005 – Launch of National ART programme
- 2006 – Scaling up of ART programme
- 2007 – National Strategic Plan
Programme characteristics and elements

- Implemented as a vertical programme (justifiably)
  - Implemented by Provincial PMTCT teams
  - Separate budgets
  - Large numbers of additional dedicated staff (esp. lay counsellors) placed after recruitment and training

- Protocol outlined details of healthworker: mother/child interactions
  - Counselling and testing
  - Infant feeding counselling
  - Dispensing of single dose nevirapine

- PMTCT often established VCT service
  - Various approaches to cryptic coding of maternal HIV status +/-
Programme characteristics and elements

• Free commercial infant formula provided for 6 months to mothers stating preferred intention
• District PMTCT supervisors became general HIV coordinators and part responsible for ART roll-out
• Monitoring (routine)
  – Although national minimum dataset, often complex sets of registers difficult to reliably track outcomes
  – Reports rarely fed back to local clinics (districts)
  – Need for lay counsellor debriefing and support recognised but hard to provide
• Pilot sites and protocol rolled-out to gain coverage
Consequences

• Wide range of uptake and delivery of services
• As a ‘PMTCT’ service, its primary focus was ‘preventing HIV transmission’ to infants
• Compartmentalisation of services
  – Nurses and midwives do not, in general, regard PMTCT activities as part of their job description
  – Lay counsellors and nurse supervisor run programme
  – PMTCT marginalised into clinic corners and huts
• Little connection between ANC and postnatal services (ANC cards vs. Road to Health Cards)
  – Postnatal maternal checks
  – ART services
  – IMCI
Consequences

• Uptake of infant feeding options has been highly variable between Provinces, often reflecting positions of local advocates
• sdNVP delivery has been poor to modest (<10-60%)
• Low follow-up of PMTCT exposed infants for 6 week testing
• Few women with low CD4 counts starting ARVs whilst pregnant
• Poor coordination and even polarisation between health professionals
• Staff have switched focus to ARV delivery and care
• Lack of belief
• ‘PMTCT fatigue’
Impact on Infant and Child Survival

<table>
<thead>
<tr>
<th>Indicator</th>
<th>1998 SA Demographic and Health survey</th>
<th>2000 MRC Burden of disease study</th>
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</thead>
<tbody>
<tr>
<td>Infant mortality rate</td>
<td>45/1000</td>
<td>60/1000</td>
</tr>
<tr>
<td>Under-5 mortality rate</td>
<td>59/1000</td>
<td>95/1000</td>
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</table>
## Impact on Infant and Child mortality in KZN

<table>
<thead>
<tr>
<th>Child DOB</th>
<th>‘IMR’ /1000 live births</th>
<th>‘CMR’ /1000 live births</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000–05</td>
<td>99.4</td>
<td>100.3</td>
</tr>
<tr>
<td>1995–99</td>
<td>50.2</td>
<td>69.9</td>
</tr>
<tr>
<td>1990–94</td>
<td>31.5</td>
<td>42.9</td>
</tr>
<tr>
<td>&lt;1990</td>
<td>48.3</td>
<td>69.8</td>
</tr>
</tbody>
</table>

Rollins. AIDS 2007; June 8
Impact on maternal mortality in SA

HIV/AIDS accounts for more than 50% of non-obstetric causes of maternal deaths

Single most important factor
## Infant HIV prevalence rates at 6 wk immunisation clinics in KZN

<table>
<thead>
<tr>
<th>N=2,473</th>
<th>Exposed</th>
<th>Infected</th>
<th>Transmission rate (%)</th>
<th>CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>907</td>
<td>189</td>
<td>20.8</td>
<td>18.2 – 23.6</td>
</tr>
</tbody>
</table>

7.6% of all infants (189/2473) attending for immunisations were already infected with HIV by 6 weeks of age

Does not include infants that would become infected through poor infant feeding practices
Infants and children needing ARVs

- In KZN alone, 20-30,000 new infections each year
- Half needing ARVs by 12 months of age
- More infections and deaths via poor infant feeding choices and practices
The SA National Strategic Plan

Key priority area 1: Prevention
‘Reduce by 50% the rate of new infections by 2011’

• Reduce MTCT
  – Broaden existing MTCT services to include other related services and target groups
  – Scale up coverage and improve the quality of PMTCT to reduce MTCT to less than 5%

Key priority area 2: Treatment, Care and support

• Increase access and uptake of VCT
• Strengthen health system and remove barriers to access
• Address special needs of pregnant women and children
The SA National Strategic Plan

**Key priority area 3: Research, monitoring and surveillance**

- Develop and implement a M&E framework
- Create an enabling environment for research in support of the NSP
- Develop and support a comprehensive research agenda

**Key priority area 4: Human rights and access to justice**

- Ensure laws, policies and customs … do not discriminate against … children
What the NSP 2007-2011 says about the past and the future ...

- The 2000-2005 NSP gave rise to the establishment and expansion of PMTCT.
  - The implementation tended to be vertical with capacity deficits in the implementation.
  - The lack of a clear M&E framework and clear targets and responsibilities was a major weakness

- The NSP 2007-2011, however, is not a plan for the health sector alone. It ... seeks to be relevant to all agencies working on HIV/AIDS in South Africa, within and working outside the government
Evidence to guide the NSP

• Interventions with established evidence base that can reduce MTCT and moreso, maternal and child survival, if implemented effectively

• Endorse many of the other related NSP targets
  – Increasing access to testing
  – Roll-out prevention services to high risk groups
  – HIV prevention programmes for uninfected women

• Several other intuitive interventions may be worth exploring but evidence base lacking
  – Community mobilisation
Increase the number of women knowing their HIV status

- Current approaches for VCT based on US and European models
- Regarded choice as the primary consideration
- Imposed many obstacles that hindered testing
- Opt-out counselling/ Provider-initiated counselling of all pregnant women attending ANC
  - If implemented correctly does not preclude choice and removes some of the barriers to testing

High acceptance rate of opt-out model (both women who tested and not tested before)
Opt-Out in Botswana (Rennie and Behets, 2006)
  - 75.3% tested in last 4 months
  - 90.5% tested in 1st 3 months
Possible model of implementation

Pre-test Group Prevention Education
- all women in ANC settings
  - 20 minutes
  - Content
  - Risk assessment
  - Risk reduction strategies
  - HIV testing and Opt-Out Approach

Post Test Negative Session
- 10-20 minutes
  - Content
  - Staying Negative
  - Risk Reduction

Post Test Positive Session
- 20-30 minutes
  - Content
  - Support
  - Risk Reduction
  - Disclosure

QA/QC of New Counselling Model
Cumulative HIV transmission risk in women with CD4 below and above 500/ml receiving AZT prophylaxis (West Africa)

- CD4 < 500 increases risk by about x3
- CD4 < 200 increases risk by about x8

Leroy et al. 2002
Women Eligible for ARV Treatment Also At Most Risk of Infecting Their Infants


Postnatal HIV Infection from Age 6 Weeks - 18 Months by Maternal Baseline CD4 Count: ZVITAMBO Study (N=2,055)
Risk factors for HIV transmission other than feeding mode (VTS-KZN)

• In Cox uni- and multivariable regression analyses, conditional on EBF, risk of transmission overall was strongly associated with:
  – maternal CD4 cell counts

  and less strongly with
  – maternal age,
  – birth weight below 2500 gm,
  – vaginal delivery, and
  – prolonged duration of ruptured membranes

<table>
<thead>
<tr>
<th>Maternal CD4 count</th>
<th>6m transmission in EBF infants</th>
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<tbody>
<tr>
<td>&lt;200</td>
<td>34.1%</td>
</tr>
<tr>
<td>&gt;200</td>
<td>17.0%</td>
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</tbody>
</table>
Infant HIV Mortality and Acquisition study *(IHMA)*
Mortality rate per 1000 child-years of follow-up

<table>
<thead>
<tr>
<th>Variable</th>
<th>Rate</th>
<th>Unadj OR</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CD4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;= 500 (1259)</td>
<td>65.2</td>
<td>1.0</td>
<td>&gt;0.001</td>
</tr>
<tr>
<td>200-499 (1304)</td>
<td>108.5</td>
<td>1.63</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>&lt; 200 (290)</td>
<td>243.5</td>
<td>3.51</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mum alive (3316)</td>
<td>90.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Mum dead (106)</td>
<td>389.8</td>
<td>4.15</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

IHMA working group.
Lancet 2004
Active identification of HIV infected pregnant women with CD4 counts <200 and initiation of HAART for life

- About 12-15% of all HIV-infected pregnant women have CD4 counts less than 200
- Account for 40-50% of all mother to child transmissions
- Account for ~50% non-obstetric maternal deaths
- Children of these mothers have a 3-4 fold increased risk of death
To reduce MTCT <5% requires effective drug prophylaxis

Transmission Rate (%)

- none: 22
- Sc ZDV: 13
- NVPsd: 12
- Sc ZDV +3TC: 9.3
- Sc ZDV NVPsd: 6.5
- Sc ZDV +3TC+ NVPsd: 4.7
- HAART: 2
Why not … dual prophylaxis for women with CD4 counts >200

‘If we cannot deliver on sdNVP, how can we expect the system to deliver AZT’

- SdNVP offers one chance only at receiving benefit
- AZT for 6 weeks or more offers multiple opportunities for intake and benefit, in addition to sdNVP
- Proven possible in W. Cape
- Providing TB treatment (3 drugs with changes mid-course) is more complicated
- Providing free commercial infant formula is more complicated for the health system and mother with more possibility of harm
Normal nutrient needs during lactation

Energy needs: 500+ kcal/day more

Protein, vitamins A, B6, C, riboflavin, pantothenic, zinc needs: 40–90% higher

Thiamine, niacin, folate, vitamin E and selenium needs: 25% higher
HIV infected breastfeeding mothers lost more weight and fat mass than HIV uninfected breastfeeding mothers

<table>
<thead>
<tr>
<th>Change between 8 and 24 weeks postpartum</th>
<th>HIV positive</th>
<th>HIV negative</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=65</td>
<td>n=41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight Kg (SD)</td>
<td>-1.4 (3.1)</td>
<td>0.4 (3.3)</td>
<td>0.004</td>
</tr>
<tr>
<td>BMI Kg/m²(SD)</td>
<td>-0.54 (2.0)</td>
<td>0.15 (1.3)</td>
<td>0.005</td>
</tr>
</tbody>
</table>

Papathakis P. JAIDS 2006. 33(4)
Breastfeeding HIV infected women warrant nutrition support

- HIV infected women tend to lose more weight while BF than HIV uninfected – lean body tissue maintained
  - Papathakis JAIDS 2006
  - Otiengo JID 2007

- But no increase in mortality in mothers

- May remove financial incentive for poor women to opt for infant formula even when household circumstances are not favourable
Replacement feeding in PMTCT sites

- Sample of milk collected from bottles (n=94) being offered to infants brought by mothers to PMTCT clinic follow-up visits
  - 63% heavily contaminated with E.coli
  - 28% diluted (based on protein concentration)

In spite of
  - All mothers having completed 12 years of education
  - 72% having fridges
  - All received good counselling on IFP
RF, family and health infrastructure

• 15-20% mothers reported free FF being used for something other than index child
  – Sold
  – Exchanged

• 50-75% reported running out
  – Mainly because of clinic supply
Feeding at some PMTCT sites
Good start mortality data
Constraints
Percentage of Professional Nurses posts filled, by hospital

AVERAGE FOR DISTRICT HOSPITALS 48%

AVERAGE FOR REGIONAL HOSPITALS 77%
Percentage of Senior, Principal and Chief Medical Officer posts filled, by hospital

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>St Mary's</td>
<td>30%</td>
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<tr>
<td>Nkonjeni</td>
<td>25%</td>
</tr>
<tr>
<td>Nkandla</td>
<td>27%</td>
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<tr>
<td>Mseleni</td>
<td>24%</td>
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<tr>
<td>Mosvold</td>
<td>30%</td>
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<tr>
<td>Manguzi</td>
<td>35%</td>
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<tr>
<td>Hlabisa</td>
<td>30%</td>
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<td>Eshowe</td>
<td>30%</td>
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<tr>
<td>Ekombe</td>
<td>15%</td>
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<tr>
<td>Ceza</td>
<td>20%</td>
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<tr>
<td>Catherine Booth</td>
<td>25%</td>
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<tr>
<td>Bethesda</td>
<td>25%</td>
</tr>
<tr>
<td>Benedictine</td>
<td>30%</td>
</tr>
<tr>
<td>Ngwelezane</td>
<td>80%</td>
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<tr>
<td>Lower Umfolozi</td>
<td>80%</td>
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Average for District Hospitals: 30%

Average for Regional Hospitals: 82%
What wins?

Risk factors

Effective interventions

Health system issues
Priority interventions

- Identify HIV infected pregnant women
- Identify those with CD4 counts <200 and start on HAART for life
- Effective drug prophylaxis
- Safe obstetric practices
- Early identification of HIV infected infants
- Counsel on infant feeding practices
- Nutrition support to HIV breastfeeding mothers
- Support appropriate feeding practices

Antenatal care
Peripartum care
Postnatal care
## Priority activities

<table>
<thead>
<tr>
<th>Integrated district implementation plans</th>
<th>Opt-out / Provider initiated counselling</th>
<th>Active case finding and Rx. of CD4&lt;200</th>
<th>AZT + sdNVP dual prophylaxis</th>
<th>Infant feeding counselling and support</th>
<th>Nutritional support for BF women</th>
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<tbody>
<tr>
<td>Integrated district implementation plans</td>
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<tr>
<td>Training and Supervision</td>
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<tr>
<td>Monitoring and reporting</td>
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<tr>
<td>Operational research</td>
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The missing interventions

- District level management
  - Protocols vs. Implementation plans
- Models for implementation that integrate rather than compartmentalise programmes
- Audit as a tool for change
  - Local reports and data flow but ... one way only
  - Building local capacity to use data effectively
- Staff selection, retention and support strategies
- Implementation research
  - To examine health system support interventions to improve the quality of services
South African NSP

Comprehensive, ambitious … full of potential

• If PMTCT targets are to be met, with all the additional gains …

• Child survival must be the overall aim and measure of success or failure
• Dedicated resources – human and financial
• Creative and flexible

• Reduced child mortality and reduced transmission are achievable