EMTCT AND INFANT FEEDING UPDATE

Basics Of Paediatric HIV Infection & TB
Woodstock 2013

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University of Cape Town
Effective PMTCT underpinned by…

- Preventing new HIV infections in the fertile.
- HIV + women avoiding unintended pregnancies.

And depends on….

- Early pregnancy test and early ANC booking
- Routine HIV testing and counselling
Talk Outline

- MTCT & PMTCT: Background
- Burden Of HIV
- Impact On Mortality
- SA PMTCT 2010
- SA PMTCT 2013
- WCP PMTCT 2013
### Milestones

- **Early 1980s**: MTCT documented
- **1985**: BF MTCT reported (CDC = avoid BF)
- **1994 (NEJM)**: PACTG 076 (AZT $\downarrow$ VT 67%)
- **1999 (Lancet)**: HIVNET 012 (sdNVP) and “Thai AZT Study” – $\downarrow$ MTCT 50%
- **2003**: “Thai” AZT + sdNVP (CD4 < 200: ART) – MTCT reduced dramatically to only 1-2%
- **HAART/FF virtually eliminates MTCT**
Timing of HIV Transmission – pre ARV era

4% Transmission of HIV for every 6 months of breast-feeding

From ppt by Prof G Theron
MTCT in 100 HIV+ Mothers by Timing of Transmission

- Uninfected: 63
- Breastfeeding: 15
- Delivery: 15
- Pregnancy: 7

As PMTCT reduces antenatal and perinatal transmission, BF transmission becomes relatively more important.

- CD4 < 350 group are responsible for up to 90% of transmissions.
Breastfeeding Saves Lives
Relative risk of infectious disease mortality from never breastfeeding

< 2 mths: 5.8 [95% CI: 3.4–9.8]
4–5 mths: 2.6 (95% CI: 1.6–3.9)
6–8 mths: 1.8 (95% CI: 1.2–2.8)
9–11 mths: 1.4 (95% CI: 0.8–2.6)

Developing World Feeding Dilemma

- HIV burden is greatest in the developing world and in communities with high background IMR
- HIV infected infants have greatest mortality
- HIVEU infants have greater mortality than non-HIVE
- Avoiding breastfeeding prevents postnatal vertical transmission but incurs significant mortality and morbidity.
Age-specific Risk Assessment Model For Timing Of Introduction Of Replacement Feeding

Jay Ross & Ellen G. Piwoz
Milestones in PMTCT and Infant Feeding

• Research focused on how to make breastfeeding safer to preserve its health and survival benefits

• 1999: Exclusive breastfeeding reduces risk of postnatal VT (Coutsoudis & Coovadia)

• 2004: Ross & Piwoz conceptual model shows if background IMR > 40, mortality from not breastfeeding > mortality from breastfeeding)

• Post 2004:
  • BF and infant NVP: SWEN, PEPI, BAN, HPTN 046
  • BF and maternal ART: Kesho Bora, Mma Bana, HPTN 046, etc . VT<1%
HPTN 046

- DNP to 6wk vs DNP to 6 months
- VT @ 6/12: DNP=1,2%; Placebo=2,4%; (p=0,048, Not significant after 6 months)
- VT @ 9/12:
  - If maternal CD4 > 350, NVP = 0,9% and Placebo = 3,3% (p=0,014)
  - If maternal ART, VT = 0,5% (irrespective of CD4 count, DNP group)

Maldonado: CROI 2011
BF Transmission Is Reduced To < 1% By EBF And ARVs So There’s No Safe Time To Introduce Replacement Feeding In Most Of Developing World

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Global HIV infections: 2007

33 million in world
2011 - 34.2 million
8 million on HAART

22 million in SSA
2011 - 23.5 million

2011
5.7 million in SA
1.7 million on HAART

12 countries account for 75% of world’s HIV-positive pregnant women
South Africa has less than 1% of world’s population but 17% of HIV infections

From ppt by Prof G Theron
RSA: 5,7 million in 2011!!!

The National Antenatal Sentinel HIV and Syphilis Prevalence Survey, South Africa 2010

Figure 7: Map of the HIV prevalence distribution pattern among antenatal women in the 52 Health districts in South Africa, 2010.
## WHO/UNAIDS Model

<table>
<thead>
<tr>
<th>Indicator</th>
<th>UNAIDS 2008</th>
<th>UNAIDS 2009</th>
<th>UNAIDS 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total HIV population (Adults &amp; children)</td>
<td>5,570,000</td>
<td>5,630,000</td>
<td>5,575,096</td>
</tr>
<tr>
<td>HIV+ Adults (15+)</td>
<td>5,240,000</td>
<td>5,300,000</td>
<td>5,056,294</td>
</tr>
<tr>
<td>Adult (15-49) prevalence (%)</td>
<td>17.9</td>
<td>17.8</td>
<td>17.9</td>
</tr>
<tr>
<td>Adult HIV+female population (15+)</td>
<td>3,230,000</td>
<td>3,270,000</td>
<td>2,945,686</td>
</tr>
<tr>
<td>HIV population (children &lt;15)</td>
<td>325,000</td>
<td>334,000</td>
<td>518,802</td>
</tr>
<tr>
<td>Total annual AIDS deaths</td>
<td>330,000</td>
<td>314,000</td>
<td>282,578</td>
</tr>
<tr>
<td>AIDS orphans</td>
<td>1,850,000</td>
<td>1,950,900</td>
<td>2,138,909</td>
</tr>
<tr>
<td>Adult AIDS deaths (15+)</td>
<td>297,000</td>
<td>284,000</td>
<td>252,348</td>
</tr>
<tr>
<td>Adult New HIV infections (15+)</td>
<td>352,000</td>
<td>344,000</td>
<td>332,512</td>
</tr>
<tr>
<td>New infections (children &lt;15)</td>
<td>49,800</td>
<td>42,700</td>
<td>48,088</td>
</tr>
<tr>
<td>Need for ART among adults (15+)</td>
<td>1,475,000</td>
<td>1,584,000</td>
<td>1,407,026</td>
</tr>
<tr>
<td>Need for ART (children)</td>
<td>156,800</td>
<td>158,600</td>
<td>304,535</td>
</tr>
<tr>
<td>Infected mothers needing PMTCT</td>
<td>218,700</td>
<td>213,800</td>
<td>260,280</td>
</tr>
</tbody>
</table>

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The National Antenatal Sentinel HIV and Syphilis Prevalence Survey, South Africa 2010
The National Antenatal Sentinel HIV and Syphilis Prevalence Survey, South Africa 2010

PMTCT In RSA

The National Antenatal Sentinel HIV and Syphilis Prevalence Survey, South Africa 2010
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### TOP TEN Countries For HIV Deaths !!!

<table>
<thead>
<tr>
<th>Country Name</th>
<th>HIV/AIDS - deaths</th>
<th>Year of Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa</td>
<td>310,000</td>
<td>2009</td>
</tr>
<tr>
<td>Nigeria</td>
<td>220,000</td>
<td>2009</td>
</tr>
<tr>
<td>Tanzania</td>
<td>86,000</td>
<td>2009</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>83,000</td>
<td>2009</td>
</tr>
<tr>
<td>Kenya</td>
<td>80,000</td>
<td>2009</td>
</tr>
<tr>
<td>Mozambique</td>
<td>74,000</td>
<td>2009</td>
</tr>
<tr>
<td>Uganda</td>
<td>64,000</td>
<td>2009</td>
</tr>
<tr>
<td>Malawi</td>
<td>51,000</td>
<td>2009</td>
</tr>
<tr>
<td>Zambia</td>
<td>45,000</td>
<td>2009</td>
</tr>
<tr>
<td>Cameroon</td>
<td>37,000</td>
<td>2009</td>
</tr>
</tbody>
</table>

Source: Indexmundi. Country Reports
Fig. 4. Trend in causes of maternal deaths, 1997-2009 (source: own calculations from data from Stats SA).

HIV status and iMMR

Source: 9th Interim Report On The Confidential Enquiries Into Maternal Deaths In South Africa 2011
Figure 2.2. Distribution of underlying causes maternal deaths 2008-2010

From Saving Mothers Report 2008-2010
Child Mortality ↑

Figure 4.1: Under-Five Mortality Rate in South Africa since 1998, and the 2015 MDG

- **2015 MDG Target**: 20
- **2007**: 104
- **2001**: 97
- **1998 (SADHS)**: 59

Under-five mortality rate per thousand live births

Source: 1998 South Africa Demographic and Health Survey, 2001 Census & 2007 Community Survey, South Africa
Figure 2. U5MR Trend 2007-2009

U5MR Trend 2007-2009

MDG Target = 20

- EC
- FS
- GP
- KZN
- LP
- MP
- NC
- NW
- WC
- RSA
Figure 3. Under 5 Deaths: Weight category by HIV status

Source: Saving Children 2009
PMTCT/EMTCT

• Care of HIV-infected women and their babies during pregnancy, breastfeeding and early childhood to
  • Prevent vertical transmission (Eliminate Paediatric HIV)
  AND
• Optimise maternal and infant health and survival
PMTCT critical to achieving MDGs

- MDG 4: Reduce U5MR by two thirds. (SA Target = 20)
- MDG 5: Reduce maternal mortality by 75%. (Target = 38)
- MDG 6: Reduce MTCT of HIV to less than 5%.
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<table>
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<tr>
<th>Option A</th>
<th>Treatment (for CD4 count ≤350 cells/mm³)</th>
<th>Prophylaxis (for CD4 count &gt;350 cells/mm³)</th>
<th>Infant receives:</th>
</tr>
</thead>
</table>
|            | Triple ARVs starting as soon as diagnosed, continued for life | Antepartum: AZT starting as early as 14 weeks gestation  
                          Intrapartum: at onset of labour, sdNVP and first dose of AZT/3TC  
                          Postpartum: daily AZT/3TC through 7 days postpartum | Daily NVP from birth through 1 week beyond complete cessation of breastfeeding; or, if not breastfeeding or if mother is on treatment, through age 4–6 weeks |

<table>
<thead>
<tr>
<th>Option B</th>
<th>Same initial ARVs for both:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Triple ARVs starting as soon as diagnosed, continued for life</td>
<td>Triple ARVs starting as early as 14 weeks gestation and continued intrapartum and through childbirth if not breastfeeding or until 1 week after cessation of all breastfeeding</td>
<td>Daily NVP or AZT from birth through age 4–6 weeks regardless of infant feeding method</td>
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<table>
<thead>
<tr>
<th>Option B+</th>
<th>Same for treatment and prophylaxis:</th>
<th>Daily NVP or AZT from birth through age 4–6 weeks regardless of infant feeding method</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Regardless of CD4 count, triple ARVs starting as soon as diagnosed, continued for life</td>
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</tr>
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Note: "Triple ARVs" refers to the use of one of the recommended 3-drug fully suppressive treatment options.

- Option A: Recommended in WHO 2010 PMTCT guidelines
- Option B: True only for EFV-based first-line ART; NVP-based ART not recommended for prophylaxis (CD4 > 350)
- Option B+: Formal recommendations for Option B+ have not been made, but presumably ART would start at diagnosis.
2010 National Guidelines

Maternal CD4 ≤ 350 or stage 3 and 4:

Mother:

• lifelong ART (TDF, 3TC, EFZ/NVP)

Infant:

• Breastfeeding up to 1 year with maternal ART cover

• DNP for 6 weeks

Maternal CD4 > 350 or stage 1 and 2:

Mother:

• AZT 12hrly from 14 wks.

• Intrapartum: sdNVP, 3hrly AZT and sdTruvada.

Infant:

• Breastfeeding with DNP to 1 year if mother not on ART

• DNP for 6 weeks if formula feeding
New Emphasis

- **Public health** approach.
- **Harmonised** with Treatment Guidelines
- Promotes **integration** with maternal, newborn and child health (IMCI/EPI/nutrition), CCMT, reproductive health and TB services.
- Promote **health and survival of mother and infant**, not just PMTCT
- Increased **accessibility**: Decentralised, nurse driven, nurse initiation, etc
- **Opt out testing**
- Aims to make **breast feeding safer.**
Perinatal Transmission Down!

Table 7: Weighted infant HIV exposure and 4-8 week (early) MTCT of HIV by province

<table>
<thead>
<tr>
<th>Province</th>
<th>Infant HIV exposure (%)</th>
<th>MTCT (%) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eastern Cape*</td>
<td>30.5 (26.9-34.2)</td>
<td>4.7 (2.4-7.0)</td>
</tr>
<tr>
<td>Free State</td>
<td>31.3 (29.1-33.5)</td>
<td>5.9 (3.8-8.0)</td>
</tr>
<tr>
<td>Gauteng</td>
<td>30.4 (27.9-33.0)</td>
<td>2.5 (1.5-3.6)</td>
</tr>
<tr>
<td>KwaZulu-Natal</td>
<td>44.3 (40.2-48.4)</td>
<td>2.9 (1.7-4.0)</td>
</tr>
<tr>
<td>Limpopo</td>
<td>23.9 (21.8-25.9)</td>
<td>3.6 (1.4-5.8)</td>
</tr>
<tr>
<td>Mpumalanga</td>
<td>37.0 (34.3-39.7)</td>
<td>5.7 (4.1-7.3)</td>
</tr>
<tr>
<td>Northern Cape*</td>
<td>16.0 (13.7-18.3)</td>
<td>1.4 (0.1-3.4)</td>
</tr>
<tr>
<td>Northwest</td>
<td>31.3 (29.0-33.5)</td>
<td>4.4 (2.9-5.9)</td>
</tr>
<tr>
<td>Western Cape</td>
<td>21.0 (17.0-25.0)</td>
<td>3.9 (1.9-5.8)</td>
</tr>
<tr>
<td>South Africa</td>
<td>32.0 (30.7-33.3)</td>
<td>3.5 (2.9-4.1)</td>
</tr>
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</table>

2.7% in 2011 but ....

Goga AE, et al SAPMTCTE 2010
Thanks to Pearl van Niekerk, PMTCT coordinator
Talk Outline

- MTCT & PMTCT: Background
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- SA PMTCT 2010
- **SA PMTCT 2013**
- WCP PMTCT 2013
- Focus on Infant (Testing, PEP, Feeding)
2013: Treatment as Prevention

Game-changer !!!!
### Table 1. Three options for PMTCT programmes

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<th>Treatment (for CD4 count ≤350 cells/mm³)</th>
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<td><strong>Option A</strong></td>
<td><strong>Antepartum</strong>: AZT starting as early as 14 weeks gestation</td>
<td>Daily NVP from birth through 1 week beyond complete cessation of breastfeeding; or, if not breastfeeding or if mother is on treatment, through age 4–6 weeks</td>
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<td><strong>Triple ARVs starting as soon as diagnosed, continued for life</strong></td>
<td><strong>Intrapartum</strong>: at onset of labour, sdNVP and first dose of AZT/3TC</td>
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<td></td>
<td><strong>Postpartum</strong>: daily AZT/3TC through 7 days postpartum</td>
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**Option B**

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**Option B+**

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<td><strong>Regardless of CD4 count, triple ARVs starting as soon as diagnosed, continued for life</strong></td>
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Note: “Triple ARVs” refers to the use of one of the recommended 3-drug fully suppressive treatment options.

- **Option A**: Recommended in WHO 2010 PMTCT guidelines
- **Option B**: True only for EFV-based first-line ART; NVP-based ART not recommended for prophylaxis (CD4 >350)
- **Option B+**: Formal recommendations for Option B+ have not been made, but presumably ART would start at diagnosis.
2013 National Guidelines

Mother:
• Maternal ART for pregnancy and breastfeeding irrespective of CD4 count
• Lifelong ART if CD4≤350 or stage 3 and 4

Infant:
• Minimum 6 weeks daily NVP.
• Longer DNP if inadequate maternal ART
• BF remains default feeding choice
Option B: Program Simplification

- FDC: EFZ, FTC and Tenofovir. Affordable
- All patients get one tablet once a day – adherence
- Reduced serious side effects (no NVP)
- If stage 3 & 4 or CD4<350: ART for life
- Strongly supports breastfeeding
- All infants get 6wks NVP and 6wk PCR test
- If stage 1 & 2 and CD4<350: ART is stopped 1 week after final breastfeed.
Possible problems

- Maternal treatment interruption may compromise future response to treatment

- Multiclass Drug Resistance
  - Breastfeeding infants whose mothers are on HAART may be infected with multiclass drug resistant virus.
  - There may be fewer transmissions but case management may be more complicated.

- No provision for multi ARV PEP in high risk infants

- Infant HIV testing schedule unchanged
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* Recommended in WHO 2010 PMTCT guidelines

** True only for EFV-based first-line ART; NVP-based ART not recommended for prophylaxis (CD4 > 350)

*** Formal recommendations for Option B+ have not been made, but presumably ART would start at diagnosis.
**Mother**

**Antenatal**

- **Known HIV positive on ART**
  - Check adherence
  - Do VL if none in previous 3 months
  - If VL > 400, see algorithm 2

- **Known HIV positive not on ART**
  - HIV Positive
  - Initiate lifelong ART
  - If not same day: AZT prophylaxis + refer
  - Initiate ART immediately at referral site

- **First HIV test during pregnancy**
  - HIV Negative
  - Re-test in third trimester (around 32 weeks gestation)
  - Positive
  - Negative

**Intrapartum**

- **If on ART**
  - Continue ART

- **If not on ART**
  - Unbooked / Diagnosis in labour / AZT prophylaxis
  - Stat dose NVP
  - Stat dose TDF/FTC
  - Stat AZT & three-hourly

- **Re-test in labour**
  - If inadequate time for HCT, test immediately after labour
  - Positive
  - Negative
**HIV-EXPOSED INFANT**

**BIRTH/DISCHARGE**

- Stat NVP
- Attending clinician discretion: Infant symptomatic or high risk: Consider birth HIV-1 DNA PCR test and NVP + AZT for infant prophylaxis

**Maternal ART ≥8 weeks OR Formula feeding**
- Infant NVP TTO for 4 weeks

**Maternal ART <8 weeks AND Breastfeeding**
- Infant NVP TTO for 12 weeks

---

**6 WEEKS**

- Routine HIV-1 DNA PCR test at 6 weeks

**Positive**
- Fast track for ART and continue CPT
  - If PCR positive
    - Confirm positive result with HIV-1 DNA PCR test.

**Negative**
- HIV test if clinically indicated

---

**9 MONTHS**

- Alere Determine® rapid HIV test at 9 months
  - Also test infants with unknown HIV status

**Positive**
- HIV test 6 weeks after the final breastfeed
  - Stop CPT if negative

**Negative**
- Rapid HIV test at 18 months
  - Stop CPT if negative

---

**18 MONTHS**

**Infant Testing**

- <9 months: HIV-1 DNA PCR test
- 9-17 months: Alere Determine® rapid HIV test and confirm positive result with HIV-1 DNA PCR test
- ≥18 months: Test as per adult testing algorithm
### SUMMARY OF THE CHANGES TO THE PMTCT GUIDELINES

<table>
<thead>
<tr>
<th></th>
<th>Old guideline</th>
<th>New guideline</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INFANT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ARV prophylaxis</strong></td>
<td>Birth PCR and multi ARVs for infants only applied to premature infants.</td>
<td>Based on clinician discretion, birth PCR may be done and multi ARV considered for symptomatic/high risk infants. This is not standard protocol for all but may be considered by attending clinicians for individual cases. An expert should be consulted for further management of these infants.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant NVP for formula fed infants: 6 weeks</td>
<td></td>
<td>Infant NVP for formula fed infants: 4 weeks</td>
</tr>
<tr>
<td>Infant NVP for breastfed infants if mother not on ART:</td>
<td>NVP until one week after final breastfeed</td>
<td>Infant NVP for breastfed infants:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 weeks if mother was on ART for ≥8 weeks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 weeks if mothers was on ART for &lt;8 weeks</td>
</tr>
<tr>
<td><strong>HIV testing</strong></td>
<td>Routine testing at 6 weeks and 18 months.</td>
<td>Routine testing will now occur at 6 weeks, 9 months and 18 months. At 9 months, infants will be screened with the Alere Determine HIV test. A positive result must be confirmed with a PCR test. The infant is only HIV positive if the PCR test is positive.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Testing algorithm at 18 months: Screening rapid test and confirmatory ELISA test.</td>
<td>The testing algorithm at 18 months as per the adult testing algorithm: Screening rapid test and confirmatory rapid test.</td>
<td></td>
</tr>
</tbody>
</table>
Option B+: Simplifies Program but may be premature

- **All** get ART at diagnosis, **continued for life**
- FDC (EFZ, FTC and TDF): one tablet once a day – promotes adherence, affordable
- Reduces serious side effects (no NVP)
- Strongly supports breastfeeding
- Reduces sexual transmission – reduces incidence
- Preconception ART for next pregnancy
Infant PEP

- Maternal ART ≥8 weeks or FF: 4 weeks NVP
- Maternal ART <8 weeks: 12 weeks NVP
- High risk: NVP + AZT
  - If NVP resistance – NVP (as above) + AZT for minimum 4 wks
  - If ARV naïve, NVP (as above) + AZT for at least 2 weeks
HPTN 040

Proportion with HIV transmission

Nielsen Saines NEJM 2012;366: 2368-79
NVP Resistance likely if ....

- Failing NNRTI based 1\textsuperscript{st} line ART
- On 2\textsuperscript{nd} line ART
- Multiple previous exposures to sdNVP

Needs

- NVP & AZT for at least 4 weeks
- Urgent optimisation of maternal ART
High Risk For Transmission

- **High risk for in-utero transmission:** Incident infection, late ART, Co-morbidity (e.g. maternal TB), symptomatic infant (e.g. IUGR, thrombocytopenia, cCMV or HSM). Needs birth PCR.

- **High risk for intrapartum transmission:** maternal TB or chorioamnionitis, spontaneous PTL, no PMTCT, VL > 400 at time of delivery (or from 36 wks). Needs multi-ARV PEP.

- **High risk for BF transmission:** Early mixed feeding, CD4 < 350 and no ART, high VL, failing 2nd line ART. Needs optimisation of maternal ART, consider Flash-heat, FF if AFASS.

- **Incident infection during BF:** IF PCR neg, needs maternal ART and infant NVP. Consider Flash-heat or FF
Feeding

- Circular H166/2012: Infant feeding counselling guideline
- Circular H186/2012: Criteria for safe infant feeding by HIV-infected mothers
Flow diagram 1: Infant feeding counselling for HIV positive mothers

Step 1: Explain Infant Feeding Options

Step 2: Assess Appropriateness of Feeding Choice

Step 3: Explore Reasons if inappropriate choice is made

Step 4: Sensitise mother or guardian to pages 7 and 8 of RTHB

Step 5: Demonstrate Chosen Feeding Option

Exclusive breastfeeding
   Provide with pamphlets

Donor and heat treated breast milk
   Provide with pamphlets

Practice of replacement feeding
   Provide with pamphlets

Step 6: Follow-up counselling and support

Monitor growth
   Check feeding practices
   Check for signs of illness

Discuss infant feeding from 6 to 24 months

Completed before the mother is discharged from the maternity unit

Completed at the postnatal clinics and by community health workers

Explain when and how to stop breastfeeding according to WHO latest guidelines
Determine the safest feeding option by using the home circumstances assessment table below:

<table>
<thead>
<tr>
<th>Questions</th>
<th>Yes</th>
<th>No/Doubtful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Do you have piped running water and a flush toilet in your home?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Can you afford to formula feed your baby for 12 months without assistance from the government to maintain normal growth and nutrition? Estimated current monthly cost in rands is R X (Annexure 3).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Can you prepare formula hygienically on demand for your infant throughout the day and night?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Are you sure you won’t give breast milk as well as formula during the first 6 months?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Have you disclosed your status to your partner or someone in your household?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Is the nearest healthcare service easily accessible?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If the answers to **ALL** six questions are YES: Recommend exclusive formula feeding.

If the answer to **ANY** question is **NO**/DOUBTFUL: Recommend exclusive breastfeeding.
ALGORITHM FOR SUPPORTING SAFE AND APPROPRIATE INFANT FEEDING BY HIV-INFECTED MOTHERS

HIV-POSITIVE MOTHER

Chooses to Breastfeed
- Adherence to drug regimens and does not meet AFASS.
  - Explore the appropriateness of infant feeding choice.
    - Counsel on safe infant feeding options.
    - Support final infant feeding choice of the mother.

- Non-adherence to drug regimen. Not virologically suppressed.
  - Mother meets circumstantial criteria. Clinical conditions present.
    - Support infant feeding choice of the mother.
  - Mother does not meet circumstantial criteria. Clinical conditions present.
    - Explore the appropriateness of infant feeding choice.
      - Counsel on safe infant feeding options.
      - Support infant feeding choice of the mother.
  - Mother does not meet circumstantial criteria. Clinical conditions not present.
    - Assess the clinical and circumstantial criteria to formula feed safely and hygienically.

Chooses to Formula Feed
- Mother meets circumstantial criteria. Clinical conditions present.
  - Support infant feeding choice of the mother.
- Mother does not meet circumstantial criteria.
  - Assess the appropriateness of infant feeding choice.
    - Support infant feeding choice of the mother.

Please note: Women who are on 2nd line ART and are not virologically suppressed (either due to non-adherence or true resistance to 2nd line drugs) do not qualify to breastfeed and should receive infant formula for the first six months of the infant’s life and subsequently in three monthly increments.

* Clinical conditions: Client is not adhering to the drug regime and / or client is not virologically suppressed (on HAART or AZT for <3 months) and / or client on 2nd line ART and is not virologically suppressed.
**Circumstantial criteria for safe replacement feeding: please refer to section A of the circular.
***Refer to circular H166/2012 (Infant Feeding Counselling Guideline).
Feeding

- EBF with maternal ART cover is default
- Actively assess if feeding choice is best. If not, explore reasons and advise.
- FF only if AFASS, medical indication or failing 2\textsuperscript{nd} line ART
- Extended infant DNP may/may not help if inadequate maternal suppression?
- May be role for heat-treatment of EBM esp with prems – preserves option of EBF.
- Human Milk Banking
Formula Feeding

- All: only four weeks prophylaxis
- Low risk: NVP monotherapy
- Increased risk of VT: NVP and AZT
- If NNRTI resistance likely: NVP and AZT
- Increased risk: First PCR soon after birth
- First PCR at 6 weeks if low risk
- Fast track ART if pos
Breastfeeding & ≥ 8 wks ART

- Low risk if viral suppression
- 4 wks DNP and PCR at 6 weeks
- If maternal VL > 400 in 4 weeks before birth: Consider birth PCR and multi ARV PEP and...
- Step up adherence support, boost 1\textsuperscript{st} line with Aluvia or change to 2\textsuperscript{nd} line as per protocol.
- Infant should get 4 weeks AZT if NNRTI resistance likely
- Change to FF if failing 2\textsuperscript{nd} line ART
Breastfeeding & < 8 wks ART

- High risk
- DNP for 12 weeks
- If maternal VL > 400 in 4 weeks before birth: Do birth PCR and give multi-ARV PEP
- Consider home Flash-heating until ≥ 8 wks ART
Communication
# PMTCT/HIV INFORMATION

*(Only detach page when child is taken to school)*

<table>
<thead>
<tr>
<th></th>
<th>Positive</th>
<th>Negative</th>
<th>To be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mother’s latest HIV test result</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When did mother have the test?</td>
<td>Before pregnancy</td>
<td>During pregnancy</td>
<td>At delivery</td>
</tr>
<tr>
<td>Is the mother on life-long ART?</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>If yes, duration of life-long ART at time of delivery</td>
<td>&lt; 4 weeks</td>
<td>&gt; 4 weeks</td>
<td>Before pregnancy</td>
</tr>
</tbody>
</table>

Document ARVs the mother received:

Did the mother receive infant feeding counseling?

Decision about infant feeding | Exclusive breast | Exclusive formula |

Document Nevirapine given:

---

All HIV exposed infants should receive Nevirapine for 6 weeks

Has the mother disclosed to anyone in the household? | Yes | No |

Has the mother’s partner been tested? | Yes | No |

Remember to offer testing for all the mother’s other children if not yet done

Offer a mother with unknown HIV status a rapid HIV test. If mother’s HIV rapid test is positive, perform an HIV DNA PCR test on infant if ≥ 6/52
Fill in this section if infant is HIV exposed

### 6 week visit

<table>
<thead>
<tr>
<th>What feeds has the infant received?</th>
<th>Exclusive breast</th>
<th>Exclusive formula</th>
<th>Mixed feeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV PCR test done?</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Date:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cotrimoxazole started?</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Infant feeding discussed?</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>Has the child received Nevirapine?</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

If yes: Stop now  Continue

Stop Nevirapine if the mother is on life-long ART or the child has stopped breastfeeding. If not, continue until breastfeeding stops.

### 10 week visit, or earlier if ill

<table>
<thead>
<tr>
<th>PCR result</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post test counseling done?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Referred for ART?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Stop Nevirapine if PCR is positive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cotrimoxazole given?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has child received Nevirapine?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

If yes: Stop now  Continue

Encourage a mother whose baby is HIV positive to continue breastfeeding.

Retest HIV negative children 6 weeks after cessation of breastfeeding, or if clinical suspicion.

An HIV exposed child should be retested with a rapid HIV Antibody test at 18 months.

<table>
<thead>
<tr>
<th>Repeat PCR test</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post test counseling done?</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Referred for ART</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Stop Nevirapine if PCR is positive</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cotrimoxazole given?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has child received Nevirapine?</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

If yes: Stop now  Continue
Appendix 5: PMTCT infant discharge letter

PMTCT infant discharge letter  
(to be given to patient)

Dear Colleague

INFANT SURNAME: ......................................................... INFANT FIRST NAME: ..........................................................

INFANT HOSPITAL NUMBER: ........................................... DOB: ............. / .......... / .......... ....................................................

Has been discharged from ........................................ (delivery facility) on: .................................... (date)

Mother started ART _____ weeks prior to delivery. The infant has been discharged on:

Daily Nevirapine (NVP) prophylaxis for 4 weeks / 12 weeks (please circle) as per the 2013 PMTCT Clinical Guidelines Update.

<table>
<thead>
<tr>
<th>Nevirapine (NVP) syrup (10mg/ml)</th>
<th>Birth Weight</th>
<th>Age</th>
<th>Daily Dosage</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;2.0kg</td>
<td>Birth to 2 weeks</td>
<td>2mg/kg</td>
<td>0.2 ml/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 to 6 weeks</td>
<td>4mg/kg</td>
<td>0.4 ml/kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 to 12 weeks</td>
<td>20mg</td>
<td>2ml</td>
</tr>
<tr>
<td></td>
<td>2.0 – 2.5kg</td>
<td>Birth to 6 weeks</td>
<td>10mg</td>
<td>1ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 to 12 weeks</td>
<td>20mg</td>
<td>2ml</td>
</tr>
<tr>
<td></td>
<td>&gt;2.5kg</td>
<td>Birth to 6 weeks</td>
<td>15mg</td>
<td>1.5ml</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 to 12 weeks</td>
<td>20mg</td>
<td>2ml</td>
</tr>
</tbody>
</table>

Feeding method at discharge:  

- Breastfeeding [ ]  
- Formula feeding [ ]

Please perform an HIV-1 DNA PCR test at six weeks of age for all HIV-exposed infants not on ART. 
If positive: Please fast track the infant for ART and continue CPT.
If negative: Please follow the 2013 PMTCT Clinical Guidelines Update for follow-up infant testing.
Adequate NIMART capacity at PMTCT and clinic sites are critical to implementation of B & B+

Retention-in-care is critical to impact during and beyond breastfeeding