HIV incidence in pregnancy and the first post-partum year

Implications for prevention of mother-to-child transmission
Botswana, 2008-2010

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Background & Rationale

- Diagnosis of HIV infection in women as early as possible is the first critical step to reducing MTCT
- Routine one-time antibody testing at ANC for PMTCT may miss
  - Acute HIV infections in the window period
  - Women who become infected after testing
- Very high risk of MTCT with: †
  - New HIV infections in late pregnancy (73%)
  - New HIV infections during breastfeeding (36%)

† Source: Humphrey, JH, et al: Mother to child transmission of HIV among Zimbabwean women who had their primary HIV infection during pregnancy or while breastfeeding. XVI International AIDS conference, Toronto, Canada, August 14, 2006.
Background - Botswana

- Population: 1.8 million
- Annual Births: 43,000
- >95% of women of pregnant women have routine HIV tests at ANC, median 22 weeks gestation
- HIV Prevalence at ANC: 32.5% (2009 ANC sentinel surveillance)
- The National PMTCT program provides free formula for 12 months to HIV-exposed babies and >90% of HIV-positive mothers choose to formula-feed
- Early Infant Diagnostic (EID) testing has shown overall 4.2% of HIV-exposed infants are HIV-positive at their first test.
HIV Incidence during Pregnancy Botswana, 2008

In 2008, we retested 400 women on the post-labour ward who had been HIV-negative at ANC and found 1.3% had new HIV infections.

Based on these findings we recommended routine re-testing:

- In the third trimester of pregnancy
- For women missed in third trimester, on maternity wards
- For provision of “late PMTCT”

Study should be repeated for HIV-negative mothers of infants who are still breastfeeding.
2010 Study Objectives

- Determine the prevalence of HIV among a sample of women approximately one year post-partum who were HIV negative when tested during pregnancy.
- Describe the sexual risk behavior of women in the post-partum period.
- Describe breastfeeding practices (rate and duration) among women who were HIV-negative when tested antenatally.
- Determine the HIV-status of infants exposed to HIV during pregnancy and breastfeeding, and follow their treatment outcomes.
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- **Describe the sexual risk behavior of women in the post-partum period**

- Describe breastfeeding practices (rate and duration) among women who were HIV-negative when tested antenatally.

- Determine the HIV-status of infants exposed to HIV during pregnancy and breastfeeding, and follow their treatment outcomes.
Methods

- **Study period**: Jan 16, 2010 – May 14, 2010
- **Study population**
  - 417 Women with an HIV-negative test documented during pregnancy presenting with 9-15 month old infants in immunization clinics
  - Refusal rate: 7 (1.7%)
- **Testing and counseling by Botswana standard algorithm**
  - Determine, Unigold, Oraquick tiebreaker
  - HIV-positive women referred for PMTCT, HIV care and treatment
  - HIV-exposed infants had a dried blood spot (DBS) taken for DNA PCR testing of HIV
- **Interview on risk behaviors and feeding practices**
Results

Of 417 women retested at immunization clinics

- **18 (4.3%)** women tested HIV-positive
  - 2 had been retested HIV-positive prior to recruitment
  - 16 were retested by our study team and found to be HIV-positive

Calculation to estimate incidence at 1 year post-partum: based on 2008 finding of 1.3% incidence a median of 17 weeks after last negative HIV test
Estimated infections in pregnant and post-partum women, Botswana 2010

43000 pregnant women

Women diagnosed before during ANC
13975 (32.5%)*

Women assumed to be HIV-negative
29025 (67.5%)

Women infected during late pregnancy
377 (1.3%)

Women infected while breastfeeding
1103 (3.8%)

* 2009 ANC Sentinel Surveillance

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Estimated infants infected with new HIV infections, Botswana 2010

<table>
<thead>
<tr>
<th></th>
<th>Women diagnosed before or during ANC</th>
<th>Women infected in late pregnancy</th>
<th>Women infected in first postpartum year</th>
</tr>
</thead>
<tbody>
<tr>
<td># of women infected</td>
<td>13975</td>
<td>377</td>
<td>1103</td>
</tr>
<tr>
<td>Transmission rate to infants</td>
<td>4.2%</td>
<td>73%</td>
<td>36%</td>
</tr>
<tr>
<td># of infants infected</td>
<td>587</td>
<td>275</td>
<td>397</td>
</tr>
</tbody>
</table>

Of 1259 infant infections, 672 (53.4%) due to incident cases of maternal HIV

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HIV-Exposed Infants

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HIV-Exposed Infants (N=18)

- Median age: 10 months [Range 9, 15]
- 100% had “ever” been breastfed
  - 259 (62.1%) of all infants were “currently breastfeeding” at the time of recruitment
  - Median age at weaning: 7 months [Range 1, 15]
  - 5 (28%) of the HIV-exposed infants were still breastfeeding

* Consent for Early Infant Diagnosis was refused by one of the seroconverting women
HIV-Exposed Infants (N=18)

- 3 (17.6%)* were HIV-positive at the time of mother’s re-test
  - 183: initiated on HAART 4/15/2010; deceased 5/17/2010
  - 219: post-test counseled, presented for evaluation, father a traditional healer and refused tx; followed-up at home and reevaluated at IDCC – treatment started
  - 325: post-test counseled, incorrect contact information given → lost to follow-up → deceased 5/18/2010

- 4 of 5 HIV-negative babies who were not yet weaned have not returned for repeat testing

* True MTCT rate would require retesting of all babies who tested HIV-negative while breastfeeding.

* Consent for Early Infant Diagnosis was refused by one of the seroconverting women
Implications for PMTCT and pediatric services

- Women continue to be at risk for HIV infection during pregnancy and while breastfeeding, despite high uptake of routine antenatal HIV testing and counseling.
- Women assumed to be HIV-negative during pregnancy and the first post-partum year in Botswana will breastfeed their babies.
- Infants are at significant risk for mother-to-child transmission even when their mother has a prior HIV-negative test.
- HIV-exposed and –infected infants are still at high risk for death and loss to follow-up.
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    - Stembile Matambo
    - Maruping Maruping
    - Stembile Matambo
    - Molly Smit
  - CDC-Atlanta
    - Tracy Creek

- Clinical sites in Francistown, Botswana
  - Boikutso Clinic
  - Botswelelo Clinic
  - Gerald Clinic
  - Lapologang Clinic
  - Masego Clinic
  - Tswaragano Clinic
  - Botshelo Clinic

- Women in Botswana who agreed to be retested for this study

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