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Jonathan Cohn
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RN, MPA
Michigan Department
of Community Health
Topics

• HIV epidemiology in pregnancy
• Progress to reduce perinatal transmission
• HIV testing
• Missed opportunities
Women and HIV: Snapshot

- 20% (9500) of new HIV infections in 2010: a 21% decrease since 2008
- 8102 new AIDS diagnoses among women: 25% of diagnoses that year (a decline)
- One quarter of deaths in 2010
- Heterosexual sex most common risk factor (84% of new infections in 2010)
- 6,000 to 7,000 HIV-positive women deliver annually
- Fewer than 200 HIV infected infants are now born in the US each year
- 40% of HIV-infected infants born to mothers with unknown status

KFF: HIV and women fact sheet March 2014
Women and HIV: Snapshot (2)

- Women of color highly affected: new infections, living with HIV, and HIV-related deaths in US
- In 2010: 64% of new HIV infections in women occurred in Black women (only 13% of female pop.)
- HIV incidence higher in Blacks and Latinas than for white women (20x, 4x, respectively)
- HIV is 7th leading cause of death in black women
Additional snapshots

IV Infections Among Women & Girls, by Age and Transmission Category, 2010

- 55 and over: 6%
- 45-54: 17%
- 35-44: 25%
- 25-34: 29%
- 13-24: 22%

Other <1%

Injection Drug Use: 16%

Heterosexual Contact: 84%

U.S. Female Population

- Latina: 16%
- Black: 63%
- White: 18%
- Other: 8%

New HIV Infections Among Women & Girls

- Latina: 15%
- White: 18%
- Black: 13%
- Other: 8%

Estimates are among those ages 13 and older and do not include U.S. dependent areas. Age distribution only includes women and girls. Distribution by transmission category includes all women and girls.

HIV Surveillance Supplemental Report, Vol. 17, No. 4; December 2012.
Michigan HIV Prevalence rates
FIGURE 6. Reported HIV Prevalence Rates, by City of Residence at Diagnosis in Wayne, Oakland, and Macomb Counties as of January 1, 2015 (N=10,265)

HIV prevalence rate per 100,000

- 11 - 71
- 72 - 149
- 150 - 317
- 318 - 617
- 618 - 1513
- <10 reported cases

Rates were calculated using the 2014 Census estimates.

*Prevalence rates for the cities of Detroit and Highland Park are overestimates due to significant population decline in these cities between 2000 and 2010 (population losses of 25% and 33%, respectively). MDHHS is currently developing a method to calculate estimates that adjust for this population change.

Data for 5 HIV+ individuals living in Wayne, Oakland, or Macomb counties at the time of HIV diagnosis were excluded from the map due to unknown city/township at diagnosis.
Perinatal Infections in MI

Most if not all Unknown status children are PCR negative. Without a negative HIV antibody documented at 18 months, CDC does not define them as Not Infected.

Quarterly HIV/AIDS Report, Michigan, October 2009
FIGURE 10. Infection Status of Perinatal HIV Exposures

<table>
<thead>
<tr>
<th>Year of Birth</th>
<th>HIV Infection</th>
<th>Not Infected</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>1</td>
<td>24</td>
<td>19</td>
</tr>
<tr>
<td>2011</td>
<td>4</td>
<td>38</td>
<td>11</td>
</tr>
<tr>
<td>2012</td>
<td>1</td>
<td>23</td>
<td>7</td>
</tr>
<tr>
<td>2013</td>
<td>0</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>2014</td>
<td>3</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

FIGURE 7. Perinatal HIV Exposures, by Residence at Birth

- Out-State Michigan
- Southeast Michigan

<table>
<thead>
<tr>
<th>Year of Birth</th>
<th>Out-State Michigan</th>
<th>Southeast Michigan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>28</td>
<td>16</td>
</tr>
<tr>
<td>2011</td>
<td>48</td>
<td>15</td>
</tr>
<tr>
<td>2012</td>
<td>32</td>
<td>19</td>
</tr>
<tr>
<td>2013</td>
<td>13</td>
<td>13</td>
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<tr>
<td>2014</td>
<td>7</td>
<td>8</td>
</tr>
</tbody>
</table>
HIV and Pregnancy

- Preventing HIV infection in women is the best way to prevent perinatal transmission.
- Offer HIV testing to ALL pregnant women.
- Treatment is available to nearly eliminate mother to child transmission (MTCT).
- With good medical care and antiretroviral therapy (ART), HIV-infected parents can live long, relatively healthy lives.
Factors Affecting Transmission

**Known risk factors**
- High maternal viral load
- Viral genotype/phenotype
- Advanced maternal HIV disease
- Low CD4 count or percent
- Vaginal delivery
- Membrane rupture > 4 hours
- Delivery at < 37 weeks
- Breastfeeding

**Suggestive, but not conclusive**
- Genetic factors
- Immature immune system in infant
- Increased viral strain diversity
- Maternal neutralizing antibody
- Illicit drug use during pregnancy
- Frequency of unprotected sexual
- Multiple sex partners during pregnancy
- Maternal nutritional status
- Anemia during pregnancy
- Cigarette smoking
- Chorioamnionitis
- Abruptio placentae
- Placental *P. falciparum* infestation
- Syphilis and other STD
- Fetal scalp electrodes
- Episiotomy and vaginal tears
## Perinatal Transmission

<table>
<thead>
<tr>
<th>Breast-feeding populations</th>
<th>Non-breast feeding populations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall risk 20-45%</td>
<td>Overall risk 15-30%</td>
</tr>
</tbody>
</table>

**Among transmissions**

- **In utero:** 15-25%
- **Intra partum:** 35-45%
- **Breast feeding:** up to 40%

- **Target with all interventions:** <5%

- **In utero:** 25-40%
- **Intra-partum:** 60-75%

- **Target with all interventions:** <2%
Mother to Child Transmission in the U.S. Over Time

Decline due to:
- Enhanced prenatal HIV testing;
- Increase in use of HAART by HIV+women;
- Increase in elective C/S by HIV+ women.
Antiretroviral Therapy in Pregnancy, USA

- Mechanism of protection:
  - Reduce maternal plasma viral load
    - Reduce infant in utero exposure
  - Reduce genital viral load
    - Reduce infant viral exposure in birth canal
  - Drugs crossing placenta provide infant pre- and post-exposure prophylaxis
• Determining the **timing** of perinatal HIV infection is of great clinical relevance for implementing cost-effective prophylaxis.

• Recent studies argue that most HIV transmission occurs very **late** in gestation.

*Kourtis, Bulterys, Nesheim, Lee. JAMA 2001; 285:709-712*
How Important is Maternal Viral Load?

- Maternal HIV-1 RNA level is strongly correlated with risk of transmission.
- RNA level near the time of delivery is an important predictor of transmission even among ARV-treated women.
- The threshold, below which transmission does not occur, has not been determined.
US Standards for ARV in Pregnancy

- cART starts after 12 weeks gestation
  - Include AZT in regimen if possible
  - Women already on ARVs when pregnancy diagnosed may continue or may interrupt during 1st trimester
- Add IV AZT during labor (if VL > 400 copies)
- Infant receives 4 weeks oral AZT
- Women not requiring ARVs for own health may discontinue postpartum
  - Controversy about post-partum discontinuation of ARVs in healthy women
  - Women requiring ARVs for own health continue

DHHS Perinatal HIV Guidelines March 28, 2014
Antiretroviral Therapy in Pregnancy, USA

- Recommended maternal regimen: Combivir (zidovudine + lamivudine) & Kaletra (lopinavir/ritonavir)
  - Other medications used in case of drug toxicity or drug resistance
- IV Retrovir (zidovudine) during labor
- Oral Retrovir (ZDV) to newborn for 4 weeks

DHHS Perinatal HIV Guidelines March 28, 2014
HIV: Antiretroviral Therapy

- Nucleoside Analogues
- CCR5 Blockers
- Integrase Inhibitors
- Fusion Inhibitors
- Non-Nucleosides
- Protease Inhibitors

FrAdapted from: Walker B. IDSA 1998
# Antiretrovirals in Pregnancy

<table>
<thead>
<tr>
<th>NRTI/NtRTI</th>
<th>PI</th>
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</thead>
<tbody>
<tr>
<td>• Abacavir</td>
<td>• Atazanavir/r</td>
</tr>
<tr>
<td>• Didanosine</td>
<td>• Darunavir/r</td>
</tr>
<tr>
<td>• Emtricitabine</td>
<td>• Fos-amprenavir/r</td>
</tr>
<tr>
<td>• Lamivudine</td>
<td>• Indinavir</td>
</tr>
<tr>
<td>• Stavudine</td>
<td>• Lopinavir/r</td>
</tr>
<tr>
<td>• Tenofovir</td>
<td>• Nelfinavir</td>
</tr>
<tr>
<td>• Zidovudine</td>
<td>• Saquinavir /r</td>
</tr>
<tr>
<td></td>
<td>• Tipranavir/r</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NNRTI</th>
<th>Fusion Inhibitor</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Efavirenz</td>
<td>• Enfuvirtide</td>
</tr>
<tr>
<td>• Etravirine</td>
<td>• Maraviroc</td>
</tr>
<tr>
<td>• Nevirapine</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Integrase inhibitor</th>
<th>CCR5 Receptor Blocker</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Raltegravir</td>
<td>• Maraviroc</td>
</tr>
<tr>
<td>• Dolutegravir</td>
<td></td>
</tr>
<tr>
<td>• Elvitegravir</td>
<td></td>
</tr>
</tbody>
</table>

Recommended Alternative Special Circumstances Only Insufficient Data

DHHS Perinatal HIV Guidelines March 28, 2013
US Standards for Mode of Delivery

• Randomized controlled studies and many observational studies showed a benefit of scheduled Cesarean in reducing mother to child HIV transmission

• Recommendations for Elective Cesarean
  – VL ≥ 1000 copies/ml at 36 weeks
  – Patient preference

European Standards

• Aebi-Popp et al
• Two large cohorts
  – European Collaborative Study
  – Swiss Mother and Child HIV Cohort Study
• Compared outcomes pre- and post-guidelines changes recommending vaginal deliveries for women with low or undetectable viral loads (2001-2010)
European Standards

- 2663 women with 3013 deliveries
- Diagnosed in pregnancy: 28%
- On cART: 73%
- Achieved viral suppression (VL < 50 copies: 86%
- Contributors to non-suppression: not on cART, diagnosis during pregnancy, teen pregnancy, IVDU
FIGURE 1. Viral load at delivery before and after the new guidelines.

- RNA<50
- RNA 50-399
- RNA 400-999
- RNA 1000-9999
- RNA>=10000
FIGURE 3. Mode of delivery before and after publication of the new guidelines stratified by delivery VL.


<table>
<thead>
<tr>
<th></th>
<th>Infected, No. (%)</th>
<th>Uninfected, No. (%)</th>
<th>Indeterminate, No. (%)</th>
<th>Total, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>140</td>
<td>2013</td>
<td>394</td>
<td>2547</td>
</tr>
<tr>
<td>Missed opportunities for perinatal HIV prevention</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No prenatal care (Step 1)a</td>
<td>25 (17.8)</td>
<td>109 (5.4)</td>
<td>43 (10.9)</td>
<td>177 (7.0)</td>
</tr>
<tr>
<td>Prenatal care but no prenatal HIV diagnosis (Step 2)a</td>
<td>34 (24.3)</td>
<td>98 (4.9)</td>
<td>28 (7.1)</td>
<td>160 (6.3)</td>
</tr>
<tr>
<td>Prenatal care and prenatal HIV diagnosis but no antiretrovirals (Step 3)a</td>
<td>4 (2.9)</td>
<td>15 (0.7)</td>
<td>7 (1.8)</td>
<td>26 (1.0)</td>
</tr>
<tr>
<td>Any missed opportunityb</td>
<td>63 (45.0)</td>
<td>222 (11.0)</td>
<td>78 (19.8)</td>
<td>363 (14.3)</td>
</tr>
<tr>
<td>Incomplete antiretroviral regimens for perinatal HIV preventionc</td>
<td>24 (17.1)</td>
<td>251 (12.5)</td>
<td>62 (15.7)</td>
<td>337 (13.2)</td>
</tr>
<tr>
<td>Perinatal HIV prevention providedd</td>
<td>53 (37.9)</td>
<td>1540 (76.5)</td>
<td>254 (64.5)</td>
<td>1847 (72.5)</td>
</tr>
</tbody>
</table>

Note. Eight hundred four (24%) of 3351 infants born in the same period have incomplete data.

aThree-step hierarchy based on the Institute of Medicine hierarchy of interventions: (1) provision of prenatal care, (2) identification of HIV-infected women in prenatal care, and (3) provision of prenatal antiretroviral drug therapy among women in prenatal care identified as HIV infected.
bAny missed opportunity among infected compared with uninfected infants: odds ratio = 8.25; 95% confidence interval = 5.48, 12.43.
cPrenatal care, prenatal HIV diagnosis, 1- or 2-arm antiretrovirals.
dPrenatal care, prenatal HIV diagnosis, 3-arm antiretrovirals.
<table>
<thead>
<tr>
<th>Year of birth</th>
<th>AOR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997</td>
<td>3.53 (1.30, 11.93)</td>
<td>.02</td>
</tr>
<tr>
<td>1998</td>
<td>3.26 (1.06, 10.03)</td>
<td>.04</td>
</tr>
<tr>
<td>1999</td>
<td>3.33 (1.11, 9.94)</td>
<td>.03</td>
</tr>
<tr>
<td>2000</td>
<td>2.06 (0.64, 6.58)</td>
<td>NS</td>
</tr>
<tr>
<td>2001</td>
<td>2.53 (0.95, 8.99)</td>
<td>NS</td>
</tr>
<tr>
<td>2002</td>
<td>2.42 (0.75, 7.78)</td>
<td>NS</td>
</tr>
<tr>
<td>2003 (Ref)</td>
<td>1.00</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Birthweight, g.</th>
<th>AOR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;2500</td>
<td>2.24 (1.50, 3.35)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>≥2500 (Ref)</td>
<td>1.00</td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Infant’s race/ethnicity</th>
<th>AOR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (Ref)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>2.72 (1.10, 6.76)</td>
<td>.03</td>
</tr>
<tr>
<td>Hispanic</td>
<td>1.26 (0.84, 1.88)</td>
<td>NS</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Infant’s medical insurance</th>
<th>AOR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public (Ref)</td>
<td>1.00</td>
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<tr>
<td>Private</td>
<td>0.84 (0.37, 1.91)</td>
<td>NS</td>
</tr>
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<td>None</td>
<td>0.47 (0.11, 1.99)</td>
<td>NS</td>
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<table>
<thead>
<tr>
<th>Prenatal interventions</th>
<th>AOR (95% CI)</th>
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<tbody>
<tr>
<td>No prenatal HIV testing and no antiretrovirals (Ref)</td>
<td>1.00</td>
<td></td>
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<tr>
<td>Prenatal HIV testing and no antiretrovirals</td>
<td>0.77 (0.29, 2.05)</td>
<td>NS</td>
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<tr>
<td>Prenatal HIV testing and 1- or 2-arm antiretroviral regimen</td>
<td>0.18 (0.10, 0.33)</td>
<td>&lt;.001</td>
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<td>0.10 (0.06, 0.19)</td>
<td>&lt;.001</td>
</tr>
<tr>
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<td>0.05 (0.03, 0.11)</td>
<td>&lt;.001</td>
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<thead>
<tr>
<th>Delivery type</th>
<th>AOR (95% CI)</th>
<th>P</th>
</tr>
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<tbody>
<tr>
<td>Vaginal (Ref)</td>
<td>1.00</td>
<td></td>
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<tr>
<td>Caesarian section</td>
<td>1.10 (0.73, 1.64)</td>
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<table>
<thead>
<tr>
<th>Maternal illicit drug use</th>
<th>AOR (95% CI)</th>
<th>P</th>
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<tbody>
<tr>
<td>No report or mention (Ref)</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.83 (1.18, 2.82)</td>
<td>.007</td>
</tr>
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Note. AOR = adjusted odds ratio; CI = confidence interval; NS = not significant.

aPrenatal zidovudine with other antiretrovirals along with intrapartum and neonatal zidovudine.
### TABLE 3—Factors Associated With Perinatal HIV Transmission Among HIV-Exposed Singleton Births ($n = 2059$) With Prenatal Care: New York City, 1997–2003

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<td>Cesarean section</td>
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*Prenatal zidovudine with other antiretrovirals along with intrapartum and neonatal zidovudine.
HIV Antibody Testing

• Screening HIV antibody test
  • Usually tests for both HIV-1/HIV-2
    – Elisa with recombinant antigen
    – Rapid test using one technology

• Confirmatory HIV antibody test
  – Western Blot
  – Elisa with synthetic antigen
  – Rapid test with different antigen/technology
HIV Antibody Testing

- Screening HIV antibody test
  - Usually tests for both HIV-1 and HIV-2
  - Elisa test using recombinant antigen
  - Rapid test using one technology
- Confirmatory HIV antibody test
  - Western blot
  - Elisa with synthetic antigen
  - Rapid test with different antigen/technology
HIV Diagnostic Testing

• Step 1. 4\textsuperscript{th} generation HIV-1/2 Ag/Ab combo immunoassay (preferred but 3\textsuperscript{rd} gen. acceptable)

• Step 2. HIV-1/HIV-2 antibody differentiation immunoassay

• Step 3. HIV-1 RNA assay
HIV Diagnostic Testing Algorithm

Step 1. HIV-1/2 Ag/Ab combo immunoassay (4th generation)

(+)  Negative for HIV-1 and HIV-2 antibodies and HIV-1 p24 Ag

(-)

Step 2. HIV-1/HIV-2 antibody differentiation immunoassay

HIV-1 (+) HIV-2 (-)
Positive for HIV-1 antibodies

HIV-1 (-) HIV-2 (+)
Positive for HIV-2 antibodies

HIV-1 (+) HIV-2 (+)
(Undifferentiated)
Positive for HIV antibodies

HIV-1 (-) or indeterminate HIV-2 (-)

Step 3. HIV-1 RNA assay

RNA (+)  Positive for HIV-1

RNA (-)  Negative for HIV-1

(+) = Reactive (or repeatedly reactive) test result, in accordance with manufacturer’s instructions

(-) = Nonreactive test result, in accordance with manufacturer’s instructions

*For 3rd generation HIV-1/2 immunoassay, interpretation is ‘Negative for HIV-1 and HIV-2 antibodies’.
### Reporting results from the HIV diagnostic testing algorithm to persons ordering HIV tests and public health authorities

<table>
<thead>
<tr>
<th>Test performed</th>
<th>Test results</th>
<th>Final interpretation for provider report</th>
<th>Test results to be reported to public health authorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. HIV-1/2 Ag/Ab combination immunoassay</td>
<td>1. Nonreactive</td>
<td>Negative for HIV-1 antigen and HIV-1/HIV-2 antibodies. No laboratory evidence of HIV infection. If acute HIV infection is suspected, consider testing for HIV-1 RNA.</td>
<td>Reporting this test result is not required.</td>
</tr>
<tr>
<td>1. HIV-1/2 Ag/Ab combination immunoassay</td>
<td>1. Reactive</td>
<td>Positive for HIV-1 antibodies. Laboratory evidence consistent with established HIV-1 infection is present.</td>
<td>Report test results 1 and 2.</td>
</tr>
<tr>
<td>2. HIV-1/HIV-2 antibody differentiation immunoassay</td>
<td>2. HIV-1 reactive and HIV-2 nonreactive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. HIV-1/2 Ag/Ab combo immunoassay</td>
<td>1. Reactive</td>
<td>Positive for HIV-2 antibodies. Laboratory evidence of HIV-2 infection is present.</td>
<td>Report test results 1 and 2.</td>
</tr>
<tr>
<td>2. HIV-1/HIV-2 antibody differentiation immunoassay</td>
<td>2. HIV-1 nonreactive and HIV-2 reactive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. HIV-1/2 Ag/Ab combination immunoassay</td>
<td>1. Reactive</td>
<td>HIV antibodies were not confirmed and HIV-1 RNA was not detected. No laboratory evidence of HIV-1 infection. Follow-up testing for HIV-2 should be performed if clinically indicated.</td>
<td>Reporting this test result is not required.</td>
</tr>
<tr>
<td>2. HIV-1/HIV-2 antibody differentiation immunoassay</td>
<td>2. Nonreactive or indeterminate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. HIV-1 RNA assay</td>
<td>3. RNA not detected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. HIV-1/2 Ag/Ab combination immunoassay</td>
<td>1. Reactive</td>
<td>Positive for HIV-1. Laboratory evidence consistent with acute HIV-1 infection is present.</td>
<td>Report test results 1, 2, and 3.</td>
</tr>
<tr>
<td>2. HIV-1/HIV-2 antibody differentiation immunoassay</td>
<td>2. Nonreactive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. HIV-1 RNA assay</td>
<td>3. RNA detected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. HIV-1/2 Ag/Ab combination immunoassay</td>
<td>1. Reactive</td>
<td>Positive for HIV-1 antibodies. Laboratory evidence of HIV-1 infection confirmed by HIV-1 RNA.</td>
<td>Report test results 1, 2, and 3.</td>
</tr>
<tr>
<td>2. HIV-1/HIV-2 antibody differentiation immunoassay</td>
<td>2. Indeterminate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. HIV-1 RNA assay</td>
<td>3. RNA detected</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. HIV-1/2 Ag/Ab combination immunoassay</td>
<td>1. Reactive</td>
<td>Positive for HIV antibodies. Laboratory evidence of HIV infection is present. HIV antibodies could not be differentiated as HIV-1 or HIV-2. Additional testing for HIV-1 RNA or HIV-2 RNA should be performed if clinically indicated.</td>
<td>Report test results 1 and 2.</td>
</tr>
<tr>
<td>2. HIV-1/HIV-2 antibody differentiation immunoassay</td>
<td>2. HIV-1 and HIV-2 reactive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. HIV-1/2 Ag/Ab combination immunoassay</td>
<td>1. Reactive</td>
<td>HIV-1 antibodies were not confirmed and HIV-1 RNA testing was not performed. Testing of this specimen is incomplete. Follow-up testing for HIV antibodies and HIV-1 RNA is recommended as soon as possible.</td>
<td>Report test results 1 and 2.</td>
</tr>
<tr>
<td>2. HIV-1/HIV-2 antibody differentiation immunoassay</td>
<td>2. Nonreactive or indeterminate</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Abbreviations:** Ag/Ab, antigen/antibody; RNA, ribonucleic acid.

CDC (USPHS) Recommendations for HIV Testing of Pregnant Women

- **Prenatal**: routine HIV screening for all pregnant women using the “opt out” approach
- Third trimester: repeat screening in high prevalence or high risk situations
- **Labor and delivery**: Routine rapid testing for women whose HIV status is unknown
- **Postnatal**: Rapid testing for all infants whose mother’s status is unknown

Revised Recommendations for HIV Testing of Adults, Adolescents, and Pregnant Women in Health-Care Settings, CDC MMWR 55(RR14) September 22 2006
Michigan HIV Testing Law

- Requires offering HIV (also Hepatitis B and STI) testing to all pregnant women
  - written consent for HIV test no longer required
  - documentation of offering test or refusal is
  - 3 points of information regarding test:
    - Meaning of test, rights of test subject, to whom results may be disclosed
- Michigan brochure on HIV transmission: Important Health Information
About HIV Testing

What if I have more questions?

- Feel free to ask the health professional who gave you this booklet any questions that you might have.
- Call the Michigan statewide HIV/AIDS information hotline (English 1-800-872-AIDS; Español 1-800-862-SIDA; TDD 1-800-332-0849).
- Visit the CDC’s HIV/AIDS website for more information (http://www.cdc.gov/hiv/).

What is HIV and how is it spread?

HIV infection is a long-term illness that damages the body’s immune system, or its ability to fight off diseases. HIV spreads through blood, semen, vaginal fluids, and breast milk. You can get or give HIV infection by:

- Having vaginal, anal, or oral sex without a condom.
- Sharing needles or works when injecting drugs.
- HIV can be passed from mother to child during pregnancy, birth, or breastfeeding.
- You cannot get HIV by donating blood or through casual contact such as hugging or shaking hands.

What is AIDS?

- AIDS (Acquired Immunodeficiency Syndrome) is the stage of HIV infection when the body is weakened and less able to fight off germs.

What is an HIV test?

It is a simple test, done by taking blood or fluid from cells in the mouth, that shows if you have been infected with HIV (human immunodeficiency virus), the virus that causes AIDS.

Who should have an HIV test?

- The CDC (Centers for Disease Control and Prevention) recommends that everyone between the ages of 13 and 64 get tested for HIV.
- Whatever your age, you should have an HIV test if you are sexually active or have shared needles or works for injecting drugs.
- Women who are pregnant or considering pregnancy should also get an HIV test.

Can anyone make me take an HIV test?

Under Michigan law, unless you are ordered by a judge, or you are a prisoner entering into a state correctional facility, getting an HIV test is your decision. No one can test you without your consent.

Can I change my mind after I consent to the test?

- Yes, you can change your mind at any time before the lab runs the test.
- If you change your mind, you must give your health care provider a written request saying that you do not want your test to be run.

Can someone under age 18 take the test without their parents’ consent?

- Yes. Minors, age 13 and older, have the right to take the test for HIV without their parents’ knowledge or consent.
Recent Missed Opportunities

• Three missed opportunities to prevent transmission in last 3 year
• Practitioner perception of patient risk may lead to missed testing/prevention opportunities.
• Two of these three MOs occurred in women that most providers would not perceive to be at risk for HIV.
• Routinized first AND third trimester testing for all women is now recommended.

Division of Health,
Wellness and Disease Control
HIV/AIDS Prevention and Intervention Section
Recent Missed Opportunities

• Case Study A

- A pregnant woman was offered and declined HIV testing during her initial prenatal care visit. The HIV Testing Consent Form was signed declining testing. This occurred in her second month of pregnancy. She presented to the Emergency Department in labor at 33 weeks. She was admitted; the baby delivered. There was no information regarding the HIV status of the patient in the maternal record. Although, the mother’s HIV status was unknown, the baby was breastfed and discharged three days later. Months later, the infant was ill and admitted to the hospital. The infant tested positive for an AIDS defining illness eight (8) days later. The doctors then decided to test the infant for HIV and the test results were positive. The mother was subsequently tested and found to be HIV positive.
Recent Missed Opportunities

• Case Study A
  – Declined testing at initial PNV
  – Testing not offered in ER or LD, despite unknown HIV status of mother
  – Baby delivered, not tested, and breastfed
Recent Missed Opportunities

• Case Study B
  
  Woman tested negative for HIV three weeks prior to diagnosis of pregnancy. She had a total of seven prenatal visits with a Metro Detroit Area prenatal care provider. She was tested for STDs (not including HIV) and tested positive for other STD(s) during pregnancy. She presented to Labor and Delivery at a suburban hospital and delivered by caesarean. Maternal HIV status information was not available. Chart noted STDs treated as recently as the third trimester, and presence of substance use. The patient was tested days after birth because of unexplained illness in the infant. Despite preliminary positive results, she breastfed. The infant was not tested and provided with ZDV/AZT prophylaxis until six days after birth. Infant HIV DNA PCR was positive.
Recent Missed Opportunities

• Case Study B
  – Not (re) tested for HIV at diagnosis of pregnancy
  – Not (re) tested for HIV during pregnancy – despite presence STDs
  – Not tested in ER or LD – despite lack available result and history STDs (and substance use)
  – Breastfeeding
  – Delayed testing and treatment of infant
Recent Missed Opportunities

• **Case Study C**
  
  - A pregnant woman tested negative for HIV at an initial prenatal visit. The patient, subsequently, had nine additional prenatal visits. When the patient gave birth, both maternal and infant charts documented the negative HIV test result from the initial prenatal screening. Maternal records indicate that the patient was married and of Middle Eastern descent. Nearly a year and a half later, both mother and child tested positive for HIV.
Recent Missed Opportunities

• Case Study C
  – Tested negative at initial PNV
  – No history to indicate need for third trimester or LD (re) testing
  – LD chart showed negative PNV result
  – 1 ½ years later both mother and child tested positive
Perinatal HIV Testing In Michigan

• The Laws
  – Perinatal Testing Law:
    • Section 333.5123 of Michigan’s Public Health Code
  – Consent Law
    • Section 333.5133 of Michigan’s Public Health Code

• MDCH Guidelines for Testing and Reporting Perinatal Human Immunodeficiency Virus (HIV), Hepatitis B, and Syphilis
  – Updated August 31, 2010
  – Reflect federal guidelines, recommendations, and best practice
Perinatal Testing Law

- Physicians and other health care professionals providing medical treatment to pregnant women are required, at the time of initial prenatal screening and examination to test for HIV, hepatitis B and syphilis, unless the woman refuses to be tested or the physician deems the tests are medically inadvisable.

State Guidelines

• Routinized Testing for ALL Pregnant Women:
  – As soon as possible in the first trimester of pregnancy:
    • Diagnosis of pregnancy at any health care facility OR
    • Initial prenatal visit
  – AND at 26-28 weeks gestation in the third trimester of pregnancy

• Regardless of perceived risk or previous negative test result

Division of Health, 
Wellness and Disease 
Control 
HIV/AIDS Prevention 
and Intervention Section
A third test for selected pregnant women

Retest women who engage in behaviors that put them at high risk for infection:
- Retest at 36 weeks gestation or at delivery

Regardless of previous negative test result
Rapid testing at delivery for women with no PNC or HIV test

- High risk of perinatal transmission in women without prenatal care or prior HIV test
- Rapid testing in labor makes it possible to begin ART prophylaxis and refer mother for care
- Begin ART prophylaxis asap after a positive rapid test (before confirmatory test results are available)
State Guidelines

• **Infants:**
  – HIV testing is recommended for ALL infants whose biological mothers have not been tested.

• **Maternal consent is required for newborn HIV testing in Michigan.**
State Guidelines : Documentation

• Michigan law and guidelines require:

1. ALL signed HIV consent/declination forms in the mother’s prenatal, labor and delivery, postpartum medical record

2. A copy of the full laboratory report in the mother’s labor and delivery record

3. A copy of the full laboratory report in the infant’s medical record.
Summary

• Incidence of HIV is trending down for women for first time in a decade

• Lowering viral load to undetectable remains a cornerstone of preventing perinatal transmission of HIV

• Despite clear guidelines for screening all pregnant patients, there are still missed opportunities for preventing infected babies, making MTCT of HIV unlikely to be a never event.
Questions?