Positive pregnancy
CUMULATIVE PERINATAL HIV EXPOSURE, AUSTRALIA

Date:

Number of cases:

- 1/01/1997: 140
- 1/01/1998: 165
- 1/01/1999: 190
- 1/01/2000: 215
- 31/12/2000: 240
- 31/12/2001: 265
- 31/12/2002: 290

Total cases from 1/01/1997 to 31/12/2002: 140 + 165 + 190 + 215 + 240 + 265 + 290 = 1407
Reported number of perinatally exposed children in Australia, 1982 - 2002

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Antenatal</td>
<td>33</td>
<td>49</td>
<td>103</td>
<td>185</td>
</tr>
<tr>
<td>Postnatal</td>
<td>59</td>
<td>35</td>
<td>15</td>
<td>109</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>92</strong></td>
<td><strong>84</strong></td>
<td><strong>119</strong></td>
<td><strong>295</strong>*</td>
</tr>
</tbody>
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* n = 232 women (74% heterosexual, 13% IDU)
71/295 infants infected (24% tm rate)
### Number of exposed children, 1993 - 2002, and number (%) with infection by year of birth

<table>
<thead>
<tr>
<th>Year of child’s birth</th>
<th>Number exposed</th>
<th>Number with infection</th>
<th>% with infection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Child born 1993 – 1997</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman diagnosed antenatally</td>
<td>49</td>
<td>12</td>
<td>24.5</td>
</tr>
<tr>
<td>Woman diagnosed postnatally</td>
<td>35</td>
<td>17</td>
<td>48.6</td>
</tr>
<tr>
<td><strong>Child born 1998 – 2002</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Woman diagnosed antenatally</td>
<td>103</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Woman diagnosed postnatally</td>
<td>15</td>
<td>8</td>
<td>53.3</td>
</tr>
</tbody>
</table>
Timing of Perinatal Infection (no antiretroviral prophylaxis)

- In utero
- At birth
- Early breast feeding
- Late breast feeding

TRANSMISSION RISK (%)

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What Is the Risk of Mother-to-child Transmission (MTCT) of HIV?

- Historically, up to 60%, but declining over the years
- Currently, in less developed settings, 30-40%
- And 20 – 25% in developed setting without intervention
- Can be 1-2% with intervention strategies
Factors Affecting the Risk of MTCT of HIV

- Maternal viral load
- Maternal state of immune suppression (HIV infection vs AIDS)
- Obstetric factors (e.g. duration of membrane rupture prior to delivery)
- Mode of delivery
- Gestational age at birth
- Breast feeding
- Others
Is there a safe threshold viral load?

i.e. a level below which HIV transmission does not occur?
MATERNAL ANTIVIRAL THERAPY AND VIRAL LOAD Effects on perinatal transmission

WITS prospective study: Cooper et al. JAIDS 2002;29:484–494
Maternal CD4 Lymphopenia and Tm Risk  
*(European Collaborative Study, AIDS, 1996)*
Association with duration of membrane rupture

The International Perinatal HIV Group. AIDS 2001;15:357-68
The International Perinatal HIV Group. AIDS 2001;15:357-68

**Group with AIDS**

**Probability of Vertical Transmission** vs. **Duration of Ruptured Membranes (hours)**
Prematurity and transmission risk

*(European Collaborative Study, AIDS, 1996)*

![Graph showing the relationship between gestational age and transmission rate.](image)
Randomised, controlled trial of breast v. formula feeding, Nairobi

Nduati et al. JAMA 2000;283:1167-1174

Breast fed (N=212)  Formula fed (N=213)

% Transmission

Age (months)

0 6 12 18 24

Breast fed: 36.7%
Formula fed: 20.5%

NB: Compliance = 70%
Influence of pattern of feeding on transmission

Coutsidis, AIDS, 2001

% infected

Age (months)

- Formula
- Excl. BF
- Mixed
What Are The Strategies for Preventing Transmission?

- Antenatal screening
- Antiretroviral therapy (ARV)
- Mode of delivery
- Not breast feeding
- Obstetric factors at delivery (e.g., avoidance of invasive procedures)
Receipt of perinatal ZDV and PNT AIDS trends

PACTG 076
25% tm reduced to 8% (67% ↓)
- 3 part AZT regimen
- AZT to mother (T2 or T3)
- AZT, IV, in labour
- AZT to infants, 6 weeks
TIMING OF AZT PROPHYLAXIS AND RISK OF POSITIVE PCR

* p<.05 compared to NONE

Relative Risk

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Summary

Transmission risk in various "intervention" settings

- Advanced HIV, breast feeding
- Breast fed infant
- Formula feeding
- Formula, AZT - 3 periods ("076")
- FF, AZT, C/S
- Formula, HAART
- Formula, HAART, VL<50
- Formula, HAART, VL<50, C/S

Transmission (%)
What to do about ARV during pregnancy?
Issues in selection of antiretroviral therapy in pregnancy

- SAFETY, EFFICACY FOR MOTHER
- SAFETY FOR FOETUS
- PREVENTION OF TRANSMISSION
Fig. 1. Cumulative distribution of gestational age at delivery, by treatment group.
? Adverse effects

- More nevirapine toxicity in women
- Teratogenicity
  - no human reports
  - ? Hydroxyurea
  - CNS risk with efavirenz
  - Amprenavir (cat B3)
    ? Teratogenicity due to its vitamin E content
- Reports of mitochondrial toxicity in infants
  *Blanche, Lancet, 1999  n = 8*
  *Europ. Coll. Study Gp, JAIDS, 2003 - NONE*

**Nevirapine** 200 mg po at onset labour and 2 mg/kg to babies within 72 h v. **AZT** q3h in labour and bd for 7 days to infant

NB: ~ 25% NVP resistance in maternal strains

**Kaplan-Meier estimates of proportion babies free from infection**
Maternal antiviral therapy as indicated for non-pregnant patients

Recommend 3 part antiviral regimen (from 2\textsuperscript{nd} trimester, during labour and to newborn)

Elective caesarean section may reduce risk, especially if VL high

As breast feeding doubles MTCT risk – formula recommended
Baby: Postnatal Management

- What ARV?
- Safety?
- Any other medications
- What tests and when
- How long is follow-up
Management of infant after perinatal HIV exposure

- Antiviral therapy
- Prevent PCP - Cotrimoxazole prophylaxis
  - till HIV -ve (usually 3 months)
  - or till 12 m
- Test for the virus
  HIV DNA PCR (RNA PCR?)
  - day 1
  - weeks 1, 6 & 12
  - 6 m
  (review at 12 and 18 months)

Schedules
- AZT x 6 w
- or AZT+3TC x 6w
- or **plus** nevirapine
  (1 (or 2?) dose(s) by day 3)
- exceptional circumstances
Plot of log base 2 HIV antibodies in infants born to HIV seropositive mothers against age in days. Thin lines represent the uninfected infants and thick lines the infected infants.

SERODIA HIV ANTIBODY TITRES IN INFANTS WITH PERINATAL EXPOSURE TO HIV

Modified from Palasanthiran et al., JID 1994;170:1593-6
Management of Infant.... contd.

- Monitor growth, development, immune function
- Immunisation routine (but IPV not OPV)
- Annual review
- Support services
I HAVE AIDS
Please hug me
I can't make you sick