HIV and postpartum mortality / morbidity

Maternal Health and HIV
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Introduction

• Every day, approximately 800 women die from preventable causes related to pregnancy and childbirth.
• 99% of all maternal deaths occur in developing countries. (50% in SSA and 30% in Southern Asia)
• A woman’s lifetime risk of maternal death – the probability that a 15 year old woman will eventually die from a maternal cause – is 1 in 3800 in developed countries, versus 1 in 150 in developing countries.
• > 60% of maternal deaths occurred in the postpartum period; 45% of postpartum deaths occurred within 1 day of delivery, In developing countries, 80% of postpartum deaths caused by obstetric factors occurred within 1 week. (Li et al, 1996)
Introduction

- HIV/AIDS is a major factor in the burden of maternal mortality worldwide.
- A WHO analysis estimated that worldwide in 2008, 61 400 maternal deaths (18% of all maternal deaths) were attributable to HIV.
- Without HIV infection the world burden of maternal death in 2008 would have been reduced from 342 900 to 281 500.
# Causes of maternal deaths in Africa

<table>
<thead>
<tr>
<th></th>
<th>AFRICA</th>
<th>SOUTH AFRICA</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAEMORRAGE</td>
<td>34%</td>
<td>14.1%</td>
</tr>
<tr>
<td>OTHER INDIRECT CAUSES</td>
<td>17%</td>
<td>OTHER INFECTIONS - 12% MED+SURGICAL-9%</td>
</tr>
<tr>
<td>SEPSIS</td>
<td>10%</td>
<td>6-8%</td>
</tr>
<tr>
<td>HYPERTENSION</td>
<td>9%</td>
<td>14 – 23%</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>6.2%</td>
<td>28%</td>
</tr>
</tbody>
</table>
SA data

The effect of HIV infection on maternal mortality is best documented in South Africa for two reasons.

• SA the country with the highest number of people living with HIV/AIDS
  - HIV prevalence rates in pregnancy that are among the highest in the world
  - rates have been documented in annual national prenatal HIV seroprevalence surveys since 1990

• availability of detailed data on maternal deaths that occur in the country since 1995
HIV prevalence epidemic curve among antenatal women, South Africa, 1990-2008
HIV prevalence distribution among antenatal women by province, South Africa, 2008
KZN PMTCT ANTENATAL HIV PREVALENCE (2008/09)
Institutional mortality ratio for HIV 6x higher!!

• 2008 - 2010 - there were 4,867 maternal deaths in SA.
• 80% were tested for HIV (of which 70% were infected)
• The Institutional MMR was 430.35/1000000 live births for HIV infected women compared to 75.46/100000 live births HIV uninfected women
## HIV testing amongst the deaths

<table>
<thead>
<tr>
<th>HIV status</th>
<th>2002-4</th>
<th>2005-7</th>
<th>2008-2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ve</td>
<td>36%</td>
<td>46.2%</td>
<td>57% (70% of those who tested)</td>
</tr>
<tr>
<td>-ve</td>
<td>10.3%</td>
<td>12.5%</td>
<td>24%</td>
</tr>
<tr>
<td>Unknown</td>
<td>53.9%</td>
<td>41.3%</td>
<td>20%</td>
</tr>
</tbody>
</table>
Saving Mothers Report – “Big 5”
CAUSES OF DEATH
HIV POS v/s HIV NEG

PRS
PNEUM
PTB
PCP
HPT D/O
OBS HAEM

0 2 4 6 8 10 12 14 16 18 20

POS
NEG
MORBIDITY

• For every death, there is 5-6x more morbidity (Severe acute maternal mortality – underrepresented)

• mainly infective, including fever, endometritis, wound sepsis, etc

• However, iMMR higher in HIV infected even for non-infective causes
Comparison of HIV status and causes of maternal death (using estimated IMMR per 100 000 live births)

<table>
<thead>
<tr>
<th>Cause of death*</th>
<th>HIV-negative</th>
<th>HIV-positive</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical and surgical disorders</td>
<td>11.5</td>
<td>24.2</td>
<td>16.7</td>
</tr>
<tr>
<td>NPRIs</td>
<td>6.6</td>
<td><strong>267.3</strong></td>
<td>25.6</td>
</tr>
<tr>
<td>Ectopic pregnancy</td>
<td>0.3</td>
<td>3.0</td>
<td>9.1</td>
</tr>
<tr>
<td>Miscarriage</td>
<td>1.4</td>
<td>9.9</td>
<td>17.6</td>
</tr>
<tr>
<td>Hyperemesis gravidarum</td>
<td>0.2</td>
<td>0.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Pregnancy-related sepsis</td>
<td>4.1</td>
<td>24.2</td>
<td>6.8</td>
</tr>
<tr>
<td>Obstetric haemorrhage</td>
<td>17.2</td>
<td>38.4</td>
<td>30.5</td>
</tr>
<tr>
<td>Hypertension</td>
<td>18.8</td>
<td>27.4</td>
<td>37.0</td>
</tr>
<tr>
<td>Anaesthetic complications</td>
<td>4.1</td>
<td>4.8</td>
<td>4.5</td>
</tr>
<tr>
<td>Embolism</td>
<td>3.2</td>
<td>4.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Acute collapse, cause unknown</td>
<td>3.2</td>
<td>9.2</td>
<td>6.8</td>
</tr>
<tr>
<td>Unknown</td>
<td>3.7</td>
<td>15.7</td>
<td>10.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>74.4</strong></td>
<td><strong>428.3</strong></td>
<td><strong>167.8</strong></td>
</tr>
</tbody>
</table>
## HIV status, 2008 - 2010

<table>
<thead>
<tr>
<th>HIV status</th>
<th>n</th>
<th>(%)</th>
<th>Probable cause of death</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV-negative</td>
<td>1166</td>
<td>24.0</td>
<td></td>
</tr>
<tr>
<td>HIV-positive not requiring HAART</td>
<td>949</td>
<td>19.5</td>
<td>(? Other causes)</td>
</tr>
<tr>
<td>AIDS not receiving HAART</td>
<td>938</td>
<td>19.3</td>
<td>(?late presentation)</td>
</tr>
<tr>
<td>AIDS receiving HAART</td>
<td>882</td>
<td>18.1</td>
<td>(?complications of ARV)</td>
</tr>
<tr>
<td>Declined</td>
<td>39</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>992</td>
<td>20.4</td>
<td></td>
</tr>
</tbody>
</table>

HAART = highly active antiretroviral therapy.
What can we do??
HIV

- Prevention
- Early identification and initiation of treatment
- Use of regimen safe in pregnancy
- Screening for TB and prophylaxis
- Prevent unwanted pregnancies in HIV infected women (which result in septic abortions)
iMMR and HIV status (Effect of HAART)

APPEARS TO HAVE DECREASED BY 13%

![Graph showing iMMR rates by HIV status and year]
Underlying causes of maternal deaths
Pharmaco-vigilance and safe regimen in pregnancy

• ARV with small for gest age

• NVP toxicities

• Could there be other problems - ??effect of antiretrovirals on the uterine muscle
<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number maternal deaths due to complications ARVs</td>
<td>14</td>
<td>17</td>
<td>42</td>
</tr>
<tr>
<td>Approx. Number HIV infected pregnant women per year</td>
<td>279798</td>
<td>279650</td>
<td>277216</td>
</tr>
<tr>
<td>Maternal deaths due to complications of ARVs/ Number pregnant HIV infected women /100000 births</td>
<td>5.00</td>
<td>6.08</td>
<td>15.15</td>
</tr>
<tr>
<td>Number of maternal deaths who were on HAART</td>
<td>214</td>
<td>306</td>
<td>362</td>
</tr>
<tr>
<td>% of deaths due to complications of ARVs of all maternal deaths who were on HAART</td>
<td>6.5</td>
<td>5.6</td>
<td>11.6</td>
</tr>
</tbody>
</table>
WHO strategy to reduce TB in people with HIV

• The 3 I’s:
  — Intensified TB case finding,
  — Isoniazid preventative therapy (IPT); and
  — Infection control for TB.

• IPT reduces the risk of active TB in HIV-infected individuals > if TST +ve

• HAART also reduces incidence of TB, (IPT +HAART may have added beneficial effect
Puerperal sepsis/ infection (local audit)

• 55 septic patients in 6months
• Most presented day 7 – 10pp
• 44/55 by c/s (5 ELCS vs 39 emergency)
  - 80% HIV infected
• 21 admitted to ICU
• 29 with hysterectomies
• 7 deaths
Puerperal sepsis cont.

Decline seen, the significant proportion of the remaining problem mainly from septic miscarriages

Modified obstetric practices

• Delaying AROM
• Vaginal swabbing – meta-analysis of 6-9 trials showed no benefit
• Antibiotic prophylaxis – vaginal and c/sections
• Effect of HAART
Unanswered questions
Why are IMMR for all causes higher for HIV infected women

• AIDS and other infections
• HPT?? Effect of HAART on immuno-pathogenesis of Pregnancy induced hypertension
• ??other medical and surgical disorders
• Obstetrics hemorrhage – ?chorioamnionitis / ??effect of ARV drugs on grossly dilated vessels / effect on myometrium
• Sepsis – remains higher despite judicious use of “prophylactic antibiotics”, and HAART
• The acute phase - ??poorly understood
Ngiya bonga

Q+A