Adverse neonatal outcomes among women living with HIV in Ontario: a population-based study

R Ng, E Macdonald, A Bayoumi, J Raboud, J Brophy, KI Masinde, M Loutfy, W Tharao, M Yudin, T Antoniou

Department of Family and Community Medicine, St. Michaels Hospital
Institute for Clinical Evaluative Sciences
November 19, 2013: Toronto
Conflict of Interest Disclosure

- None
Background

- Prevention of perinatal HIV transmission at less than 1%
- No population-based data examining other adverse neonatal outcomes
- Important gap:
  - Women: 20% of persons with HIV in care
  - Vast majority (> 80%) of child-bearing age
  - Previous research shows a majority intend to become mothers
  - More women originally from Africa, Caribbean
Objectives

- Compare risk of preterm birth, low birth weight and small for gestational age births between women living with and without HIV in Ontario between 2002/3 to 20010/11
Methods – Data sources

- Used administrative healthcare databases at Institute for Clinical Evaluative Sciences
  - Identified live births using MOMBABY database
  - Identified women with HIV aged 18 – 49 using validated case-finding algorithm

- Outcomes:
  - Demographic characteristics of mothers
  - Proportions of births that were preterm ( < 37 weeks), small for gestational age and low birth weight (< 2500 grams)
Methods – Analysis

- Multivariable generalized estimating equation models with logit link to compare risk of each outcome between groups
  - Adjusted for age, adequacy of prenatal care, neighborhood deprivation, neighborhood instability, comorbidity burden, region of origin, caesarean section, induction of labour and parity
Results

- 1,113,874 singleton births for analysis
  - 615 (0.06%) were to women living with HIV
  - 40.3% of women living with HIV originally from Africa or the Caribbean
# Results – Baseline Characteristics

| Characteristic                        | HIV  
|                                      | n = 615 | Non-HIV  
<table>
<thead>
<tr>
<th></th>
<th></th>
<th>N = 1,113,259</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 to 34</td>
<td>458 (74.5%)</td>
<td>881,796 (79.2%)</td>
<td>0.004</td>
</tr>
<tr>
<td>35 to 49</td>
<td>157 (25.5%)</td>
<td>231,463 (20.8%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Immigrant to ON</td>
<td>297 (48.3%)</td>
<td>288,267 (25.9%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Caesarean section</td>
<td>231 (37.6%)</td>
<td>302,504 (27.2%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Induction of labour</td>
<td>111 (18.0%)</td>
<td>234,315 (21.0%)</td>
<td>0.07</td>
</tr>
<tr>
<td>Adequacy of Prenatal care</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequate</td>
<td>370 (25.8%)</td>
<td>271,294 (36.5%)</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Inadequate</td>
<td>624 (43.6%)</td>
<td>265,225 (35.7%)</td>
<td></td>
</tr>
<tr>
<td>Intermediate</td>
<td>347 (56.4%)</td>
<td>640,507 (57.5%)</td>
<td></td>
</tr>
</tbody>
</table>
## Results – Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>HIV n = 615</th>
<th>Non-HIV N = 1,113,259</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neighborhood deprivation quintile</td>
<td></td>
<td></td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>1 (lowest)</td>
<td>66 (10.7%)</td>
<td>290,837 (26.1%)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>70 (11.4%)</td>
<td>228,756 (20.5%)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>90 (14.6%)</td>
<td>210,132 (18.9%)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>117 (19.0%)</td>
<td>188,042 (16.9%)</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>254 (41.3%)</td>
<td>181,208 (16.3%)</td>
<td></td>
</tr>
</tbody>
</table>
Results

- Preterm Birth
  - 14.6% (HIV) vs. 6.3% (non-HIV)
  - aOR: 1.70 (95% CI: 1.34 to 2.16)
- Small for gestational age infants
  - 14.6% (HIV) vs. 10.3% (non-HIV)
  - aOR: 1.43 (95% CI: 1.12 to 1.82)
- Low birth weight
  - 12.5% (HIV) vs. 4.6% (non-HIV)
  - aOR: 1.85 (95% CI: 1.44 to 2.38)
Limitations

- Could not identify births that occur out of hospital
- No clinical data, no information on determinants of adverse neonatal outcomes
- Potential for misclassification
Discussion & Conclusions

- Higher risk of adverse neonatal outcomes among women living with HIV vs. women not living with HIV

- Next steps:
  - KTE forum – community members, social scientists, basic scientists, clinicians
  - Qualitative research
Acknowledgments

- Co-investigators
  - Rick Glazier, Mona Loutfy, Jason Brophy, Ahmed Bayoumi, Mark Yudin, Erin MacDonald, Brandon Zagorski, Wangari Tharao, Khatundi Masinde

- Funding
  - Ontario HIV Treatment Network (OHTN)