HIV-1 Transmission Risk Persists During The First 6 Months Of Antiretroviral Therapy

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Background

Combination antiretroviral therapy (ART) decreases the risk of sexual HIV-1 transmission by suppressing HIV-1 RNA concentrations in blood and genital secretions to below undetectable levels [1,2]. However, HIV-1 transmission may still occur prior to complete viral suppression.

Objective

To estimate the risk of heterosexual HIV-1 transmission from persons on ART.

Methods

• Using data from a prospective study of heterosexual HIV-1 serodiscordant African couples enrolled in the placebo arm of the Partners PrEP Study, we quantified HIV-1 transmission risk in 3 time periods: between ART eligibility and treatment initiation, during the first 6 months of ART, and after 6 or more months of ART by when viral suppression is usually achieved.
• Sexual behavior, self-report of ART use by infected partners, and HIV-1 status of uninfected partners were assessed every 1-3 months.
• HIV-1 testing was performed using paired rapid antibody tests, with positive results confirmed by ELISA.
• The primary outcome was phylogenetically-linked HIV-1 transmission within the couple.
• Plasma HIV-1 RNA concentrations were quantified from archived EDTA samples which were batch tested at the end of the study.

Results

Table: HIV incidence in serodiscordant couples by ART exposure group

<table>
<thead>
<tr>
<th>ART exposure before transmission</th>
<th>N</th>
<th># Linked HIV infections</th>
<th>Person-years of follow up</th>
<th>Incidence per 100 P-Y (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART eligible but prior to ART start</td>
<td>249</td>
<td>3</td>
<td>175</td>
<td>1.71 (0.35-5.01)</td>
</tr>
<tr>
<td>≤6 months of ART</td>
<td>364</td>
<td>3</td>
<td>168</td>
<td>1.79 (0.37-5.22)</td>
</tr>
<tr>
<td>&gt;6 months of ART</td>
<td>242</td>
<td>0</td>
<td>167</td>
<td>0.00 (0.00-2.20)</td>
</tr>
</tbody>
</table>

Discussion

• We observed residual risk of HIV-1 transmission within 6 months of ART initiation and prior to complete viral suppression in the HIV-1 infected partner.
• Condom use and HIV incidence during this period were similar to that prior to ART initiation.
• Prevalence of unprotected sex was comparable before and after ART.
• For HIV-1 serodiscordant couples in which the infected partner is starting ART, or is ART eligible but delays or declines treatment, other prevention options including antiretroviral pre-exposure prophylaxis (PrEP) are needed.

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References