HIGH VIREMIA AMONG ‘STABLE’ PATIENTS RECEIVING ANTIRETROVIRAL THERAPY IN ZAMBIA

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BACKGROUND
• Despite widespread availability of ART in Zambia, only 59.8% HIV-positive adults 15-59 years old were found to have Viral Load (VL) suppression (<1000 copies of viral RNA/ml) according to the 2015-2016 Zambia Population Based HIV Impact Assessment (ZAMPHIA) community based study (1).
• This high level of silent non-suppression threatens to undermine the country’s ability to attain the UNAIDS 2020 treatment target of 90-90-90.
• HIV VL associated with various factors, females have a 35-50% lower HIV VL relative to males (2), VL suppression among HIV+ people in Zambia is undermined the country's ability to attain the UNAIDS 2020 treatment target of 90-90-90. This high level of silent non-suppression threatens to undermine the country's ability to attain the UNAIDS 2020 treatment target of 90-90-90.
• HIV VL associated with various factors, females have a 35-50% lower HIV VL relative to males (2), VL suppression among HIV+ people in Zambia is.
• The analysis sample was 73.5% among females, 73.5% among males. The analysis sample was 73.5% among females, 73.5% among males.
• Distinctly lower among 15 to 24 years old: 34.0% among females, 35.7% among males.

OBJECTIVES
1. To determine the prevalence of viremia among stable patients being enrolled into differentiated service delivery in two urban ART clinics purposively selected for heavy clinic patient load (>4500).
2. To identify factors associated with HIV VL among stable patients.

METHODS
• Enrolled: A systematic sample of 405 stable patients to receive accelerated 3-month ART pick-ups from a dedicated treatment room (FastTrack Model).
• Data Collection: • Dry blood spots (DBS) collected by Pharmacy Technologists and lay healthcare workers through finger prick to test for VL at enrolment into FastTrack model.
• Socio-demographic, clinical and pharmacy data.
• Data Analyses: Bivariate and backward stepwise logistic regression analyses to assess:
  • Crude viral suppression rates
  • Factors associated with odds of unsuppressed HIV VL at FastTrack enrolment.
Quantitative bias analysis using known limitations in the specificity (87.3%) and sensitivity (80.8%) of DBS results for true plasma viral load from external studies to correct for estimates on prevalence of viremia.

RESULTS
• Of the 405 enrolled, 308 patients had completed clinical data and were included in the analysis.
• 43.5% (n=134) without a CD4 test result in last 6 months, were enrolled based on clinical judgement of stability.

Figure 1. Viral Suppression Rates Among HIV positive Adults, By Province

Figure 2. Prevalence of suppression corrected for DBS measurement bias (Sensitivity = 80.8%, Specificity = 87.3%)

TABLE 1. Characteristics associated with unsuppressed viral load (defined as ≤1000 copies viral RNA/ml)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Proportions (%)</th>
<th>OR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender: Male</td>
<td>83 (25.6)</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>225 (74.4)</td>
<td>0.79 (0.47, 1.33)</td>
<td>0.37</td>
</tr>
<tr>
<td>Age Category at ART Start</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25 years</td>
<td>39 (12.5)</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>26-35 years</td>
<td>116 (38.3)</td>
<td>0.83 (0.40, 1.72)</td>
<td>0.73</td>
</tr>
<tr>
<td>&gt;35 years</td>
<td>148 (48.4)</td>
<td>0.70 (0.37, 1.35)</td>
<td>0.37</td>
</tr>
<tr>
<td>WHO Stage at ART Start</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>109 (35.0)</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>56 (17.9)</td>
<td>1.25 (0.40, 4.24)</td>
<td>0.36</td>
</tr>
<tr>
<td>3 or 4</td>
<td>122 (41.2)</td>
<td>1.47 (0.87, 2.50)</td>
<td>0.16</td>
</tr>
<tr>
<td>Time on ART at Enrolment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;2 years</td>
<td>284 (92.2)</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>≥2 years</td>
<td>24 (7.8)</td>
<td>1.13 (0.48, 2.68)</td>
<td>0.77</td>
</tr>
<tr>
<td>≥2 yrs/misused pharmacy pick-ups in last 12 months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-3</td>
<td>127 (41.2)</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>4-7</td>
<td>124 (40.3)</td>
<td>1.36 (0.82, 2.25)</td>
<td>0.48</td>
</tr>
<tr>
<td>8-11</td>
<td>57 (18.5)</td>
<td>1.07 (0.56, 2.04)</td>
<td>0.89</td>
</tr>
</tbody>
</table>

• The analysis sample was 73.5% female (n=225) with a median age of 34.7 years (IQR: 29.7-39.3) and median days on ART of 2144 (IQR: 1087-2947).
• Median age (34.7 years (IQR: 29.7-39.3)) and median days on ART of 2144 (IQR: 1087-2947).
• The full sample were not statistically different from the analysis sample.

KEY FINDINGS
• At enrollment, 40.3% (n=124) had >1000 copies of viral RNA/ml.
• VL non-suppression corrected to 30.8% when analyzed for DBS measurement bias.
• No significant association between unsuppressed HIV VL and gender, age, WHO staging at ART start, time on ART label/prescription missed pharmacy appointments was found.
• Odds of unsuppressed VL was greater for those who started ART at WHO clinical stage 2 (OR: 1.25, 95% CI: 0.65, 2.42) and stage ≥3 (OR: 1.47, 95% CI: 0.87, 2.50) compared to those who started at WHO clinical stage 1, although effect sizes were statistically insignificant.

CONCLUSIONS
• When corrected for specificity and sensitivity, rates of VL non-suppression among patients identified as stable during FastTrack enrolment were significantly higher than that reported by ZAMPHIA(11) and for a larger cohort of patients in government-run ART clinics supported by CIDRZ (4%).
• Community obtained DBS does not appear to be a suitable method of monitoring VL in Zambia when compared to plasma VL assessment.
• More research is underway to understand the discrepancy in results between community obtained DBS and that reported by the other studies in order to optimize community obtained DBS for VL monitoring.

REFERENCES

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