HIV & Comorbid Hypertension

Jessica R. Hyde, MS, CHES
Manager, Chronic Disease Branch
Hypotheses

• Prevalence of hypertension (HTN) is higher among people living with HIV (PLWH) than the general population

• The 2017 update to clinical practice guidelines will significantly increase prevalence of HTN among PLWH
Background

• PLWH who achieve durable viral suppression have life expectancies comparable to the general population

• 53% of deaths among PLWH are from non-AIDS causes
  • 15% of which are attributable to cardiovascular disease (CVD)

• Available literature suggested HTN prevalence range of 4% - 57%
  • None assessed the impact of 2017 diagnostic guidelines
  • None assessed prevalence of HTN among PLWH in Texas
2017 Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

- Released by the American College of Cardiology and the American Heart Association in November 2017 (ACC/AHA 2017)
- Lowered diagnostic threshold to 130/80 mm Hg and redefined stages of HTN
- More aggressive target facilitates earlier identification and treatment of HTN
- First update in 14 years since the previous standard (140/90 mm Hg) was set by the Joint National Commission in 2003 (JNC-7)
Medical record abstractions and interview data from 2013-2014 Medical Monitoring Project (MMP) survey

- Houston + Texas project areas
- n=957 PLWH

Participants with HTN were identified:
- Charted diagnosis
- Antihypertensive medication use
- Blood pressure readings (at 130/80 & 140/90 mmHg)

Statistical analyses conducted to determine sociodemographic and clinical associations and odds ratios
## Methods

The methods used to measure blood pressure based on the guidelines of 2003 JNC 7 and 2017 ACC/AHA are as follows:

<table>
<thead>
<tr>
<th>Measure</th>
<th>2003 JNC 7 Guidelines</th>
<th>2017 ACC/AHA Guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average of last three systolic readings</td>
<td>≥140 mm Hg</td>
<td>≥130 mm Hg</td>
</tr>
<tr>
<td>Average of last three diastolic readings</td>
<td>≥90 mm Hg</td>
<td>≥80 mm Hg</td>
</tr>
<tr>
<td>One systolic reading</td>
<td>&gt;180 mm Hg</td>
<td>&gt;180 mm Hg</td>
</tr>
<tr>
<td>One diastolic reading</td>
<td>&gt;120 mm Hg</td>
<td>&gt;120 mm Hg</td>
</tr>
<tr>
<td>Three systolic readings</td>
<td>≥140 mm Hg</td>
<td>≥130 mm Hg</td>
</tr>
<tr>
<td>Three diastolic readings</td>
<td>≥90 mm Hg</td>
<td>≥80 mm Hg</td>
</tr>
</tbody>
</table>
Results

• HTN prevalence among sample increased from 47.6% to 68.7% with the 2017 update

• Several sociodemographic and clinical variables were significantly associated with HTN under both guidelines:
  • Age, race/ethnicity, BMI, smoking status, length of time on antiretroviral therapy (ART), and time since HIV diagnosis

• Males were 2.36 times more likely to be hypertensive than females at ≥130/80 mm Hg

• Those with BMI ≥30.0 (obese) were 6 times more likely to be hypertensive than those with BMI ≤24.9 at ≥130/80 mm Hg
Results: Overall Prevalence

- 2013 Texas BRFSS*: 32.2%
- MMP (JNC-7): 47.6%
- MMP (ACC/AHA 2017): 68.7%

*Behavioral Risk Factor Surveillance System
Results: Prevalence by Age Group

- Prevalence by Age Group:
  - 18-39: 10.8% (2013 Texas BRFSS), 24.9% (MMP (JNC-7)), 54.4% (MMP (ACC/AHA 2017))
  - 40-49: 25.9% (2013 Texas BRFSS), 43.4% (MMP (JNC-7)), 67.8% (MMP (ACC/AHA 2017))
  - 50+: 67.7% (2013 Texas BRFSS), 67.7% (MMP (JNC-7)), 83.0% (MMP (ACC/AHA 2017))
Results:
Prevalence by Sex

![Bar chart showing prevalence by sex for MMP (JNC-7) and MMP (ACC/AHA 2017)]

- Male:
  - 2013 Texas BRFSS: 32.2%
  - MMP (JNC-7): 70.2%
  - MMP (ACC/AHA 2017): 64.0%

- Female:
  - 2013 Texas BRFSS: 30.2%
  - MMP (JNC-7): 48.5%
Results: Prevalence by Race/Ethnicity

<table>
<thead>
<tr>
<th></th>
<th>White</th>
<th>Black</th>
<th>Hispanic/Latino</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013 Texas BRFSS</td>
<td>33.3%</td>
<td>42.6%</td>
<td></td>
</tr>
<tr>
<td>MMP (JNC-7)</td>
<td>50.2%</td>
<td>53.4%</td>
<td>38.6%</td>
</tr>
<tr>
<td>MMP (ACC/AHA 2017)</td>
<td>73.3%</td>
<td>72.9%</td>
<td>60.2%</td>
</tr>
</tbody>
</table>
Potential Risk Factors

• **Age**: Nearly 60% of PLWH in care in Texas are >45, and more than half have lived 10+ years with their HIV diagnosis

• **Smoking**: One-third of the sample were current smokers, and another 21.6% were former smokers

• **Obesity**: Nearly two-thirds were overweight or obese

• **Inflammation**: Immune response to HIV may damage endothelial receptors in the lining of blood vessels or cause arterial stiffness\(^6,7\)

• **ART**: Certain classes may be associated with weight gain\(^8,9\) or their effect may come from immune suppression/reconstitution\(^6\)
Discussion Points

• ACC/AHA anticipated the updates guidelines would increase national HTN prevalence by 42.9%\textsuperscript{10}
  • In our sample, prevalence increased by 44.3%

• PLWH retained in care typically have at least 2-3 clinical encounters per year
  • Prime opportunities to address HTN concurrently
  • International reports point toward low awareness and low provider engagement on the topic
Next Steps

• Assess barriers to addressing HTN in HIV care settings
• Explore opportunities for infectious disease/primary care cross-training
• Leverage other common touch points to provide patient education, such as medication therapy management in pharmacy settings
• Promote CVD management best practices:
  • Team-based care
  • Self-management education and support
  • Self-measured blood pressure monitoring
Summary

- HTN is a highly prevalent comorbidity for PLWH
- The 2017 change to diagnostic criteria increased sample prevalence by 44.3%, from 47.6% to 68.7%
- Because PLWH are living longer after HIV infection/diagnosis, chronic diseases and related risk factors should be routinely addressed and normalized in HIV care
- Further research is needed to identify provider- and patient-related barriers to successful prevention, identification, treatment, and management of HTN in HIV care settings
References


Questions?
Thank you!

Jessica R. Hyde, MS, CHES
Manager, Chronic Disease Branch
JessicaR.Hyde@dshs.texas.gov
(512) 776-6573