AN ECONOMIC ANALYSIS OF FACTORS ASSOCIATED WITH PREP USE FOR HIV PREVENTION IN WOMEN

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• University of Puerto Rico, Mentoring Institute for HIV and Mental Health Research – National Institute of Mental Health (NIMH)
Background

• Ending the HIV Epidemic - 90% reduction in new HIV infections by 2030 (Fauci, et al., 2019)

• Along with behavioral strategies, preexposure prophylaxis (PrEP) for HIV prevention is a major biomedical tool (Zorrilla, Rabionet, Mosquera, & Ramirez de Arellano, 2012)
Background

Since its approval in 2012, PrEP uptake has been slow (U.S. Department of Health and Human Services, 2021)

- An estimated 1.2 million are at high risk of becoming HIV infected
- Only about 18% are on PrEP
- 4 in 5 who could benefit are not on PrEP
Background

1.2 million with indications for PrEP

- 492,000 - MSM
- 115,000 - IV drug users
- 624,000 - Heterosexually active adults
  - 157,000 - Men
  - 468,000 - Women

Average Annual Proportion of PrEP Users

- Men 95%
- Women 5%
Background

Between 2015 and 2019 (Allen et al., HIV.gov, 2021)

• 9% reduction in HIV infections for men while women remained stable
• 7% increase in new infections among women who inject drugs, while men remained stable
PrEP uptake is higher in states that expanded Medicaid under the ACA

- Insured are four times more likely to access PrEP (Patel et al., 2017)
- Medicaid removes cost barrier (Karletsos & Stoecker, 2021)
- Medicaid expansion associated with 25% higher PrEP prevalence (Siegler et al., 2020)
Literature

• **Disparities in PrEP use among Medicaid enrollees** (Harawa, Tan & Leibowitz, 2022)

• **Addressing PrEP uptake beyond the cost barrier** (Chan, Seiler, & Chu, 2020; Laufer, O'Connell, Feldman, Mps, & Zucker, 2015)
Study Aims

Determine the effect of ACA Medicaid expansions and access to healthcare services on PrEP use

Hypothesis

Women at risk for HIV who are living in states that expanded Medicaid programs and with greater access to healthcare services are more likely to use PrEP
Methods – Variables and Data

Outcome Variable: PrEP-to-Need ratio (PNR) - (AIDSVu database)

- PNR = # of persons prescribed PrEP
  # of new HIV diagnoses

- Gives the level of PrEP use relative to the need
- Higher PNR indicates greater PrEP coverage
- Available from 2012 - 2021
Methods – Variables and Data

Key Independent Variables - (Kaiser Family Foundation, and County Business Patterns (CENSUS))

• ACA Medicaid expansions
• Family Planning Clinics per 100,000 population
• Mental Health and SUD Treatment Centers per 1000 HIV infections

Figure 2 Number of states that expanded Medicaid programs, 2012-2021
Method – Empirical Model

- Estimate the effects of changes in Medicaid eligibility, the availability of family planning clinics and mental health and substance use disorder treatment centers on state-level PrEP-to-Need ratios
Method – Empirical Model

We model these relationships using a TWFE regression:

\[ PNR_{st} = \alpha_0 + \text{Expand}_{st} \alpha_1 + \text{FPClinic}_{st} + \text{MHSUD}_{st} + X_{st} \alpha_2 + A_s \alpha_3 + T_t \alpha_4 + \epsilon_{st} \]

*PNR*$_{st}$ - PrEP-to-Need ratio in state $s$ in year $t$
*Expand*$_{st}$ - state $s$ expanded Medicaid in year $t$
*FPClinic*$_{st}$ - rate of family planning clinics in state $s$ in year $t$
*MHSUD*$_{st}$ - rate of mental health and SUD treatment centers in state $s$ in year $t$
# Results - Summary

<table>
<thead>
<tr>
<th></th>
<th>All States</th>
<th>Expansion</th>
<th>Nonexpansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNR - State</td>
<td>4.45</td>
<td>5.18</td>
<td>2.80</td>
</tr>
<tr>
<td>PNR - Men</td>
<td>4.89</td>
<td>5.70</td>
<td>3.05</td>
</tr>
<tr>
<td>PNR - Women</td>
<td>2.04</td>
<td>2.32</td>
<td>1.39</td>
</tr>
<tr>
<td>Medicaid Expansion</td>
<td>0.50</td>
<td>0.72</td>
<td>0</td>
</tr>
<tr>
<td>Family planning</td>
<td>0.88</td>
<td>0.92</td>
<td>0.79</td>
</tr>
<tr>
<td>clinics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MHSUD treatment</td>
<td>17.3</td>
<td>20.1</td>
<td>11.1</td>
</tr>
<tr>
<td>Observations</td>
<td><strong>510</strong></td>
<td><strong>390</strong></td>
<td><strong>120</strong></td>
</tr>
</tbody>
</table>
Changes in PNR, 2012 - 2021
## Results – Regression Analysis

<table>
<thead>
<tr>
<th></th>
<th>State PNR</th>
<th>Men PNR</th>
<th>Women PNR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicaid Expansion</td>
<td>1.800***</td>
<td>2.130***</td>
<td>0.359*</td>
</tr>
<tr>
<td></td>
<td>[0.725,2.875]</td>
<td>[0.813,3.447]</td>
<td>[-0.016,0.735]</td>
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<tr>
<td>Family planning clinics</td>
<td>-0.945</td>
<td>-0.731</td>
<td>-0.123</td>
</tr>
<tr>
<td></td>
<td>[-5.410,3.520]</td>
<td>[-3.504,2.042]</td>
<td>[-1.416,1.171]</td>
</tr>
<tr>
<td>MHSUD treatment centers</td>
<td>-0.118*</td>
<td>-0.103*</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>[-0.240,0.005]</td>
<td>[-0.226,0.019]</td>
<td>[-0.018,0.009]</td>
</tr>
<tr>
<td>N</td>
<td>459.000</td>
<td>459.000</td>
<td>457.000</td>
</tr>
</tbody>
</table>
Results - Summary

Medicaid associated with:

- 40% increase in PNR overall
- 43.5% increase for men
- 17.5% increase for women
Discussion and Conclusions

• Further support to the importance of Medicaid expansion on health outcomes

• Medicaid expansion twice as beneficial for men (43.5%) than women (17.5%) in PrEP use

• Women at risk of HIV are still vulnerable due to the gender disparity
Discussion and Conclusions

• Targeted interventions are needed to work along with large-scale interventions, like Medicaid

• Further studies needed to explore PrEP services being offered at more granular levels
Thank You!
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