PrEP for PWID: Challenges and Opportunities

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Disclosures

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Background
New HIV Diagnoses in the US and Dependent Areas by Transmission Category, 2019

- Male-to-Male Sexual Contact: 65%, 24,084 diagnoses
- Heterosexual Contact: 23%, 8,617 diagnoses
- Injection Drug Use: 7%, 2,508 diagnoses
- Male-to-Male Sexual Contact and Injection Drug Use: 4%, 1,468 diagnoses

NOTE: Does not include other and penile/anal transmission categories.

Figure 1. Human immunodeficiency virus outbreaks among persons who inject drugs (United States, 2016–2019). Abbreviations: MSM, men who have sex with men; PWID, persons who inject drugs.

Source: Lyss 2020, PMID: 32877545
PrEP with Tenofovir DF for Persons who Inject Drugs
Bangkok Tenofovir Study: Background

<table>
<thead>
<tr>
<th>Study Design: Bangkok Tenofovir Study</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Background</strong>: Randomized, phase 3, double-blind, placebo-controlled trial conducted in Bangkok, Thailand that examined efficacy and safety of tenofovir DF as preexposure prophylaxis in persons who inject drugs</td>
</tr>
<tr>
<td><strong>Inclusion Criteria</strong> (2,413 enrolled)</td>
</tr>
<tr>
<td>- 20-60 years of age</td>
</tr>
<tr>
<td>- HIV-1-negative</td>
</tr>
<tr>
<td>- Reported injecting drugs in prior year</td>
</tr>
<tr>
<td>- All subjects received risk-reduction counseling</td>
</tr>
<tr>
<td>- All subjects received bleach and condoms</td>
</tr>
<tr>
<td>- Excluded if HBsAg+</td>
</tr>
<tr>
<td>- Excluded if pregnant or breastfeeding</td>
</tr>
<tr>
<td><strong>Treatment Arms:</strong></td>
</tr>
<tr>
<td>- Placebo: 1 pill daily</td>
</tr>
<tr>
<td>- Tenofovir DF: 1 pill daily</td>
</tr>
</tbody>
</table>

Source: Lyss 2020, PMID: 32877545
PrEP with Tenofovir DF for Persons who Inject Drugs
Bangkok Tenofovir Study: Results (Modified Intent-to-Treat)

This analysis does not include 2 additional HIV infections in placebo group that were identified at enrollment.
Follow-up time: mean 4.0 years (SD 2.1; max 6.9 years)

CDC Indications for PrEP: Injection Drug Use

CDC 2021 Update Clinical Practice Guideline – PrEP for the Prevention of HIV Infection in the US.
Challenges in the Implementation of PrEP for PWID
PrEP has been underutilized for PWID

• Among 265 HIV-uninfected PWID in Baltimore, only 2 (0.75%) were currently taking PrEP despite 43% being eligible for PrEP based on injection behavior.

• 2015 NHBS data in Philadelphia showed that only 2.6% of 612 HIV-negative PWID surveyed had received a prescription for PrEP.

• A survey of PWID in San Francisco found that only 3.0% of PWID reported taking PrEP.
PrEP Cascade among PWID accessing syringe services in Miami, FL in 2019

Source: Jo 2020 PMID: 32298320
PrEP Awareness, Use, and Interest among PWID, Seattle NHBS 2015-2018 & KC SSP 2019

Source: Seattle area NHBS 2015, 2018; Corcorran M. et.al. Substance Use and Misuse, 2021
Awareness of PrEP and Risk Perception Among PWID

- In a systematic review of the PrEP care cascade in PWID:
  - PrEP awareness ranged from >1% to 57%
  - Risk perception range from 1.1% to 66%
  - Among the studies reviewed, factors associated with willingness to use PrEP were varied:
    - Perception of risk for HIV
    - Appropriate support services (e.g., social support, support from clinicians)
    - Female gender
    - Identifying as bisexual
    - Homelessness
    - Other medical comorbidities
    - Being PrEP eligible (e.g., risk factors for HIV)

Source: Mistler, Copenhaver, Shrestha. AIDS and Behavior, 2021
What is your single biggest concern about your health right now?

N= 410, 41 (10%) responded ‘none’

2015 Needle Exchange Client Survey
What is your most important medical concern right now?

Among women who exchange sex, Seattle NHBS 2016

- General primary care: 19%
- Mental health: 28%
- Dental care: 17%
- Substance use: 9%
- Wound care: 3%
- Other: 6%
- None: 7%
- Contraception: 0%
- STDs: 6%
- HIV: 4%
- Hepatitis C: 1%
- Other: 6%
- None: 7%
12 Month-Ending Provisional Number and Percent Change of Drug Overdose Deaths

Based on data available for analysis on: April 03, 2022

Figure 1a. 12 Month-ending Provisional Counts of Drug Overdose Deaths: United States

Decreased HIV Testing During the COVID-19 Pandemic

Qualitative and quantitative data from syringe service programs (SSPs) indicate that HIV (and HCV) testing was put on hold or significantly reduced at the beginning of the COVID-19 pandemic.

Unpublished data from a survey of SSPs indicate that HIV testing remains below the pre-COVID baseline for ~50% of SSPs.

Source: Glick et.al. 2020; Frost el.al. 2021
Future Directions for PrEP Delivery among PWID
Improving PrEP Uptake and Sustained Use Among PWID

• There is relatively few data on concrete strategies to improve PrEP uptake and sustained use among PWID.

• Many novel strategies, such as “home PrEP,” “tele-PrEP,” community pharmacy-based PrEP, and “on-demand PrEP” many not be well suited towards PWID.
18 interviews with service providers and 3 focus groups with PWID (n=27):
- Overall support for PrEP for PWID
- Should be on the menu of HIV prevention options, but not at the expense of other interventions
- More education is needed among PWID and providers
- Three potential models:
  1. Drug user health center – fixed site addressing a range of services on a walk-in basis
  2. Mobile outreach – outreach worker-led program engaging with clients in the field
  3. Add-on to existing service provider (e.g., SSPs)
Integrating PrEP into Syringe Services for Women

- Demonstration project in Philadelphia aiming to integrate PrEP into existing SSP services for women who inject drugs (WWID).
- WWID ≥18 years of age, who were HIV negative at baseline and not pregnant or planning to become pregnant, were educated about and offered 24 weeks of daily PrEP.
- Participants completed surveys and clinical assessment at baseline and weeks 1, 3, 12, and 24.
  - TDF drug levels in urine were obtained at week 12 and 24 to assess adherence.

Source: Roth A. et.al. JAIDS, 2021
Results

- 95 women were enrolled
- 63.4% currently homeless
- 39.6% visited SSP a “few times a week,” 16.5% visited “daily”
- 46.2% reported sharing syringes in the past 6 months
- 71.6% reported transactional sex, with 78.9% reporting inconsistent condom use
- 54.3% reported their self-perceived risk of HIV to be extremely or very low
- 45.7% reported their self-perceived risk of HIV to be somewhat/very/extremely high

Source: Roth A. et.al. JAIDS, 2021
Results

• Of the 95 women enrolled, 69 received a prescription of PrEP in week 1 and 43 were maintained on PrEP by week 12.

• 5 women who initially did not receive a PrEP prescription in week 1 initiated PrEP by week 12.

• Of the 48 WWID on PrEP at week 12, 23 persistent on PrEP by week 24.

Source: Roth A. et.al. JAIDS, 2021
Adherence to PrEP

Source: Roth A. et.al. JAIDS, 2021
### TABLE 3. Correlates of PrEP Uptake and Retention in Care Among Women Who Inject Drugs (n = 95) Enrolled in a PrEP Demonstration Project in Philadelphia

<table>
<thead>
<tr>
<th></th>
<th>A. PrEP Uptake</th>
<th>B. Retention in Care</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OR (95% CI)</td>
<td>aOR (95% CI)*</td>
</tr>
<tr>
<td>Age, yr</td>
<td>1.00 (0.95 to 1.05)</td>
<td>1.07 (1.02 to 1.13)</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White, non-Hispanic</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Black, non-Hispanic</td>
<td>0.89 (0.28 to 2.82)</td>
<td>0.88 (0.27 to 2.73)</td>
</tr>
<tr>
<td>Hispanic/Latino</td>
<td>0.78 (0.21 to 2.84)</td>
<td>1.59 (0.44 to 6.01)</td>
</tr>
<tr>
<td>Mixed race, non-Hispanic</td>
<td>2.68 (0.22 to 33.6)</td>
<td>1.32 (0.15 to 11.6)</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>High school grad</td>
<td>0.93 (0.35 to 2.45)</td>
<td>0.45 (0.16 to 1.17)</td>
</tr>
<tr>
<td>Some college or higher</td>
<td>1.30 (0.45 to 3.72)</td>
<td>0.67 (0.24 to 1.85)</td>
</tr>
<tr>
<td>Currently homeless</td>
<td>1.01 (0.42 to 2.42)</td>
<td>1.29 (0.55 to 3.07)</td>
</tr>
<tr>
<td>Current housing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Own home</td>
<td>1.20 (0.19 to 7.62)</td>
<td>1.29 (0.22 to 7.78)</td>
</tr>
<tr>
<td>Staying with family/friends</td>
<td>0.74 (0.26 to 2.07)</td>
<td>0.73 (0.25 to 2.03)</td>
</tr>
<tr>
<td>Single room occupancy</td>
<td>1.14 (0.28 to 4.67)</td>
<td>1.08 (0.27 to 4.18)</td>
</tr>
<tr>
<td>Living in shelter/treatment facility</td>
<td>1.36 (0.38 to 4.98)</td>
<td>1.73 (0.51 to 6.16)</td>
</tr>
<tr>
<td>Living on street</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Frequency of SSP access</td>
<td>1.56 (1.16 to 2.09)</td>
<td>1.85 (1.24 to 2.77)</td>
</tr>
<tr>
<td>Sharing syringes</td>
<td>0.75 (0.32 to 1.73)</td>
<td>0.50 (0.21 to 1.13)</td>
</tr>
<tr>
<td>No. sexual partners</td>
<td>1.00 (0.99 to 1.01)</td>
<td>1.00 (0.99 to 1.00)</td>
</tr>
<tr>
<td>Inconsistent condom use</td>
<td>2.79 (1.03 to 7.53)</td>
<td>3.38 (1.07 to 10.7)</td>
</tr>
<tr>
<td>Transactional sex</td>
<td>0.74 (0.29 to 1.85)</td>
<td>0.80 (0.33 to 1.97)</td>
</tr>
<tr>
<td>Baseline STI diagnosis</td>
<td>0.96 (0.32 to 2.84)</td>
<td>0.64 (0.20 to 1.85)</td>
</tr>
<tr>
<td>Sexual assault (n = 67)</td>
<td>5.03 (1.14 to 22.2)</td>
<td>5.89 (1.02 to 33.9)</td>
</tr>
</tbody>
</table>

**Self-perceived HIV risk**

|                       | Ref            | Ref                  |
| Extreme/very unlikely | 1.29 (0.56 to 3.02) | 0.78 (0.34 to 1.76)  |

*Model was adjusted for follow-up period, age, race/ethnicity, and current housing.

†Model was adjusted for age, race/ethnicity, and current housing.

‡Model was restricted to women who received the question on sexual assault at baseline.
Coupling PrEP with HCV Treatment for PWUD with OUD – ANCHOR Study


- Individuals were enrolled if they were HCV RNA+ and had opioid misuse within the past year.
  - Based on site characteristics, all participants receiving care at the Baltimore site were on MOUD. Participants in DC were offered MOUD.

- Patients meeting inclusion criteria (no decompensated liver disease, contraindications to DAA, pregnancy/breastfeeding) were started on DAA therapy for HCV at day 0.

- HIV negative participants were screened for interest in and knowledge of PrEP and were offered PrEP based on 2014 CDC guidelines.
  - Interest in PrEP was assessed at each study visit during a 6-month window (week 0 to 24) and participants could start at any time.
  - Participants who initiated PrEP were followed through week 48.

Source: Brokus C. et.al. OFID, 2021
Coupling PrEP with HCV Treatment for PWUD with OUD – Results

- 198 participants were enrolled, 185 (93%) of whom were HIV negative.
- 62.7% met 2014 CDC PrEP eligibility criteria
  - 44.3% met IDU criteria only
  - 4.9% met sex criteria only
  - 13.5% met both criteria
- Clinicians recommended PrEP to 94 (50.8%) individuals
- 29 (15.7% of HIV- cohort) participants initiated PrEP

Table 1. Baseline Population Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>HIV Negative (n = 185)</th>
<th>PrEP (n = 29)</th>
<th>No PrEP (n = 156)</th>
<th>PValue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age, y, median (IQR)</td>
<td>57 (52-61)</td>
<td>54 (52-60)</td>
<td>58 (52-61)</td>
<td>.20</td>
</tr>
<tr>
<td>Male sex</td>
<td>129 (69.7)</td>
<td>21 (72.4)</td>
<td>108 (69.2)</td>
<td>.83</td>
</tr>
<tr>
<td>Black race</td>
<td>155 (83.8)</td>
<td>26 (89.7)</td>
<td>129 (82.7)</td>
<td>.42</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>172 (93.0)</td>
<td>27 (93.1)</td>
<td>145 (92.9)</td>
<td>1</td>
</tr>
<tr>
<td>Baseline epidemiology</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unstably housed</td>
<td>101 (54.6)</td>
<td>17 (58.6)</td>
<td>84 (53.8)</td>
<td>.69</td>
</tr>
<tr>
<td>Drug use, daily or greater frequency</td>
<td>111 (60.0)</td>
<td>21 (72.4)</td>
<td>90 (58.6)</td>
<td>.22</td>
</tr>
<tr>
<td>Receptive needle sharing, past year</td>
<td>24 (13.0)</td>
<td>7 (24.1)</td>
<td>17 (10.8)</td>
<td>.07</td>
</tr>
<tr>
<td>Receptive IDU equipment sharing, past year</td>
<td>54 (29.2)</td>
<td>8 (27.6)</td>
<td>46 (29.5)</td>
<td>1</td>
</tr>
<tr>
<td>&gt;1 sex partner, past year</td>
<td>33 (17.8)</td>
<td>8 (27.6)</td>
<td>25 (16.0)</td>
<td>.18</td>
</tr>
<tr>
<td>Condomless vaginal sex, past year</td>
<td>72 (38.9)</td>
<td>12 (41.4)</td>
<td>60 (38.5)</td>
<td>.84</td>
</tr>
<tr>
<td>Condomless anal sex, past year</td>
<td>11 (5.9)</td>
<td>2 (6.9)</td>
<td>9 (5.6)</td>
<td>.68</td>
</tr>
<tr>
<td>Transactional sex, past year</td>
<td>10 (5.4)</td>
<td>2 (6.9)</td>
<td>8 (5.1)</td>
<td>.66</td>
</tr>
</tbody>
</table>

2014 CDC eligibility

- Met IDU criteria only
  - 82 (44.3) vs. 10 (34.5) vs. 72 (46.2) .63
- Met sex criteria only
  - 9 (4.9) vs. 2 (6.9) vs. 7 (4.5) .31
- Met both criteria
  - 25 (13.5) vs. 9 (31.0) vs. 16 (10.3) .006

2017 CDC eligibility

- Met IDU criteria only
  - 39 (21.1) vs. 5 (17.2) vs. 34 (21.8) .53
- Met sex criteria only
  - 20 (10.8) vs. 4 (13.8) vs. 16 (10.3) .8
- Met both criteria
  - 31 (16.8) vs. 11 (37.9) vs. 20 (12.8) .002

Coupling PrEP with HCV Treatment for PWUD with OUD – Results

- Median treatment duration for those initiating PrEP was 104 days (IQR 28, 276).
- 8 participants were retained on PrEP through the 48-week timepoint.
- Most common reason for discontinuation was side effects (n/v most frequent).

Source: Brokus C. et.al. OFID, 2021
A

PrEP Adherence by Self-Report, Past 30 Days

<table>
<thead>
<tr>
<th>Week</th>
<th>Any pills</th>
<th>7 pills/week</th>
<th>4-6 pills/week</th>
<th>1-3 pills/week</th>
<th>0 pills/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 4</td>
<td>100</td>
<td>90</td>
<td>80</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>Week 12</td>
<td>90</td>
<td>80</td>
<td>70</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Week 24</td>
<td>80</td>
<td>70</td>
<td>60</td>
<td>50</td>
<td>40</td>
</tr>
<tr>
<td>Week 36</td>
<td>70</td>
<td>60</td>
<td>50</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>Week 48</td>
<td>60</td>
<td>50</td>
<td>40</td>
<td>30</td>
<td>20</td>
</tr>
</tbody>
</table>

B

PrEP Adherence by TFV-DP Level

<table>
<thead>
<tr>
<th>Week</th>
<th>Quantifiable</th>
<th>7 pills/week</th>
<th>4-6 pills/week</th>
<th>1-3 pills/week</th>
<th>0 pills/week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 4*</td>
<td>100</td>
<td>90</td>
<td>80</td>
<td>70</td>
<td>60</td>
</tr>
<tr>
<td>Week 24</td>
<td>90</td>
<td>80</td>
<td>70</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Week 36</td>
<td>80</td>
<td>70</td>
<td>60</td>
<td>50</td>
<td>40</td>
</tr>
</tbody>
</table>

*Based on present or not present

SHE Clinic: Co-located, low-barrier services

- SHE Clinic provides low-barrier walk-in medical services to women living unhoused, many of whom inject drugs, in north Seattle
  - Co-located within the Aurora Commons, a day drop-in center for unhoused individuals

Table 3: Utilization of HIV harm-reduction services among 76 women accessing day-shelter services in north Seattle, by care at SHE Clinic

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>SHE Clinic patients (n=41)</th>
<th>SHE Clinic non-adopters (n=35)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recent STI screening</td>
<td>34 (83)</td>
<td>22 (63)</td>
<td>0.03</td>
</tr>
<tr>
<td>Recent STI treatment</td>
<td>13 (32)</td>
<td>3 (9)</td>
<td>0.06</td>
</tr>
<tr>
<td>Opioid replacement*</td>
<td>21/36 (58)</td>
<td>3/22 (14)</td>
<td>0.001</td>
</tr>
<tr>
<td>PrEP prescription*</td>
<td>18/37 (49)</td>
<td>0/22 (0)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*calculated for those eligible for intervention (opiate dependent or HIV negative)

Source: Stewart J. et.al. JAMA Network Open, 2021
What can we learn from HIV treatment adherence strategies among PWID?

- Bazzi et.al. conducted a systematic review of HIV treatment adherence research in PWID, which included 20 studies.

- Factors enabling ART adherence included:
  - Substance use treatment, including MOUD
  - Self-efficacy, empowerment and social support
  - Stable housing
  - Health insurance
  - Trust in providers and good patient-provider relationships
  - Accessibility of health care services
  - Directly administered ART
Looking forward

• Additional work is needed to integrate PrEP into low-barrier services for PWID, including drug treatment programs, SSPs, other community-based organizations, and primary care.

• More research is needed to identify successful strategies to improve both uptake AND sustained use of PrEP among PWID.

• Cabotegravir has the potential to improve sustained use of PrEP, particularly among PWID with concurrent sexual risk factors for HIV.
Conclusions

• PWID remain disproportionately affected by HIV, with several recent outbreaks of HIV within PWID communities.

• PrEP should be offered to all PWID who have shared injection equipment in the past 6 months or who have sexual risk factors.
  - TDF/FTC remains the only guideline recommended medications for HIV prevention in PWID.

• Despite elevated risk for HIV, PWID experience a multitude of barriers to PrEP initiation and sustained use, including socio-structural barriers, stigma, low risk perception, and multiple competing needs.

• Integrating PrEP into other services for PWID (e.g., SSPs, drug treatment, low-barrier primary care) has the potential to improve uptake of PrEP but additional efforts are needed to identify strategies to retain PWID in PrEP services.
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