Disclosures

- Financial - This research has been funded by a grant from the National Institute on Drug Abuse (NIDA) R01 DA030768

- I have no actual or potential conflict of interest in relation to this program/presentation
Recent upsurge in prescription pain pill abuse and overdose
Illicit drug use is often primary reason for incarceration (Teplin, 1994)
Leading cause of death among former inmates were drug overdose, cardiovascular disease, homicide, suicide (Binswanger, 2006)
Opioids involved in 14.8% of all deaths following prison release (Washington State Dept. of Corrections) (Binswanger, 2013)
Women at increased risk for overdose and opioid-related deaths
Co-occurrence of severe mental illness (SMI) and substance use disorders – major public health concern (Johnson, 2006)
- Bipolar
- Depression
- Schizophrenia
Persons with SMI are at increased risk for HIV infection
IDUs more likely to have suicide ideation and attempts compared to those with minimal or no drug use (Dinwiddie, 1997; Darke, 2002)
Heroin users 14 times more likely than non-heroin users to die from suicide (Darke, 2002)
Injection Drug Use (IDU)

- Over time, heroin users have increasingly adopted non-injection routes of drug use versus traditional injection routes (Neaigus, 1998)
  - Social and group norms (Rhodes, 2005)
  - Non-IDUs serve as ‘bridge’ between high and low risk populations (Neaigus, 2001)
- Compared to non IDUs, IDUs more likely to use multiple drugs and have bigger social network of active users (Latkin, 2001)
- Greater police presence and fear of arrest associated with higher HIV prevalence among injectors (Friedman, 2006)
Injection drug use and unprotected sex are risk factors for HIV/AIDS.

Incarceration associated with HIV transmission and risk behaviors (Werb, 2008; Calzavara, 2003)

- Heroin and cocaine injection
- Inconsistent condom use with casual sex partners
- Associated with used syringe lending among both active HIV-seropositive and negative IDUs (Milloy, 2013; Wood, 2005)
Project STRIDE

- Post-Pilot data collection from March 2012-January 2014
  - Field recruitment
  - Part A eligibility: 18 +; Opioid-dependent; medically insured
- Research and diagnostic interviews: ASI-Lite, TLFB, criminal justice (CJ) codes, CJ risk screener
- Analysis using SPSS 19.0
  - Descriptives (t-test, Chi square)
  - Logistic Regression
- N = 544
Significance

- 2.7% of DC residents are living with HIV
  - From 2006-2010, 70% decrease in the number of new HIV diagnosis attributable to IDU (DC DOH, 2011)
  - Expansion of DC needle exchange services in 2007

- Research Question: How do drug injectors differ from non-injectors?
  - Little is known about significant demographic and health differences between IDU v non IDU
Descriptives

- 98% African American, 2% Other
- 79% Male, 20% Female, 1% Transgender
- Mean age = 52
- 68% have at least high school diploma/GED
- 22% employed
- 15% married, 85% not married
- 8% have no stable living arrangements
- 54% on community supervision
- 11% HIV positive
- 26% current method IDU, 74% non-IDU
## Medical Conditions

<table>
<thead>
<tr>
<th>Medical Conditions</th>
<th>STRIDE Sample (%)</th>
<th>General U.S. Population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>3.5</td>
<td>7.9</td>
</tr>
<tr>
<td>Emphysema</td>
<td>2.8</td>
<td>1.9</td>
</tr>
<tr>
<td>Diabetes</td>
<td>9.5</td>
<td>8.6</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>13.4</td>
<td>1.1</td>
</tr>
<tr>
<td>Asthma</td>
<td>14.5</td>
<td>12.6</td>
</tr>
<tr>
<td>Bipolar</td>
<td>27.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Hypertension</td>
<td>39.6</td>
<td>24.3</td>
</tr>
<tr>
<td>Depression</td>
<td>44.1</td>
<td>6.7</td>
</tr>
<tr>
<td>HBV/HCV</td>
<td>44.8</td>
<td>0.9/0.4</td>
</tr>
</tbody>
</table>

n=261
Descriptives: IDU v non-IDU

- Male: 75% IDU, 81% non-IDU
- High School Diploma or More: 67% IDU, 68% non-IDU
- Employed: 22% IDU, 23% non-IDU
- No Stable Living Arrangement: 88% IDU, 93% non-IDU
- On Community Supervision: 50% IDU, 58% non-IDU

n=544
Physical Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>IDU</th>
<th>non-IDU</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer</td>
<td>6%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Emphysema</td>
<td>2%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>3%</td>
<td>9%</td>
<td></td>
</tr>
<tr>
<td>Asthma</td>
<td>11%</td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>45%</td>
<td>37%</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>HBV/HCV***</td>
<td>89%</td>
<td>33%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

n=261

*P<0.05; **p<0.01; ***p<0.001
HIV-positive (11% of sample)

- IDU: 13%
- non-IDU: 10%

N=544
Health Conditions

Current Meds for Physical*  Ever Prescribed Psych Meds*  Ever Suicide Ideation*

56%  53%  38%
45%  42%  29%

N=544
*P<0.05; **p<0.01; ***p<0.001

n-=544

IDU
non-IDU
Psychiatric Conditions

n=261
*P<0.05; **p<0.01; ***p<0.001
## Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>IDU M (SD)</th>
<th>Non-IDU M (SD)</th>
<th>T Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age</td>
<td>53.5 (6.4)</td>
<td>51.5 (7.7)</td>
<td>-2.78**</td>
</tr>
<tr>
<td>Mean Sum of Convictions</td>
<td>6.1 (8.3)</td>
<td>4.8 (6.1)</td>
<td>-2.04*</td>
</tr>
<tr>
<td>Mean Months Incarcerated</td>
<td>126.5 (128.7)</td>
<td>103.3 (112.4)</td>
<td>-2.03*</td>
</tr>
<tr>
<td>Mean CJ risk†</td>
<td>5.6 (1.8)</td>
<td>5.2 (1.8)</td>
<td>-1.48</td>
</tr>
<tr>
<td>Mean Years Heroin Use</td>
<td>26.0 (11.5)</td>
<td>22.1 (12.6)</td>
<td>-3.25***</td>
</tr>
<tr>
<td>Mean Age at First Use‡‡</td>
<td>19.5 (8.3)</td>
<td>21.6 (7.5)</td>
<td>1.56</td>
</tr>
<tr>
<td>Mean Days Cocaine use in Past 30 days</td>
<td>3.3 (7.1)</td>
<td>2.0 (5.6)</td>
<td>-2.18*</td>
</tr>
</tbody>
</table>

N=544 † N=220 ‡‡ N=190

*P<0.05; **p<0.01; ***p<0.001
## Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>IDU M (SD)</th>
<th>Non-IDU M (SD)</th>
<th>T- value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Days experienced medical problems in last 30 days</td>
<td>7.7 (12.1)</td>
<td>5.40 (10.0)</td>
<td>-2.23*</td>
</tr>
<tr>
<td>Mean Times hospitalized for medical problems, lifetime</td>
<td>4.1 (5.0)</td>
<td>3.0 (4.2)</td>
<td>-2.37*</td>
</tr>
<tr>
<td>Mean Times treated for psych/emotional problems in hospital/inpatient</td>
<td>2.3 (7.9)</td>
<td>1.0 (3.0)</td>
<td>-2.94**</td>
</tr>
<tr>
<td>Mean Medical ASI Index</td>
<td>10.3 (2.3)</td>
<td>9.9 (2.1)</td>
<td>-2.00*</td>
</tr>
<tr>
<td>Mean Family ASI Issues (Exp)</td>
<td>-0.41 (0.16)</td>
<td>-0.46 (0.16)</td>
<td>-3.21**</td>
</tr>
</tbody>
</table>

N=544  
*P<0.05; **p<0.01; ***p<0.001
### Logistic Regression Analysis

<table>
<thead>
<tr>
<th>Step 1 (^{a,b,c})</th>
<th>Model 1(^a)</th>
<th>Model 2(^b)</th>
<th>Model 3(^c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR</td>
<td>OR</td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>1.019</td>
<td>1.027</td>
<td>1.023</td>
</tr>
<tr>
<td>Female</td>
<td>0.689</td>
<td>0.810</td>
<td>0.724</td>
</tr>
<tr>
<td>Medical Index</td>
<td>1.044</td>
<td>1.016</td>
<td>1.016</td>
</tr>
<tr>
<td># Years Heroin Use</td>
<td>1.019*</td>
<td>1.021*</td>
<td>1.018</td>
</tr>
<tr>
<td>Family (ASI)</td>
<td>--</td>
<td>9.368**</td>
<td>9.496**</td>
</tr>
<tr>
<td>Ever prescribed meds for psych/emotional problems</td>
<td>--</td>
<td>0.736</td>
<td>0.773</td>
</tr>
<tr>
<td>Ever serious thoughts of suicide</td>
<td>--</td>
<td>0.775</td>
<td>0.762</td>
</tr>
<tr>
<td>On Probation/Parole</td>
<td>--</td>
<td>--</td>
<td>1.325</td>
</tr>
<tr>
<td># Months Incarcerated</td>
<td>--</td>
<td>--</td>
<td>1.002</td>
</tr>
<tr>
<td>Constant</td>
<td>0.074**</td>
<td>0.200</td>
<td>0.205</td>
</tr>
</tbody>
</table>

**Model Statistics**

<table>
<thead>
<tr>
<th>Chi-square</th>
<th>15.918**</th>
<th>32.872***</th>
<th>37.051***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nagelkerke R Square</td>
<td>0.043</td>
<td>0.087</td>
<td>0.097</td>
</tr>
</tbody>
</table>

*\(^{a,b,c}\) N=544

*\(^p<0.05\); **\(^p<0.01\); ***\(^p<0.001\)
In bivariate analysis-- when compared to non-IDU, IDUs significantly had greater mean:
- years of age
- sum of convictions
- months incarcerated
- years of heroin use
- days of cocaine use in the last 30 days
- days experienced medical problems in the last 30 days
- days hospitalized over a lifetime
- times treated for psych/emotional problems in a hospital or inpatient setting
- medical index and more family issues
- more suicide ideation in life and in the last 30 days
Discussion

In the multivariate model-- when compared to non-IDUs, IDUs significantly had (controlling for gender and age):

- 1.02 odds of greater years of heroin use and 9.37 odds of greater family issues when family and mental health issues were added to the model
- 9.50 odds of greater family issues when criminal justice measures were added to the previous model
Conclusion/Future Recommendations

- IDUs have significantly more medical/psychiatric (including suicide ideation), legal, and family issues than non-IDUs
- IDUs significantly more likely to use cocaine in the last 30 days and more years of heroin use in life
- Future research should explore these differences
  - Fatal vs. non-fatal overdoses relating to suicide
- Public health recommendations: tailored treatment programs considering method of drug use & involvement in the CJ system
  - Holistic approach: coordination of health services
  - Poly-drug treatment
  - Harm reduction
Yale University
Howard University
George Mason University
NIDA
Our participants!
Any questions?

mmbaba@gmu.edu: (202) 316-1516
References

11. Wood, E, Li, K, Small, W, Montaner, JS, Schechtner, MT, Kerr, T. Recent incarceration independently associated with syringe sharing by injection drug users