HIV/AIDS and Drug Abuse: The Promise of Integrated Care

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The Crisis: National Overdose Death Rates

In 2017, there were 70,237 overdose deaths (9.6% higher than 2016)

Legend for estimated age-adjusted death rate (per 100,000 population):
- <2
- 2-3.9
- 4-5.9
- 6-7.9
- 8-9.9
- 10-11.9
- 12-13.9
- 14-15.9
- 16-17.9
- 18-19.9
- 20-21.9
- 22-23.9
- 24-25.9
- 26-27.9
- 28-29.9
- 30+

1. Over prescription of opioid medications led to misuse
2. Addiction to prescription opioids led to heroin
3. Emergence of fentanyl(s), with higher potency and greater profitability in the black market than heroin.
Overdose Death Rates: Psychostimulants (Including Methamphetamine)

Source: Centers for Disease Control and Prevention
HIV Can Disseminate Very Rapidly among IDU

USA: new HIV cases in IDUs have decreased since 1990, to 4000 year (8-10% new HIV cases)

IDU 20% of those living with HIV

Outbreak of HIV Linked to IDU of Oxymorphone in Indiana, USA 2015

80% 3% 17%
Injection Drug Use No Injection Drug Use

Average 9 syringe-sharing partners, sex partners

In Scott County, a community of 4200 people there were 215 new HIV Infections in 2014-2015 attributed to IDU

U.S. Counties Vulnerable to Rapid Spread of IDU-Associated HIV

220 counties in 26 states identified as vulnerable communities

HIV and HCV: Another Consequence of Opioid Epidemic

- HIV Prevention Trials Network: Approved protocol, **INTEGRA**: A Vanguard Study of Integrated Strategies for Linking Persons with OUD to Care and Prevention for Addiction, HIV, HCV, and Primary Care
- RFA-DA-20-013: PrEP for HIV Prevention among Substance Using Populations (R01 Clinical Trial Optional)
- Several currently NIDA-funded studies to use network analysis and modeling approaches to predict HIV incidence and to better target prevention and treatment efforts related to HIV/OUD
Individuals with OUD show heightened brain responses to drug cues relative to controls. These are reduced with medication assisted treatments and following prolonged abstinence.
Effects of OUD Medications Effects Among HIV+ IDU

ART coverage of among IDUs

On plasma viral suppression

Among IDUs Medication Assisted Treatment Improves HIV Outcomes

Methadone Maintenance Therapy Promotes Initiation Of Antiretroviral Therapy in IDU

- Probability of ART initiation (%)
  - MMT
  - No MMT
  - Log-rank p-value = 0.004
  - Time from recruitment (months)

Methadone Maintenance Therapy Increases Antiretroviral Adherence and HIV Treatment Outcomes in IDU

- Adjusted Odds Ratio
  - Subsequent Weekly Heroin Use: 0.24
  - >=95% Adherence: 1.52
  - HIV-1 RNA Suppression: 1.34
  - CD4 Cell Response: 1.58

Source: Palepu A et al., Drug and Alc Depend 2006; 84: 188-194.

Extended-Release Naltrexone Improves Viral Suppression Among Incarcerated PLWH & OUD

Improving Treatments for Addiction: Implementing Medication-Assisted Treatment

- Emergency department-initiated buprenorphine
  - Reduced self-reported, illicit opioid use
  - Increased engagement in addiction treatment; decreased use of inpatient addiction treatment services

Self-Reported Illicit Opioid Use in the Past 7 Days

<table>
<thead>
<tr>
<th>Days</th>
<th>Baseline</th>
<th>30 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buprenorhine</td>
<td>5.4</td>
<td>0.9</td>
</tr>
<tr>
<td>Referral</td>
<td>5.4</td>
<td>2.3</td>
</tr>
<tr>
<td>Brief Intervention</td>
<td>5.6</td>
<td>2.4</td>
</tr>
</tbody>
</table>

Source: D’Onofrio G et al., JAMA April 28, 2015.

Infectious Clinic’s-Based Buprenorphine of Opioid-Dependent HIV+ Patients vs Tx Referral

Average Estimated Participation in Opioid Agonist Therapy (%)

- Clinic-Based BUP: 74%
P<0.001
- Referred Tx: 41%
**Opioid Medication Therapy In Prison**

**Mortality Post Release**

Survival Curve During the Year Following Release (Drug-Poisoning Mortality)

OMT resulted in a 75% reduction in mortality (85% reduction in overdoses) in the first month post release.

**Viral Load Increases Over Time After Release From Jails/Prisons**

Linkage time to care as measured by first HIV RNA viral load drawn after release from prison/jail.

Source: Marsden J et al., Addiction 2017; 112:1408-1418.

Medication Assisted Treatment (MAT)

**Opioid Effect**
- **Full Agonist** (Methadone: Daily Dosing)
- **Partial Agonist** (Buprenorphine: 3-4X week)
- **Antagonist** (Naltrexone: ER 1 month)

**Source:** Williams AR, Nunes E, Olfson M. Health Affairs Blog, 2017

**OUD Cascade of Care in USA**

**DECREASES:**
- Opioid use
- Opioid-related overdose deaths
- Criminal activity
- Infectious disease transmission

**INCREASES:**
- Social functioning
- Retention in treatment

**MAT is highly underutilized!**
**Relapse rates are very high (50% in 6 months)**

**HIV CARE CONTINUUM:**
- Diagnosed with HIV
- Engaged or retained in care
- Linked to care
- Prescribed antiretroviral therapy
- Achieved viral suppression

**Source:** Williams AR, Nunes E, Olfson M. Health Affairs Blog, 2017
HIV+ IDUs Are Much Less Likely to Receive HAART

% Providers Who Would Defer ART
By CD4+ Count and IDU status

Number Of Substance Abuse Treatment Facilities Offering Any MAT

National: 1,027

National: 5,941


Source: Substance Abuse and Mental Health Services Administration
Treating People Living With HIV, Who Have OUD

1. Linking PLWH who use opioids to Medication Assisted Therapies
2. Engaging and Retaining PLWH with OUD in HIV Care
What is *NIDA* doing?

Implementation and services research
- Integrated and new models of care
- Health Care (i.e., STD clinics)
- Criminal Justice System
- Rural communities
- Countries where IDU is driver of HIV epidemic

IDUs as Share of Total HIV Cases & of Patients Receiving ART, 2008

HAART as HIV Prevention: Including IDU

HIV epidemic indicators for BC

Expansion of HAART was associated with decreases in new HIV diagnoses between 1996-2012 (92% in IDU and 22% in MSM)

Facilitate expansion and adherence to HAART among IDU
• Enhanced HIV screening
• Low threshold HAART treatment facilities
• Wide availability of needle and syringe programs,
• Extensive MAT

Integrated Models of Care for Individuals with Opioid Use Disorder with HIV and/or HCV

Scalable, Integrated Intervention To Engage IDU In HIV Care and MOUD (HPTN 074)

Systems navigators facilitate engagement, retention, adherence in HIV care and MAT. Psychosocial counseling, at least 2 sessions ART at any CD4 count.

All incident HIV infections among partners occurred in the SOC arm:

Intervention: (0 cases/215.6 p-y) IR: 0.0/100 p-y (CI 0.00, 1.7)
SOC: (7 cases/683.6 p-y) IR: 1.0/100 p-y (CI 0.41, 2.1)

Proportion Alive & HIV RNA <40 cp/mL

PR (26 weeks) = 2.2 (1.6, 3.0)
PR (52 weeks) = 1.7 (1.3, 2.2)

Adapted from Miller et al., 2018; permission for use of data provided by Dr. W.C. Miller.
Needle and Syringe Programs Prevent HIV and HCV

Timeline of Indiana HIV Outbreak among IDUs

The HEALing Communities Study (HCS): Research Sites

Ohio State University
PI: Rebecca Jackson

Columbia University
PI: Nabila El-Bassel

Boston Medical Center
PI: Jeffrey Samet

University of Kentucky
PI: Sharon Walsh

Data Coordination Center: RTI International
NEW THERAPEUTICS for OUD

- Long lasting medications to improve compliance
- Non-Opioid Medications
- Vaccines and other immunotherapies
- New treatment regimens: Integrated LA ARV and OUD treatment, or combined injectable formulations LA ARV and OUD

**SUBLOCADE™**
(LA Buprenorphine ER), Once-Month Injectable
FDA Approval 11.30.2017

% negative opioid urines (Weeks 5 to 24)

Heidbreder et al., CPDD 2017

**CAM2038:**
Subcutaneous ER
Buprenorphine
Weekly or monthly injection

Comparison CAM2038 versus Daily SL BPN

Heidbreder et al., CPDD 2017
What can we do together?

• Implementation science to develop scalable integrated models of care for SUDs and HIV in communities of highest need
• Research on acceptability, use, provision, dosing of PrEP for drug users and those with SUDs
• Most effective combination of medications and psychosocial interventions to address SUDs, HIV risk, and HIV
Now NIDA resources are with you wherever you go!

We’re connecting communities with a new mobile Web site that gives you drug-related information by topic, audience, and format—when you need it, where you need it.

The new mobile site (m.drugabuse.gov) provides:

- Easy access to NIDA’s resources through iPhone, Android, iPad, and other smartphones and tablets.
- A convenient way to find, view, request, and share publications—right in the palm of your hand.
- E-books of all publications to allow offline reading on all major e-readers, including Kindle and Nook.
- New Spanish-language content on drugs of abuse and related topics.