The Opioid Epidemic and the Complications of Injection Drug Use

Laura Bamford, MD, MSCE
Philadelphia FIGHT Community Health Centers
October 17, 2019

Disclosures

- Gilead Sciences - Consultant and Speaker Bureau
- Alkermes - Consultant

Note: If AAAP is the CME provider for this training, please complete our COI form here: http://www.cvent.com/d/ntqcxr.

The content of the activity may include discussion of off-label or investigational drug uses. The faculty is aware that it is their responsibility to disclose this information.

Target Audience

- The overarching goal of PCSS is to train a diverse range of healthcare professionals in the safe and effective prescribing of opioid medications for the treatment of pain, as well as the treatment of substance use disorders, particularly opioid use disorders, with medication-assisted treatments.
Educational Objectives

- At the conclusion of this activity participants should be able to:
  - Describe the epidemiology of the opioid crisis
  - Discuss the complications of injection drug use
  - Describe tools to combat the opioid crisis and the complications of injection drug use

Note: When writing your educational objectives, please reference the link below to access recommended leading verbs for formulating objectives:

Heroin Use Has INCREASED Among Most Demographic Groups

<table>
<thead>
<tr>
<th>Demographic Group</th>
<th>2017</th>
<th>2018</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2.4</td>
<td>3.6</td>
<td>50%</td>
</tr>
<tr>
<td>Female</td>
<td>0.8</td>
<td>1.9</td>
<td>100%</td>
</tr>
<tr>
<td>Age, Years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-24</td>
<td>1.6</td>
<td>1.6</td>
<td>0%</td>
</tr>
<tr>
<td>25-34</td>
<td>3.5</td>
<td>2.1</td>
<td>100%</td>
</tr>
<tr>
<td>35-44</td>
<td>1.2</td>
<td>1.9</td>
<td>58%</td>
</tr>
<tr>
<td>45 or older</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher Education</td>
<td>1.4</td>
<td>3.3</td>
<td>145%</td>
</tr>
<tr>
<td>Less than high school</td>
<td>2.0</td>
<td>1.7</td>
<td>-</td>
</tr>
<tr>
<td>Annual Household Income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤$25,000</td>
<td>3.4</td>
<td>5.6</td>
<td>62%</td>
</tr>
<tr>
<td>$25,000-$49,999</td>
<td>1.3</td>
<td>2.3</td>
<td>77%</td>
</tr>
<tr>
<td>≥$50,000</td>
<td>1.8</td>
<td>2.6</td>
<td>44%</td>
</tr>
<tr>
<td>Health Insurance Coverage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.2</td>
<td>4.7</td>
<td>12%</td>
</tr>
<tr>
<td>No</td>
<td>0.6</td>
<td>1.1</td>
<td>62%</td>
</tr>
</tbody>
</table>

Heroin Addiction and Overdose Deaths Are Climbing

70,237 total deaths
*68,557 predicted deaths in 2018 representing first decline since 1999*

---

**Modes of Injection Drug Use**

- Intravenous or intra-arterial – “mainlining”
- Subcutaneous or intradermal – “skin popping”
- Intramuscular – “muscle popping” or “muscling”

---

**Medical Complications of Injection Drug Use**

- **Viral infections**: HIV, hepatitis A, B, and C
- **Skin and soft tissue infections**: abscesses, cellulitis, septic thrombophlebitis
- **Pulmonary**: Community acquired pneumonia, pulmonary tuberculosis, foreign body granulomatosis, septic embol
- **Cardiovascular**: Infective endocarditis, lymphedema, thrombophlebitis
- **CNS**: Epidural abscess, brain abscess
- **Lymphatic system**: Splenic abscess
- **Endovascular**: Bloodstream infections, pseudo aneurysms, deep venous thrombosis
- **Musculoskeletal**: Psoas abscesses, septic arthritis, osteomyelitis, tenosynovitis
- **Hematology**: iron deficiency anemia
- **Renal**: AA (secondary) amyloidosis
- **High risk behaviors**: STIs, violence, trauma
Infectious Complications of Injection Drug Use

- Bacteria or fungi present on the surface of the skin, in saliva, in the drug itself, or in diluents or filters used to prepare drugs for injection may be introduced into subcutaneous tissues, muscles, or the bloodstream.
- PWID are 16.3 times more likely to develop invasive MRSA infections compared to the general population.
- Hospitalizations for serious bacterial infections including skin and soft tissue infections, infective endocarditis, epidural abscesses, and osteomyelitis are increasing in PWID in the United States.

Injection Drug Use Equipment

Skin and Soft Tissue Infections

- Most common medical complication in PWID and top reason for hospitalization in these individuals.
- Between 6% and 32% of PWID have an active SSTI at any time.
- Risk factors include female sex, frequent injection, inadequate skin cleaning, subcutaneous or intramuscular injecting, HIV infection, and needle sharing.
- Staph aureus and group A Streptococci are most common pathogens, but oral flora, Pseudomonas, and gram negative enteric bacilli are also seen.
**Infectious Endocarditis**

- Compared with general population, *Staph aureus* is the most common cause of IE among PWID (68% versus 28% of cases) and more often involves right-sided valves.
- *Streptococci* and *Enterococci* are the next most common pathogens.
- Less commonly, fungi and gram-negative bacilli cause IE in PWID.
- PWID have higher rates of reinfection and valve-related complications.

**HIV Infection and HIV-Associated Behaviors Among Persons Who Inject Drugs - 20 Cities, United States, 2015**

- 27% of HIV negative respondents reported receptive sharing of syringes in the previous 12 months.
- Receptive syringe sharing was higher among whites (39%) compared to Latinos (24%) and blacks (17%).
- 49% reported receptive sharing of other injection equipment with similar patterns as above by race and ethnicity (61%, 45%, and 41%).
- 52% received syringes from a syringe service program and 58% were screened for HIV in the same time period.

**IDU accounted for 9% of new HIV infections in 2016**

- [Graph showing Stage 3 (AIDS) Classifications among Adults and Adolescents with HIV Infection, by Transmission Category and Year of Diagnosis, 1985–2013—United States and 6 Dependent Areas]
Annual HIV Incidence by Transmission Risk Factor in Philadelphia

33 new infections in PWID in 2016 (5.2%)

HIV Outbreak in PWID in Philadelphia

*Represents a 115% increase in new HIV infections in PWID since 2016
OPIOID OVERDOSE DEATHS AMONG PERSONS WITH HIV INFECTION, UNITED STATES, 2011-2015

- Overall mortality among persons with diagnosed HIV was 12.7% less in 2015 (1630.6 per 100,000) than in 2011 (1,868.8 per 100,000).
- The opioid overdose death rate among persons with diagnosed HIV was 42.7% greater in 2015 (33.1 per 100,000) than in 2011 (23.2 per 100,000).
- Rates of opioid overdose deaths were higher for all subgroups examined by age, sex, race/ethnicity, transmission category, and U.S. Census region of residence at death, with the exception of the West U.S. Census region.
- Deaths were highest among persons aged 50–59 years at death (41.9 per 100,000), females (35.2 per 100,000), whites (49.1 per 100,000), PWID (137.4 per 100,000), and the Northeast U.S. Census region (60.6 per 100,000).

IN THE SHADOW OF THE OPIOID CRISIS, NEW HEPATITIS C INFECTIONS HAVE MORE THAN TRIPLED

Visit www.cdc.gov/hepatitis for more information.

HCV Treatment Cascade

- 2,499,638 Viremic
- 888,512 Aware
- 266,439 Treated in 2018
- 266,025 Cured in 2018
Preventive Care for PWID

- Screen for HIV and hepatitis A, B, and C
- Vaccinate for hepatitis A and B and tetanus
- Counsel about the risks associated with sharing injection equipment
- Educate about safer injection practices
- Teach opioid overdose prevention and prescribe naloxone
- Provide access to sterile needles and syringes
- Distribute condoms and screen for STIs
- Prescribe medication assisted treatment
- Prescribe PrEP for HIV prevention
- Provide access to supervised injection facilities
- Educate about early signs of infection related to IDU

HIV Treatment and Viral Suppression

- HIV treatment has dramatically increased quality of life and life expectancy in individuals living with HIV
- HIV viral suppression prevents sexual transmission of HIV to uninfected partners
- Unknown but likely also reduces transmission via sharing syringes and other drug injecting equipment

‘ADDICTIONARY’ ADVICE

<table>
<thead>
<tr>
<th>ABUSER, ADDICT</th>
<th>DRUG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use “person-first” language: Rather than call someone an addict, say he or she suffers from addiction or a substance-use disorder.</td>
<td>Use specific terms such as “medication” or “an is medically used psychoactive substance” to avoid ambiguity.</td>
</tr>
<tr>
<td>CLEAN, DIRTY</td>
<td>LAPSE, RELAPSE, SLIP</td>
</tr>
<tr>
<td>Use proper medical terms for positive or negative test results for substance use.</td>
<td>Use morally neutral terms like “resumed” or experienced a “recurrence” of symptoms.</td>
</tr>
</tbody>
</table>
Prescribe Rapid Initiation of ART

- In a randomized controlled trial in South Africa participants randomized to same day ART initiation were significantly more likely to be virally suppressed at 10 months
- In a similar study in Haiti same day initiation of ART resulted in significantly increased retention in care and viral suppression at 12 months
- A pilot study of 39 individuals in San Francisco suggested that initiating ART on the same day of HIV diagnosis might modestly shorten the time to achieving viral suppression
Strategies for Engagement in HIV Care Among PWID

- Built on decades of Prevention Point Philadelphia’s expertise in harm reduction strategies and established trust in the community in North Philadelphia
- Built on decades of Philadelphia FIGHT’s expertise in providing high quality HIV and HCV care
- Location at the epicenter of the co-occurring HIV, HCV, and opioid epidemics in Philadelphia
- Collocation of medical services, social services, and harm reduction services
- Flexible appointment scheduling with walk-in follow-up visits and new patient visits
- Medication delivery to Prevention Point with option for daily or weekly DOT

Clinica Bienestar HIV Care Continuum

<table>
<thead>
<tr>
<th>Domain in HIV Continuum of Care</th>
<th>Clinica Bienestar Philadelphia, % (95% CI)</th>
<th>City of Philadelphia, % (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linkage to care</td>
<td>80.3 (71.1, 84.0)</td>
<td>77.5 (74.0, 80.6)</td>
</tr>
<tr>
<td>Retention in care</td>
<td>94.5 (91.1, 96.0)</td>
<td>86.4 (81.0, 91.0)</td>
</tr>
<tr>
<td>Vital signs</td>
<td>82.8 (71.9, 93.0)</td>
<td>90.9 (83.3, 94.5)</td>
</tr>
</tbody>
</table>

Note: CI: confidence interval. We used the City of Philadelphia’s definitions for the HIV continuum of care measures.

Population Characteristics

- Average age was 43.2 years
- 81% identified as male
- 40% reported being homeless in the previous month
- 44% reported that they went hungry in the previous week
- 51% reported feeling very depressed in the previous week
- 15% of participants were incarcerated in any given month
- 89% were out of HIV care and 11% were newly diagnosed with HIV
HCV Treatment in PWID

- Clinical trials among PWID reporting current IDU at the start of HCV treatment and/or continued use during therapy demonstrate SVR rates approaching 95%
- A cohort study of 89 patients treated for HCV in a primary care clinic in New York found that regardless of active substance use, SVR rates were ≥95%
- The rate of HCV reinfection in PWID is lower (2.4/100 person-years) than the rate of incident HCV infection in the general population of PWID (6.1 to 27.2/100 person-years)
- Utilization of medication assisted treatment is associated with a reduction in HCV reinfection in PWID

Prescribe PrEP

BOX B3: RECOMMENDED INDICATIONS FOR PREP USE FOR INDIVIDUALS WHO INJECT DRUGS

- Adult or adolescent person
- Without acute or established HIV infection
- Any injection of drugs not prescribed by a clinician in past 6 months

AND at least one of the following

- Any sharing of injection or drug preparation equipment in past 6 months
- Risk of sexual acquisition (also evaluate by criteria in Box B1 or B2)

* CDC recommends daily, continuous pre-exposure prophylaxis with TDF/FTC

PrEP in PWID

- PrEP with tenofovir reduced risk of HIV acquisition in PWID by 49%
- In separate analyses in participants known to be taking tenofovir consistently the risk declined by 74%
- 25% of PrEP eligible PWID in Baltimore had previously heard of PrEP and 63% of sample were interested in taking PrEP while only 2 were currently taking PrEP
- Barriers to PrEP utilization in PWID include low PrEP knowledge, low perceived HIV risk, negative experiences with HCPs, concerns about side effects, competing health priorities, homelessness, criminal justice system involvement, and HIV-related stigma
**DISCOVER: FTC/TAF vs FTC/TDF as PrEP in MSM, TGW**

- International, randomized, double-blind, active-controlled phase III trial
- Adult MSM or TGW at high risk of HIV infection
- FTC/TDF 200/200 mg qd (n = 2244)
- FTC/TAF 150/300 mg f.o.d (n = 2224)
- median adherence: 89% (FTC/TDF, n = 2244) vs 90% (FTC/TAF, n = 2224)
- Current analysis assessed whether adherence, FC, sexual behavior, or STI incidence could account for observed differences in HIV infection rates

**DISCOVER: Onset and Duration of Protection With FTC/TAF vs FTC/TDF as PrEP**

- Adherence comparable between arms by self-report over time, pill count (median adherence: 89% in each arm), and TVN-DFP levels in CD5
- Steady-state PBMC TVN-DFP levels were 5.5-fold higher with FTC/TAF vs FTC/TDF
- Modeling found that concentrations > EC50 would last for 36 days after final dose of FTC/TAF vs 10 days after FTC/TDF

**DISCOVER: Rapidity in Achieving EC90**

- In a phase study in healthy volunteers, median PBMC TVN-DFP concentration ≥ EC90 reached within 3.2 h (8 h within 4 h) of dosing with FTC/TAF vs 5 days of dosing with FTC/TDF
Safer Injection Techniques

- Wash hands and clean area to be injected with an alcohol swab
- Never share needles, syringes, tourniquets, cookers, water, or filters
- Always inject toward the heart at a 15 to 35 degree angle
- Veins in arms are preferred over legs
- Use different arms and different veins
- Use sterile or boiled water
- Prepare own clean area for use away from others
- Do not reuse needles

Refer to Syringe Service Programs

- Reduce rates of HIV and HCV without increasing drug use, number of PWID, or needles discarded in an unsafe manner
- Medical providers in the District of Columbia and all states except Delaware and Kansas are legally allowed to prescribe or dispense syringes to PWID

http://www.temple.edu/lawschool/aidspolicy/50statesataglance.htm
Prescribe Naloxone

DO YOU OR SOMEONE YOU KNOW TAKE OPIOIDS?
NARCAN (NALOXONE) IS AVAILABLE HERE

Increase Access to Medication Assisted Treatment

- Prescribe buprenorphine, oral naltrexone, or long-acting injectable naltrexone or refer for methadone maintenance
- Buprenorphine and methadone significantly reduce opioid use, increase treatment retention, and decrease overall mortality
- HIV and HCV incidence are associated with participation and duration in a methadone maintenance program
- According to a 2015 analysis based on data from the National Survey of Drug Use and Health, only about 20% of Americans with an opioid use disorder received MAT between 2004 to 2013

Test for Fentanyl in Urine and Drug Samples

- Fentanyl has been found mixed into heroin, cocaine, methamphetamine, MDMA, marijuana, K2, and pressed into counterfeit prescription pills
- People who use drugs may be unaware that fentanyl is used as an adulterant
- Might rely on ineffectual information including smell, taste, color, and word of mouth to assess for the presence of fentanyl
- Use rapid and confirmatory urine drug screen panels that include fentanyl and norfentanyl
- Rapid fentanyl test strips are single-use immunoassay tests for the qualitative detection of fentanyl and norfentanyl
- Demonstrated 96 to 100% sensitivity and 90 to 98% specificity in detecting fentanyl in illicit drug samples, compared to the gold standard for this type of analysis, gas chromatography/mass spectrometry
Supervised injection facilities (SIFs) provide individuals with SUDs a medically monitored and legally sanctioned environment to more safely engage in IDU. SIFs are designed to keep PWID alive long enough for them to engage in treatment for SUD.

Supervised Injection Facilities
(also known as supervised injection sites, safe injection sites, fix rooms, safer injection facilities, drug consumption facilities, or medically supervised injection centers)

• The first SIF began operating in Bern, Switzerland in 1986 in response to increasing HIV infections and drug-related overdoses.
• There are now over 100 legally sanctioned SIFs in 10 countries and 66 cities in Europe, Australia, and Canada.
• No legally sanctioned facility currently exists in the United States.

Services Provided at SIFs

• SIFs permit the injection of pre-obtained illicit drugs under the supervision of medical staff.
• SIFs differ by site, but these facilities typically provide the supplies necessary to inject drugs in a sterile manner, offer overdose response, provide basic medical care including wound care, offer safe injecting education, and refer to substance use disorder treatment.
• Many also offer HIV and HCV screening and administer vaccinations.
Benefits to the Individual

- Studies in Europe, Canada, and Australia suggest that SIFs are associated with a reduction in drug overdose deaths
- SIFs are associated with safer injection practices reducing HIV and HCV transmission and acquisition of bacterial and fungal infections
- SIFs are effective referral sites for substance use disorder treatment and primary medical care

Benefits to the Community

- Use of SIFs is associated with decreased public injection and increased safe syringe disposal
- SIFs have not been shown to lead to increased drug use, increased crime, or increased drug trafficking in their surrounding communities

References

References


PCSS Mentoring Program

- PCSS Mentor Program is designed to offer general information to clinicians about evidence-based clinical practices in prescribing medications for opioid addiction.
- PCSS Mentors are a national network of providers with expertise in addictions, pain, evidence-based treatment including medication-assisted treatment.
- 3-tiered approach allows every mentor/mentee relationship to be unique and catered to the specific needs of the mentee.
- No cost.

For more information visit: https://pcssNOW.org/mentoring/

PCSS Discussion Forum

Have a clinical question?

http://pcss.invisionzone.com/register

PCSS is a collaborative effort led by the American Academy of Addiction Psychiatry (AAAP) in partnership with:

<table>
<thead>
<tr>
<th>American Academy of Family Physicians</th>
<th>American Academy of Addiction Psychiatry</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Academy of Neurology</td>
<td>American Society of Addiction Medicine</td>
</tr>
<tr>
<td>Addiction Technology Transfer Center</td>
<td>American Society of Pain Management</td>
</tr>
<tr>
<td>American Academy of Pain Medicine</td>
<td>Association for Medical Education and Research in Substance Abuse</td>
</tr>
<tr>
<td>American Academy of Pediatrics</td>
<td>International Nurses Society on Addictions</td>
</tr>
<tr>
<td>American College of Emergency Physicians</td>
<td>American Psychiatric Nurses Association</td>
</tr>
<tr>
<td>American College of Physicians</td>
<td>National Association of Community Health Centers</td>
</tr>
<tr>
<td>American Dental Association</td>
<td>National Association of Drug Court Professionals</td>
</tr>
<tr>
<td>American Medical Association</td>
<td>Southeastern Consortium for Substance Abuse Training</td>
</tr>
<tr>
<td>American Osteopathic Academy of Addiction Medicine</td>
<td></td>
</tr>
</tbody>
</table>