

Preventing HIV and
Improving the Lives
of People who Inject Drugs

David Serota, MD, MSc

Assistant Professor of Clinical Medicine

Division of Infectious Diseases

University of Miami Miller School of Medicine



@serotavirus

Disclosures + Caveats

I don't have any conflict of interest or disclosures relevant to the material presented today

I'm presenting a biomedical approach to helping people who use drugs, there are other approaches



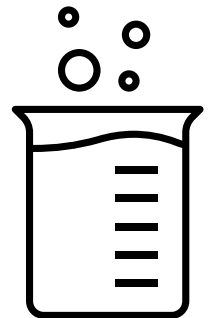
About Me



- Grew up in the southeast
- Knew nothing of HIV until medical school and nothing of addiction until residency
- Research interests: infectious diseases, addiction, and HIV pre-exposure prophylaxis

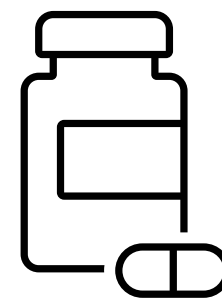
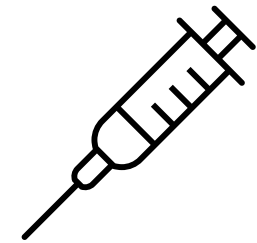
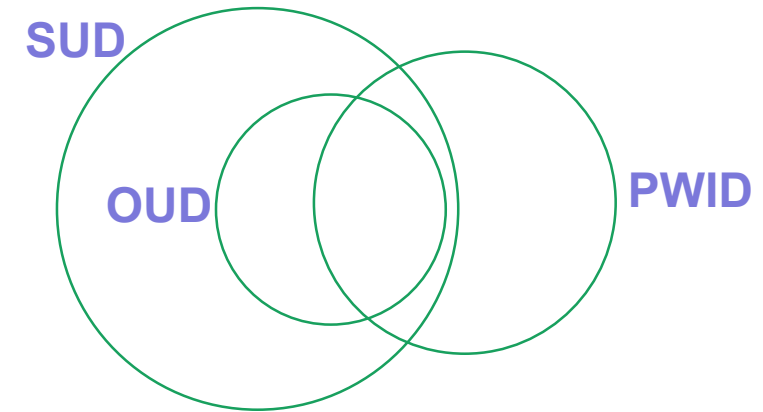
Learning Objectives

- Learn how to diagnose substance use disorders
- Recognize the social and medical challenges faced by people who inject drugs
- Understand where HIV prevention fits into the care for people who inject drugs
- Identify the components of holistic medical care for people who inject drugs



Terminology

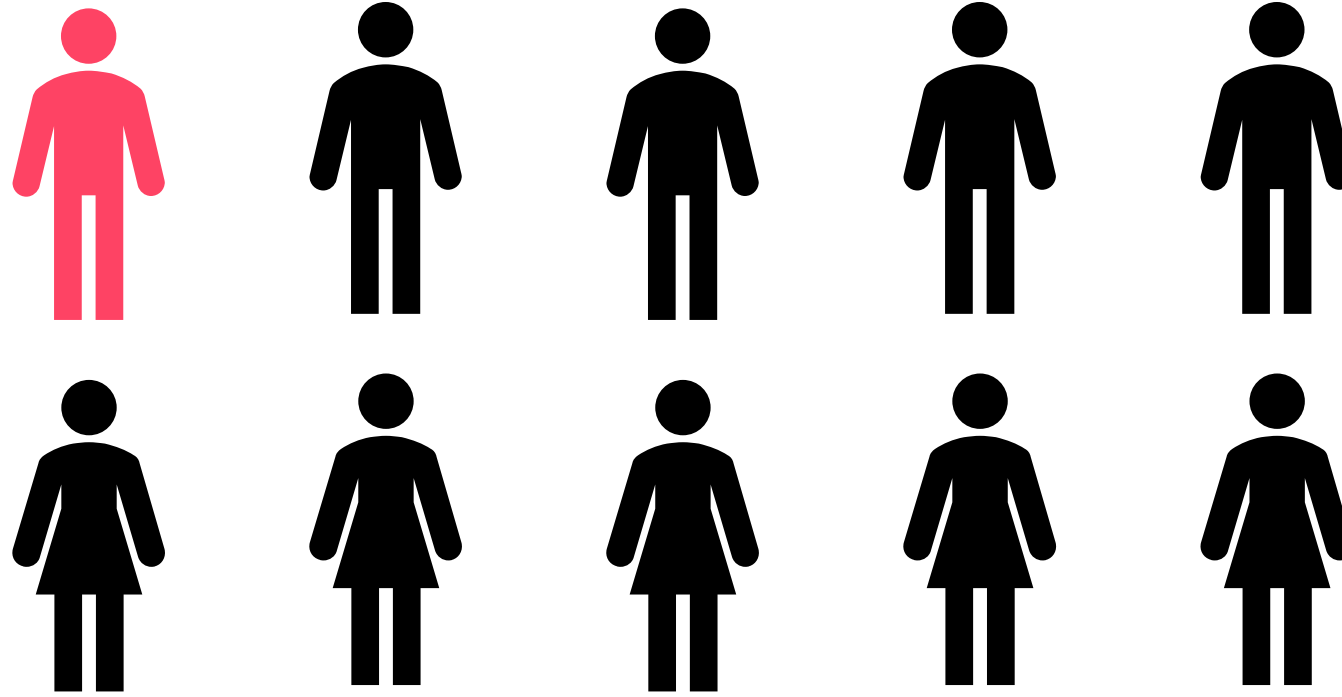
OUD	Opioid use disorder
SUD	Substance use disorder
PWID	Person who injects drugs
MOUD	Medications for opioid use disorder
SSP	Syringe services program



70,980 drug overdose death in US in 2019

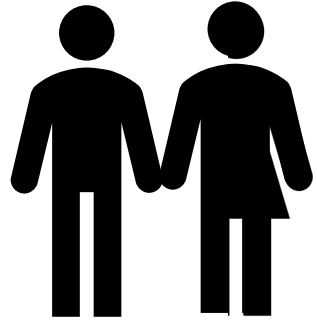
36% of PWID
live in the South

Up 4.6% from 2018



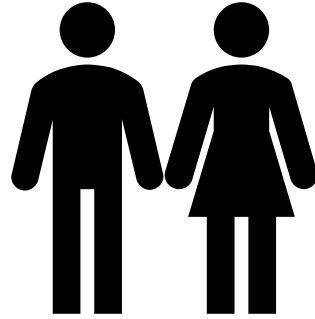
1 in 10 new HIV diagnoses is
among a person who injects drugs

1 infection per ___ acts with an HIV-positive partner



Receptive
anal

72



Receptive
vaginal

1,250



Shared
syringe

159

Penetrative
anal

909

Penetrative
vaginal

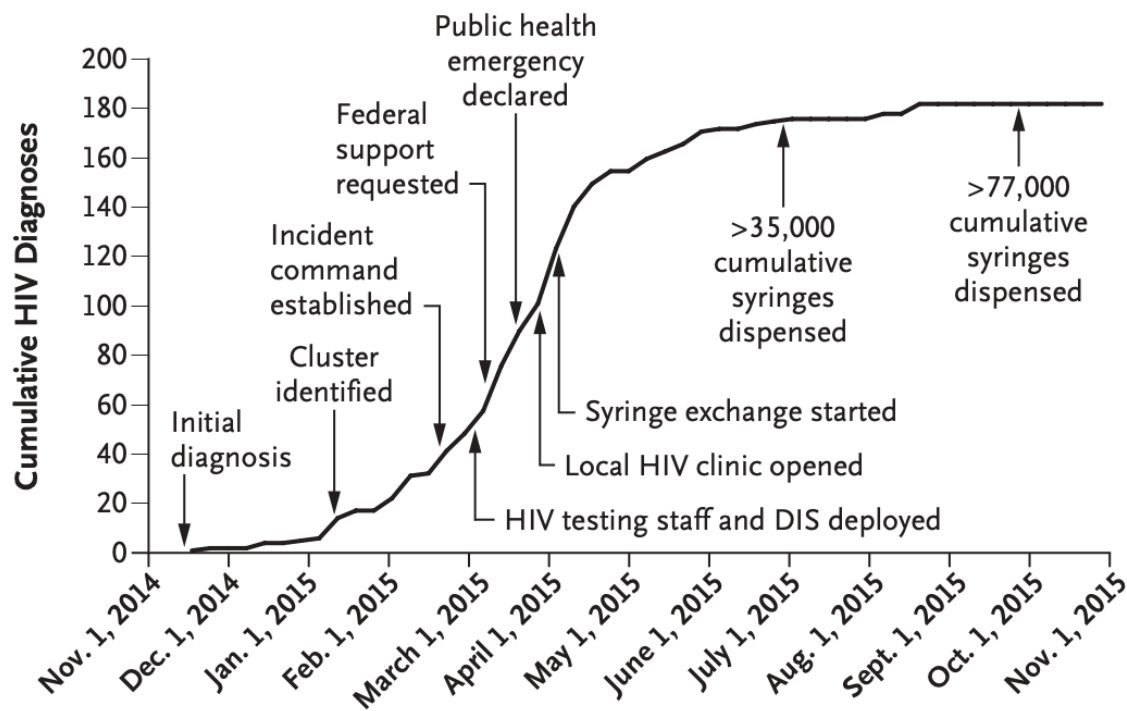
2,500

Risk of HIV infection by act

Communities of PWID are vulnerable to HIV outbreaks

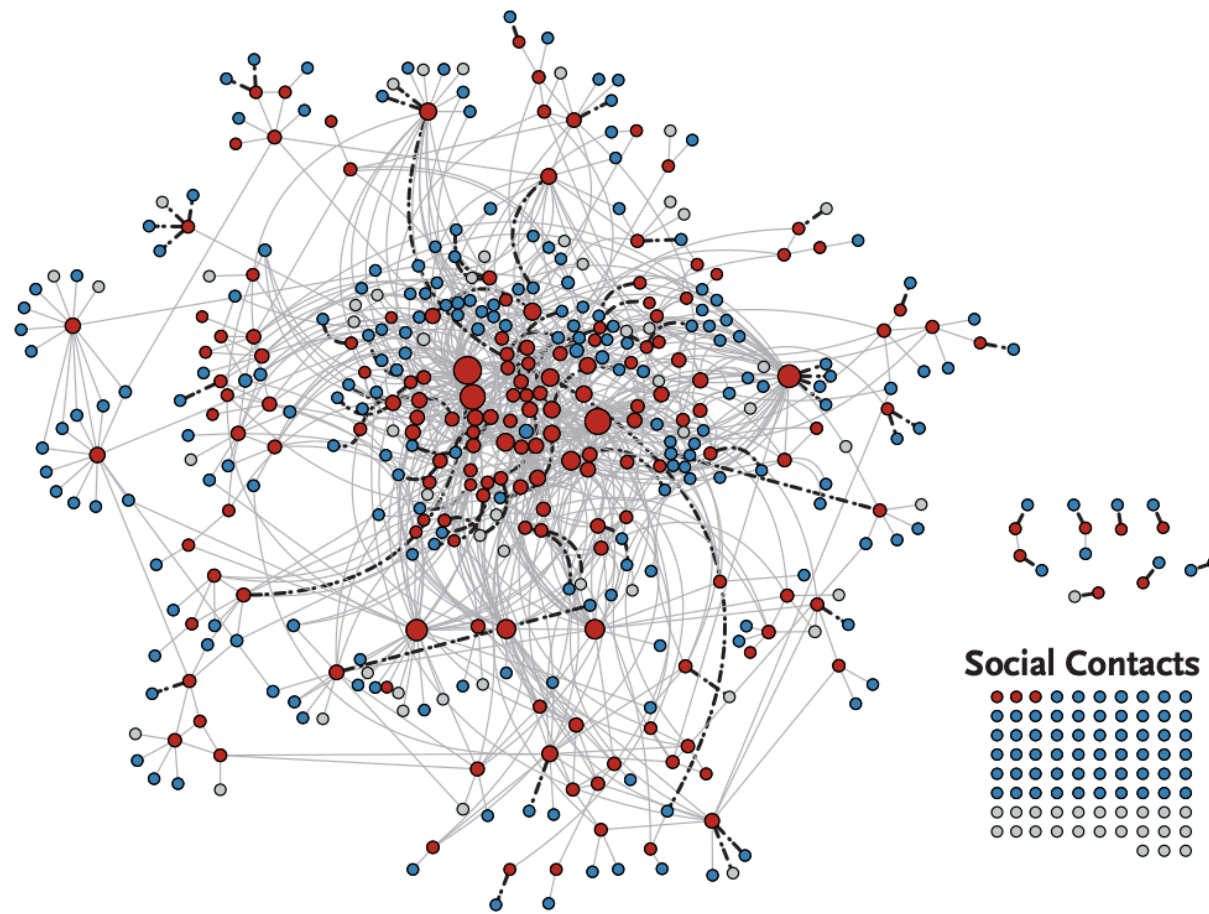
- Scott County, IN: 24,000 residents
- 181 new HIV diagnoses (15x rate in Miami)
- Close network of needle sharing

Scott County, Indiana 2014-2015

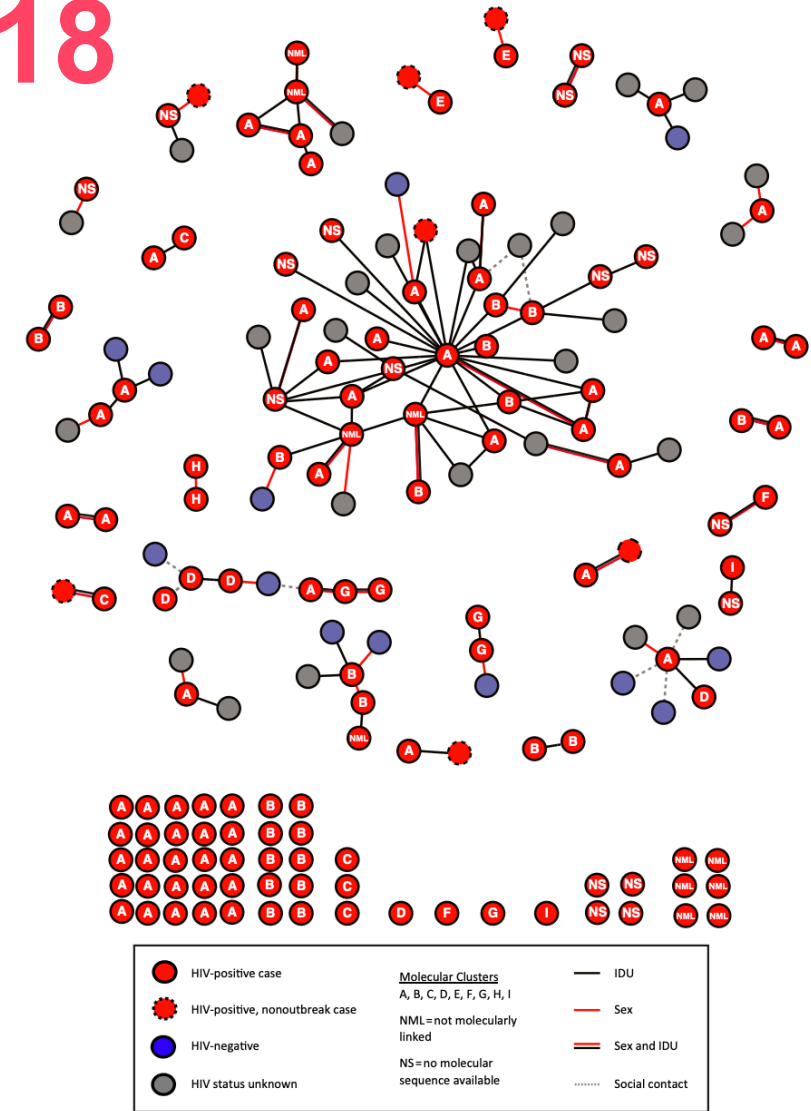
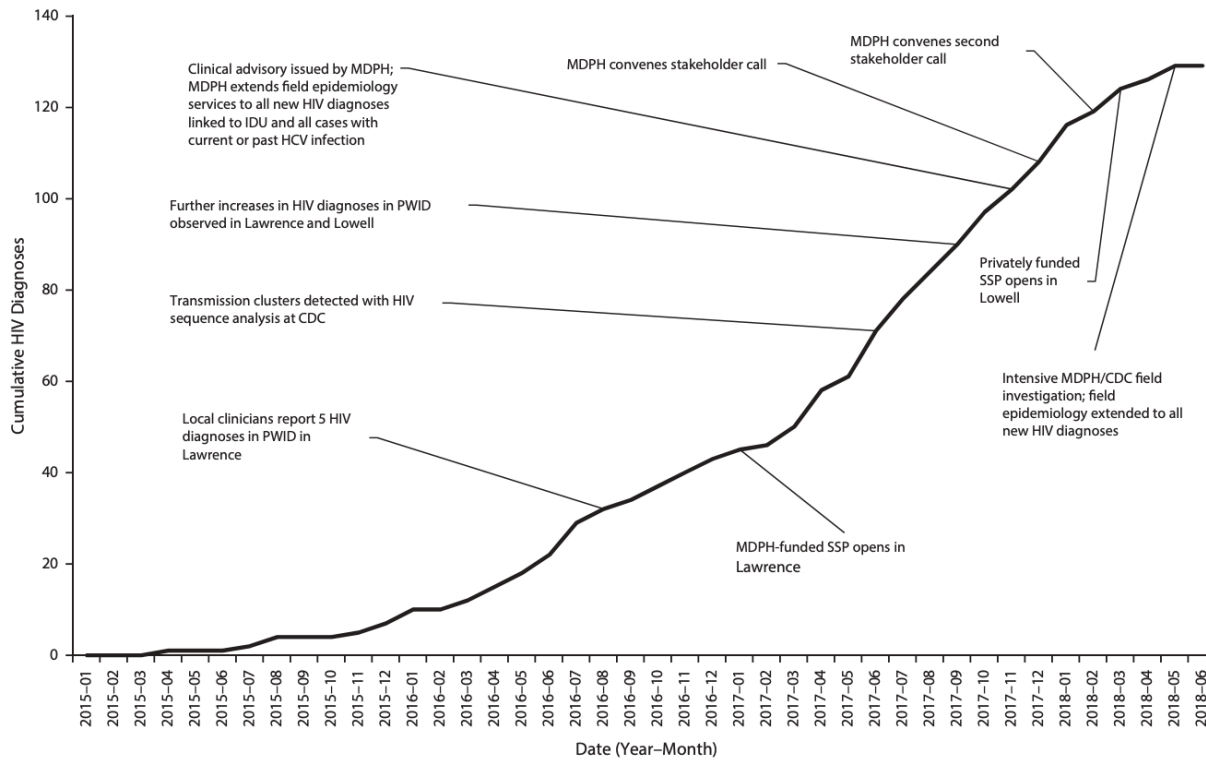


HIV Status
● HIV+ ● HIV- ● Not tested

Connection Type
— Syringe sharing --- Sexual only



Massachusetts, 2015-2018



Notes from the Field

Outbreak of Human Immunodeficiency Virus Infection Among Persons Who Inject Drugs — Cabell County, West Virginia, 2018–2019

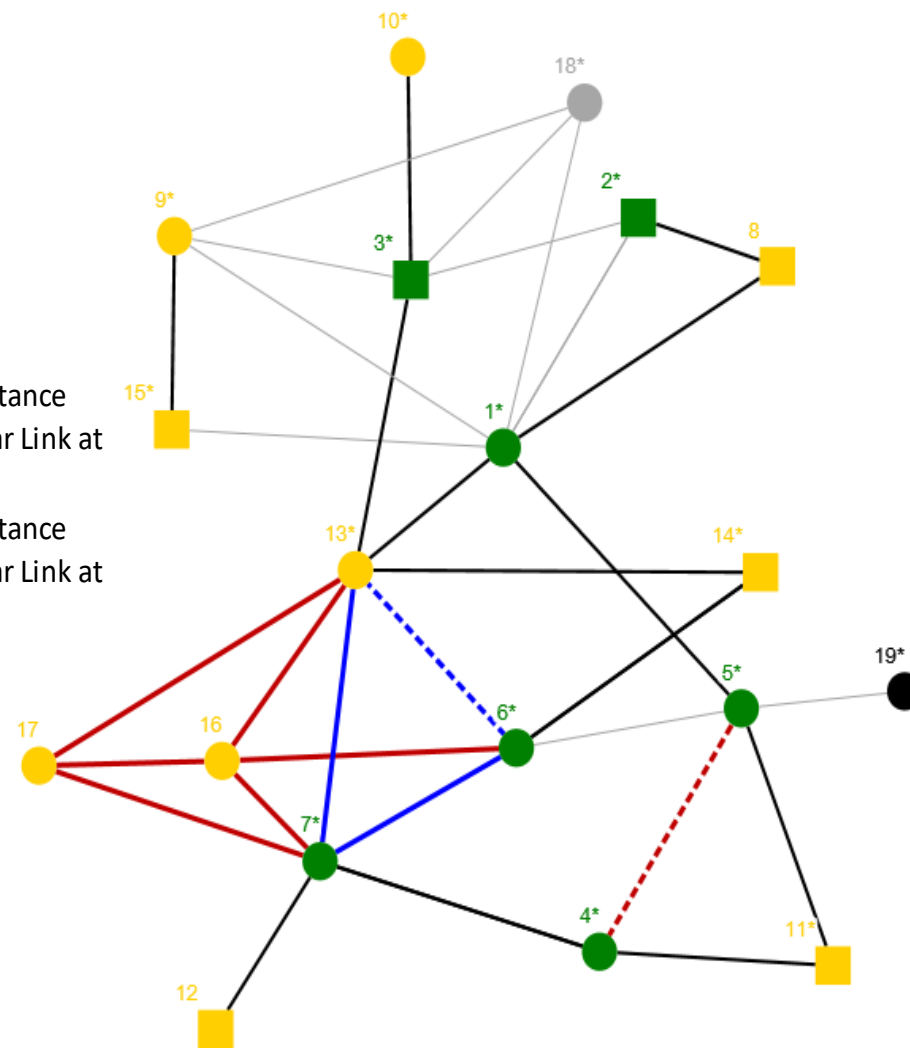
Amy Atkins, MPA¹; R. Paul McClung, MD²; Michael Kilkenr
Kyle Bernstein, PhD⁴; Kara Willenburg, MD⁵; Anita Edward

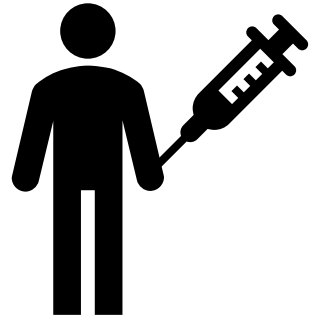


Miami, 2018



- Confirmed HIV Seroconversion
- Previous Positive HIV Status
- Negative HIV Status
- Unknown HIV Status
- No HIV Genotype
- * IDEA Participant
- Epidemiological Link
- Social Link
- Molecular Link at 0.5% Genetic Distance
- - Epidemiological Link and Molecular Link at 0.5% Genetic Distance
- Molecular Link at 1.5% Genetic Distance
- - Epidemiological Link and Molecular Link at 1.5% Genetic Distance





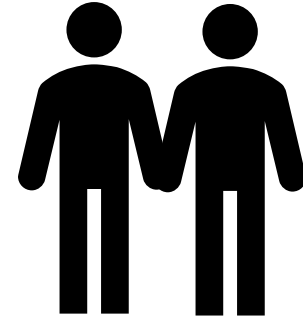
Male
PWID

1 in 43



Female
PWID

1 in 26



Men who
have sex
with men

1 in 6

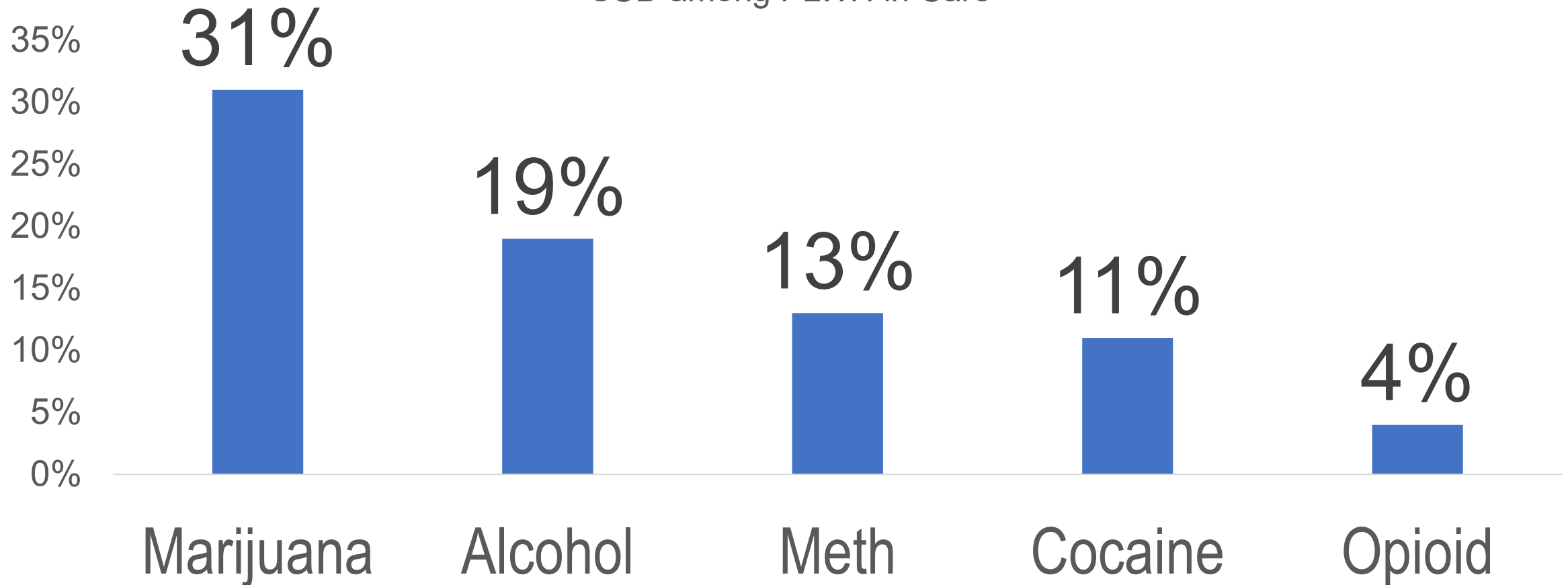
African
American
MSM

1 in 2

Lifetime risk of HIV
infection

Substance use disorders (SUD) among people living with HIV in care

SUD among PLWH in Care



**Diagnose
Substance
Use Disorder**

Substance use disorder DSM 5

2-3	mild
4-5	moderate
6+	severe

Risky use

- Recurrent use in hazardous situations
- Keep using despite physical or psychological problems

Social impairment

- Role failure – interference with school, work, home
- Keep using despite relationship problems
- Important activities given up or reduced

Loss of control

- Taking more or for longer than intended
- Not being able to cut down or stop despite attempts
- Spending a lot of time obtaining, using, or recovering from use
- Craving/can't think of anything else

Physiologic dependence*

- Tolerance to effects of the substance
- Withdrawal symptoms when not using or using less

Risky

**Substance
use**

vs

**Substance
use
disorder**

Spectrum of risk

Language matters – terminology guide

Avoid	Preferred
Addict	Person with addiction, with SUD
Drug abuser	Person who uses drugs
IV drug user	Person who injects drugs
Clean	In recovery, not using drugs
Dirty	Recent drug use
Drug habit	Drug addiction , substance use disorder
Heroin addict	Person with opioid use disorder

**Challenges faced
by people who
inject drugs**

Non-medical problems for PWID

74%
uninsured



60%

Homeless in
the last year



44%

Food insecure
last month



78%

Below FPL



Many
experience
trauma

Mental Health Conditions among PWID

22%

Have
attempted
suicide

78%

Serious
mental
illness



More likely to share syringes
More likely to inject multiple times per day
More likely to report no access to SUD care

Colledge, Drug Alc Dep 2019

Adams, J Infec Dis 2020

Infectious Complications of Injection Drug Use

HIV prevalence 7% in US (18% globally)

Hepatitis C prevalence 50%

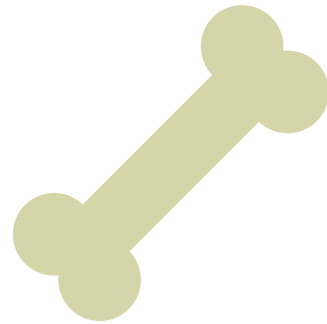
Hepatitis B prevalence 9% (globally)



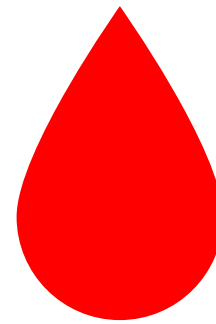
Injection drug use-associated bacterial infections



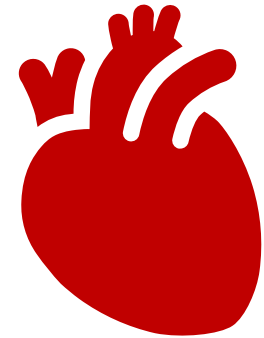
- SSTI
- Cellulitis
- Abscess



- Osteomyelitis
- Septic arthritis



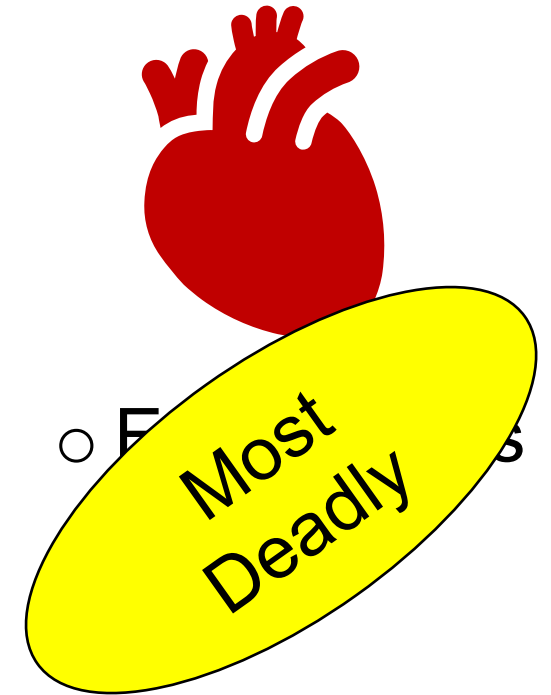
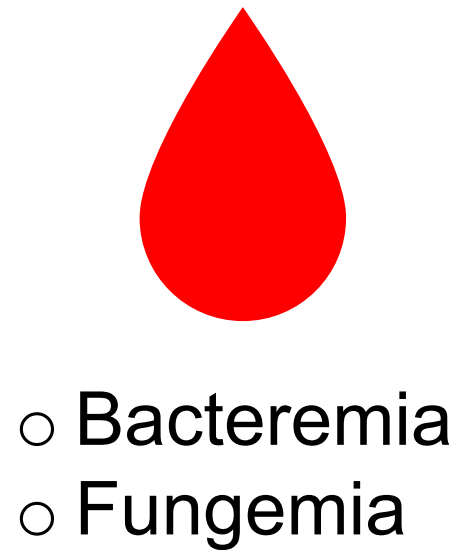
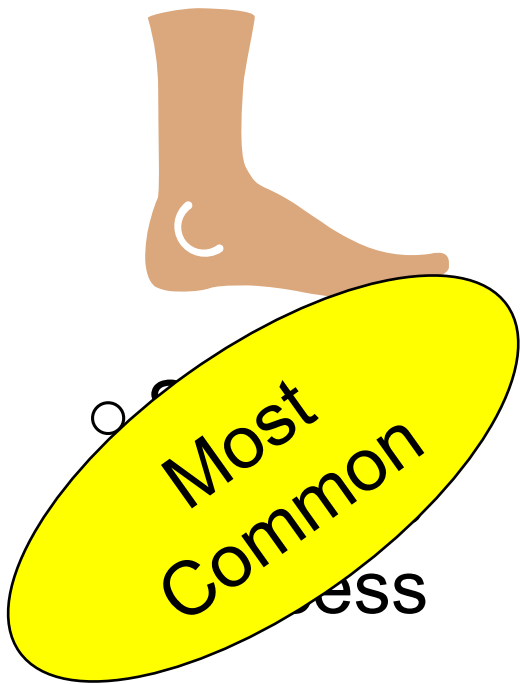
- Bacteremia
- Fungemia



- Endocarditis

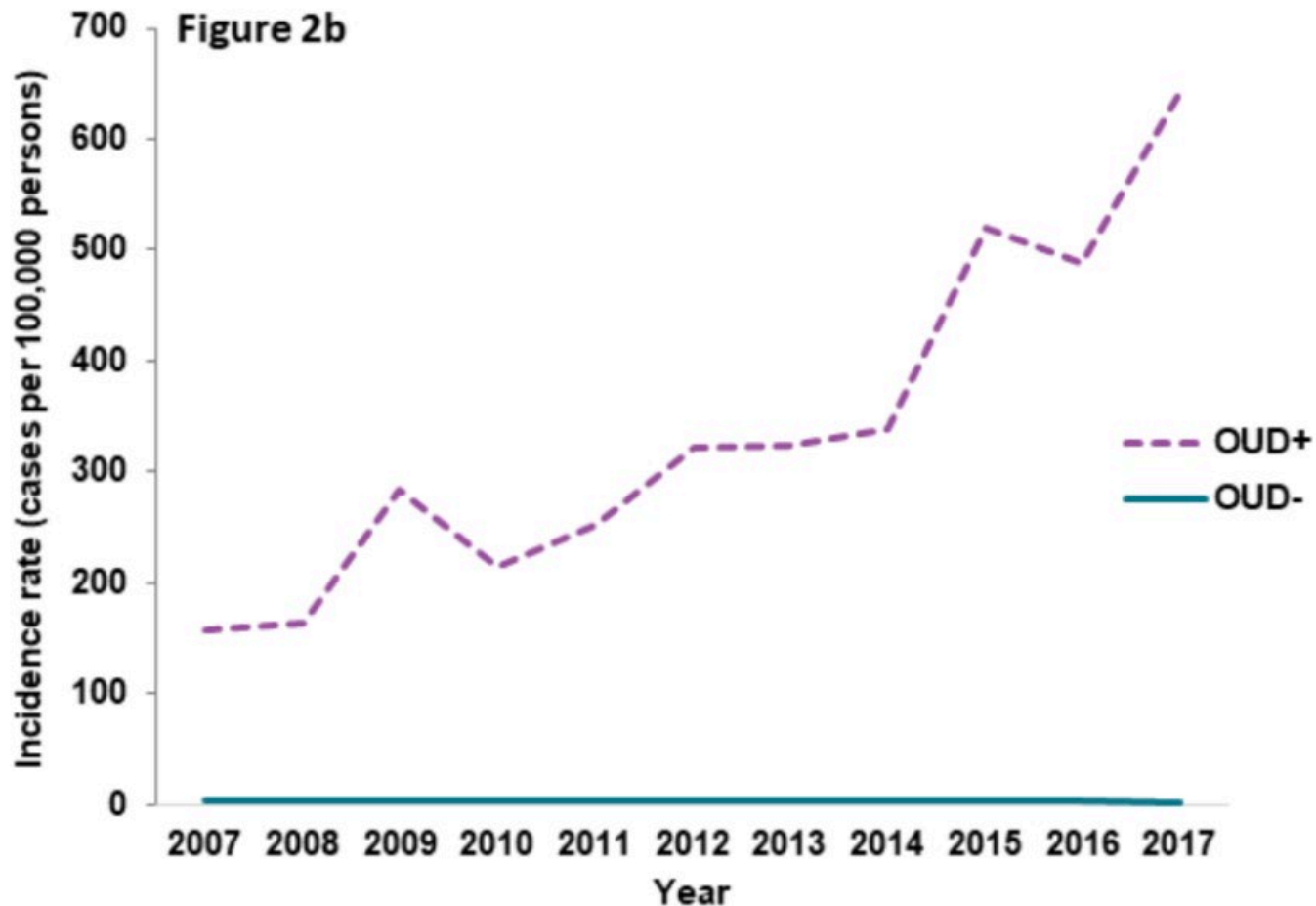
SSTI = skin and soft tissue infection

Injection drug use-associated bacterial infections



SSTI = skin and soft tissue infection

Incidence of endocarditis among those with vs. without opioid use disorder (OUD)



Estimated **287,800** drug use-associated endocarditis deaths by 2030

Wong, CID 2020
Barocas, CID 2020

Experiences of healthcare for PWID

Stigmatization and marginalization

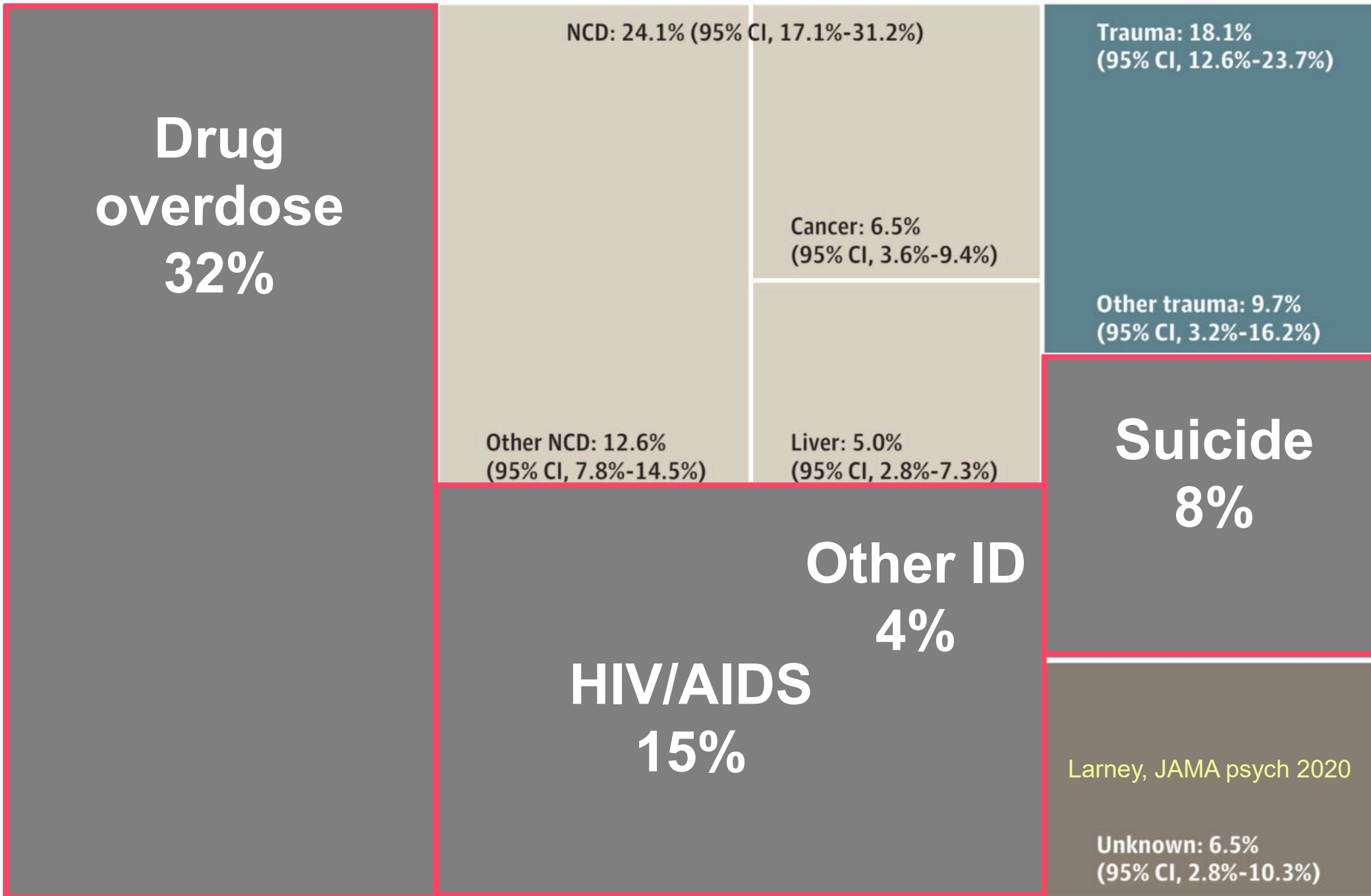
Undertreated pain/untreated withdrawal

Seek informal medical care, avoidance, delay

Feeling of not being trusted by healthcare team

Risk of falling out of care

Causes of death among people with opioid use



How can we improve the lives of people who inject drugs?

Preventing HIV is important, but may not be the most pressing issue in the lives of many PWID

It is our job to provide a menu of treatment and prevention interventions



Harm Reduction

“Harm reduction is a set of practical strategies and ideas aimed at reducing negative consequences associated with drug use. Harm Reduction is also a movement for social justice built on a belief in, and respect for, the rights of people who use drugs.”

-- Harm Reduction Coalition

Harm reduction approaches for PWID

- Medications for OUD
- Syringe exchange programs
- Naloxone
- Overdose prevention
- Screening and treatment of HIV and HCV
- PrEP
- Injection hygiene education
- Supervised injection facilities



PrEP for people
who inject drugs:
What do we know?

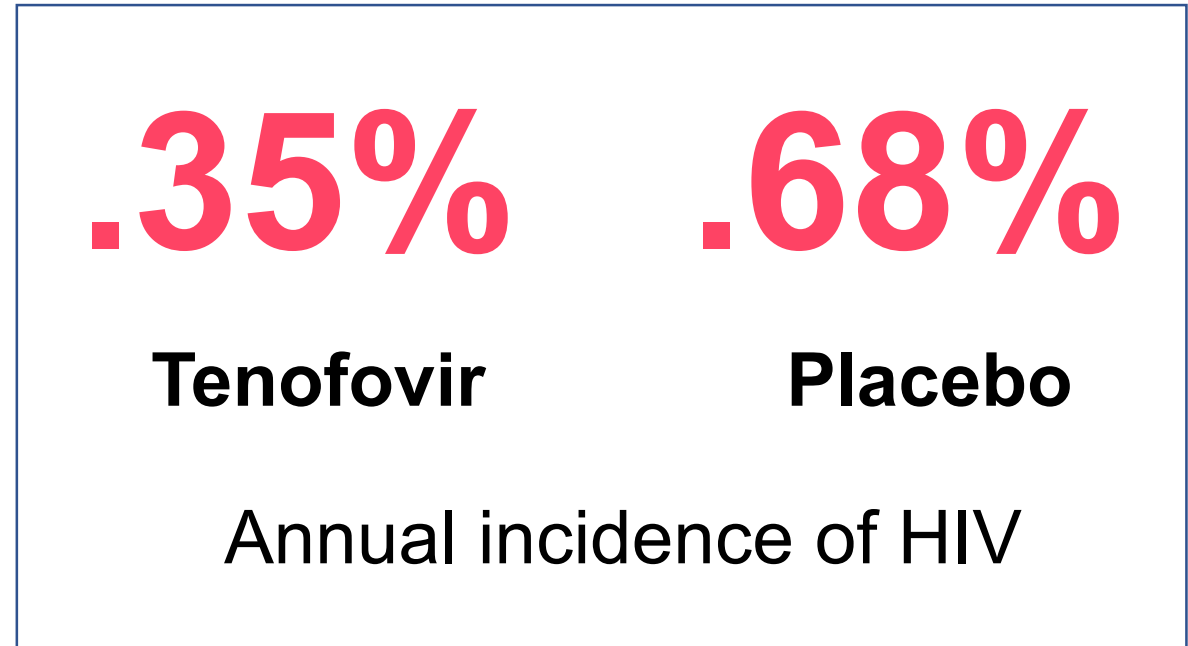
Antiretroviral prophylaxis for HIV infection in injecting drug users in Bangkok, Thailand (the Bangkok Tenofovir Study): a randomised, double-blind, placebo-controlled phase 3 trial



Kachit Choopanya, Michael Martin, Pravan Suntharasamai, Udomsak Sangkum, Philip A Mock, Manoj Leethochawalit, Sithisat Chiamwongpaet, Praphan Kitisin, Pitinan Natrujirote, Somyot Kittimunkong, Rutt Chuachoowong, Roman J Gvetadze, Janet M McNicholl, Lynn A Paxton, Marcel E Curlin, Craig W Hendrix, Suphak Vanichseni, for the Bangkok Tenofovir Study Group

Bangkok Tenofovir Study, 2013

- Randomized placebo-controlled trial of **2413 PWID**
- Tenofovir vs. placebo
- Risk reduction counseling
- Methadone



49% ↓ **HIV infection**

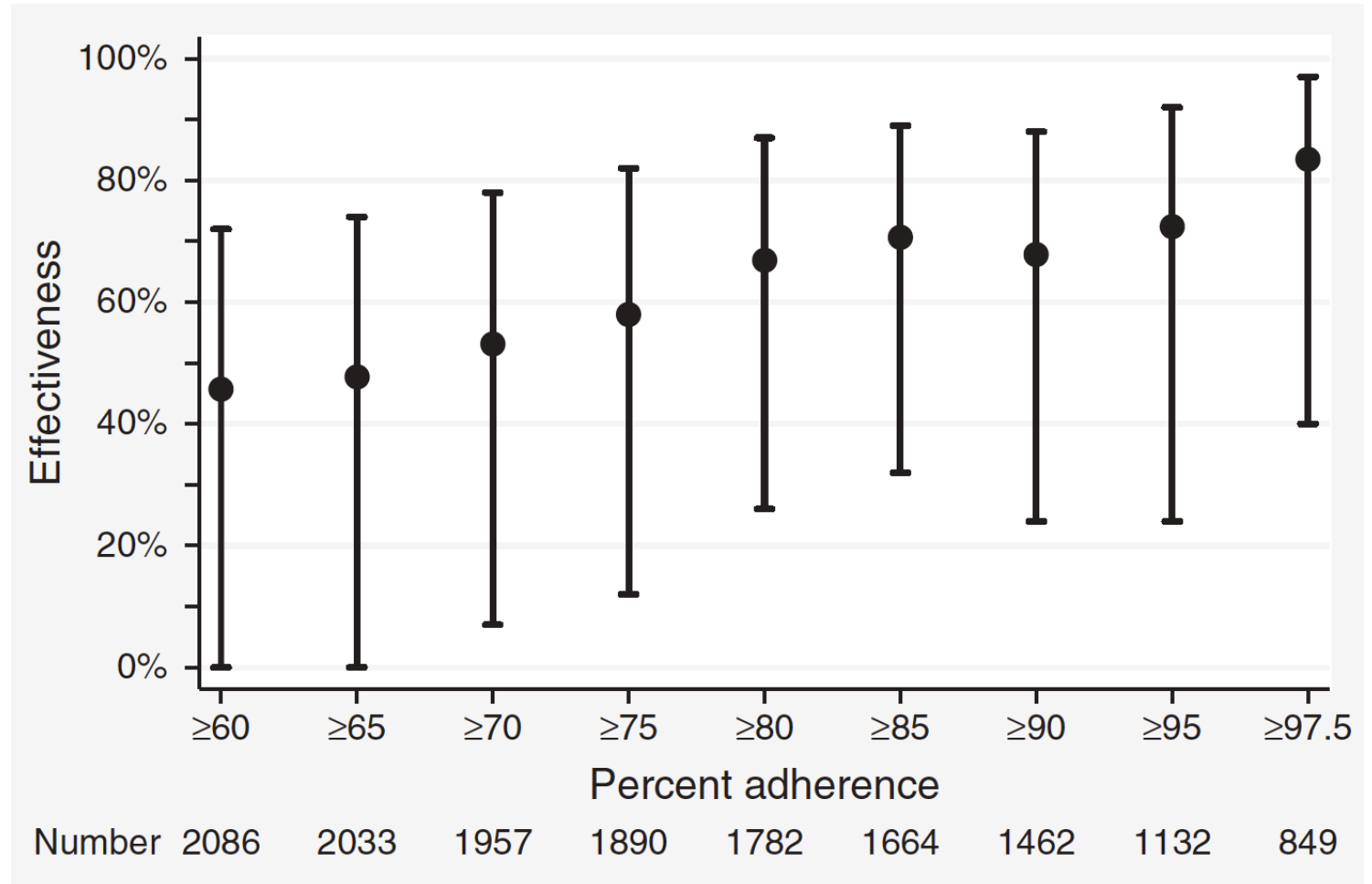
70% if drug detected

Bangkok Tenofovir Study, 2013

○ Impact of adherence on efficacy

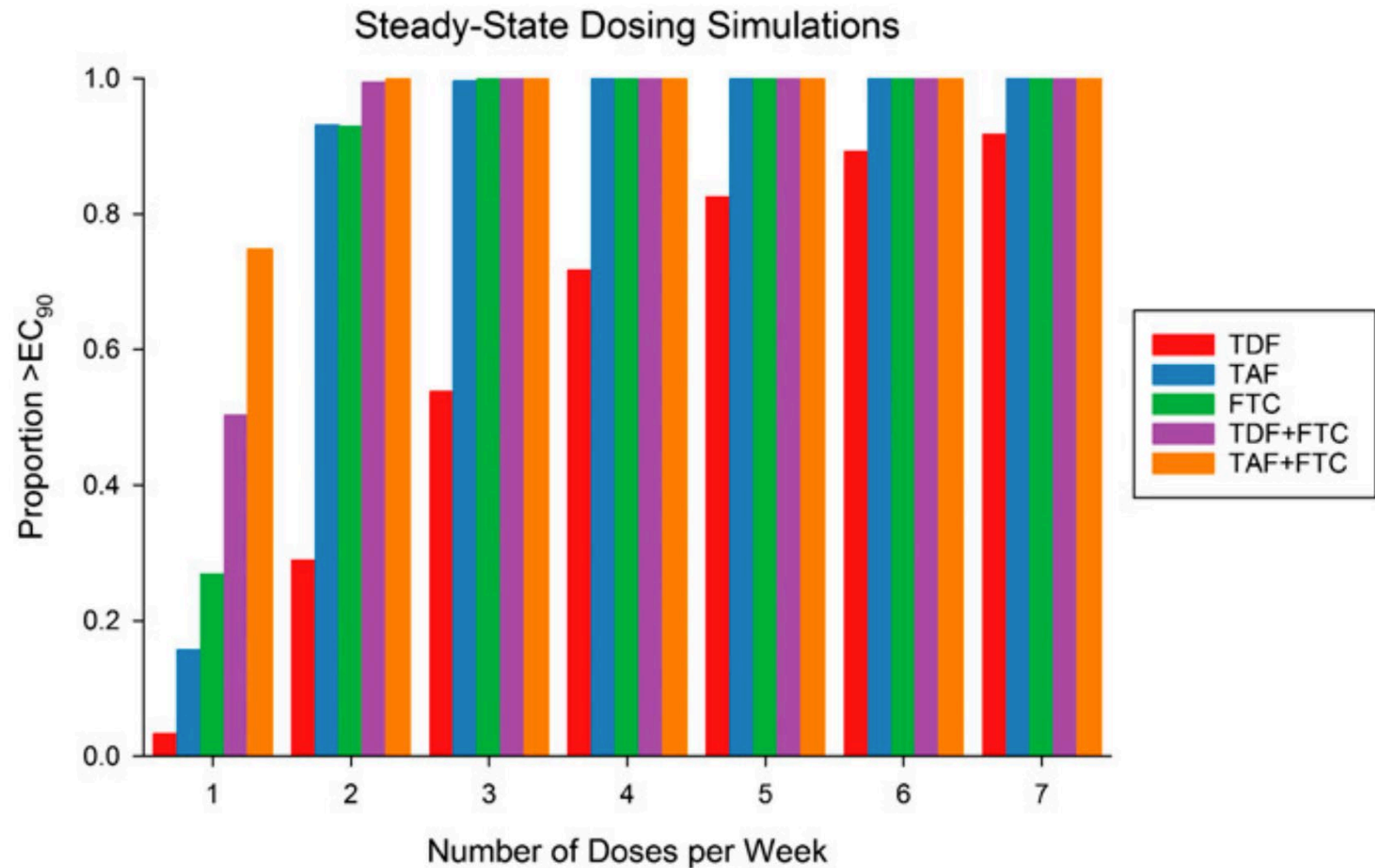
○ ↓ adherence

Youth
Men
Meth



Biological evidence that PrEP works for PWID

Use of TAF-FTC (Descovy) or TDF-FTC (Truvada) expected to work better than tenofovir alone



Which medication should I prescribe for daily PrEP?

TDF/FTC (Truvada)

FDA approval: 2012



19 mm



12.5 mm

TAF/FTC (Descovy)

FDA approval: 2019



EFFECTIVENESS

- ✓ for multiple populations

SAFETY

- Small ↓ in eGFR and BMD

COST

- \$1,845/month in 2019
- Generic in 2020

-2.0

-0.99%

-6.5

+0

SAFETY / 48 WKS

eGFR (mL/min)

HIP BMD

LDL (mg/dL)

BODY WEIGHT (kg)

+2.0

+0.18%

+1.0

+1.1

EFFECTIVENESS

- ✓ for MSM and transwomen
- ? for other populations

SAFETY

- Small ↑ in LDL and weight

COST

- \$1,845/month in 2019

100

0

0

100

Barriers to PrEP among PWID

Access/Knowledge

Eligibility

Adherence

Logistics



How many PWID are using PrEP in the US?

- **115,000** PWID in the US with PrEP indications
- In San Francisco **3%** of PWID had used PrEP in the last year

PrEP awareness and risk preception low

- **28%** aware of existence of PrEP – Miami SSP
- Low willingness to prescribe PrEP among PCPs, less for PWID

Which PWID are eligible for PrEP?

Only **37%** of PWID met CDC PrEP criteria

About **1/3** met sexual criteria alone

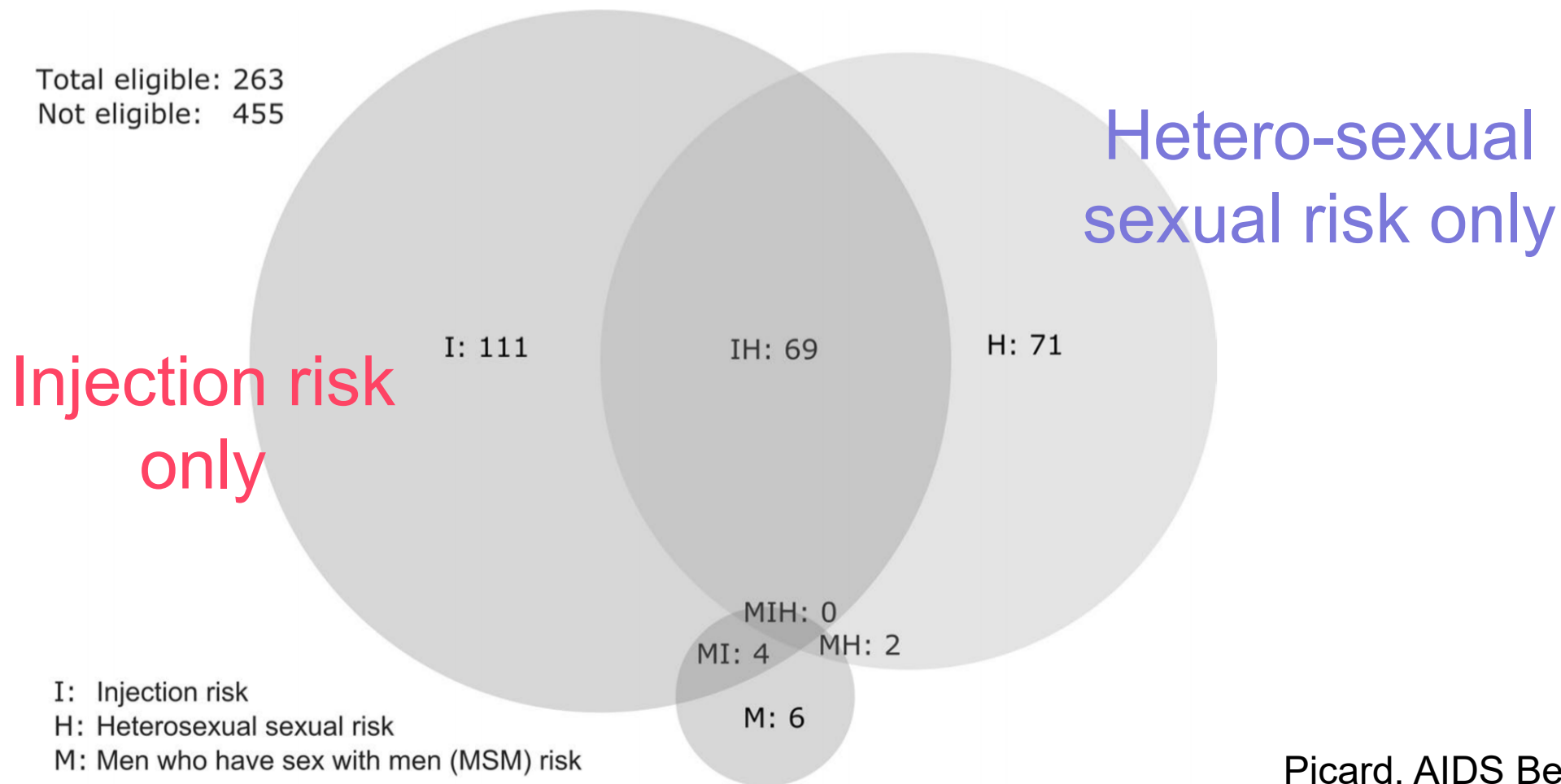
28% with elevated risk* did not meet CDC criteria

* ARCH-IDU score >46

CDC PrEP indications for PWID

1. Sharing injection or drug paraphernalia within the last 6 months
2. Meeting any sexual risk criteria

PWID have high prevalence of sexual risk



Adherence/Retention on PrEP among PWID

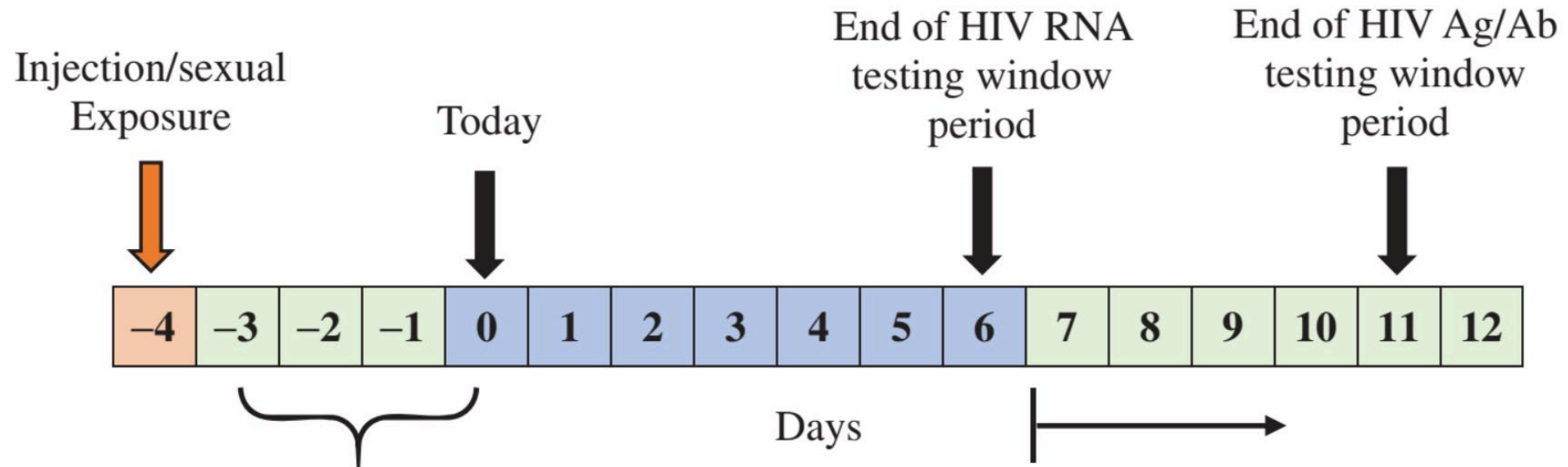
- Substance use has been associated with discontinuation and lower adherence
- *But not across all studies*
- None focused on **PWID**
- Stimulants >>> Other



Substance use is not a reason to deny someone PrEP

Hojilla, JIAS 2018
Serota, CID 2019
Hoenigl, EID 2019

Difficulties in getting onto PrEP for PWID



PEP Eligibility:
Guidelines recommend PEP within 72 hours of a high risk exposure

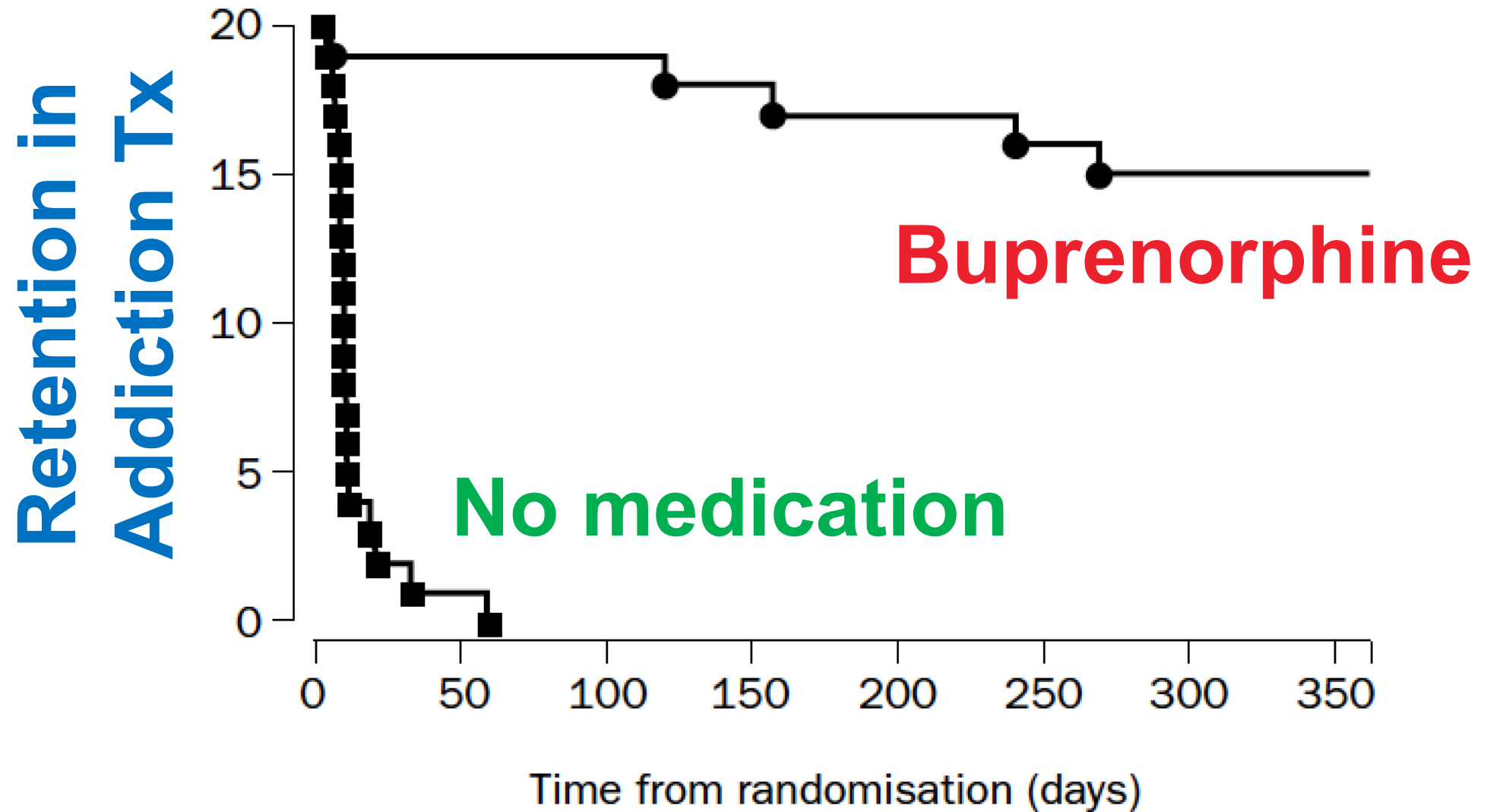
PrEP Eligibility:
If a patient avoids further exposures and returns for HIV RNA testing on day 6, providers can be confident in the result of the test and she may begin PrEP

Harm reduction approaches for PWID

- Medications for OUD
- Syringe exchange programs
- Naloxone
- Overdose prevention
- Screening and treatment of HIV and HCV
- PrEP
- Injection hygiene education
- Supervised injection sites



Medications for OUD (MOUD):



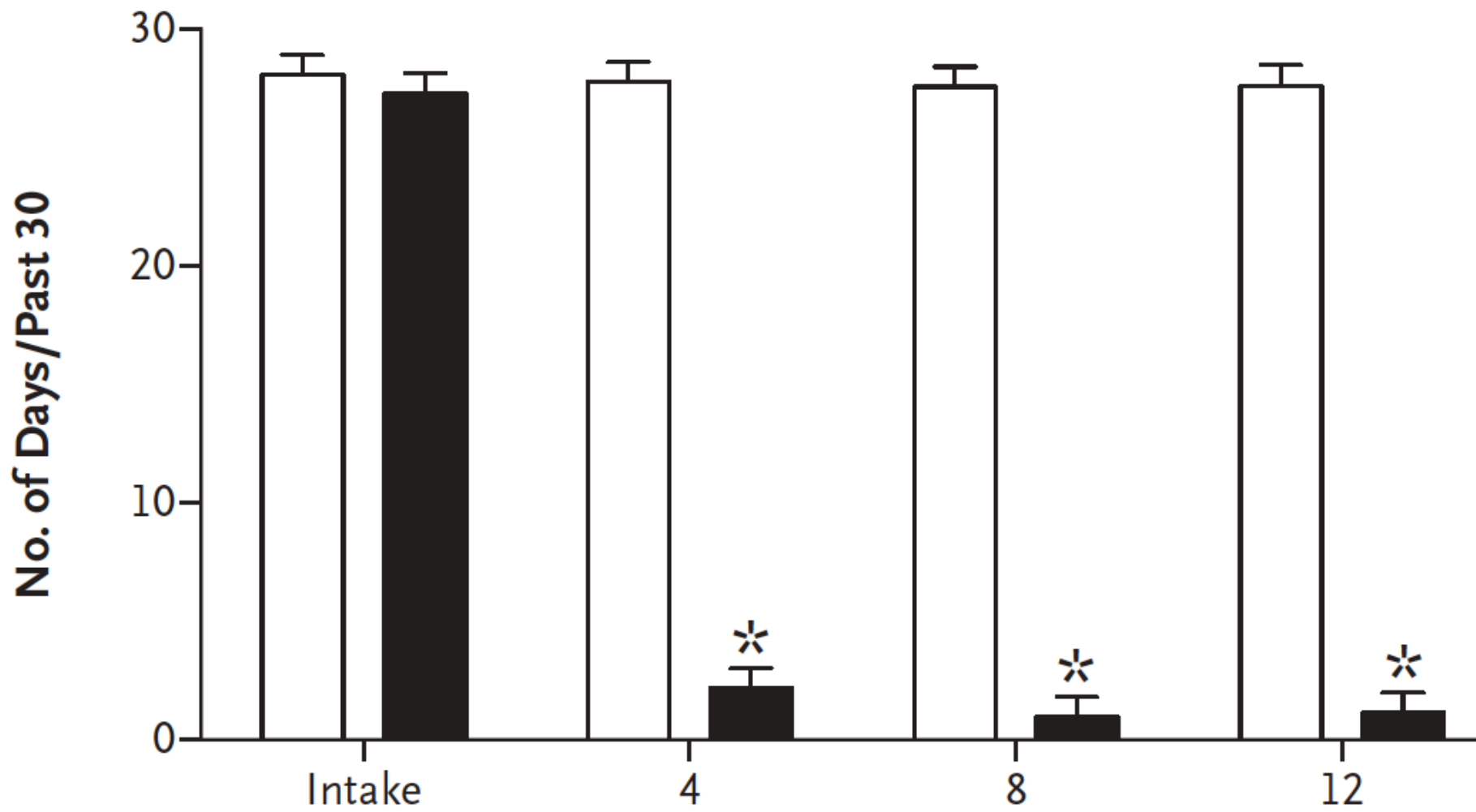
Illicit-Opioid Use

Medication

Waitlist

■ Buprenorphine

□ No buprenorphine



Medication for Opioid Use Disorder After Nonfatal Opioid Overdose and Association With Mortality

A Cohort Study

Marc R. Larochelle, MD, MPH; Dana Bernson, MPH; Thomas Land, PhD; Thomas J. Stopka, PhD, MHS; Na Wang, MA; Ziming Xuan, ScD, SM; Sarah M. Bagley, MD, MSc; Jane M. Liebschutz, MD, MPH; and Alexander Y. Walley, MD, MSc

Mortality Associated With Time in and Out of Buprenorphine Treatment in French Office-Based General Practice: A 7-Year Cohort Study

RESEARCH LETTER

Postincarceration Fatal Overdoses After Implementing Medications for Addiction Treatment in a Statewide Correctional System

Mortality risk during and after opioid substitution treatment: systematic review and meta-analysis of cohort studies

Luis Sordo,^{1,2,3} Gregorio Barrio,⁴ Maria J Bravo,^{1,2} B Iciar Indave,^{1,2} Louisa Degenhardt,^{5,6} Lucas Wiessing,⁷ Marica Ferri,⁷ Roberto Pastor-Barriuso^{1,2}

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All cause mortality post-overdose was
4.7 deaths/100 PY

Exposure to buprenorphine or methadone associated with ~50% decrease in mortality

Mortality Associated With
Buprenorphine Treatment in Primary
General Practice: A 7-Year Cohort

Mortality risk during
systematic review

Luis Sordo,^{1,2,3} Gregorio Bar
Lucas Wiessing,⁷ Marica Fer

ent

Medications for Opioid Use Disorder

Reduction in injection frequency

Reduction in syringe sharing

Reduction in overdose and death

Reduction in HIV infection – 54% reduction

Improvement in HCV cure rates

Improvement in HIV viral suppression

Improvement in quality of life

MacArthur, BMJ 2012
Gowing, Cochrane Database 2011
Metzger, JAIDS 2016
Norton, JSAT 2017

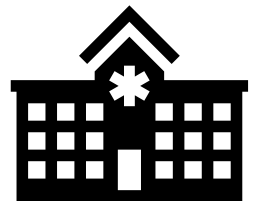
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Syringe Services Programs and HIV prevention

- Syringes
- Overdose prevention
- Low barrier treatment for skin infections
- Frequent screening of HIV and hepatitis C
- Linkage to substance use disorder treatment
- Gateway to the healthcare system



Florida Bill 242 – Infectious Disease Elimination Act, 2016



- Effective 07/01/2016
- UM pilot syringe access program
- Possession, distribution, or exchange of needles and syringes under the pilot program is not a violation of Florida law.

Launched World AIDS Day 2016



**YOU DON'T
HAVE TO
SHARE**

Our goal is to provide people with the tools to safely inject and protect themselves from HIV and hepatitis C infection.

ANONYMOUS SERVICES INCLUDE:

- Syringe exchanges
- Free HIV and hepatitis C testing
- Basic wound care
- Drug treatment referrals
- Overdose prevention and naloxone distribution
- Referrals for HIV and hepatitis C care
- Free condoms

Visit any time. No appointment required.

1636 NW 7th Avenue
Monday, Wednesday, and Friday | 10 a.m.-4 p.m.
Tuesday and Thursday | 12 noon-6 p.m.
Saturday | 8-11 a.m.

For more information, call 786-606-9047
or visit IdeaExchangeMiami.com.

IDEAEXCHANGE

UHealth
UNIVERSITY OF MIAMI HEALTH SYSTEM

Mobile Unit Services, 2017



	Totals
Participants enrolled	1489
Hispanic	39%
White non-Hispanic	49%
Black non-Hispanic	9%
Multiracial	2%
Native American	1%
Mean Age	37
Male	72%
Female	27%
Transgender	1%



Slides courtesy Hansel Tookes

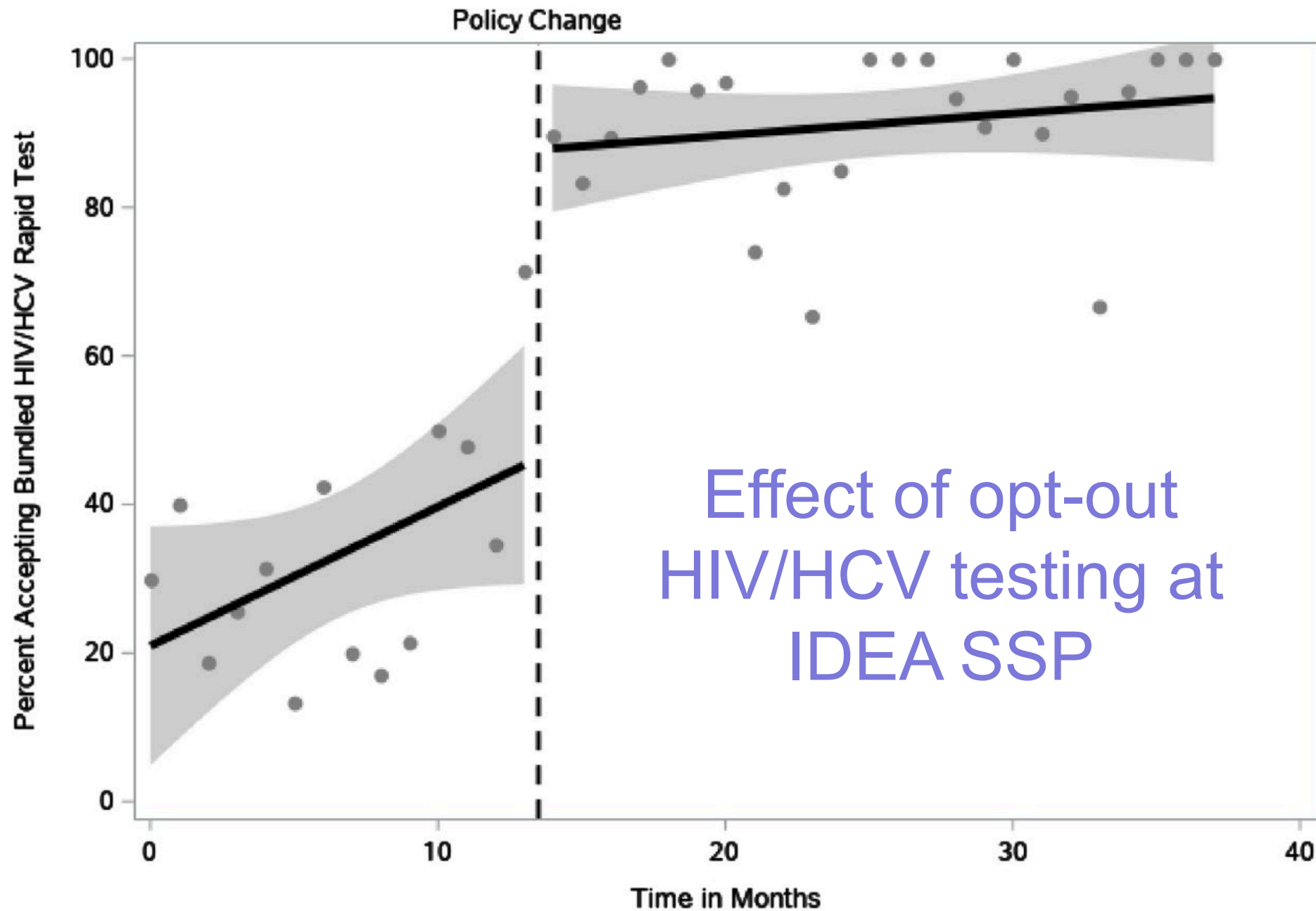
Number of exchanges	16,544
Needles in	596,176
Needles out	588,978



Overdose Prevention



Naloxone distributed	3668
Naloxone reversals	1944




Effect of opt-out
HIV/HCV testing at
IDEA SSP

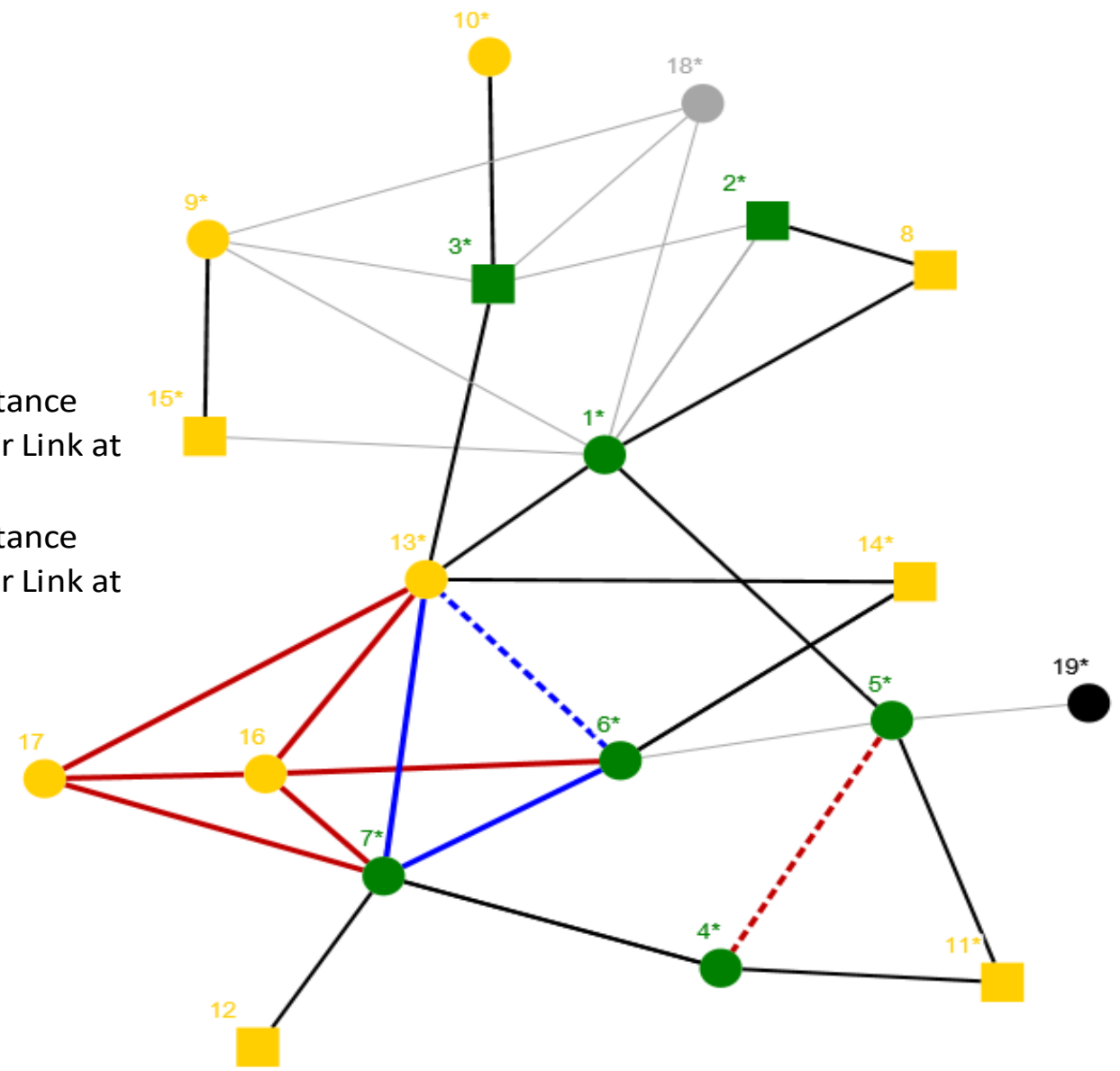
ORIGINAL PAPER



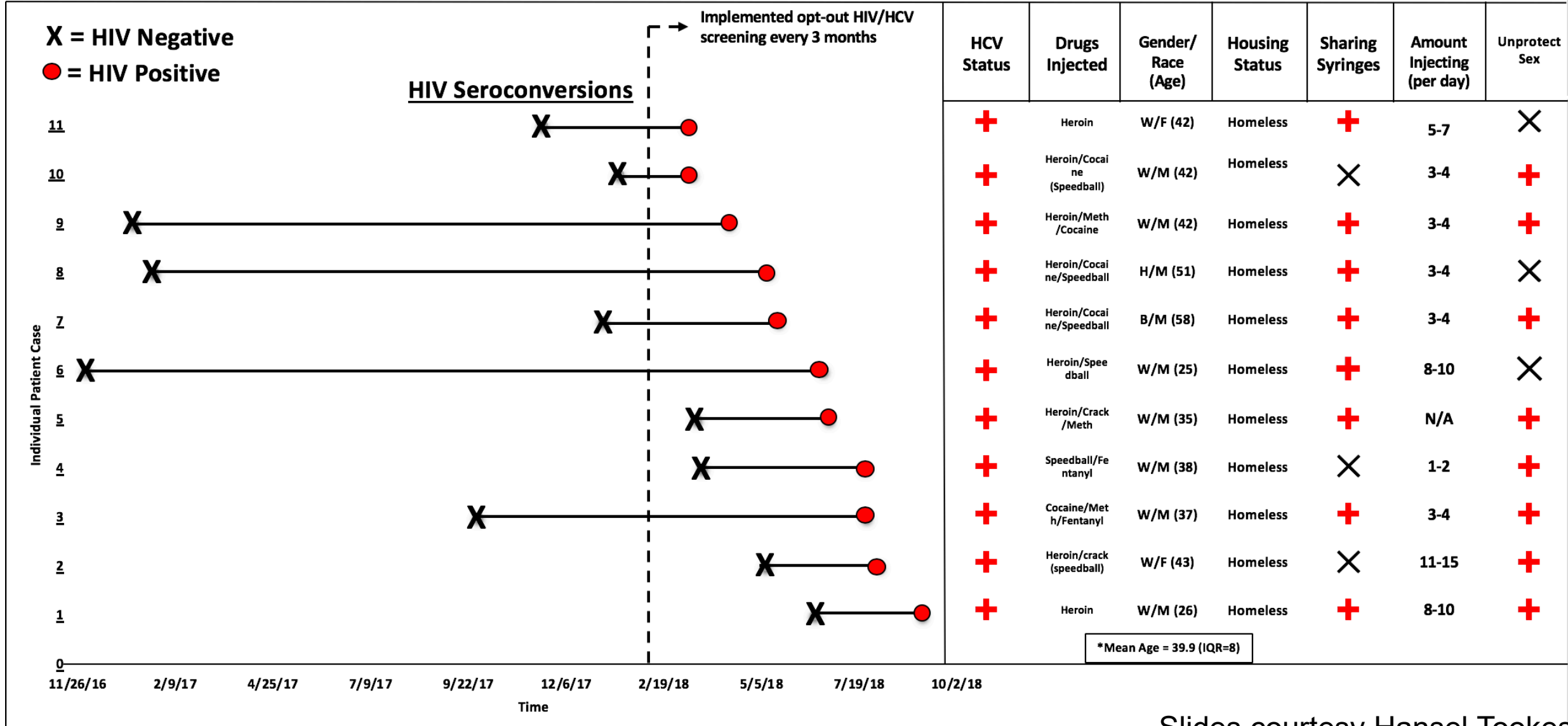
Rapid Identification and Investigation of an HIV Risk Network Among People Who Inject Drugs –Miami, FL, 2018

Hansel Tookes¹  · Tyler S. Bartholomew¹ · Shana Geary² · James Matthias^{3,2} · Karalee Poschman^{4,2} · Carina Blackmore² · Celeste Philip² · Edward Suarez¹ · David W. Forrest¹ · Allan E. Rodriguez¹ · Michael A. Kolber¹ · Felicia Knaul¹ · Leah Colucci¹ · Emma Spencer²

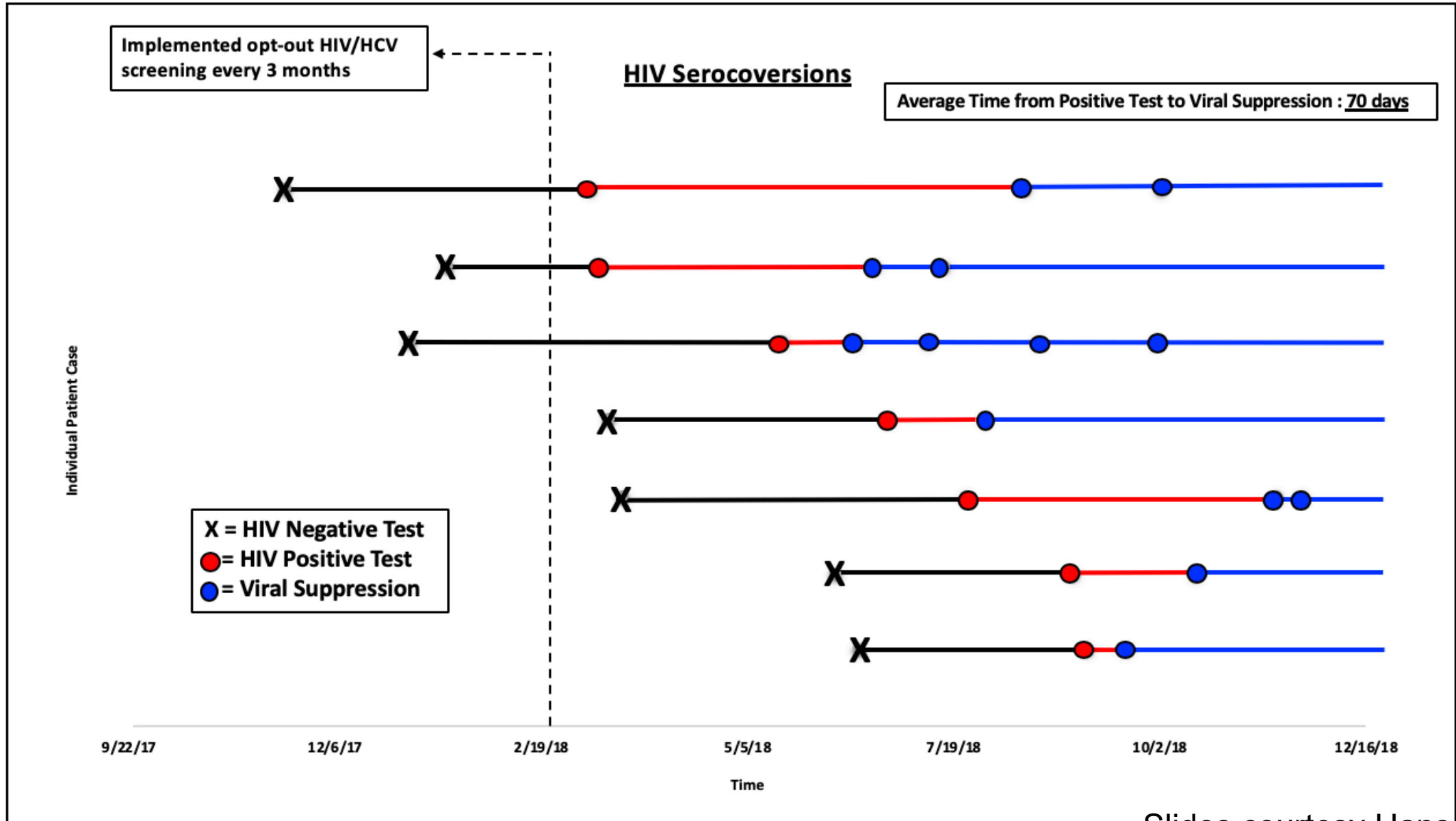
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- Previous Positive HIV Status
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- - Epidemiological Link and Molecular Link at 0.5% Genetic Distance
- Molecular Link at 1.5% Genetic Distance
- - Epidemiological Link and Molecular Link at 1.5% Genetic Distance



HIV Seroconversions Identified by IDEEA Exchange



Average time to viral suppression 70 days



Hospital admissions among people who inject opioids following syringe services program implementation

K. J. Bornstein^{1*}, A. E. Coye¹, J. E. St. Onge², H. Li³, A. Muller⁴, T. S. Bartholomew³ and H. E. Tookes²

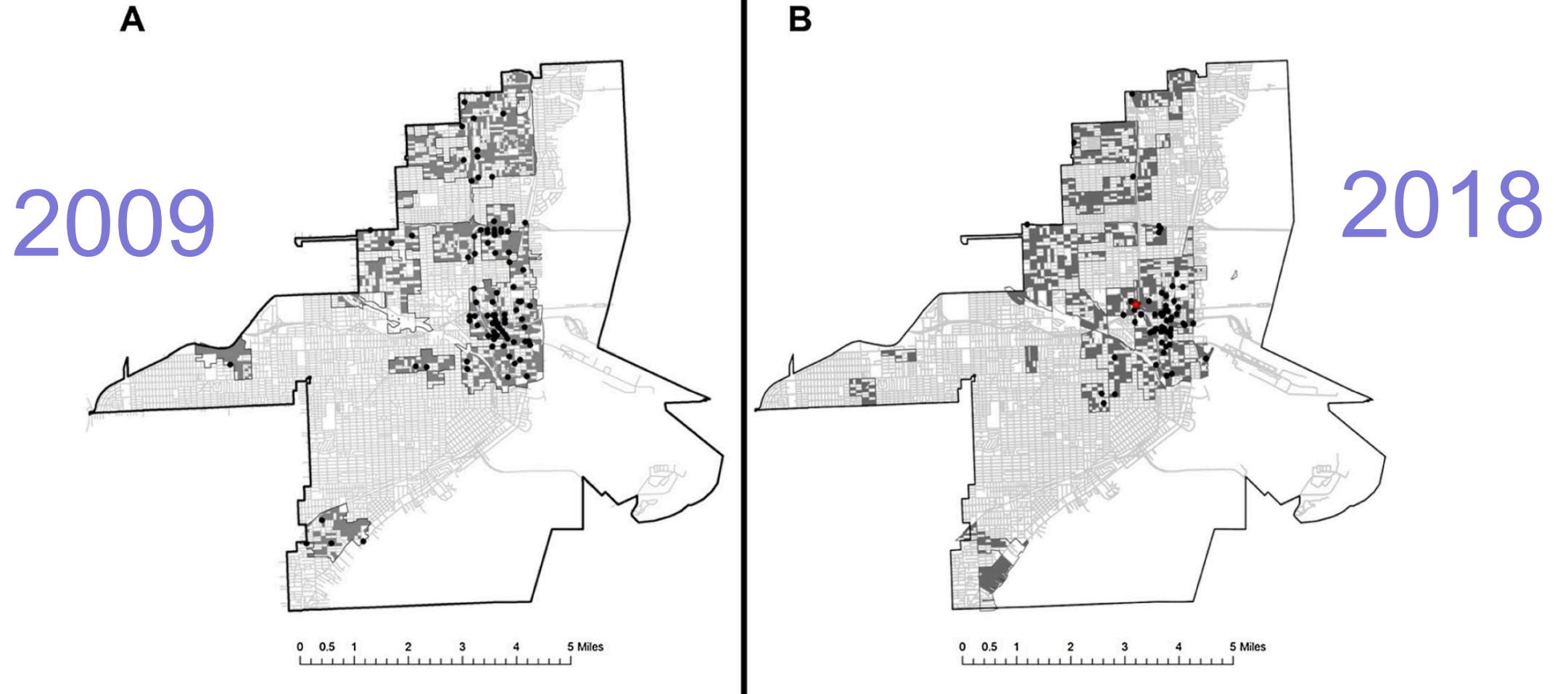
Pre-implementation



Post-implementation



Syringe Disposal Before and After SSP



Syringe Disposal Before and After SSP

Pre-implementation

371

Post-implementation

191

Syringes per 1000 census blocks

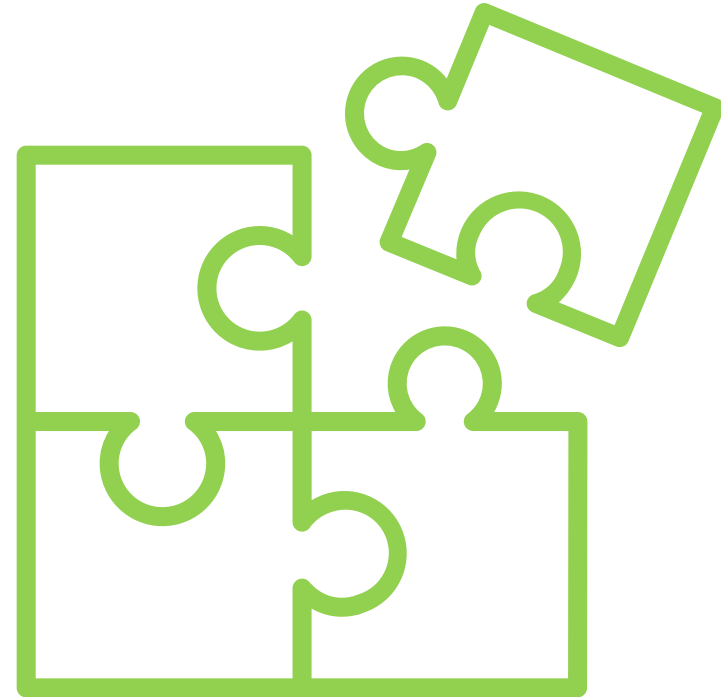
Student-Run Free Clinic at a Syringe Services Program, Miami, Florida, 2017–2019

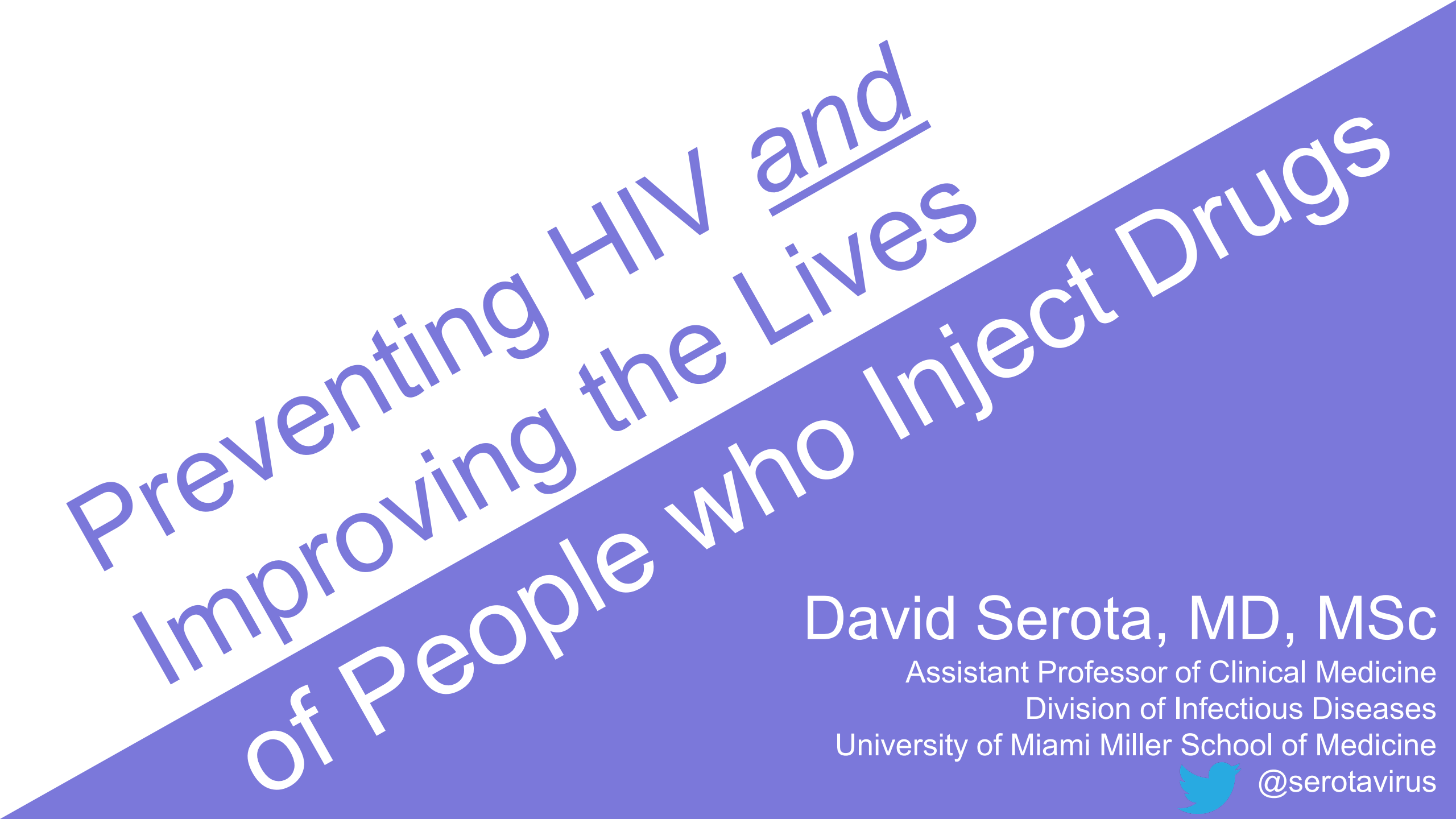
PWID to receive quality medical care while providing medical students early exposure to a vulnerable population with unique medical needs. To our knowledge, the IDEA Clinic is the only SSP-affiliated, medical student-run clinic primarily serving PWID in the United States.



Future directions in HIV prevention among PWID – PrEP is only a piece

- Scale up low barrier medications for OUD
- Increase access to syringe exchange
- Supervised injection facilities
- Long-acting PrEP
- Rapid and cheap PCR testing





Preventing HIV and
Improving the Lives
of People who Inject Drugs

David Serota, MD, MSc

Assistant Professor of Clinical Medicine

Division of Infectious Diseases

University of Miami Miller School of Medicine



@serotavirus