

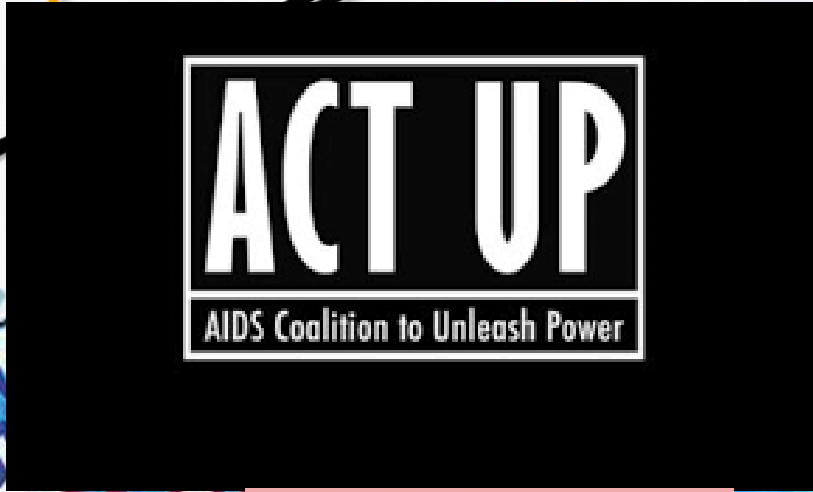
**Looking Beyond Bugs to Consider Drugs:**  
**Drug User Health and**  
**HIV/HCV Prevention and Treatment**

Brianna Norton, DO, MPH  
Clinical Professor of Medicine  
Albert Einstein College of Medicine, New York, NY



This activity is jointly provided by Physicians' Research Network and the Medical Society of the State of New York.

# I am an ID/HIV doc



**Twinrix**  
Combined hepatitis A and hepatitis B vaccine



# Why not this?



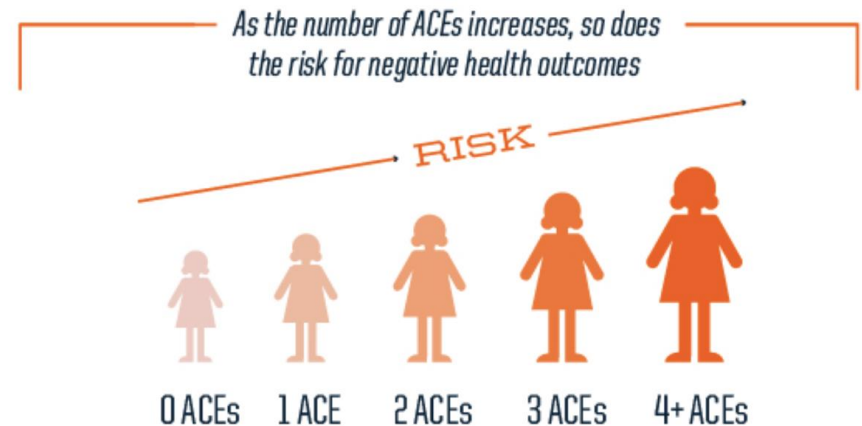
# Stigma: Drug Users are Bad

## Social Determinants of Health



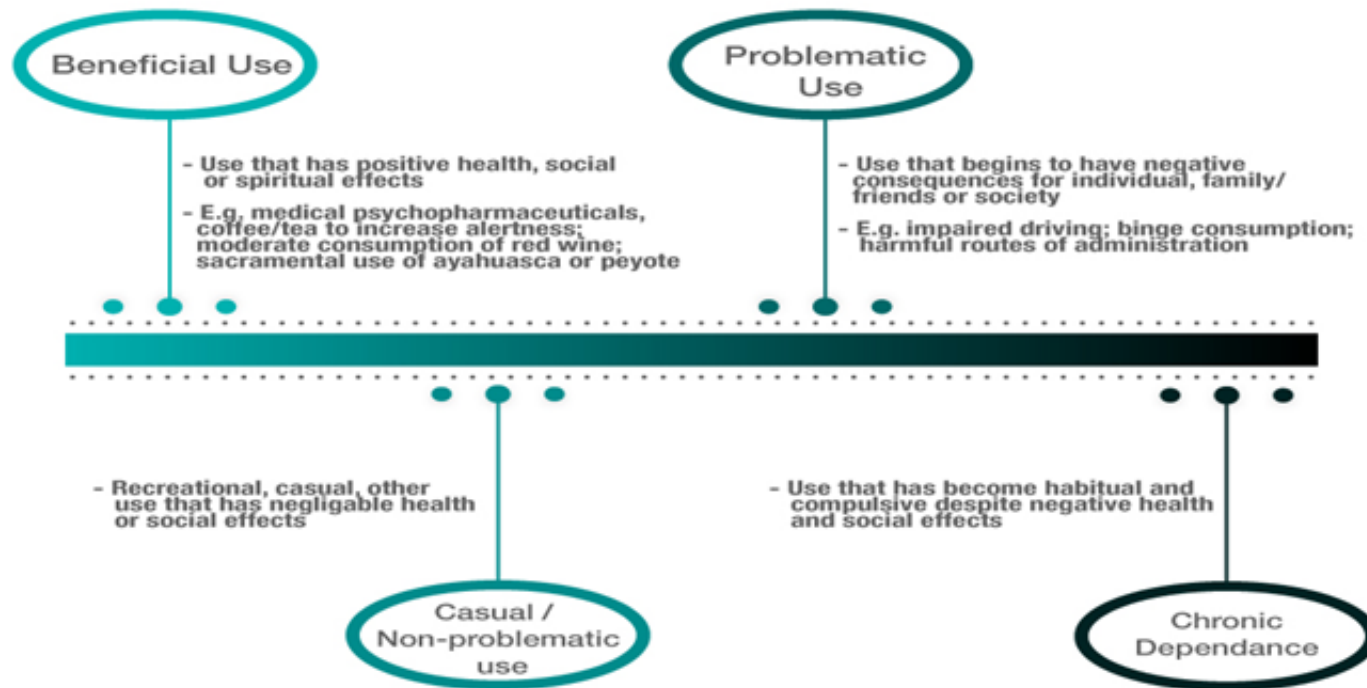
## Adverse Childhood Events

### WHAT IMPACT DO ACEs HAVE?



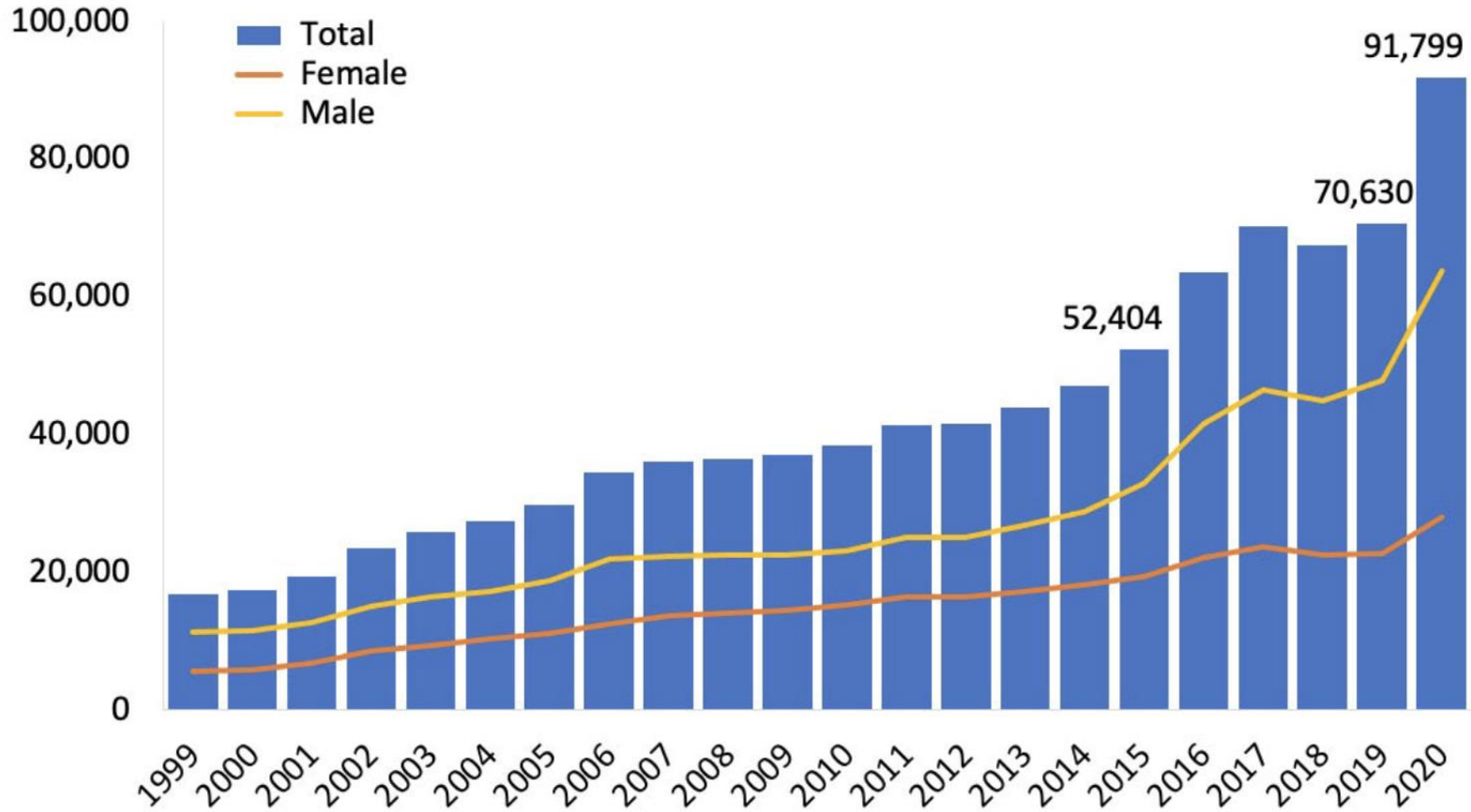
# Stigma: I don't know any drug users

## Spectrum of Substance Use



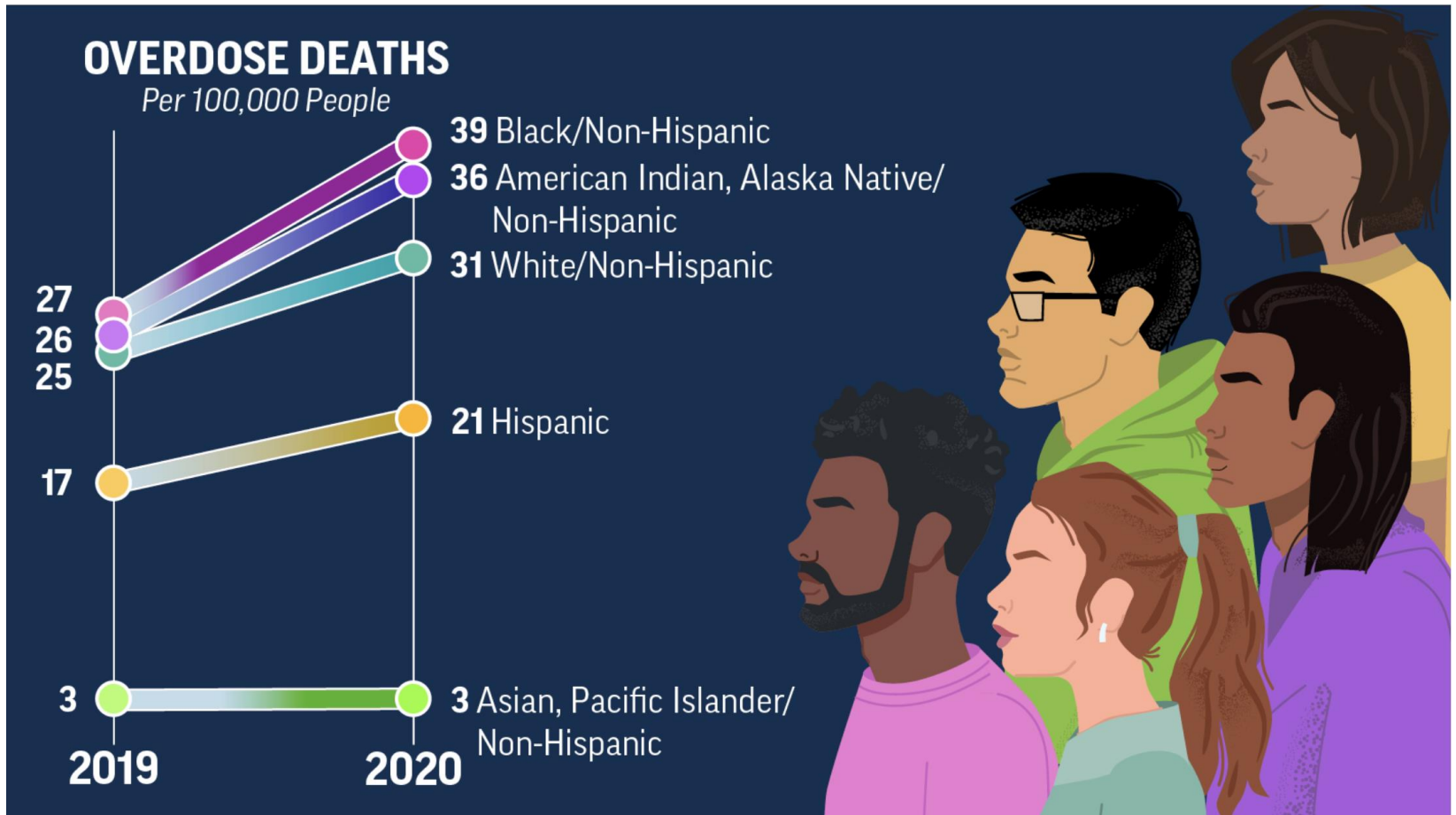
*Adapted from graphic presented in A Public Health Approach to Drug Control in Canada, Health Officers Council of British Columbia (2005).*

# 2021: Over 100,000 Overdose deaths



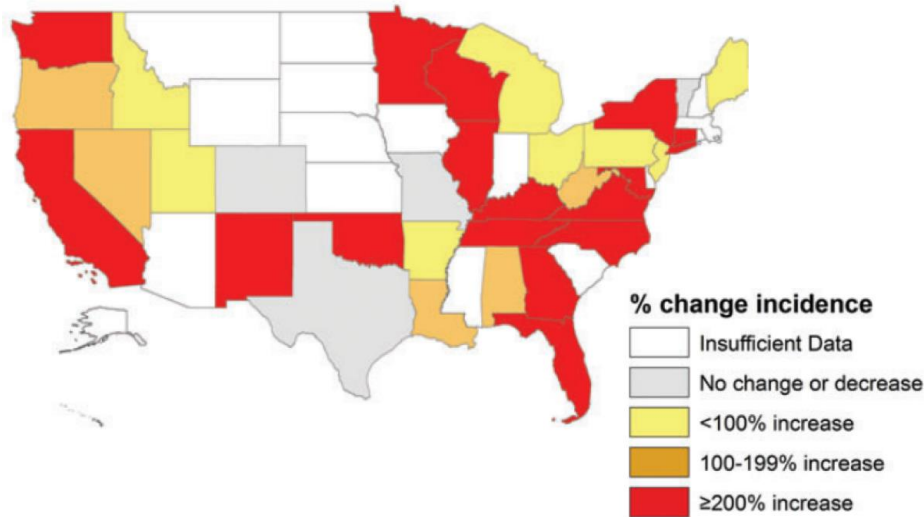


# Overdose Deaths by Ethnicity



# Syndemics of Injection Drug Use and Infectious Diseases

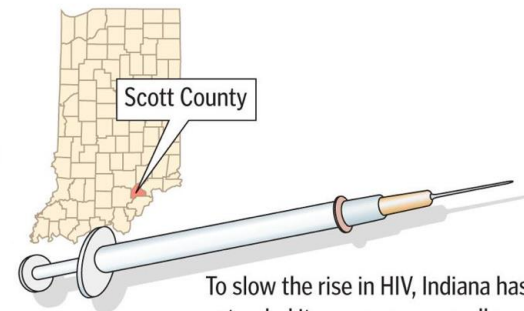
**200% Increase in NEW HCV Cases in NYS from 2000-2017: Majority among PWID**



**HIV Outbreak in Scott County: Population of 4200, all from IDU. 92% coinfecting with HCV**

## 142 cases of HIV linked to illegal drugs

Many cases in Scott County are traced to people injecting Opana, a prescription painkiller similar to heroin and sold in pill form.



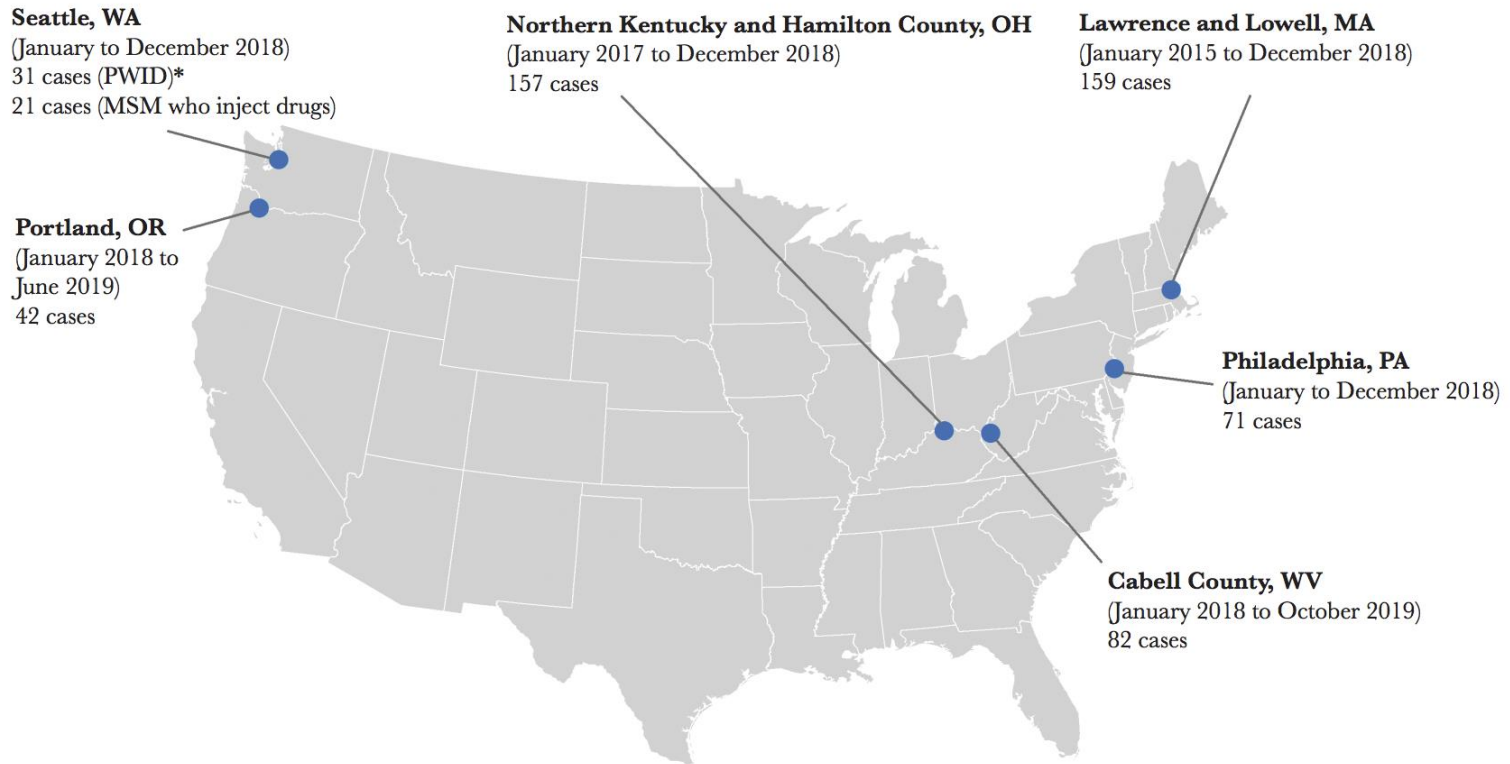
To slow the rise in HIV, Indiana has extended its emergency needle exchange program in the area.

SOURCES: CENTERS FOR DISEASE CONTROL AND PREVENTION, STATE OF INDIANA

BILL THORNBRO | HERALD-TIMES



# HIV Outbreaks among PWID

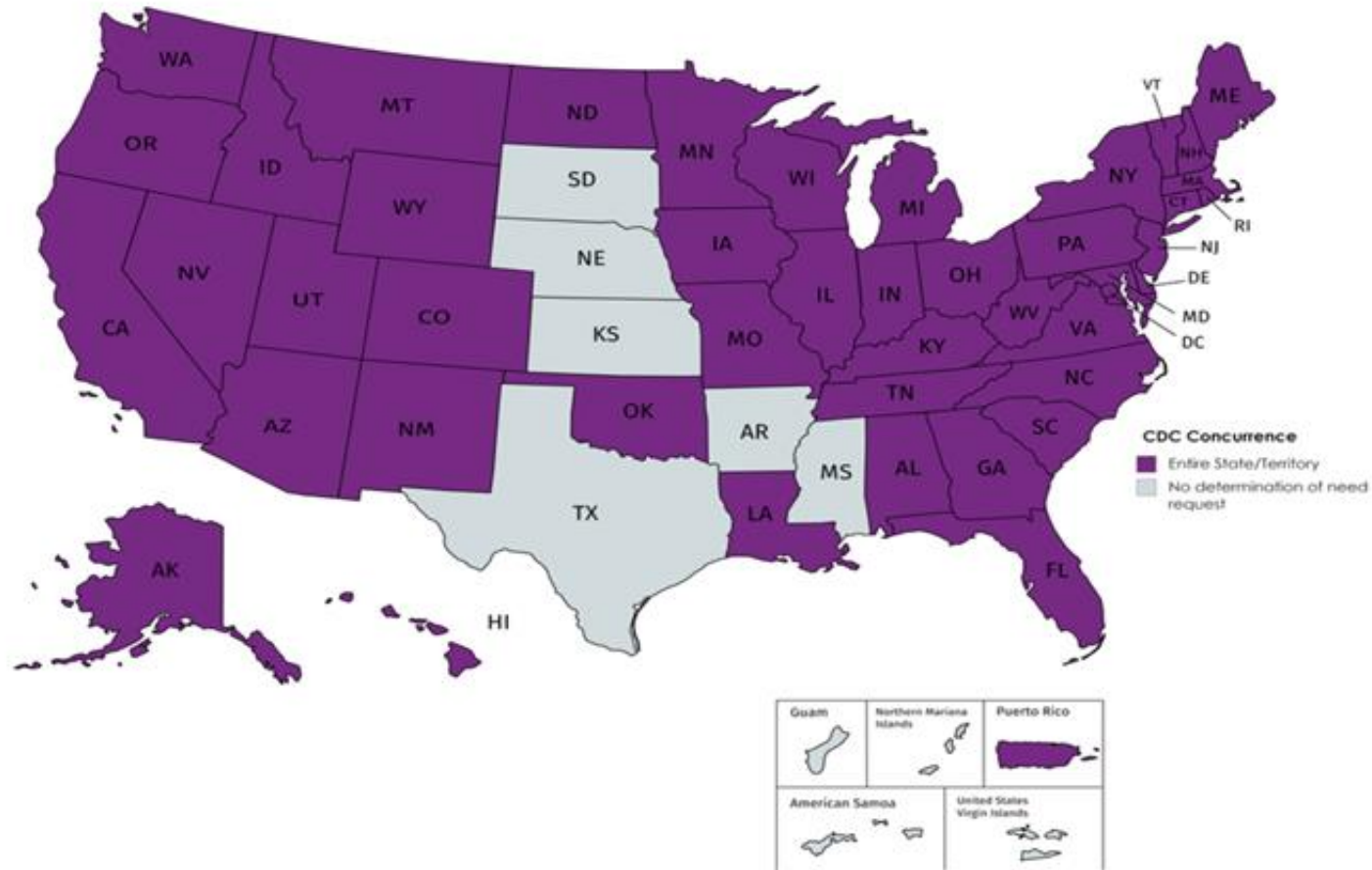


\* Does not include MSM who inject drugs

**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.

# Jurisdictions Determined to be Experiencing or At-risk of Significant Increases in Hepatitis Infection or an HIV Outbreak Due to Injection Drug Use Following CDC Consultation

There are currently 44 states and DC, 1 tribal nation, 1 territory and with a determination of need in place.



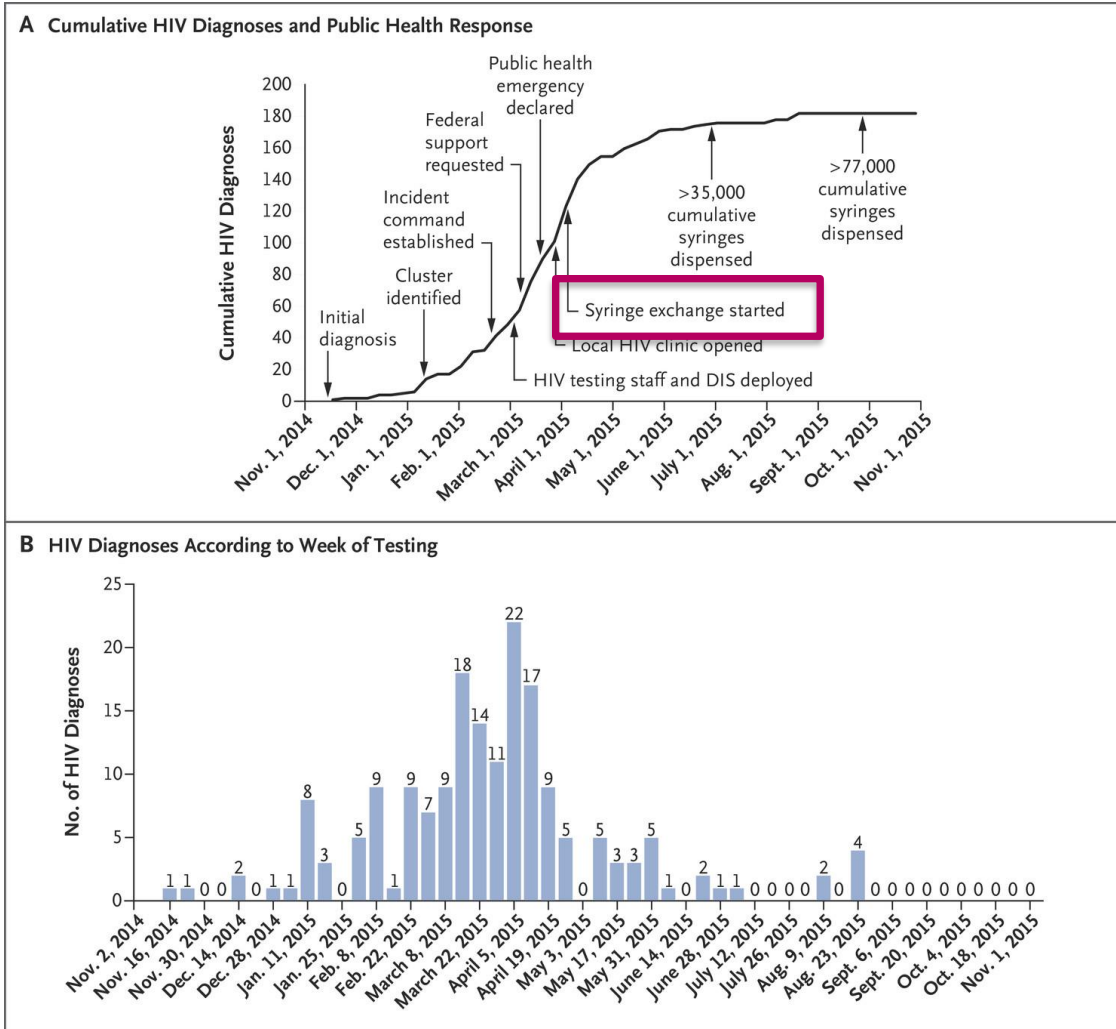
# How do we keep our loved ones, community members, patients alive and healthy

- BEFORE they enter substance use treatment
- While they are in and out of substance use treatment

**THINK HARM REDUCTION!**



# Outbreak of HIV Infection in Southeastern Indiana



# What is Harm Reduction?

**A set of practical strategies and ideas aimed at reducing negative consequences of drug use.**

**A movement for social justice built on a belief in, and respect for, the rights of people who use drugs.**

**Accepts, for better and or worse, that licit and illicit drug use is part of our world and chooses to work to minimize its harmful effects rather than simply ignore or condemn them.**

**Does NOT attempt to minimize or ignore the real and tragic harm and danger associated with licit and illicit drug use**

# Harm reduction principles are universal

- Harm reduction principles are universal and **not specific to drug user health**
- Harm reduction approaches are less commonly applied in the setting of drug user health, compared to its application in other health conditions like **diabetes**, or **hypertension**
- **Stigma** around drug use and addiction, as well as people who use drugs, is an undeniable reason





# What are Syringe Services Programs (SSPs)?

Syringe Services Programs, often called SSPs, are community-based prevention programs. SSPs provide a range of health services, and they provide a lifeline to those struggling with substance abuse. Comprehensive SSPs offer patients vaccinations and testing for diseases, referrals to treatment for substance use disorder and other diseases (such as viral hepatitis and HIV), and sterile injection equipment to prevent the transmission of infectious diseases.

**Scientists, including those at the Centers for Disease Control and Prevention (CDC), have studied SSPs for more than 30 years and found that comprehensive SSPs benefit communities.**



SSPs save lives by lowering the likelihood of deaths from overdoses.



Providing testing, counseling, and sterile injection supplies helps prevent outbreaks of other diseases. For example, SSPs are associated with a **50% decline** in the risk of HIV transmission.



Users of SSPs were **three times more likely** to stop injecting drugs.



Law enforcement benefits from reduced risk of needlesticks, **no increase in crime**, and the ability to save lives by preventing overdoses.



When two similar cities were compared, the one with an SSP had **86% fewer syringes** in places like parks and sidewalks.



U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention

CS000196-D March 22, 2019

Montefiore  
THE UNIVERSITY HOSPITAL

EINSTEIN  
Albert Einstein College of Medicine  
OF YESHIVA UNIVERSITY

# How to Inject Drugs Safely

- Syringes
- Cooker
- Cotton
- Alcohol pad
- Saline
- Vitamin C
- Tourniquet



# Overdose Prevention Centers





# What are Overdose Prevention Centers (OPCs)?

- **Terminology:** supervised injection facilities, supervised consumption facilities, or harm reduction centers
- Clinics where people who use drugs can consume *pre-obtained* controlled substances under the supervision of trained staff
- **~200 OPCs operating in 14 countries since 1990s**
- Clients can access medical care and other support services, including referrals to treatment programs



Review

Supervised injection services: What has been demonstrated?  
A systematic literature review<sup>☆</sup>



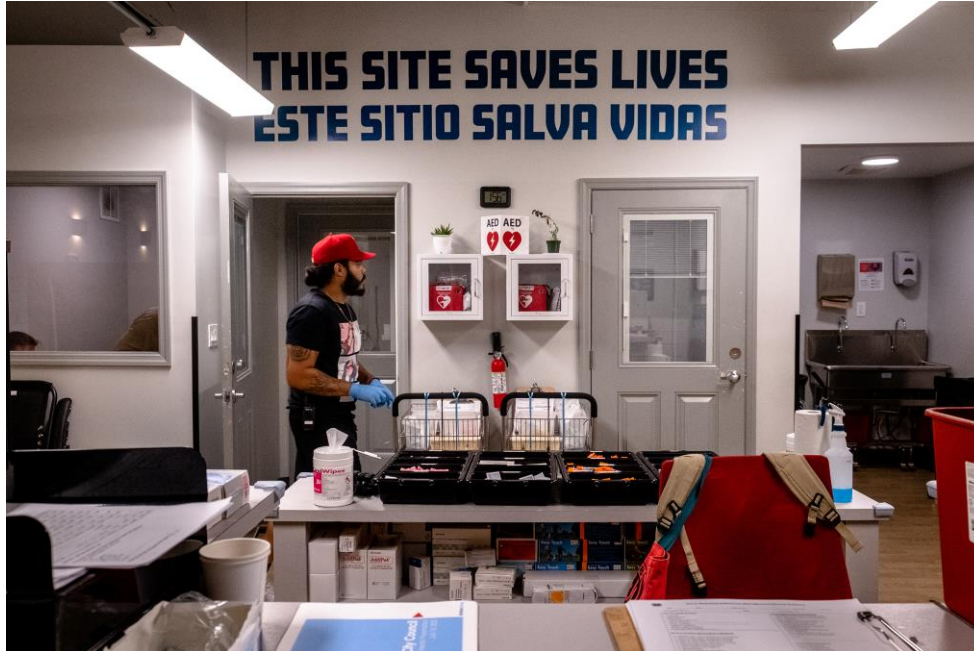
- All studies converged to find that OPCs
  - Enhance access to health care
  - Reduced the overdose frequency and overdose mortality
  - Reduced levels of public drug injections and dropped/left syringes
- OPCs were NOT found to
  - Increase drug injecting
  - Increase drug trafficking/selling or crime in the surrounding environments.

*“Studies from other countries have shown that [overdose prevention centers] reduce the number of overdose deaths, reduce transmission rates of infectious disease, and increase the number of individuals initiating treatment for substance use disorders without increasing drug trafficking or crime in the areas where the facilities are located.” –*

*American Medical Association*

# NYC SSP Becomes First Sanctioned Overdose Prevention Site in the US

- 2 OPCs now in NYC (East Harlem and Washington Heights Corner Project)
- Montefiore delivers care to East Harlem



The New York Times

## *Nation's First Supervised Drug- Injection Sites Open in New York*

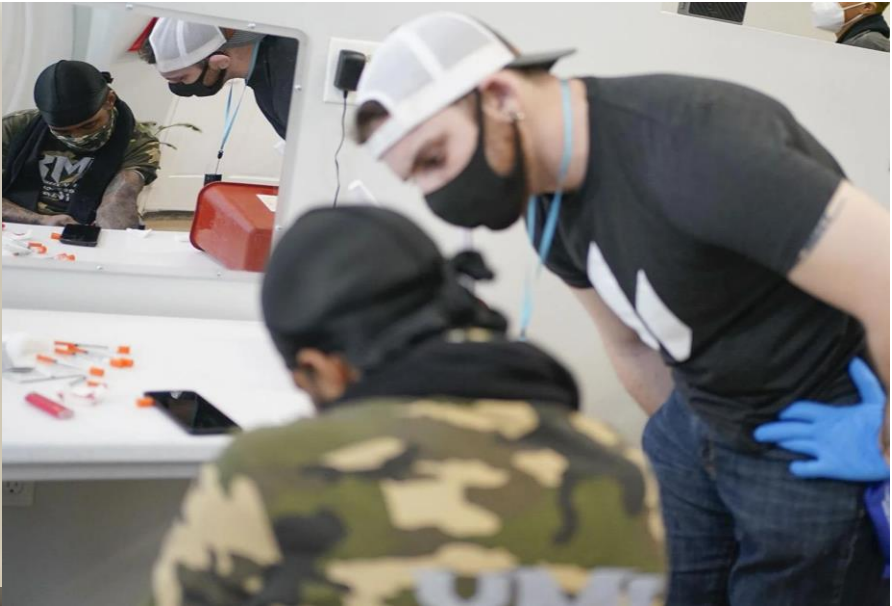
During the first official day in operation at the two Manhattan facilities, trained staff reversed two overdoses, officials said.

**Montefiore**  
THE UNIVERSITY HOSPITAL

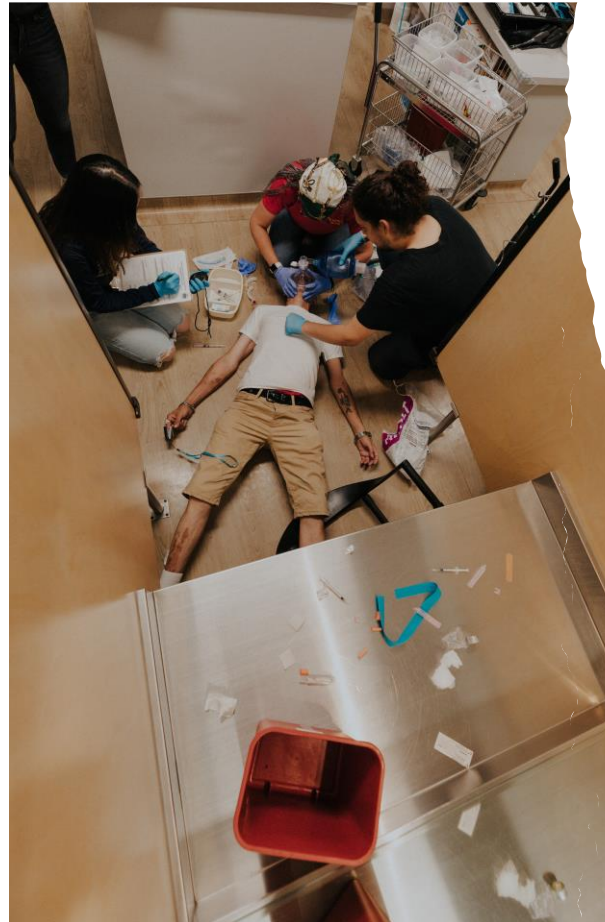
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OF YESHIVA UNIVERSITY



# First Sanctioned OPC Data



# Interventions Performed



Overdose  
Interventions 626

Ambulance Calls  
8  
Deaths  
0

- **Myth: PWID do not care about their health**

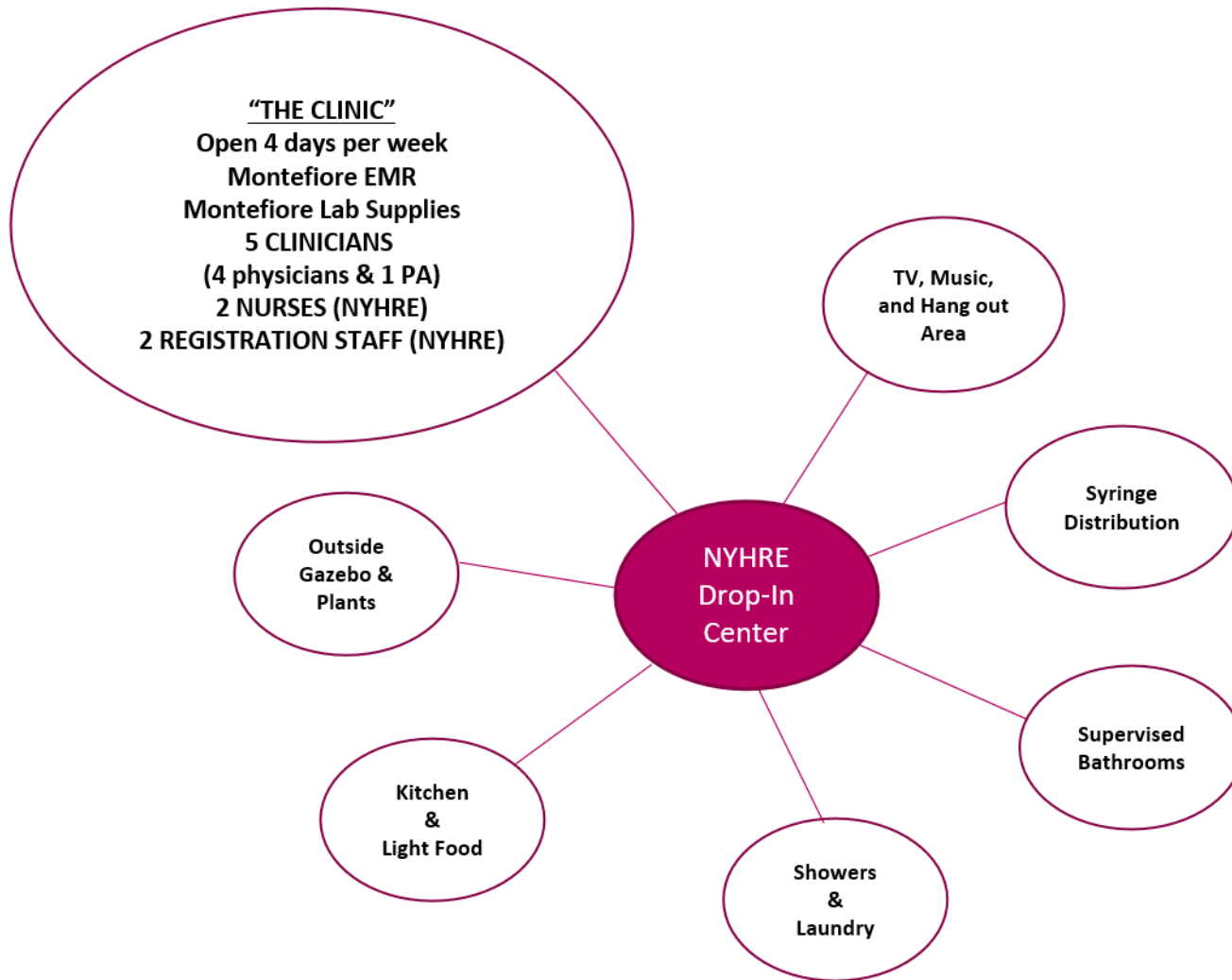


# Harm Reduction Programs Can Increase Access to Care Monteriore/OnPoint Clinic





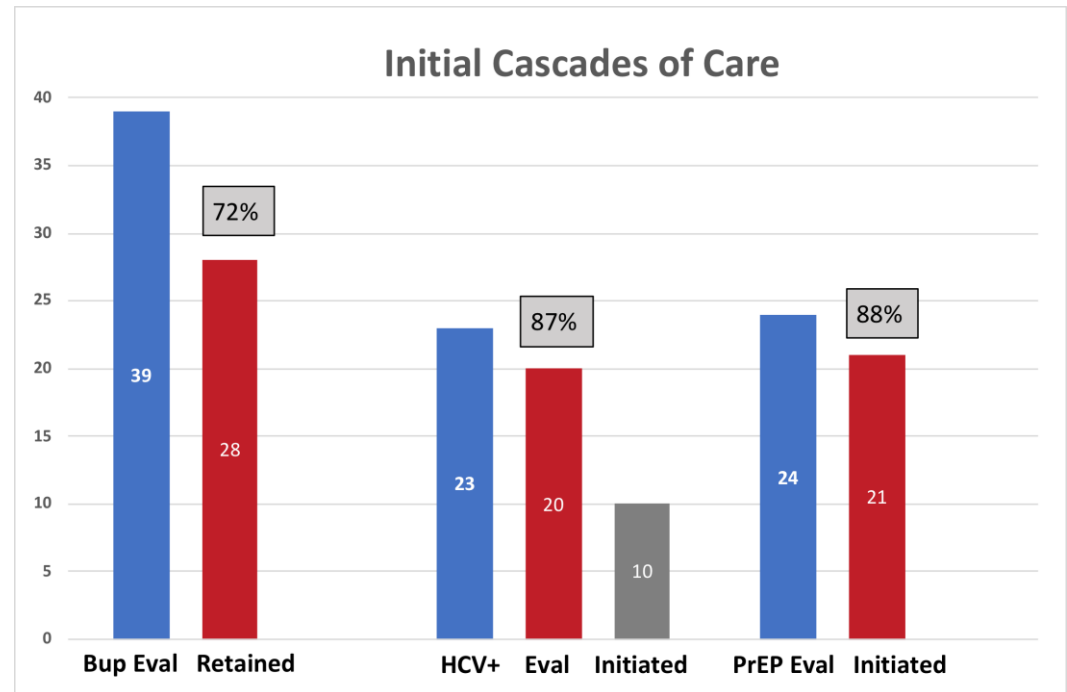
# Our Model: One Spoke in the Wheel



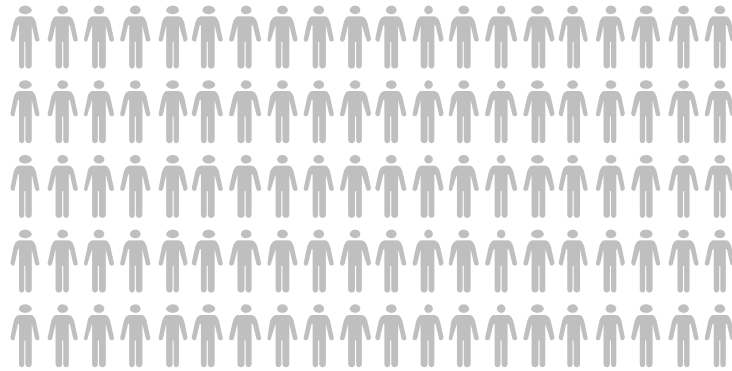
# Patient Characteristics and Reasons for Accessing Care

Patient Characteristics	N (%); n=118
Age, median (IQR)	46 (17)
Race	
Non-Hispanic Black	38 (32.2)
Non-Hispanic White	19 (16.1)
Latinx	52 (44.1)
Other	9 (7.6)
Gender	
Male	55 (46.6)
Female	62 (52.5)
Transgender	1 (0.9)
Substance Use	
Heroin	41 (34.8)
Crack/cocaine	24 (20.3)
Benzodiazepines	10 (8.5)
Cannabis	13 (11)
Reason for patient's first visit*	
Buprenorphine	38 (32.2)
Hepatitis C	29 (24.6)
PREP/PEP	27 (22.8)
HIV	6 (5.1)
STI	7 (5.9)
Other	22 (18.6)

**118** Unique Patients were seen from in first 3 months of opening



# PWID are at the core of the HCV epidemic

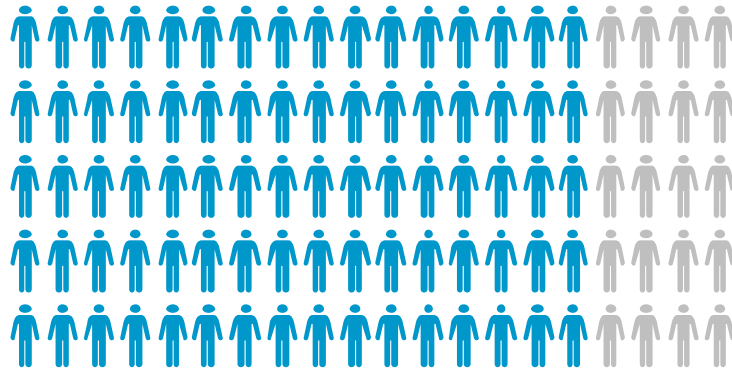


PEOPLE LIVING WITH HCV INFECTION

1) Hajarizadeh B, et al. *Nature Rev Gastroenterol Hepatol* 2013. 2) Grebely J and Dore GJ *Antiviral Research* 2014

# PWID are at the core of the HCV epidemic

**80%** OF NEW INFECTIONS OCCUR AMONG  
CURRENT PWID IN MANY COUNTRIES

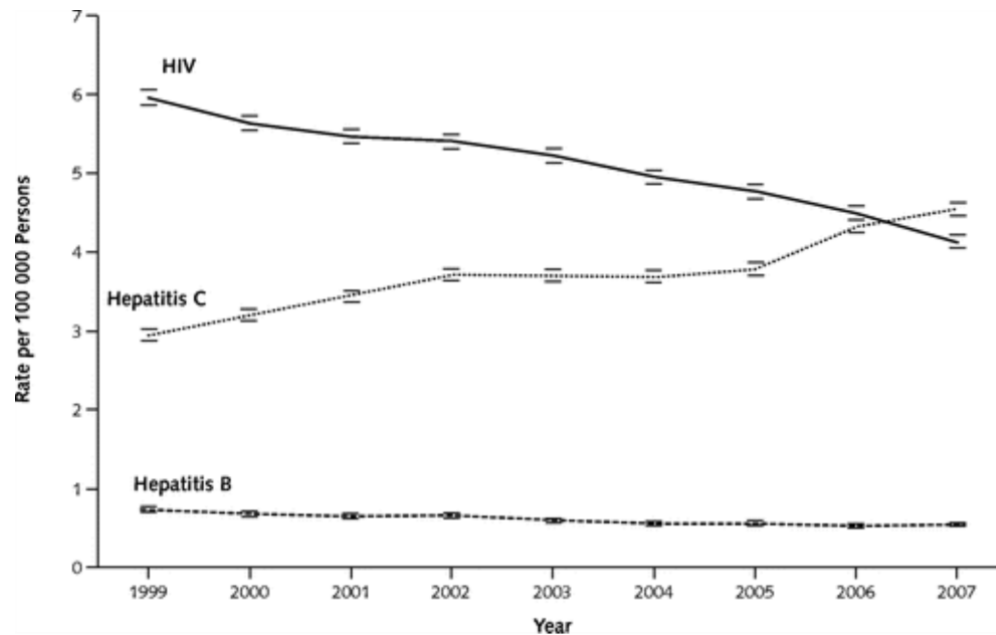


PEOPLE LIVING WITH HCV INFECTION

1) Hajarizadeh B, et al. *Nature Rev Gastroenterol Hepatol* 2013. 2) Grebely J and Dore GJ *Antiviral Research* 2014



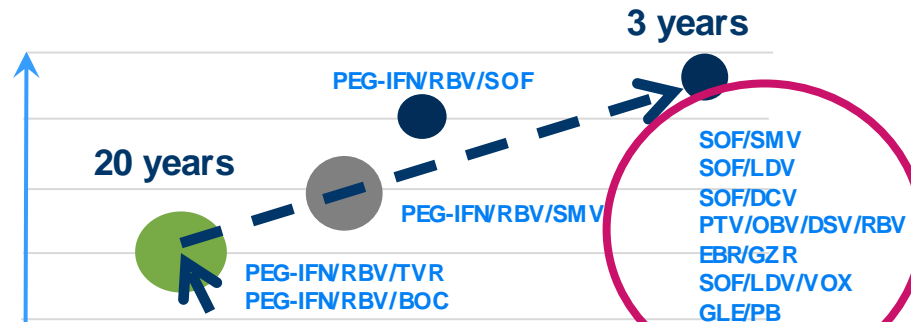
## The Increasing Burden of Mortality From Viral Hepatitis in the United States Between 1999 and 2007



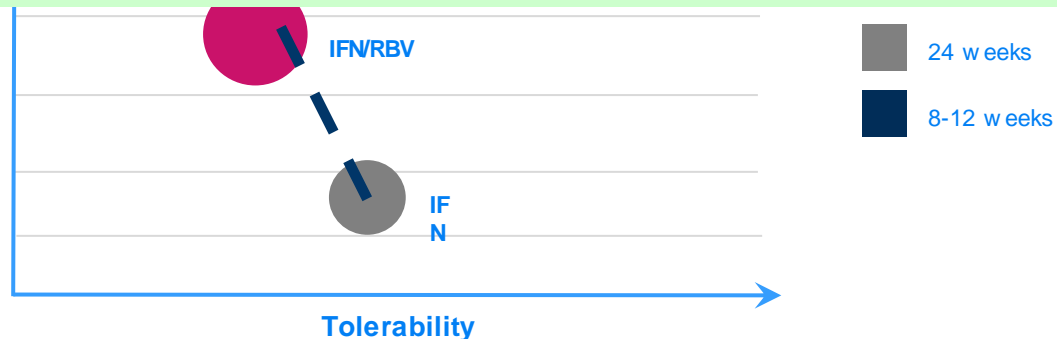
**>17, 000 people died of HCV in the US in 2017**

**More people die of HCV than from the top 60 other infectious diseases including HIV, TB, pneumonia.**

# We have the solution: We have a cure!



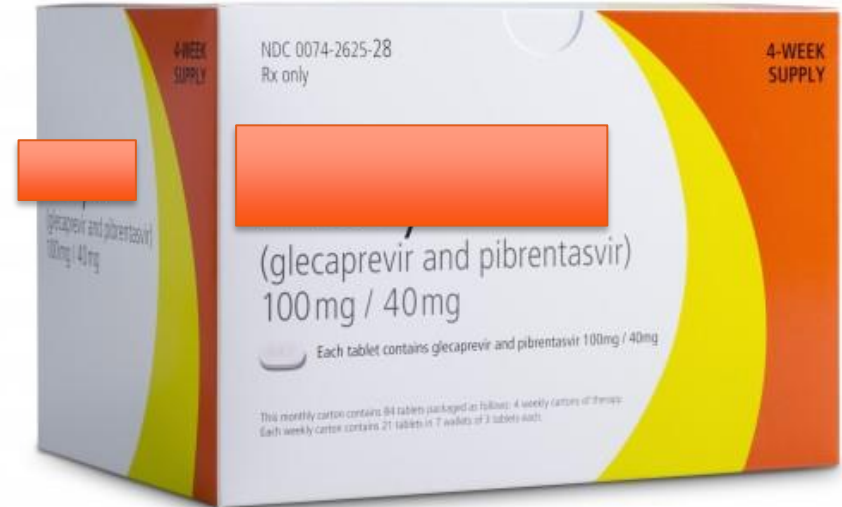
One of the most exciting advances in clinical medicine in decades: DAAs have cure rates >95% in 8-12 weeks, with few side effects



Dore GJ & Feld J. CID 2015 (revised)

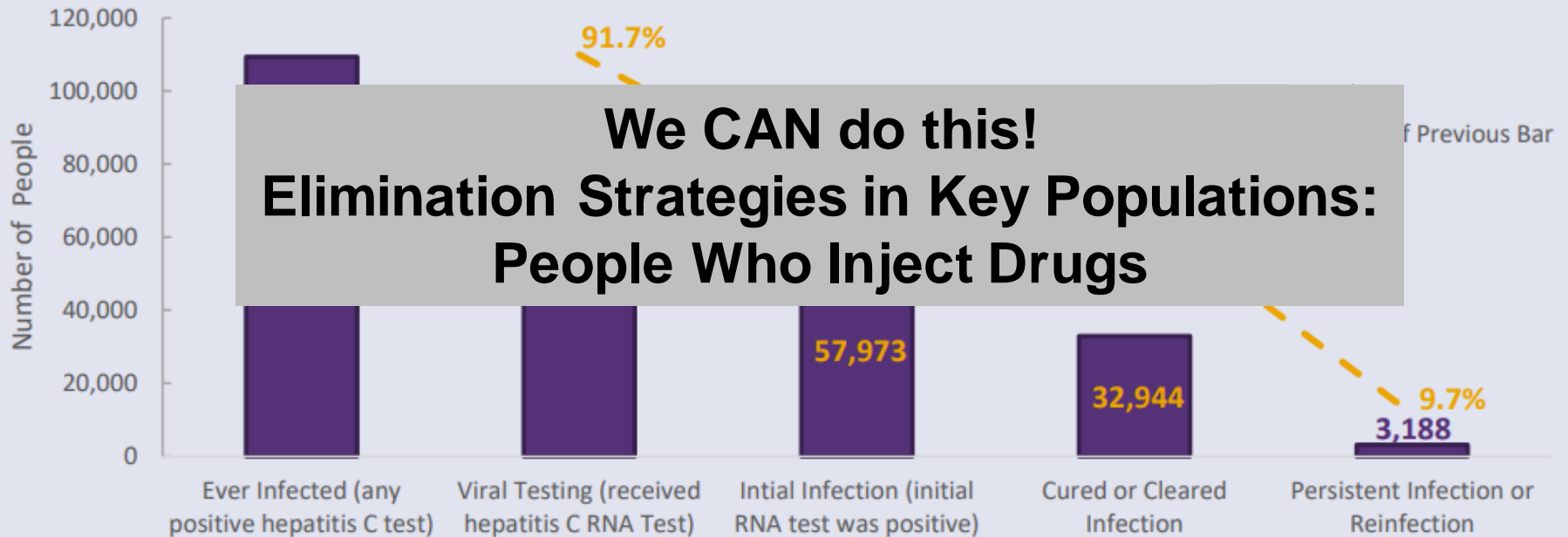
# How are we currently treating HCV in HCV or HIV/HCV coinfection in NYS?

- **Glecaprevir/pibrentasvir**
- **Shortest regimen length**
  - **8 weeks**
- **Used in renal disease**
- **Used with compensated cirrhosis**
- **Cheapest (~20,000)**
- **Approved by NYS Medicaid**



# HCV Care Cascade in NYS

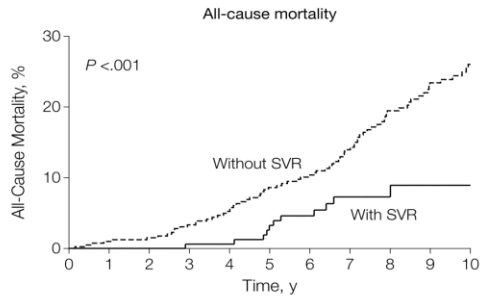
Figure 17.1: Laboratory-Based Hepatitis C Virus Clearance Cascade, NYS (excl. NYC), 2016-2021



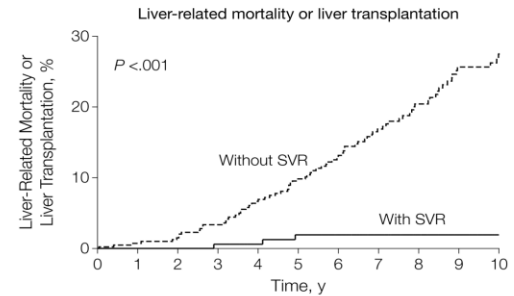


# Why should we treat PWID with DAAs?

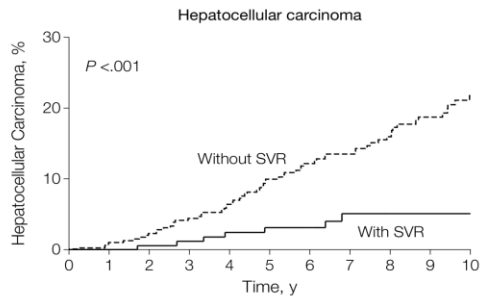
## Individual: Reduction in Mortality



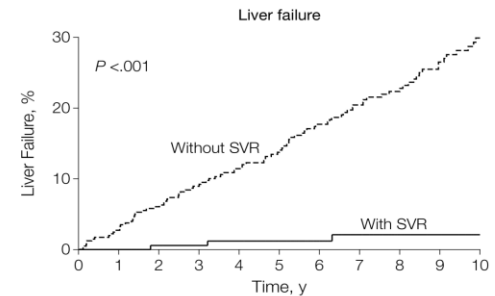
No. at risk	405	393	382	363	344	317	295	250	207	164	135
Without SVR	405	393	382	363	344	317	295	250	207	164	135
With SVR	192	181	168	162	155	144	125	88	56	40	28



No. at risk	405	392	380	358	334	305	277	229	187	146	119
Without SVR	405	392	380	358	334	305	277	229	187	146	119
With SVR	192	181	168	162	155	144	125	88	56	40	28



No. at risk	405	390	375	349	326	294	269	229	191	151	122
Without SVR	405	390	375	349	326	294	269	229	191	151	122
With SVR	192	181	167	161	152	142	124	86	54	39	27

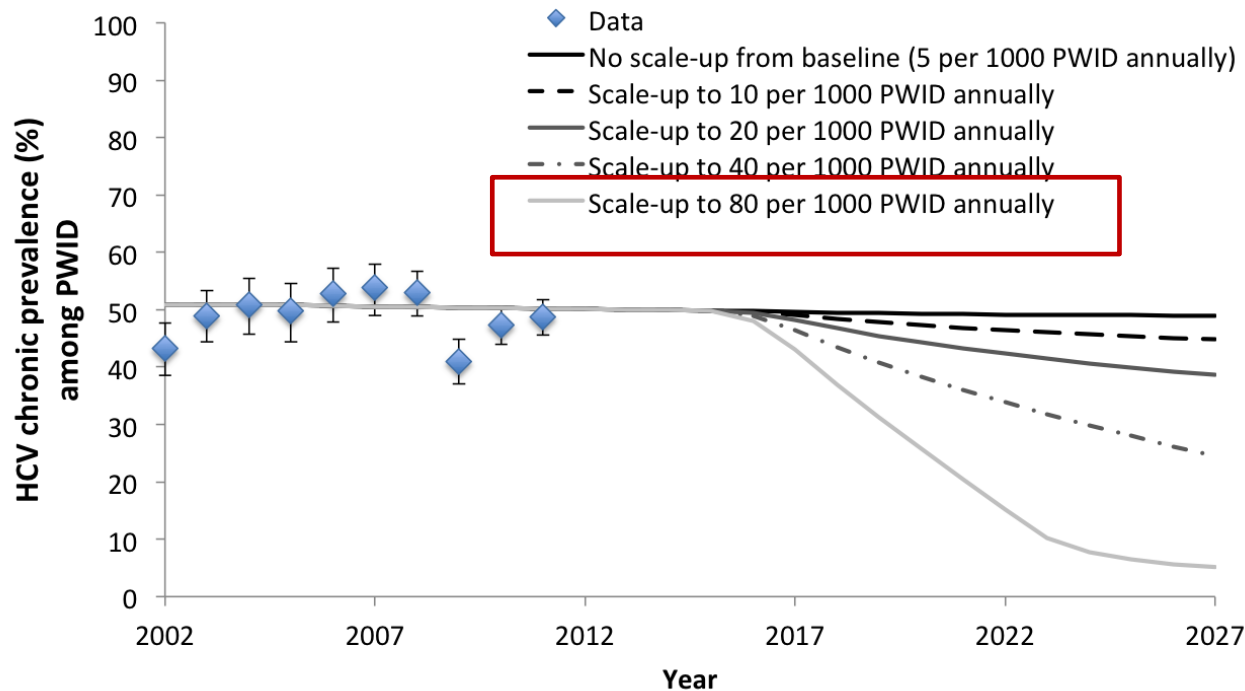


No. at risk	405	384	361	337	314	288	259	216	184	143	113
Without SVR	405	384	361	337	314	288	259	216	184	143	113
With SVR	192	180	166	160	152	141	123	88	56	40	28

van der Meer et al. JAMA, 2012

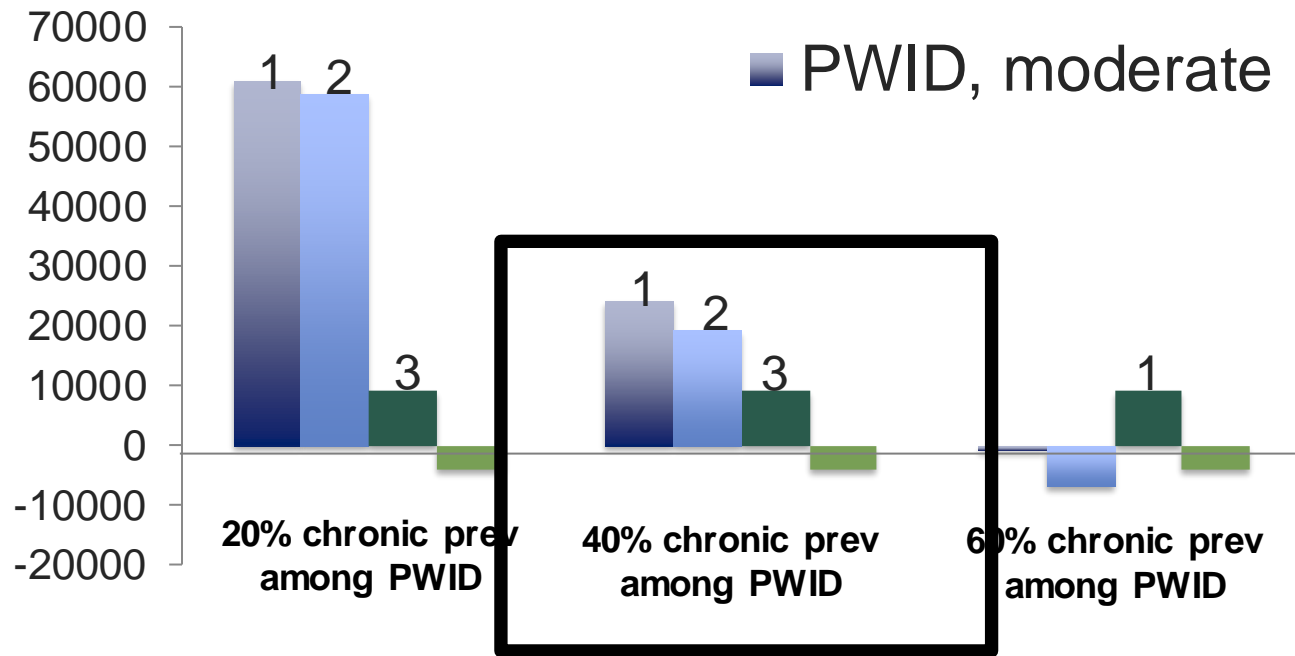
# Why should we treat PWID with DAAs?

## • Public Health: Reduce Transmission



# Why should we treat PWID?

## \$\$\$\$- It's Cost Effective!



# Why should we treat PWID? SOCIAL JUSTICE

- We have an ethical obligation to treat people with life-saving medications, whether or not they use drugs
- Racism left many urban, black and Latinx PWID without any aid/funding devoted to effective interventions to treat substance use disorder for decades
- Stigma surrounding PWID does not give them the same collective bargaining to reduce restrictive policies, or advocate for widespread HCV treatment for PWID

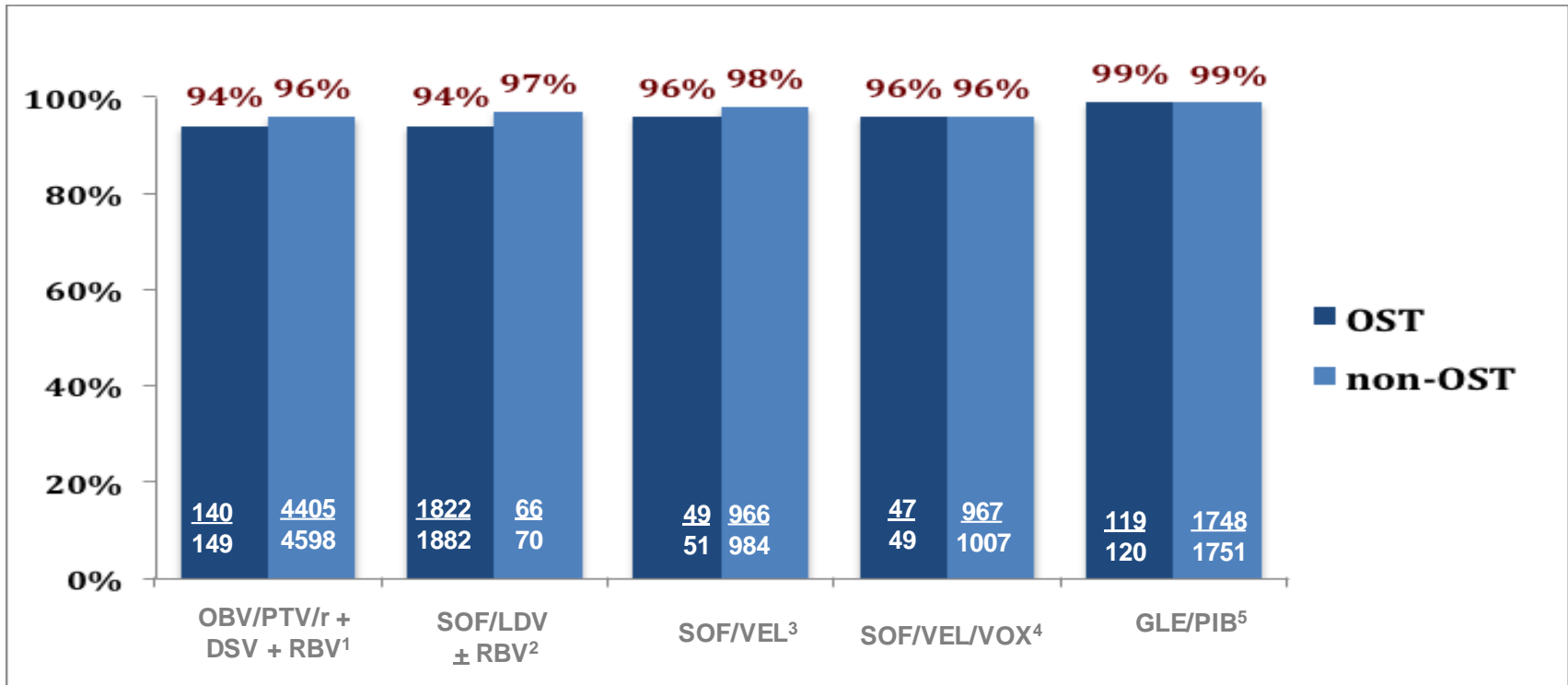
WE MUST THEREFORE BE THE ADVOCATES!

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***What is the evidence to show that  
DAA's are actually effective in  
People Who Inject Drugs?***



# People receiving MOUD :Post-hoc analysis of phase II/III trials

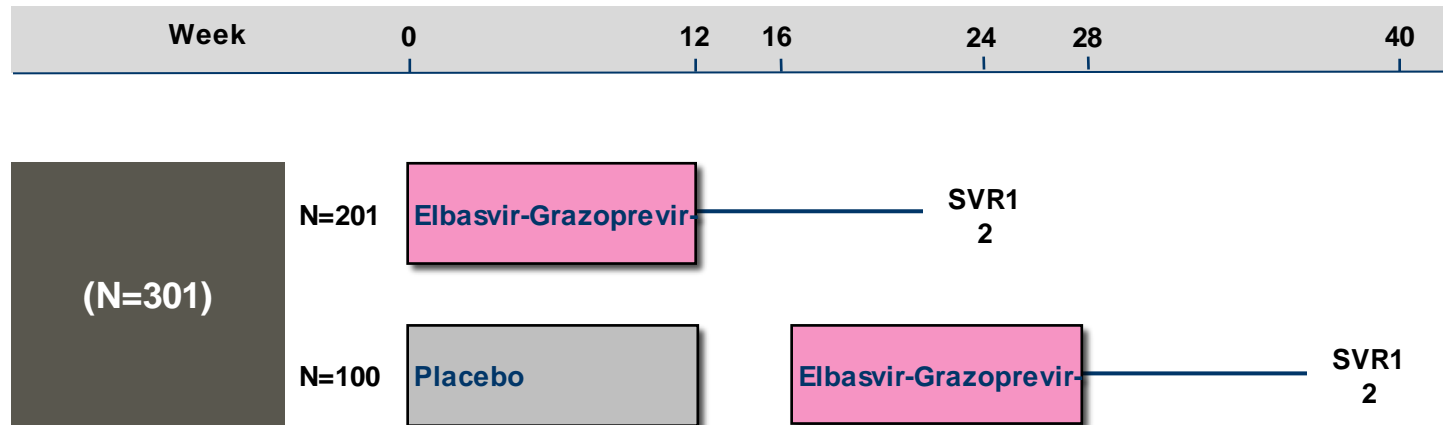


1) Grebely J, ILC 2017, Amsterdam, The Netherlands, April 19-23<sup>rd</sup>, 2017. 2) Grebely CID 2016. 3) Grebely CID 2016.

4) Grebely J, ILC 2017, Amsterdam, The Netherlands, April 19-23<sup>rd</sup>, 2017. 5) Zeuzem, S. Ann Intern Med 2015. 6) Dore, GJ Ann Intern Med 2016. Zeuzem 2016; Puoti, 2017

# C-EDGE CO-STAR

## Elbasvir-Grazoprevir in PWID on Opiate Agonist Therapy



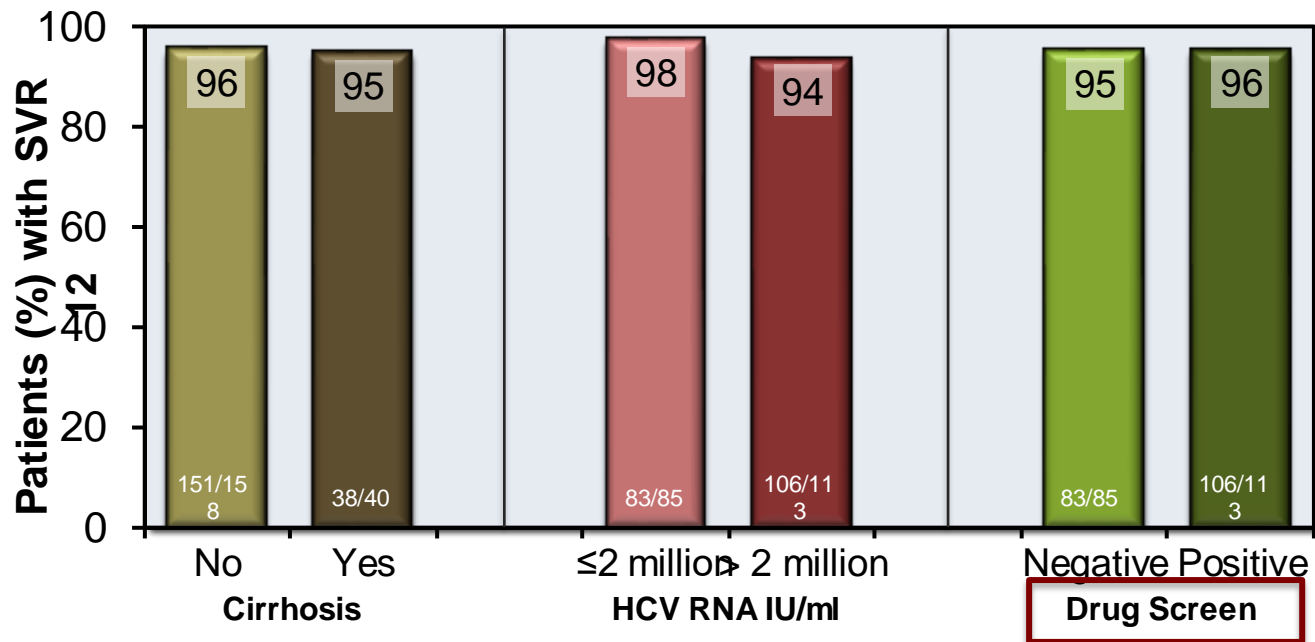
20% with cirrhosis

8% with HIV/HCV Coinfection

60% with positive baseline urine toxicology

# Great Cure Results Despite Drug Use

C-EDGE CO-STAR: SVR12 Results with Modified Full Analysis Set<sup>^</sup>

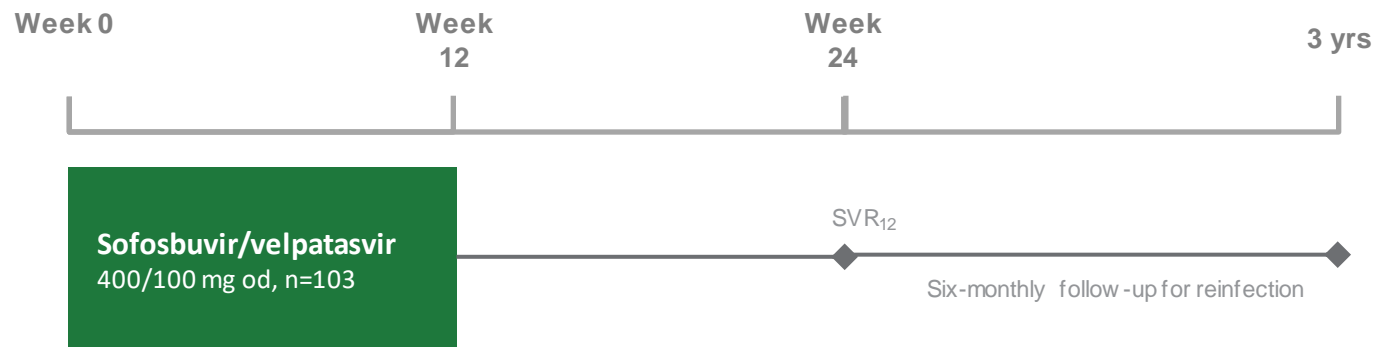


<sup>^</sup>Excludes patients who discontinued trial for non-treatment related reasons

Dore et al. *Ann Intern Med.* 2016 Nov 1;165(9):625-634.

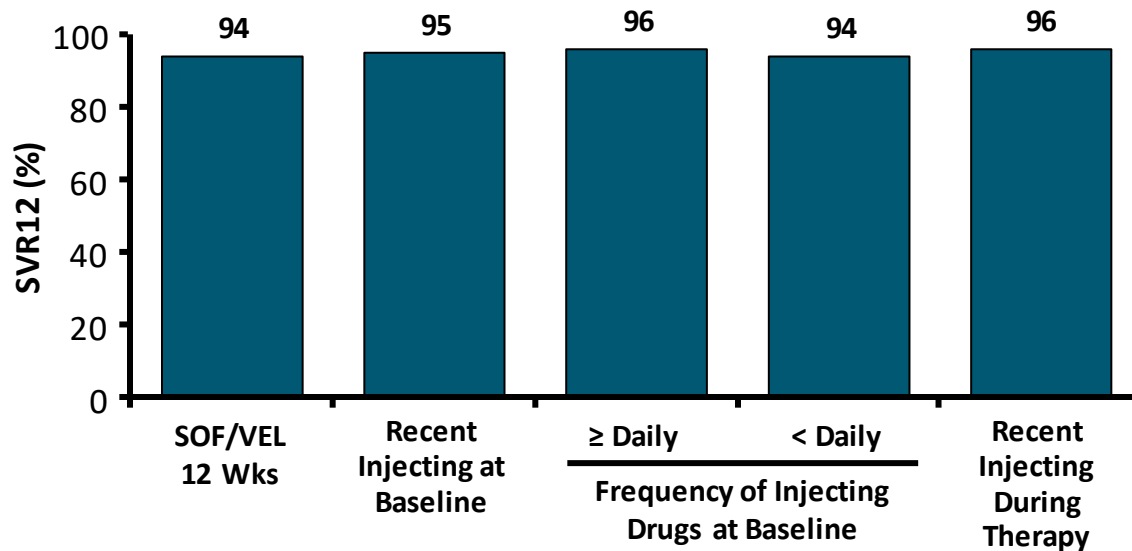
# All Recent PWID – The SIMPLIFY Study

- International open-label trial. N=103
- Electronic blister packs to monitor adherence
- 100% people with recent injecting drug use (past six months)
- 74% Injection use in last 1 month



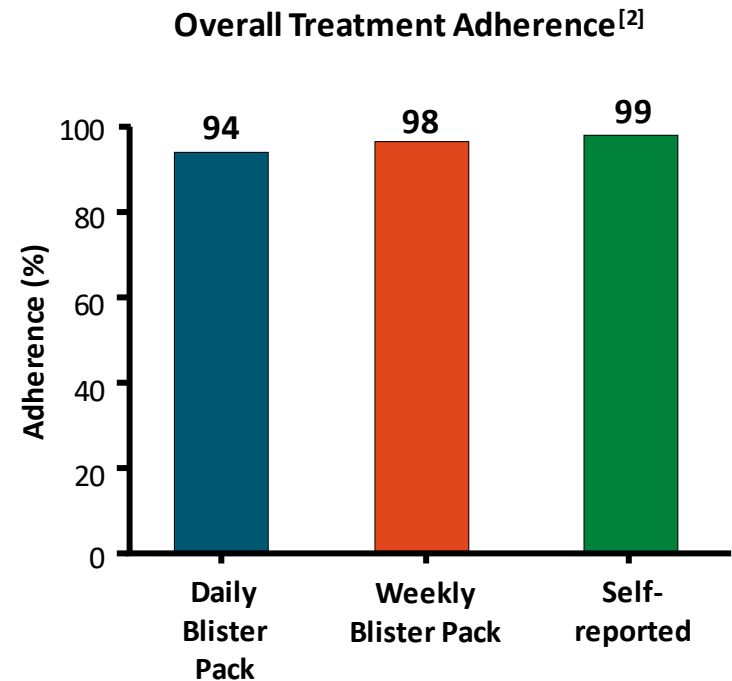
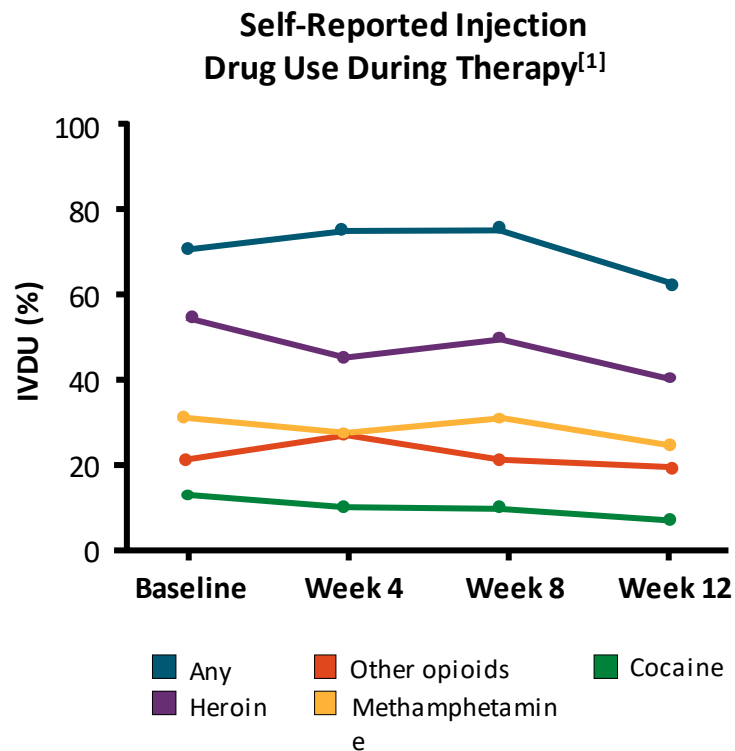
# SIMPLIFY: Efficacy of SOF/VEL in PWID

## SVR12: Overall and By Baseline Drug Use (Intention-to-Treat Analysis)





# SIMPLIFY: Injection Drug Use and Treatment Adherence



1. Gilead Sciences. EPCLUSA US full Prescribing Information. 2. Cunningham. Int J Drug Policy. 2018;62:14.



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**What about in the “real-world”?**  
**Meeting Patients Where They Already Seek Care**

# Intensive Models of Hepatitis C Care for People Who Inject Drugs Receiving Opioid Agonist Therapy

## A Randomized Controlled Trial

Matthew J. Akiyama, MD, MSc; Brianna L. Norton, DO, MPH; Julia H. Arnsten, MD, MPH; Linda Agyemang, MPH; Moonseong Heo, PhD; and Alain H. Litwin, MD, MS, MPH

**Background:** Many people who inject drugs (PWID) are denied treatment for hepatitis C virus (HCV) infection, even if they are receiving opioid agonist therapy (OAT). Research suggests that HCV in PWID may be treated effectively, but optimal models of care for promoting adherence and sustained virologic response (SVR) have not been evaluated in the direct-acting antiviral (DAA) era.

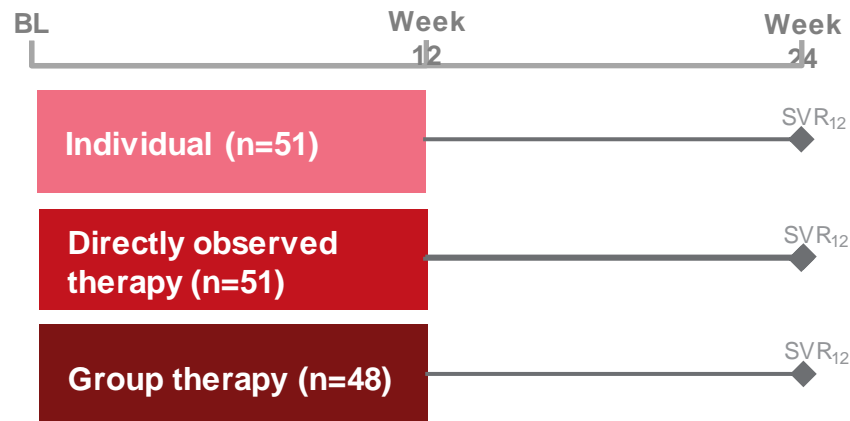
**Objective:** To determine whether directly observed therapy (DOT) and group treatment (GT) are more effective than self-administered individual treatment (SIT) in promoting adherence and achieving SVR among PWID receiving OAT.

**Design:** Three-group, randomized controlled trial conducted from October 2013 to April 2017. (ClinicalTrials.gov: NCT01857245)

treatment, and 75% reported ever injecting drugs. Overall adherence, estimated from mixed-effects models using the daily timeframe, was 78% (95% CI, 75% to 81%) and was greater among participants randomly assigned to DOT (86% [CI, 80% to 92%]) than those assigned to SIT (75% [CI, 70% to 81%]; difference, 11% [CI, 5% to 18%]; Bonferroni-corrected  $P = 0.001$ ). No significant difference in adherence was observed between participants randomly assigned to GT (80% [CI, 74% to 86%]) and those assigned to SIT (difference, 4.7% [CI, -2% to 11%]; Bonferroni-corrected  $P = 0.29$ ). The HCV treatment completion rate was 97%, with no differences among groups ( $P = 0.53$ ). Overall SVR was 94% (CI, 89% to 97%); the SVR rate was 98% in the DOT group, 94% in the GT group, and 90% in the SIT group

# PREVAIL Study : HCV Treatment in Methadone Clinics

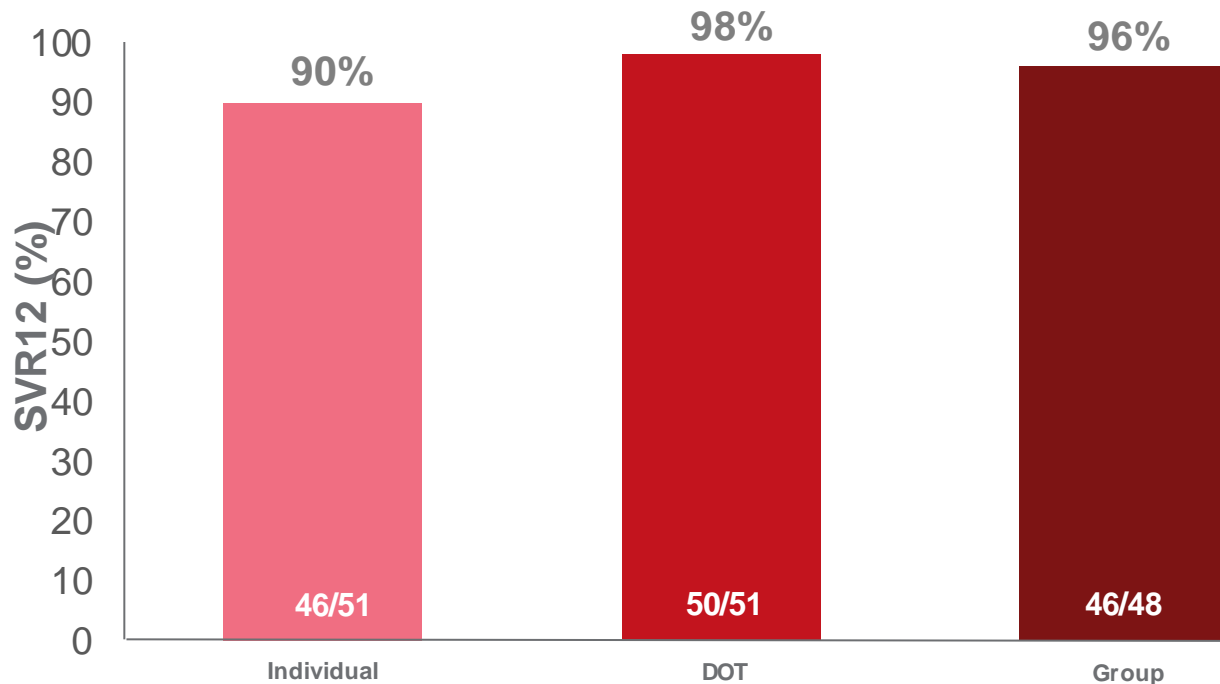
- RCT of 150 PWID receiving OST
- HCV treatment onsite at methadone maintenance clinic
- Electronic blister packs to monitor adherence



Akiyama, Norton et al. *Ann Intern Med.* 2019 May 7;170(9):594-603.

# PREVAIL Study – HCV Cure Rates are High

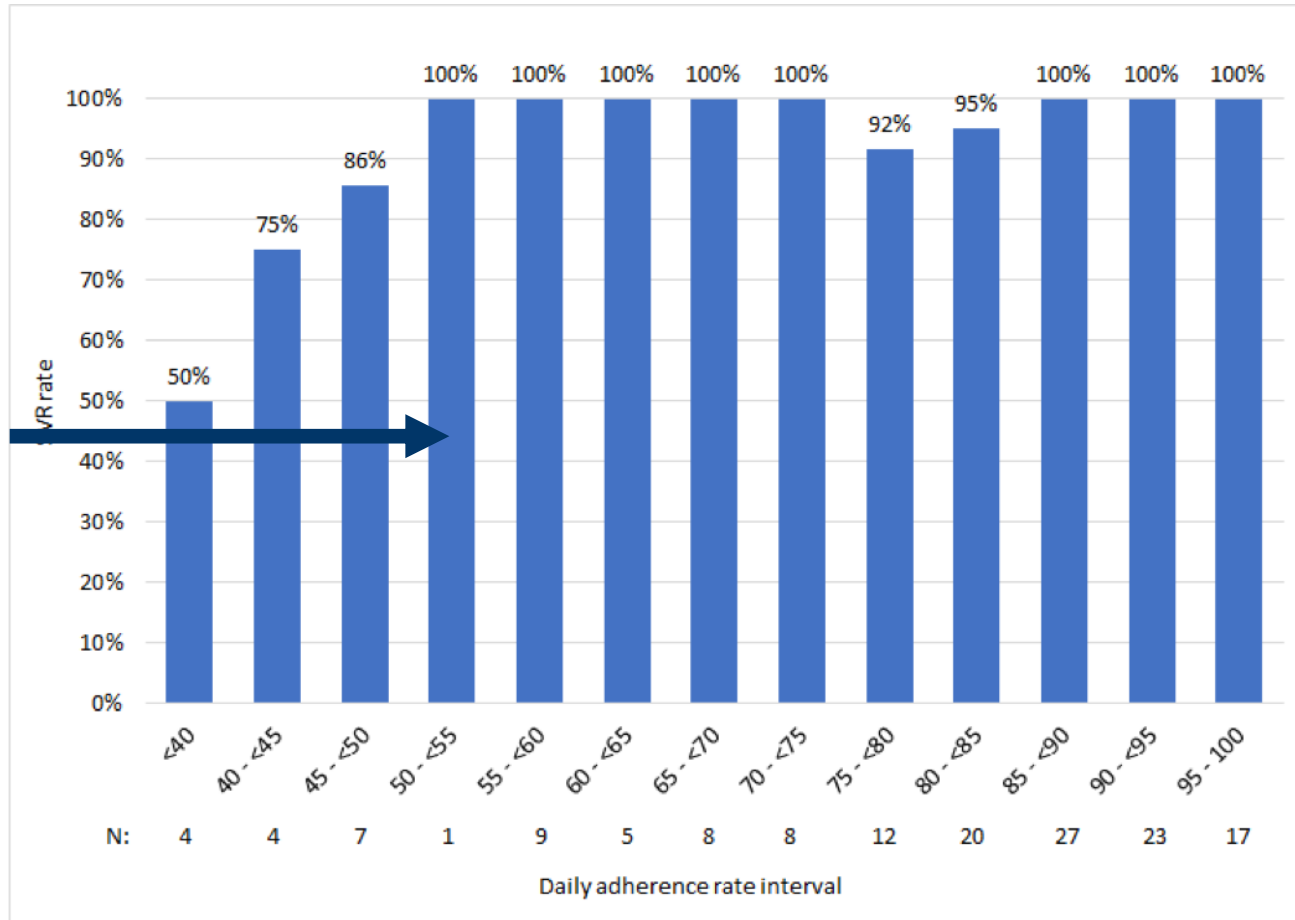
- 85% genotype 1a, 27% cirrhosis, 11% treatment-experienced, 14% HIV
- 98% methadone, 65% with recent drug use in last 6 months



Akiyama, Norton et al. *Ann Intern Med.* 2019 May 7;170(9):594-603.



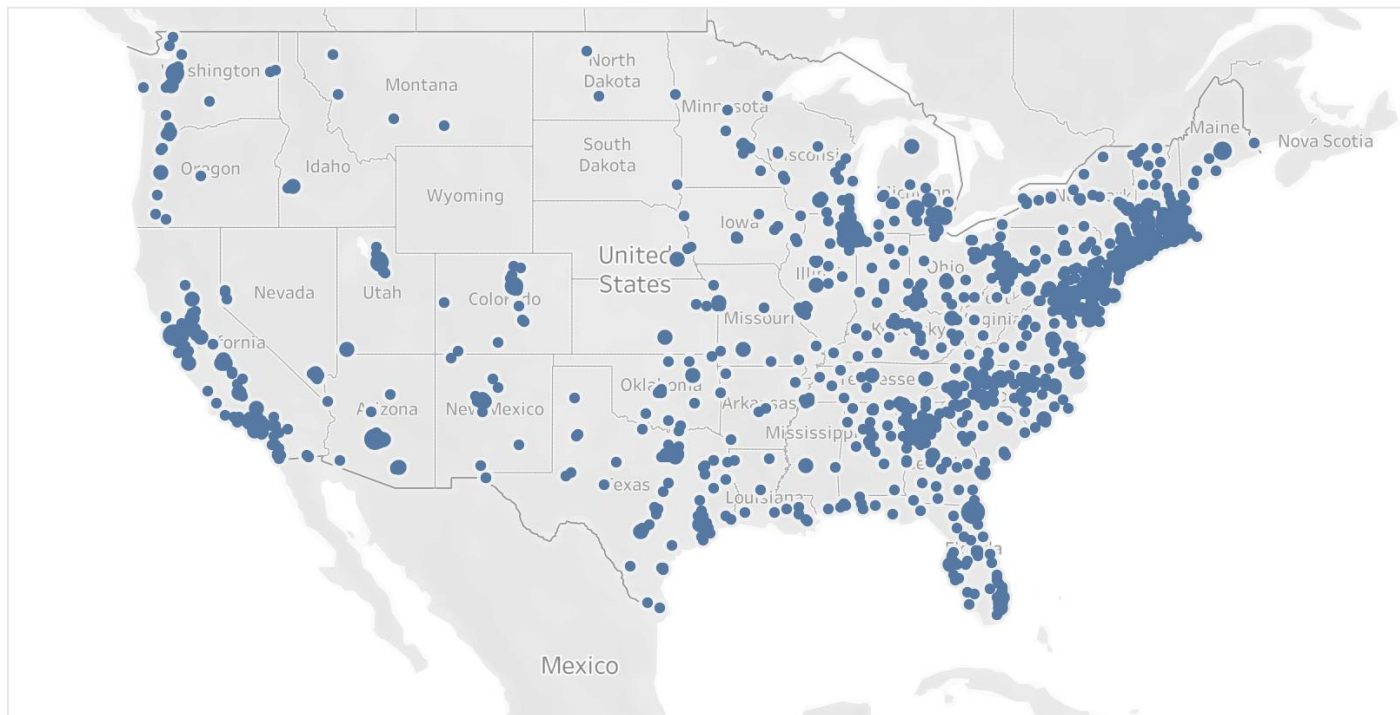
# Suboptimal Adherence Can Still Lead to High HCV Cure



**Overall Adherence:  
74%**

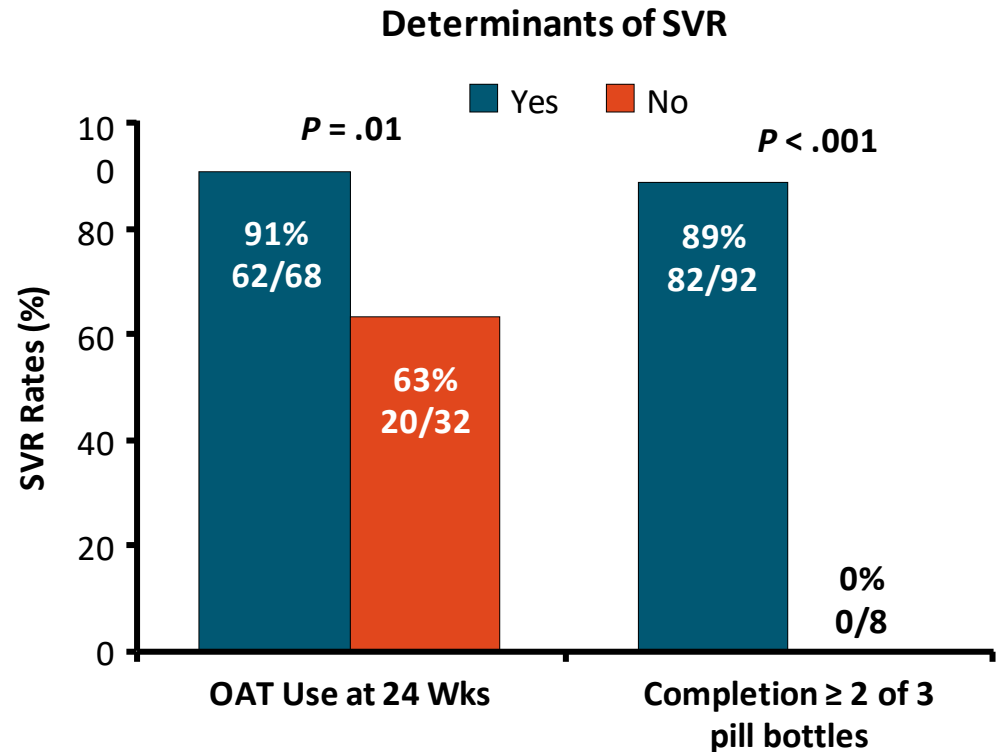
# Methadone Clinics Throughout the United States

Methadone Clinics



# ANCHOR Study: Syringe Exchange Programs

- Prospective, open-label trial in Washington, DC of 100 patients with HCV infection and opioid use disorder with ongoing IVDU
- Treated with SOF/VEL for 12 wks and offered MOUD with buprenorphine
- **82% achieved SVR12, despite ongoing IVDU and imperfect adherence AND offered at a syringe exchange program**





*What can you do to help?*

# Screen all your patients!

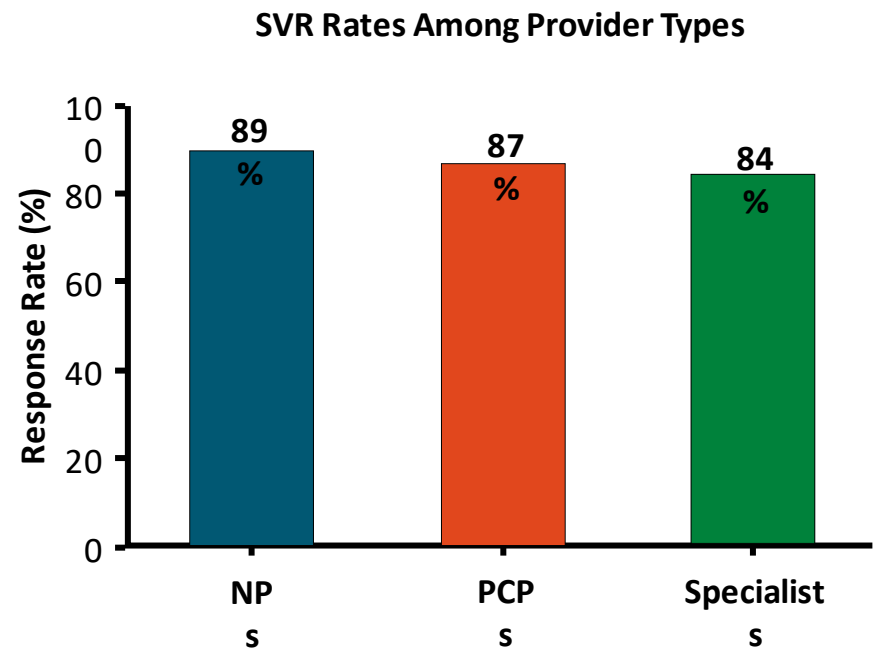
The USPSTF recommends screening **adults 18 to 79 years of age** for HCV infection

**Grade B\***

\*USPSTF determined with moderate certainty that HCV screening in adults aged 18 to 79 years has substantial net benefit. Physicians should offer or provide this service.

# ASCEND: PCPs Can Effectively Manage HCV Care With Direct-Acting Antivirals

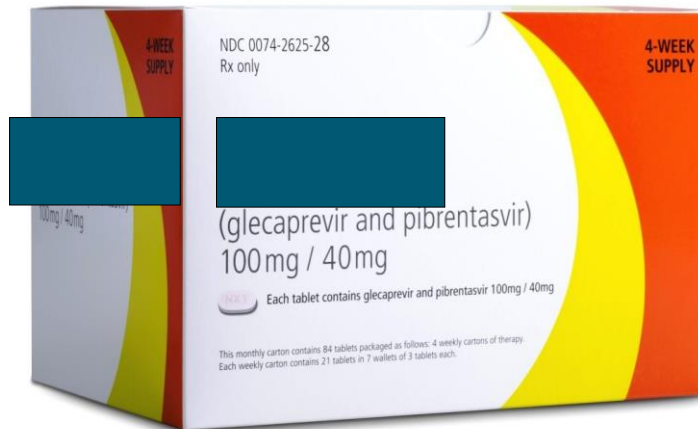
- Open-label trial 13 FQHCs in Washington, DC
- N = 600 patients
- Treated with 12 weeks LDV/SOF
- Overall, 516 (86%) achieved SVR; consistent across provider groups





# But HOW do I really treat HCV?

- Glecaprevir/Pibrentasvir 8 weeks for \*almost\* everyone!



## SEND TO SPECIALIST

- decompensated cirrhosis
- HBV/HCV coinfection- send to liver
- Older HIV meds: may need to adjust

# New Guidelines for Simplified Treatment of HCV

## WHO IS ELIGIBLE FOR SIMPLIFIED TREATMENT

Adults with chronic hepatitis C (any genotype)  
who do not have cirrhosis  
and have not previously received hepatitis C treatment

### Baseline Labs:

HCV Viral Load

HCV Genotype

CBC, BMP, LFTs

Liver Fibrosis Score

HIV, HepBsAg

**NO MONITORING DURING  
TREATMENT!**

**Obtain SVR 12 weeks POST Treatment**

**Why about  
HIV/HCV Co-infection?**

# HIV/HCV Coinfection

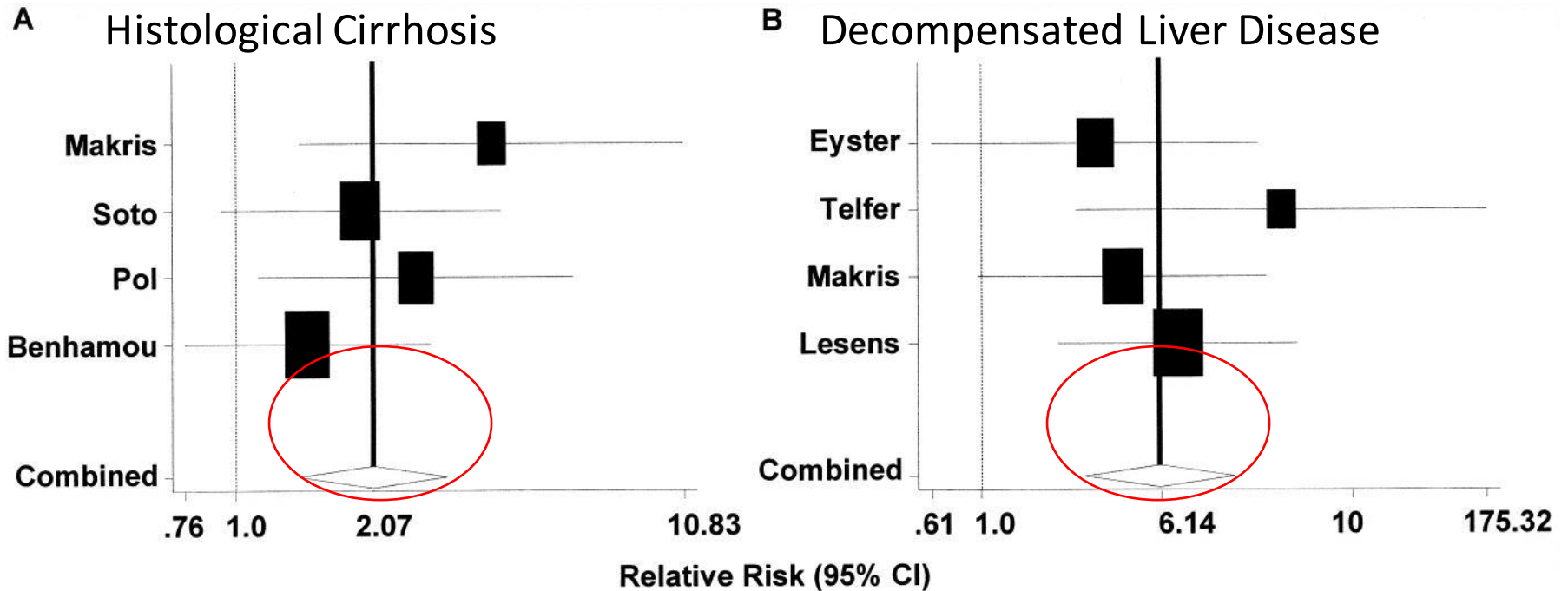
- Exactly the same Medication Regimens
- Same SVR/Cure Rates
- Drug- Drug Interactions only with older HIV medications

# Drug-Drug Interactions

ARV(s)	GLE/PIB	GZR/EBR	SOF/LDV	SOF/VEL	SOF/VEL/VOX
ATV + (RTV or COBI)	X	X	✓*	✓*	X
DRV + (RTV or COBI)	X	X	✓*	✓*	✓*†
LPV + RTV	X	X	✓*	✓*	X
EFV	X	X	✓*	X	X
RPV	✓	✓	✓*	✓	✓
DTG	<div style="background-color: yellow; border: 2px solid black; padding: 10px; text-align: center;"> <b>INTEGRASE INHIBITORS and NRTI's OK!</b> </div>				✓
RAL					✓
EVG/COBI/					✓*†
EVG/COBI/					✓†
3TC/ABC					✓
TAF	✓	✓	✓	✓	✓
TDF	✓	✓	✓*	✓*	✓*

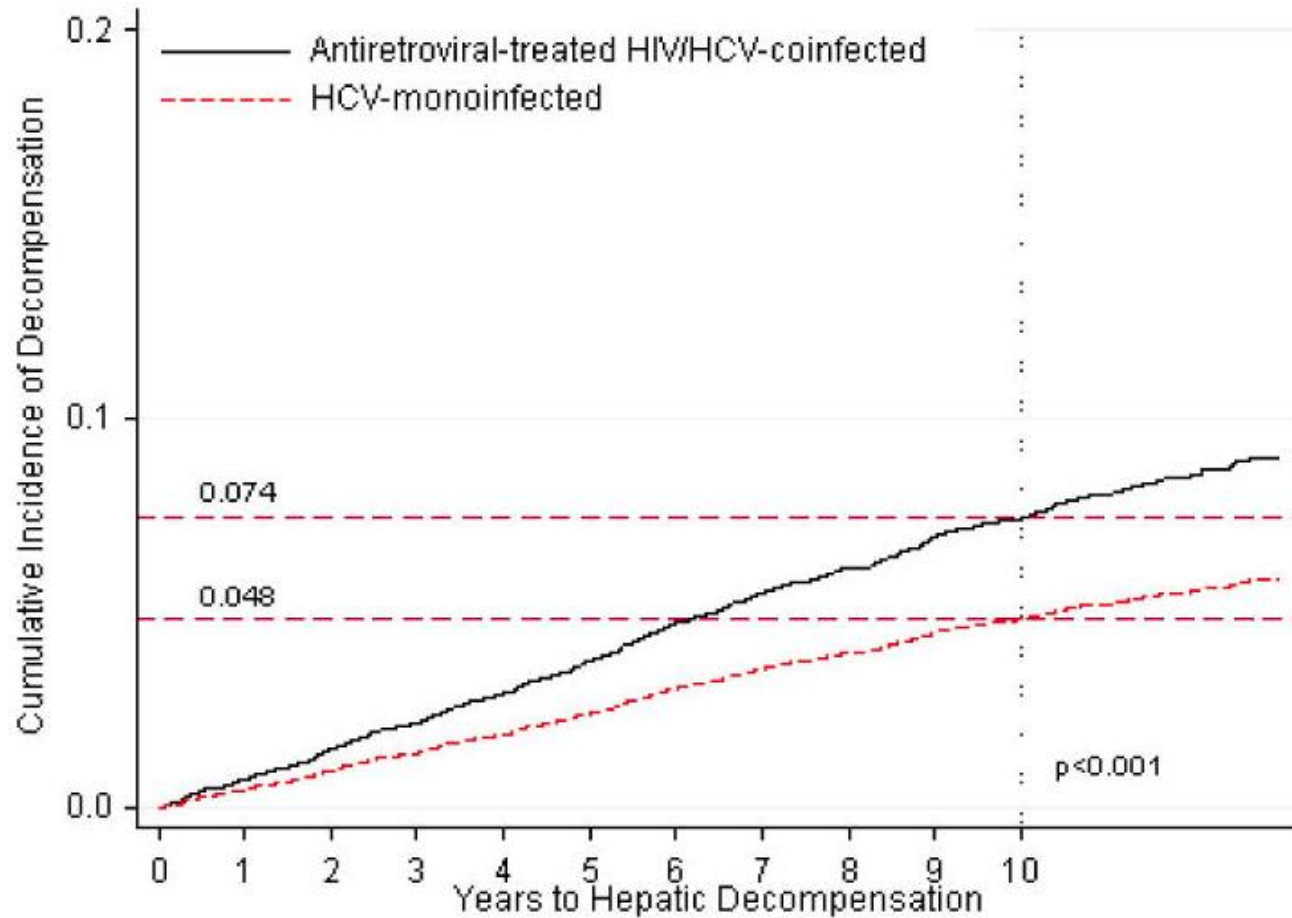
†No clinically significant drug interaction per prescribing information; AASLD/IDSA and DHHS guideline recommend monitoring liver enzymes owing to lack of clinical safety data.

# Liver Disease is Worse in HIV/HCV





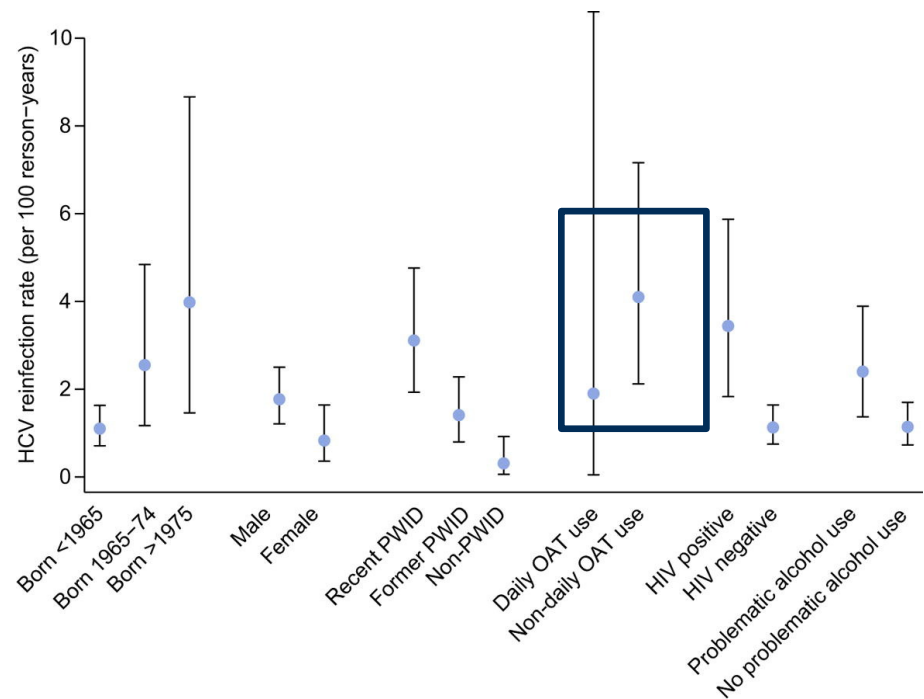
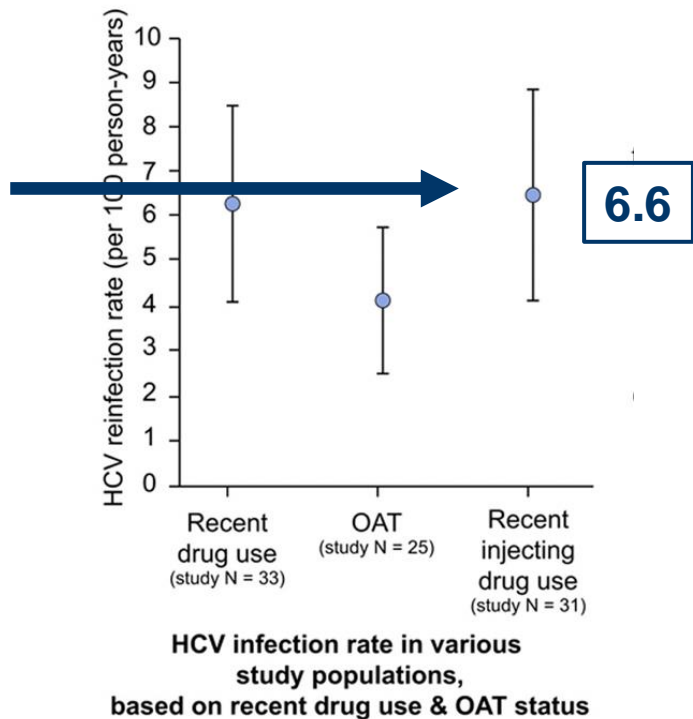
# Higher Rates of Hepatic Decompensation for HIV/HCV: 1997-2010



Is this all for naught.....What about Reinfection?



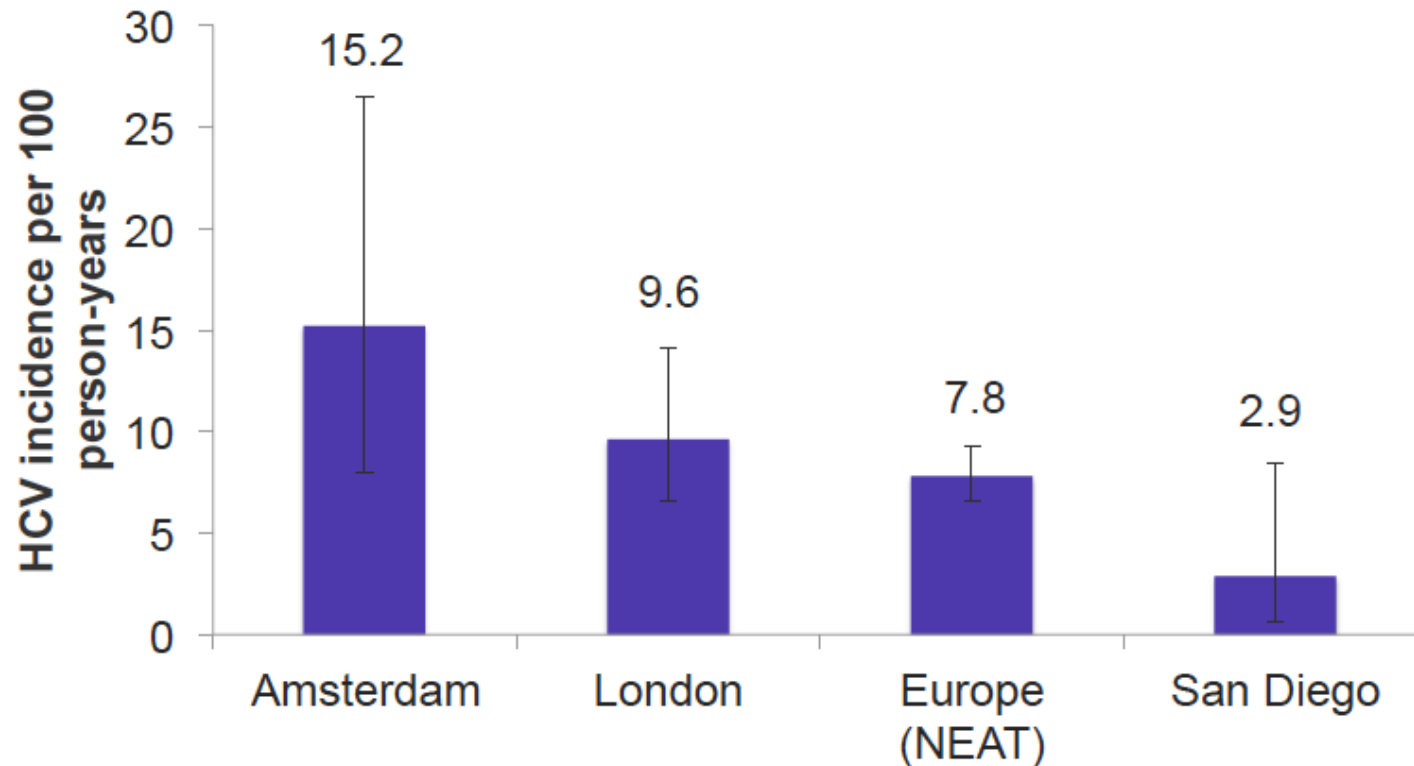
# Two large Meta-Analyses: Reinfection in era of DAAs



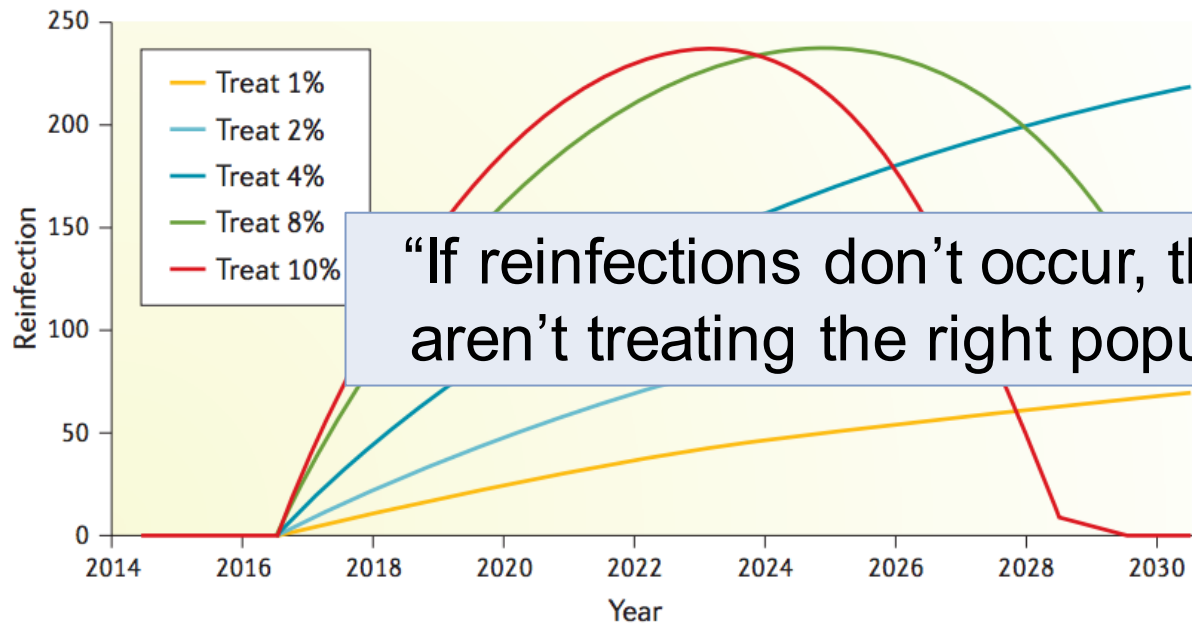
Hajarizadeh et al. *Journal of Hepatology* , April 2020; Rossi et al. *Journal of Hepatology*, November 2018

# US Data on HIV+ MSM Reinfection

## HCV reinfection incidence after SVR among HIV+ MSM



# HCV Treatment as Prevention for PWID



“If reinfections don’t occur, then we aren’t treating the right population”

# Remember Harm Reduction



## WHO 2030 HCV Elimination Goals

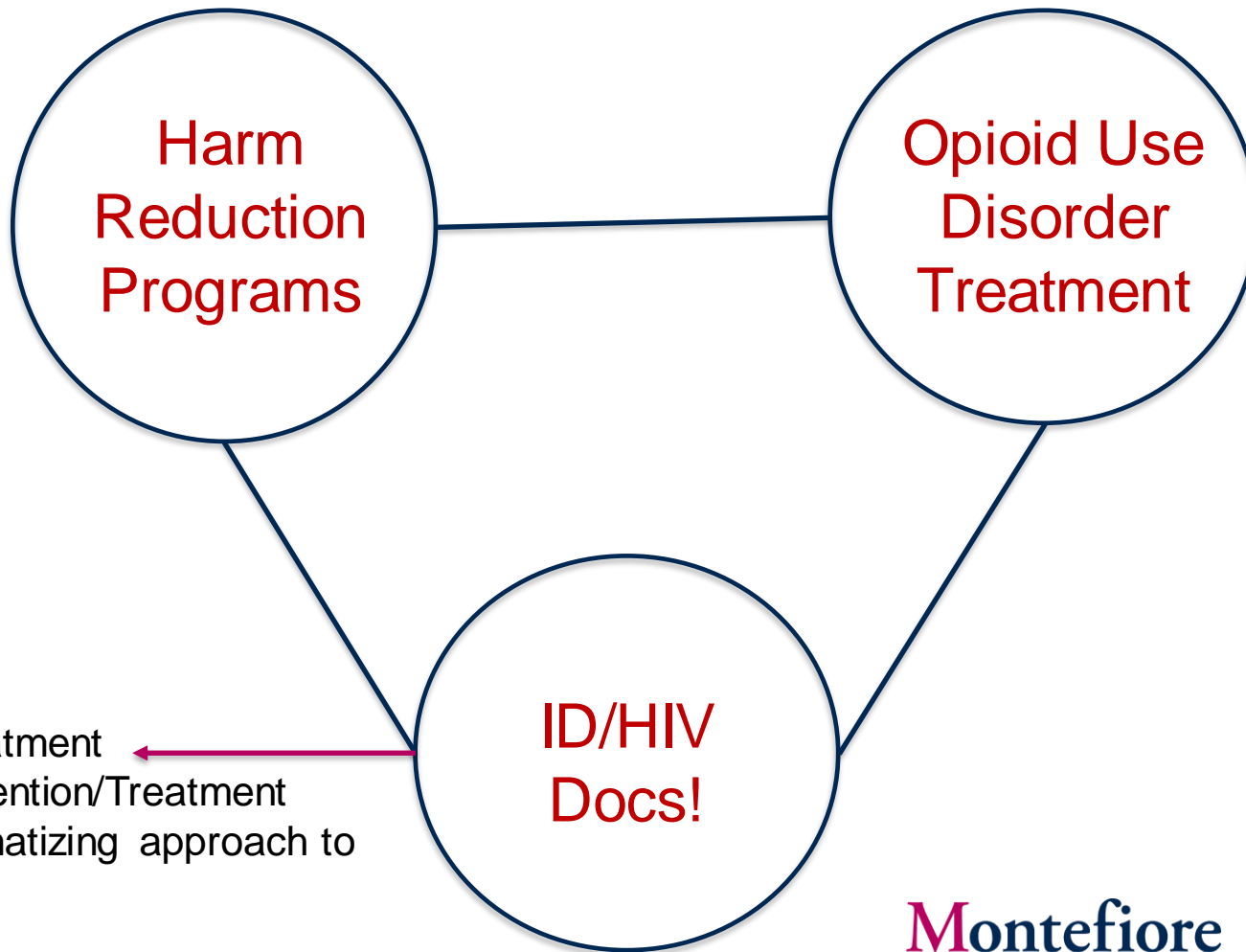
Interventions	Indicator	2015 baseline	Targets		
			2020	2030	
1	Hepatitis B vaccination	HEPB3 coverage	84%	90%	90%
2	HBV PMTCT <sup>a</sup>	HEP vaccine birth dose coverage	39%	50%	90%
3	Blood safety	Donations screened with quality assurance	97%	95%	100%
	<b>Injection safety</b>	Proportion of unsafe injections	5%	0%	0%
4	<b>Harm reduction</b>	Syringes & needles distributed/100,000/year	27	200	300
5	Testing services	% HBV-infected diagnosed	9%	30%	90%
		% HCV-infected diagnosed	20%	30%	90%
Treatment	% diagnosed with HBV on treatment	8% <sup>b</sup>	– <sup>c</sup>	80% <sup>d</sup>	
	% diagnosed with HCV started on treatment	7% <sup>b</sup>	– <sup>c</sup>	80% <sup>d</sup>	



# What can I do?

- Be an advocate
- Treat people with dignity
- Remember harm reduction in the office
- Treat people with suboxone/buprenorphine
- Make connections with your local community based organizations/syringe service programs
- TREAT PEOPLE FOR a CURABLE DISEASE: HCV!

# Keeping People Who Inject Drugs Alive and Healthy



Harm  
Reduction  
Programs

Opioid Use  
Disorder  
Treatment

ID/HIV  
Docs!

- HCV Treatment
- HIV Prevention/Treatment
- Non-stigmatizing approach to care



Thank You for Your Attendance!

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