

# HCV Elimination and the Oregon Experience:

Combining innovation and interconnectedness to achieve elimination

## Andrew Seaman, MD

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- ❖ Associate Professor of Medicine, Oregon Health & Sciences University
- ❖ Head of SUD Services, Better Life Partners



# Disclosures

- I have received investigator-initiated research support from Merck Pharmaceuticals, Abbvie, and the Gilead FOCUS Foundation; of which, only investigator initiated research was within the last 24 months

# Objectives

- Discuss HCV testing, treatment, policy, and harm reduction interventions to lower barriers
- HCV Elimination in urban areas, experience from Portland's Central City Concern
- HCV Elimination in rural areas: Experience from OR-HOPE and PATHS in Oregon, and the role of peers
- Putting it all together: Harnessing the power of love and interconnectedness to move from micro to macro-elimination

# Defining Terms

- Micro-elimination: (Virtually) eliminating an infectious disease from a single health system or services center
- Macro-elimination: (Virtually) eliminating an infectious disease from the broader population of a city, state, or country
- DBS: Dried Blood Spot
- OTP: Opioid Treatment Program / Methadone Clinic

# Defining Terms

- PWUD/PWID: People who use/inject drugs
- Peers: People with lived experience of substance use and involvement in improving health outcomes for PWUD
- MOUD: Medications for Opioid Use Disorder
- SSPs: Syringe Service Programs

# We must treat PWUD

- Meta-analysis of 38 studies of PWUDs, n=3,634 included

	Treatment Completion	Svr12 (ITT analysis)
All PWUDs	98%	88%
PWUDs on OAT	97%	91%
Recent IDU	97%	87.5%

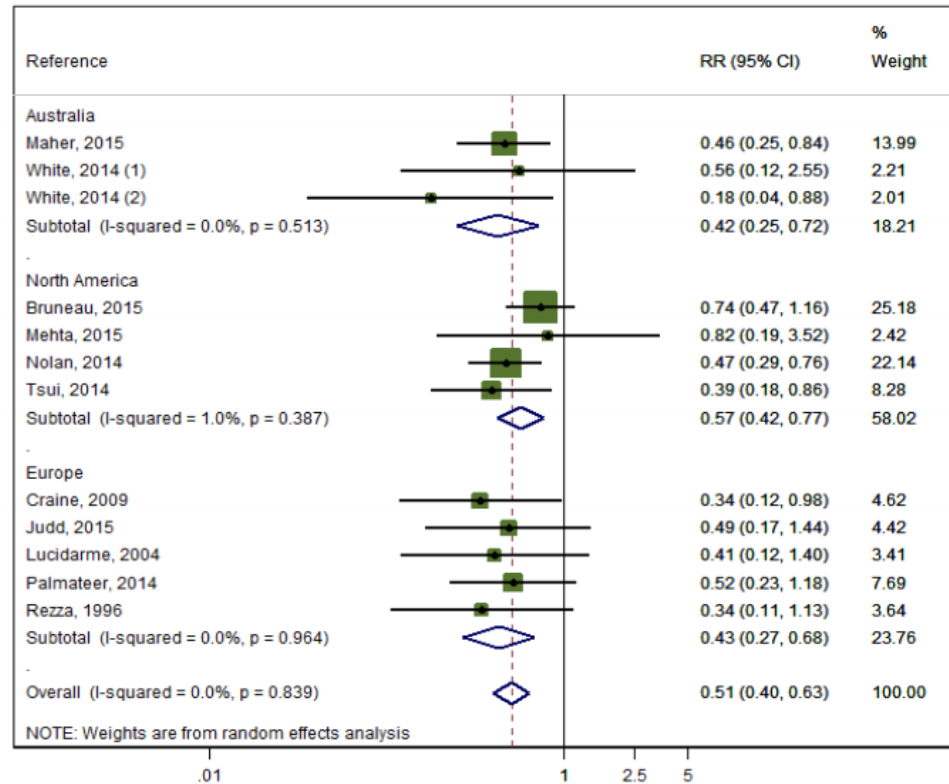
- Meta-Regression Analysis: Clinical trials associated with OR 2.2 (1.27-3.75) of achieving SVR12
- Intention to treat analysis

# MOUD: 50% transmission reduction



## Impact of current OST exposure (adjusted estimates)

OST =  
Medications for  
Opioid Use  
Disorder  
(MOUD)



- 12 studies:
- 6361 participants
- 1030 HCV cases
- **50% reduction** in risk of HCV
- Little heterogeneity
- GRADE: Low Evidence.

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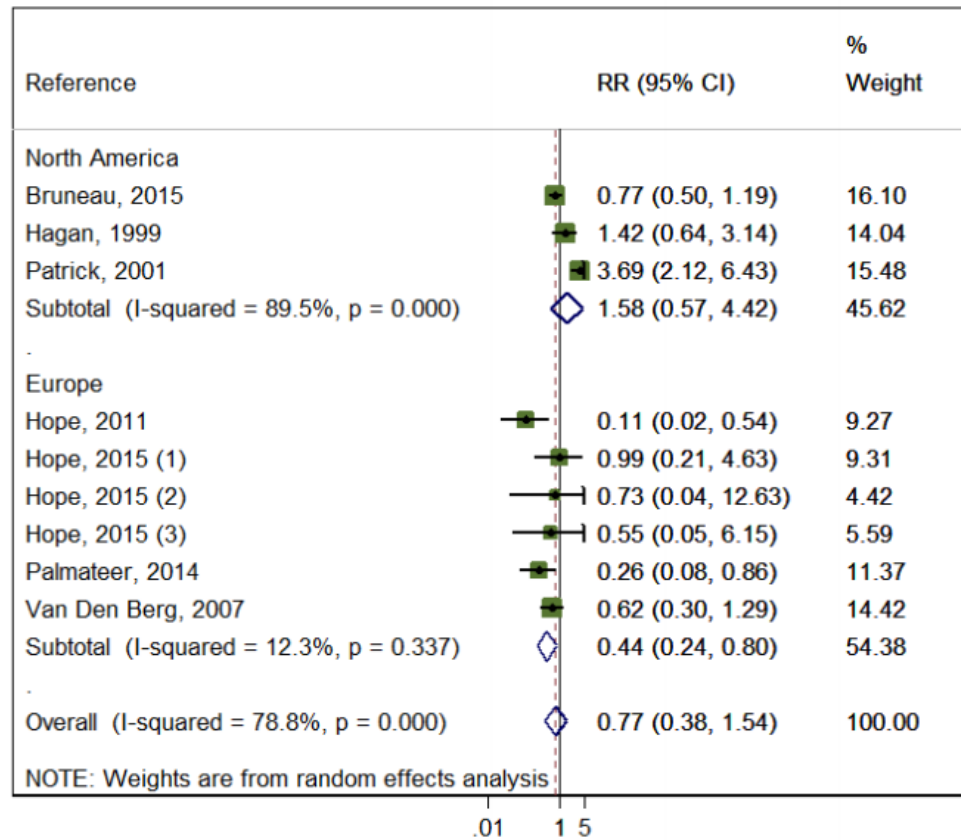
# Harm Reduction, SSPs: 20-60% transmission reduction



## Impact of high NSP by region (unadjusted analyses)

NSP = SSP

Syringe Service Program



- 7 studies
- High heterogeneity ( $I^2=79\%$ )
- **Weak evidence overall – RR 0.77**
- **In Europe NSP associated with 66% reduction in HCV**
- **Grade: very low evidence**

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# Harm Reduction, SSPs: 20-60% transmission reduction



<https://nigelbrunsdon.com/>. Accessed 12/3/19



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# Harm Reduction, SSPs: 20-60% transmission reduction

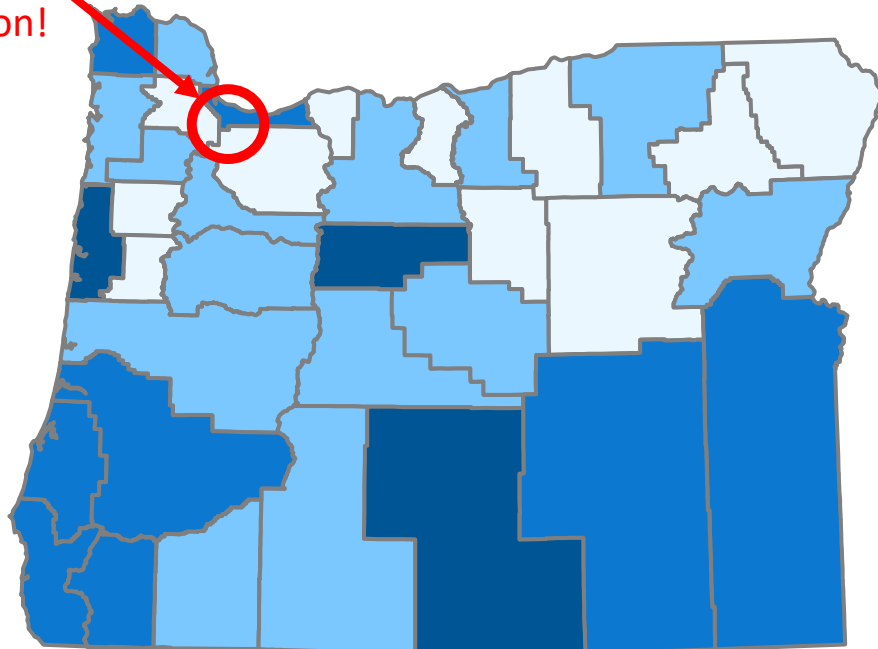
- People share injection equipment when they are desperate
- MOUD gives people time, choice, and financial freedom
- Harm reductionists, Peers are heros!



# CCC HCV Elimination Program, Portland

Portland  
Metro: ½  
state  
population!

Mean Annualized Rates per 100,000  
Persons, by County<sup>1</sup>



Rate per 100,000



Oregon: 3<sup>rd</sup> highest HCV-associated  
mortality, 4<sup>th</sup> highest prevalence<sup>2</sup>



1) Oregon Health Authority. Hepatitis C Infections in Oregon. 2017. Accessed April 12, 2019. 2) <https://map.hepvu.org/map>. Accessed 12/2/19. [Primary source: Rosenberg et al. JAMA Network Open. 2018;1(8):e186371.]

# Central City Concern

CCC is a houselessness services organization serving 14,000 Portlanders

## Supportive Housing

Onsite supportive services to aid with recovery, mental health and other challenges that might be barriers.

## Low Barrier Housing

Meeting people where they are with immediate, accessible housing.

## Transitional Housing

People stay from six months up to two years as they gain stability.

## Permanent Housing

Permanent, affordable housing for people who need an added layer of assistance.

## Integrated Care Centers

Blackburn Clinic  
Old Town Clinic  
Hep C Clinical Pharmacy

## Residential Care

Hooper Detoxification and Stabilization Center  
Recuperative Care Program

## Puentes

Outpatient mental health and addiction treatment for the Latinx/Hispanic community and non-English speakers.



# Began with Anger and Love

## 2017 Restrictions:

- ▶ Cirrhosis +
- ▶ No substance use
- ▶ Only specialists could treat



(photo: Philippe Bonnet, Nigel Brunson photography)<sup>1</sup>

1) Heroes of Harm Reduction Series, Nigel Brunson. Accessed 5/3/2023.

# Began with Anger and Love

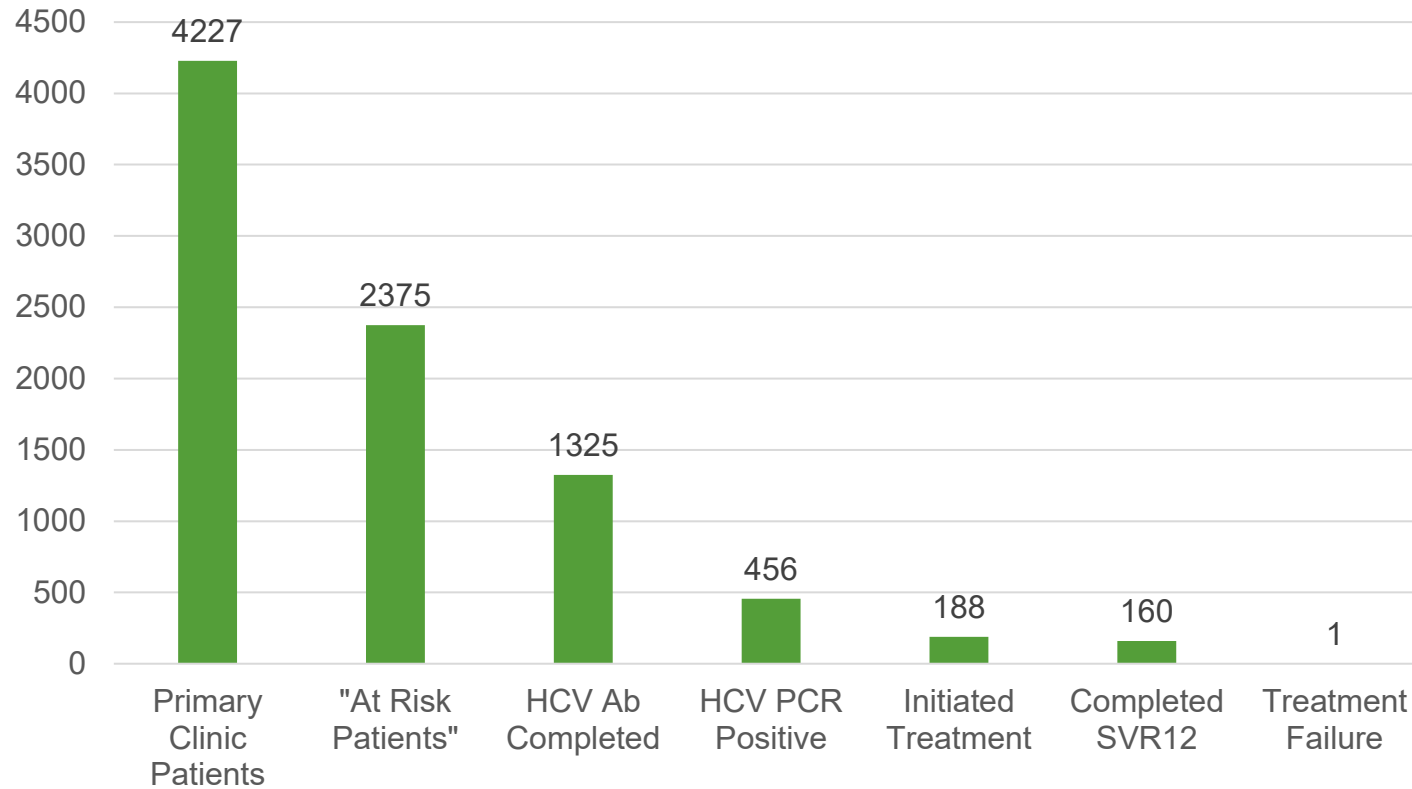
## Those we cured:<sup>3</sup>

- ▶ More self-efficacy
- ▶ Less chaotic substance use
- ▶ More HR engagement
- ▶ Better relationships



(photo: Angie Woody, Nigel Brunson photography)<sup>2</sup>

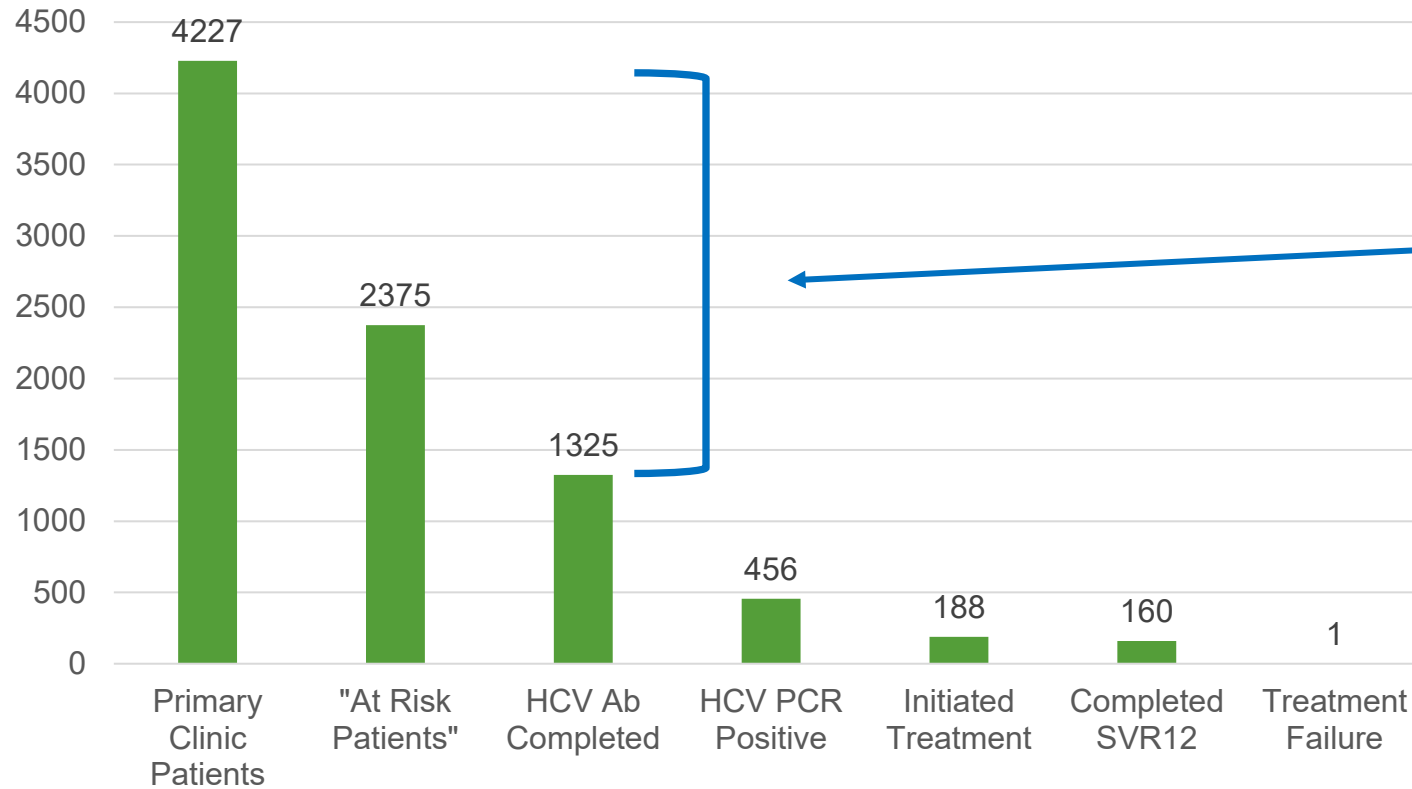
# Start Small: One Clinic, Some Patients



- Lots of heart, few systems
- Risk based screening → 34% PCR positive
- Only 41% + initiated treatment
- Very high SVR12 completion rates

**February 2017 – December 2018**

# Start Small: One Clinic, Some Patients



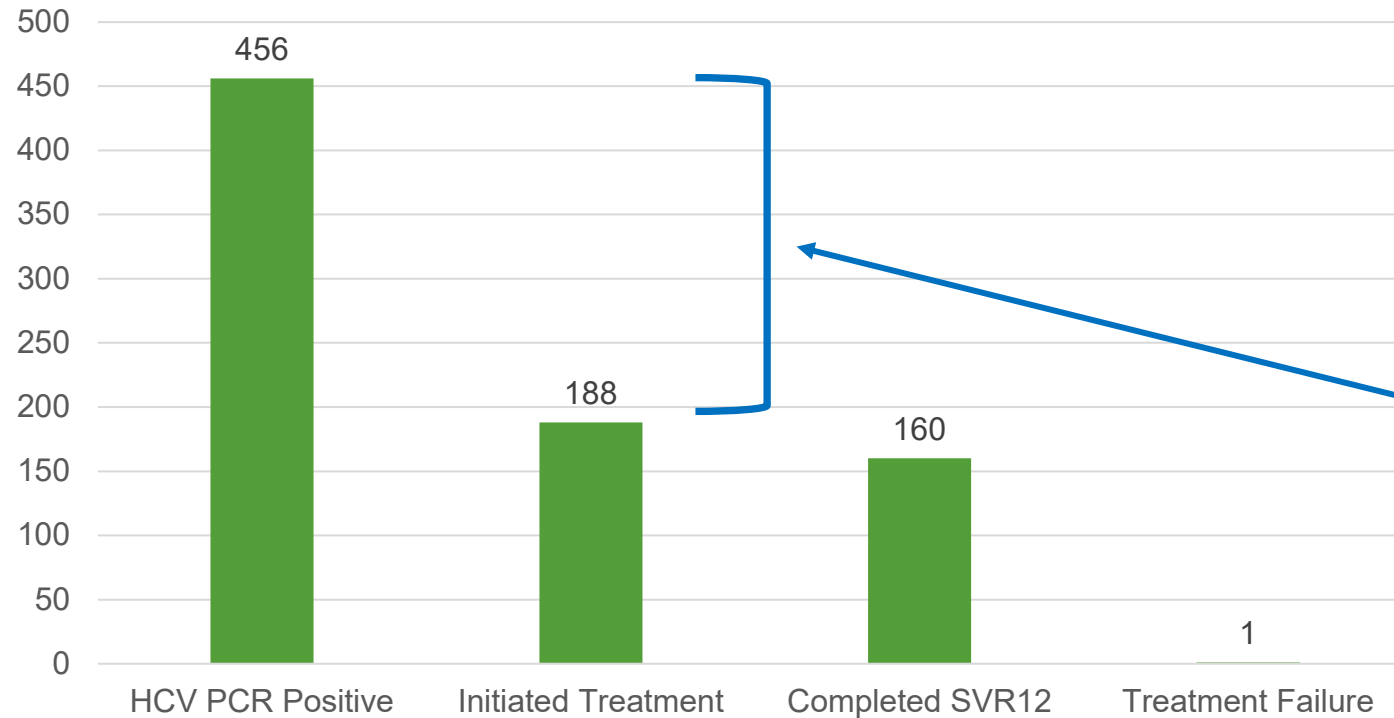
## Identify Gaps

- Risk → universal, opt-out screening
- Build systems at bottle necks
- Streamline referral process
- Mitigate and organize against PA barriers

February 2017 – December 2018



# Start Small: One Clinic, Some Patients

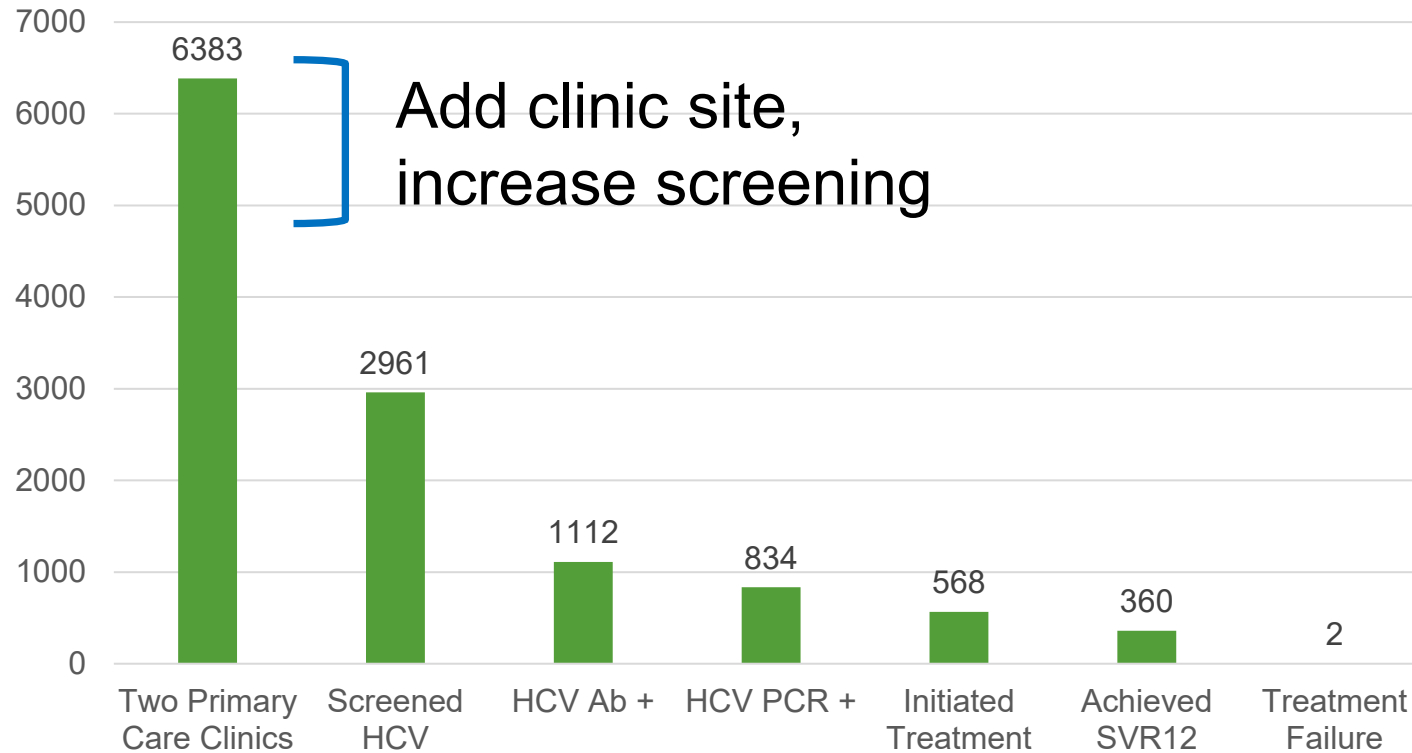


## Identify Gaps

- Risk → universal, opt-out screening
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**February 2017 – December 2018**

# Build Internally, Refine Systems

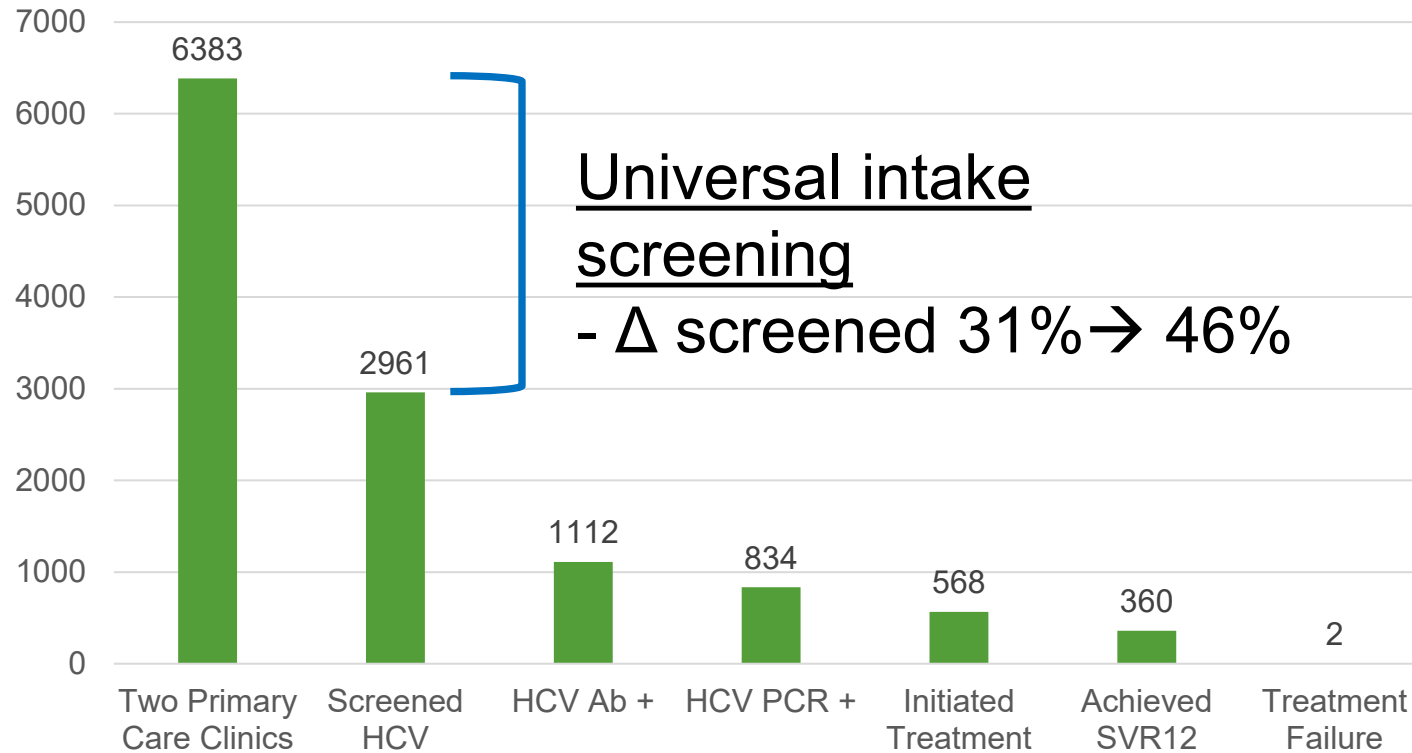


## Grow and Refine Systems

- Add sites internally
- Universal screening

**February 2017 – December 2019 – One Year Later**

# Build Internally, Refine Systems

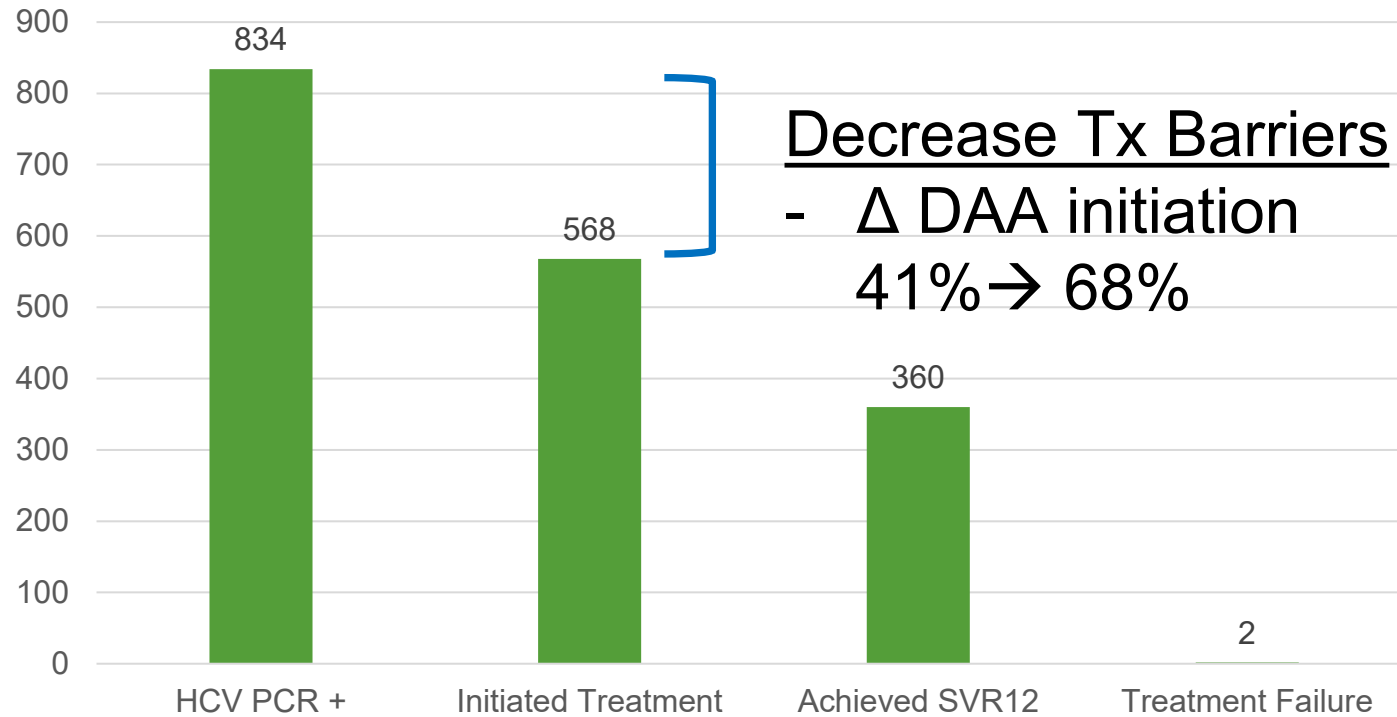


## Grow and Refine Systems

- Add sites internally
- Universal screening

**February 2017 – December 2019**

# Build Internally, Refine Systems



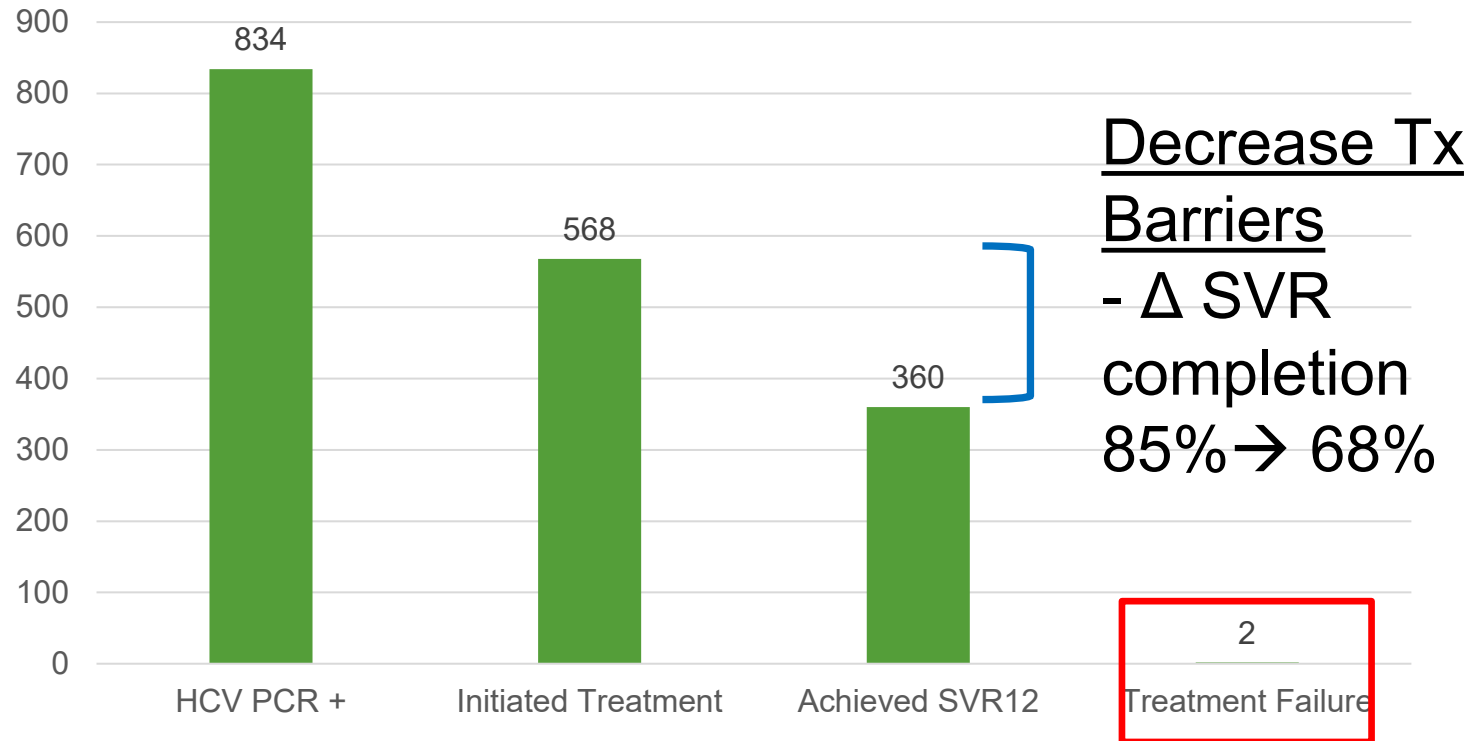
## Decrease Barriers to Treatment

- Reduce prior auth restrictions
- Enhanced care coordination
- “One-Click screening to Treatment lab draw”<sup>1</sup>

**February 2017 – December 2019**

1) Source: Seaman A, King CA et al. Int J Drug Policy. 2021 Jul 26:103359.

# Build Internally, Refine Systems



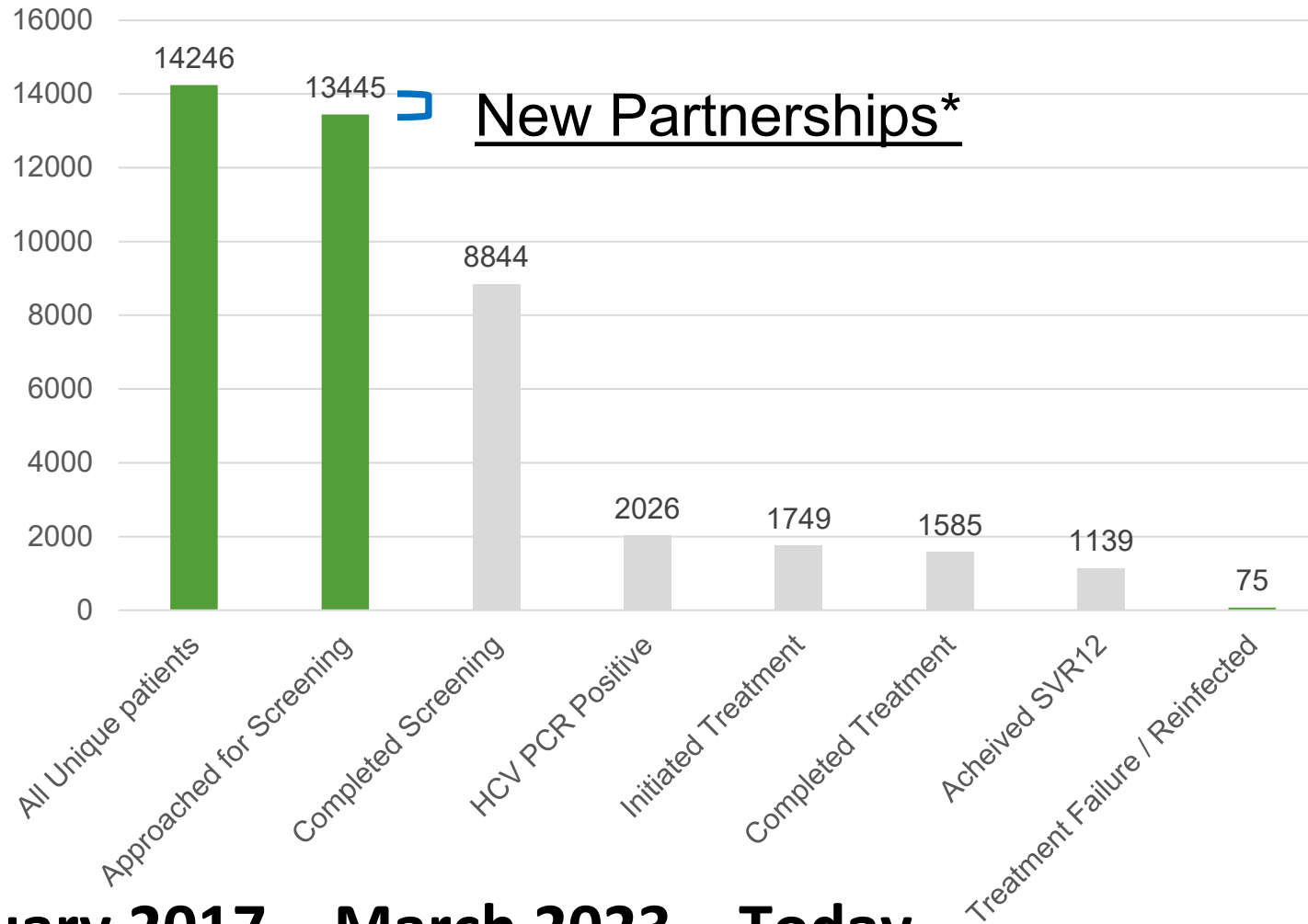
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1) Source: Seaman A, King CA et al. Int J Drug Policy. 2021 Jul 26:103359.

# Build Partnerships, Innovate

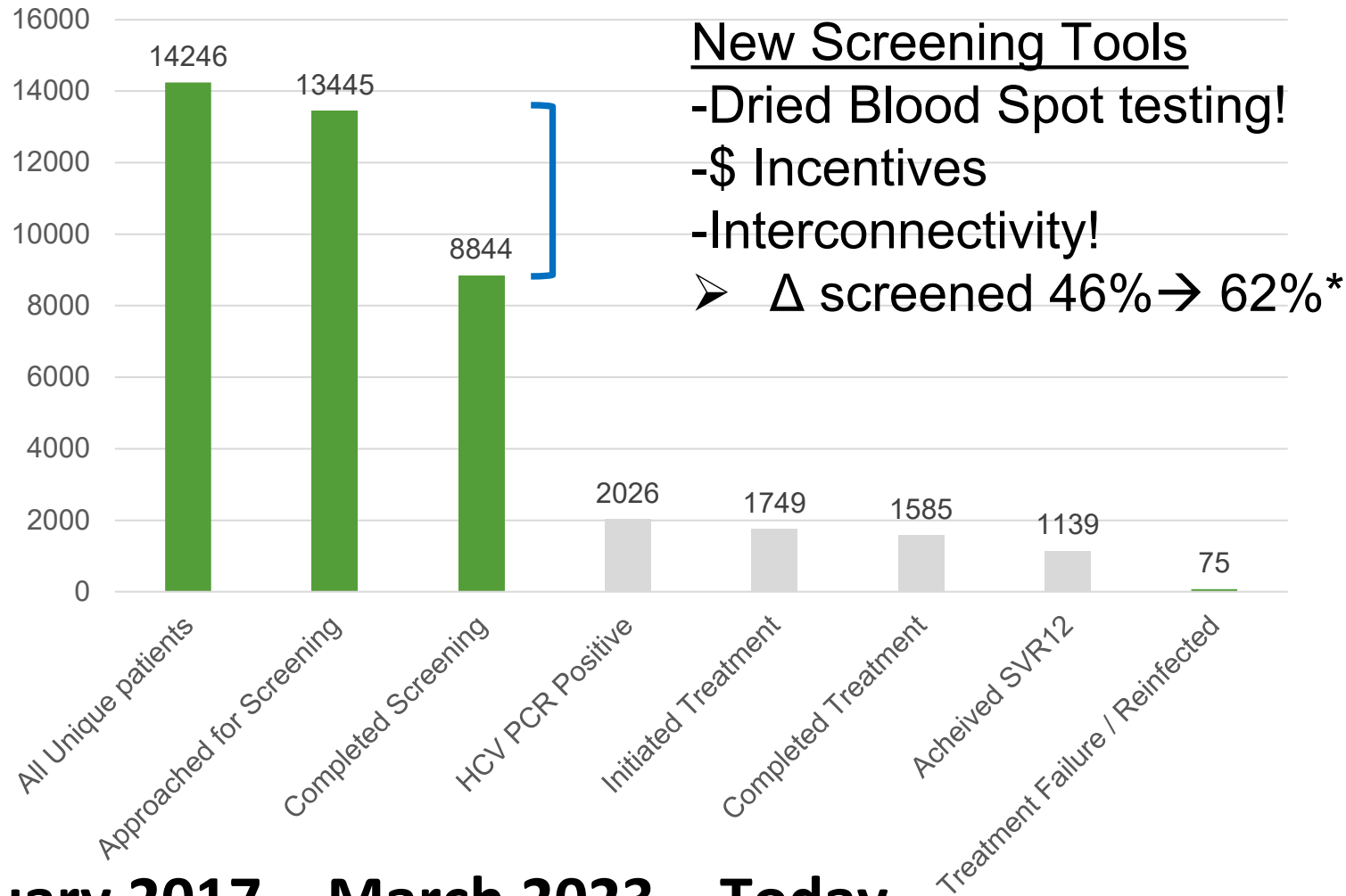


## Build Partnerships\* / Interconnectivity

- 8+ supportive housing
- SUDs detox center
- **3 Opioid Treatment Programs**
- Dozens street outreach sites
- Mental health, SUDs treatment, hospital systems, ...

February 2017 – March 2023 – Today

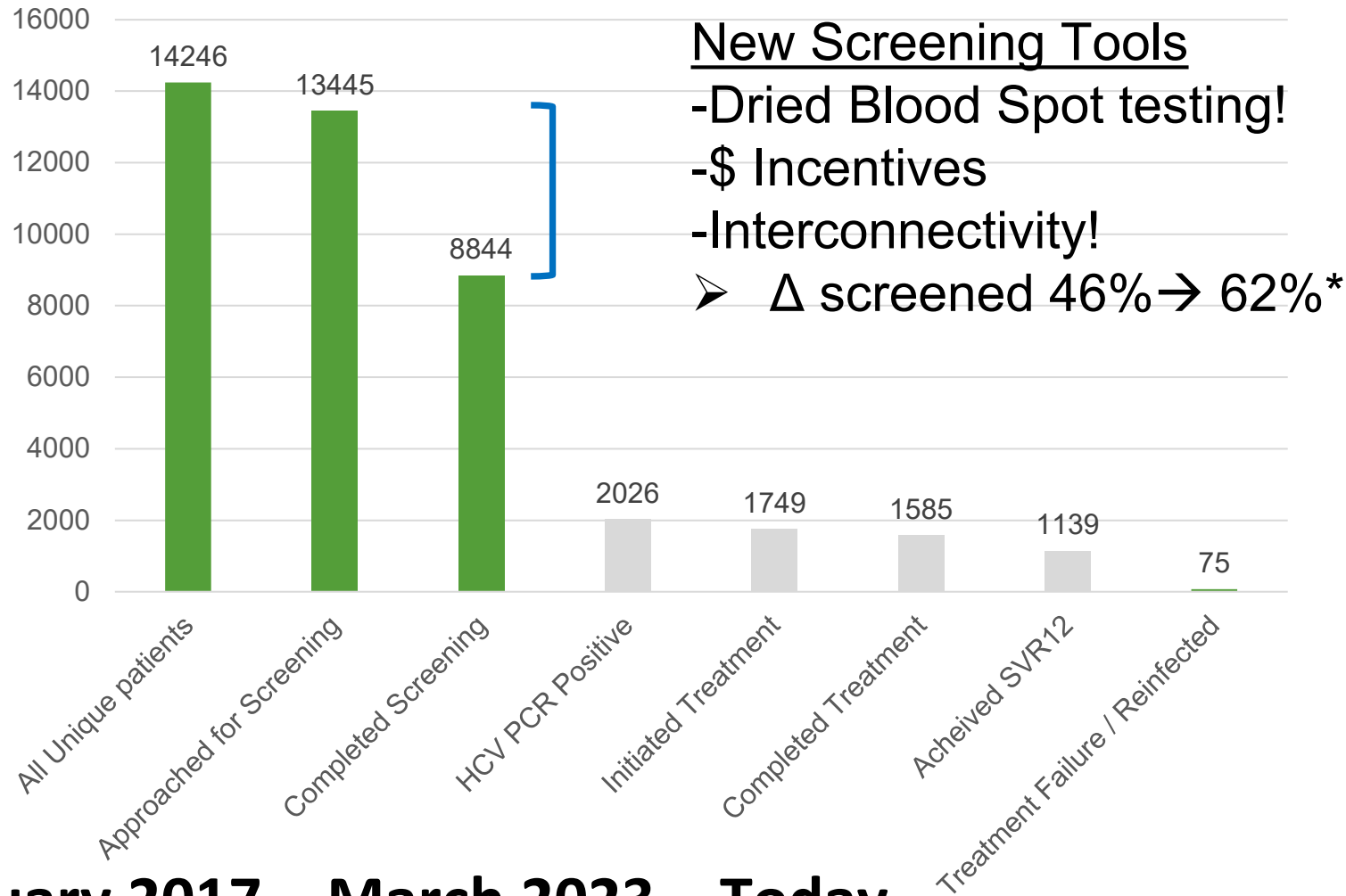
# Implement DBS / PoC Testing!



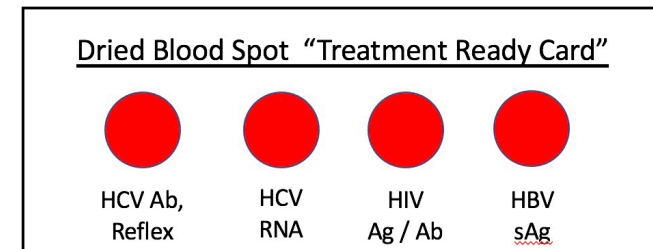
**February 2017 – March 2023 – Today**

\* Majority declined due to recent screening, low risk.

# Implement DBS / PoC Testing!



## Dried Blood Spot (DBS) +/- rapid PoC



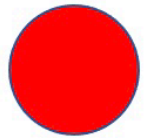
**February 2017 – March 2023 – Today**

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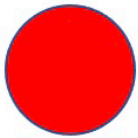


# Implement DBS / PoC Testing!

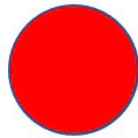
## Dried Blood Spot “Treatment Ready Card”



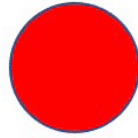
HCV Ab,  
Reflex



HCV  
RNA



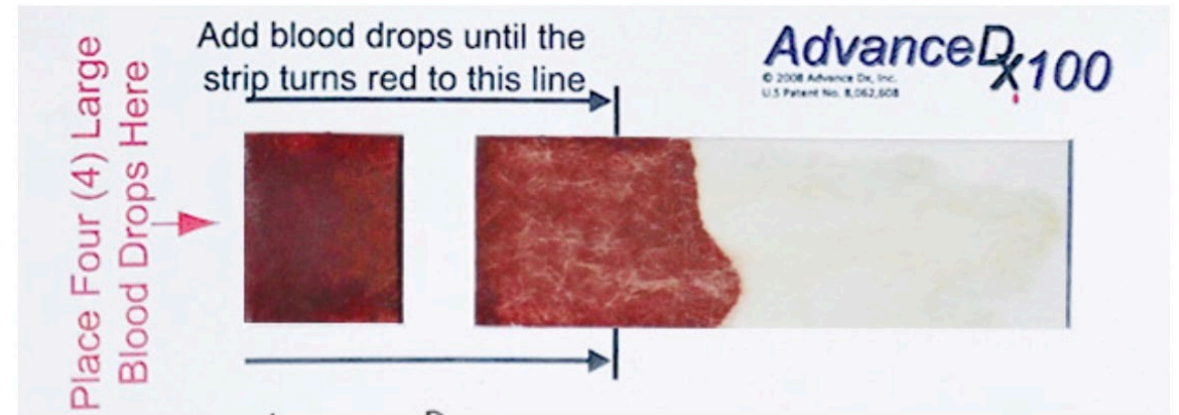
HIV  
Ag / Ab



HBV  
sAg

- HCV RNA: 100% sensitivity and specificity down to 600IU
- Fingertick, flexible testing settings
- Average time to results ~4 days\*

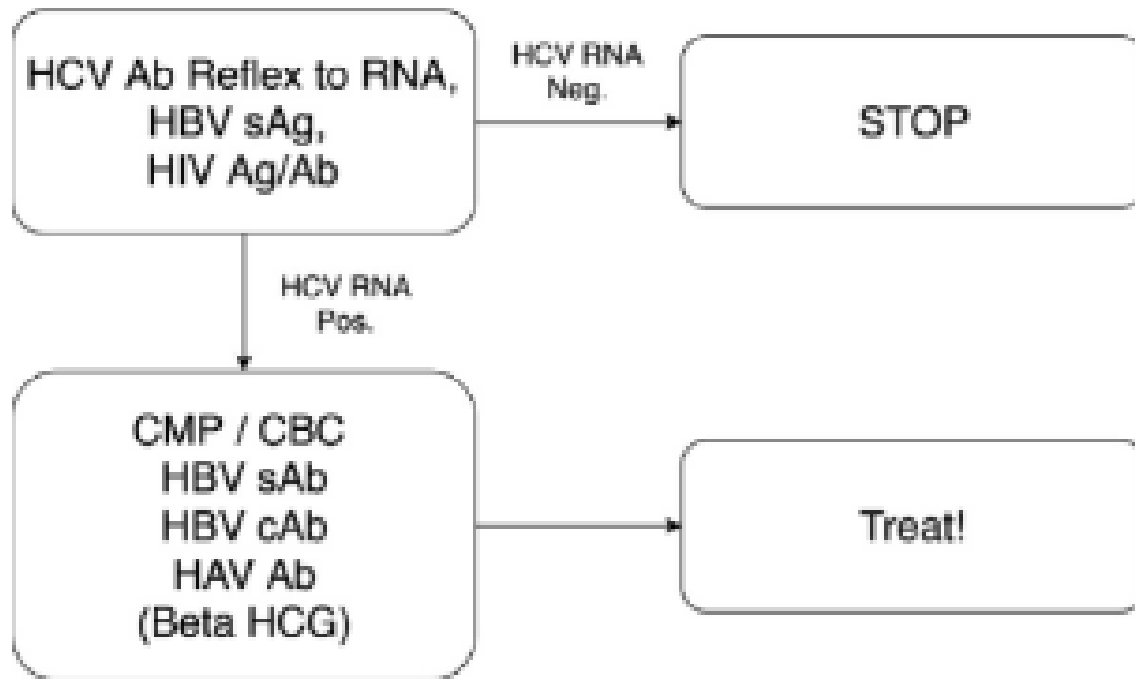
## HBV core Antibody, Total, Serum Separator Card



- 100% sensitivity and specificity
- Fingertick, flexible testing settings

# Screening to treatment, one lab draw!

## Screening-to-treatment lab bundle\*



## Lab bundle decreases time-to-treatment\*

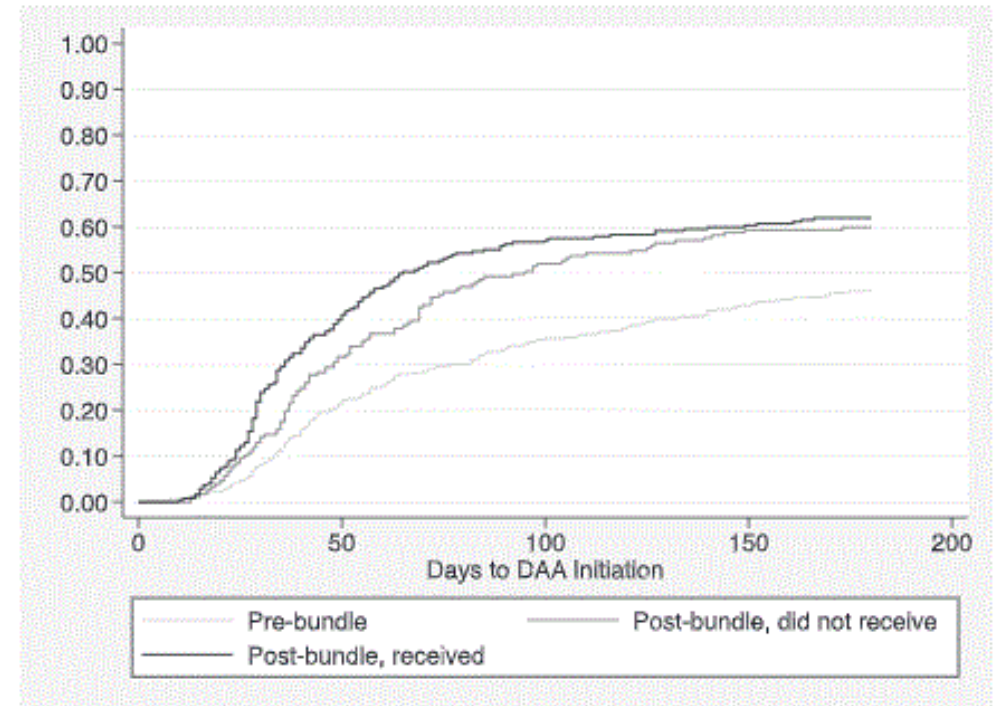
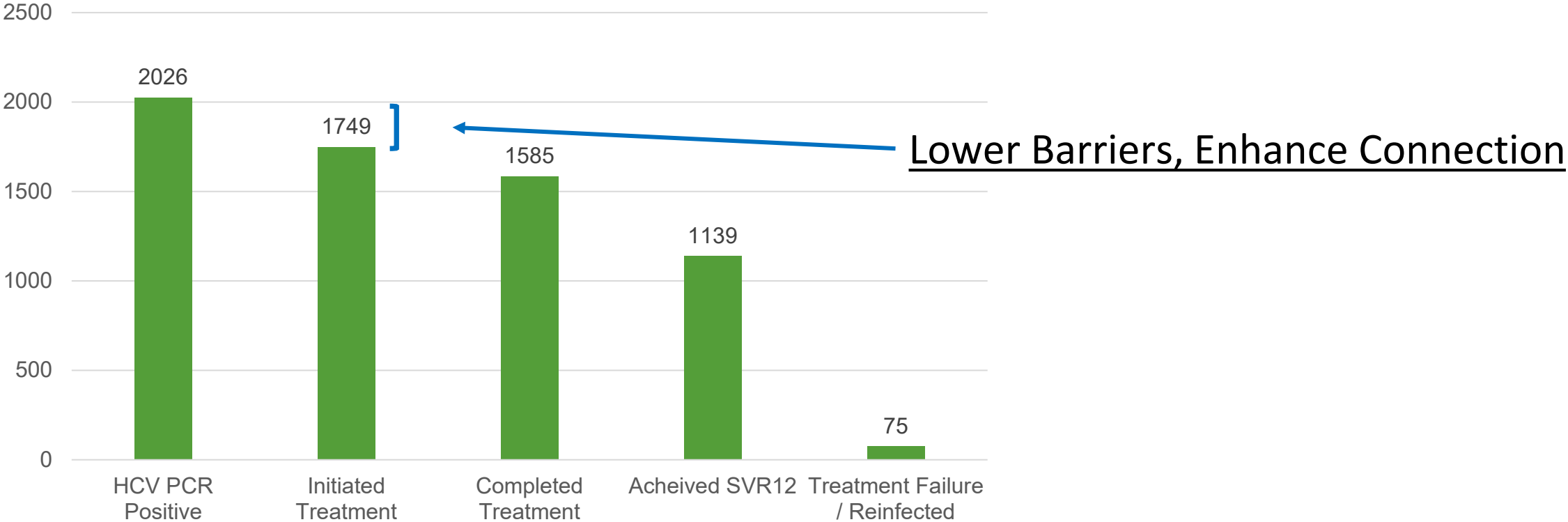


Fig 2, Kaplan-Meier Curve, receipt of treatment

\*Source: Seaman A, King CA et al. Int J Drug Policy. 2021 Jul 26:103359.

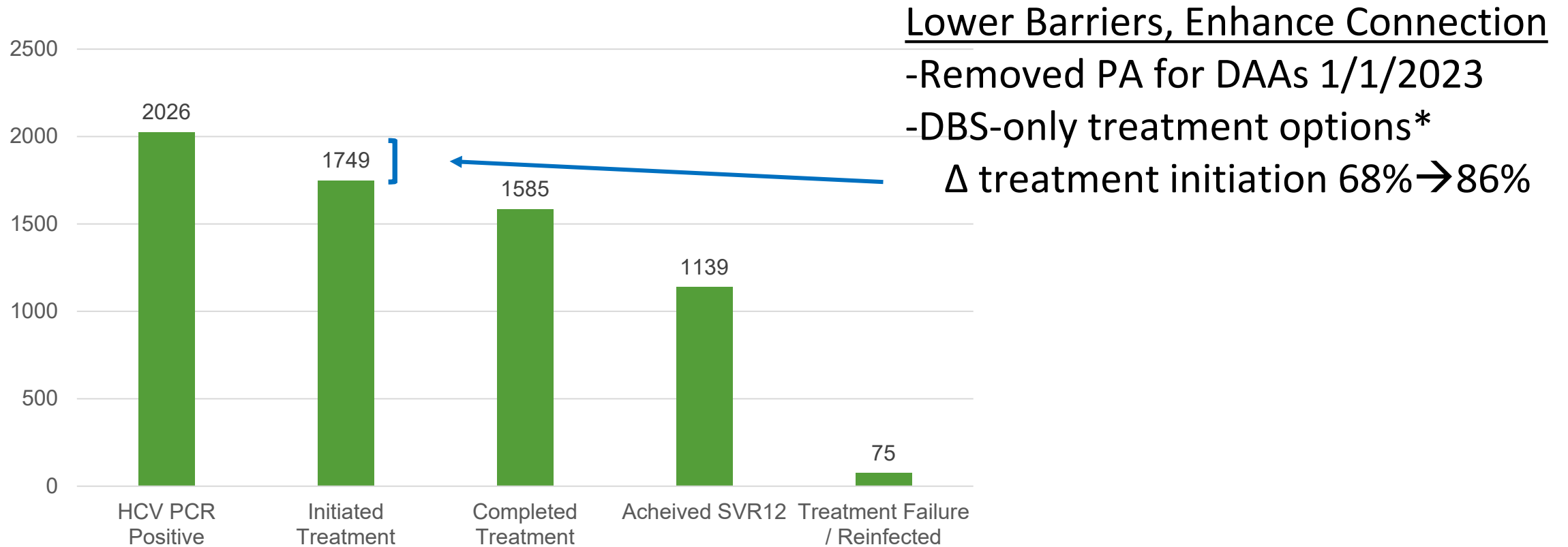
# Interconnectedness is Critical



**February 2017 – March 2023 – Today**

\* Seaman A, Spencer H. DBS TaT Model using D-CHEQ scoring tool. Pre-publication. Implemented 1/1/2023.

# Remove the PA: Test and Treat Models



**February 2017 – March 2023 – Today**

\* Seaman A, Spencer H. DBS TaT Model using D-CHEQ scoring tool. Pre-publication. Implemented 1/1/2023.

# D-CHEQ:

## Decompensated Cirrhosis in Hepatitis C Screening Questionnaire

- ▶ 4 questions re: Age, Alcohol Use, Prior Liver Disease/Complications
- ▶ Score 4-15
- ▶ Retrospective analysis of 1746 DAA treatments
  - ▶ 35 decomp cirrhosis
  - ▶ 130 randomized controls

# D-CHEQ:

## Decompensated Cirrhosis in Hepatitis C Screening Questionnaire

- ▶ 4 questions re: Age, Alcohol Use, Prior Liver Disease/Complications
- ▶ Score 4-15
- ▶ Retrospective analysis of 1746 DAA treatments
  - ▶ 35 decomp cirrhosis
  - ▶ 131 randomized controls

D-CHEQ Score	Sensitivity	Specificity
>8	100%	89%
>11	100%	97%

# DBS Test and Treat Model (DBS TaT)

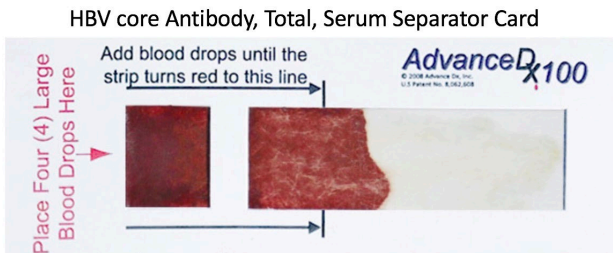
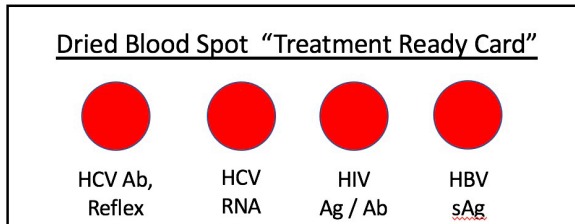
**Outreach / OTP  
Performs D-CHEQ,  
DBS / SSC**



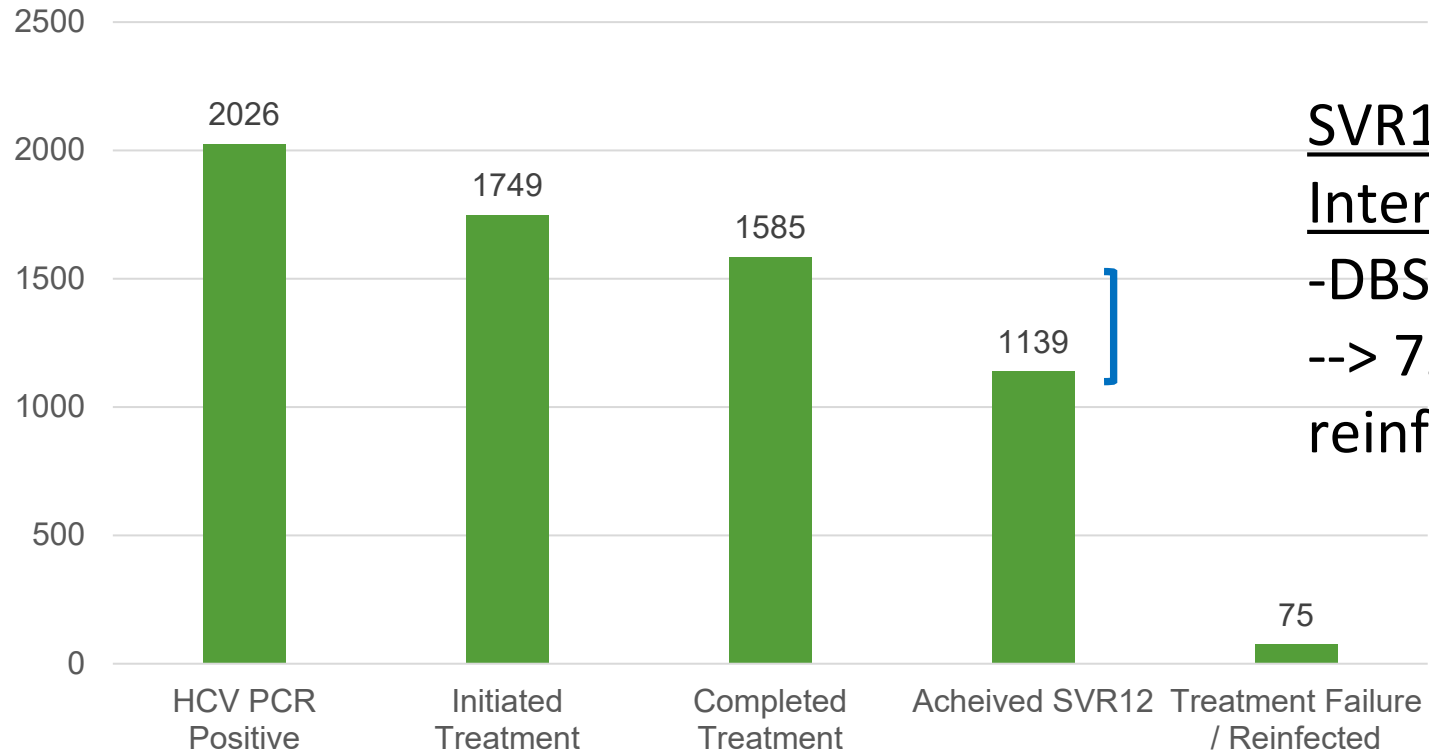
**D-CHEQ  $\leq$  11, HCV +,  
HBV sAg neg?**



**Start DAAs!**



# Incentivization of SVR12



## SVR12 completion: Incentives and Interconnectedness

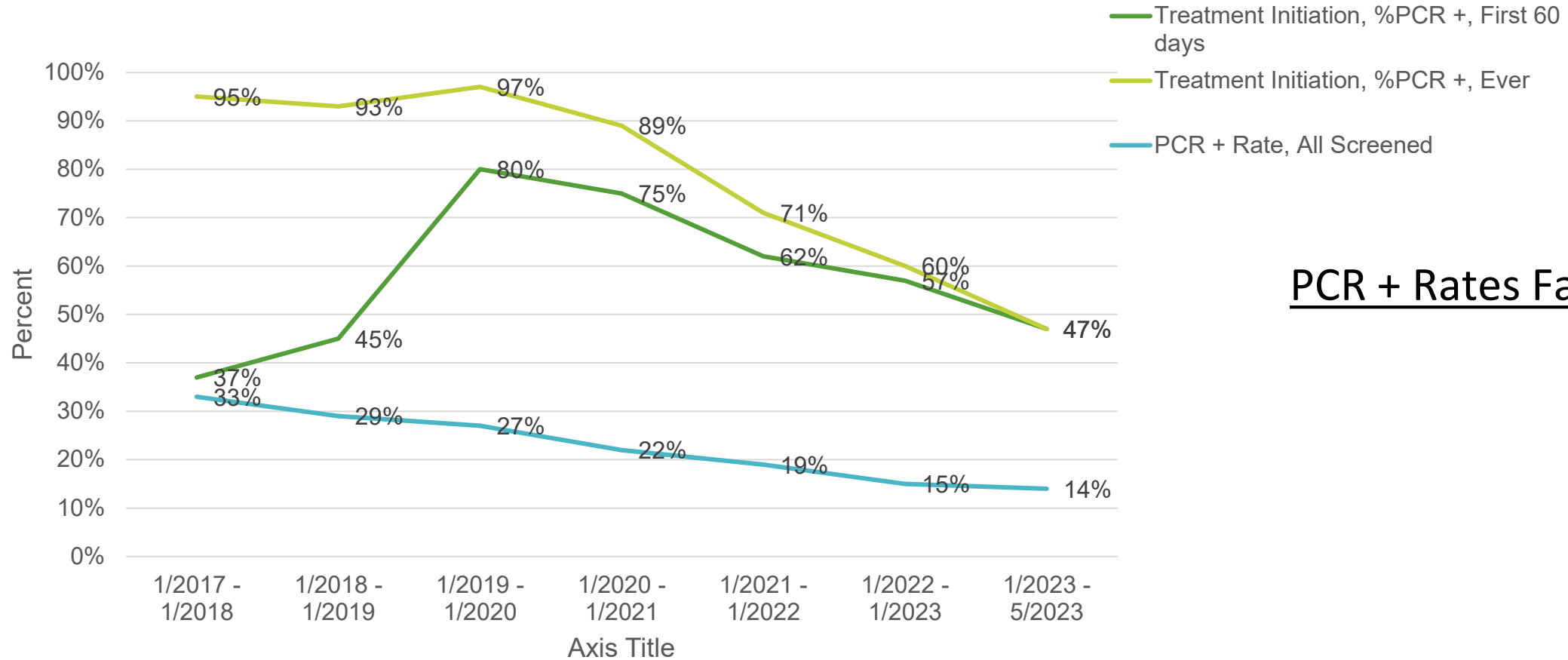
-DBS-only treatment options\*  
--> 72% SVR12, 4% tx failure or reinfection

**February 2017 – March 2023 – Today**

\* Seaman A, Spencer H. DBS TaT Model using D-CHEQ scoring tool. Pre-publication. Implemented 3/1/2023.



# HCV PCR + rates over time

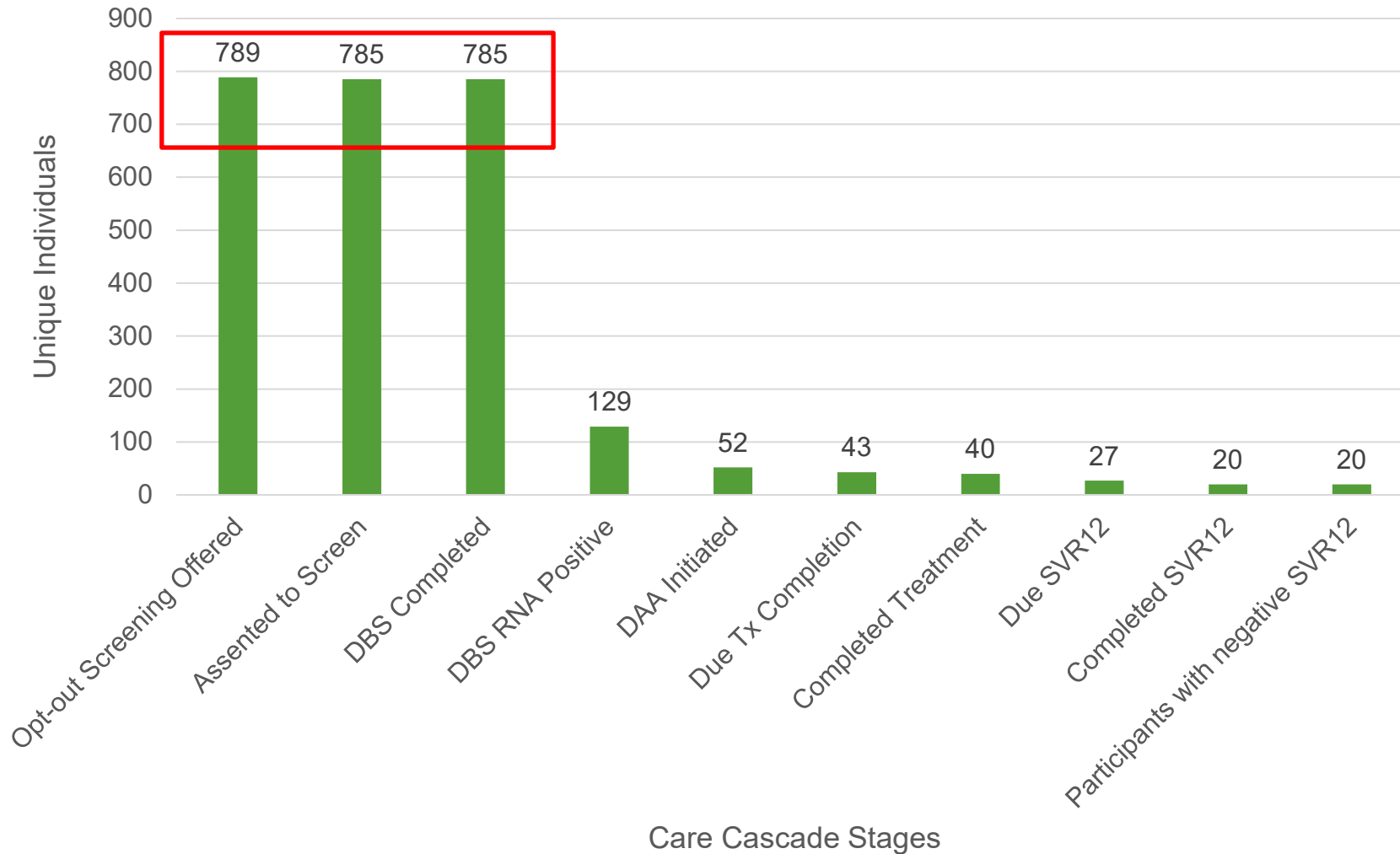


PCR + Rates Falling

**January 2017 – May 2023**

# OTP, DBS, and Role in Elimination

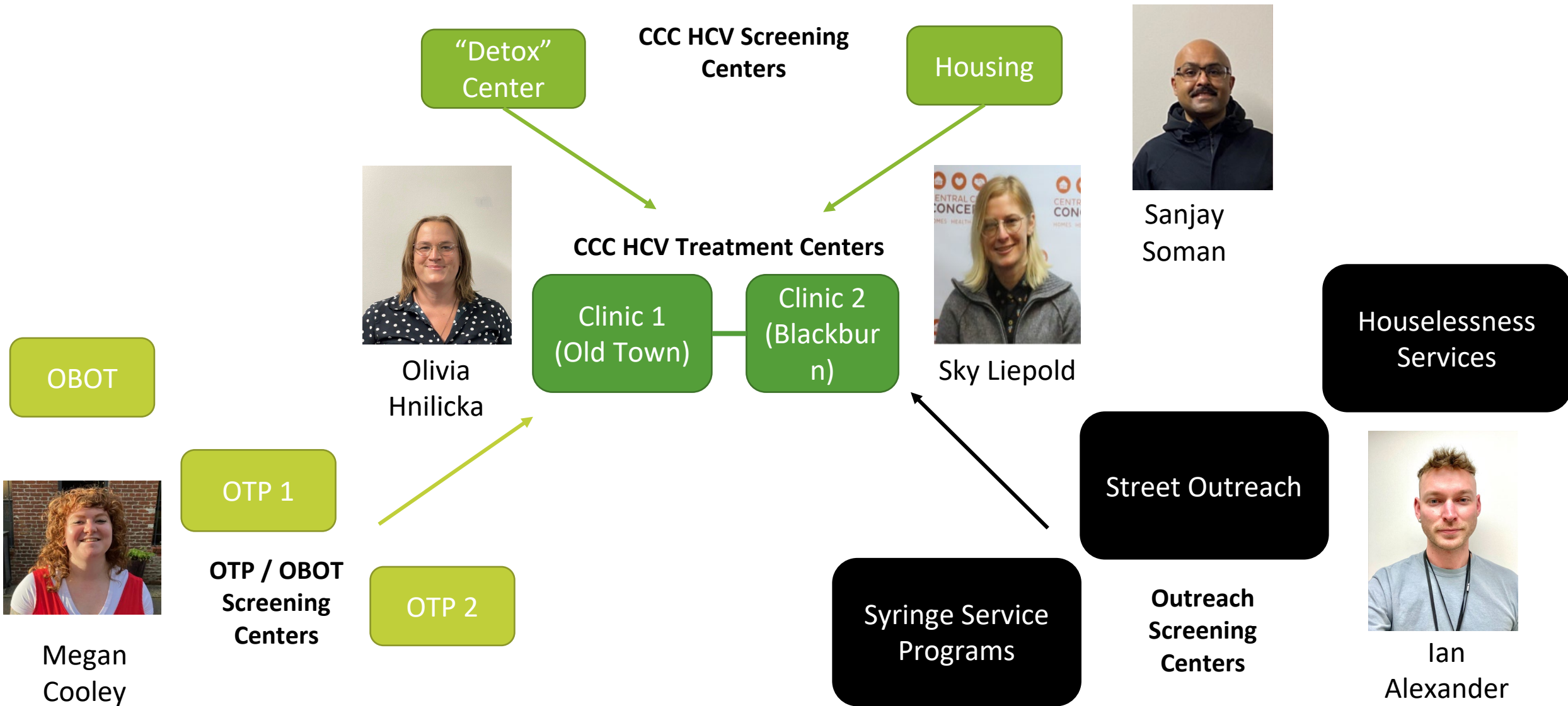
DBS HCV Care Cascade, OTP, 12/21 – 9/22



**Collaboration OTP / CCC. DBS HCV Ab reflex to RNA + Syphilis anti-Trep Ab**

- **>99% OTP patients accepted screening**
- **4/399 opted for phlebotomy → only 4/5 did not complete, discharged from clinic**
- **32 positive syphilis tests**

# Relationships are the core of Elimination



# HCV In Rural Communities

- ▶ Treating people who use drugs essential for HCV elimination, yet few access HCV treatment due to limitations in capacity, particularly in rural areas.
- ▶ Rural challenges for people who use drugs:
  - Few HCV providers, *despite* longstanding ECHO
  - Few syringe service programs, naloxone
  - Encampment sweeps, loss of phones, stigma, barriers to attending appointments<sup>1</sup>

# Oregon HOPE Peer Engagement Model

## ▶ Rural Peer Recruitment and Training

- Local people with lived experience,  $\geq 2$  years recovery
- Hired/supervised by community-based organizations
- Trained in community outreach, harm reduction techniques, HCV/HIV testing, research ethics

## ▶ Peer Services

- Build relationships
- Community outreach
- Harm reduction “gift bags”
- HCV/HIV rapid testing
- Linkage to SUD services
- Insurance/housing assistance



Rural Opioid Initiative (UG3DA044831).

Slide Credit: Korthuis PT. NIDA HCV Elimination Seminar, 5/4/2023.

# TeleHCV Component 1: Peer Support

- TeleHCV:
  - Telemedicine visit facilitation, including bringing technology to participant
  - Medication pick-up, adherence support, surveys, and retention
  - Medication lockers if unstably housed
  - Crisis management
  - Housing assistance during HCV treatment



# TeleHCV Component 1: Peer Support

- Enhanced Usual Care:
  - Warm handoff to additional peer support and insurance hep C navigators
  - Provide referral information for local HCV treatment providers
  - Surveys and retention



# TeleHCV Component 2: Clinicians

- Team of Interdisciplinary Clinicians
- Key responsibilities:
  - Review labs, prescribe
  - Medications sent by mail
  - Follow-up adherence call with pharmacist at 4 weeks for refill



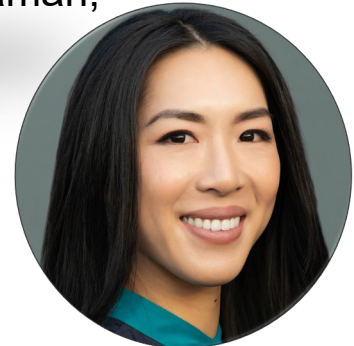
Jane Babiarz, MD



Andrew Seaman,  
MD



Christopher Fox,  
NP



Jenica Lee,  
PharmD



Megan Herink,  
PharmD

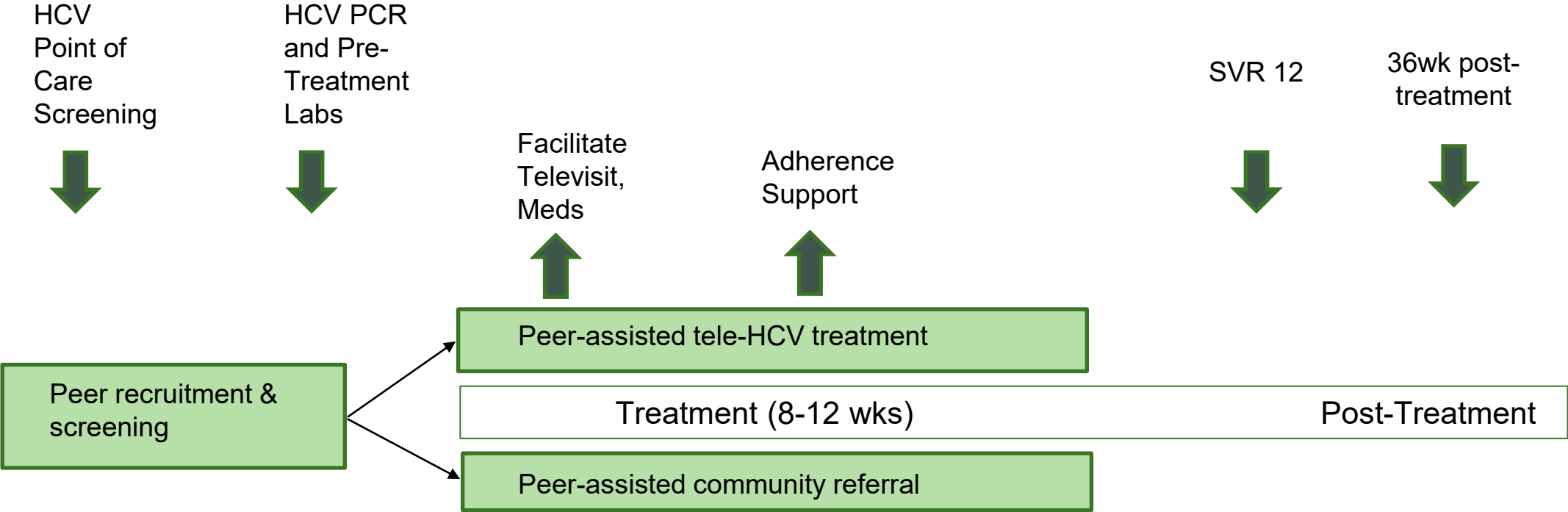


Hunter Spencer,  
DO



# Rural: Rethink Treatment Delivery

## Peer Facilitated Telemedicine



# Rural: Rethink Treatment Delivery

## Final Sample Characteristics (N=203)

- 62.1% male
- 88.2% White, 7% AIAN; 6% Hispanic/Latinx
- 69.5% houseless in past 6 months
- Past 30-day drug use: 88.2% methamphetamine, 57.6% fentanyl/heroin

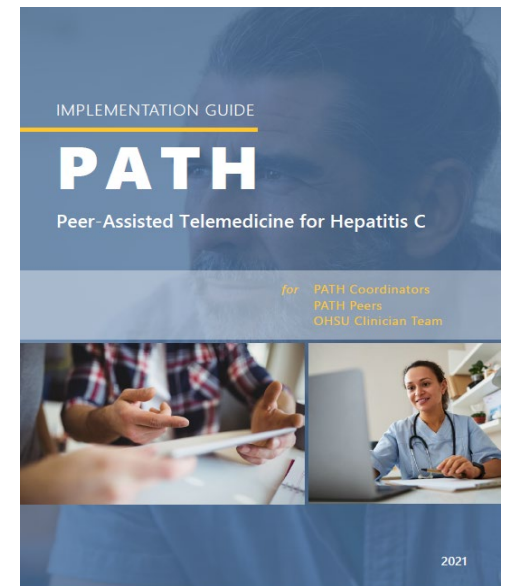
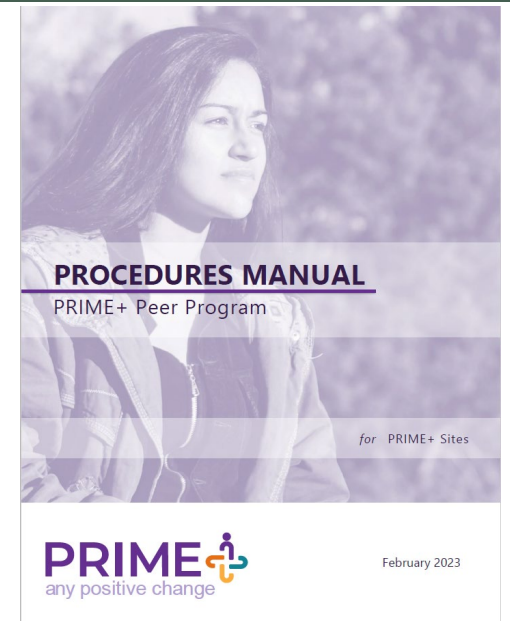
## Preliminary ITT Medication Initiation and HCV Outcomes (As of April 2023)

	EUC	TeleHCV
<b>Started HCV Meds</b> within 6 Months	16/103 (15.5%)	85/100 (85.0%)
<b>HCV Undetectable</b> at SVR12 <small>(% among those due, regardless of initiation)</small>	13/99 (13.1%)	62/96 (64.6%)

*Unpublished data, not for distribution*

# PRIME+ & PATHS: Expanding Statewide

- ▶ Collaborated with Oregon Health Authority to expand peer models statewide
  - 2020: OR-HOPE Peer Engagement model expanded as “**PRIME+**” to 24 of 36 counties
  - 2022: Tele-HCV model expanded as “**PATHS**” to 18/36 rural counties
  - Funded by SAMHSA State Opioid Response Grant
- ▶ Oregon HOPE team supports peer infrastructure
  - Developed PATHS implementation guide
  - Provides training and TA to peer teams



# Putting It Together

- Start small, don't forget the big picture
- Weave a wide net! The more interconnected, the more cases you catch, the more you cure.
- Can't build systems without heart or have heart without systems
- DBS and OTPs are perfectly suited for each other
- Remove barriers to treatment and innovation (Prior Auth!), avoid unnecessary pre-treatment evaluation
- Engage Peers, Outreach Workers, Telemedicine in rural areas in addition to ECHO!

# Contacts

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## Lab Partners

Chip House – Molecular Testing Laboratories  
[chouse@moleculartestinglabs.com](mailto:chouse@moleculartestinglabs.com)



Laura Gillim - LabCorp  
[Gilliml@LabCorp.com](mailto:Gilliml@LabCorp.com)



# Acknowledgements



## Acknowledgements

- The people living with hepatitis C and other victims of the war on drugs who taught us how to do this work.
- The CCC HEP Team for the radical love, harm reduction values, and perseverance to bring the cure to the people.
- Dr. Todd Korthuis, OR HOPE, and the PATHS Team for redefining rural HCV treatment
- Thank you to Nigel Brunson, Harm Reduction photographer, for allowing me to use their affirming work. Heroes of Harm Reduction Series, Nigel Brunson. Accessed 5/3/2023.

# Resource Slides

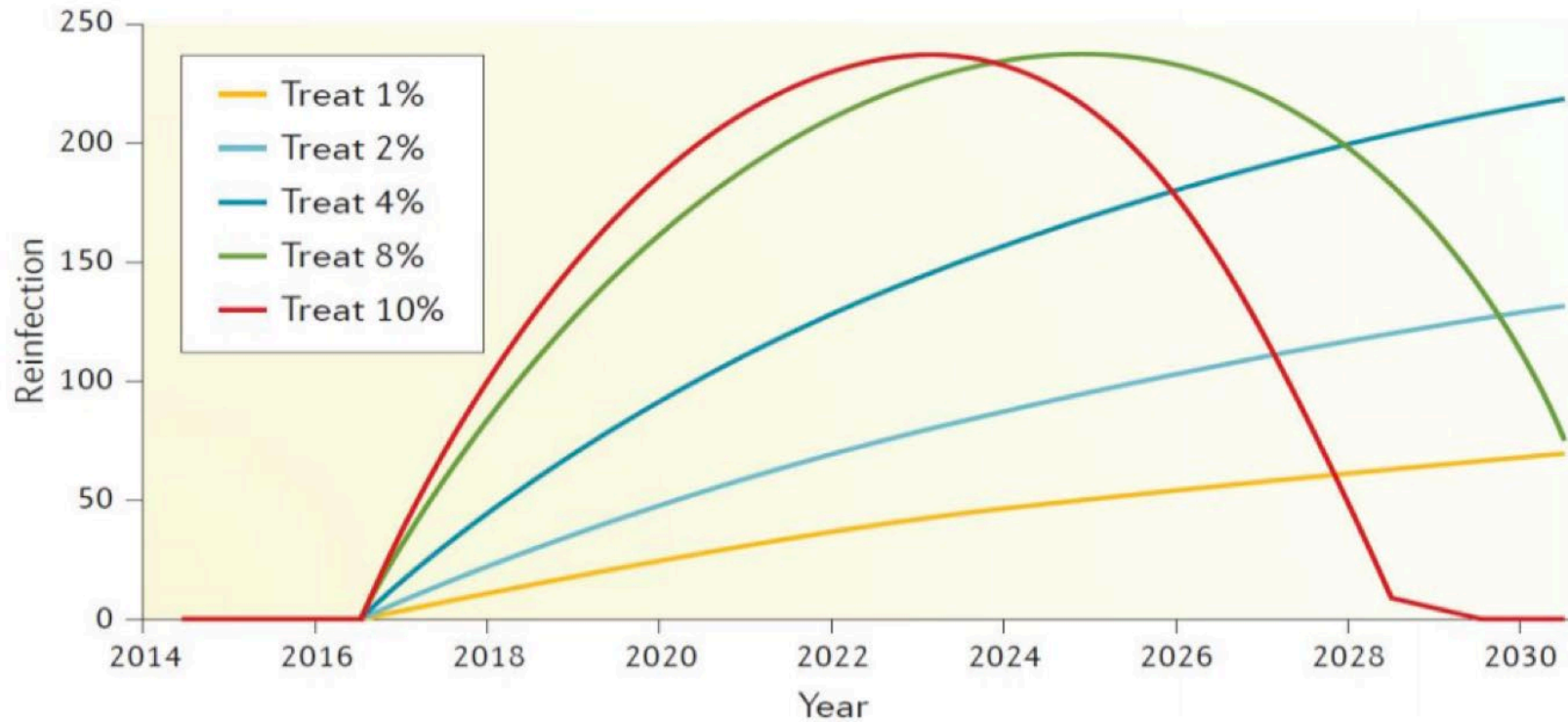
# Reinfection happens, less with OUD treatment

- Meta-analysis and Systematic review, n=22 studies; 5112 total PYFU)

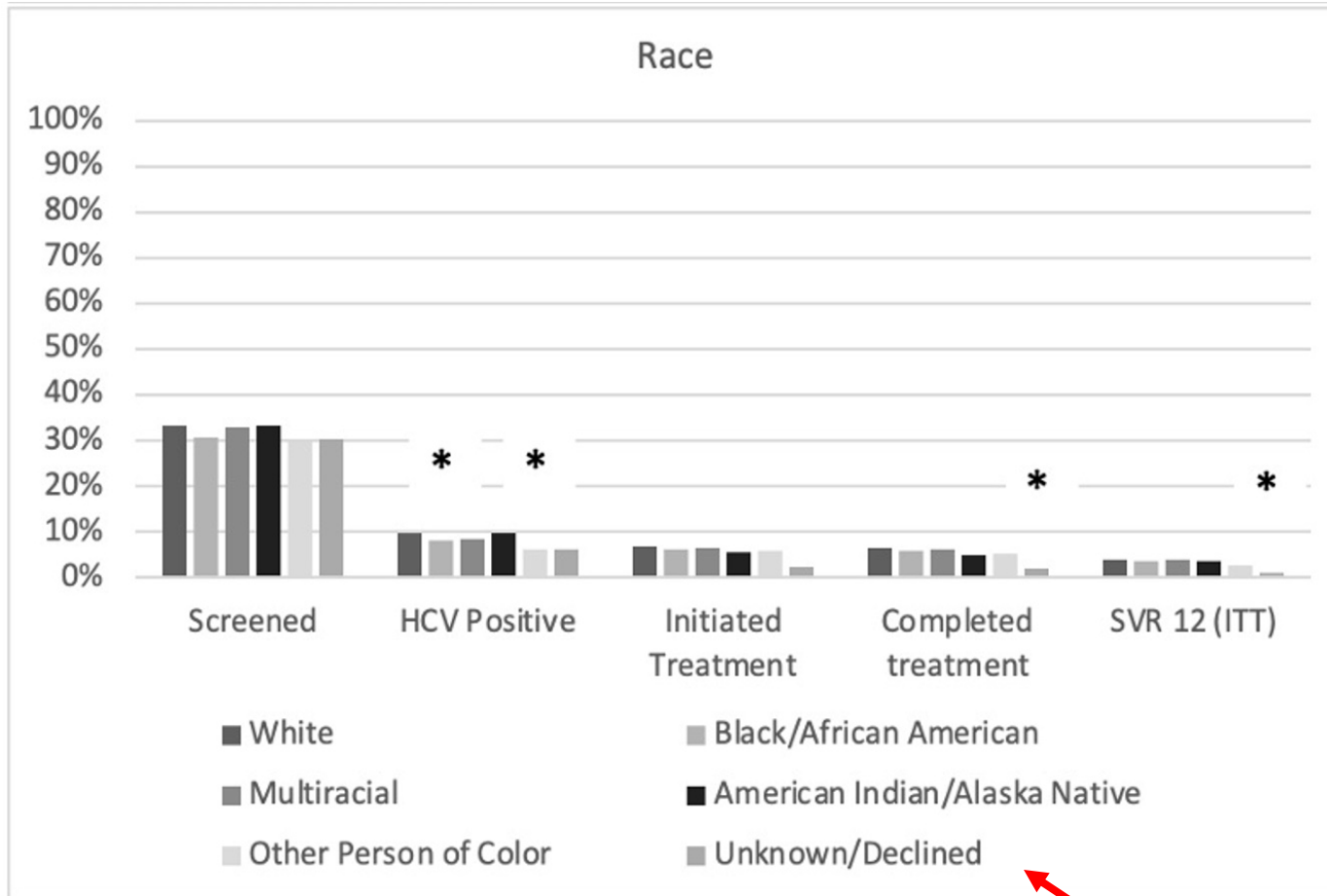
Population	Post-Treatment Reinfection Rate
NO Recent Injection, + Bupe or Methadone	<b>1.3</b> per 100 person years
+ Recent Injection, + Bupe or Methadone	<b>3.6</b> per 100 person years
+ Recent Injection, NO Bupe or Methadone	<b>4.6</b> per 100 person years



# Treat more high risk pts, end HCV sooner



# Equity Assessment: Race



- No difference in screening / Tx across ALL groups
- Less equity in Tx completion/SVR1

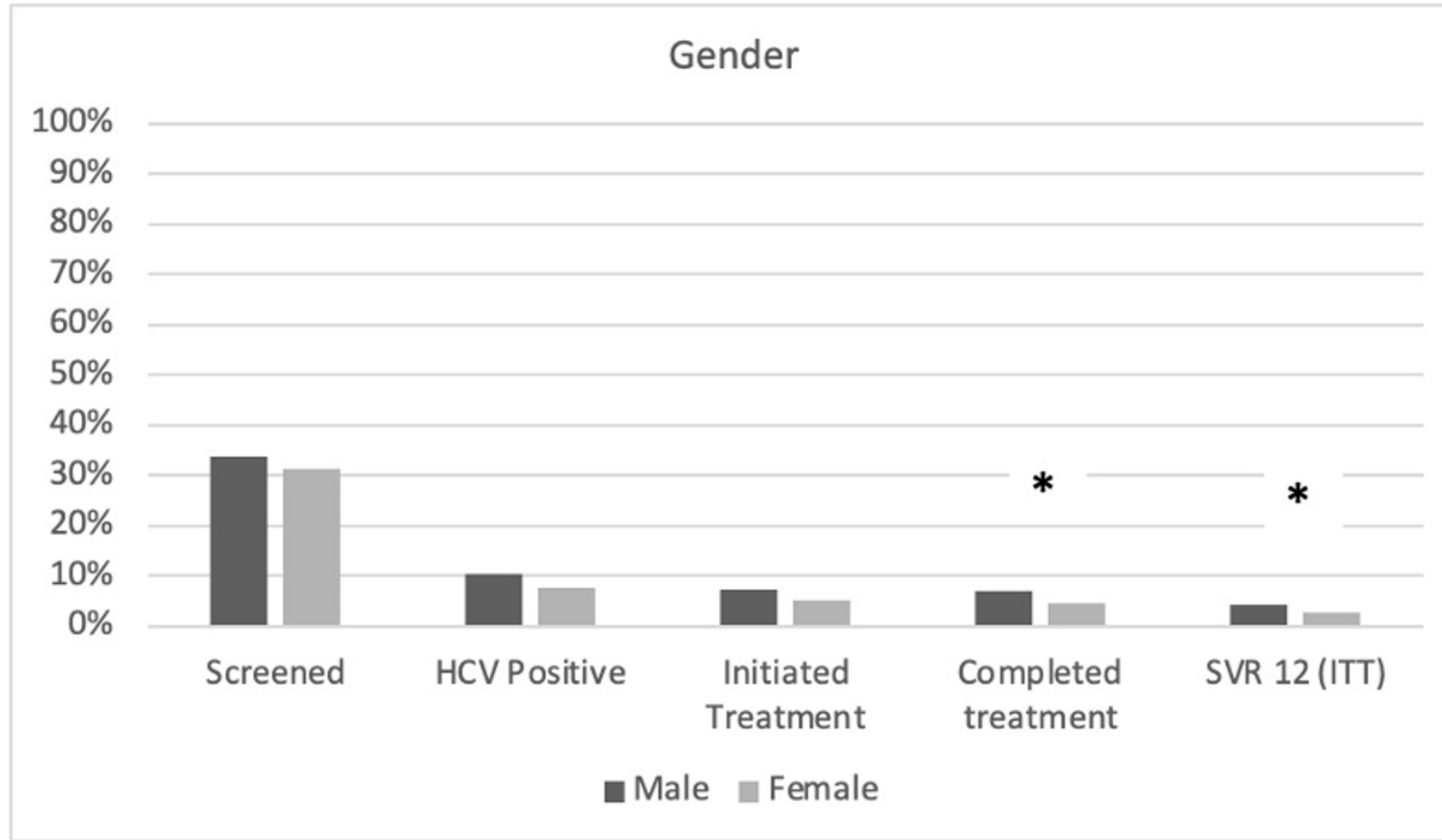


Culturally specific case management

\*Source: Seaman A, King CA et al. Int J Drug Policy. 2021 Jul 26:103359.

Mostly Latinx, Pacific Islander

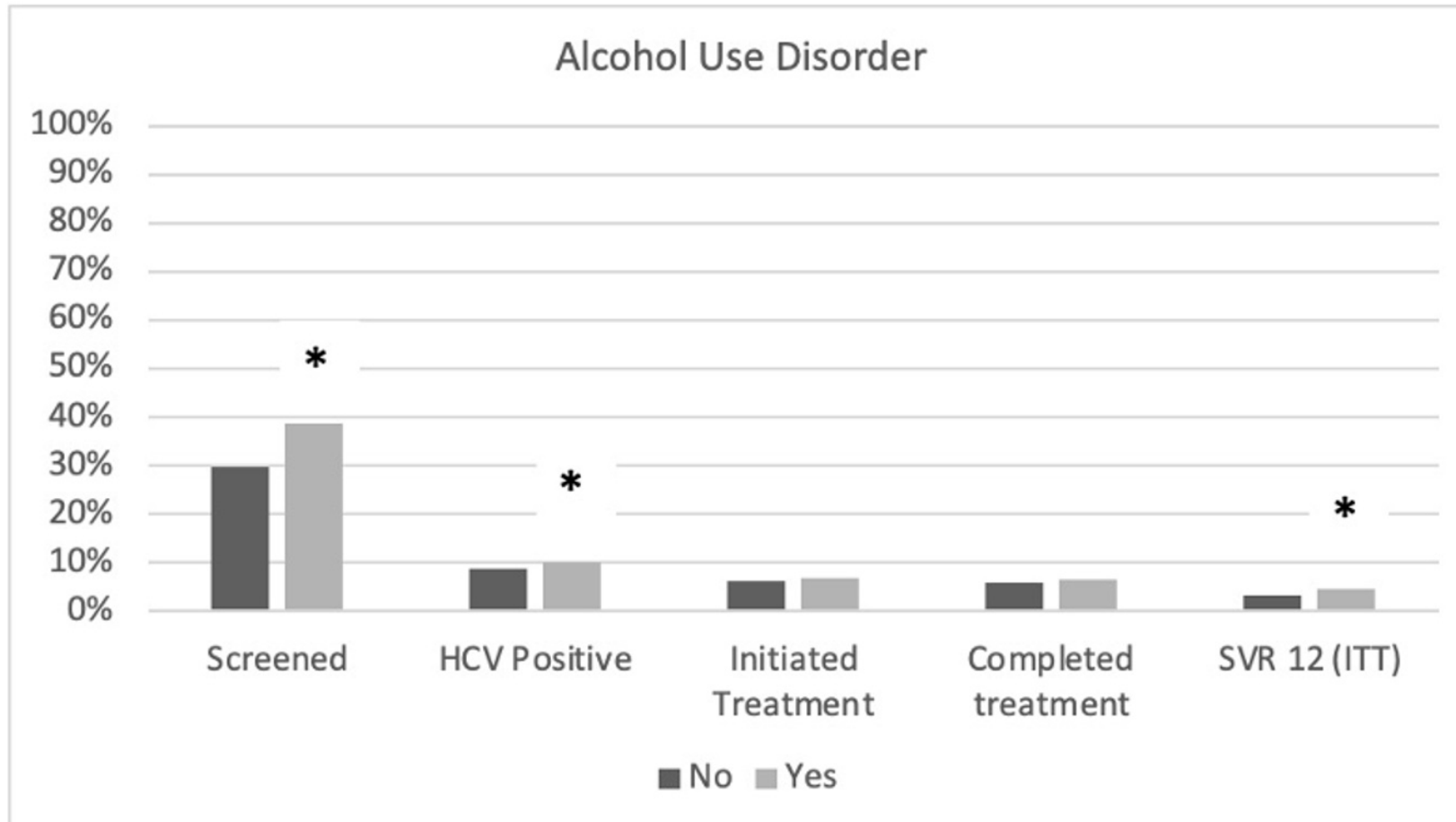
# Equity Assessment: Gender



- Female-identifying less likely to complete Tx / SVR12
- Due to competing demands?

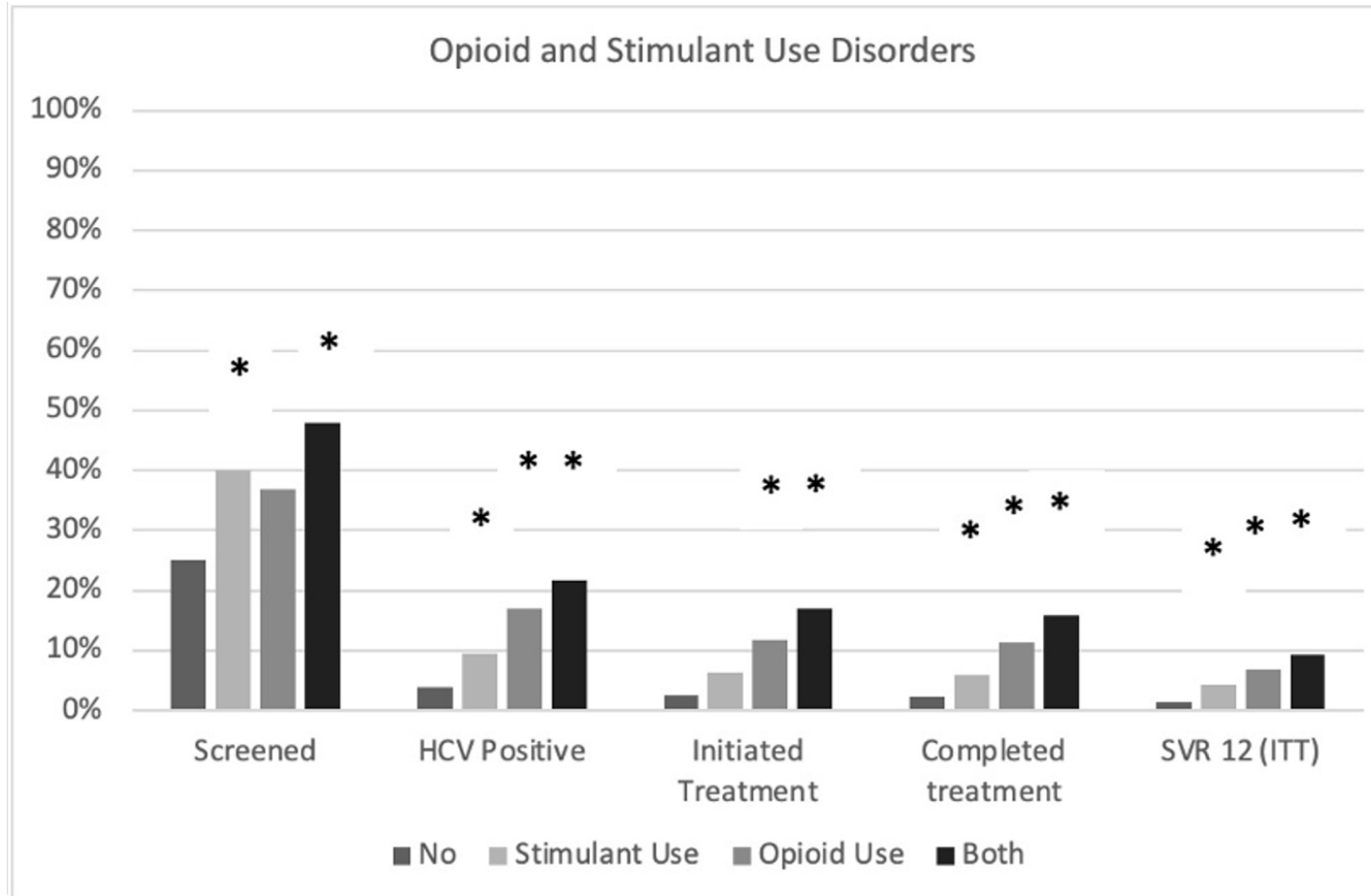
\*Source: Seaman A, King CA et al. Int J Drug Policy. 2021 Jul 26:103359.

# Equity Assessment: AUD



\*Source: Seaman A, King CA et al. Int J Drug Policy. 2021 Jul 26:103359.

# Equity Assessment: Opioid and Stimulant Use



\*Source: Seaman A, King CA et al. Int J Drug Policy. 2021 Jul 26:103359.