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# INTEGRATED CARE FOR SYNDEMICS: BRINGING SUD, HIV & HCV TREATMENT TOGETHER

Sarah Kattakuzhy, MD, MPH

Associate Professor of Medicine and Psychiatry

University of Maryland School of Medicine, Baltimore, Maryland, USA

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## DISCLOSURES

- Participated in an advisory board for Gilead Sciences in 2022
  - Received grant funding for investigator-initiated research payable to my institution
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Review the current evidence base for syndemic-integrated care models



Discuss examples of integrated care in diverse international settings



Present case studies that illustrate how integrated care can improve outcomes

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## OUTLINE

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## LEARNING OUTCOMES



Describe the evidence base supporting collocated care for substance use disorder and infectious syndemics (HIV/HCV).



Identify integrated care models successfully implemented across different regions and service settings.



Understand the clinical and operational mechanisms through which collocated care improves treatment retention, infectious disease outcomes, and overall patient engagement.



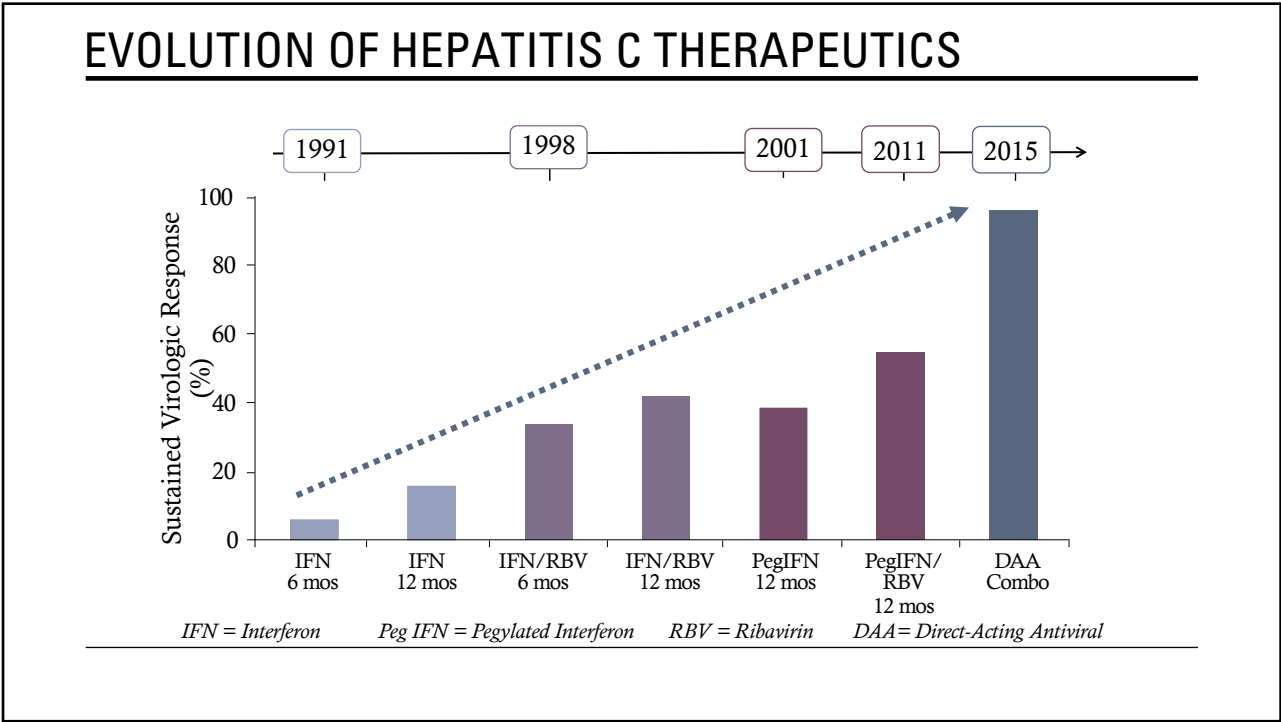
Apply insights from real-world case examples to strengthen or design integrated service pathways in your own contexts.

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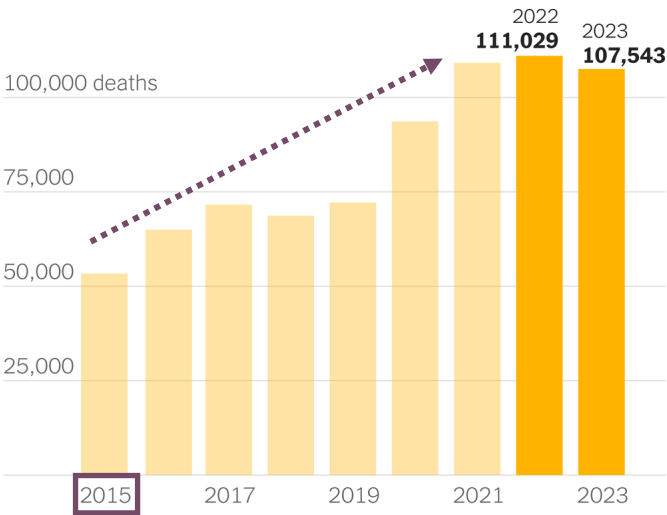


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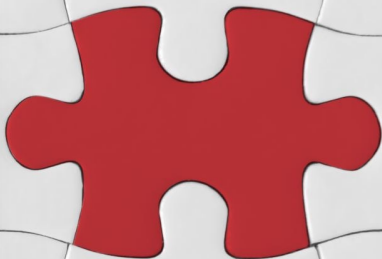
U.S. DRUG  
OVERDOSE  
DEATHS PER  
YEAR  
(1999-2023)



CDC, Washington Post

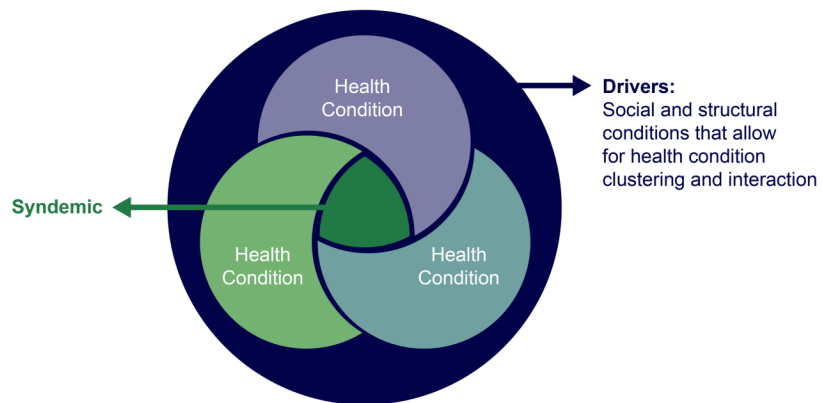
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DEFINING THE  
SYNDEMIC  
CHALLENGE



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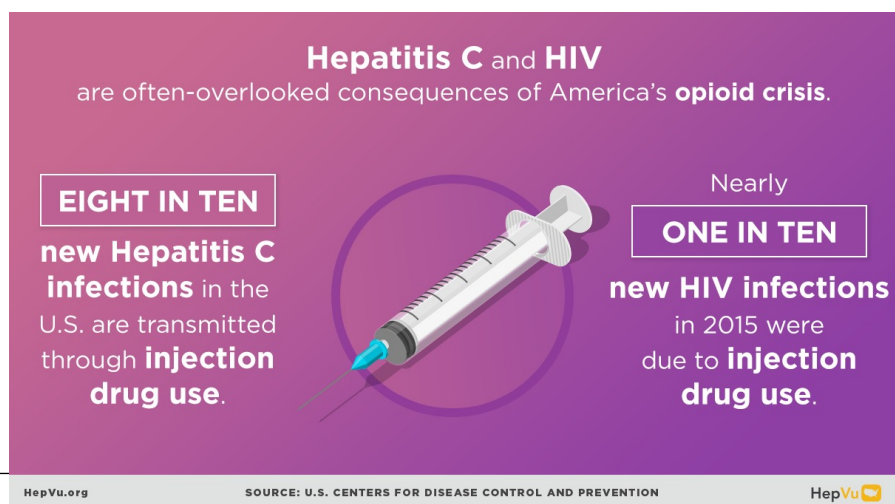
## WHAT IS A SYNDEMIC?



HHS, Office of Infectious Disease and HIV/AIDS Policy

9

## WHAT IS A SYNDEMIC?



10



Strategic pairing of therapeutic interventions based on the syndemic principle

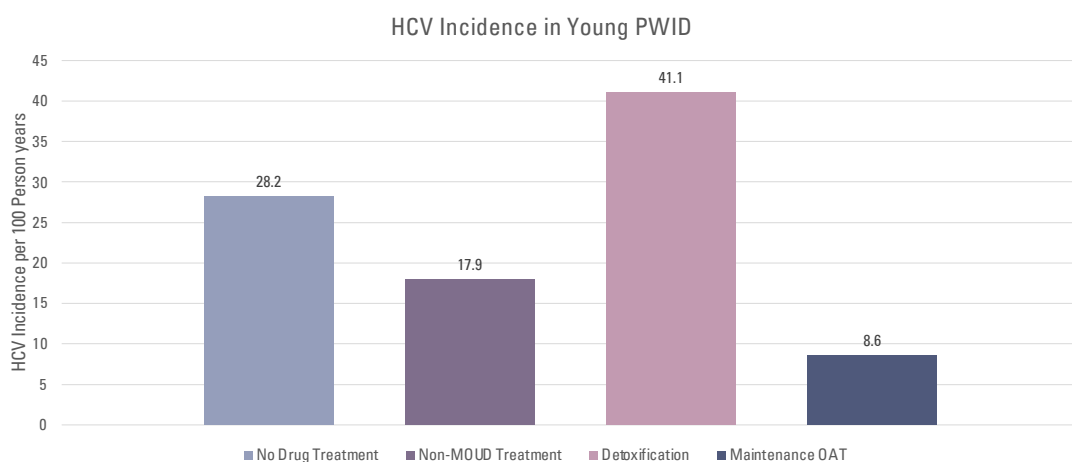


Integrated treatment of both conditions will **reduce risk** associated with conditions and **improve efficacy** of treatments

## WHAT IS INTEGRATED CARE?

11

## MOUD REDUCES HCV INCIDENCE



Tsui, JAMA IM 2014

12

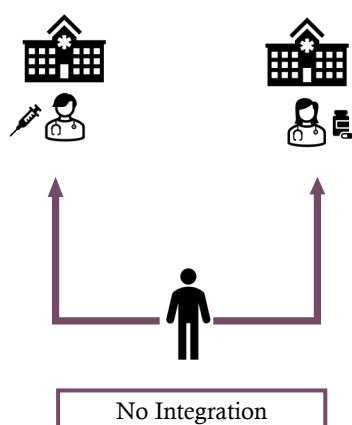
## MOUD IMPROVES HIV OUTCOMES



Altice, JAIDS 2012

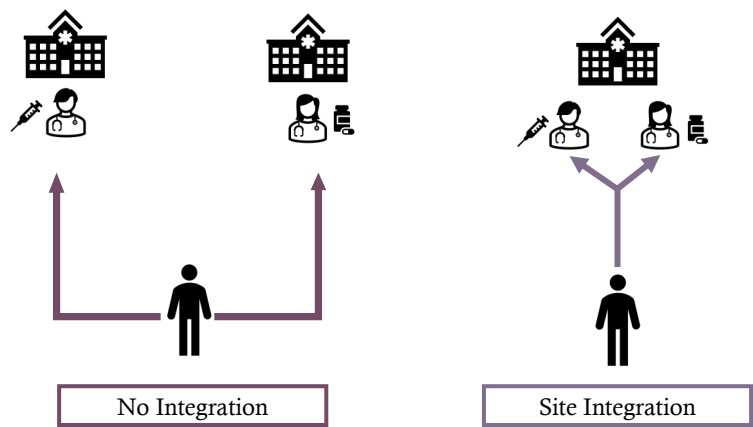
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## WHAT MODELS HAVE BEEN EXPLORED?



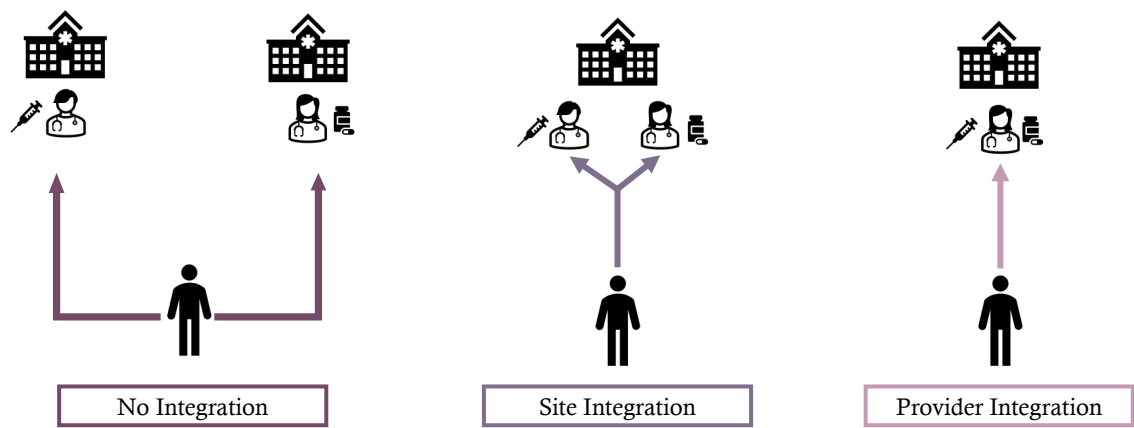
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WHAT MODELS HAVE BEEN EXPLORED?



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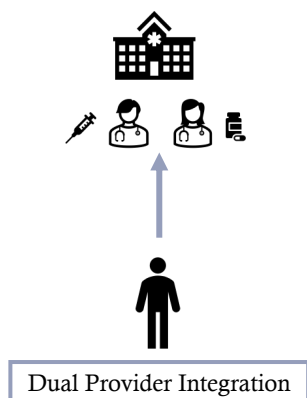
WHAT MODELS HAVE BEEN EXPLORED?



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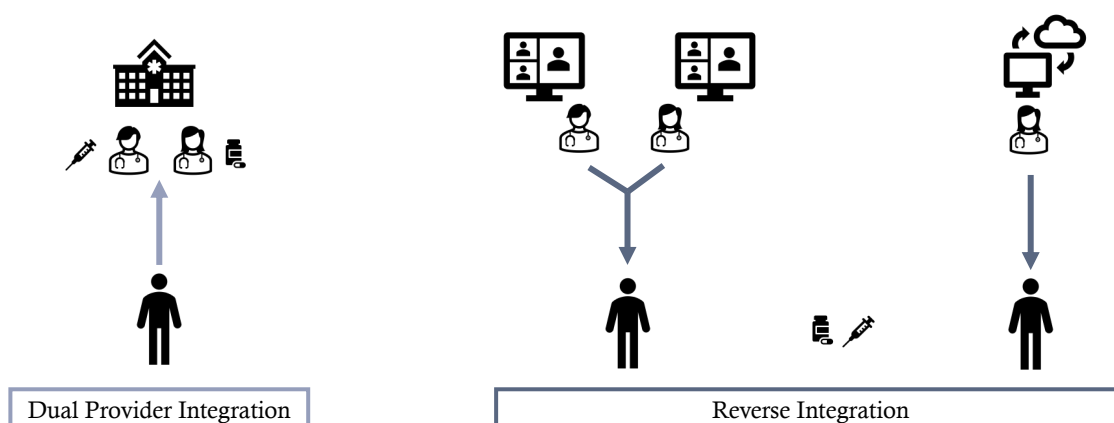


## WHAT MODELS HAVE BEEN EXPLORED?




17

## WHAT MODELS HAVE BEEN EXPLORED?



18



## EVIDENCE FOR INTEGRATED CARE OF HCV, HIV & OUD

19

## INTEGRATING HCV CARE INTO OTP PROGRAMS

*Wolfson-Stofko, JVH 2024*

- Prospective cohort study of in-person HCV treatment
- OAT Clinics in Ontario, Canada
- 295 patients

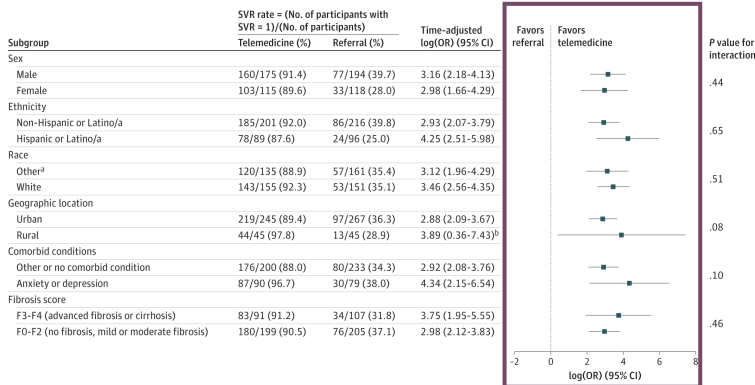
*Talal, JAMA 2024*

- Step-wedge cluster RCT of Telemedicine HCV treatment vs. Referred Care
- 12 OTP in New York, USA
- 602 participants

Wolfson-Stofko B, Hirode G, Vanderhoff A, et al. Real-world hepatitis C prevalence and treatment uptake at opioid agonist therapy clinics in Ontario, Canada. *J Viral Hepat*. Butner JL, Gupta N, Fabian C, Henry S, Shi JM, Tetraault JM. Onsite treatment of HCV infection with direct acting antivirals within an opioid treatment program. *J Subst Abuse Treat*. 2017;75:49-53. doi:10.1016/j.jsat.2016.12.014; Fadnes LT, Aas CF, Vold JH, Leiva RA, Ohldeck C, Chalabianloo F, Skurtveit S, Lygren OJ, Dalgård O, Vickerman P, Midgard H, Løberg EM, Johansson KA; INTRO-HCV Study Group. Integrated treatment of hepatitis C virus infection among people who inject drugs: A multicenter randomized controlled trial (INTRO-HCV). *PLoS Med*. 2021 Jun 1;18(6):e1003653. doi: 10.1371/journal.pmed.1003653. PMID: 34061883; PMCID: PMC8205181.

20

# INTEGRATING HCV CARE INTO OTP PROGRAMS



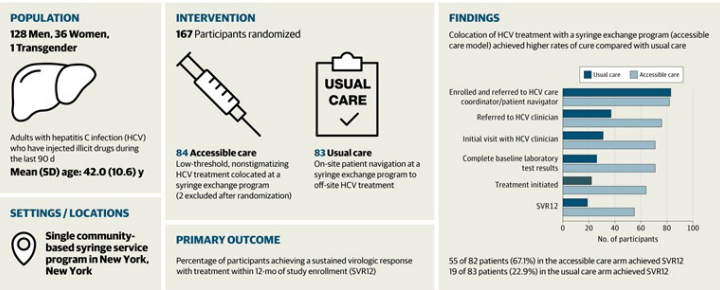
Talal A, Andrews P, Mcleod A, et al. Integrated, Co-located, Telemedicine-based Treatment Approaches for Hepatitis C Virus Management in Opioid Use Disorder Patients on Methadone. *Clinical Infectious Diseases*. 2019;69(2):323-331. doi:10.1093/cid/ciy89; Talal AH, Markatou M, Liu A, et al. Integrated Hepatitis C–Opioid Use Disorder Care Through Facilitated Telemedicine: A Randomized Trial. *JAMA*. 2024;331(16):1369–1378. doi:10.1001/jama.2024.2452

21

# INTEGRATING HCV CARE IN NSP/SSP

Eckhardt, *JAMA Internal Medicine*

- Randomized controlled trial to onsite low threshold clinic vs. referral
- 1 SSP in New York, USA
- 167 participants

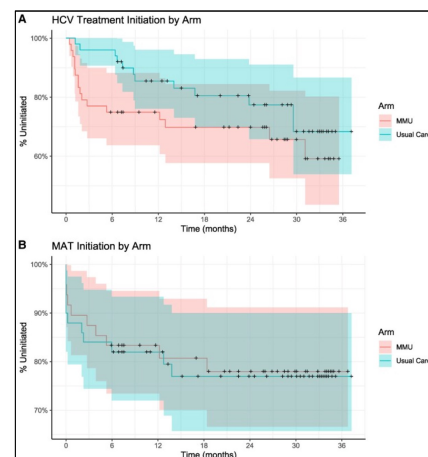


Lindqvist K, Thorin Z, Kåberg M. Real-world hepatitis C treatment outcomes and reinfections among people who inject drugs at a needle and syringe program in Stockholm, Sweden. *Harm Reduct J*. 2023;20:72. doi:10.1186/s12954-023-00801-1  
Eckhardt B, Mateu-Gelabert P, Aponie-Melendez Y, et al. Accessible Hepatitis C Care for People Who Inject Drugs. *JAMA Intern Med*. 2022;182(5):494-502. doi:10.1001/jamainternmed.2022.0170

22

## BRINGING HCV AND MOUD CARE MOBILE

- *Midgard, Liver Int 2022*
  - Prospective cohort study of mobile van-initiated HCV treatment
  - Rural areas of Norway
  - 102 patients, 85% completion
- *Ramers, OFID 2025*
  - Randomized controlled trial of mobile van-initiated HCV treatment vs. usual care
  - Urban unhoused in San Francisco
  - 33% in the MMU group initiated HCV treatment compared to 24% in the usual care group



Midgard H, Bjørnstad R, Egeland M, et al. Peer support in small towns: A decentralized mobile Hepatitis C virus clinic for people who inject drugs. *Liver Int.* 2022;42(6):1268-1277. doi:10.1111/liv.15266; Ramers CB, Vawter N, Northrup A, Klamen SL, Lewis SV, Tam A, Del Aguila C, Lewis R, Mendez B, Reyes L, Matthews E, Rojas S, Godino JG. Simplified and Integrated Hepatitis C Virus Testing and Treatment Algorithm for Unhoused People Who Inject Drugs. *Open Forum Infect Dis.* 2025 May 22;12(6):ofaf302. doi: 10.1093/ofid/ofaf302. PMID: 40476033; PMCID: PMC12138882.

23

## INTEGRATING MOUD IN HIV CARE SETTINGS

*Lucas, Annals 2010*

- Randomized controlled trial of HIV clinic-based bup vs. referred treatment
- Estimated participation was **74%** in the clinic-based BUP group and **41%** in the referred-treatment group ( $P < 0.001$ )
- Estimates of opioid and cocaine use were significantly lower in clinic-based BUP than in referred treatment
  - for opioids, 44% vs. 65%
  - for cocaine, 51% vs. 66%

Lucas GM, Chaudhry A, Hsu J, et al. Clinic-based treatment of opioid-dependent HIV-infected patients versus referral to an opioid treatment program: A randomized trial. *Ann Intern Med.* 2010;152(11):704-711. doi:10.7326/0003-4819-152-11-201006010-00003

24

# INTEGRATING HCV CARE IN CARCERAL SETTINGS FOR PWID

*Papaluca, Journal of Hepatology 2019*

- Prospective cohort investigation of nurse-led care for PWID
- Australian prison system
- 416 participants, 96% SVR

*Hariri S, Int J Drug Policy 2021*

- Prospective cohort investigation of nurse-led care for PWID integrated into MOUD
- Iran, 1 prison
- 82 participants, 100% SVR

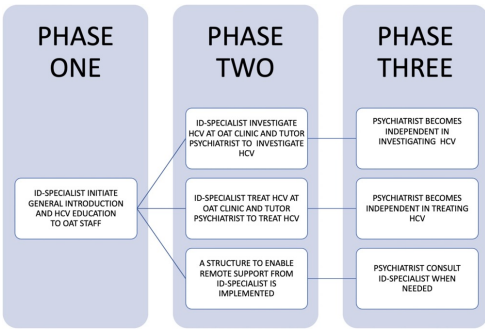
Papaluca T, McDonald L, Craigie A, et al. Outcomes of treatment for hepatitis C in prisoners using a nurse-led, statewide model of care. *Journal of Hepatology*. 2019;70(5):839-846. doi:10.1016/j.jhep.2019.01.01; Hariri S, Alavi M, Roshandel G, Mohammadi Z, Fazel A, Amirani T, Bazazan A, Motamed-Gorji N, Sohrabpour A, Merat S, Poustchi H, Malekzadeh R. An intervention to increase hepatitis C virus diagnosis and treatment uptake among people in custody in Iran. *Int J Drug Policy*. 2021 Sep;95:103269. doi: 10.1016/j.drugpo.2021.103269. Epub 2021 May 12. PMID: 33991887.

25

# INTEGRATING HCV AND MOUD TREATMENT BY SAME PROVIDER (PSYCHIATRIST)

*Klasa, BMC Psychiatry, 2025*

- Prospective cohort study of patients treated for HCV by Psychiatrist
- OTP in Stockholm, Sweden
- 139 participants
- Resulted in SV 88%



Klasa PE, Sandell M, Aleman S, Kåberg M. Psychiatrist-led hepatitis C (HCV) treatment at an opioid agonist treatment clinic in Stockholm- a model to enhance the HCV continuum of care. *BMC Psychiatry*. 2025 Mar 27;25(1):291. doi: 10.1186/s12888-025-06733-3. Erratum in: *BMC Psychiatry*. 2025 Jul 31;25(1):746. doi: 10.1186/s12888-025-07203-6. PMID: 40148897; PMCID: PMC11948708.

26

# INTEGRATING HCV AND MOUD TREATMENT BY SAME PROVIDER (ID SPECIALIST/INTERNIST)

Clinical Infectious Diseases  
MAJOR ARTICLE



## Concurrent Initiation of Hepatitis C and Opioid Use Disorder Treatment in People Who Inject Drugs

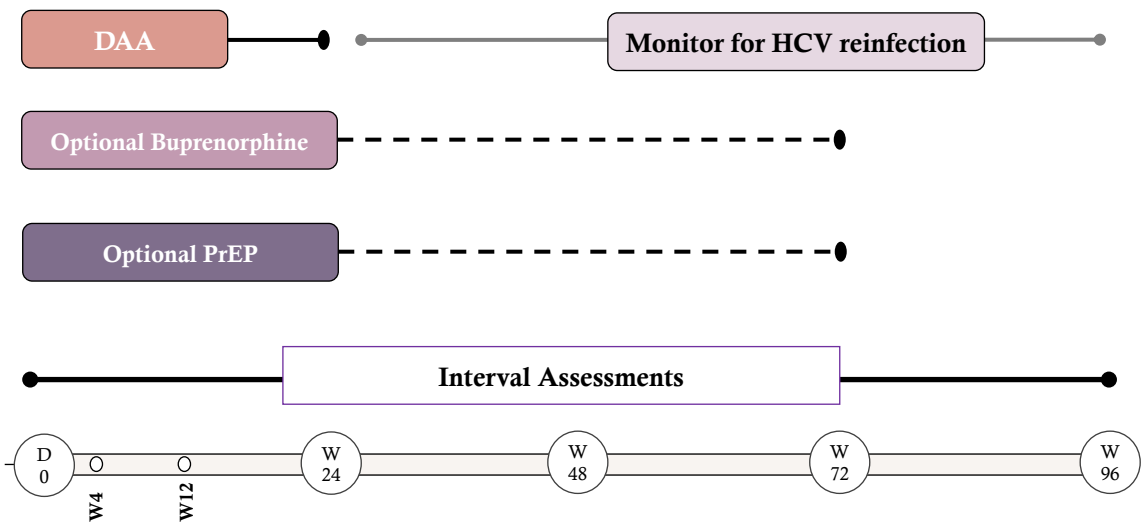
Elana S. Rosenthal,<sup>1,2</sup> Rachel Silk,<sup>1,2</sup> Poonam Mathur,<sup>1,2</sup> Chloe Gross,<sup>1,2</sup> Rahwa Eyasu,<sup>1,2</sup> Laura Nussdorf,<sup>2,3</sup> Kristi Hill,<sup>2,3</sup> Christopher Brokus,<sup>2,3</sup> Aaron D'Amore,<sup>2,3</sup> Nadeera Sidique,<sup>2,3</sup> Phyllis Bijole,<sup>4</sup> Miriam Jones,<sup>4</sup> Randy Kier,<sup>4</sup> Dana McCullough,<sup>4</sup> David Sternberg,<sup>4</sup> Kristen Stafford,<sup>1</sup> Junfeng Sun,<sup>3</sup> Henry Masur,<sup>2,3</sup> Shyamasundaran Kottitil,<sup>1,2</sup> and Sarah Kattakuzhy<sup>1,2</sup>

<sup>1</sup>Institute of Human Virology at the University of Maryland School of Medicine, Baltimore, Maryland, USA, <sup>2</sup>DC Partnership for HIV/AIDS Progress, Hepatitis Clinical Research Program, Washington, DC, USA, <sup>3</sup>Critical Care Medicine Department, National Institutes of Health, Bethesda, Maryland, USA, and <sup>4</sup>Helping Individual Prostitutes Survive, Washington, DC, USA

Rosenthal ES, Silk R, Mathur P, et al. Concurrent Initiation of Hepatitis C and Opioid Use Disorder Treatment in People Who Inject Drugs. *Clin Infect Dis.* 2020;71(7):1715-1722. doi:10.1093/cid/ciaa105

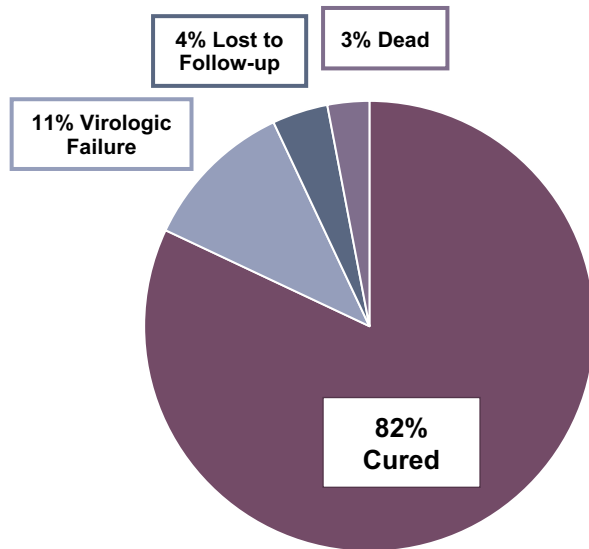
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## ANCHOR: STUDY DESIGN



28

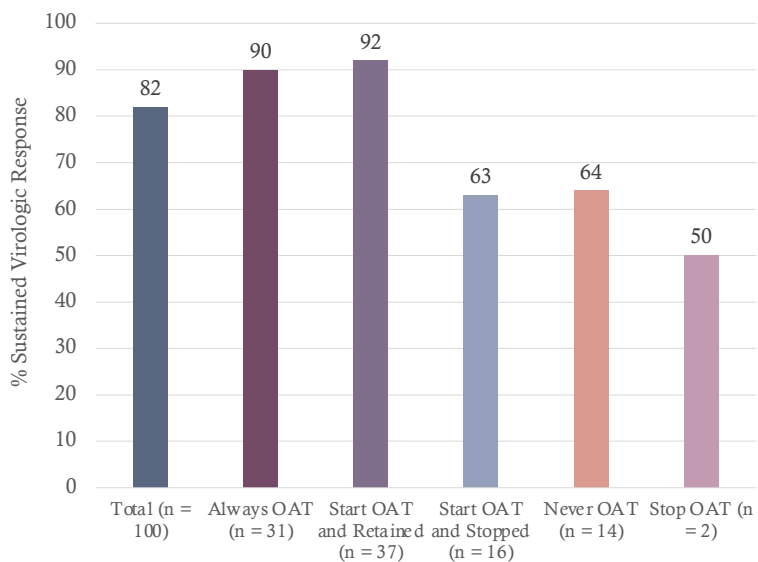
## ANCHOR: SVR



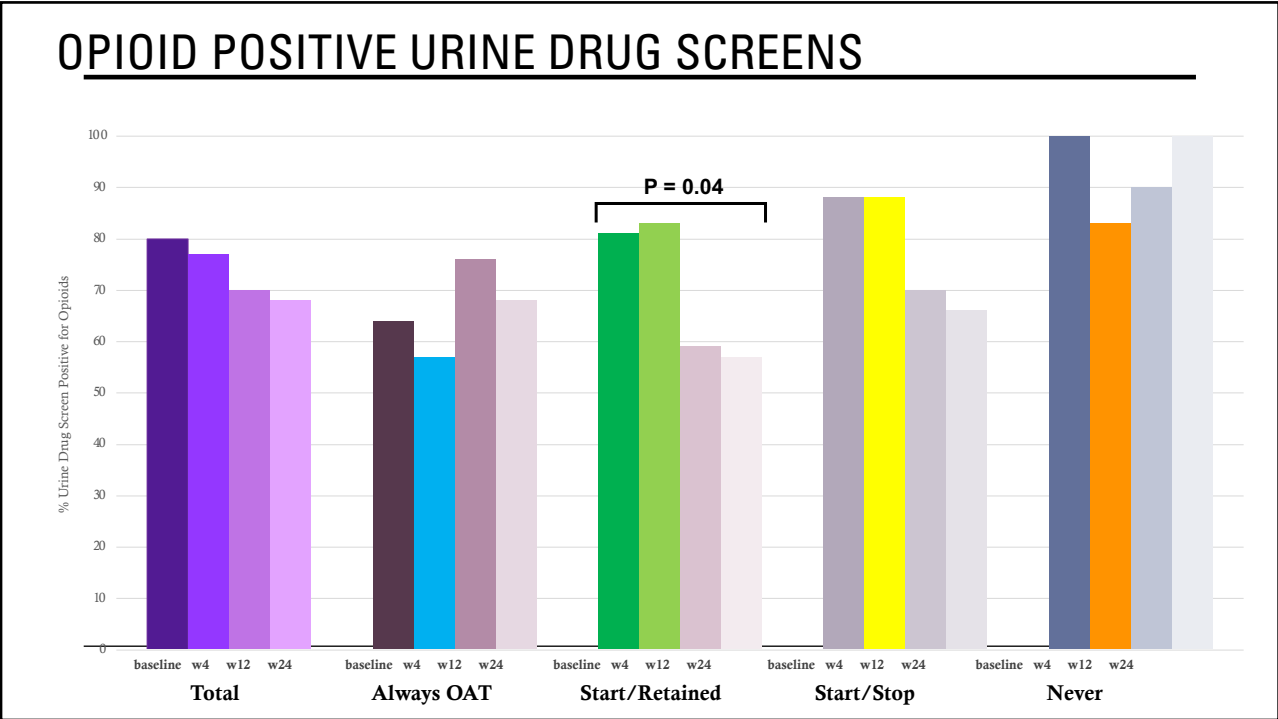
Rosenthal, CID 2020

29

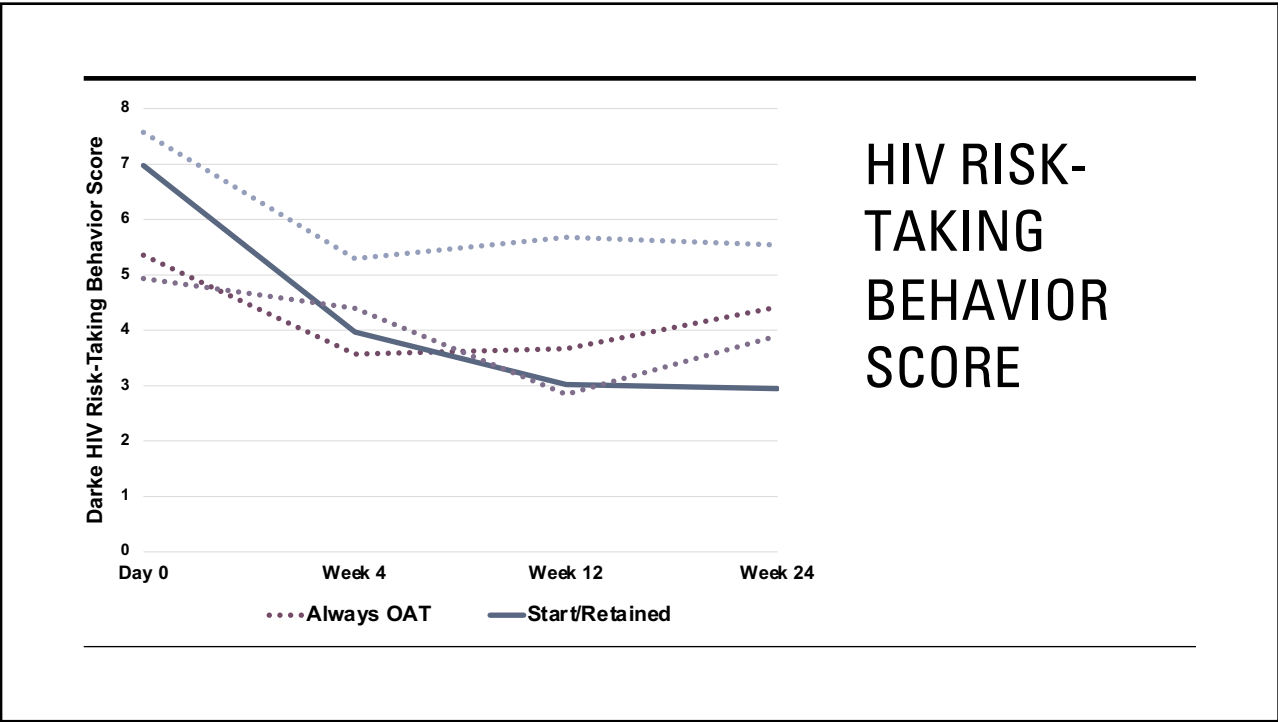
## SUSTAINED VIROLOGIC RESPONSE



30



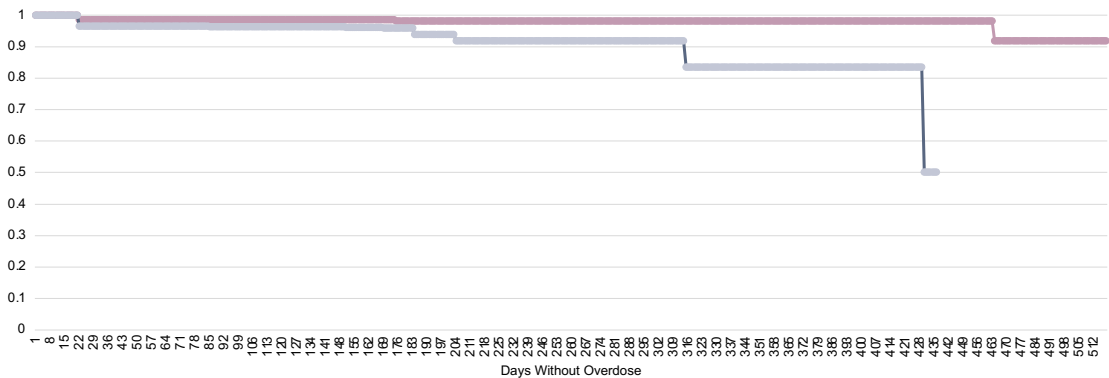
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32

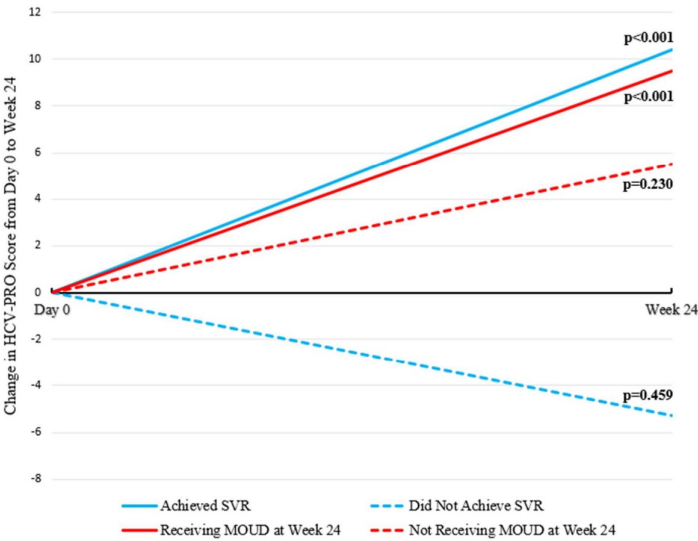


# OVERDOSE-FREE SURVIVAL



33

# MOUD AND SVR IMPROVE QUALITY OF LIFE RATINGS



Spaderna, IJDP 2023

34

## SUMMARY OF EVIDENCE

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Multiple evidence-based strategies to integrate HCV care into MOUD settings or deliver HCV care to PWUD

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Evidence for provider integration of HCV and MOUD care by psychiatrists, general practitioners, and ID specialists

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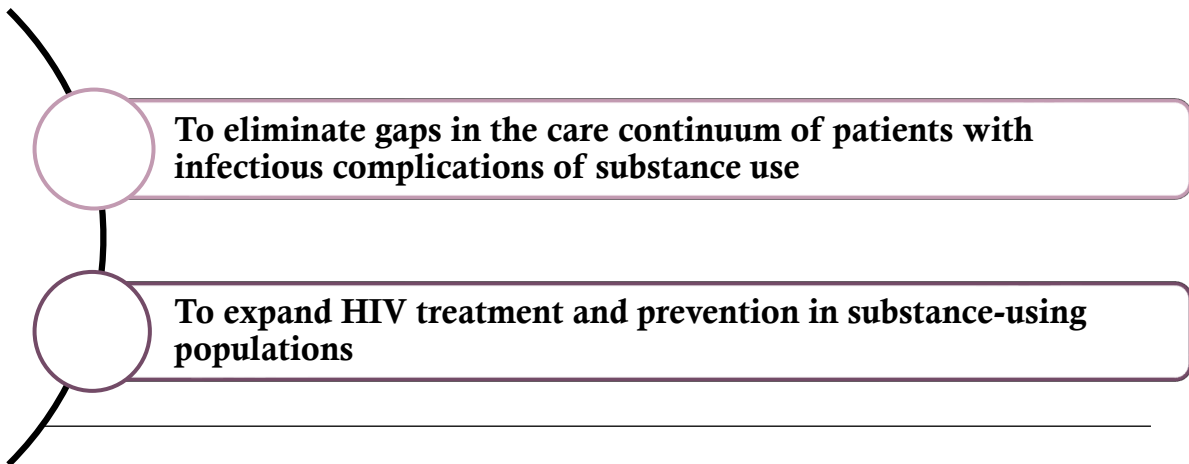
ANCHOR study supports that concurrent initiation of MOUD and HCV treatment has improved effect on HCV cure, HIV risk behavior, drug frequency, and overdose

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36

## RESEARCH INITIATIVE IN INFECTIOUS DISEASE AND SUBSTANCE USE (RIIS)



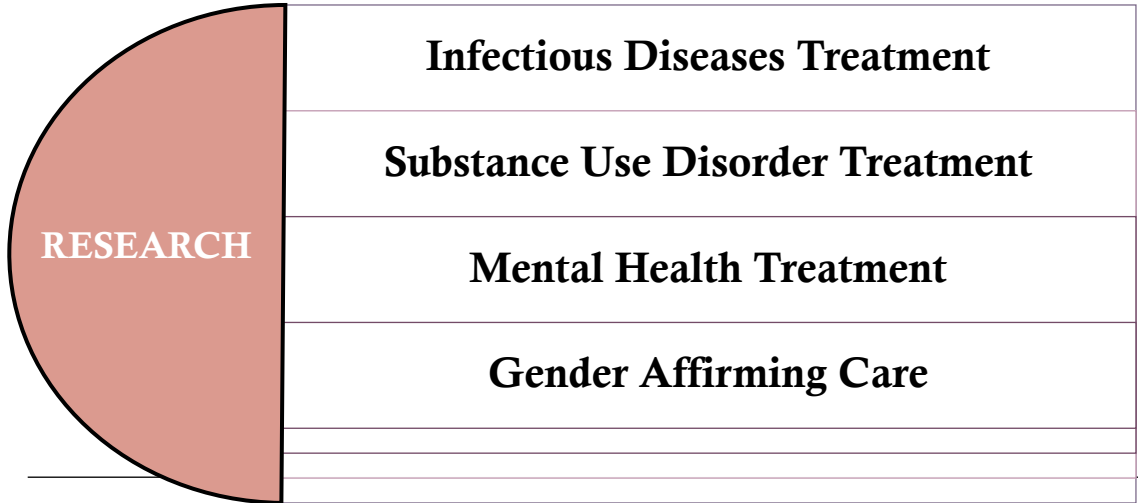
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## INTEGRATED CLINICAL SERVICES

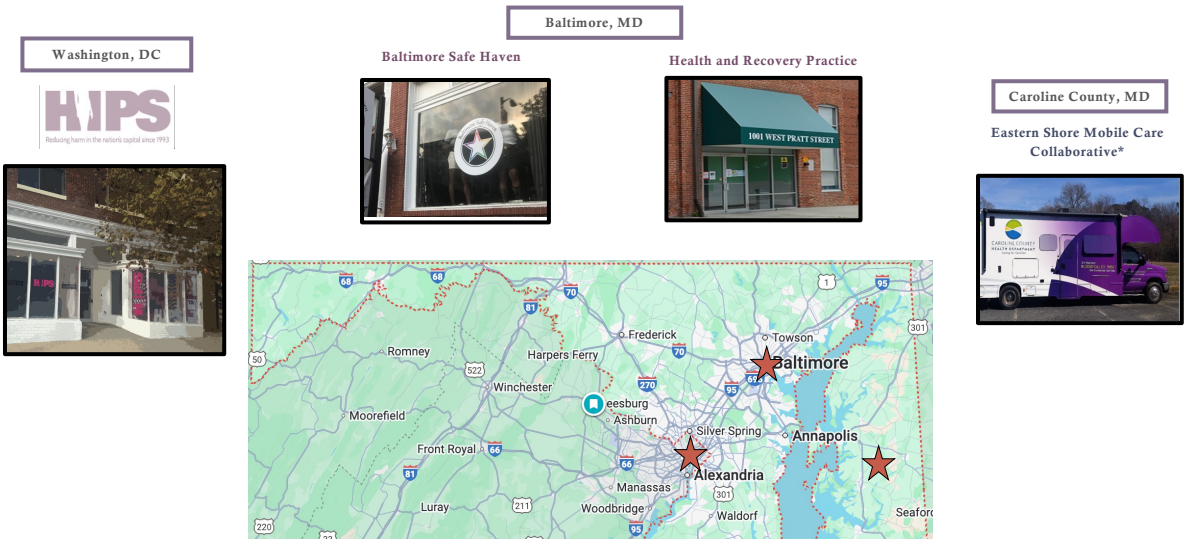


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INTEGRATED CLINICAL SERVICES AND RESEARCH



39



COMMUNITY-BASED CARE SETTINGS

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56-year-old Black male

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38-year history of opioid use; initially heroin, transitioned to fentanyl in the last three years

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Injecting 4-5 times per day

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Previously on methadone but detoxed while incarcerated and will “never do that again”

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Utilizes syringe service program

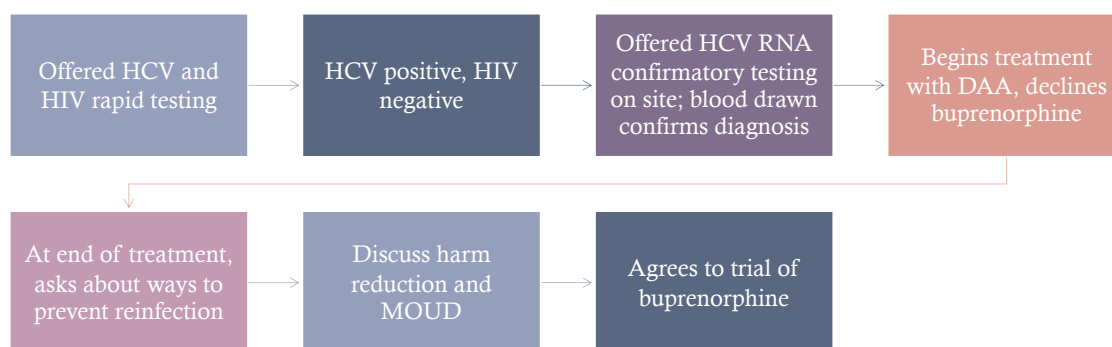
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**M.B.**

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**M.B.**



42

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## LESSONS FROM M.B.



Patient-identified order of priority



Harm reduction is low-hanging fruit applicable across the care continuum



Success and ease of HCV treatment paved the way for MOUD treatment



Ask again! Repeat encounters offer opportunities for motivational interviewing, developing discrepancy

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43

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34-year old White female

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15-year history of opioid use and methamphetamine use

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Injecting daily

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Previous history of HCV treatment

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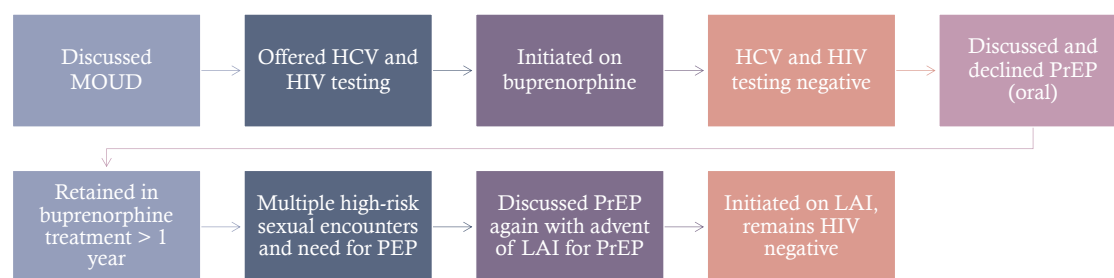
Engaging in sex work

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A.J.

44

## A.J.



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## LESSONS FROM A.J.

Syndemic treatment benefit

MOUD as a form of HIV prevention

- Reduced injection drug use
- Reduced chemsex
- Longitudinal engagement with MOUD providers who prescribed PrEP
- Longitudinal engagement with MOUD enabled discussion of new PrEP options

Newer LAI for PrEP may change risk/benefit ratio for some individuals

46

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32-year-old White person

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10 days post-release from incarceration

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Presents to rural telemedicine addiction van

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Seeking MOUD, which they were maintained on during incarceration

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No non-prescribed drug use since incarcerated one year ago

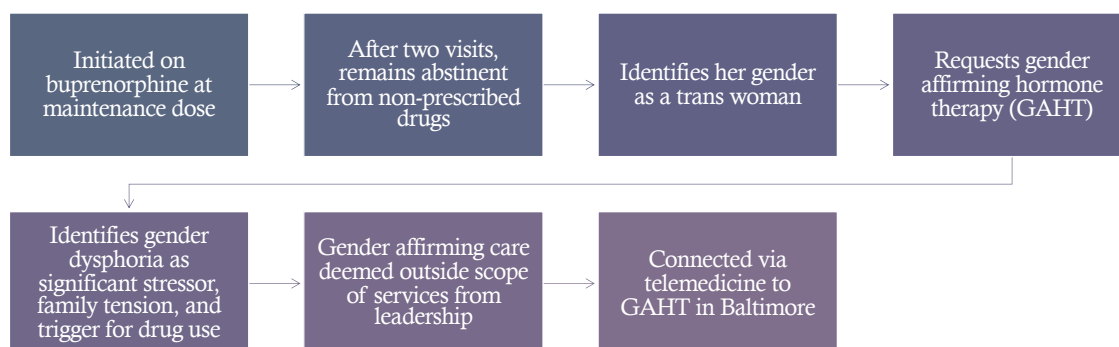
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**C.H.**

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**C.H.**



48





49



A syndemic is the synergistic interaction of two or more co-occurring diseases or health conditions that are worsened by social, environmental, and economic factors



The syndemic approach holds that integrated treatment of both conditions will reduce risk associated with conditions and improve efficacy of treatments



There are multiple models integrated care, at the site level, provider level, and through technology-based reverse integration.



There is strong evidence that integrating HCV and MOUD treatment can lead to improved rates of HCV treatment uptake, retention, and cure, reproduced across OTP, SSP, and community-care settings



ANCHOR study supports that concurrent initiation of HCV and MOUD leads to bidirectional improvements in rates of HCV cure and reduced drug use, supportive of the syndemic approach



Integration can occur simultaneously or unfold over time (as in case studies), but there may be implementation barriers



It's fun!

50

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# THANK YOU AND QUESTIONS

[skattakuzhy@ihv.umaryland.edu](mailto:skattakuzhy@ihv.umaryland.edu)

(+1) 443-691-4638

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