

DIAGNOSING AND TREATING VIRAL HEPATITIS AMONG PEOPLE WHO USE DRUGS

Telemedicine Models of Care

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Disclosures

Grant/Research

Astra Zeneca

Gilead

Novo Nordisk

Salix

Committee /Advisor

AbbVie

Gilead

Novo Nordisk

Madrigal

Principal

Empath Medical Innovations



Webinar Objectives

- To understand the feasibility and implementation challenges of facilitated telemedicine as an HCV elimination approach in rural New York State.
 - Telemedicine continues to expand HCV treatment access
 - Facilitated telemedicine can result in >90% HCV treatment initiation and cure.
- To understand the state of hepatitis C virus elimination in a rural New York State healthcare network.
 - HCV infection remains underdiagnosed and undertreated in rural NYS.
 - Opportunities for research using facilitated telemedicine to address HCV in rural areas.
- To understand the interventions required for hepatitis C virus elimination in rural New York State.
 - Incorporate county health commissioners as decision-making stakeholders for valuable perspectives.
 - Investigate potential co-implementation of facilitated telemedicine in rural locations.
 - Facilitate telemedicine implementation within different sites at trial conclusion.

Telemedicine

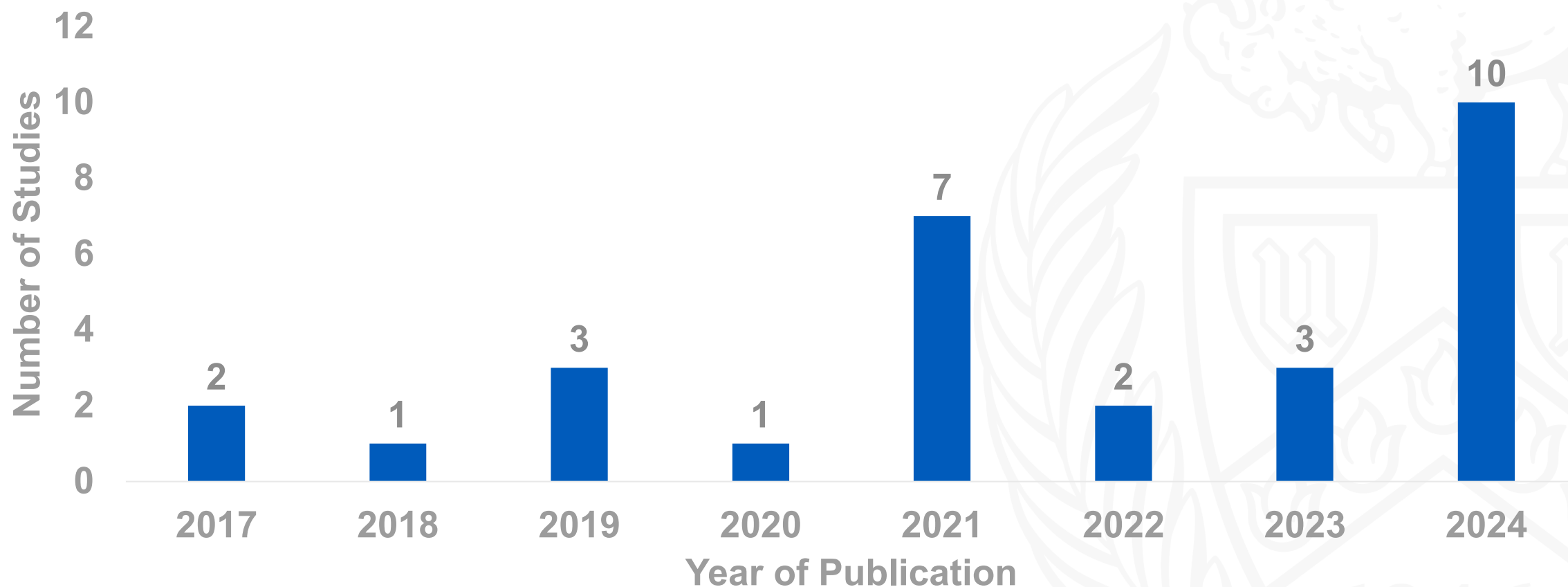
- Telemedicine is the utilization of digital technology to deliver healthcare services remotely.
- Telemedicine has the potential to overcome healthcare access challenges for underserved populations:
 - Geographical
 - Temporal
 - Stigma
 - Healthcare fragmentation
 - Healthcare system navigation



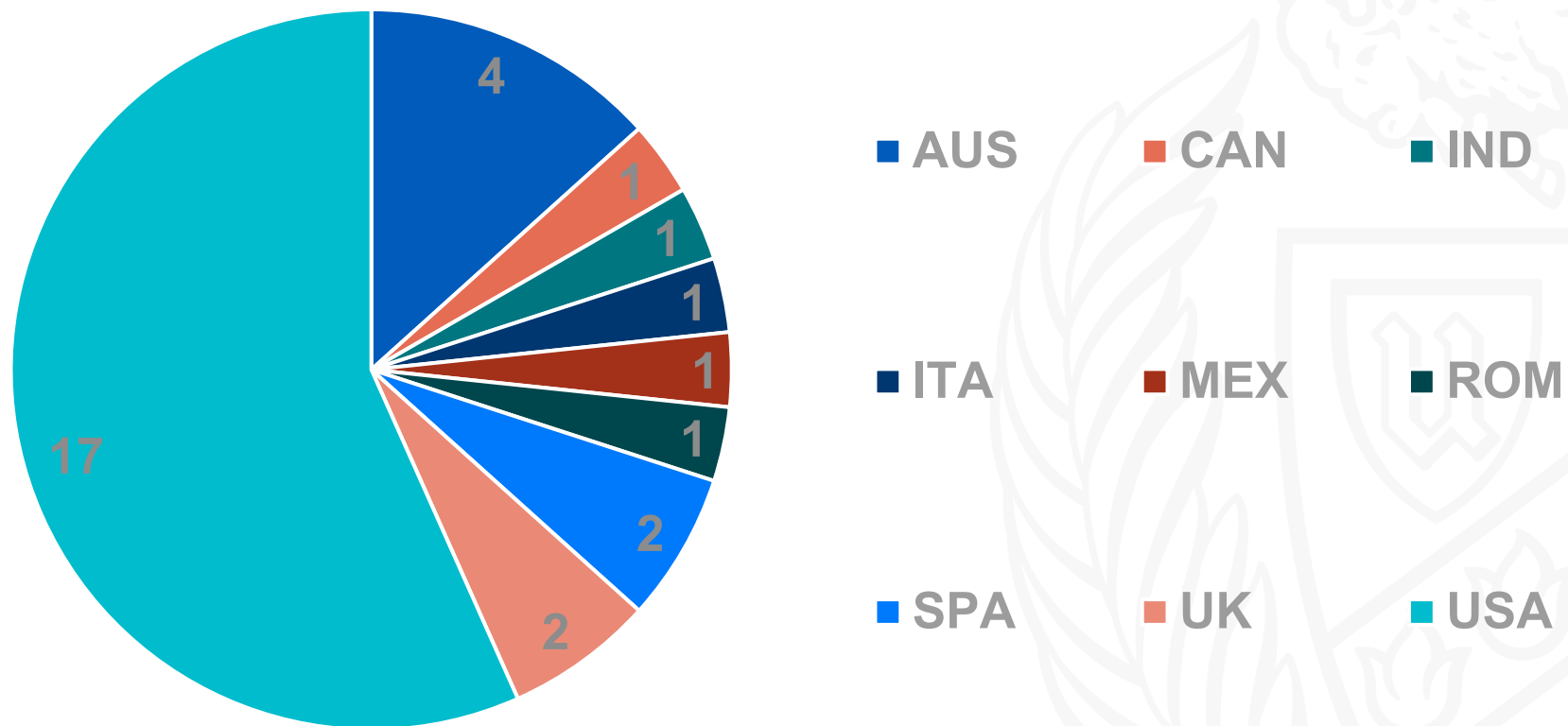
HCV Telemedicine Review Methods

- Search conducted in Pubmed using terms
 - “HCV” or “hepatitis”
 - “telemedicine”
- Systematic reviews
 - Haridy et al, Clin Gastro Hepatology 2021: 19:1139-60
 - Muftah et al, Hepatology 2023: 78: 179-194.
- Inclusion criteria
 - Review titles and abstracts
 - Since 2013 (direct-acting antiviral era)
- Exclusion criteria
 - Other digital technology, i.e., mhealth, telementoring, etc.

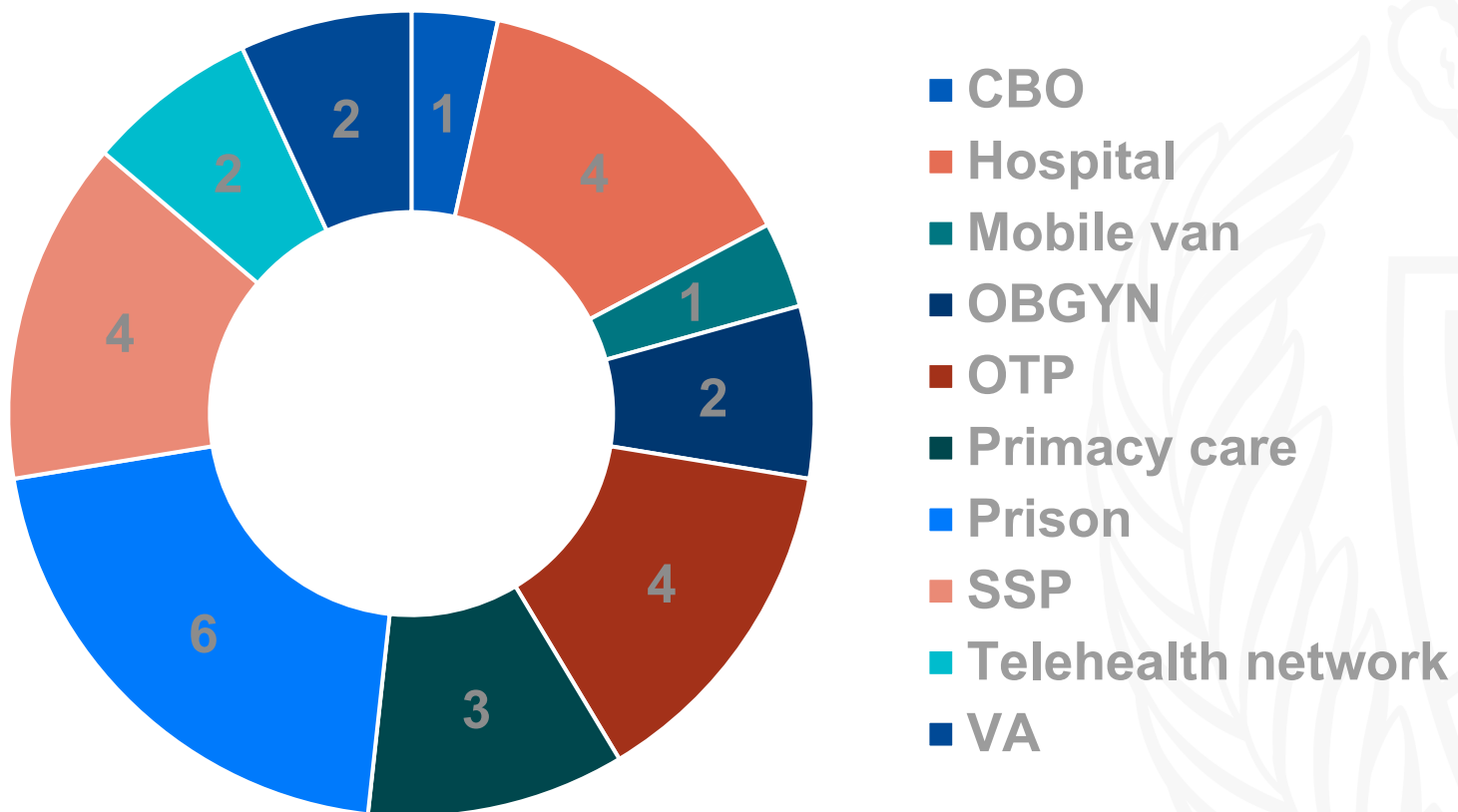
HCV Telemedicine Studies by Year



HCV Telemedicine Studies by Country



HCV Telemedicine Studies by Setting



Telemedicine as a Socio-Technical Bridge



- **Social support builds patient trust.**

- Address competing priorities
- Deliver personalized care

- **Technical support bridges digital divide.**

- Provide technology and internet access
- Assist with digital literacy

HCV Telemedicine Models

- **Facilitated Telemedicine (Talal, 2024)**

Talal AH, Markatou M, Liu A, Perumalswami PV, Dinani AM, Tobin JN, Brown LS. Integrated Hepatitis C-Opioid Use Disorder Care Through Facilitated Telemedicine: A Randomized Trial. JAMA. 2024 Apr 23;331(16):1369-1378. doi: 10.1001/jama.2024.2452. PMID: 38568601; PMCID: PMC10993166.

- **Peer-Assisted Telemedicine (Korthuis, 2024)**

Seaman A, Cook R, Leichtling G, Herink MC, Gailey T, Cooper J, Spencer HC, Babiarz J, Fox C, Thomas A, Leahy JM, Larsen JE, Korthuis PT. Peer-Assisted Telemedicine for Hepatitis C in People Who Use Drugs: A Randomized Controlled Trial. Clin Infect Dis. 2025 Mar 17;80(3):501-508. doi: 10.1093/cid/ciae520. PMID: 39602441; PMCID: PMC11912958.

- **Staff-Assisted Telemedicine (Price, 2023)**

Morris MD, McDonell C, Luetkemeyer AF, Thawley R, McKinney J, Price JC. Community-Based Point-of-Diagnosis Hepatitis C Treatment for Marginalized Populations: A Nonrandomized Controlled Trial. JAMA Netw Open. 2023 Oct 2;6(10):e2338792. doi: 10.1001/jamanetworkopen.2023.38792. PMID: 37862013; PMCID: PMC10589813.

Facilitated Telemedicine (Talal, 2024)

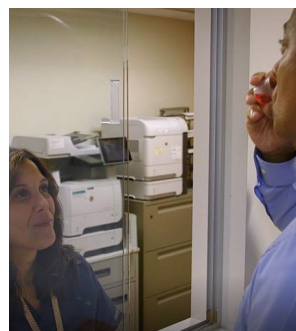
- Case managers recruited participants in OTPs
- Patient advocacy – scheduling, reminders, check-ins
- HCV education
- Healthcare system navigation



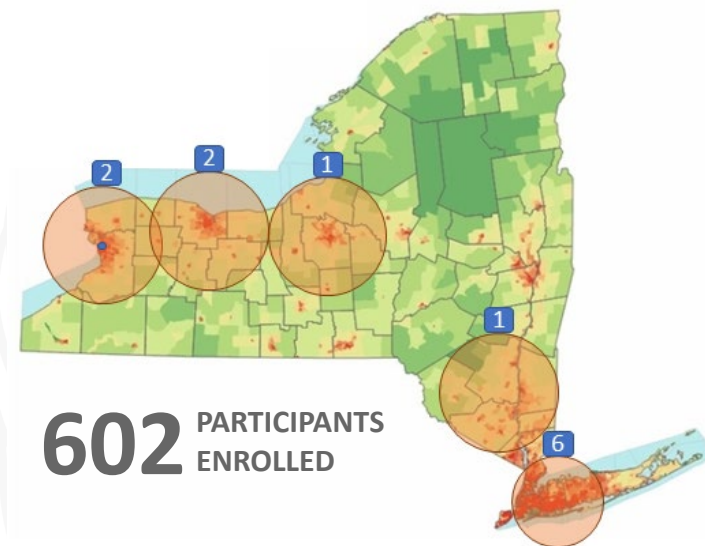
Onsite case manager



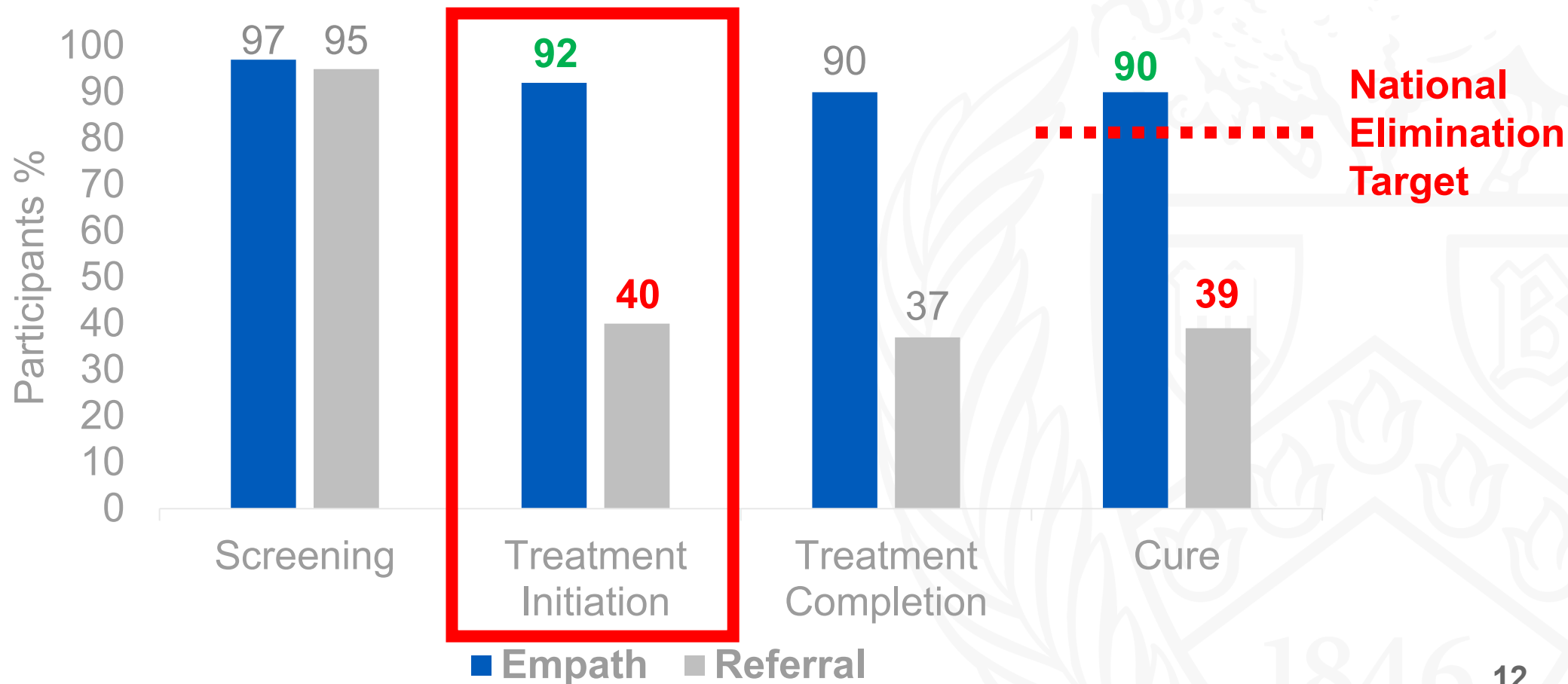
HCV tele-consultation



HCV medication with methadone



Facilitated Telemedicine (Talal, 2024)



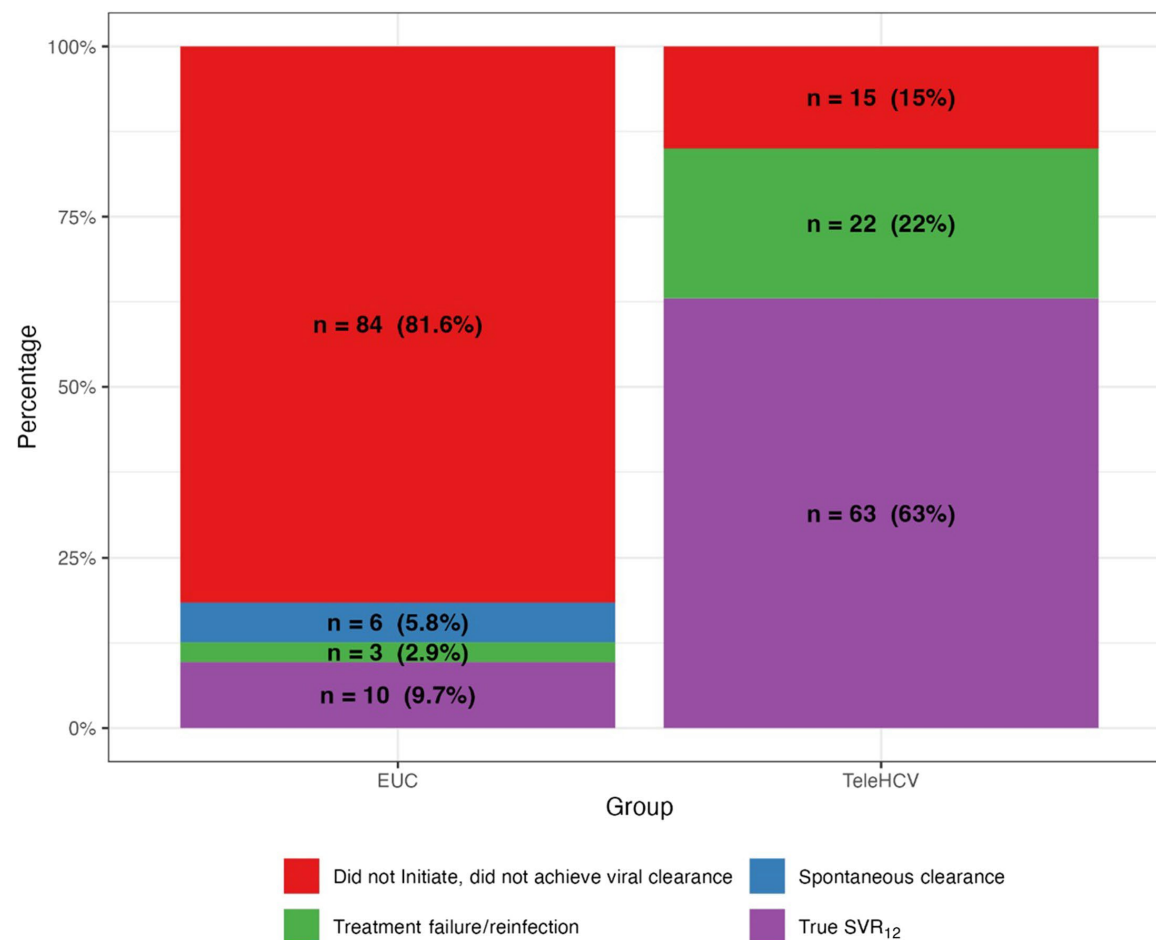
Facilitated Telemedicine (Talal, 2024)

- 95% participants recommended facilitated telemedicine over offsite referral
 - High satisfaction
 - Decrease in substance use
 - Minimal reinfections
- 45 OTP staff interviews from 12 OTPs throughout New York State
 - Addresses workforce fatigue
 - Builds trust with patients and staff
 - Improves reimbursement opportunities

Peer-Assisted Telemedicine (Korthuis, 2024)

- Peers supported screening, pretreatment laboratory evaluation, telemedicine visits, medication delivery and adherence.
- Peers recruited 203 participants in 7 rural Oregon counties through SSPs, outreach sites and participant referrals.
- 70% participants experienced recent homelessness.

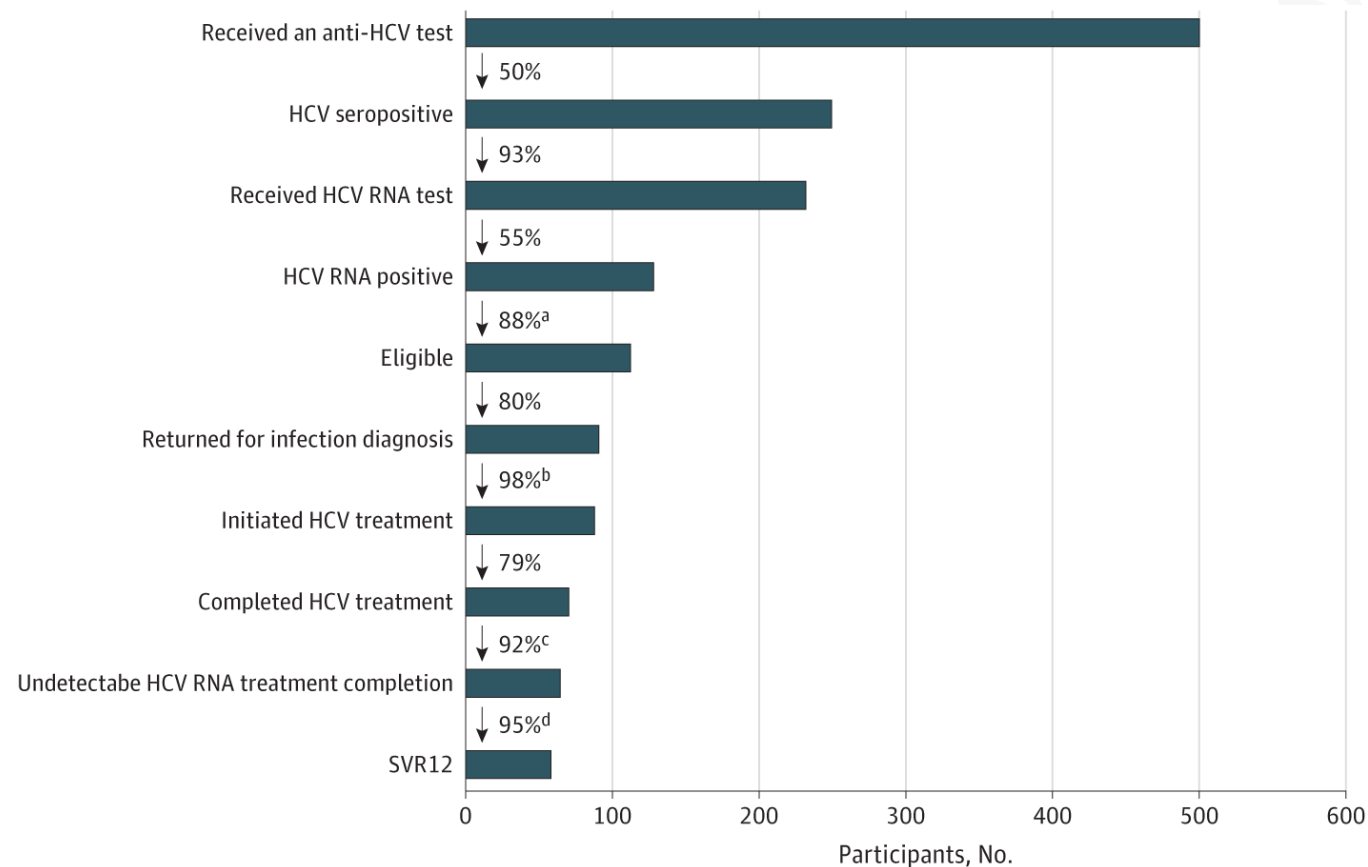
Peer-Assisted Telemedicine (Korthuis, 2024)



Staff-Assisted Telemedicine (Price, 2023)

- Staff supported screening, counseling, harm reduction and telemedicine visits.
- Staff recruited 111 participants from a fixed community space and a mobile medical van in San Francisco.
 - Where PWID were known to congregate
 - Neighborhood with the highest percentage of Black people in San Francisco
- Staff provided 2-week starter pack of medication to prevent insurance-related delays.
- Single-arm study.

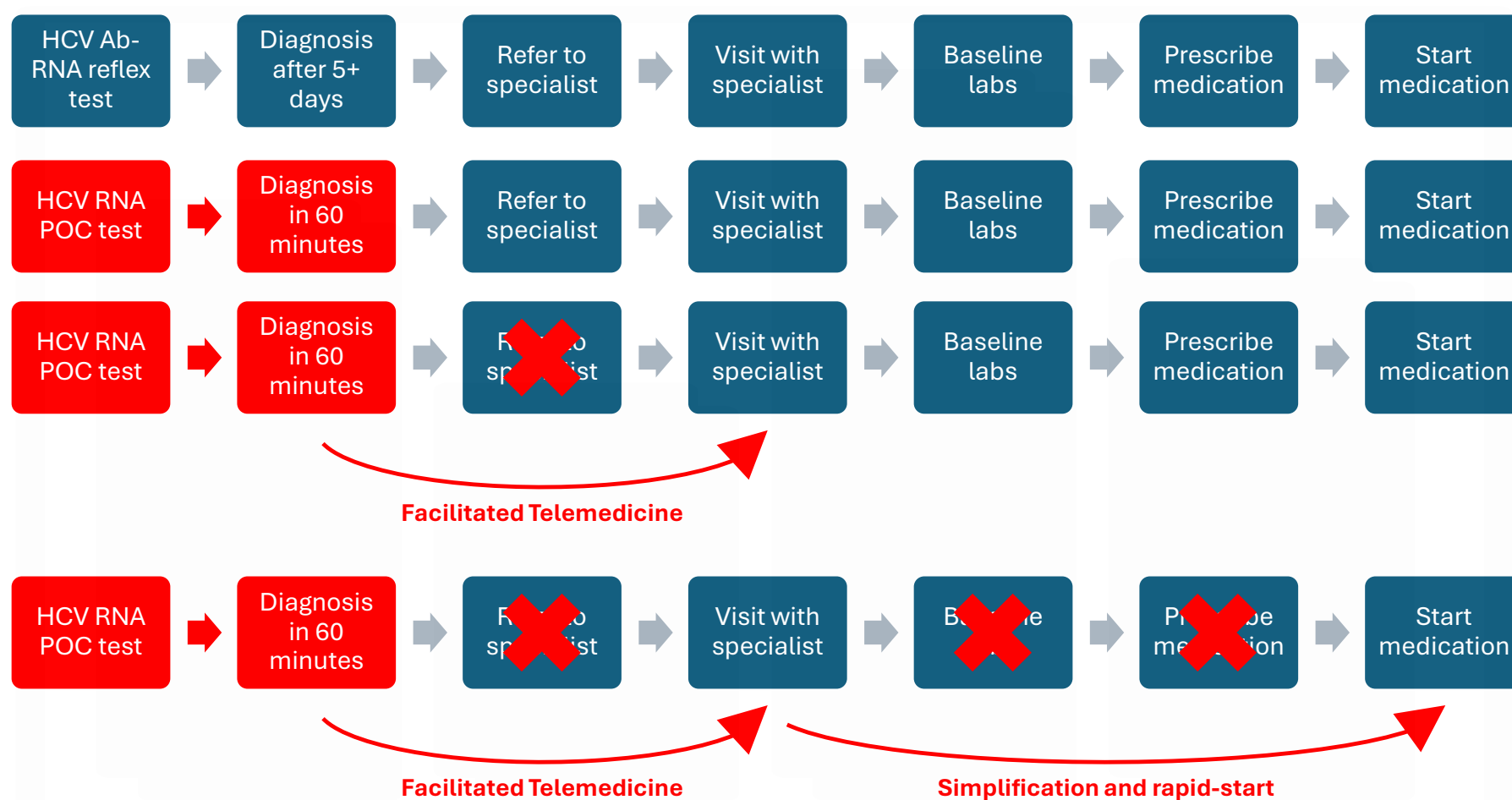
Staff-Assisted Telemedicine (Price, 2023)



HCV Telemedicine Models – Summary

Author	Model	Year	Type	Setting	Location	SVR
Talal	Facilitated telemedicine	2024	Randomized controlled trial	OTP	Urban New York State	90%
Korthuis	Peer-assisted telemedicine	2024	Randomized controlled trial	SSP	Rural Oregon	63%
Price	Staff-assisted telemedicine	2023	Nonrandomized controlled trial	Community site	Urban San Francisco	67%

Facilitated Telemedicine versus Standard of Care



Pilot Study of Multicomponent Telemedicine for HCV at Bassett



HCV diagnosis



**HCV
telemedicine**



**HCV medication rapid
dispensing**

THANK YOU



Hepatitis C Care Cascade Using Direct-Acting Antivirals in Rural New York State from 2013-2023: A Retrospective Observational Study

Short title: HCV Care Cascade in Rural New York State

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October 9, 2025

HCV Background

- Overall
 - Unaware of diagnosis – 33% (Kim HS, J Viral Hepat 2019)
 - Received treatment (direct-acting antivirals [DAAs]) – 34% (Wester C, MMWR Morb Mortal Wkly Rep 2023)
- OUD
 - Received treatment – 12% (Estradt AT, Harm Reduct J 2024)
- Rural vs. Urban
 - Acute infections 11.8% vs. 1.4% (CDC 2025)
 - Chronic infections 58.5 vs. 37.1 per 100,000 (CDC 2025)
- Public Health Changes
 - HCV RNA reflex testing – 2017
 - Universal antibody screening – 2020
- Knowledge Gap
 - Rural HCV data, particularly in patients with OUD

Aims

- To describe the HCV cascade in a rural population.
- To compare HCV RNA testing rates before vs. after reflex testing in 2017
- To compare serology testing rates before vs. after universal screening in 2020
- To quantify and compare time from positive HCV RNA result to DAA initiation over time
- To assess OUD vs. non-OUD subgroups

Design

- Setting

- Bassett Healthcare Network
- Central NY State
- 1 academic medical center, 4 hospitals, >24 primary care clinics
- >90% rural (US Census definition)

- Design

- Retrospective, cross-sectional observational study
- Epic EHR data collection
- 11 testing periods (2013-2023)
- 12-month cross sections (based on date of positive HCV serology test)

- Statistics

- HCV cascade described with frequencies and percentages and inspected with graphical plots of annualized average numbers
- HCV RNA testing, DAA treatment initiation, and viral clearance before and after reflex testing were compared with chi-square test (Rao-Scott)
- Median time from HCV RNA + to DAA treatment was compared with Kruskal-Wallis test
- DAA treatment rates before (2013-16) vs. after (2017-23) NY State's widespread implementation of insurance coverage for DAAs was compared with Kaplan-Meier analysis
- Subgroups analyses for OUD vs. non-OUD were also compared with chi-square test (Rao-Scott) with adjustment for clustering

Eligibility Criteria

- Inclusion Criteria

- Age 18-79 years
- Active primary care patient
 - Defined as having ≥ 1 primary care office or telehealth visit in prior 12 months

- Exclusion Criteria

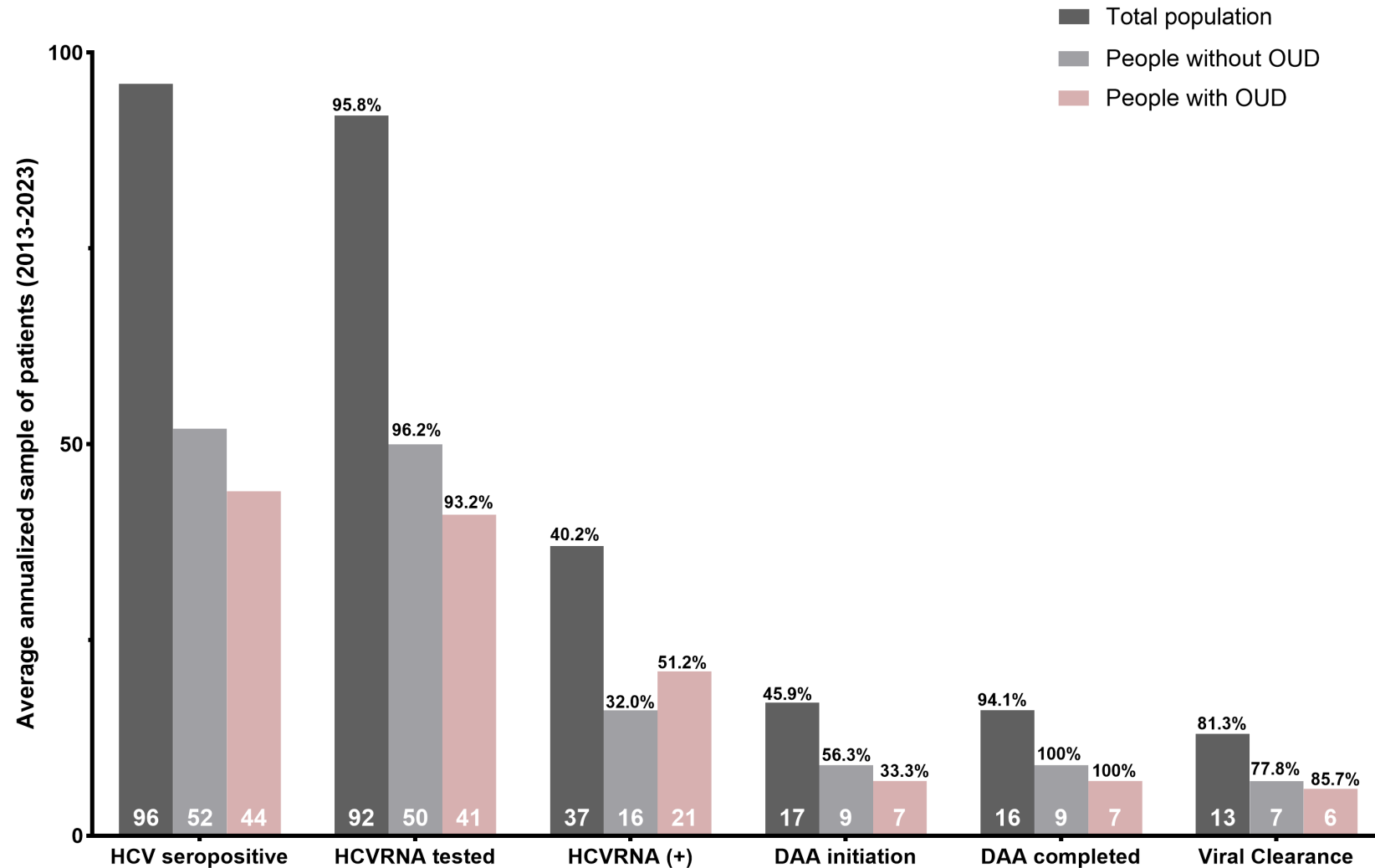
- Only seen in ED or hospitalized

Results – HCV Cascade – Overall

	Population (n ^a)	HCV Antibody Testing	HCV Seropositive	HCV RNA Testing	HCV RNA Positive	DAA treatment started	DAA treatment completed	Achieved Durable Viral Clearance
Total	798,760	40,520 (5.07%)	1,060 (2.62%)	1008 (95.09%)	411 (40.77%)	183 (45.19%)	180 (98.90)	144 (81.82%)
People with OUD	33,583	2,796 (8.33%)	485 (17.35%)	456 (94.02%)	234 (51.32%)	82 (35.65%)	80 (98.77%)	62 (78.48%)
People without OUD	765,177	37,724 (4.93%)	575 (1.52%)	552 (96.00%)	177 (32.07%)	101 (57.71%)	100 (99.01%)	82 (84.54%)
Female	442,600	22,901 (5.17%)	509 (2.22%)	489 (96.07%)	190 (38.85%)	84 (44.68%)	83 (98.81%)	67 (83.75%)
Male	356,072	17,610 (4.95%)	551 (3.13%)	519 (94.19%)	221 (42.58%)	99 (45.62%)	97 (98.98%)	77 (80.21%)
0-19 years of age	22,044	728 (3.30%)	11 (1.51%)	-- ^b	--	--	--	--
20-39 years	203,790	9,454 (4.64%)	394 (4.17%)	372 (94.42%)	175 (47.04%)	49 (28.65%)	48 (97.96%)	35 (74.47%)
40-59 years	291,523	15,547 (5.33%)	362 (2.33%)	350 (96.69%)	153 (43.71%)	86 (56.95%)	84 (98.82%)	69 (85.19%)
60-79 years	281,403	14,791 (5.26%)	293 (1.98%)	276 (94.20%)	79 (28.62%)	46 (58.23%)	46 (100.00%)	38 (82.61%)
Black or African American	7,826	513 (6.56%)	36 (7.02%)	33 (91.67%)	13 (39.39%)	--	--	--
Other	7,348	465 (6.33%)	14 (3.01%)	14 (100.00%)	11 (78.57%)	--	--	--
Unknown Race	13,220	745 (5.64%)	23 (3.09%)	23 (100.00%)	--	--	--	--
White or Caucasian	770,366	38,797 (5.04%)	987 (2.54%)	938 (95.04%)	380 (40.51%)	168 (44.92%)	166 (98.81%)	134 (82.72%)
Hispanic	8,395	539 (6.42%)	22 (4.08%)	21 (95.45%)	--	--	--	--
Non-Hispanic	694,584	34,627 (4.99%)	906 (2.62%)	861 (95.03%)	356 (41.35%)	155 (44.16%)	153 (98.71%)	126 (84.00%)
Unknown Ethnicity	95,781	5,354 (5.59%)	132 (2.47%)	126 (95.45%)	48 (38.10%)	26 (54.17%)	25 (100.00%)	16 (66.67%)

Results – HCV Cascade – Annualized

Figure 1. Annualized Average HCV Care Cascade (2013–2023) in the Total Bassett Health Network Primary Care Population and Stratified by OUD Status, NY



Notable observations:

- DAA initiation – low overall, even lower in OUD

Results – Annual Trends #1

Figure 2A. Annual Trends in HCV Care Cascade Steps (%) as a Proportion of the Previous Step – Bassett Health Network Primary Care Population, NY (2013–2023)

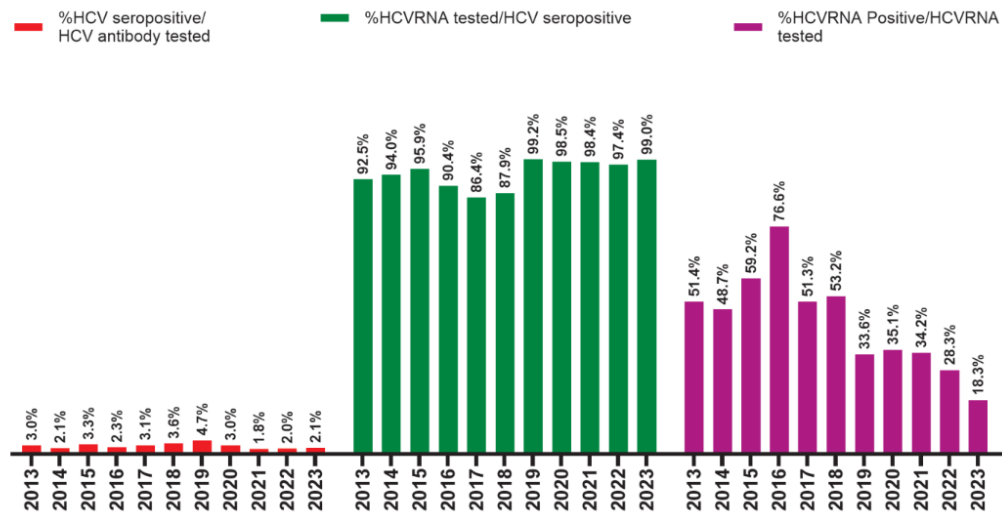
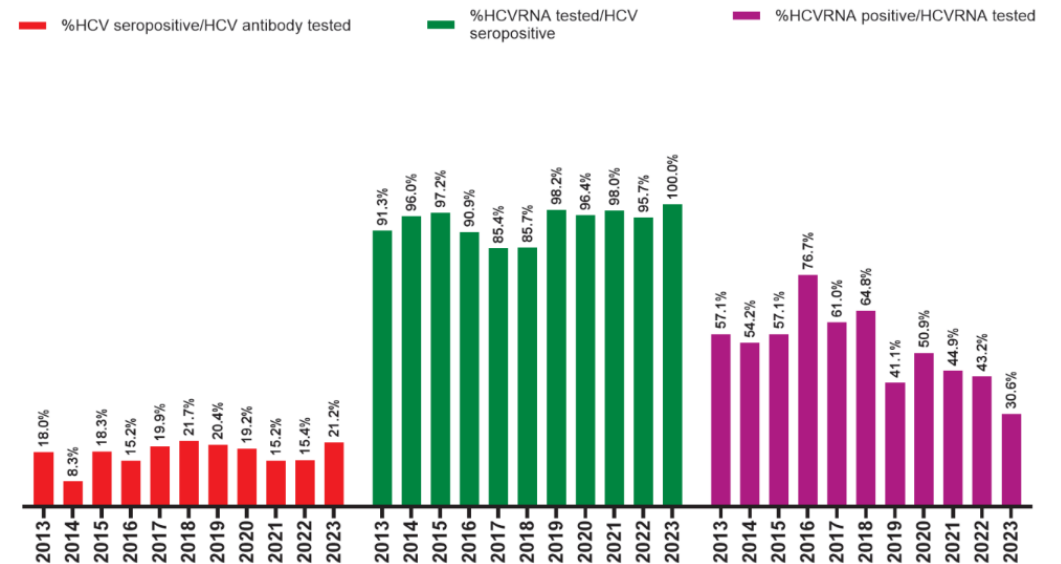


Figure 3A. People With Opioid Use Disorder: Annual Trends in HCV Care Cascade Steps (%) as a Proportion of the Previous Step – Bassett Health Network, NY (2013–2023)



Notable observations:

- HCV seropositivity decreased (not for OUD)
- HCV RNA testing increased
- HCV RNA positivity decreased

Results – Annual Trends #2

Figure 2B. Annual Trends in HCV Care Cascade Steps (%) as a Proportion of the Previous Step – Bassett Health Network Primary Care Population, NY (2013–2023)

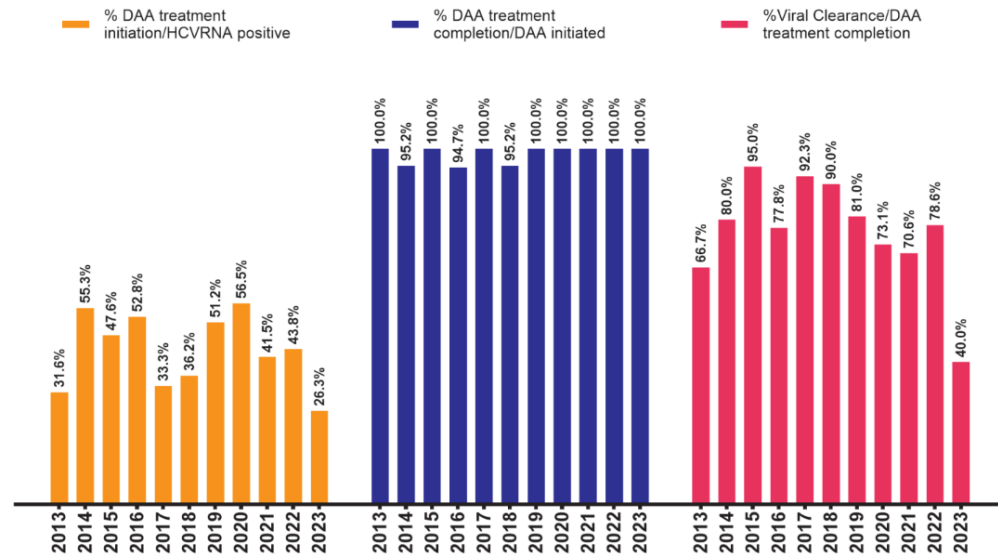
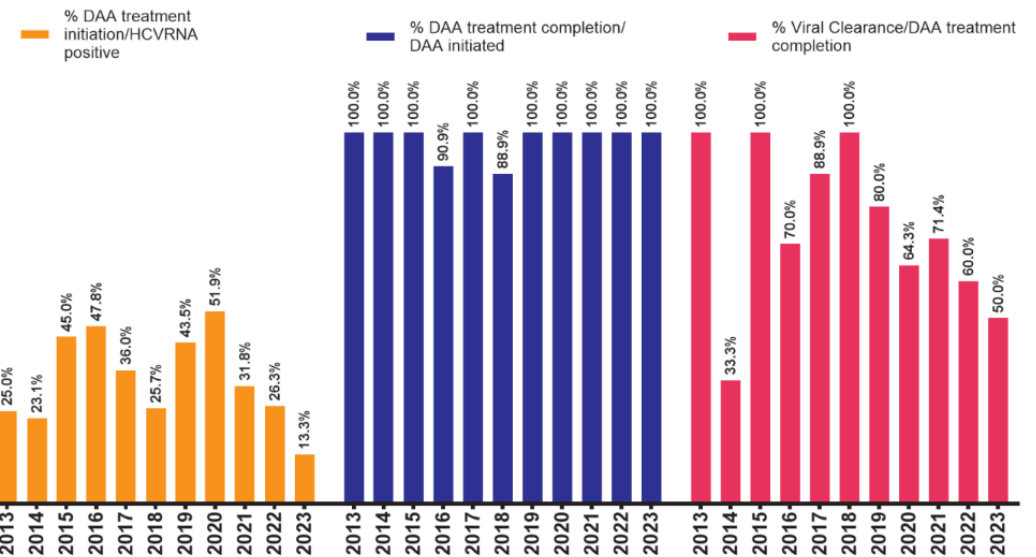


Figure 3B. People With Opioid Use Disorder: Annual Trends in HCV Care Cascade Steps (%) as a Proportion of the Previous Step – Bassett Health Network, NY (2013–2023)



Notable observations:

- No clear pattern for DAA initiation or DAA completion
- Possibly decreased durable response (viral clearance)

Results – Cascade Changes Due to Policy Changes

Table 2. Pre- and post-policy changes for hepatitis C virus RNA reflex testing in 2017 and CDC's updated recommendations for hepatitis C virus screening in 2020.

A. Chi-square results for pre- and post-2017 RNA reflex testing recommendation

Test Years	% RNA Tested	% RNA Positive	% DAA Started	% DAA Completed	% Achieved Durable Viral Clearance
2013-2016	93.57	57.94	49.62	100.00	85.48
2018-2023	96.68	33.91	44.64	100.00	78.22
p-value (2013-2016 vs. 2018-2023)	0.0333	<0.0001	0.3526	--	0.2511

B. Chi-square results for pre- and post-2020 CDC's updated recommendations for HCV screening

Test Years	% Antibody Tested	% Antibody Positive	% RNA Tested	% RNA Positive	% DAA Started	% DAA Completed	% Achieved Durable Viral Clearance
2013-2019	3.89	3.13	92.47	50.56	44.81	98.33	86.21
2021-2023	7.25	1.97	98.25	27.30	40.00	100.00	71.43
p-value (2013-2019 vs. 2021-2023)	<0.0001	<0.0001	0.0002	<0.0001	0.4153	0.9999	0.0424

HCV, Hepatitis C virus; CDC, Centers for Disease Control and Prevention; DAA, Direct-acting antivirals

Results – OUD vs. Non-OUD

- HCV Serological Testing
 - Non-OUD – 4.9%
 - OUD – 8.3%
- HCV Seropositivity
 - Non-OUD – 1.5%
 - OUD – 17.3%
- HCV RNA +
 - Non-OUD – 32.1%
 - OUD – 51.3%
- DAA Initiated
 - Non-OUD – 57.1%
 - OUD – 35.7%
- DAA Completed
 - Non-OUD – 100%
 - OUD – 100%
- Viral Clearance
 - Non-OUD – 77.8%
 - OUD – 85.7%

Results – Summary

- Overall

- ~ 700,000, annualized ~10,000
- 2013-2023, 11 years
- Low seropositivity (3%)
- High RNA testing in seropositives (96%)
- About ½ of RNA tested are RNA + (41%)
- About ½ of RNA positives initiate DAA (45%)
- Almost all who initiate DAA complete DAA (99%)
- Most who complete DAA have durable responses (82%)

- Time

- HCV antibody and RNA testing increased over time, especially after health policy changes
- HCV seropositivity and HCV RNA positivity decreased over time
- No definite trend for DAA initiation over time
- No trend for DAA completion over time
- Possibly decreased durable responses over time

- OUD

- HCV antibody testing, seropositivity, and HCV RNA testing are higher in OUD vs. non-OUD
- DAA initiation is lower though DAA completion and durable response are similar in OUD vs. non-OUD

Conclusions

- HCV testing has improved
- HCV DAA initiation is subpar, particularly in people with OUD
 - Opportunity for improvement
- HCV DAA completion is high
- HCV DAA durable response rates may be decreasing

HCV Care Cascade in Rural New York State Discussion Questions

New York State Association of County Health
Officials

October 9, 2025

Questions Provided to County Health Officials

- What level of prioritization is assigned to hepatitis C virus (HCV) elimination and what affects the priority level in your county?
- What are experiences with and suggestions for interventions for HCV elimination in your county?
- What has been the role of telemedicine in your county after the COVID pandemic?
- What do you perceive are the needs and desirables to improve the HCV care cascade in rural New York State?

Additional Discussion Questions

Prior Activities

- HCV was included in the NYS 2019-2024 Prevention Agenda.
 - HCV was one of five focus areas of the Prevent Communicable Diseases Action Plan.

Priority Area: Prevent Communicable Diseases

Focus Area 4: Hepatitis C Virus (HCV)

Goal 4.1: Increase the number of persons treated for HCV

Goal 4.2: Reduce the number of new HCV cases among people who inject drugs

Additional Discussion Questions

Future Activities

- It appears that HCV has not been included in the 2025-2030 NYS Prevention Agenda¹.
 - Preventive services for chronic disease prevention and control have been included in the most recent agenda.
 - Targets - general chronic disease, asthma, high blood pressure, obesity, stroke, and cancer screening.
 - Is HCV elimination not included in the current agenda because a statewide elimination plan now exists?
 - If not, how is HCV being prioritized or not?
- What are the specific approaches in the action plans that have been prioritized to address HCV?

¹Prevention Agenda 2025-2030: New York State's Health Improvement Plan https://www.health.ny.gov/prevention/prevention_agenda/2025-2030/