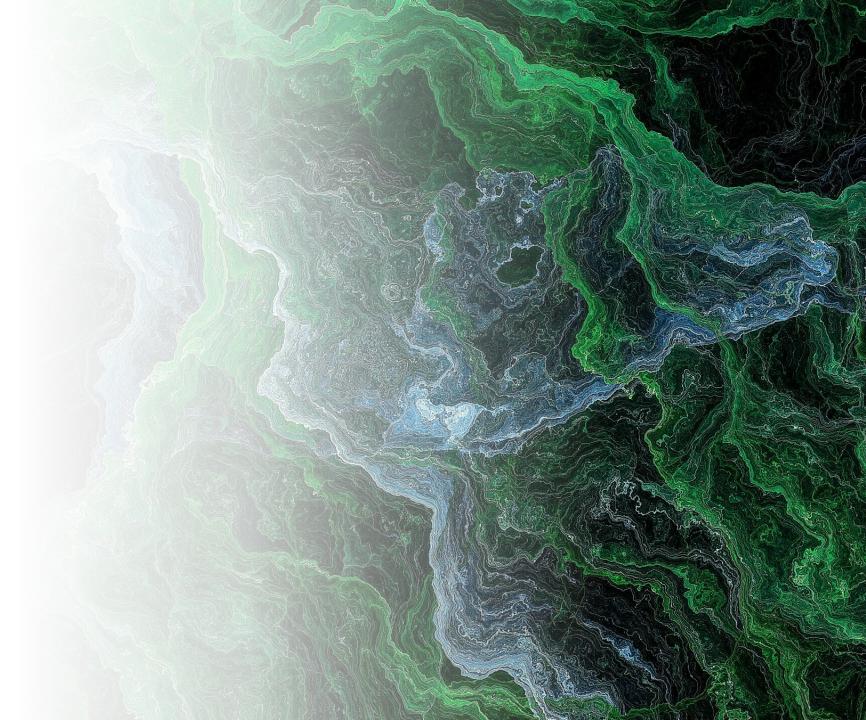
Striving Toward Elimination: Advances in Hepatitis C Testing and Treatment

Anthony Martinez, MD, AAHIVS, FAASLD

Associate Professor of Medicine Jacobs School of Medicine University at Buffalo Medical Director, Hepatology Erie County Medical Center



Progress Toward HCV Elimination in the United States



Elimination progress held back by:

Sobriety Restrictions

Prescriber Restrictions

Retreatment Restrictions

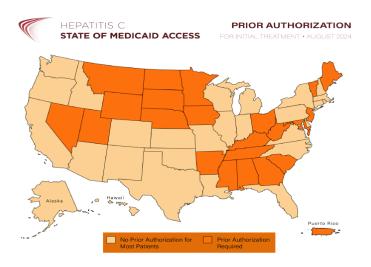
Need for Prior Authorizations

Patient readiness models of care

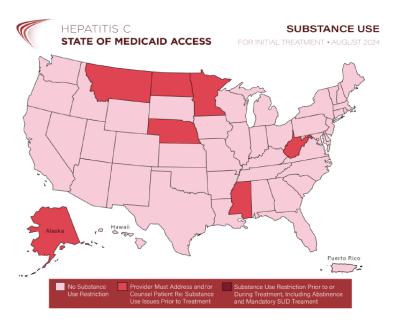
Stigma

Sulkowski, M., Cheng, WH., Marx, S. et al. Estimating the Year Each State in the United States Will Achieve the World Health Organization's Elimination Targets for Hepatitis C. Adv Ther **38**, 423–2 440 (2021). https://doi.org/10.1007/s12325-020-01535-3

PRIOR AUTHORIZATION REQUIREMENTS



SOBRIETY RESTRICTIONS



No Prior Authorization for Most Patients (29): Alaska, Arizona, California, Colorado, Connecticut, Delaware, District of Columbia, Florida, Hawaii, Idaho, Illinois, Indiana, Kansas, Louisiana, Massachusetts, Michigan, Missouri, New Hampshire, New Mexico, New York, North Carolina, Oklahoma, Oregon, Pennsylvania, Rhode Island, Texas, Virginia, Washington, Wisconsin

Prior Authorization Required (23): Alabama, Arkansas, Georgia, Iowa, Kentucky, Maine, Maryland, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Jersey, North Dakota, Ohio, Puerto Rico, South Carolina, South Dakota, Tennessee, Utah, Vermont, West Virginia, Wyoming

Citation: Center for Health Law and Policy Innovation & National Viral Hepatitis Roundtable, Hepatitis C: State of Medicaid Access (2024), www.stateofhepc.org

No Substance Use Restriction (45):

Florida, Georgia, Hawaii, Idaho, Illinois,

California, Colorado, Connecticut,

District of Columbia, Delaware,

Indiana, Iowa, Kansas, Kentucky,

Massachusetts, Michigan, Missouri,

Carolina, Ohio, Oklahoma, Oregon,

Pennsylvania, Puerto Rico, Rhode Island, South Carolina, South Dakota,

Tennessee, Texas, Utah, Vermont,

Virginia, Washington, Wisconsin,

Provider Must Address and/or

Alaska, Minnesota, Mississippi,

Innovation & National Viral Hepatitis

Access (2024), www.stateofhepc.org

Counsel Patient About Substance

Use Issues Prior to Treatment (7):

Montana, Nebraska, North Dakota,

Citation: Center for Health Law and Policy

Roundtable, Hepatitis C: State of Medicaid

Wyoming

West Virginia

Nevada, New Hampshire, New Jersey,

Louisiana, Maine, Maryland,

New Mexico, New York, North

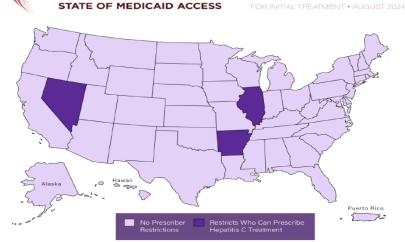
Alabama, Arizona, Arkansas,

PRESCRIBER RESTRICTIONS

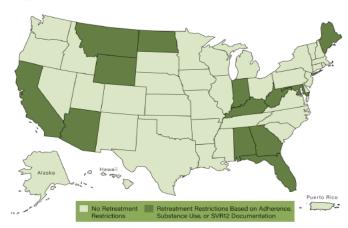
HEPATITIS C

PRESCRIBER

RETREATMENT



HEPATITIS C STATE OF MEDICAID ACCESS



Note: states are not penalized for requiring prior authorization for retreatment.

No Prescriber Restrictions for

Simplified Treatment (49): Alabama, Alaska, Arizona, California, Colorado, Connecticut, DC, Delaware, Florida, Georgia, Hawaii, Idaho, Indiana, Iowa, Louisiana, Kansas, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming

Prescriber Restrictions (3): Arkansas, Illinois, Nevada

Citation: Center for Health Law and Policy Innovation & National Viral Hepatitis Roundtable, Hepatitis C: State of Medicaid Access (2024), www.stateofhepc.org

No Retreatment Restrictions

(39): Alaska, Arkansas, Colorado, Connecticut, District of Columbia, Delaware, Hawaii, Idaho, Illinois, Iowa, Kansas, Louisiana, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Puerto Rico, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin

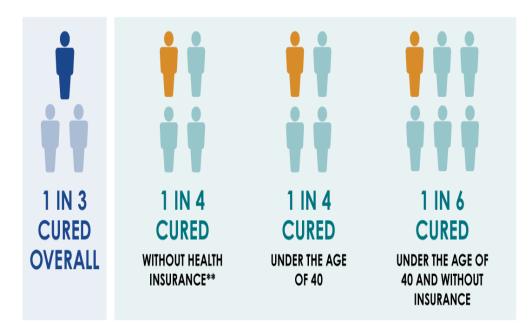
Retreatment Restrictions based on adherence, substance use, or SVR12 documentation (13): Alabama, Arizona, California, Florida, Georgia, Indiana, Kentucky, Maine, Maryland, Montana, North Dakota, West Virginia, Wyoming

Citation: Center for Health Law and Policy Innovation & National Viral Hepatitis Roundtable, Hepatitis C: State of Medicaid Access (2024), www.stateofhepc.org

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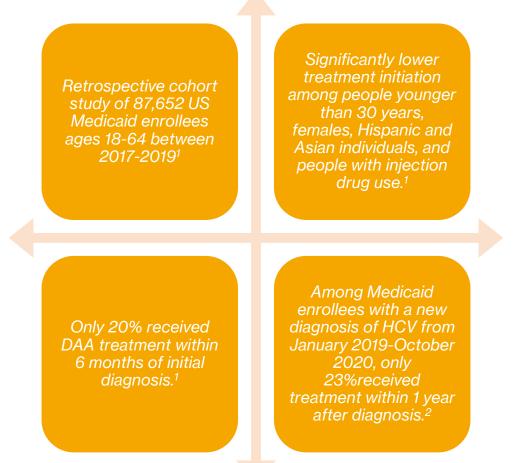
HCV Treatment Rates in the US

ADULTS DIAGNOSED AND CURED* OF HEPATITIS C IN THE U.S., 2013-2022



*Cured is defined as viral clearance, which is an undetectable hepatitis C virus ribonucleic acid (HCV RNA) after a prior test result of detectable HCV RNA. **Referred to as Other (client or self-pay) in the analysis

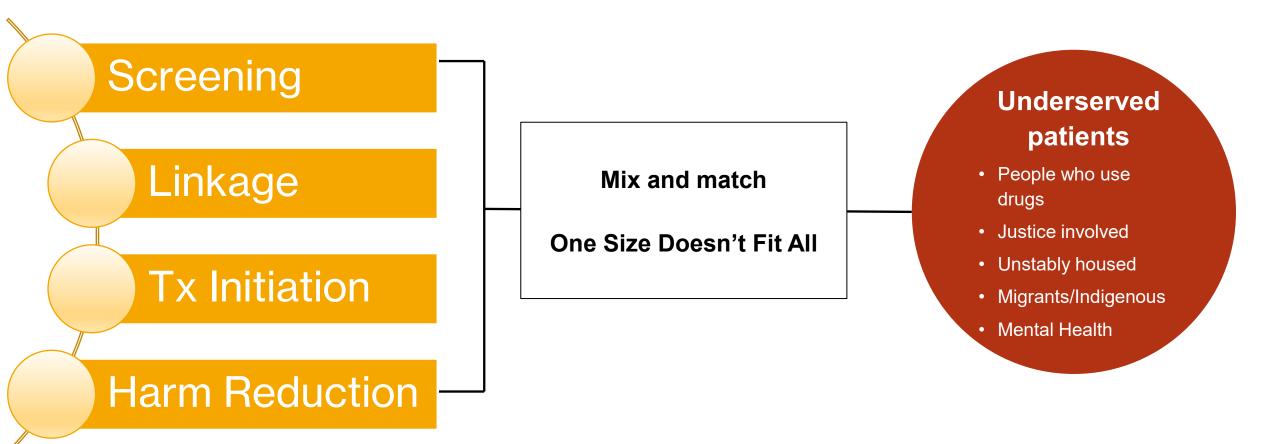
Source: Centers for Disease Control and Prevention



1.JAMA Network Open. 2023;6(8):e2327326. doi:10.1001/jamanetworkopen.2023.27326

2. ThompsonWW, Symum H, Sandul A, et al; DHSc. Vital signs: hepatitis C treatment among insured adults— United States, 2019-2020. MMWR Morb Mortal Wkly Rep. 2022;71(32):1011-1017. doi:10.15585/mmwr.mm7132e1

Pillars For HCV Elimination



Test and Treat Model of Care



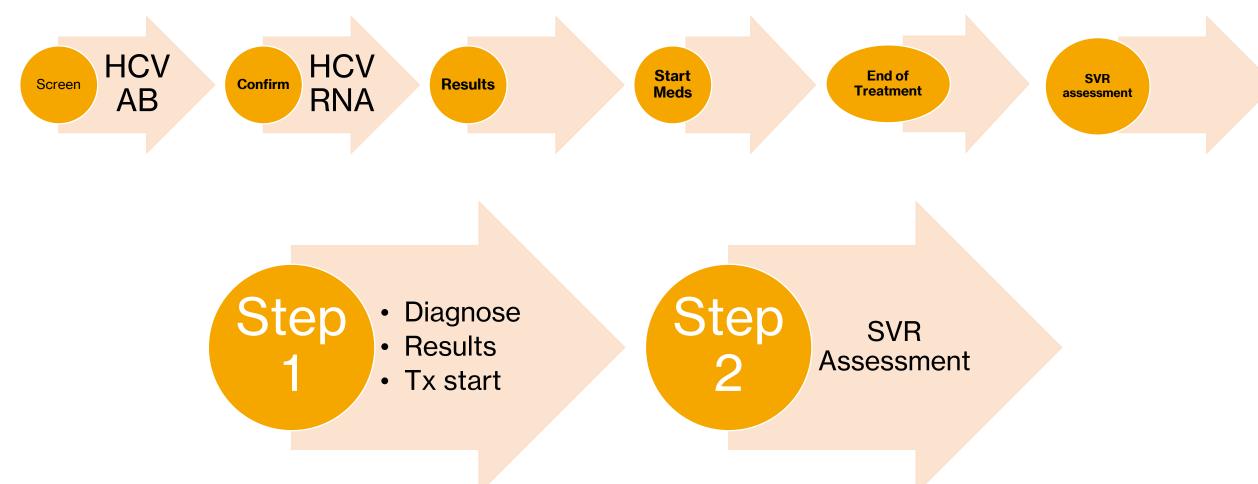
TEST- Simplified HCV screening and Dx

TREAT - Simplified, shortduration, pan-genotypic treatments, immediate initiation

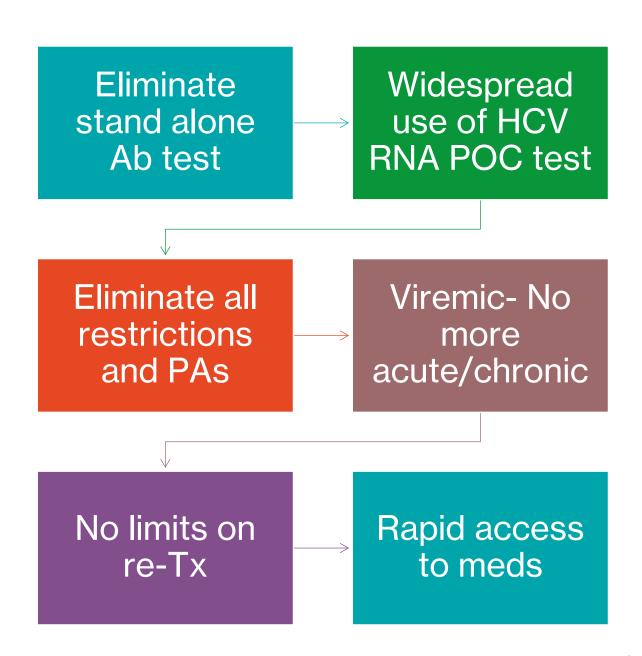




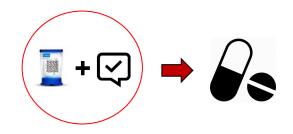
Speed Is The Key



Test And Treat Key Elements



Single-visit strategies to improve testing



Point-of-care HCV RNA and diagnosis (Health care worker)

Point-of-care HCV RNA (high HCV prevalence setting)



Rapid anti-HCV antibody test, point-of-care HCV RNA and diagnosis (Health care worker) Rapid HCV antibody testing with reflex point-of-care HCV RNA (low HCV prevalence setting)

Slide courtesy of Jason Grebley | Head, Hepatitis and Drug Use Research Group, Kirby Institute

Point Of Care Testing

A 2023 Meta-analysis of 45 Studies Evaluating the Impact of Using POC vs SOC Approaches on HCV RNA Viral Load Testing and Treatment¹



GeneXpert / Xpert HCV

- Fingerstick, CLIA waived
- FDA approved for: Adult (>22) individuals at risk or with signs/symptoms of HCV with or without Ab evidence
- Does not differentiate acute/chronic
- Not intended for on-treatment monitoring or SVR assessment
- No performance characteristics among pregnant people
- Annual calibration
- Limited EMR integration
- Limited communication to state DOH reporting systems

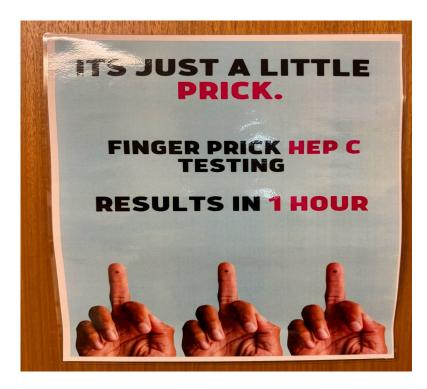




Evaluation of Time to HCV RNA Detection Using the Xpert HCV Viral Load Fingerstick Assay¹

Overall median time to result: 32 minutes for people with detectable HCV RNA vs 57 minutes for people with undetectable HCV RNA **Results in ≤40 minutes** among 80% of participants with detectable HCV RNA





What's included

6 Materials Provided

The Xpert HCV test kit (GXHCV-10) contains sufficient reagents to process 10 specimens or quality control samples. Each kit contains the following:

Xpert HCV cartridges with integrated reaction tubes

- Bead 1, Bead 2 and Bead 3 (freeze-dried)
- Lysis Reagent (Guanidinium Thiocyanate)
- Rinse Reagent
- Binding Reagent
- Elution Reagent

Disposable 100 µL Transfer Pipettes

Instructions for Use

(For use with the GeneXpert Xpress System)

Quick Reference Instructions

(For use with the GeneXpert Xpress System)

CD

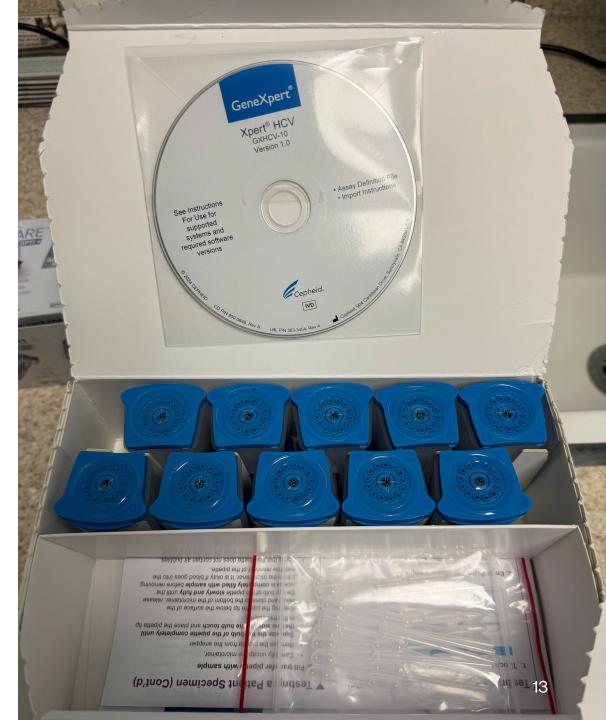
- Assay Definition File (ADF)
- Instructions to import ADF into GeneXpert Xpress System

10 per kit

1 of each per cartridge 1.0 mL per cartridge 0.5 mL per cartridge 1.5 mL per cartridge 1.5 mL per cartridge 20 per kit 1 per kit

1 per kit





What's Not Included

Bleach

Ethanol / denatured alcohol

Absorbent pad

High flow lancet

Capillary collection tubes

Alcohol wipes

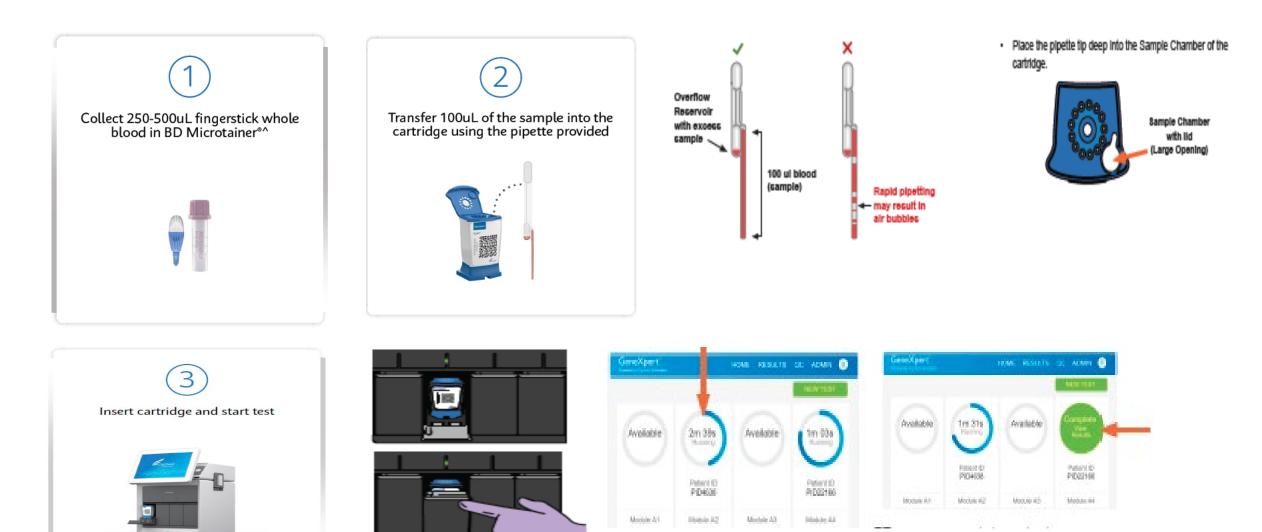
Gauze

Bandage

Warm packs

- Positive quality controls
- Negative quality controls
- Carrying case
- Printer

GeneXpert / Xpert HCV



La Bodega POC Testing Program

- N = 60
- Past Ab (n =14)
- POC RNA + (n = 10)
- Insufficient sample / error (n = 5)
- SVR assessment (n=10)
- Serum SVR correlation 100%
- HIV (n=1), Pregnant (n=2)



Key Learnings

Handwarmer is key

Gravity is your friend (hang the arm)

Position hand against firm surface

Get high-flow lancets

Use the ring finger

Use the nondominant hand (avoid calluses, etc.)

Among people who use drugs via inhalation, use the opposite hand that they hold the stem with

Patients very willing to be tested

Still need HBV testing / POC test

Costs

- 2 bay machine \$21,000, 4 bay \$39,000 (before discounts)
- ~ \$30.00 per cartridge
- Controls:

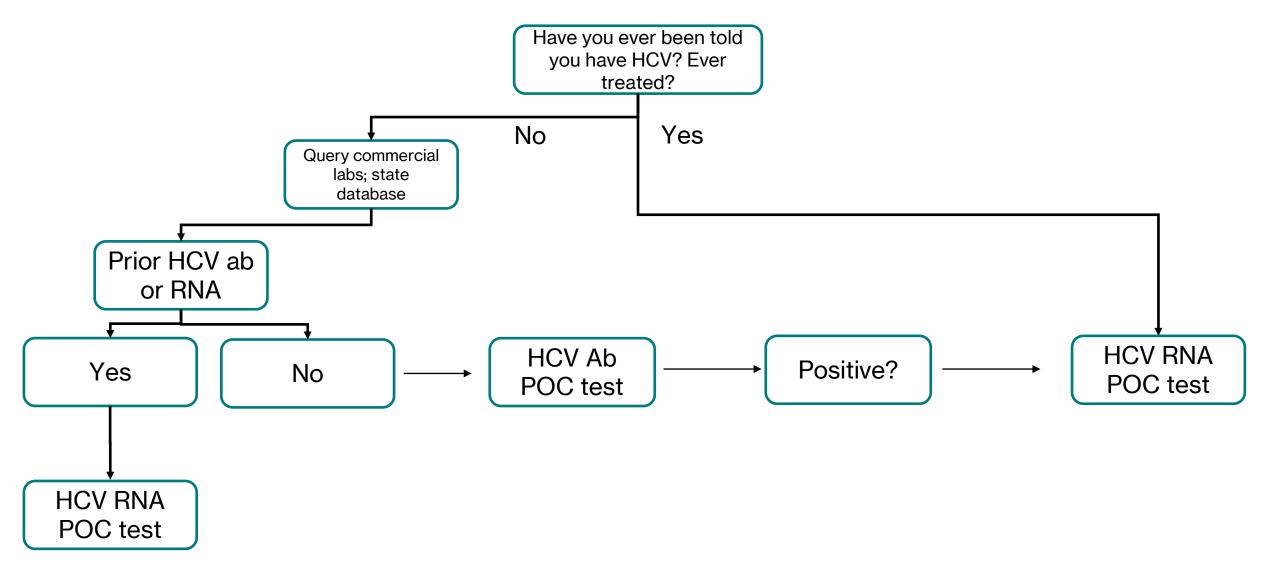




ONE-CARE Opti+ Adjustable Safety Lancets 23G x 3 Depth Setting (1.3 I 1.8 I 2.3mm), Preloaded, Gentle, Sterile, 100/bx



La Bodega HCV POC Testing Algorithm



Can we shorten the time to cure?

SVR Many get lost to follow up Hard to track people down for SVR 12 assessment Potential to relapse and reinfect 12

SVR

 Heightened anxiety while waiting could be a trigger for relapse

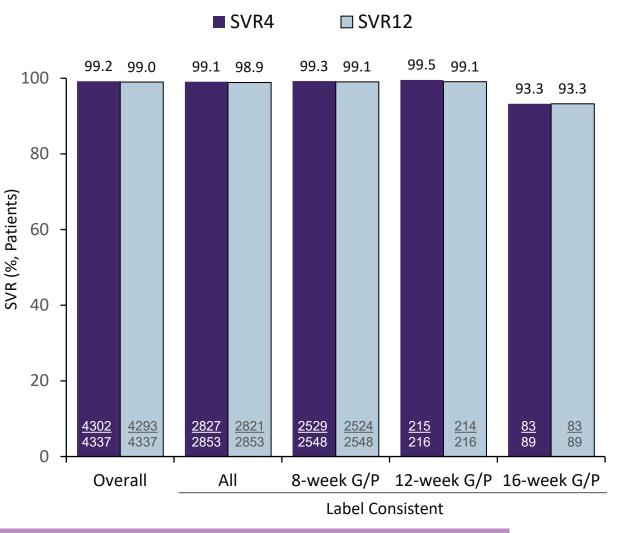
- Shortens care cascade by 2 months
- Easier to retain in care for a month
- Knowledge of cure can serve as reinfection/relapse deterrent
- Entire patient journey reduced to 3 months start to finish (for 8-week G/P regimen)

Positive Predictive Value of SVR4 for SVR12 in Pts Treated with G/P

- Patients receiving G/P in clinical trials
- >99% of patients that achieved SVR4 achieved SVR12
- All patients that did not achieve SVR4 did not achieve SVR12 (NPV=100%; sensitivity=100%)
- Specificity was 79.5%, indicating the majority of patients relapsing do so by post-treatment week 4

	Overall	All	8-wk G/P	12-wk G/P	16-wk G/P
PPV	99.8	99.8	99.8	99.5	100.0
NPV	100.0	100.0	100.0	100.0	100.0
Sensitivity	100.0	100.0	100.0	100.0	100.0
Specificity	79.5	81.3	79.2	50.0	100.0

SVR, sustained virologic response; SVR4, SVR at post-treatment Week 4; SVR12, SVR at posttreatment Week 12; PPV, positive predictive value; NPV, negative predictive value



• Achieving SVR4 was highly predictive of long-term SVR for patients treated with G/P, regardless of treatment duration

• All measures of concordance were similar between the overall group and the 8-week treatment duration group, demonstrating the high effectiveness of the shortest treatment regimen



Concordance Between SVR4, SVR12, and SVR24 in HCV-Infected

Patients Who Received Fixed-Dose Combination Sofosbuvir/Velpatasvir

in Phase 3 Clinical Trials

M. SULKOWSKI¹, J. FELD², N. REAU³, S. SCHERBAKOVSKY⁴, C. HERNANDEZ⁴, K. VANSTRAELEN⁴, K. HAMMOND⁴, B. KRETER⁴, V. SURI⁴, L. NI⁴, M. BOURLIERE⁵, A. MANGIA⁶

¹Johns Hopkins University School of Medicine, Baltimore, MD, USA; ²Toronto Centre for Liver Disease, Toronto General Hospital, University Health Network, Canada; Rush University Medical Center, Chicago, IL, USA; 4Gliead Sciences, Inc., Foster City, CA; 4Hopital Saint Joseph, Marseilles, France; #Fondazione "Casa Solilevo Della Sofferenza" IRCCS, San Giovanni Rotondo, Italy

INTRODUCTION



 The SOF/VEL Phase 3 ASTRAL-1, -2, and -3 program evaluated SOF/VEL in treatment-naive (TN) and treatment-experienced (TE) patients both with and without compensated cirrhosis. SOF/VEL has been shown to be safe and effective (sustained virologic response 12 weeks after treatment completion (SVR12) >90%) In TN and TE patients, and was the first pangenotypic single-tablet regimen for the treatment of chronic HCV.12 As HCV treatment expands to resource limited populations or beyond fertiary care, simplistic algorithms require clarification, when SVR can be determined. SVR concordance with SOF supports this shift to a minimal monitoring strategy.³

OBJECTIVE

To evaluate the concordance of SVR 4 weeks after treatm completion (SVR4) with SVR12, and SVR12 with SVR 24 ks after treatment completion (SVR24) in patients receiving SOF/ in the Phase 3 A8TRAL-1 (G8-U8-342-1138; NCT02201940), A AL-2 (G8-U8-342-1139; NCT02220998), and ASTRAL-3 (G8-U 1140; NCT02201953) studies.

METHODS

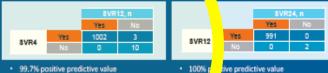
Sofosbuvir/Velpatasvir Phase 3 Program

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Total Partners in All Mills A. J. and J. and Mills Total Partners on ROPARE, shows an ISS

- HCV RNA data from patients in ASTRAL-1, ASTRAL-2, and ABTRAL-3 were evaluated.
- SVR was defined as patients with HCV RNA < lower limit of quantitation (15 IU/mL) at the aforementioned post-treatment visits, using the COBAS® TagMan® HCV Test v2.0.
- Only patients with both SVR4 and SVR12 or SVR12 and SVR24 data were included in this concordance analysis.
- No data were imputed.

	Total, N=1558	SOF/VEL, N=1035
Mean age, y	53	53
Men, n (%)	944 (61)	630 (61)
Black, n (%)	85 (6)	61 (6)
Hispanic, n (%)	107 (7)	68 (7)
Mean BMI, kg/m² (SD)	26.9	26.8
HCV GT #	393(25)/391(25)/552(35)/ 138 (9)/25(2)/49(3)	328(32)/238(23)/277(27) 116(11)/35(3)/41(4)
olime HCV RNA, log _{te} JulmL (SD)	(0.70)	6.3 (0.70)
Cirrhosia, n (%)	343	220 (21)
Treatment-experienced, n (%)	415 (27)	291 (28)



100% negative predictive value

RESULTS

.

RESULTS

There were 20 patients from ASTRAL-1, -2, apr who received SOF/VEL (n=1015/1035) and did not achieve SVR12

100%

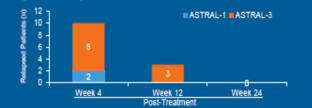
tive predictive value

13 patients who experienced virolog/ Jose or reinfection follow-up

1 discor

- 1 withdrew consent
- 1 death unrelated to treatment
- Of 13 patients who relapsed or reinfected, 10 occurred at post-treatment Week4, and 3 occurred at post-treatment Week 12:
- 2 were GT1; 11 were GT3
- 8 had compensated cirrhosis
- 8 had been previously been treated with peg-interferon + ribavirin
- There was 1 GT3a patient with confirmed GT1a reinfection between post-treatment Week 4 and post-treatment Week 12
- This would potentially change the PPV for SVR4 and SVR12 concordance from 99.7% to 99.8%





Patient Details on Viral Relapse or Reinfection

						_		
Patient #	бТ	SVR4	SVR 12	SVR 24	Relapsed	Previous Regimen	Cirrhosis	Previous Outcome
1	3e	Yes	No	No	Between SVR4 & SVR12	PEG + RBV	Yea	Nonresponder
2	3a	Yes	No	No	Between SVR4 & SVR12	None (TN)	Yes	NA
3	3a	Yes	No	No	Between SVR4 & SVR12	PEC +RBV	No	Relapsebreakthrough
4	18	No	No	No	Before SVR4	None (TN)	No	NIA
5	1b	No	No	No	Before SVR4	PEG + RBV	Yes	Nonresponder
8	38	No	No	No	Before SVR4	None (TN)	Yes	NIA
7	3e	No	No	No	Before SVR4	PEG + RBV	No	Relapse/breakthrough
8	3a	No	No	No	Before SVR4	None (TN)	No	NIA
9	38	No	No	No	Before SVR4	PEG + RBV	Yes	Relapse/breakthrough
10	3	No	No	No	Before SVR4	PEG +RBV	No	Relapse/breakthrough
11	38	No	No	No	Before SVR4	PEC+RBV	Yes	Nonresponder
12	3a	No	No	No	Before SVR4	None (TN)	Yes	NIA
13	38	No	No	No	Before SVR4	PEC+RBV	Yes	Nonresponder

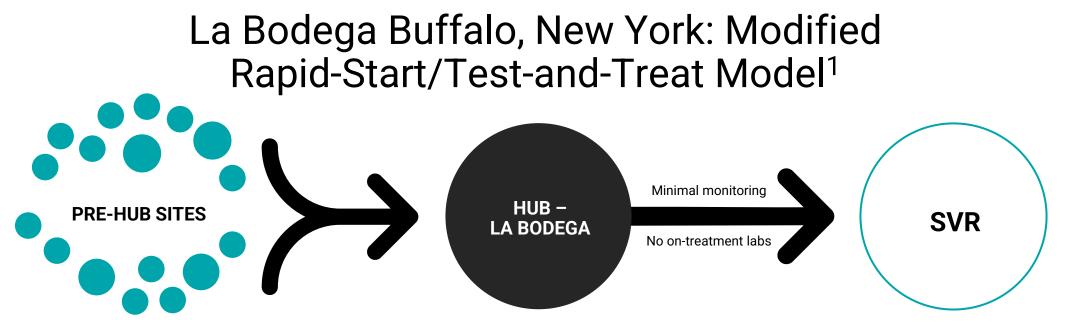
CONCLUSIONS

- For SOFIVEL, there was high concordance (99.7% positive predictive value) between SVR4 and SVR12.
- 3 of 1025 patients (0.3%) who achieved SVR4 subsequently did not achieve SVR12. All were GT3a. The 1 GT1a reinfected patient would potentially change the PPV from 99.7% to 99.8%.
 There was 100% concordance between SVR12 and SVR24.
- These results suggest SVR4 may be utilized to predict long-term SVR, as opposed to SVR12 and SVR24. This approach could be valuable in patients with high risk (PWID or incarcerated individuals released) of not attending SVR12 assessment.
- This data supports alternative approaches to SVR assessment. In addition, this supports EASL ouldance that testing for SVR can be omitted in certain patients.

REFERENCES: 1. Feld JJ et al. N. Engl J Med 2015; 372: 2589-2507; 2. Foster GR et al. N. Engl J Med 2015; 373: 2000-2017; 3. Solomon S et al. AASLD 2020 LOT.

ACKNOWLEDGNENTS: We extend our tranks to the patients and their families. These studies were funded by Glead Sciences, Inc.

DISCLOSURES: M. Suitowski: Research: Abbele, Assambly Boolences, Glead Sciences, Jansen, Proteix Digital Haab; DSMB member: Glead Sciences, Scientific advance Abbale, Assambly Boolences, Abbele, Glead Sciences, Immunoure, Bronstin, J. Feld, Consolitation and research. Abbele, Arbales, Barrier, Beeg, Finth, Glead, Anneer, N. Beeg, Consultation: White, Abbele, State Research Glead, Abbele, Sciences, Consultation, White, Abbele, Sciences, Consolitation, Abbele, Abbele, Sciences, Abbele, Consolitation, Abbele, Abbele, Sciences, Abbele, Consolitation, Abbele, Abbele, Sciences, Abbele, Abbele, Sciences, Abbele, Abbele, Abbele, Abbele, Sciences, Abbele, Abbele, Abbele, Sciences, Abbele, Abb K. VanDhuelen, K., Hammond, B. Koster, Y. Suri, and L. M are exployees of and own stock in Glead, M. Bouriser: Consultation: Glead, Abbile, Inseau, March Dary & Dohne, Interact, Richee, Endel Meyers Space: Glead, Abbile, Interact, Roche, A. Margie, Advicty or Research Glead, Weak Darys & Dohne, Interact, Richee, Sping Bark.



- Community addiction clinics; SSPs
- High-risk OB/peds (foster care system)
- Prison/jail
- STI clinics
- Emergency department
- Primary care
- Street medicine

- Individualized screening protocol: POC Ab test; conventional Ab with PCR reflex
- Single phone number and email for referral
- La Bodega staff schedules, and navigates patient to, appointments

- On-site lab draw
- Colocalized MAT—rapid start
- Immediate HCV treatment
- On-site pharmacy
- Counseling services
- PrEP, HIV, primary care

La Bodega Triage System



Full support required—meds held at clinic; daily/weekly dispensing; frequent check-ins and reminders via phone, text, social media

Intermediate support—meds delivered to the patient; La Bodega staff tracks refills, deliveries; less frequent check-in

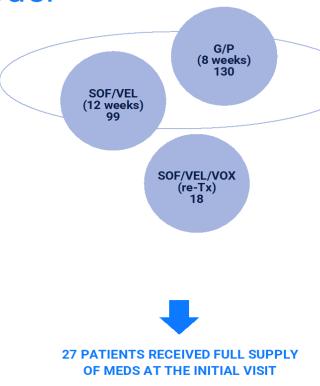
Minimal support required- candidate for full supply of meds

Ab=antibody; HCV=hepatitis C virus; HIV=human immunodeficiency virus; MAT=medication-assisted treatment; PCR=polymerase chain reaction; POC=point of care; PrEP=pre-exposure prophylaxis; OB=obstetrics; SSP=syringe service program; STI=sexually transmitted infection; SVR=sustained virologic response. Reference: 1. Data on file, La Bodega.

Rapid Start Model¹

April 2023 – April 2024

- All regimens at parity
- No longer payer driven
- Patients able to choose regimen
- Meds kept on site
- Started same day with rapid start vs next-day start for Medicare or telemedicine patients
- N=247



G=glecaprevir, MAT=medication-assisted treatment; mITT=modified intention to treat; P=plbrentasvir; SOF=sofobusvir; SVR=sustained virologic response; Tx=treatment; VEL=velpatasvir; VOX=voxilaprevir. Reference: 1. Data on file, La Bodega.

Results

Regimen Preference

- 51% preferred a shorter duration of therapy
- 30% preferred fewer pills
- Active substance use, or the total number of concomitant medications did not affect patient preference
- Patients receiving MAT preferred a shorter duration of treatment (59% vs 41%, P<0.05)

Adherence Results

- Overall full adherence rate, 59%
- Adherence was the greatest but not significant in those receiving fewer pills compared to shorter duration (67% vs 59%)
- Overall loss to follow-up rate, 32%
- Those receiving telemedicine had significant follow-up loss (68%, P<0.01)

Efficacy Results

- Overall SVR: 97% mITT (124/128)
- Telemedicine achieved the lowest percentage of SVR (67%, P<0.01, per protocol)
- 94% SVR among active substance users

So What About HBV?

 29 cases worldwide (5 in the US) of HBV reactivation

WARNING: RISK OF HEPATITIS B VIRUS REACTIVATION IN PATIENTS COINFECTED WITH HCV AND HBV

Hepatitis B virus (HBV) reactivation has been reported, in some cases resulting in fulminant hepatitis, hepatic failure, and death.

See full Prescribing Information for complete BOXED WARNING.

Born after 1991 in the US, should be immunized

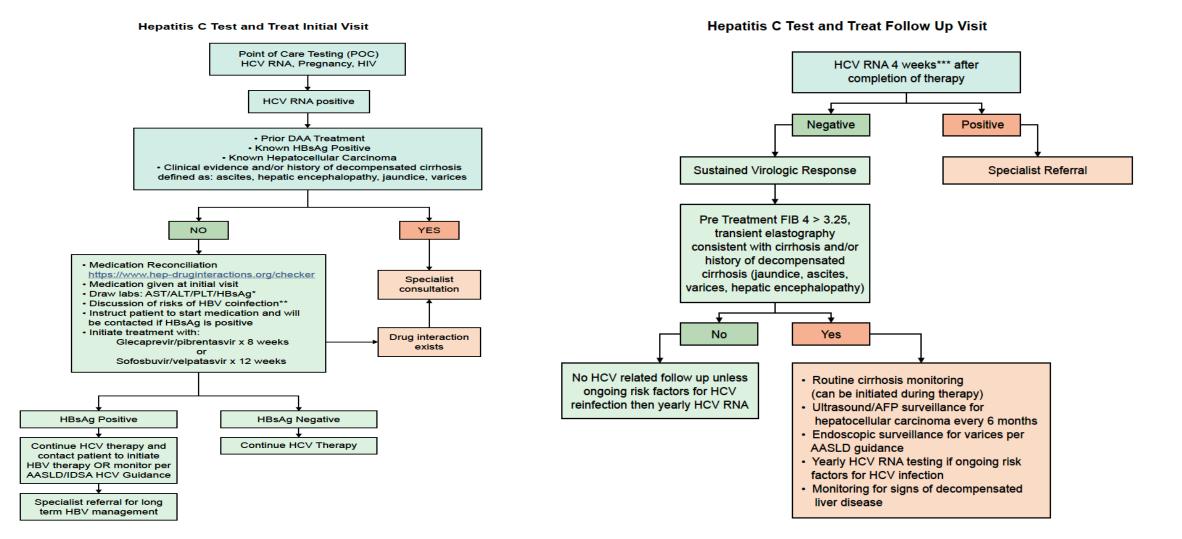
1. Conners EE, et al. *MMWR Recomm Rep.* 2023;72(1):1-25. 2. FDA. October 12, 2016. Accessed February 6, 2025. https://www.fda.gov/drugs/drug-safety-and-availability/fda-drug-safety-communication-fda-warns-about-risk-hepatitis-b-reactivating-some-patients-treated

Prevalence (Median) = 1.2%¹ in US

HBV reactivation in patients on HCV DAA Tx = $0-0.1\%^{1}$

> Time to HBV reactivation after starting HCV treatment² = 4-8 weeks. Mean 52 days

Updated AASLD / IDSA Guidelines 2025



Conclusions

- Shortening the patient journey from diagnosis to cure is essential for elimination.
- Test and treat models of care are critical and feasible among highrisk populations.
- Need to move away from liver disease to infectious disease.
- POC test utilization will be key for test and treat adoption.
- Implementation of SVR4 where appropriate, has major impact on shortening the care cascade.
- SVR rates are high despite imperfect adherence regardless of regimen.
- Full supplies of medication at the time of diagnosis are key.
- Move from "patient readiness" to "provider readiness."



Final Thoughts

• It's all about the people: The best programs are built of the community, for the community

• It's all about the people: The right provider for the right person at the right time with the right tools at their disposal

