

# Hepatitis C

## Exploring the Link with Injection Drug Use

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# Today's Meeting Goals

WHO Envisions Viral Hepatitis elimination by 2030

**DISCOVER** How PWID Contribute to the Increasing Burden of Hepatitis C

**UNDERSTAND** Why PWID Should Be Treated

**REMEMBER** That Hepatitis C Is a Curable Disease

**CONSIDER** Your Role in Screening, Diagnosing, and Referring PWID

PWID people who inject drugs;  
WHO, World Health Organization.

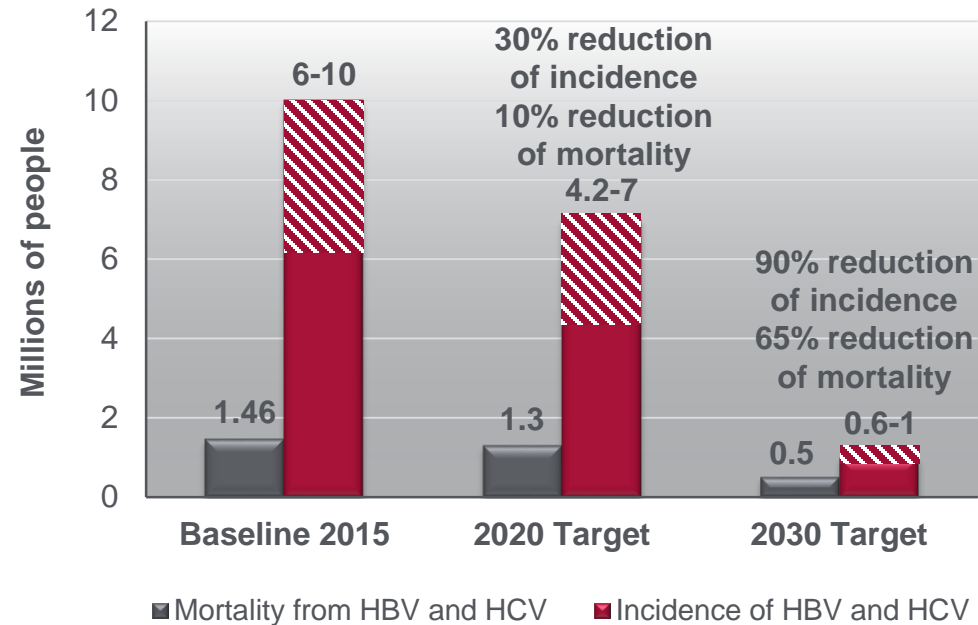
# WHO Envisions Viral Hepatitis Elimination by 2030

**Globally, more than 90%** of the burden of hepatitis-associated mortality is due to sequelae of HBV and HCV infections

## WHO prevention and treatment service coverage targets to eliminate HBV and HCV

1. HBV vaccinations for infants
2. Prevention of mother-to-child transmission of HBV
3. Blood and injection safety
4. Harm reduction\*
5. Treatment
  - Diagnosis
  - Highly effective medicines

## Impact of Service Coverage Targets Leading to Elimination of HBV and HCV by 2030

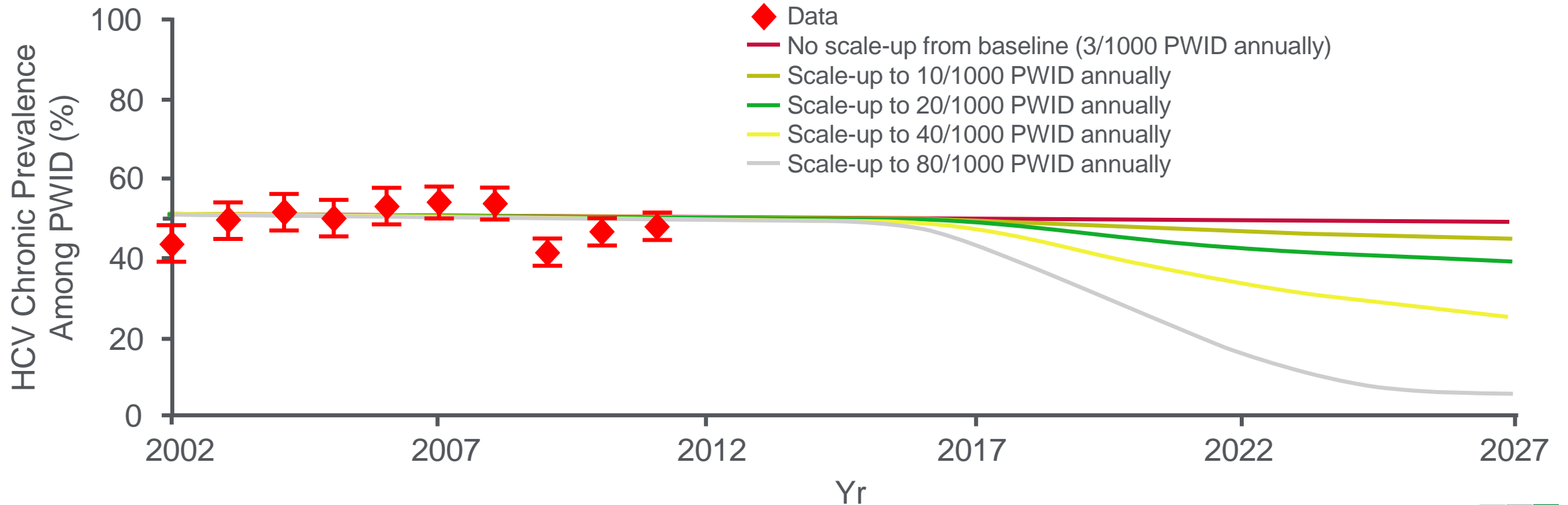


**In the absence of additional prevention efforts, 19 million hepatitis-related deaths are anticipated from 2015 to 2030.**

\*Sterile syringe/needle set distributed per person per year for PWIDs.  
World Health Organization. Advocacy Brief. May 2016.

# HCV Treatment Can Prevent Onward Transmission

- Observed and modeled HCV chronic prevalence among PWID in Melbourne, Australia



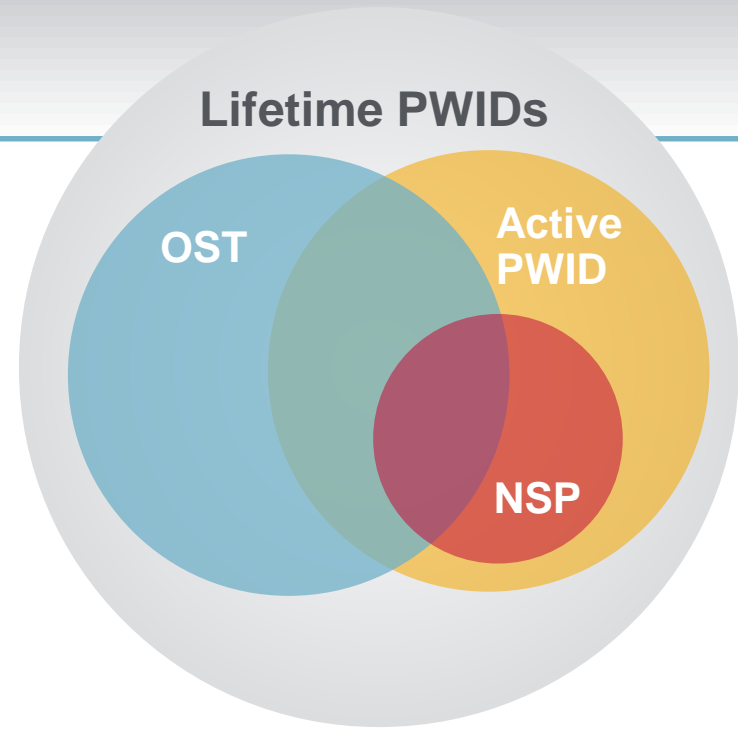


## How Do PWID Contribute to the Increasing Burden of Hepatitis C?

**PWID or PWIDs? People Who Inject Drugs**

# What Does the Term “PWID” Mean?

- “PWID” is a subjective term referring to any people who have ever injected drugs<sup>1</sup>
  - Once
  - Regularly
  - Occasionally
  - No longer (ie, on stable OST)
  - Previously (eg, ever in the past)
- PWID populations<sup>1,2</sup>:
  - “Active” or “recent” PWID – injected drugs within 1 month to 1 year and are at risk for transmitting/acquiring HCV infection
  - “Former” PWID – ceased injecting drugs but may have existing HCV infection
  - People move between groups<sup>1</sup>



NSP, needle/syringe program;  
OST, opioid substitution therapy.

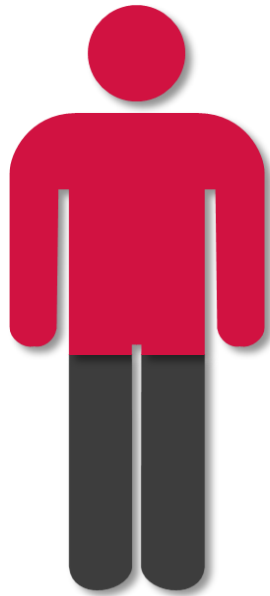
**Past or current injection drug use is the most important risk factor for HCV infection.<sup>3</sup>**

**– US Preventive Services Task Force**

1. Larney S, et al. *Int J Drug Policy*. 2015;26(10):950-957. 2. Grebely J, et al. *Int J Drug Policy*. 2015;26(10):1028-1038. 3. Moyer VA. *Ann Intern Med*. 2013;159(5):349-357.

# Injection Drug Use (IDU) Is the Primary Risk Factor for New HCV Infections in the United States<sup>1</sup>

~3.5 million people living with chronic HCV in the United States<sup>2</sup>



~60%  
are current  
or former  
PWID<sup>3</sup>

With an estimated **34,000 new HCV infections** in the United States in 2015, new infections have nearly tripled in the **past 5 years**, reaching a 15-year high.<sup>2,4,\*</sup>

The greatest increases in new HCV infections, and the highest overall number of cases, were among young people aged 20-29 years, with injection drug use as the primary route of transmission.<sup>4</sup>

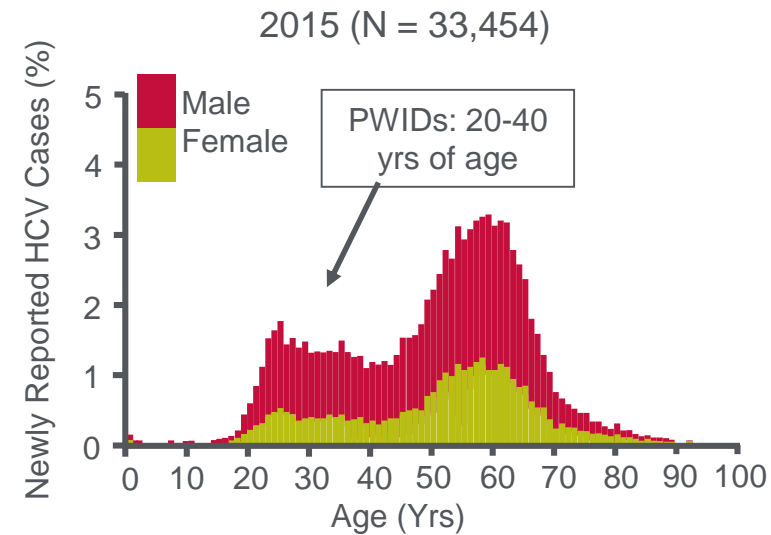
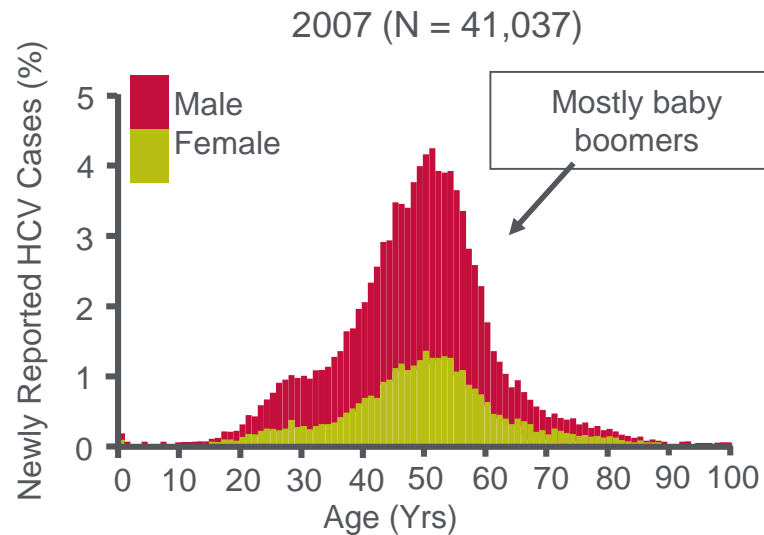
1. Estimated prevalence of acute HCV infections after adjusting for under-ascertainment and under-reporting. Latest available data. Campbell CA, et al. *MMWR Morb Mortal Wkly Rep*. 2017;66(18):465-469.

2. CDC. Hepatitis Surveillance Report – United States. <https://www.cdc.gov/hepatitis/statistics/2015surveillance/commentary.htm>. Accessed May 11, 2017.

3. Litwin AH, et al. *Clin Infect Dis*. 2005;40(Suppl 5):S339-S345.

4. CDC. Hepatitis Surveillance Report – United States. <https://www.cdc.gov/nchhstp/newsroom/2017/hepatitis-surveillance-report.html>. Accessed May 11, 2017.

# Changing Epidemiology of HCV in the US



- Screening → linkage to HCV care → DAA treatment cascade must be operative in all those at risk
- Treatment of PWIDs plus harm reduction efforts essential part of elimination efforts

California Department of Public Health. Chronic hepatitis C infections in California: cases newly reported through 2015. June 2017.



# HCV Outbreaks Associated With IDU Are Occurring Throughout the United States

## HIV, Hepatitis C outbreak continues in Indiana

Published: Thursday, November 5th 2015, 10:40 pm MST  
Updated: Thursday, November 5th 2015, 10:40 pm MST

Posted by Jordan Vilines, Reporter [CONNECT](#)



(Source: FOX19 NOW/File)

BATESVILLE, IN southeastern Indiana state is still trying to stem the outbreak called 'the worst' stemming from

On Thursday, November 5th, 2015, a person in Indiana who told

Portland Press Herald

What are you looking for?

NEWS

Posted July 6, 2015 | Updated July 6, 2015

## Hepatitis C cases soar with Maine heroin epidemic

## Kentucky sees significant growth in hepatitis C infections among women 15 to 44

### HIGHLIGHTS

Intravenous drug use continues to drive up disease in state

Number of babies born to infected women also increases

Health departments starting needle exchanges to try to slow spread of disease

VIDEOS



npr CPR NEWS • news arts & life music prog



HEALTH NEWS FROM NPR



2:22

+ Queue

PUBLIC HEALTH

## CDC Warns More HIV, Hepatitis C Outbreaks Likely Among Drug Users

April 24, 2015 · 2:19 PM ET

Heard on All Things Considered

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Heroin

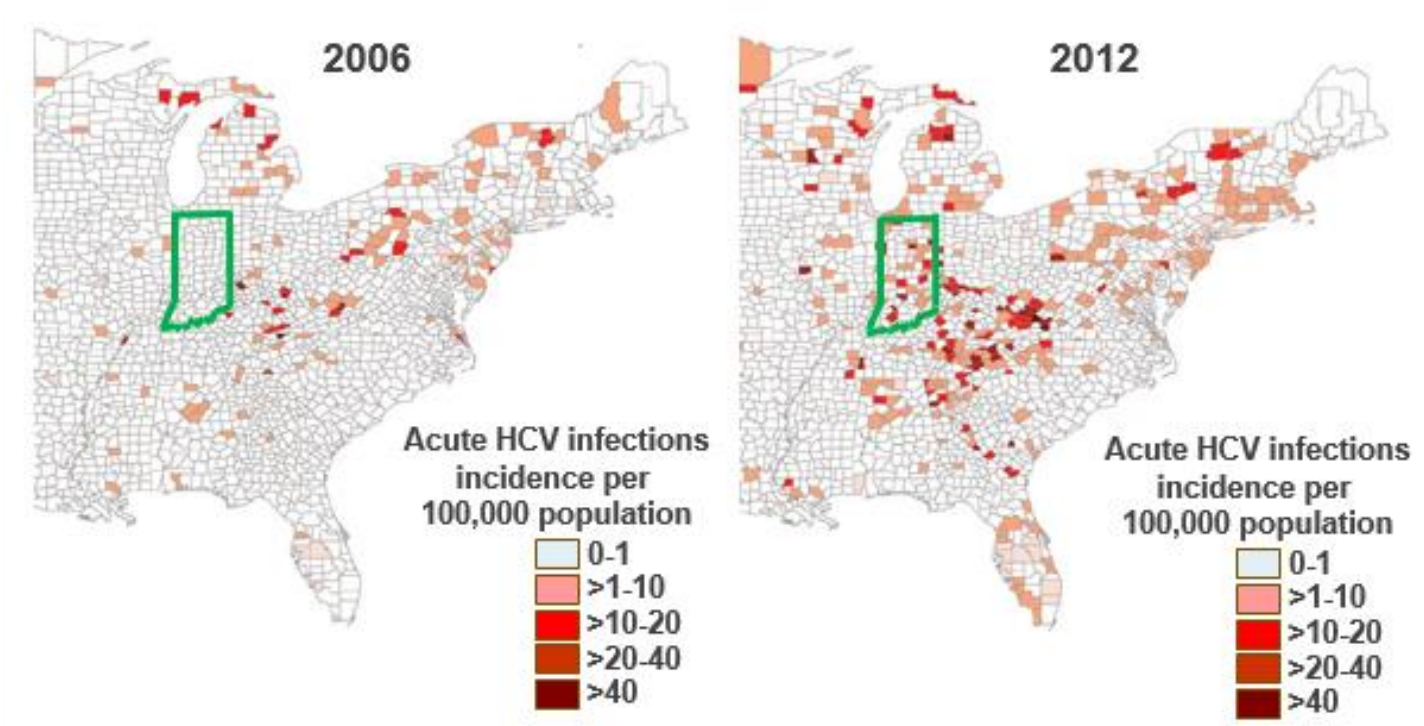
## How the Heroin Crisis Ushered in a Hepatitis C Epidemic

Meanwhile, high prices and stringent requirements from insurers and Big Pharma are limiting access to effective treatment.

CDC, Centers for Disease Control and Prevention.

# Injection Networks Are Driving Hepatitis C Outbreaks

- Higher incidence of HCV infection (especially among younger PWID) in 2012 than in 2006 in at least 30 states, with the largest increases occurring in nonurban counties east of the Mississippi River\*



**Data indicate an emerging US epidemic of HCV infection among young nonurban persons (aged ≤30 years)**

\*Based on data from national surveillance and supplemental case follow-up at selected jurisdictions describing the US epidemiology of HCV infection among young persons (aged ≤30 years). Suryaprasad AG, et al. *Clin Infect Dis*. 2014;59(10):1411-1419.

## Indiana HIV outbreak, hepatitis C epidemic sparks CDC alert

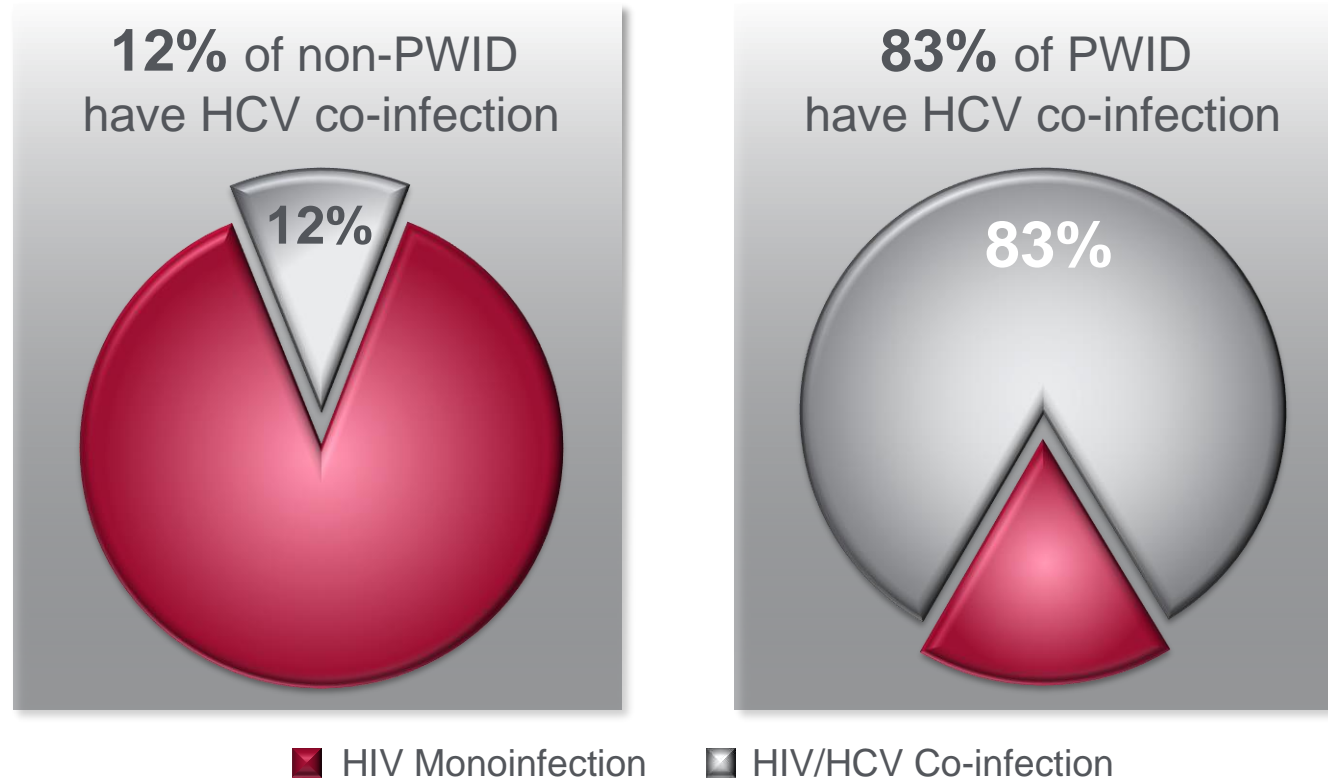


A sign for free HIV testing is displayed in front of the Scott County Health Department in Scottsburg, Ind. (Christopher Fryer, AP)

# Why Should PWID Be Screened and Treated for HCV Infection?

# PWID Are Often Co-infected With HCV and HIV

**Among the HIV-positive population in North America**



**~153,000 PWID in North America are co-infected with HIV/HCV**

Platt L, et al. *Lancet Infect Dis*. 2016;16(7):797-808.

# High Rates of HCV Infection Among PWID

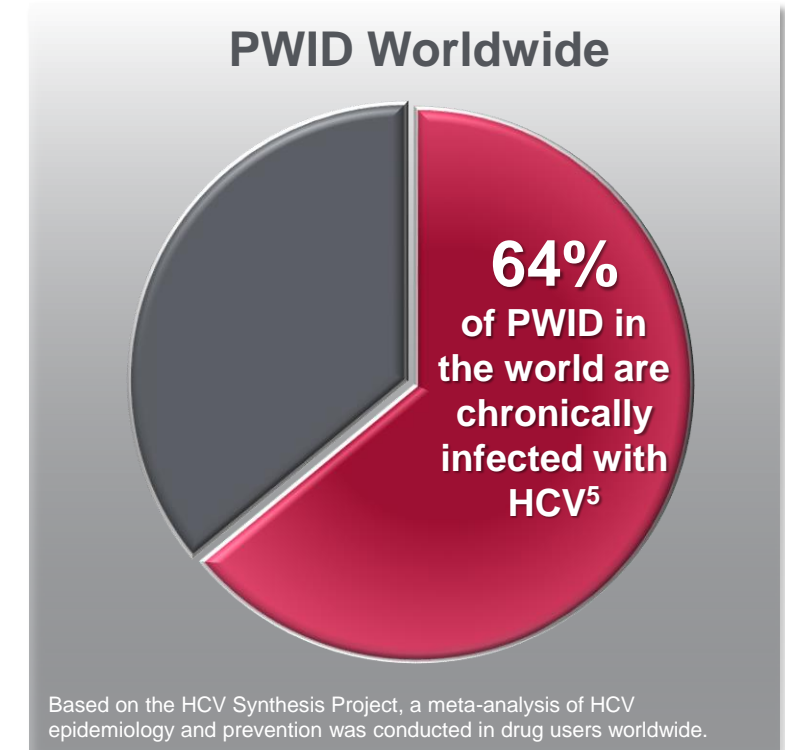
- HCV transmission is highly efficient among PWID
  - Young injectors frequently acquire HCV soon after transitioning to injection.<sup>1,\*</sup>

## Host Factors

- Young/new PWID tend to share drug preparation equipment (eg, drug cookers, filtration cotton, rinse water)<sup>1</sup>
- Injectors<sup>†</sup> may increase other high risk behaviors (eg, MSM and multiple sex partners)<sup>2,3</sup>

## Viral Factors

- HCV can survive on inanimate surfaces like cookers, and filters for days, and even longer in the barrel of a syringe<sup>1</sup>
- In controlled healthcare environments, HCV is transmitted at up to a 10-fold rate relative to HIV following needlesticks<sup>4</sup>

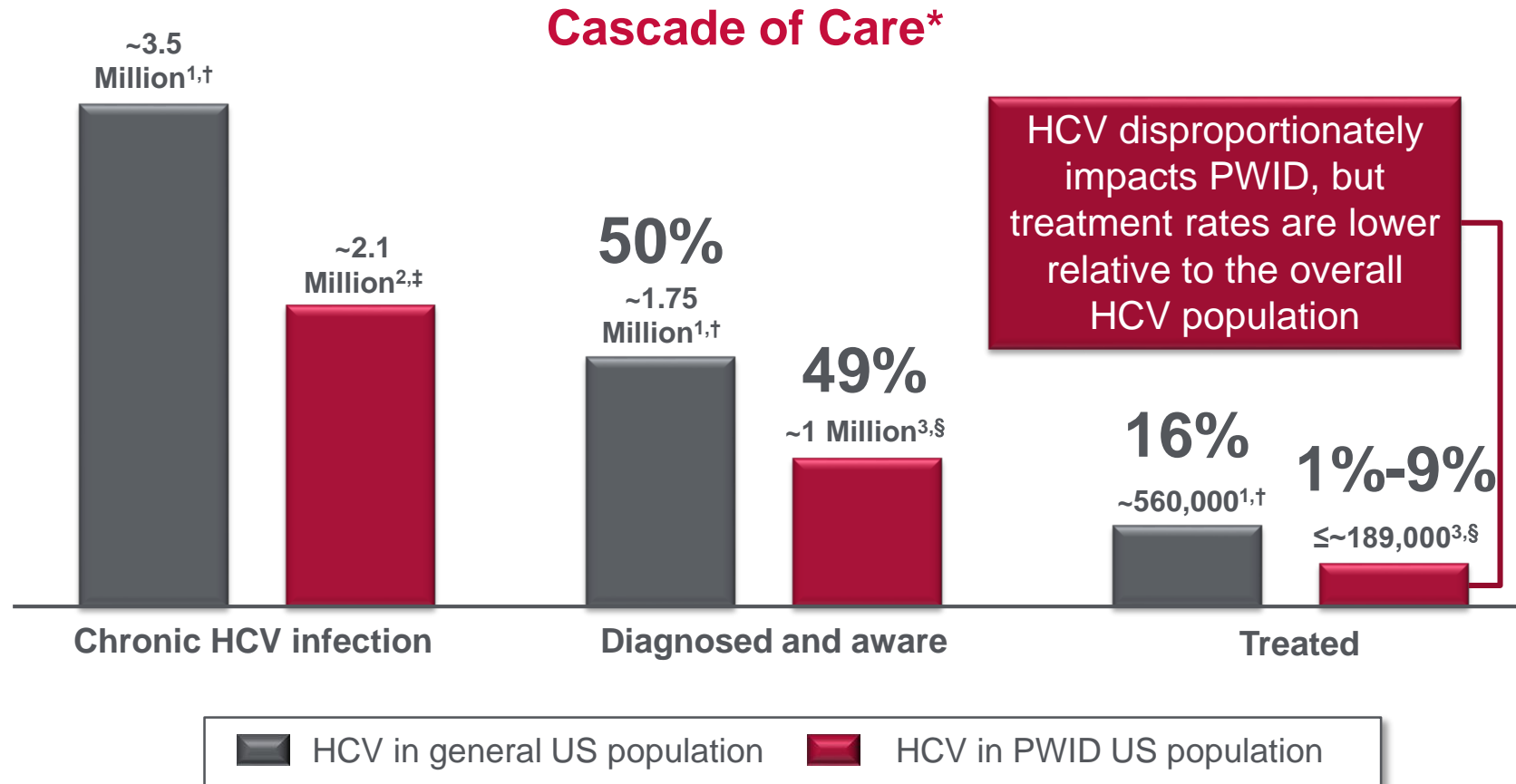


\*Examples of other modes of HCV transmission include transfusion, needlestick, sex, mother-to-child.

†Prescription opioids such as oxycodone have been associated with heightened risk of initiating injecting.

1. DHHS Young PWID Consultation Report. Feb 26-27, 2013. 2. Midgard H, et al. *J Hepatol*. 2016;65:S33-S45. 3. Werb D, et al. *Harm Reduct J*. 2016;13(1):25. 4. Chen JY, et al. *Nat Rev Gastroenterol Hepatol*. 2014;11(6):362-371. 5. DHHS Action Plan 2014-16. February 2014.

# HCV Is Underdiagnosed and Undertreated, Even More for PWID



\*All numbers are approximate. <sup>†</sup>2003-2013; <sup>‡</sup>Estimated, 2005; <sup>§</sup>Estimated, 2014.

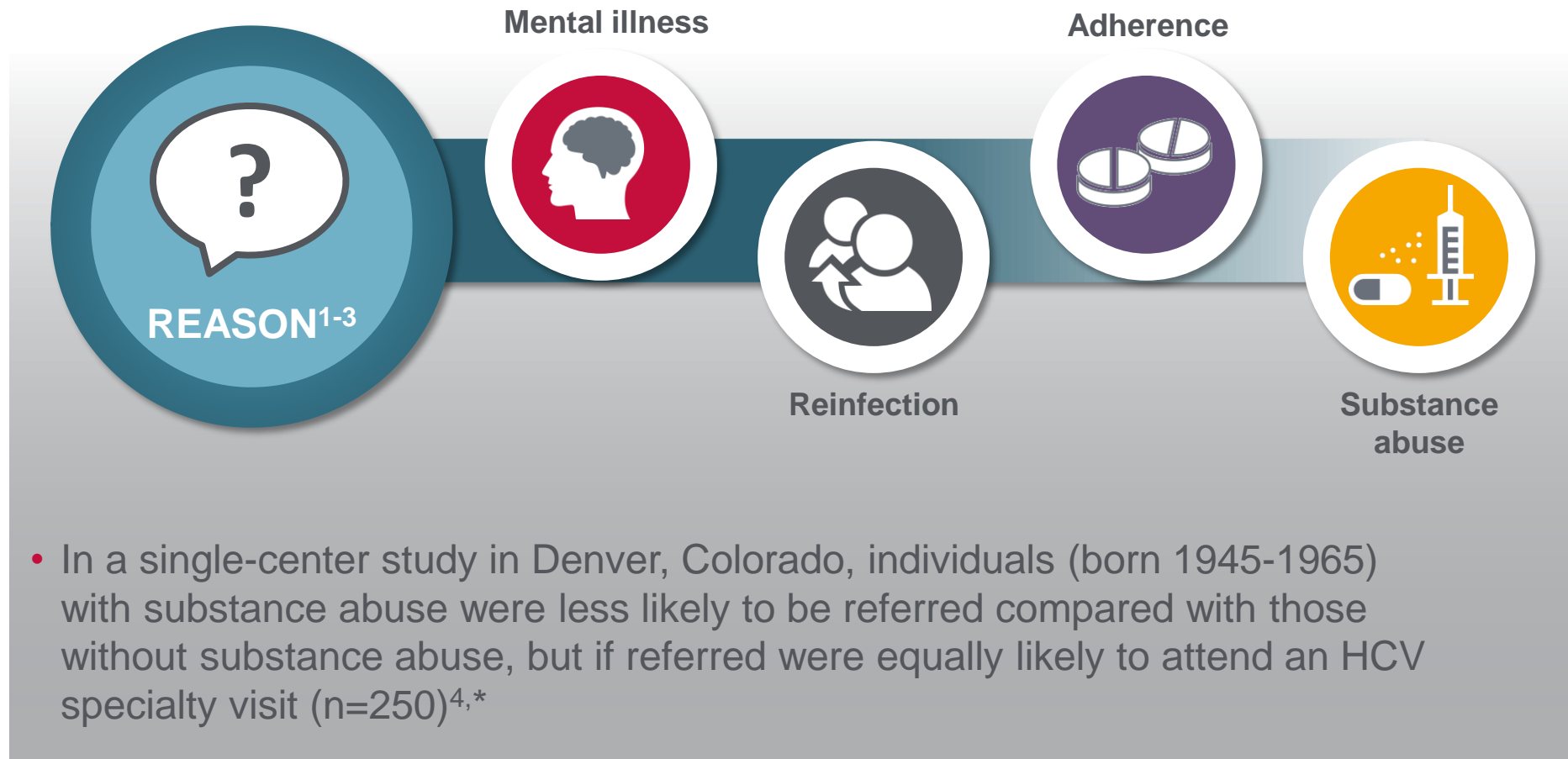
1. Yehia BR, et al. *PLoS One*. 2014;9(7):e101554.

2. Litwin AH, et al. *Clin Infect Dis*. 2005;40(Suppl 5):S339-S345.

3. Coffin PO, Reynolds A. *Hepat Med*. 2014;6:79-87.



# Perceived Barriers to HCV Care in the PWID Population

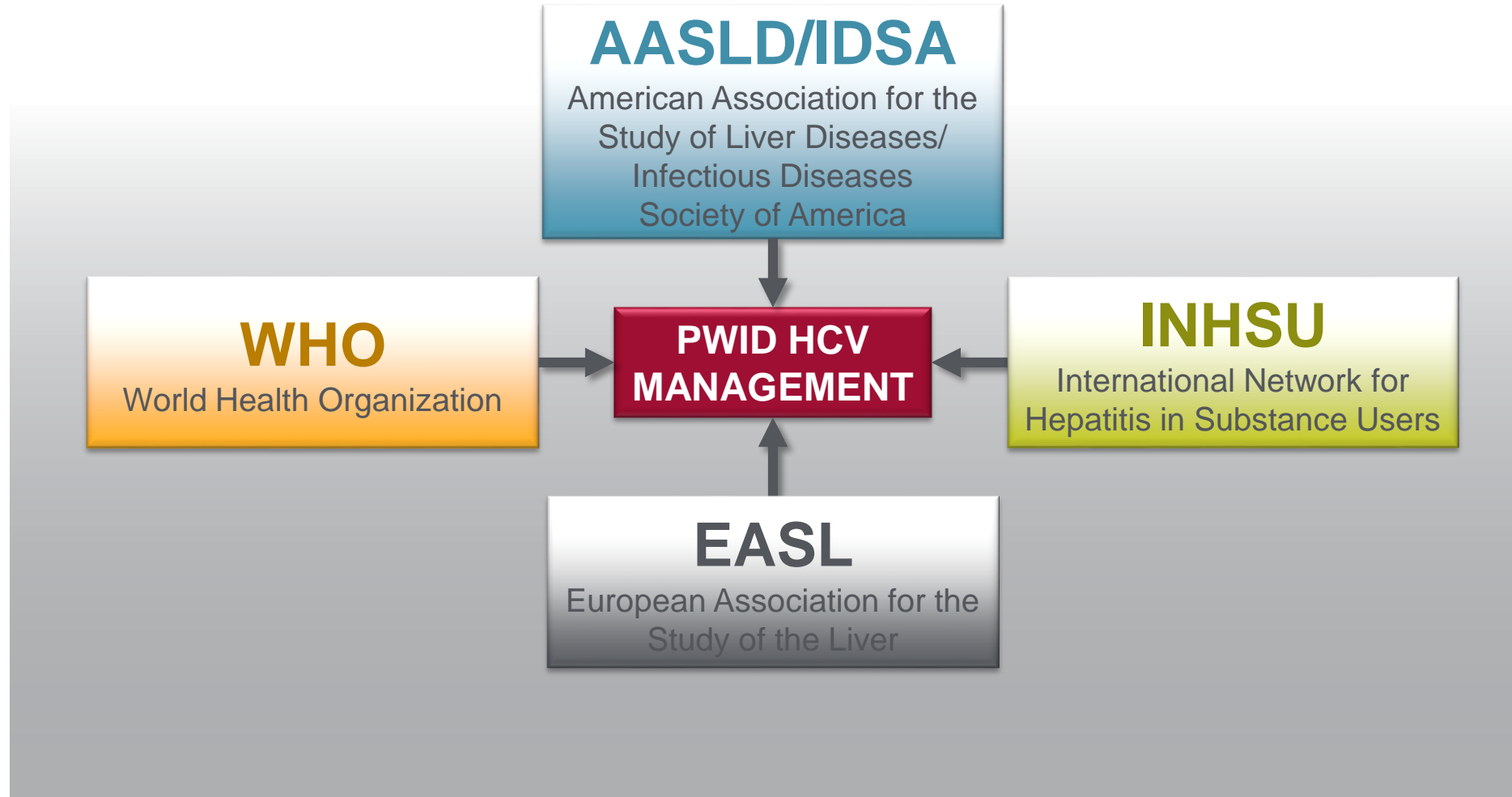


\*Individuals born between 1945-1965 were screened for HCV through a testing and linkage-to-care program in 2 community clinics in Denver, Colorado. HCV evaluation and treatment courses were followed prospectively from January 2013–March 2015.

1. Asher AK, et al. *Subst Use Misuse*. 2016;51(9):1218-1223. 2. Rich ZC, et al. *BMC Public Health*. 2016;16:994-1003. 3. Aspinall EJ, et al. *Clin Infect Dis*. 2013;57(Suppl 2):S80-S89.

4. Muething L, et al. IDSA/ID Week 2015. Poster 1029.

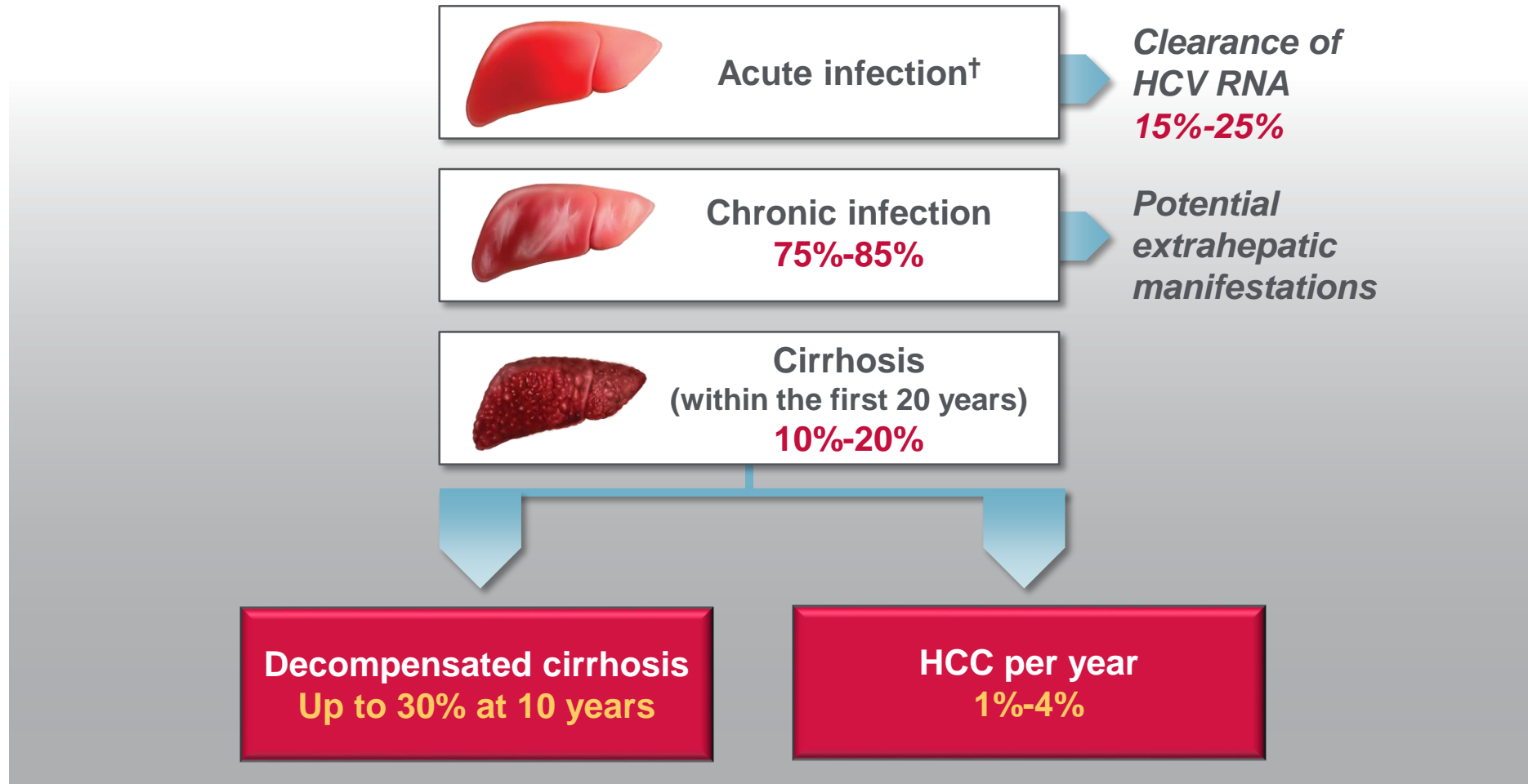
# Major Global Organizations Recommend HCV Treatment for PWID<sup>1-4</sup>



1. AASLD/IDSA HCV Guidance. [www.hcvguidelines.org/full-report-view](http://www.hcvguidelines.org/full-report-view). Accessed April 23, 2017.
2. European Association for Study of Liver. *J Hepatol*. 2017;66(1):153-194.
3. WHO guidelines approved by the guidelines review committee. Geneva: World Health Organization. 2016.
4. Grebely J, et al. *Int J Drug Policy*. 2015;26(10):1028-1038.



# Chronic HCV Infection Can Result in Cirrhosis and Can Increase the Risk for Hepatocellular Carcinoma (HCC)\* if Not Treated



\*All percentages are approximate.

†20%-30% of individuals are symptomatic.

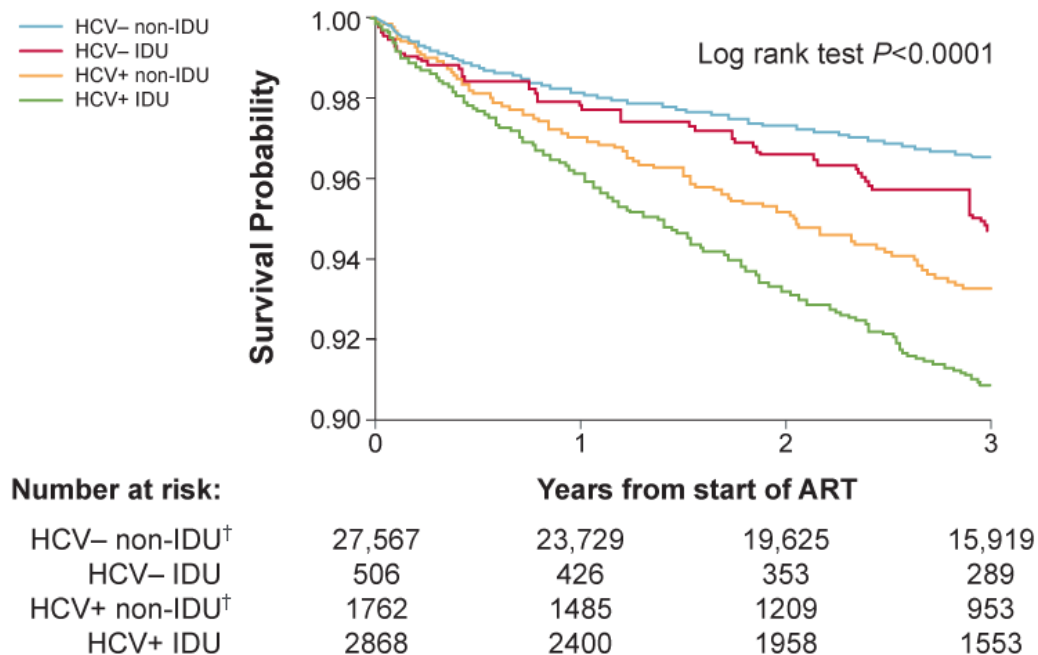
Adapted from Chen SL, Morgan TR. *Int J Med Sci.* 2006;3(2):47-52.

RNA, ribonucleic acid.

# Individuals With HIV/HCV Co-infection Have Higher Mortality Rates Compared With Those Without HCV

- Overall, individuals with HIV/HCV co-infection have **~2.5x greater mortality rates and higher rates of liver mortality** (adjusted HR=14.0), compared with those without HCV\*

Survival probability by HCV Status in PWID and HIV Populations  
(ART Cohort Collaboration study; 2000-2009)



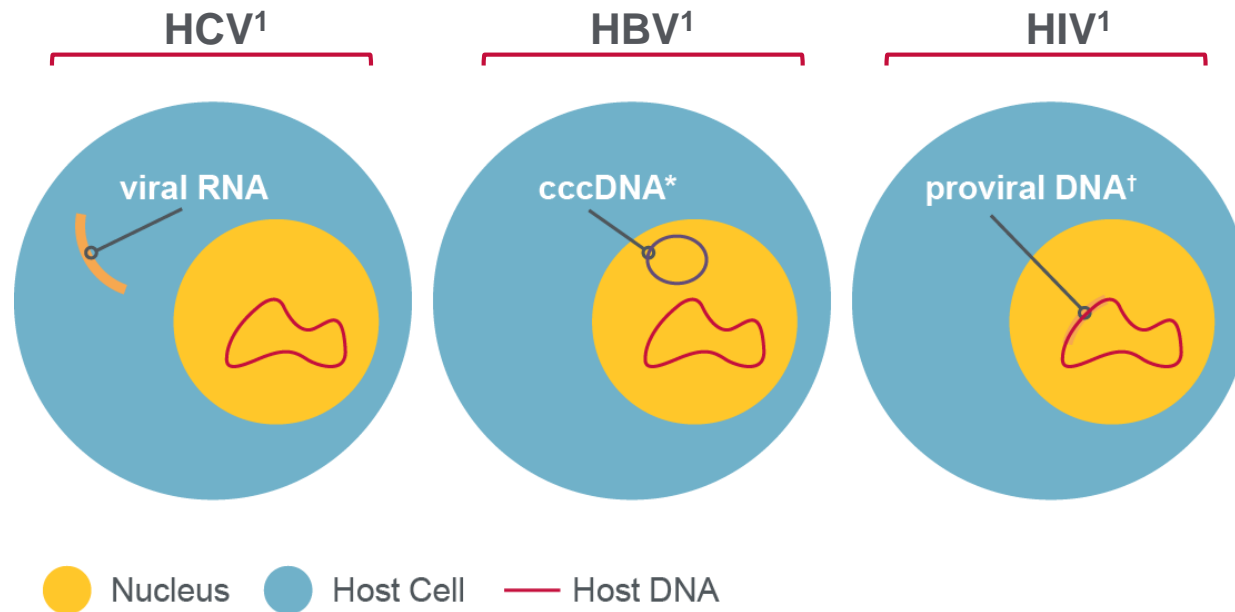
Effects of both HCV and IDU on mortality risk were greater in patients aged 30-49 years.

\*Data collected from the Antiretroviral Therapy Cohort Collaboration study involving 16 European and North American cohorts with ~32,000 HIV-infected persons (who initiated ART between 2002-2009) with known HCV status and IDU history. HCV+ was defined as positive antibody test or plasma HCV RNA.

<sup>†</sup>Non-IDU category is composed of men who have sex with men, heterosexual, blood, other/unknown. May MT, et al. *J Acquir Immune Defic Syndr*. 2015;69(3):348-354.

# Unlike Some Chronic Conditions, HCV Can Be Cured

- The possibility of eliminating the virus and achieving a cure may be due to the manner in which the virus infects the host cells<sup>1</sup>
  - HCV does not integrate into the nuclei of infected cells, whereas HBV and HIV DNA are incorporated into the nucleus of the cell<sup>1</sup>



**Most chronic conditions<sup>‡</sup> require lifelong management, but HCV is curable, with a treatment duration of 8-12 weeks with highly effective all-oral treatments.<sup>1-4</sup>**

\*HBV cccDNA: accumulates in hepatocyte nuclei, acting as a template for viral messenger RNA transcription.

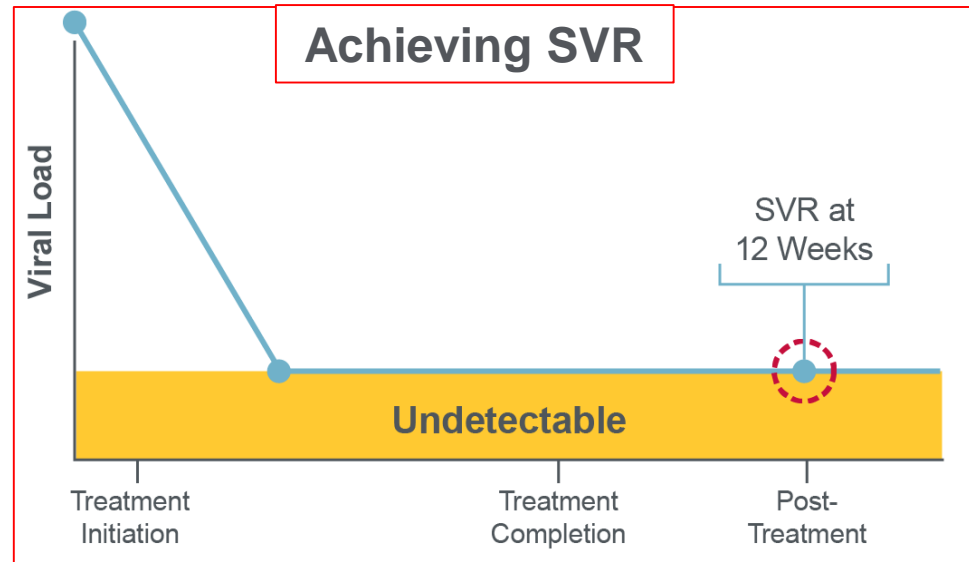
†HIV proviral DNA: integrates into the chromatin of infected cells, acting as the template for the transcription of viral genes.

‡Including diabetes, hypertension, and hyperlipidemia.

1. Soriano V, et al. *J Antimicrob Chemother.* 2008;62(1):1-4. 2. Last AR, et al. *Am Fam Physician.* 2011;84(5):551-558. 3. World Health Organization. Advocacy Brief. May 2016. 4. AASLD/IDSA HCV Guidance. Recommendations for testing, managing, and treating hepatitis C. <http://www.hcvguidelines.org>. Accessed April 23, 2017.

cccDNA, covalently closed circular DNA;  
DNA, deoxyribonucleic acid.

# HCV Cure Is Determined 3 Months After Treatment End



Cure, also known as SVR, is defined as no detectable HCV in the blood at least 12 weeks after completion of therapy.<sup>1,2</sup>

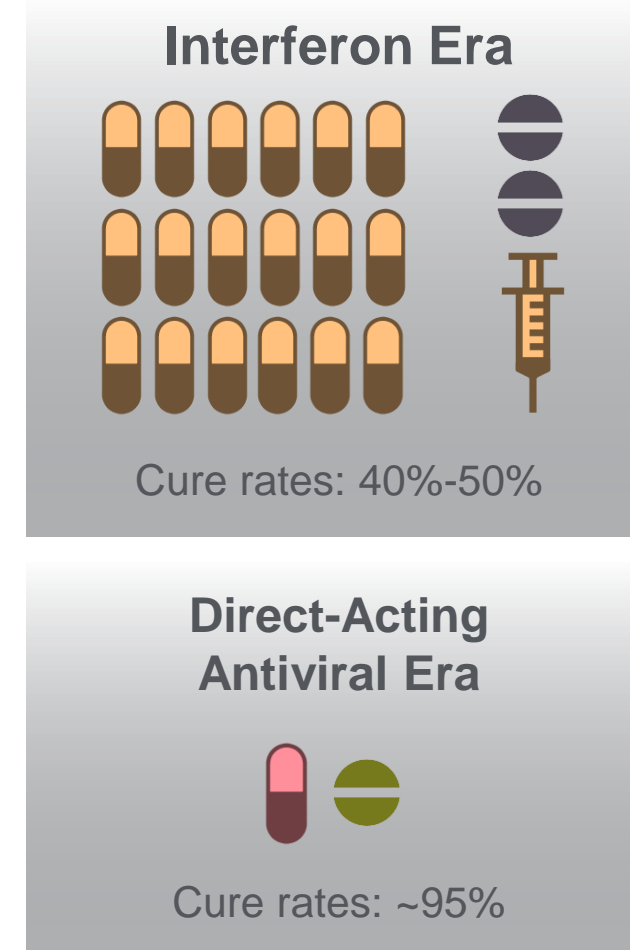
- In some instances, HCV treatment does not result in cure, or SVR, because the virus does not reach undetectable levels or because it does not stay undetectable after therapy completion
- In 1 study, of those patients who reached SVR, 99% had undetectable levels of HCV RNA up to 4 years after cessation of treatment. These patients do not experience viral recurrence and may be considered to be cured<sup>3,\*</sup>

\*Studies utilized SVR24, the standard protocol before 2013 for measuring attainment of SVR.

1. US DHHS, Center for Drug Evaluation and Research. Draft Guidance for Industry. Chronic Hepatitis C Virus Infection: Developing Direct-Acting Antiviral Drugs for Treatment. May 2016. 2. AASLD/IDSA HCV Guidance. Recommendations for testing, managing, and treating hepatitis C. <http://www.hcvguidelines.org>. Accessed April 23, 2017. 3. Swain MG, et al. *Gastroenterology*. 2010;139(5):1593-1601.

# Treatment for HCV Has Evolved

- Before 2011 (interferon era)
  - HCV treatment had serious side effects
  - Could last up to a year
  - Cure rates\* (SVR) were 40%-50% for the most common genotype<sup>1</sup>
- Now (interferon-free)
  - Few side effects
  - All genotypes
  - Cure rates about 95%<sup>2,3,\*</sup>

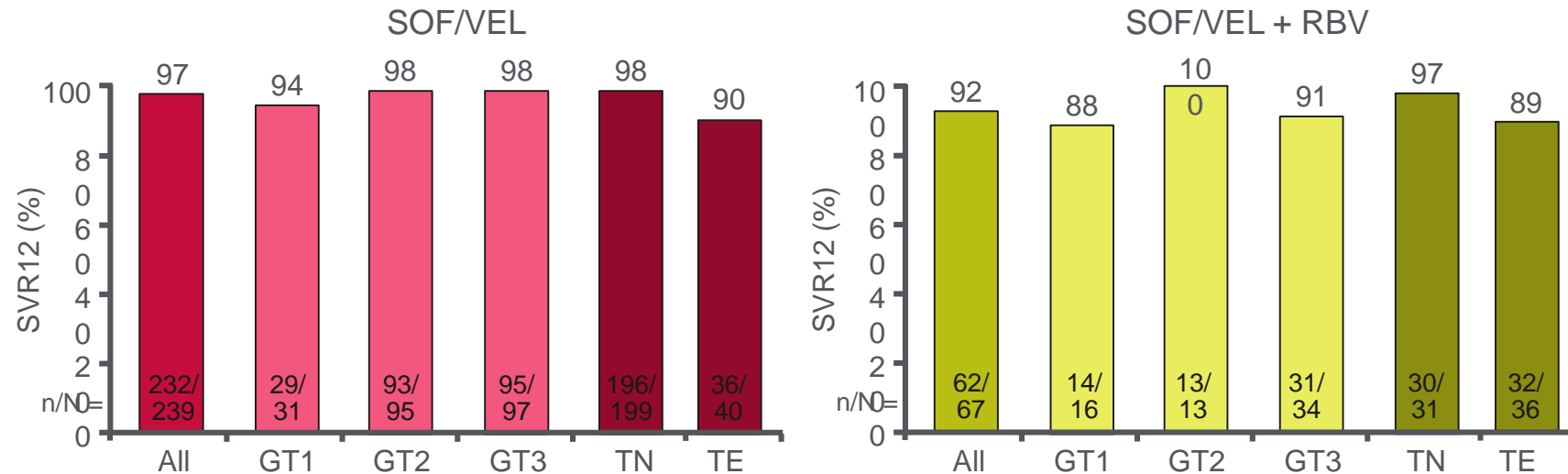


\*Cure, also known as SVR, is defined as no detectable HCV in the blood at least 12 weeks after completion of therapy.

1. Ghany MG, et al. *Hepatology*. 2011;54(4):1433-1444. 2. AASLD/IDSA HCV Guidance. Recommendations for testing, managing, and treating hepatitis C. <http://www.hcvguidelines.org>. Accessed April 23, 2017. 3. US DHHS, Center for Drug Evaluation and Research. Draft Guidance for Industry. Chronic Hepatitis C Virus Infection: Developing Direct-Acting Antiviral Drugs for Treatment. May 2016.

# HCV-TARGET: Real-World Efficacy and Safety of SOF/VEL for GT1-6 HCV

- Pts treated per local standard of care at academic (n = 45) and community medical centers (n = 19) in North America (n = 60) and Europe (n = 4)
  - N = 451 for SOF/VEL; N = 119 for SOF/VEL + RBV

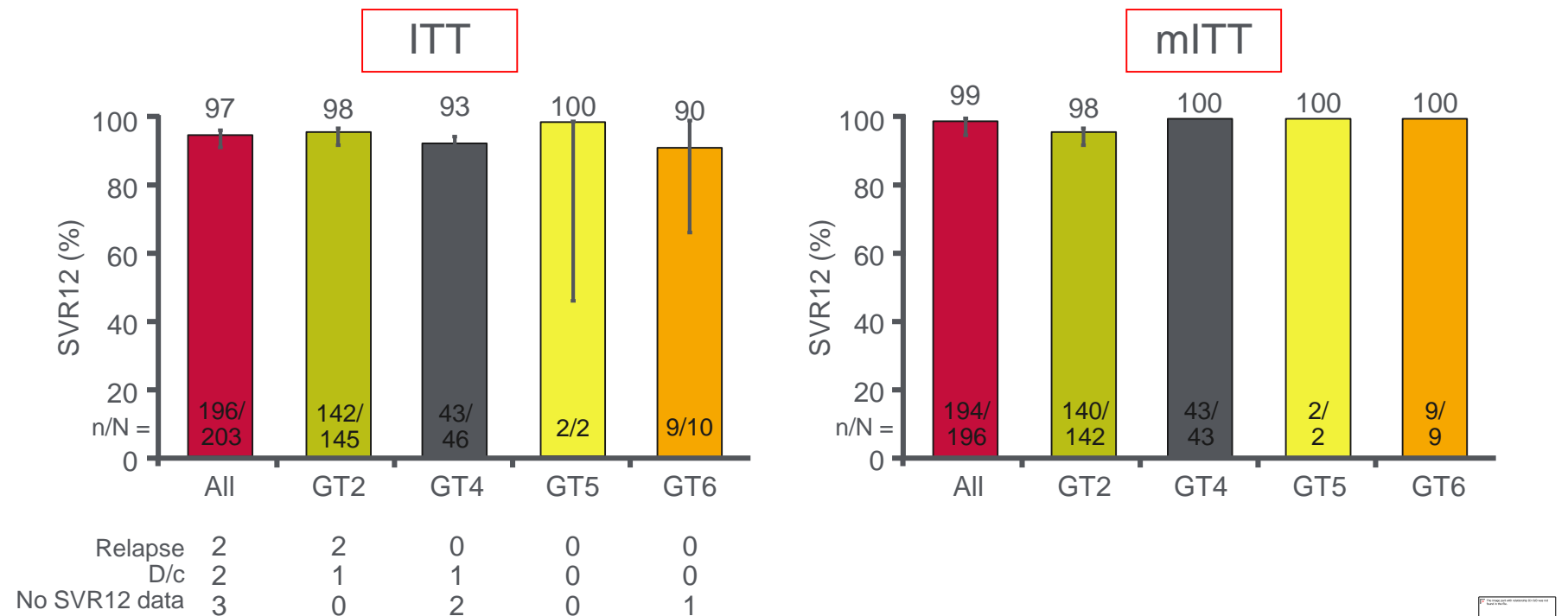


[clinicaloptions.com](http://clinicaloptions.com)



## SURVEYOR 2, Part 4: 8-Wk GLE/PIB for Pts With GT2, 4, 5, 6 HCV Without Cirrhosis

99% SVR12 rate with 8-wk regimen in DAA-naïve pts with GT2 HCV—noninferior to 95% historical control (SOF + RBV for 12 wks)



# PWID Across the Spectrum Can Be Treated for HCV



## Active Injectors

- Among active injectors, frequent drug use (daily/every other day) has an impact on adherence, treatment completion, or treatment efficacy; occasional drug use does not<sup>1,\*</sup>



## Opioid Agonist Therapy

- Among patients on opioid agonist therapy, HCV treatment outcomes improved among those treated for opioid addiction compared with nonaddiction-treated drug users<sup>2,\*</sup>



## Former Injectors

- Among former injectors, successful HCV outcomes are more likely to be achieved if PWID are stabilized for addiction and then undergo HCV therapy<sup>3,\*</sup>

\*Studies utilized IFN/RBV as the treatment arm.

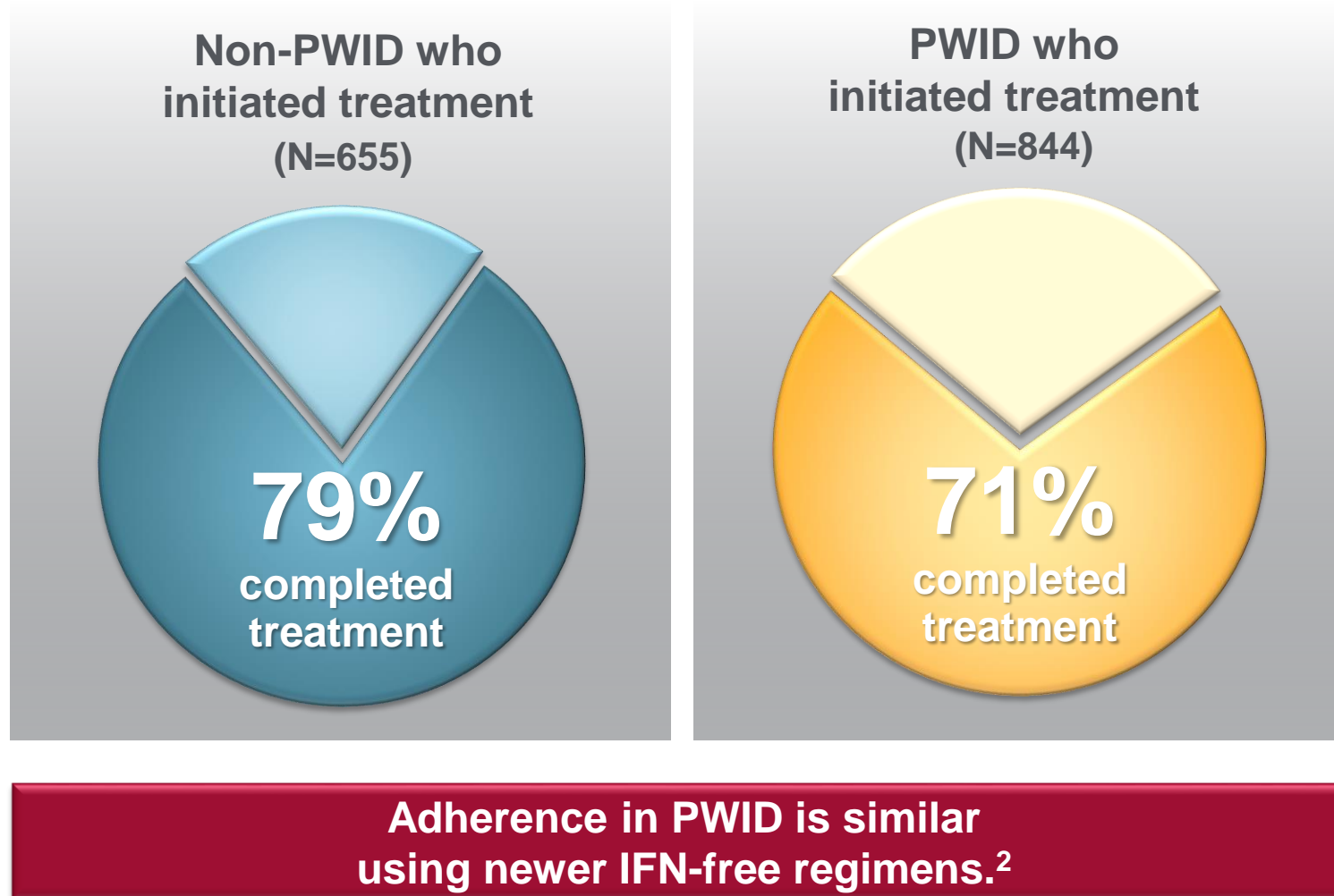
1. Robaey G, et al. *Clin Infect Dis*. 2013;57(Suppl 2):s129-s137. 2. Dimova RB, et al. *Clin Infect Dis*. 2013;56(6):806-816.

3. Zeremski M, et al. *World J Gastroenterol*. 2013;19(44):7846-7851.

IFN, interferon.



# IFN Era: Adherence Among PWID is Comparable to the Overall HCV Population (2001-2007)<sup>1</sup>

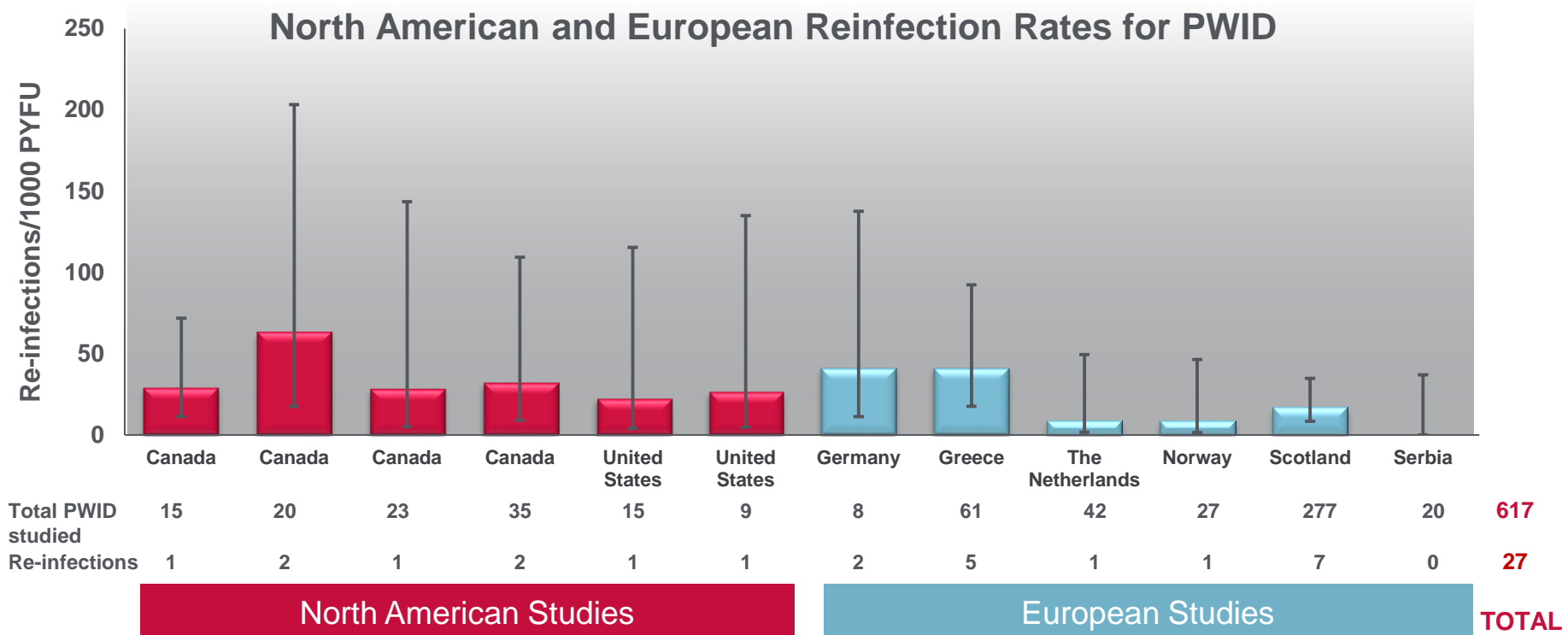


1. Hellard M, et al. *Clin Infect Dis*. 2009;49:561-573. 2. Litwin A, et al. INHSU 2016. Oral presentation.

# Reinfection Is Rare, Even Among High-Risk Groups

- A global meta-analysis of 14 articles that assessed HCV recurrence in high-risk patients; 12 evaluated the risk in PWID\*

**Reinfection rate among high-risk populations (PWID and Prisons)**  
19.06/1000 PYFU†



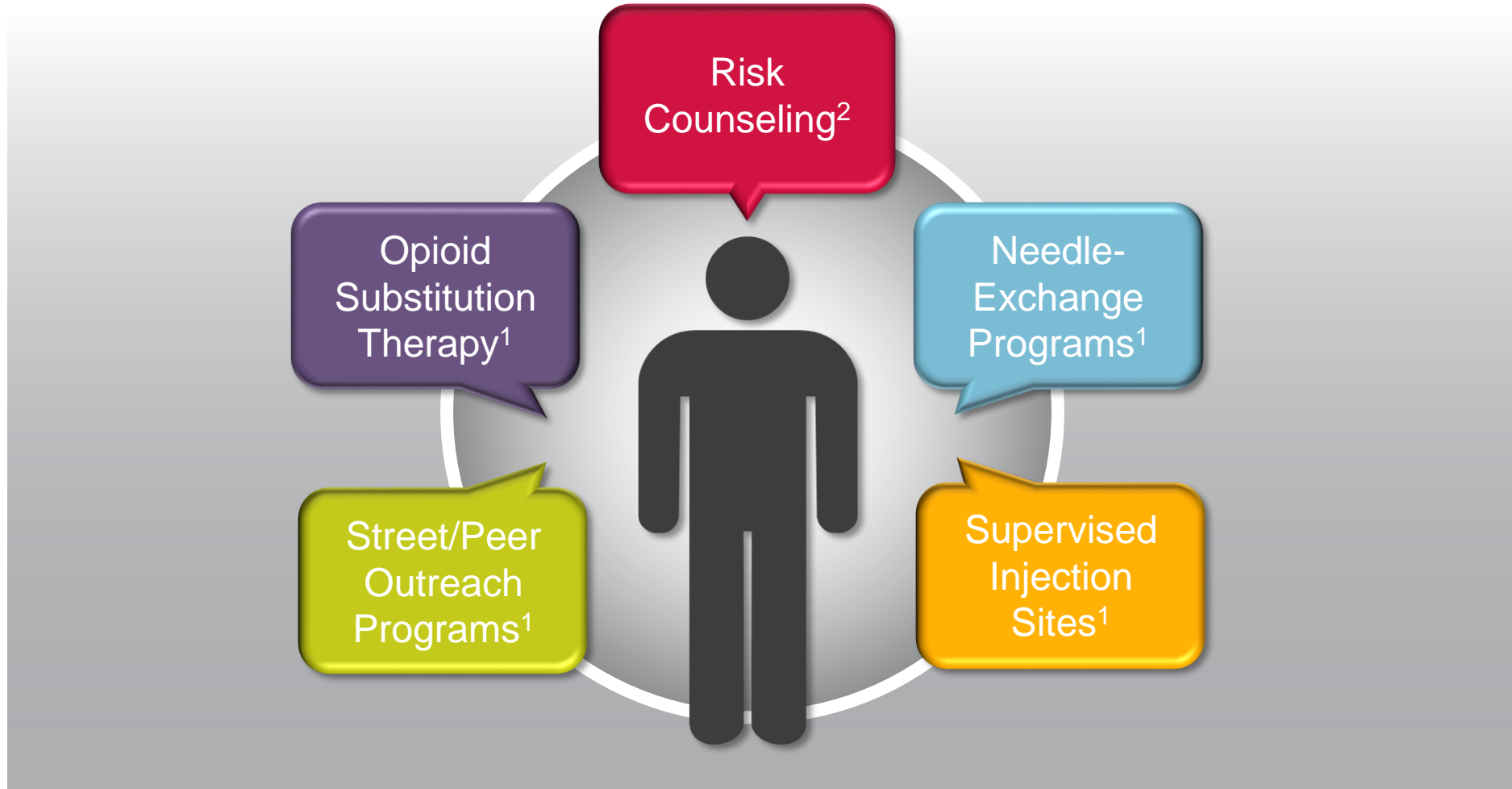
\*Studies included adults (aged ≥18 years) who achieved SVR12 or SVR24 post-treatment with IFN-based therapies.

†Includes 2 studies conducted in prisons and was not specific to PWID.

Simmons B, et al. *Clin Infect Dis*. 2016;62(6):683-694.

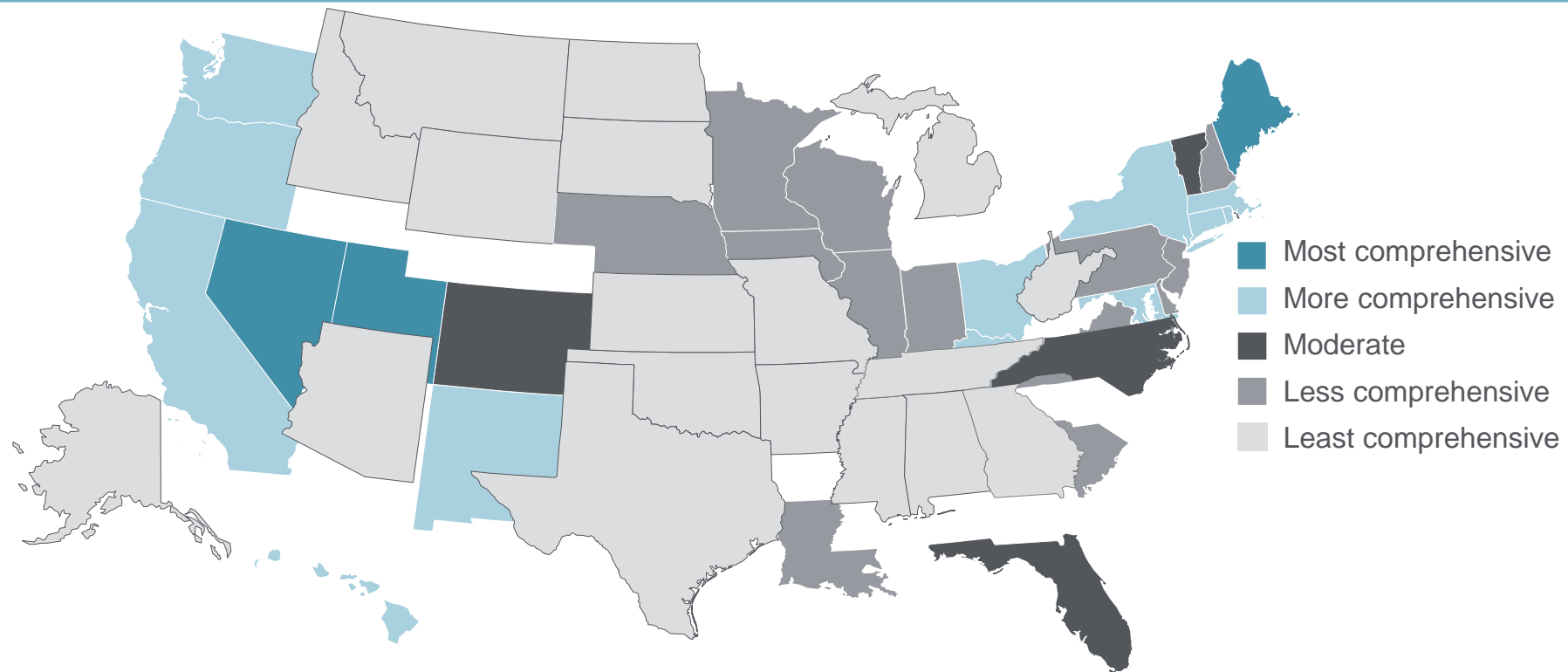
PYFU, person-years of follow-up.

# Harm Reduction Facilities Can Increase Adoption of Lower-risk Alternative Injection Practices<sup>1</sup>



1. Beirness DJ, et al. Canadian Centre on Substance Abuse. 2008.
2. Logan DE, Marlatt GA. *J Clin Psychol*. 2010;66(2):201-214.

# Comprehensiveness of State Laws Pertinent to Prevention of HCV Infection Among PWID\*



- Assessment of whether a state had established
  - Authorization of syringe exchange statewide or in selected jurisdictions
  - Exemption of needles or syringes from the definition of drug paraphernalia
  - Decriminalization of possession and distribution of syringes or needles for participants of a legally authorized syringe service program
  - Avoidance of criminal prosecution for possession of drug paraphernalia by disclosing possession of a needle or sharp object to an arresting officer
  - Allowance for the retail sale of syringes without a prescription to PWID

\*United States, 2016.

Campbell CA, et al. *MMWR Morb Mortal Wkly Rep.* 2017;66(18):465-469.



## What Role Can You Play in the Treatment and Management of PWIDs?

# You Are the First Line of Communication for Patients With Addiction

*Give your patients a chance to be cured with 3 simple steps.*

## Screen for HCV antibodies

Test at-risk patients with a blood test to detect the presence of HCV antibodies\*

## Diagnose with an HCV RNA test

A blood test for the presence of HCV RNA will confirm an HCV diagnosis in patients who test positive for HCV antibodies

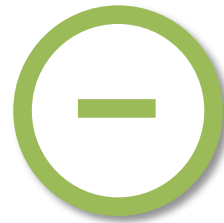
## Refer to an experienced HCV clinician

Refer your patients with HCV to an experienced HCV clinician for treatment evaluation, regardless of symptoms

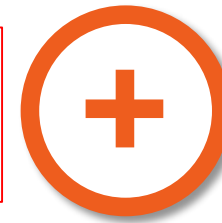
\*Screening for HCV antibodies does not have to be with a blood test. It can be via oral swab, or an even simpler approach, asking the patient questions about injecting drugs even once then proceed to the blood test for HCV RNA.

# The First Step Is to Diagnose HCV: HCV Antibody Test

*The CDC, USPSTF, and AASLD Recommend  
Screening all PWIDs for HCV<sup>1-3</sup>*



**TEST FOR HCV  
ANTIBODIES**



## **If the Result Is Negative**

- It is highly unlikely that your patient has been exposed to HCV<sup>1</sup>
- However, if exposure is suspected in the past 6 months, consider re-testing for HCV antibodies or ordering an HCV RNA test<sup>3</sup>

## **If the Result Is Positive**

- Your patient has been exposed to HCV<sup>1</sup>
- You will need to confirm a chronic HCV diagnosis with an HCV RNA test<sup>3</sup>

1. Smith BD, et al. *MMWR Recomm Rep*. 2012;61(RR-4):1-32.

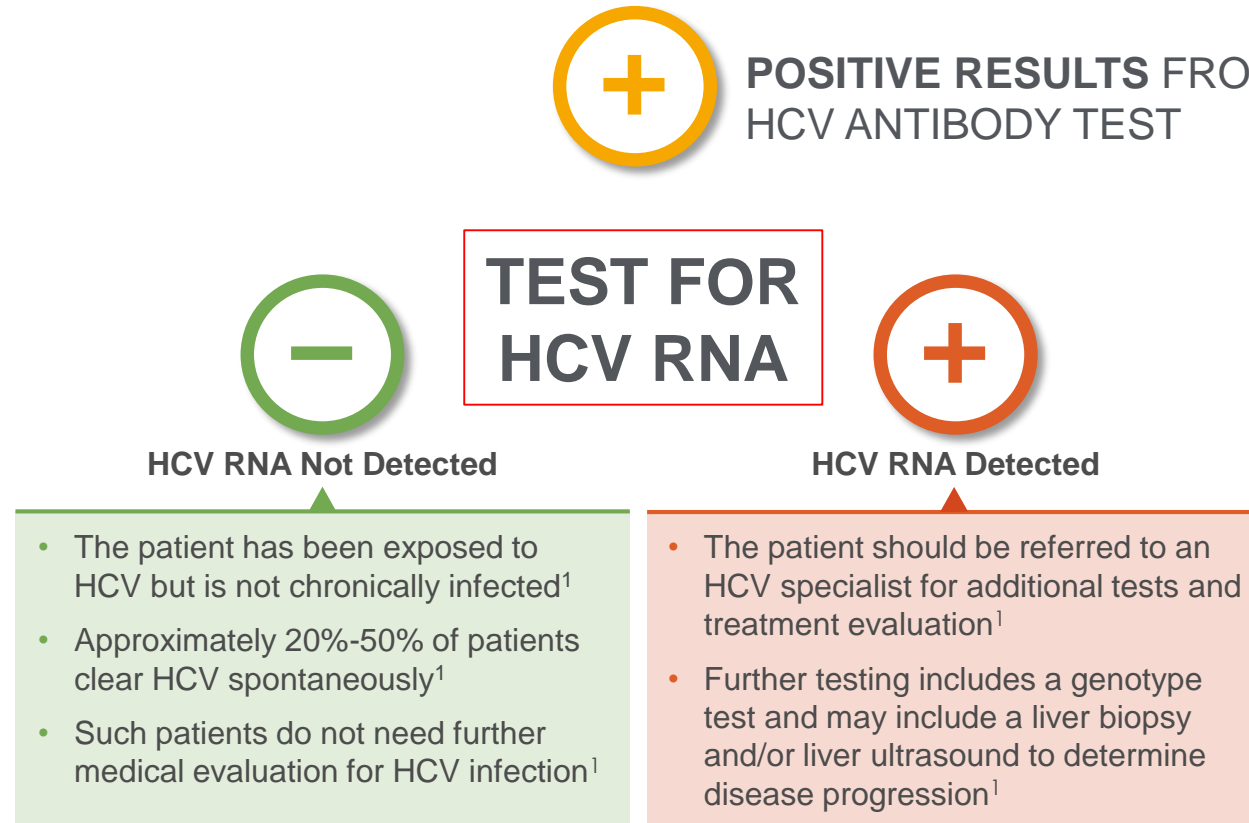
2. USPSTF. <http://www.uspreventiveservicestaskforce.org/uspstf12/hepc/hepcfinalrs.htm>. Accessed April 23, 2017.

3. AASLD/IDSA HCV Guidance. Recommendations for testing, managing, and treating hepatitis C.

<http://www.uspreventiveservicestaskforce.org/uspstf12/hepc/hepcfinalrs.htm>. Accessed April 23, 2017.

# The Second Step Is to Confirm HCV Diagnosis: HCV RNA Test

To confirm the diagnosis, a blood test for the presence of HCV RNA is necessary<sup>1</sup>



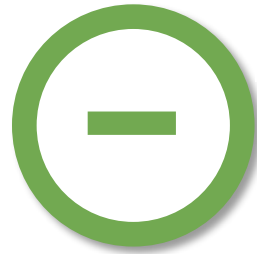
**An HCV Ab reflex to the HCV RNA confirmation test automatically confirms Ab-positive samples with an HCV RNA test.<sup>2</sup>**

AASLD/IDSA HCV Guidance. Recommendations for testing, managing and treating hepatitis C. <http://www.hcvguidelines.org>. Accessed April 23, 2017.

2. CDC. *MMWR Morb Mortal Wkly Rep*. 2013;62(18):362-365.



# What to Do if HCV RNA Is Not Detected



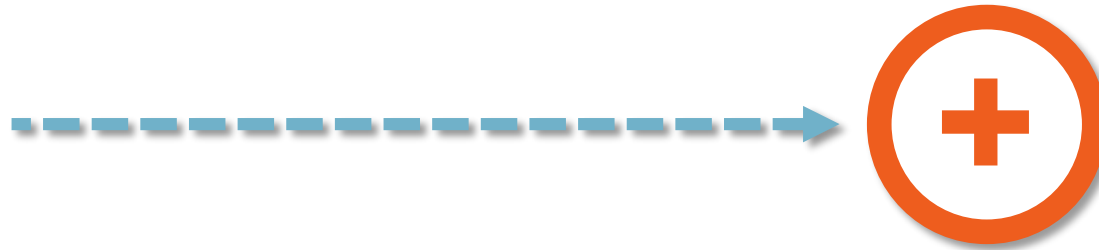
**If HCV RNA  
Is Not  
Detected**

- The patient is not chronically infected with HCV
- No further medical evaluation for HCV infection is required
- **Discuss** the results with your patient:
  - **Tell** the patient that he or she is not chronically infected, and that no further testing or treatment is needed
  - **Confirm** that he or she understands how the virus is spread and the situations in which he or she could be exposed
  - **Explain** that he or she will always test positive for HCV antibodies<sup>1</sup>
  - **Explain** that he or she is not immune, and can be infected with repeat exposure

1. CDC. <http://www.cdc.gov/hepatitis/HCV/PDFs/HepCGettingTested.pdf>. October 2013. Accessed April 23, 2017.

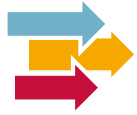
# What to Do if HCV RNA Is Detected

## If HCV RNA Is Detected



- The patient is infected with HCV
- Consider ordering an HCV genotype test (optional)
- Refer the patient to an HCV specialist for additional tests and treatment evaluation
- **Discuss** the diagnosis with your patient:
  - **Tell** your patient that he or she is infected with HCV and will be referred to a specialist for more tests and possible treatment
  - **Explain** that HCV is a progressive disease that can lead to serious liver-related complications
  - **Emphasize** that HCV can be curable and that treatment options are available

# Refer HCV-Positive Patients to HCV Specialists



## Refer Promptly

- After their diagnosis is confirmed with an HCV RNA test,<sup>1</sup> your patients with chronic HCV should be promptly referred to an HCV specialist, regardless of viral load or liver enzyme levels
  - Viral load or liver function tests may not be reliable indicators of liver damage<sup>2,3</sup>
  - Most patients with chronic HCV are asymptomatic until serious liver complications arise<sup>4</sup>



## Quality Referral

- Confirm diagnosis with an HCV RNA test
- Refer to a specialist who has experience with treating HCV



## Discuss Referral With Your Patient

- 24%-57% of patients with HCV miss their first appointments with a specialist<sup>5</sup>
- There are several common reasons for patient nonadherence:
  - Patients may not recognize the urgency of treating a disease with few symptoms<sup>5</sup>
  - Lack of insurance coverage<sup>5</sup>
  - Fear of social rejection and stigmatization<sup>5</sup>
- Explain why referral is necessary
- Describe the liver complications that can arise from delaying treatment
- Make it clear that therapy can lead to cure
- Assure your patient that you will stay in contact

1. USPSTF. <http://www.uspreventiveservicestaskforce.org/uspstf12/hepc/hepcfinalrs.htm>. Accessed April 23, 2017. 2. Heller T, Seeff LB. *Hepatology*. 2005;42(6):1261-1263.

3. AASLD/IDSA HCV Guidance. Recommendations for testing, managing, and treating hepatitis C. <http://www.hcvguidelines.org>. Accessed April 23, 2017.

4. Heidelbaugh JJ, Bruderly M. *Am Fam Physician*. 2006;74(5):756-762. 5. McGowan CE, Fried MW. *Liver Int*. 2011;32(Suppl 1):151-156.

# Hepatitis C: Barriers to Treatment

- Unidentified patients
- Too few treating providers
- Patients frequently fail to see an “expert”
- Local care is better?
  - Patient is on site
  - Relationship with local provider
  - Project ECHO<sup>®</sup> teaches skills in a case-based format



# Project ECHO®

- **E**xtension for **C**ommunity **H**ealth **O**utcomes
- Getting care to people instead of getting people to care
- Deliver knowledge
  - Right place
  - Right time

# Learning to Drive

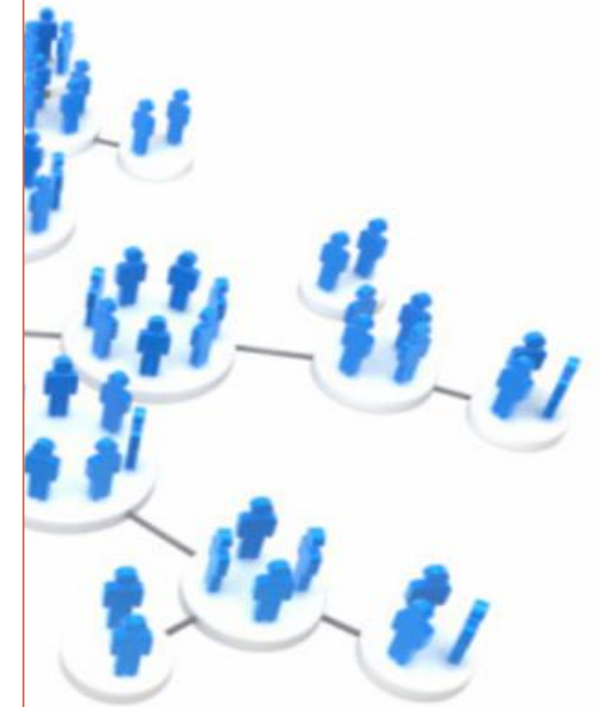
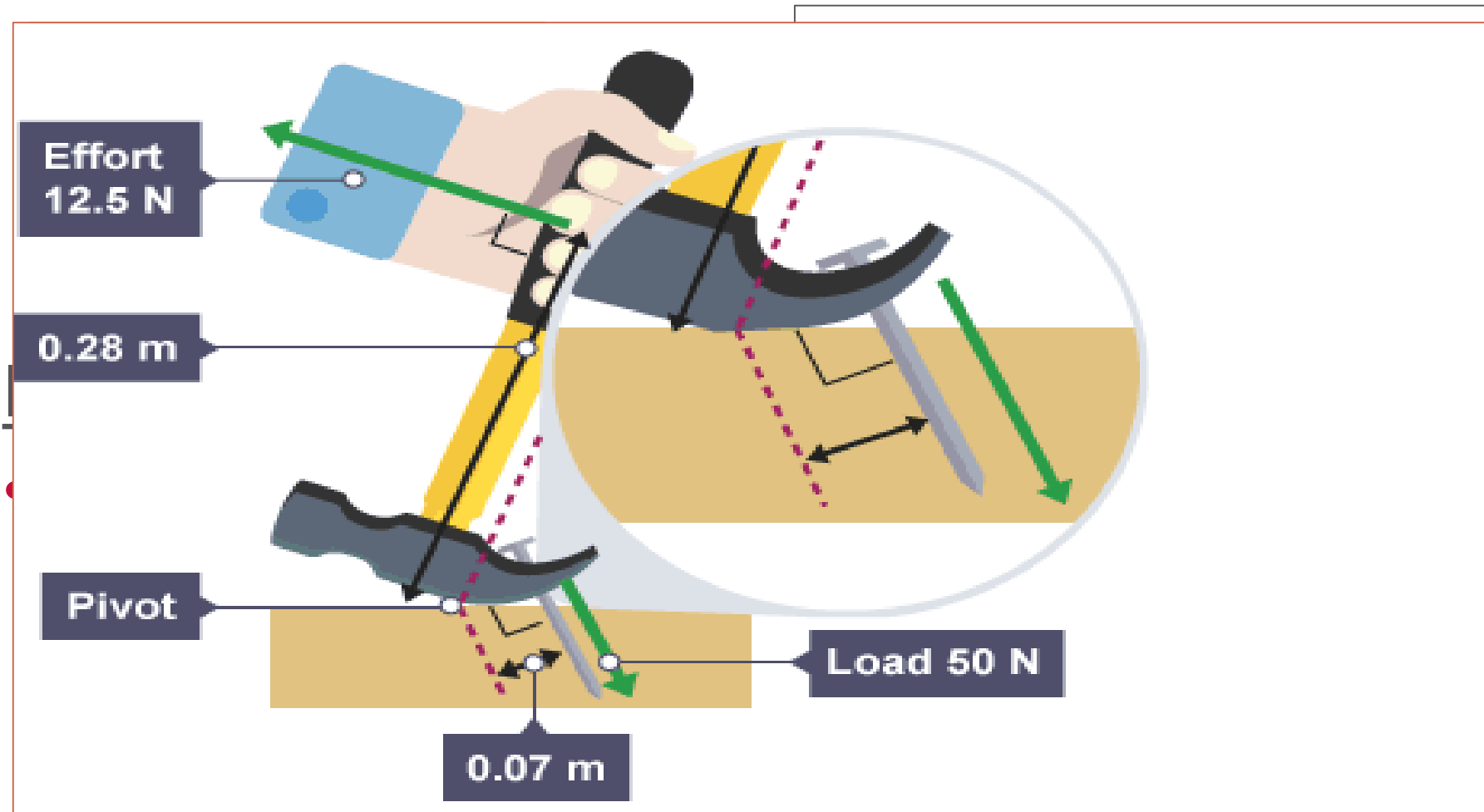


- Learning by watching



- Learning by doing

# Force Multiplier



Knowledge

# Project ECHO® ≠ Telemedicine

*Models: Provider-to-patient vs Provider-to-Provider*



**Telemedicine**  
Provider-to-Patient  
1-to-1



**Telemedicine**  
Provider-to-Provider  
1-to-1



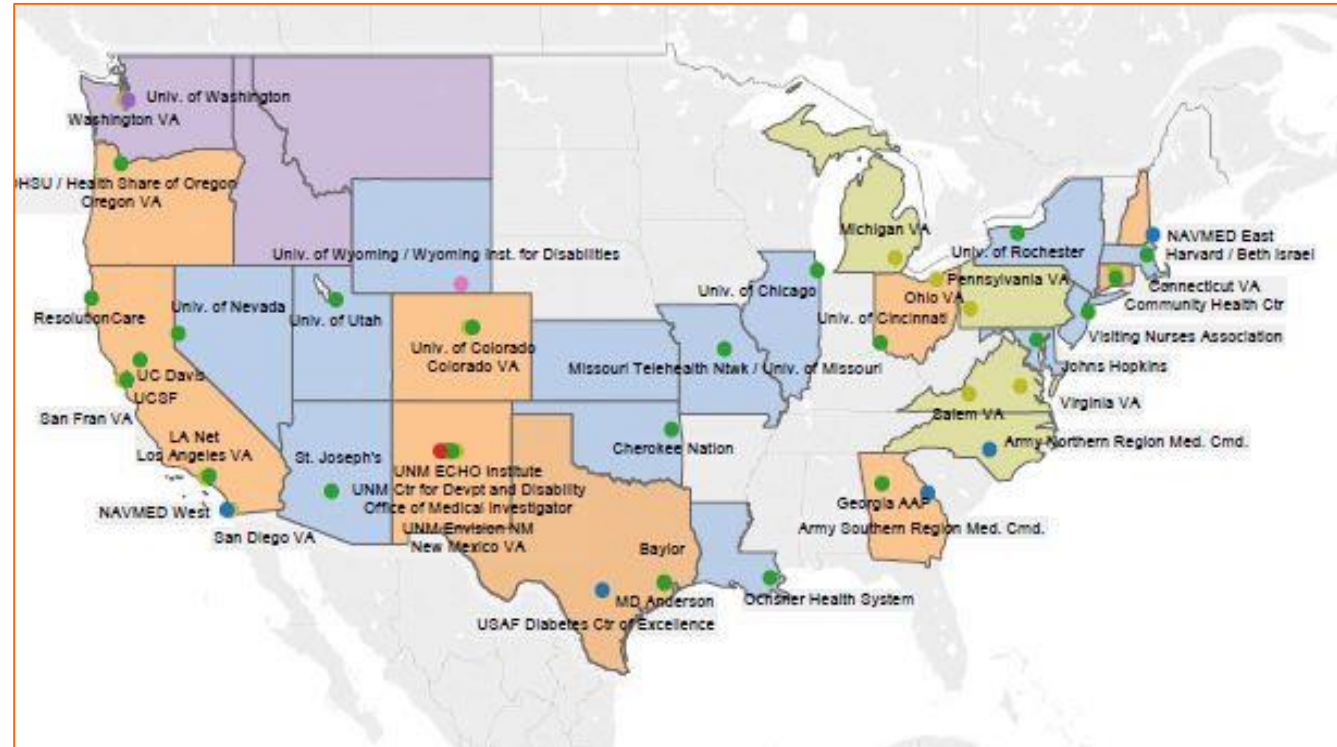
**Project ECHO®**  
Tele-mentoring  
One-to-many  
Case-based with CME  
Force multiplier



# Project ECHO® Hubs, USA



Sanjeev Arora, MD  
University of New Mexico



Copyright 2015  
Project ECHO®

# Making the Most of our Assets Using Primary Care to Manage Complex Disease

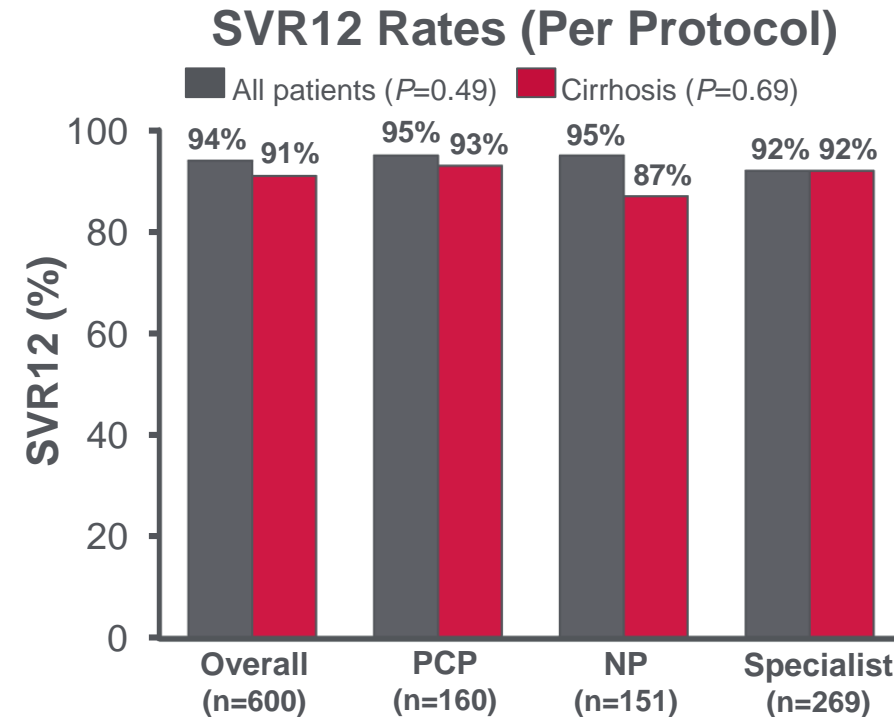
**Table 2. Sustained Virologic Response According to Genotype and Site of Treatment.\***

HCV Genotype	ECHO Sites <i>no. of patients with response/total no. (%)</i>	UNM HCV Clinic	Difference between ECHO Sites and UNM HCV Clinic <i>percentage points (95% CI)</i>	P Value
All genotypes	152/261 (58.2)	84/146 (57.5)	0.7 (−9.2 to 10.7)	0.89
Genotype 1	73/147 (49.7)	38/83 (45.8)	3.9 (−9.5 to 17.0)	0.57
Genotype 2 or 3	78/112 (69.6)	42/59 (71.2)	−1.5 (−15.2 to 13.3)	0.83

- No difference between university and community care - different from all prior studies
- Sense of community among providers

# ASCEND Study: HCV Treatment by Primary Care Providers (2016)

- Multicenter, open-label, phase 4 study (n=600 HCV patients)
  - 2 urban health centers, 16 providers
  - Ledipasvir/sofosbuvir
  - Similar patient types for all
  - Male (69%), black (96%), HIV-coinfected (23%), cirrhosis (20%)
  - HCV treatment experienced (18%)



Emmanuel B, et al. *Hepatology*. 2016;64(suppl S1):11A-12A. Abstract 22.

# Delivery System Reform Incentive Payment Project (DSRIP)

HCV

Free screenings,  
public info of risk  
factors



Perform HCV Antibody or  
Rapid HCV Antibody test

Positive Patients  
Identified



If anti-HCV positive, client  
offered HCV RNA with GT

Resources  
Assessed

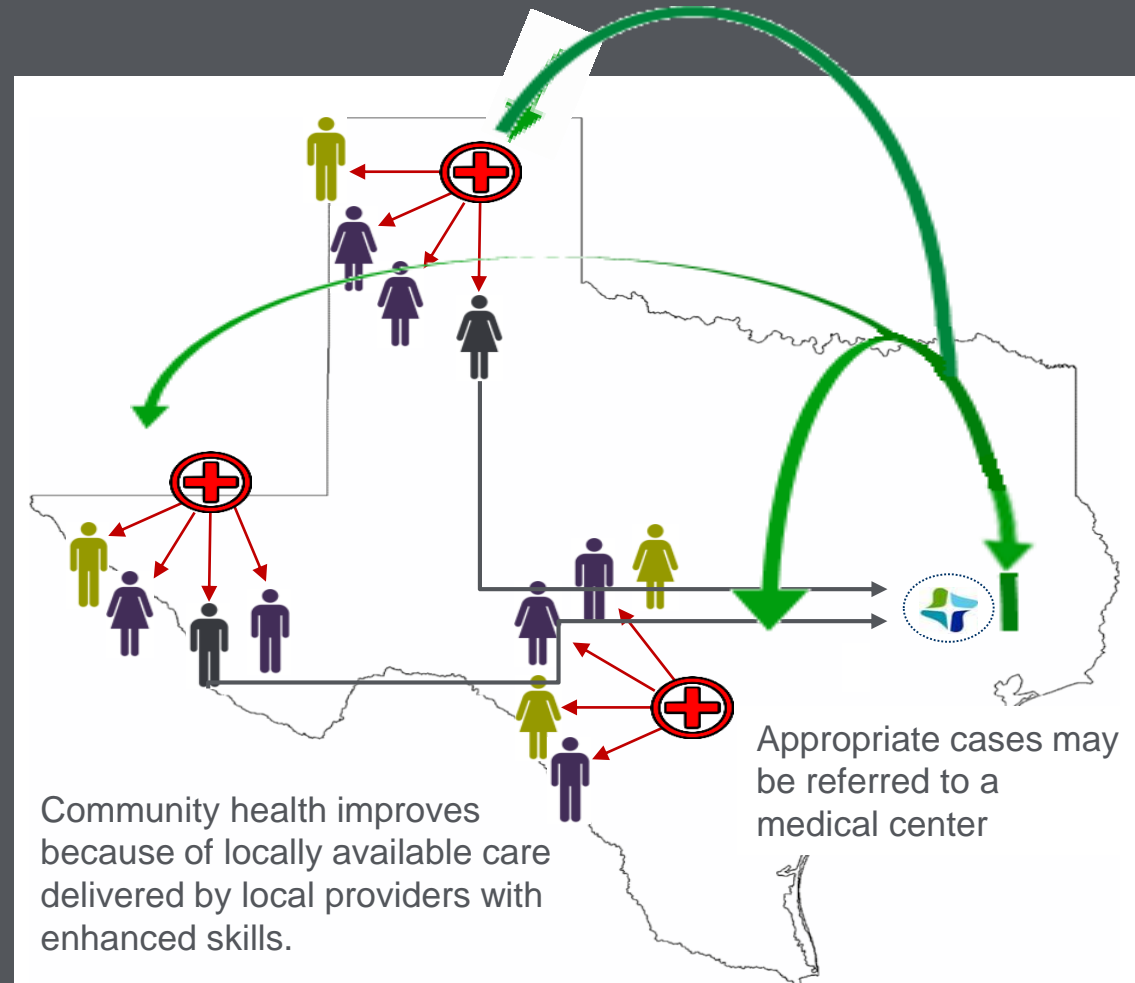


If client is HCV (+), staff  
informs via ph or mail

Appropriate  
Referral



Resources: FQHC,  
County, Indigent Clinic





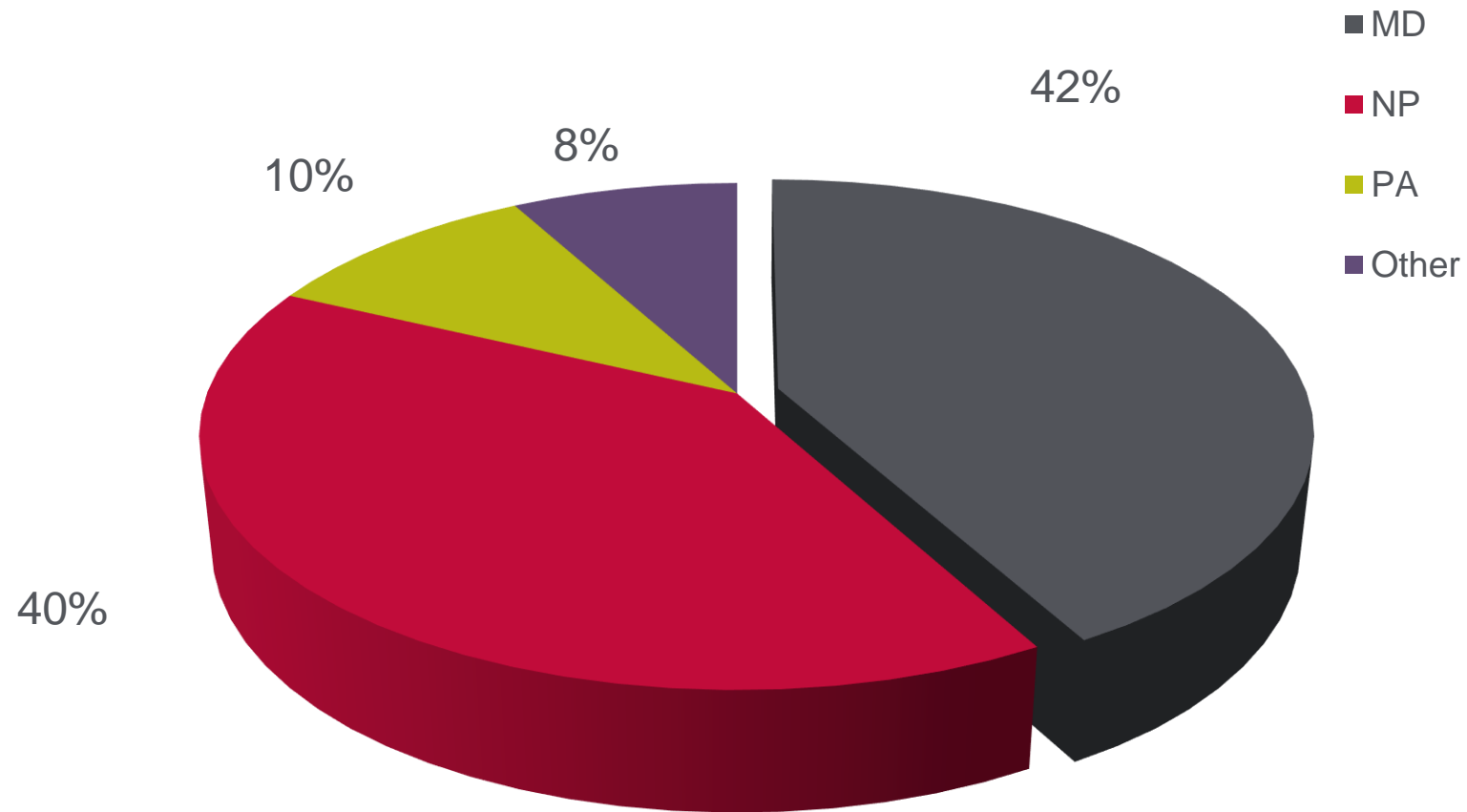


## Project ECHO® *Baylor St. Luke's 2015-2017*

- Over 700 cases presented
  - Over 3,000 patients treated without assistance
- Over 345 providers in 6 states have been educated
  - Texas, Louisiana, South Carolina, Alabama, Florida and Tennessee

# Community Providers

Community Provider Participation



# Referral Best Practices

- ✓ Explain what to expect when meeting with an HCV specialist
- ✓ Explain what an HCV diagnosis means, that HCV is curable, and that interferon-free (no injections) options exist that offer all-oral treatments
- ✓ Assist with scheduling the specialist appointment and emphasize the importance of keeping the appointment
- ✓ After the specialist appointment, stay in touch with your patient and the specialist



# Various Clinical Models Have Demonstrated Improved Linkages to HCV Care

“Evaluation by a practitioner who is prepared to provide comprehensive management, including consideration of antiviral therapy, is recommended for all persons with current (active) HCV infection.”

— AASLD/IDSA Recommendations for Testing, Managing, and Treating Hepatitis C<sup>1</sup>



## Co-located or Integrated Care

- Designed to impact loss to follow-up<sup>1</sup>
- Potentially affects access to treatment<sup>1</sup>



## Telehealth

- Delivers service to underserved populations<sup>2</sup>
- Links specialists to communities<sup>2</sup>
- Has shown similar safety and efficacy to non-telehealth settings for patients with HCV<sup>3,4,\*</sup>



## Referral

- Referral for HCV infection to an experienced HCV clinician<sup>1</sup>
- Multidisciplinary approach to treatment has the potential to mitigate barriers to HCV care<sup>1</sup>

\*HCV treatments were Peg-IFN+RBV-based therapies (pre-DAA). Treatment duration was 48 weeks for genotype 1 and genotype 4; 24 weeks for other genotypes. Studies utilized SVR24 as primary endpoint.

1. AASLD/IDSA. Recommendations for Testing, Managing, and Treating Hepatitis C. <http://www.hcvguidelines.org>. Accessed April 23, 2017. 2. University of New Mexico. Project ECHO Model. <http://echo.unm.edu/about-echo/model/>. Accessed April 23, 2017. 3. Arora S, et al. *N Engl J Med*. 2011;364(23):2199-2207. 4. Rossaro L, et al. *Dig Dis Sci*. 2013;58(12):3620-3625.

# Treatment at Early-Stage Disease May Be Associated With Higher SVR Rates and Less Severe Complications



- **Treat Early**

- Treatment is more effective at early-stage disease<sup>1,\*</sup>

- **Treat in place**

“[Clinicians] should treat HCV-infected patients with antiviral therapy with the goal of achieving an SVR, preferably early in the course of their chronic HCV infection before the development of severe liver disease and other complications.”

– AASLD/IDSA HCV Guidance<sup>2</sup>

\*Studies utilized SVR24, the standard protocol before 2013 for measuring attainment of SVR.

1. Bruno S, et al. *Hepatology*. 2010;51(2):388-397.

2. AASLD/IDSA HCV Guidance. Recommendations for testing, managing, and treating hepatitis C.

<http://www.hcvguidelines.org>. Accessed April 23, 2017.

