

# Access to Care for Chronic Hepatitis C

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# Disclosures

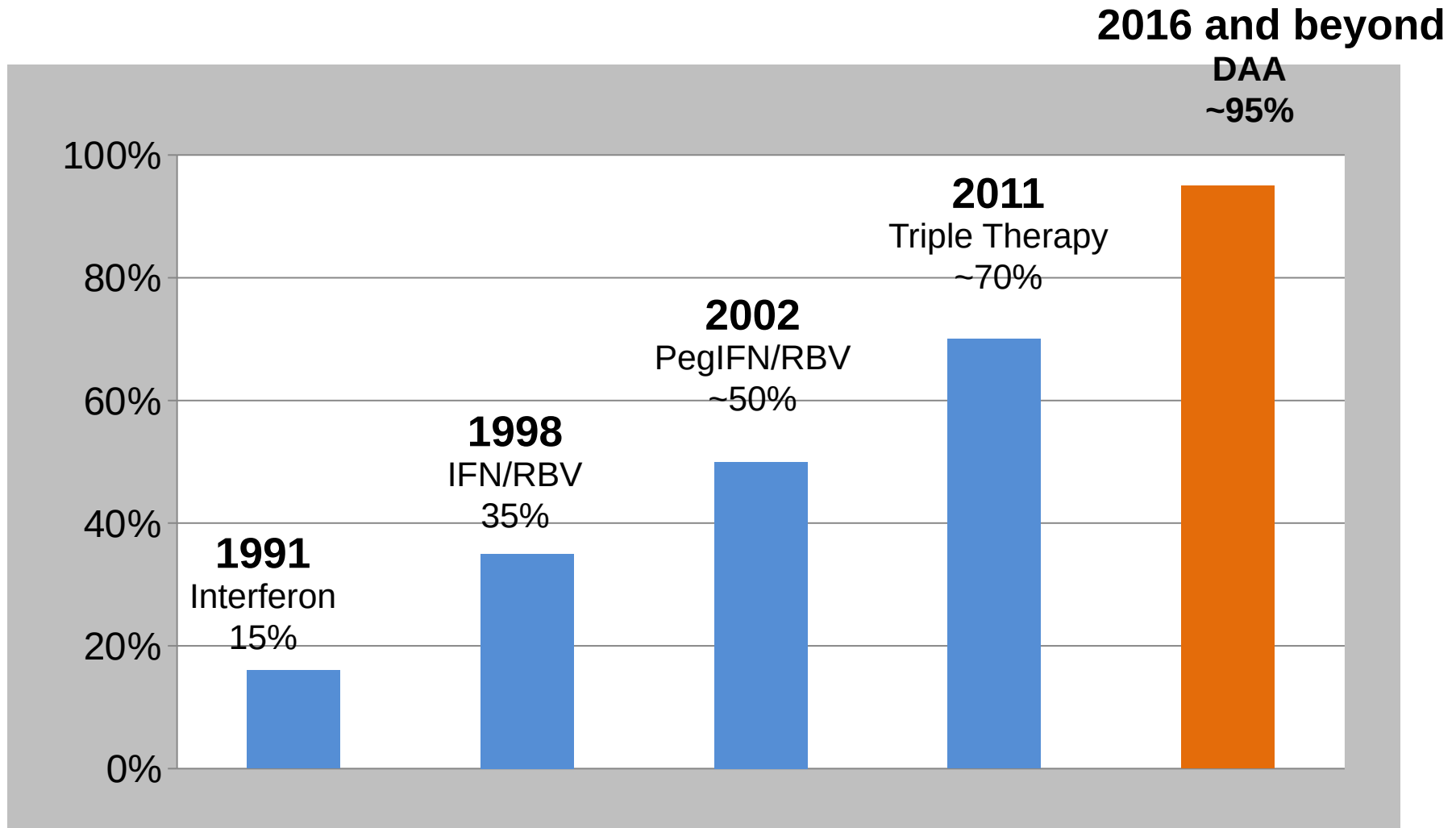
Michael W. Fried, M.D.

- **Grants/Research Support (Paid to Institution)**
  - AbbVie, BMS, Gilead, Merck
- **Consultant (Unpaid):**
  - AbbVie, BMS, Merck,
  - TARGET PharmaSolutions
  - Stock/Shareholder:
    - TARGET PharmaSolutions (Independently Managed)
- **Speakers Bureau: None**
- **Other Financial Support: NIH Grants**



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL

# Evolution of HCV Therapeutics

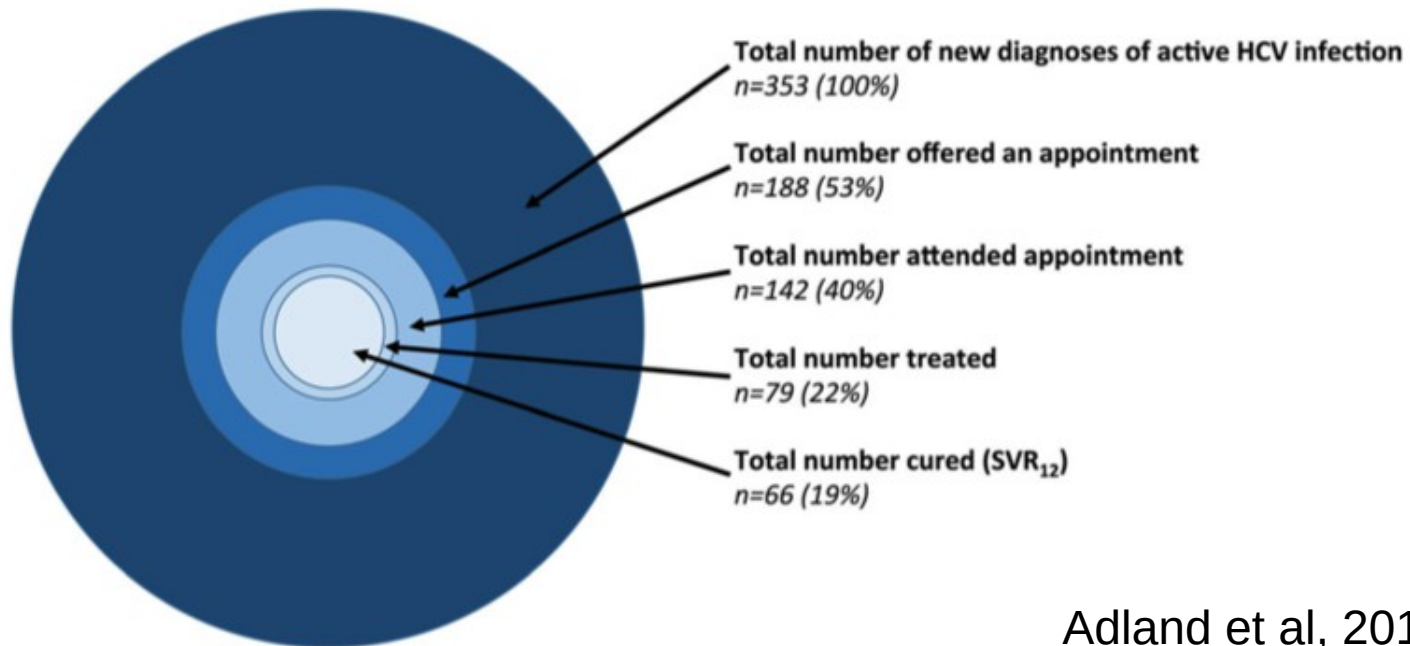


Fried et al, 2002  
Ghany et al 2011

IFN: Interferon; RBV: Ribavirin  
Triple therapy: IFN/RBV/DAA  
DAA: Direct-acting Antivirals

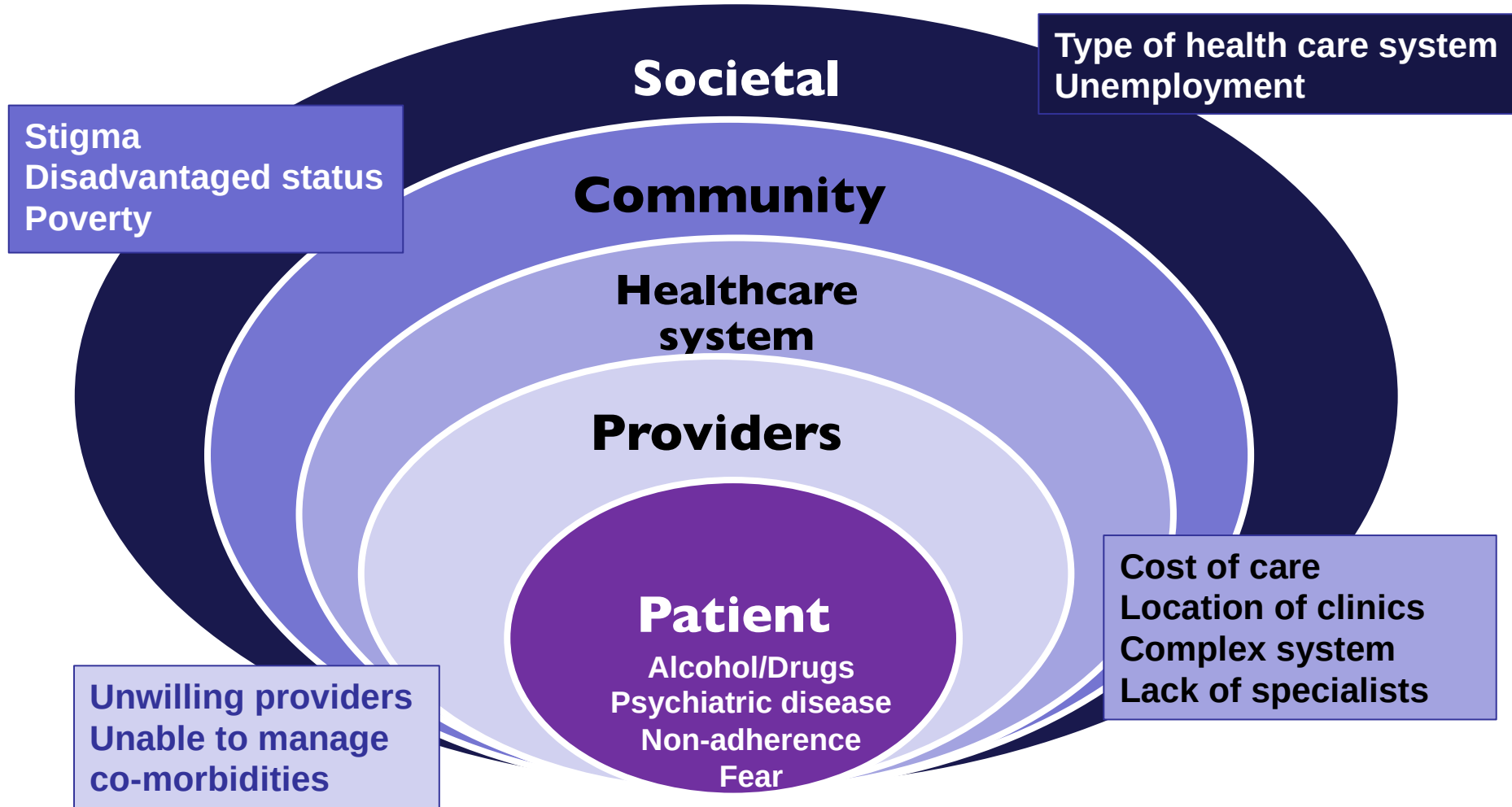
# Cascade of Care in DAA Era

- Reviewed microbiology records from UK teaching hospital
- Between 2013 and 2016
- Evaluated linkage to care and outcome
- ~38,000 people tested for HCV
- 353 new diagnoses (~1%)

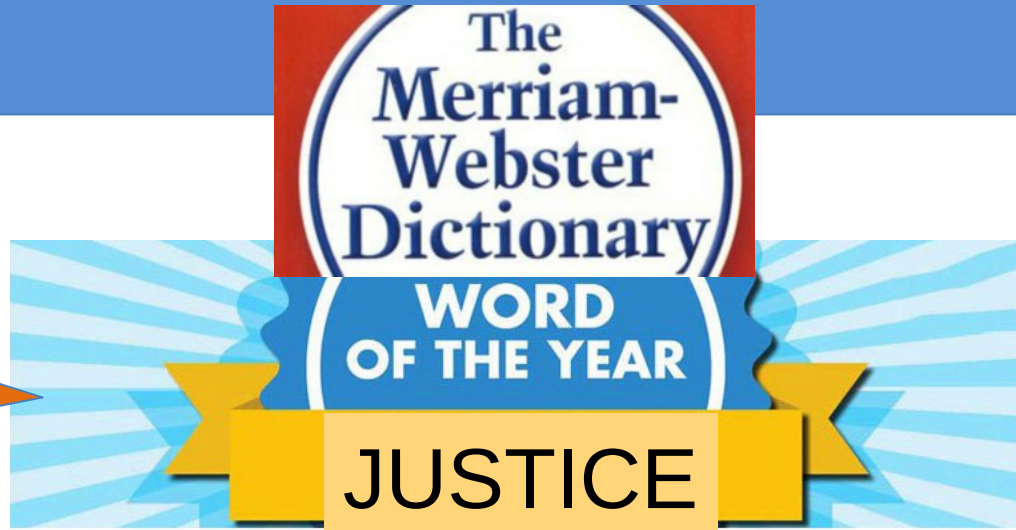


Adland et al, 2018

# Barriers to Treating HCV

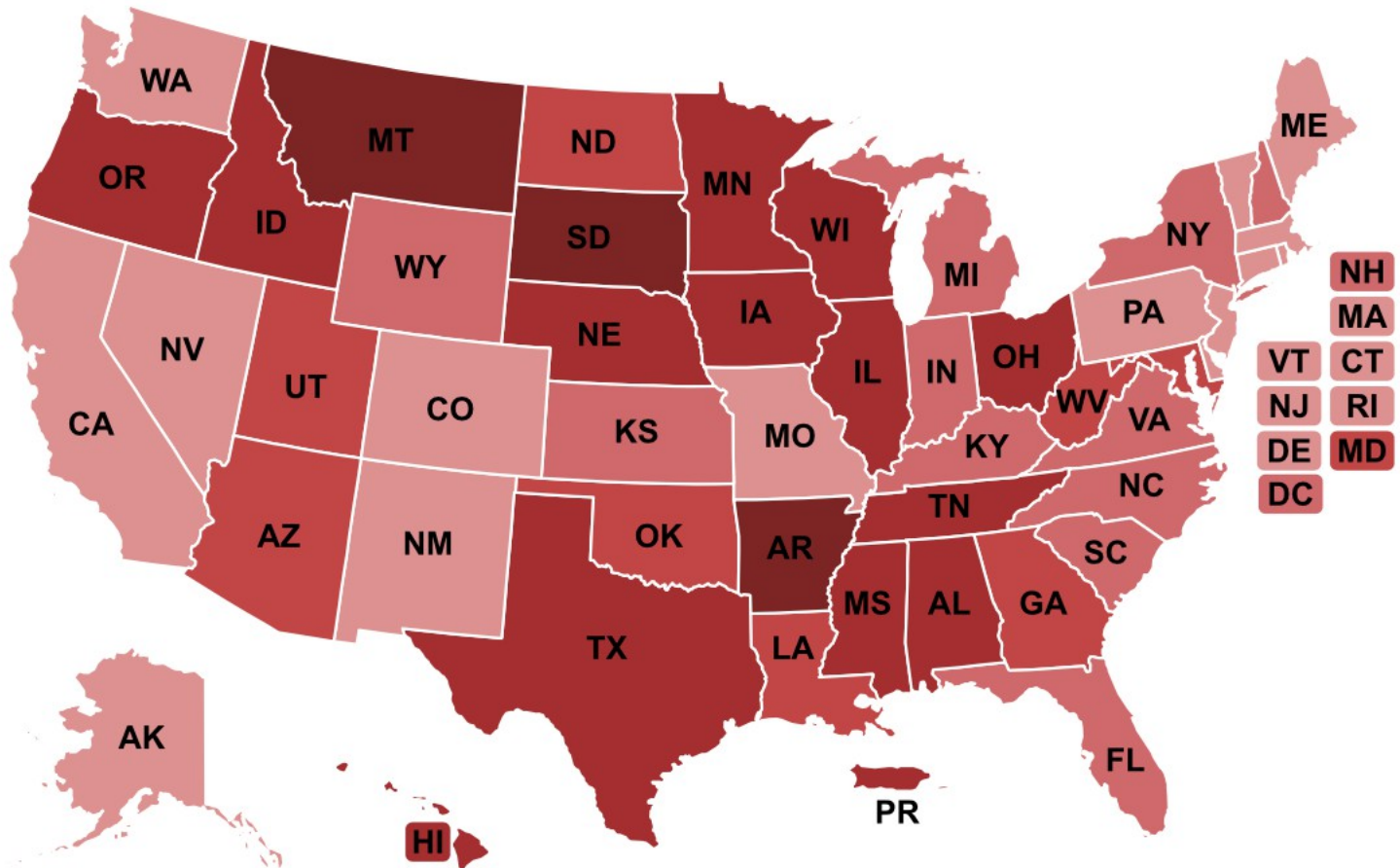


# Merriam Webster Dictionary



- The quality of being fair and reasonable

# Access to HCV Medications in U.S. State Medicaid Programs: Many States Are Failing

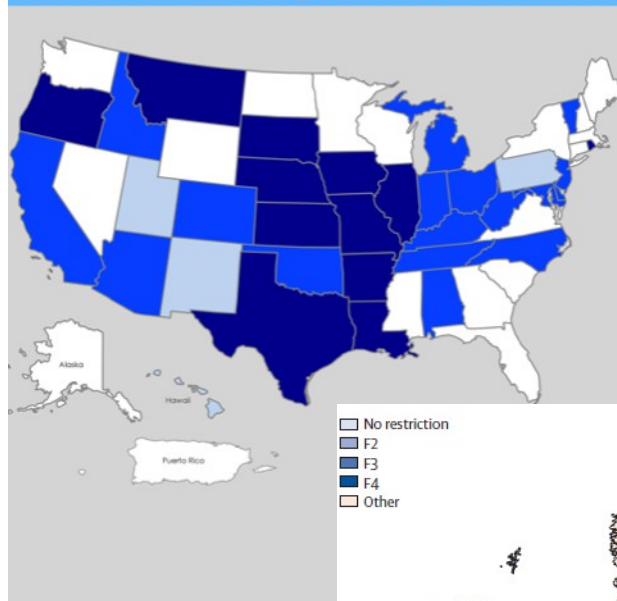




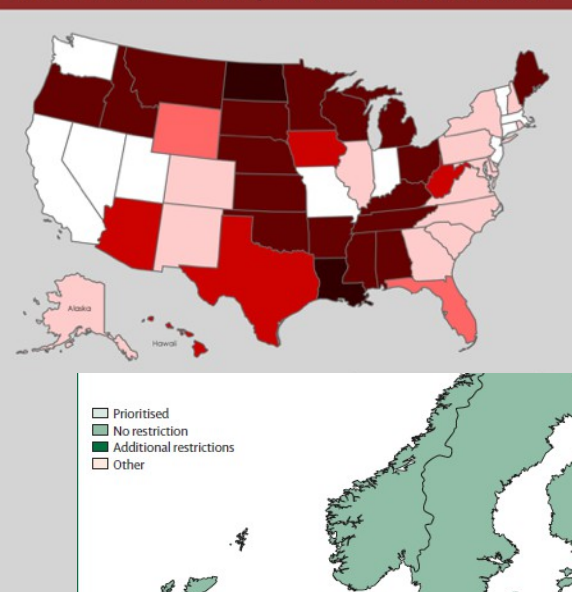
**The cake was great and the ice cream was delicious, but deep down inside, he knew that some day his parents would discover that “F” wasn't for 'fantastic'**

# Arbitrary Restrictions May Limit Access to HCV Treatment in Many States

2017 Medicaid FFS Liver Damage Restrictions for HCV Treatment

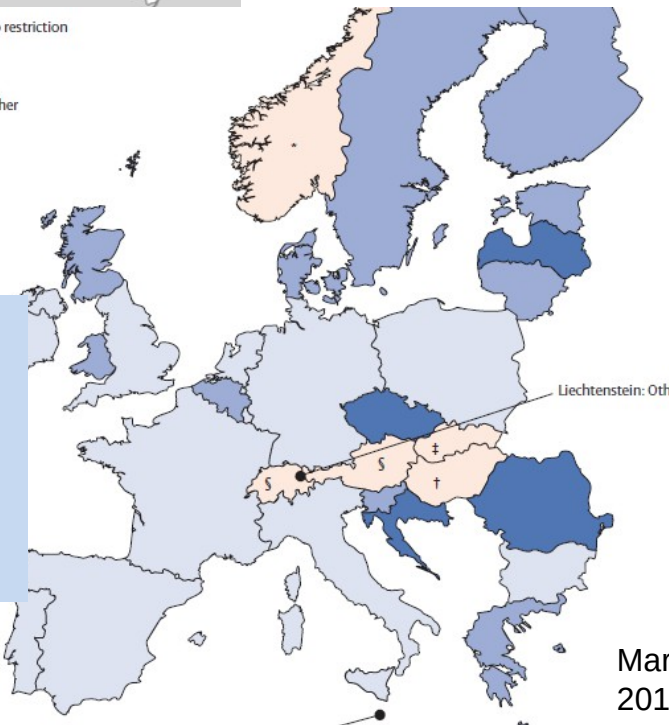


2017 Medicaid FFS Sobriety Restrictions for HCV Treatment

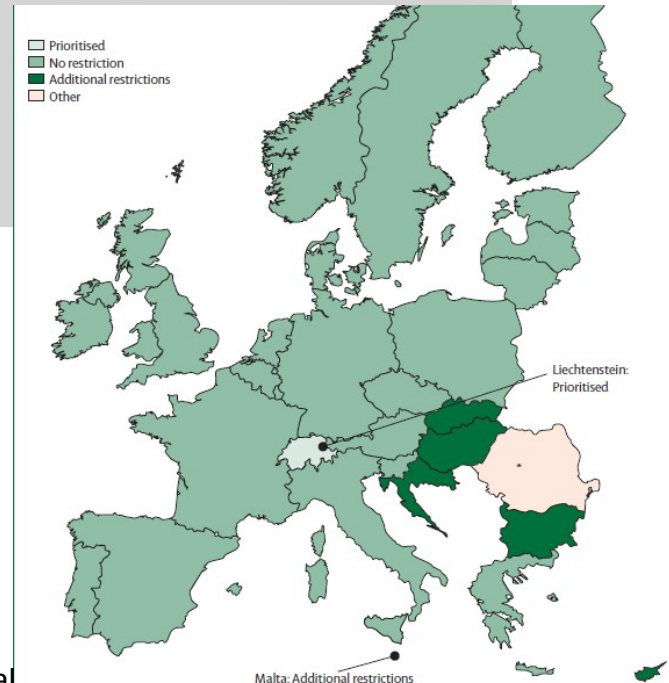


Europe has fewer restrictions for fibrosis or substance use disorders

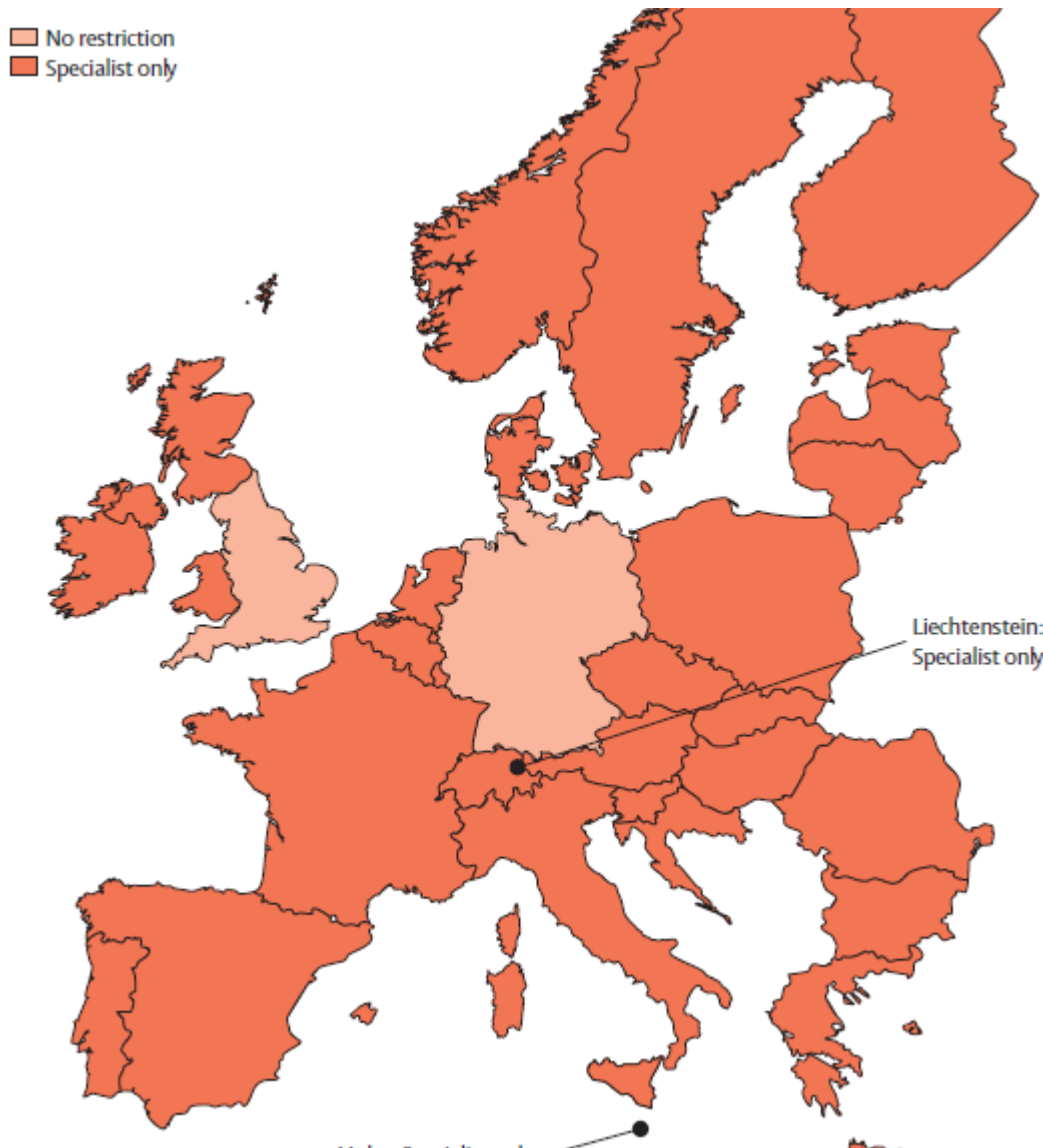
NVHR website, accessed 12/28/18



Marshall et al, 2018



# Most European Countries Restrict HCV Therapy to Specialists



Most countries do not have enough specialists to treat HCV within their communities

# Efficiency of a telemedicine program in the management of hepatitis C in inmates

**Hypothesis/Aim/Objective:** JailFree-C Program aims to eliminate HCV infection in El Dueso Prison (Cantabria, Spain). This project lies in two important features:

- A strategy that includes a test-and-treat plan
- And then, a multidisciplinary team and telemedicine program (TP) to provide inmates attention

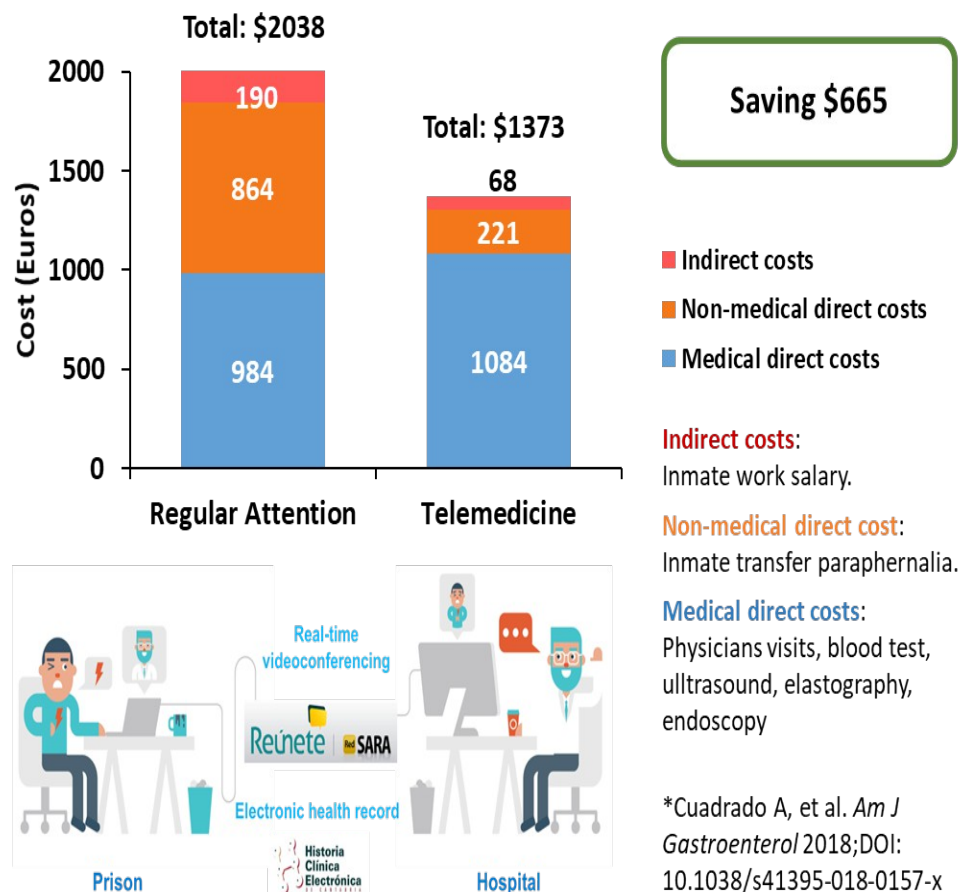
We previously showed that TP is satisfactory.\* Now, we have carried out an economic evaluation model, based on decision trees to perform a minimizing cost analysis.

## Results:

- 821 inmates were screened, of which 81 (9.9%) had positive viremia. Five were released before the first consultation, so the cohort included 76 patients for this study.
- The TP produces an average saving per patient of \$665.

**Conclusions:** Telemedicine is an effective way to attend inmates. This TP efficiency derives from savings regarding direct non-medical costs and indirect costs.

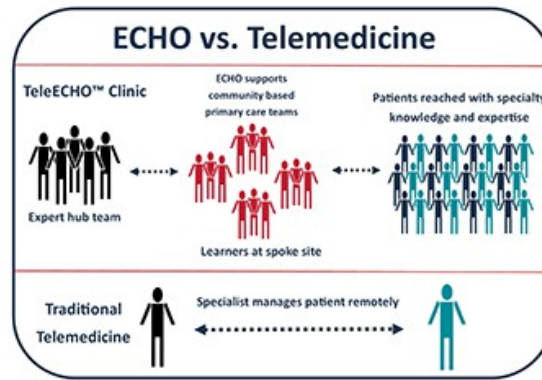
Llerena S, et al., Abstract 53





## Outcomes of Treatment for Hepatitis C Virus Infection by Primary Care Providers

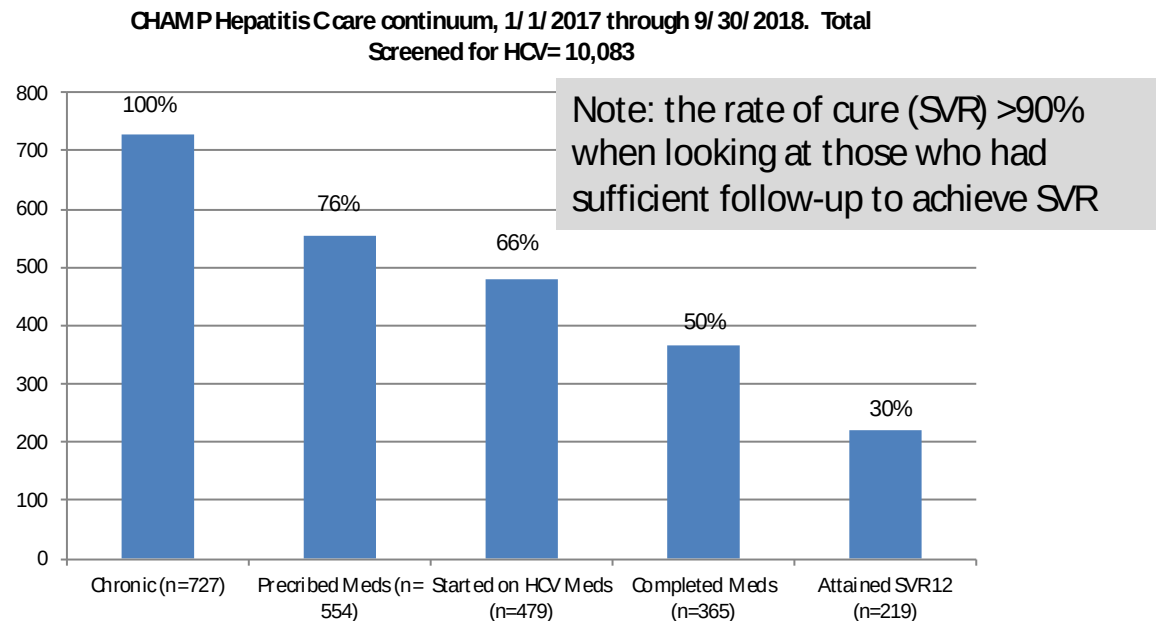
Sanjeev Arora, M.D., Karla Thornton, M.D., Glen Murata, M.D.,  
Paulina Deming, Pharm.D., Summers Kalishman, Ph.D., Denise Dion, Ph.D.,  
Brooke Parish, M.D., Thomas Burke, B.S., Wesley Pak, M.B.A.,



## Project ECHO: Telementoring of Primary Care Clinicians to Treat Hepatitis C

# CHAMP: Carolina Hepatitis Academic Mentoring Program: Cascade of Care

- Implemented to combat new HCV infections from opiate epidemic
- Modeled on ECHO (Extension for Community Healthcare Outcomes)
- Peer-to-peer telementorship model
  - Academic centers (UNC and Duke)
  - Primary care providers (in areas without liver specialists)
  - Logistics and organization (North Carolina State Health Dept.)



\* 2018 data is in the process of collection.

# High Cure Rate of Hepatitis C in a Primary Care Clinic

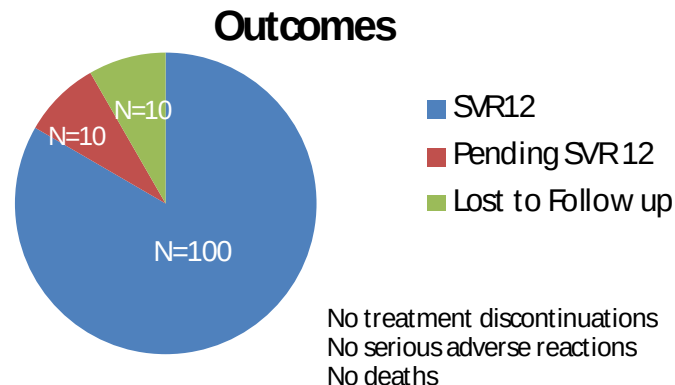
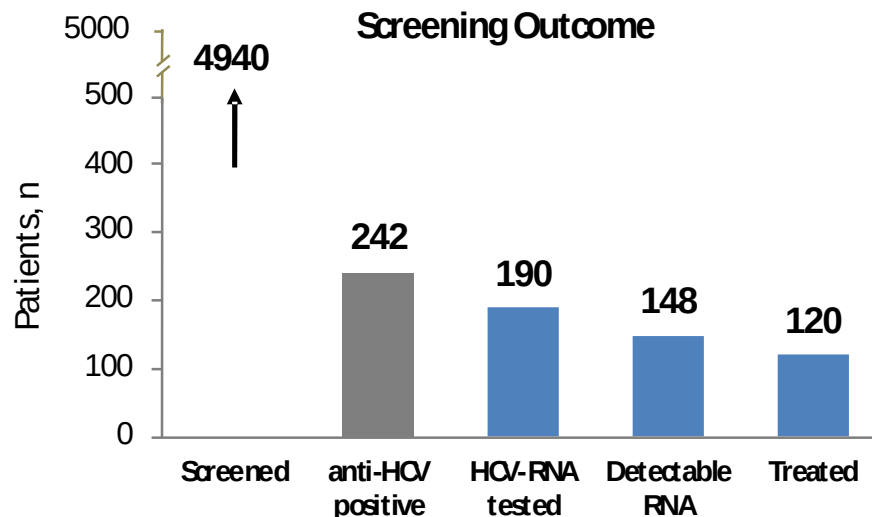
Screening and treatment by PCP, NP, social worker, and pharmacist with the supervision of a hepatologist (10/2013 to 12/2016)

**Demographics of Patients Screened for HCV Antibody**

	Screened	HCV Ab+
Age		
1945–1969	58.3	72.9
1970–2013	41.7	27
Male	36.7	63.1
Female	63.3	36.9
Race		
Black	69.5	76.6
White	16.8	21.6
Asian	3.0	0
Pacific Islander	8.1	0.9

**Access to HCV treatment in a primary care clinic using protocol-driven care under the supervision of a hepatologist can achieve a high cure rate**

Ochsner Health System, New Orleans



Joshi, AASLD 2017, Poster 1582

# Exporting Project ECHO to Europe

- **Pilot study to evaluate feasibility of ECHO-model in Ireland**
- **Private practice general practitioners did not participate, largely due to time and financial constraints**
- **State employed healthcare providers attended 10 case-based web conferences between March and October 2015**
- **Practitioners demonstrated increased expertise in managing HCV patients**
- **Created a network of interested practitioners to provide local HCV care**

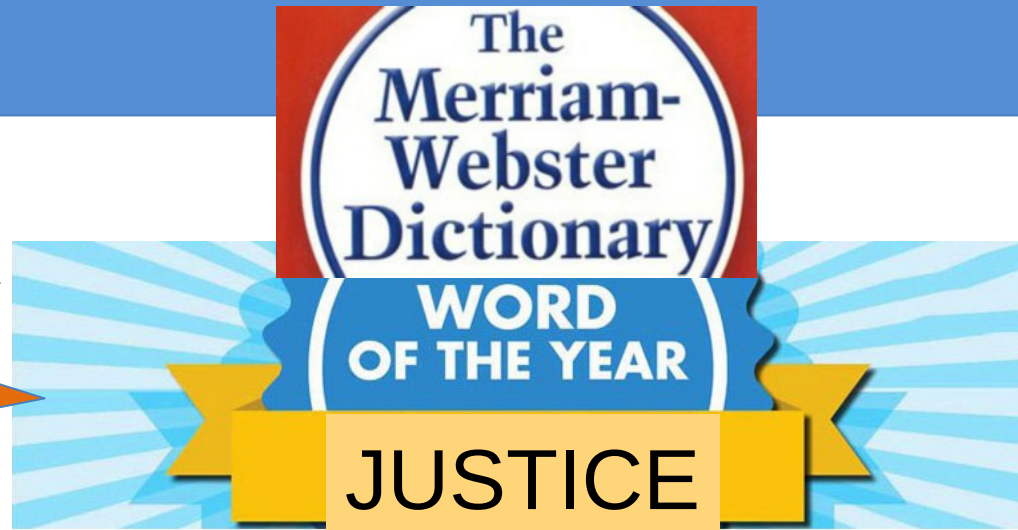
**Table 2** Topics of case-related questions brought by conference participants

Topic	Number of cases
Referral pathways	8
Staging of liver disease	7
Management of early-stage chronic liver disease	1
Management of compensated cirrhosis	1
Management of decompensated cirrhosis	5
Management of addiction	4
Management of treatment complications	2
Management of psychiatric illness	1
Suitability for DAAs	5
Advice regarding associated medical conditions	2

A number of cases addressed multiple issues.

# Merriam Webster Dictionary

201  
8



- The quality of being fair and reasonable

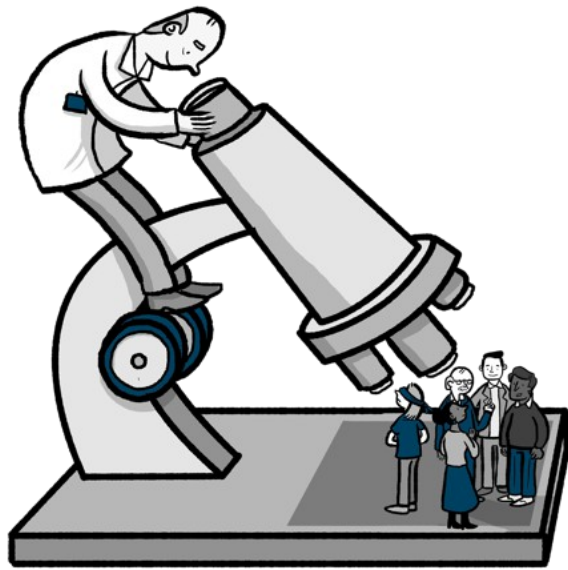
201  
9



# A Thousand Mile Journey Begins with a Single Step

*Lao Tzu*

Goal: Global Elimination of HCV



May begin with  
Microelimination

***When eating an elephant,  
take one bite at a time***

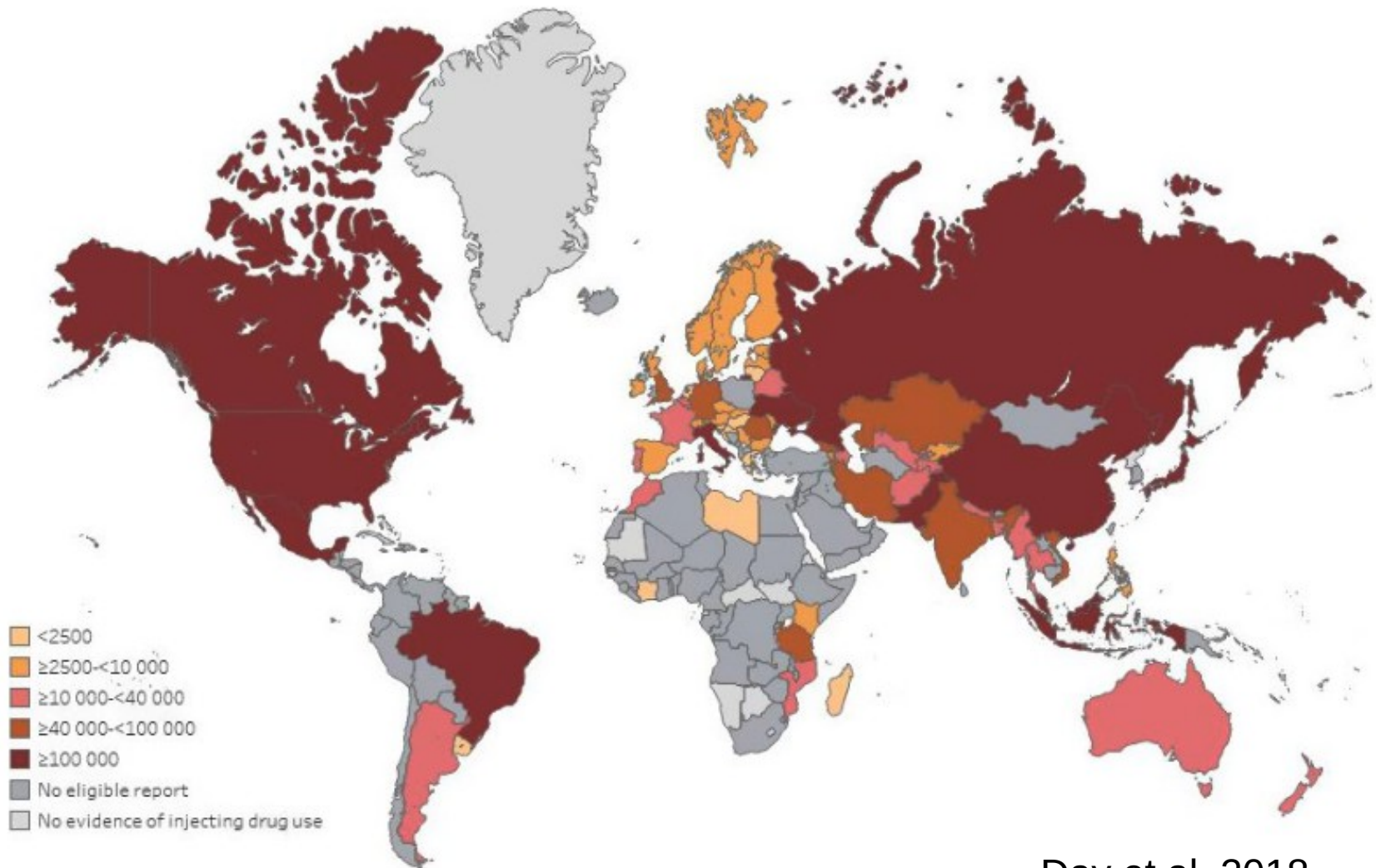
General Creighton Abrams



# Potential Microelimination Targets

- **Patients with advanced liver disease**
- **Haemophilia patients**
- **Prisoners**
- **Children**
- **Patients engaged with drug treatment units**
- **Migrant communities from high prevalence regions**
- **People who inject drugs in networks**
- **Men who have sex with men**
- **Generational cohorts of high prevalence**
- **Geographically defined areas**

# Estimated No. of PWIDs with HCV Infection



Day et al, 2018

### **Structured interviews with 30 PWIDs from Australia**

- **Lack of symptoms despite many years of infection may decrease motivation for treatment**
- **Persistent negative impressions regarding side effects, as carryover from interferon era**
- **Incorrect assumptions that ongoing drug use would lead to denial for HCV treatment**
- **Competing adherence between opiate substitution therapies and HCV treatment**
- **Lack of support during HCV therapy**

# High SVR in PWID with HCV despite imperfect medication adherence: Data from the ANCHOR study

**Objective:** To understand if people who inject drugs (PWID) with HCV and active injection drug use (IDU) can adhere to DAAs and achieve SVR

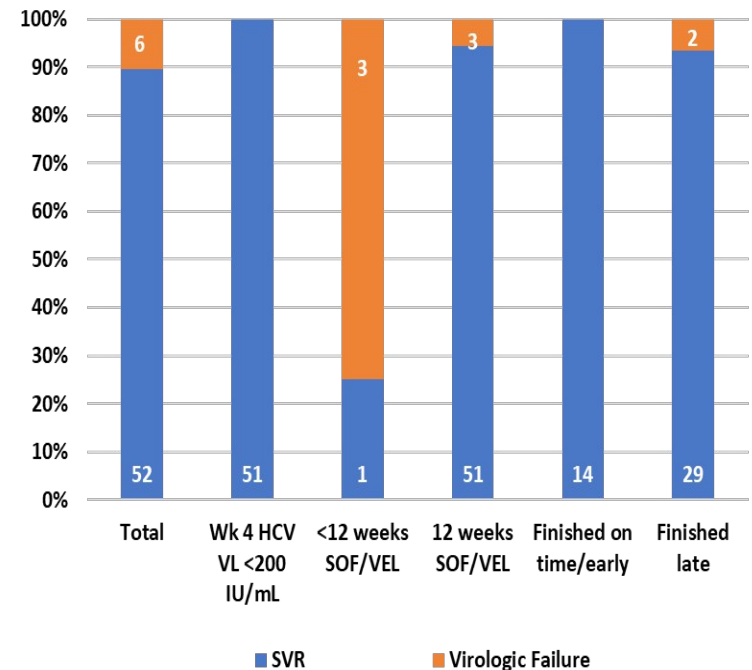
**Methods:** Single-center study of PWID with chronic HCV, opioid use disorder, and active IDU of heroin within 3 months, treated with SOF/VEL x12 weeks

## Main findings:

- Of the patients who have reached the SVR time point and have attended the week 24 visit, 52 (90%) patients achieved SVR.
- SVR was significantly associated with HCV VL <200 IU/mL at week 4 ( $p=0.004$ ) and taking all 84 pills of SOF/VEL ( $p=0.003$ ).
- Completing treatment after 12 weeks did not impact SVR, even in patients finishing more than 14 days late.

**Conclusions:** PWID with HCV and ongoing IDU have high rates of adherence, treatment completion, and SVR. Even with imperfect adherence, patients are able to achieve high rates of SVR with completion of treatment.

Medication Adherence and SVR



Kattakuzhy S, et al., Abstract 18

# Hepatitis C virus reinfection and injecting risk behavior following elbasvir/grazoprevir treatment in participants on opiate agonist therapy: C-EDGE Co-STAR Part B

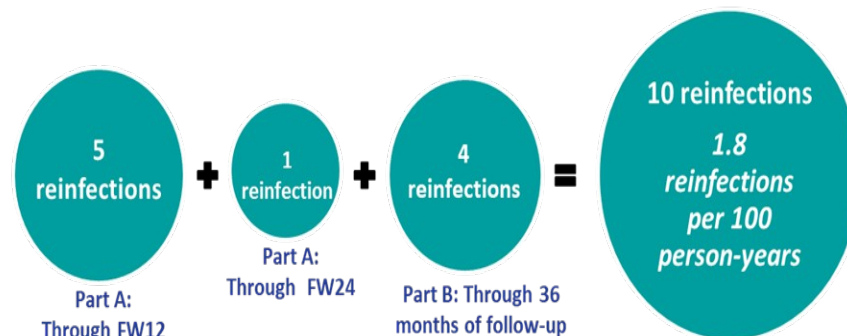
## Aim:

To assess risk of reinfection and describe risk behaviors in participants with GT1, 4, or 6 infection on OAT for  $\geq 3$  months

## Methods:

- 3-year observational trial with the following assessments every 6 months:
  - Recurrence of HCV RNA
    - Viral sequences at baseline and virologic recurrence compared to determine reinfection
  - Urine drug screen
  - Participant-reported behaviors including self-reported drug use
- Participants who received  $\geq 1$  dose of EBR/GZR in Co-STAR Part A were enrolled in Part B (n=199).

Grebely J, et al., Abstract 52



Reinfection rate among all persons* (N = 199):		
10 reinfections	564 person-years	1.8 reinfections per 100 person-years (95% CI: 0.8, 3.3)
Reinfection rate among persons with reported injection drug use* (n = 80):		
6 reinfections	212 person-years	2.8 reinfections per 100 person-years (95% CI: 1.0, 6.2)

\*From end of treatment through 36 months of follow-up

## Conclusions:

- Drug use patterns remained stable during follow-up.
- The rate of reinfection was higher in the early follow-up period, possibly be due to more frequent follow-up.
- A higher reinfection rate of 2.8/100 person-years was observed among participants with reported injection drug use.

# Patient Level Barriers Among Inmates

**Structured interviews with 46 inmates from Ireland**

## **Barriers**

**Lack of HCV knowledge**

**Lack of confidentiality  
leading to stigma**

**Inconsistent access to  
prison health services**

## **Enablers**

**Access to healthcare**

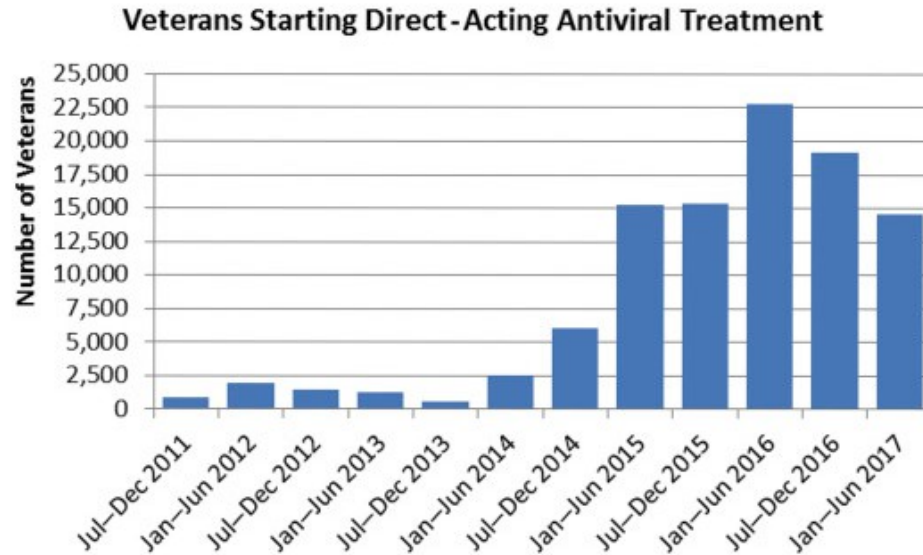
**Opt-out screening at  
intake**

**Peer support**

**Stability of prison life**

**No competing priorities  
compared to life on the  
outside**

# U.S. Veterans: Successful Microelimination Program

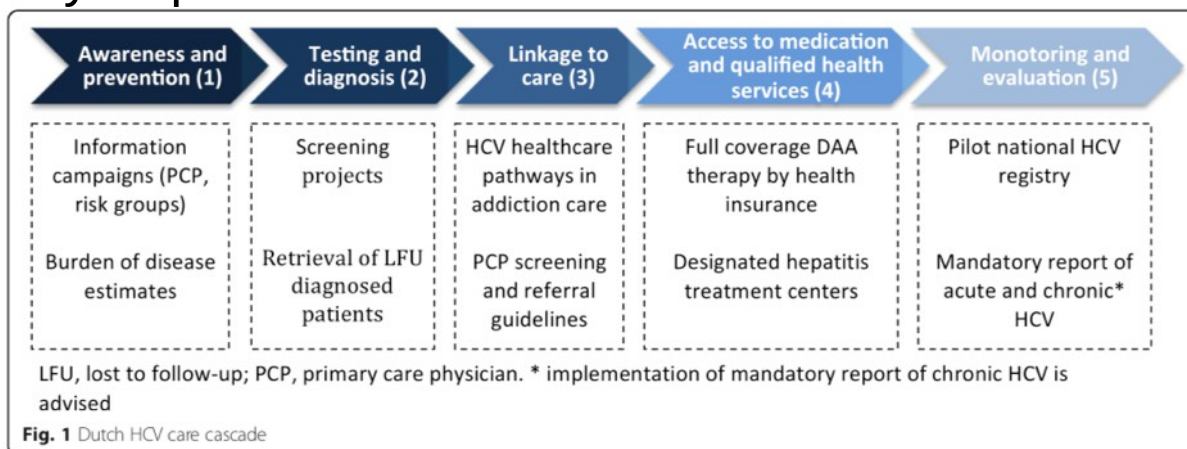
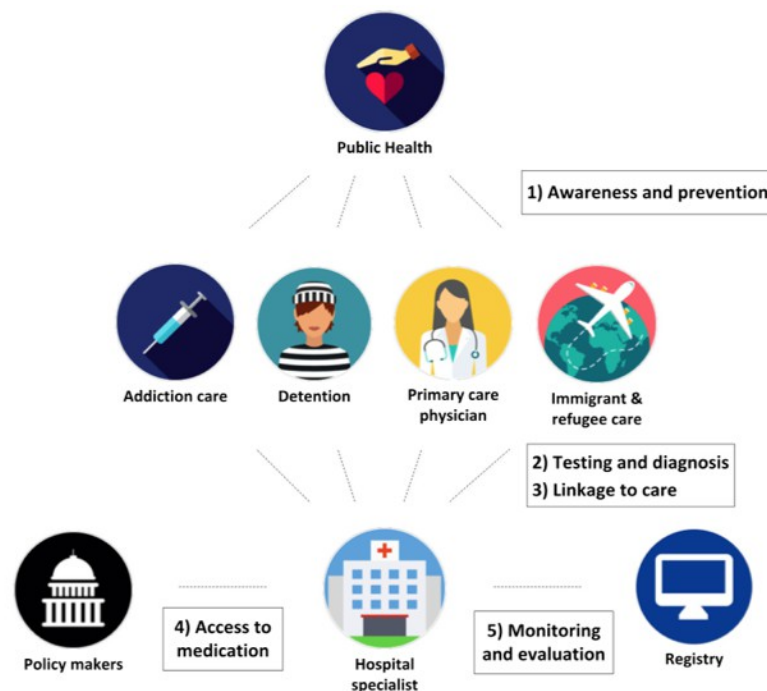


- Multiple novel solutions tailored to identified barriers:
  - Reflex lab testing at centralized labs
  - Proactive outreach
  - Engaged advocates/providers for homeless and PWIDs
  - Electronic tools for testing and treatment follow-up
  - Utilize non-physician providers
  - Telehealth and telementoring
  - Other interventions

# Dutch Microelimination Campaign Initiated in 2016



- Netherlands with favorable HCV epidemiology (Low prevalence of 0.1-0.3%)
- Targeted several subpopulations:
  - HIV-infected
  - Hemophilia patients
  - Migrants from high risk areas
  - PWIDs
  - Prisoners
  - Hemodialysis patients



# Progress in HCV Microelimination in Netherlands (2017)



	Population size (N)	HCV seroprevalence (%)	Total chronic HCV infections (HCV RNA (+)) (N)	HCV infections cured (N)/(%)	Source/Comments	Main actions/interventions to facilitate HCV elimination
HIV-infected	22,900	12%	1471 (R)	1124/76%	[24, 27]	<ul style="list-style-type: none"> <li>• Behavioral counseling.</li> <li>• Once in a lifetime or frequent<sup>c</sup> screening (depending on risk behavior).</li> </ul>
Hemophilia patients (born < 1992)	NA	NA	700 (R)	190/27.1%	[25] (Combined Dutch & UK cohort)	<ul style="list-style-type: none"> <li>• Once in a lifetime screening.</li> <li>• Treatment scale-up.</li> </ul>
High-risk MSM (HIV-negative) <sup>b</sup>	NA	4,8%	NA	NA/NA	[57]	<ul style="list-style-type: none"> <li>• Behavioral counseling.</li> <li>• Frequent<sup>c</sup> screening</li> <li>• Early treatment in case of (re) infection.</li> </ul>
Migrants from high endemic countries	1,527,032	NA	13,819 (E)	NA/NA	[58]	<ul style="list-style-type: none"> <li>• Raise awareness of HCV through local/multimedia information campaigns.</li> <li>• Once in a lifetime screening for first-generation migrants with HCV prevalence <math>\geq 2\%</math> in country of origin.</li> </ul>
PWD	14,000	39–74%	4040–7666 (C)	NA/NA	[7, 12–16, 59]	<ul style="list-style-type: none"> <li>• Once in a lifetime or frequent<sup>c</sup> screening (depending on risk behavior).</li> <li>• Treatment scale up.</li> </ul>
Prisoners	10,194/each day	7.4–13.9%	558–1049 (C)	NA/NA	[60–62]	<ul style="list-style-type: none"> <li>• Educate prison doctors on HCV.</li> <li>• Once in a lifetime or frequent<sup>c</sup> screening (depending on risk behavior).</li> <li>• Include detainees in regular health insurance.</li> </ul>
Hemodialysis patients	17,132	NA	NA	NA/NA	[63]	<ul style="list-style-type: none"> <li>• Once in a lifetime screening.</li> </ul>
Health care workers <sup>d</sup>	NA	NA	NA	NA/NA	–	<ul style="list-style-type: none"> <li>• Once in a lifetime screening by employer.</li> </ul>
General Dutch population	17,081,507 <sup>a</sup>	0.1–0.4%	12,640–50,561 (C)	4427/8–35%	[7, 29]	<ul style="list-style-type: none"> <li>• Raise awareness of HCV through multimedia information campaigns.</li> <li>• Educate general practitioners on HCV to increase compliance with viral hepatitis screening and referral guidelines.</li> <li>• Trace and treat HCV infected lost to follow-up.</li> </ul>

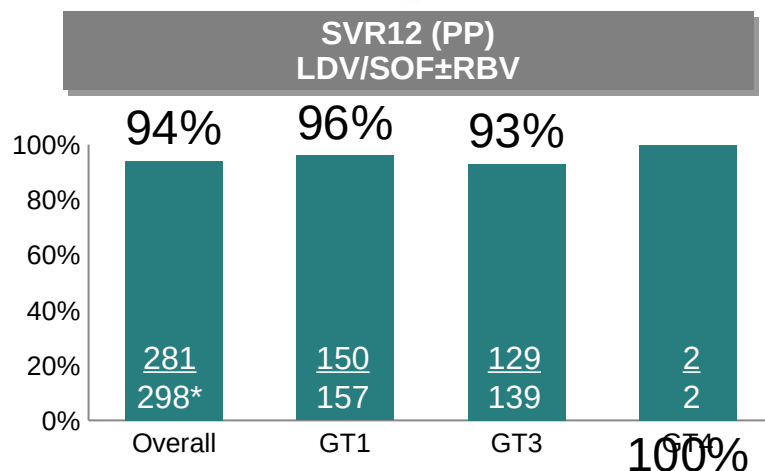
# Treatment as Prevention for HCV in Iceland, proof-of-concept study



Results of 'Real world experience' from a nation wide treatment as prevention (TasP) proof of concept program (treatment with LDV/SOF ± RBV)

## Iceland

- Population: 330,000
- Estimated HCV seroprevalence: 800-1000 patients (0.3%)
- Treatment to all within 2 years.
- 3rd year for “search and rescue”



\*22 patients who did not complete treatment, and 2 who died between EOTR and post treatment week 12 have been removed.

## Baseline Demographics

From 12 month evaluation	N=322
Mean age, years (range)	42 (33-52)
Males, n (%)	215 (67)
Cirrhosis (Fibroscan >12,5 kPa)	20 (6)
Previous treatment for HCV	46 (14)
Encounter site	
University Hospital	208 (65)
Addiction treatment center	100 (31)
Penitentiary	14 (4)
IV Drug Use	
Ever	292 (91)
Within 6 months	97 (33)
Within 30 days	49 (15)
Current OST	44 (15)

**Iceland treated almost one half of the diagnosed HCV population in the first year, showing that elimination in a defined region is feasible**



# Prevalence of HCV Among PWID During Second Year of Treatment

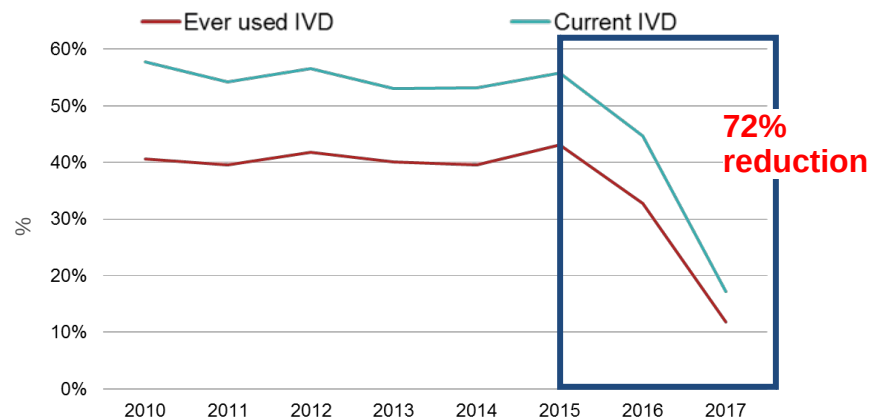
Nationwide effort combining DAA, addiction treatment and harm reduction for elimination

## Iceland

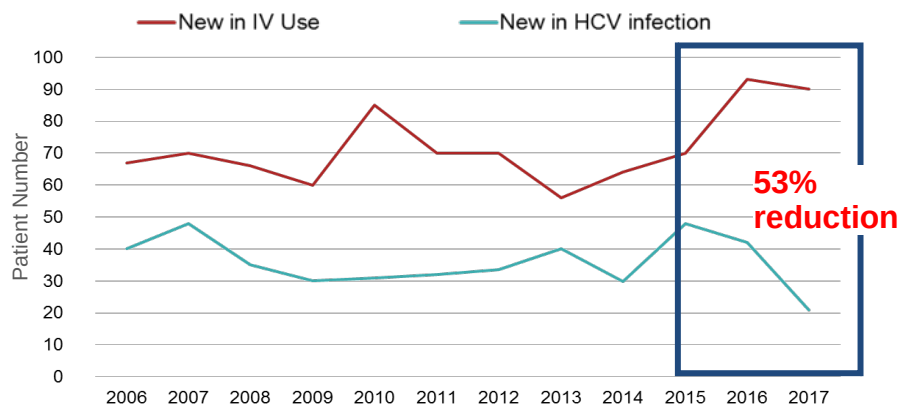
- Population: 340,000
- Estimated HCV seroprevalence: 0.3%
- Treatment to all within 3 years
- Emphasis on those:
  - Actively injecting drugs
  - Incarcerated
  - With advanced liver fibrosis or cirrhosis
- 3rd year for “search and rescue”

Demographics	N=518
Living situation, %	
Home	75
Homeless/halfway house	16
Prison	8
IVDU, %	
Ever	88
Within 6 months	37
Current OST	12
Treatment site, %	
University Hospital	65
Addiction Hospital	30
Penitentiary	5

Proportion of viremic HCV among PWID at Vogur Hospital



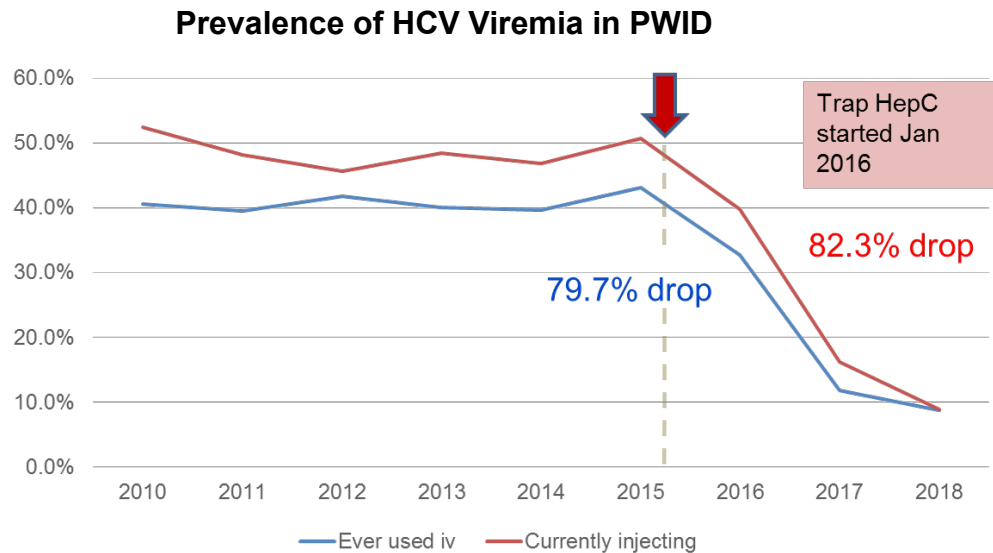
New Injection Drug Users and new HCV infections, Vogur Addiction Hospital 2006-2017



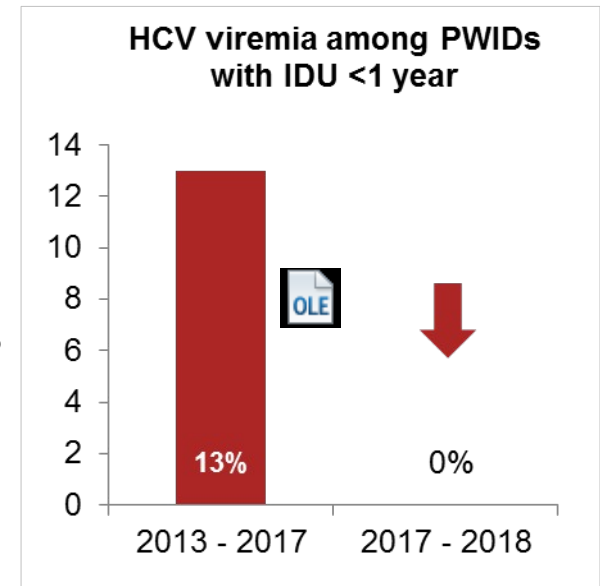
**Treatment as prevention program in Iceland has translated into a significant reduction in prevalence and incidence among PWID**

# Marked reduction of hepatitis C prevalence and incidence in PWID

Iceland nationwide treatment effort started in January 2016, offering all HCV infected individuals treatment with LDV/SOF or SOF/VEL, including those with recent IDU



- SVR12 PP 95%



**TrapHepC resulted in reduction in HCV prevalence and incidence among PWID. Treatment as prevention is a successful approach in the prevention of transmission of HCV among PWID.**



# **Access to Care: Summary**

**Barriers to HCV therapy still exist despite the availability of medications with near-universal efficacy**

**Barriers exist at multiple levels: Patient, provider, health system**

**While every country has unique challenges, some barriers are common across all countries**

**Goal of global elimination of HCV**

**May start with microelimination projects**

**Numerous examples of successful programs indicate that removing barriers and improving access to care is possible**

