CDC PUBLIC HEALTH GRAND ROUNDS

Working Together to Eliminate the Threat of Hepatitis B and C

Accessible version: https://www.youtube.com/watch?v=wQfjsUKYLh0

April 17, 2018

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

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Working Together to Eliminate Hepatitis B and C

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U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Hepatitis B and Hepatitis C Viruses Are Blood Borne Infections

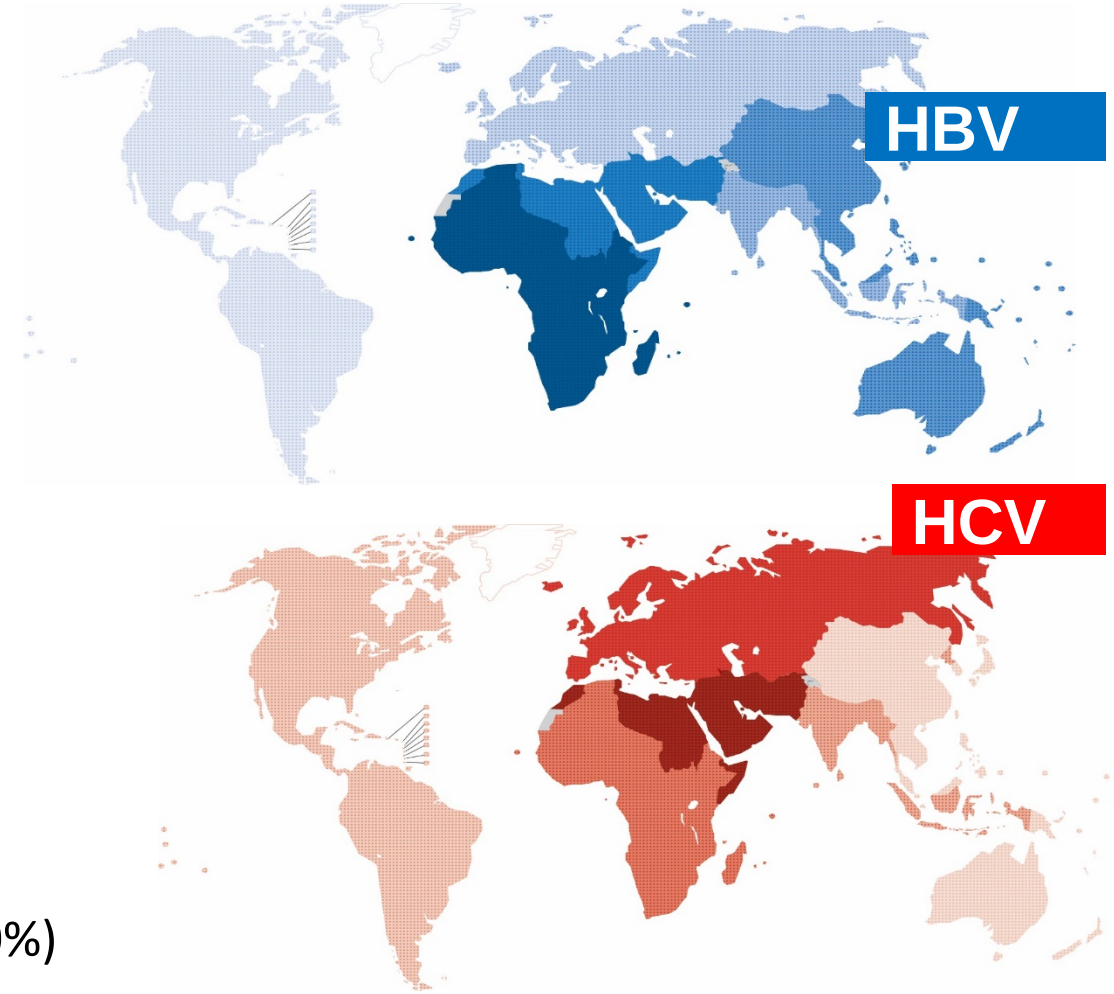
- **Transmission**
  - Exposures to contaminated blood (health care, substance abuse, perinatal)
  - Sexual (greatest risk for HBV)
- **Chronic infection causes most morbidity and mortality**
  - 20%–25% lifetime risk of premature death from liver cirrhosis and cancer or extrahepatic disease
  - HCV increases other disease risks (e.g., type 2 diabetes, non-Hodgkins lymphoma)
- **Prevention**
  - Hepatitis B vaccination
  - Reduce viral exposures—universal precautions, safe injection, safer sex
  - HBV and HCV testing, care and treatment; curative for HCV

Sanyal AJ, Terrault NA, Lindor KD, et al. Zakim & Boyer's Hepatology A Textbook of Liver Disease 7th ed. 2017, 428-445

Meeting of the International Task Force for Disease Eradication, June 2017. *Wkly Epidemiol Rec*. 2017 Sep 15;92(37):537-56

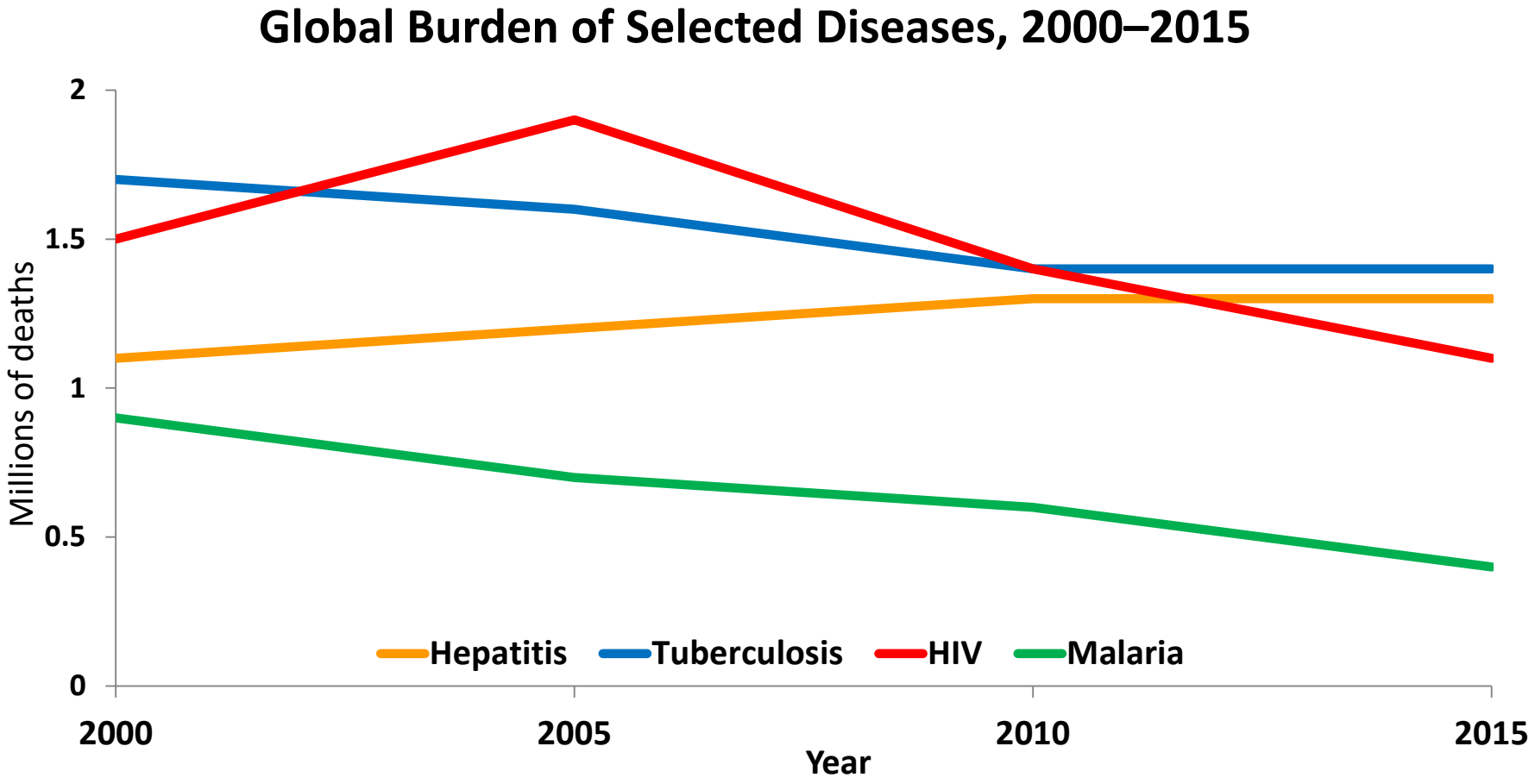
HBV and HCV Are Major Global Health Threats

- **In 2000, 1.28 million deaths per year**
  - HBV: 884,000, HCV: 420,000
  - HBV and HCV cause 50% of all primary liver cancer deaths globally
- **Globally, 328 million people infected**
  - HBV: 257 million
    - 2/3 living in Western Pacific or Africa
    - Major risk: perinatal or horizontal contact among young children
  - HCV: 71 million
    - 2/3 living in Europe, south Asia, north Africa
    - Major risk: healthcare-associated transmission
    - Highest prevalence: People who inject drugs (50%)



www.who.int/hepatitis/publications/global-hepatitis-report2017/en

While Other Diseases Are Declining, HBV and HCV Continue As Global Threat

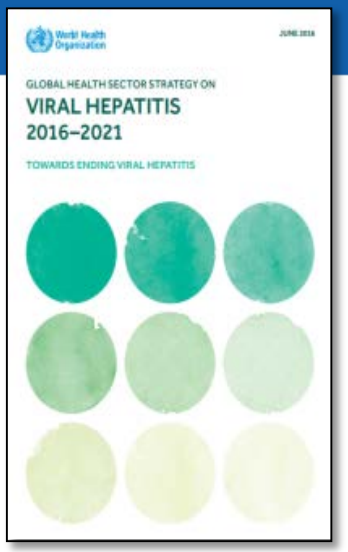


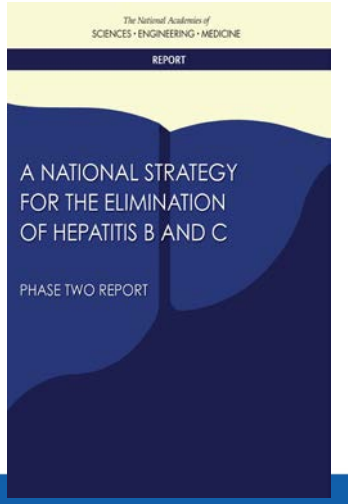
HBV and HCV cause 96% of mortality from all forms of viral hepatitis

www.who.int/hepatitis/publications/global-hepatitis-report2017/en/
www.who.int/hepatitis/strategy2016-2021/ghss-hep/en

Global and U.S. Goals for Elimination of HBV and HCV as Public Health Threats by 2030

- **UN SDG called on global community to "combat hepatitis"**
- **In 2016, World Health Assembly endorsed WHO global elimination goals for HBV and HCV**
  - By 2030, 90% reduction in new infections and 65% reduction in deaths
  - WHO encourages development of national goals
- **In 2017, U.S. IOM (NAS) developed U.S. elimination goals and recommended actions by 2030**
  - Hepatitis B: 100% reduction in new cases in children age under 5 years
    50% reduction in deaths
  - Hepatitis C: 90% reduction in new cases
    65% reduction in deaths



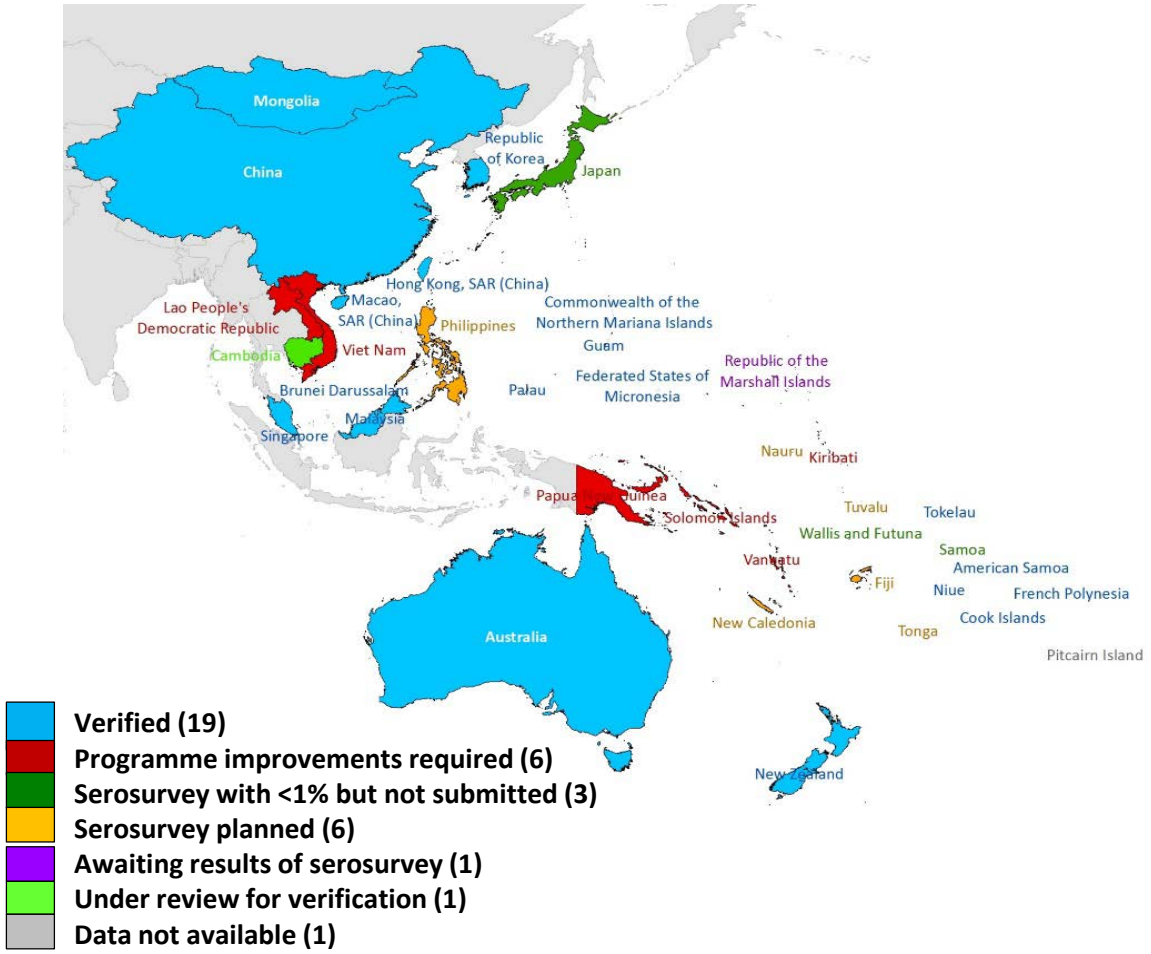


SDG: Sustainable development goals NAS: National Academy of Sciences nationalacademies.org/hmd/Reports/2017.aspx

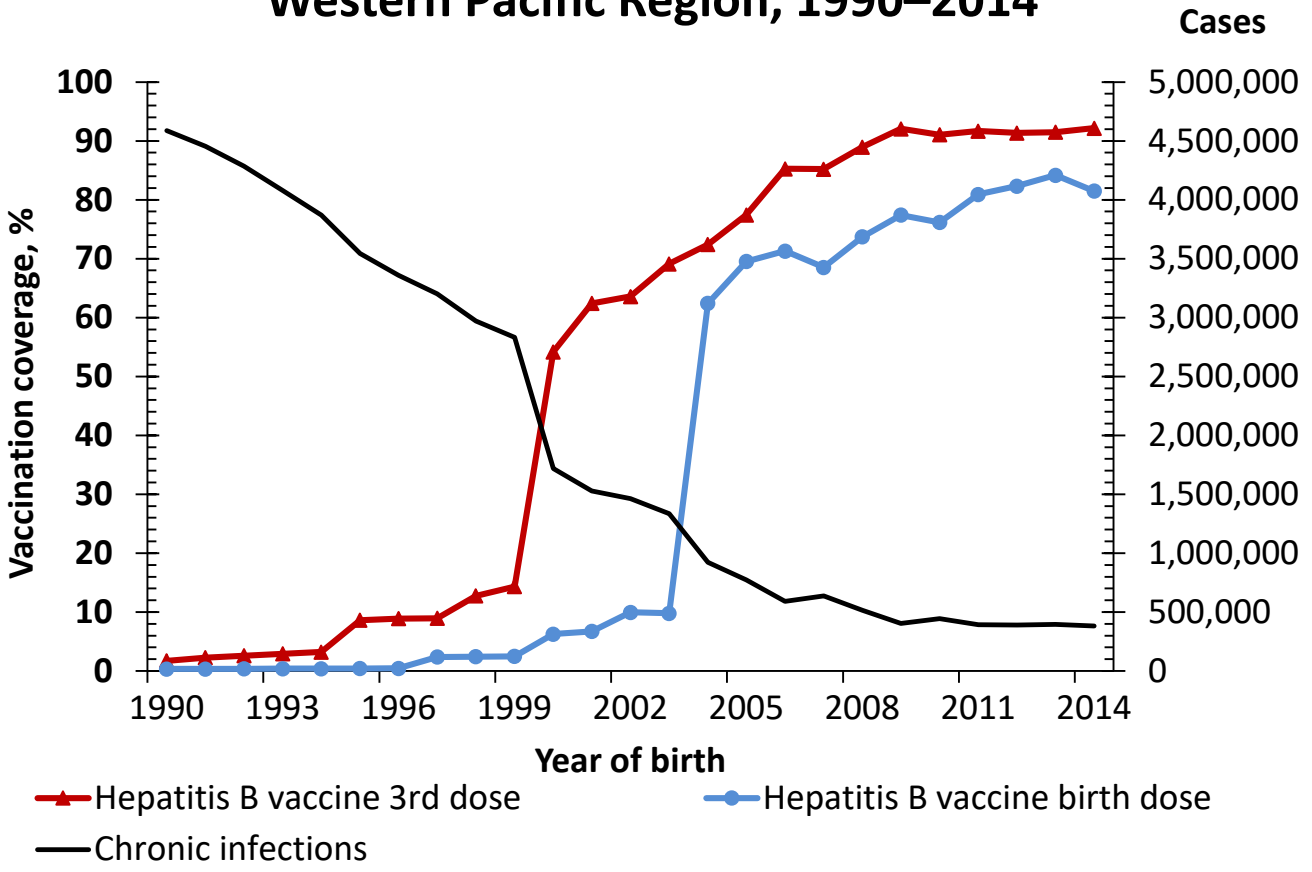
www.who.int/hepatitis/publications/global-hepatitis-report2017/en/ www.who.int/hepatitis/strategy2016-2021/ghss-hep/en

Hepatitis B Vaccine is the Cornerstone for HBV Elimination

Western Pacific Region achieved goal of <1% of children with HBV by 2017



Hepatitis B Vaccine Coverage and Number of Lifetime Chronic Infections by Year of Birth, Western Pacific Region, 1990–2014



www.who.int/hepatitis/publications/global-hepatitis-report2017/en/

Wiesen E, Diorditsa S, & Li X. *Vaccine.* 2016 May 27;34(25):2855-62

Vaccine-based Strategies to Eliminate HBV Transmission in the United States

- **Prevent mother-to-child transmission**
  - Increase HepB birth-dose coverage from 72% to 90% or higher
  - Case management to assure HBV exposed new-borns receive vaccine/HBIG at birth and follow-up
- **Test HBsAg+ mothers for HBV DNA viral load to guide maternal antiviral therapy**
- **Maintain childhood and adolescent HepB vaccine coverage >90%**
- **Improve vaccination of at-risk adults**

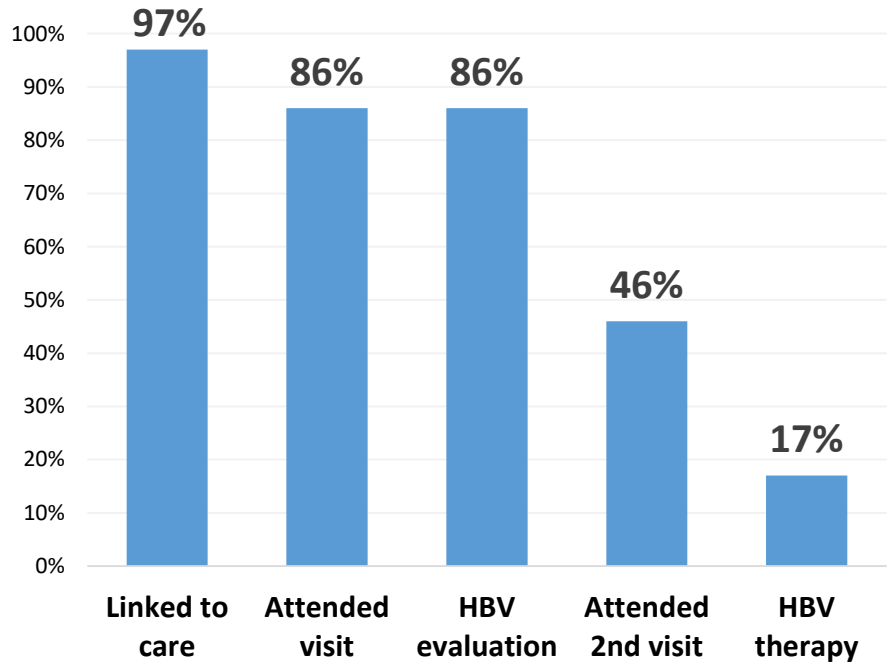
HBIG: Hepatitis B immunoglobulin

Abara WE, Qaseem A, Schillie S, et al. *Ann Intern Med*. 2017;167(11):794-804 Schillie S, Vellozzi C, Reingold AR, et al. *MMWR* 2018 Jan 12;67(1):1–31

Reducing HBV Deaths by 50% in the United States by 2030

- **850,000–2.2 million people with chronic HBV**
  - 50% are Asian/Pacific Islanders (API); sixfold mortality risk for API
  - HBV testing recommended for persons from countries with >2% prevalence (i.e., Asia, Africa)
- **Long term therapy decreases mortality by 50-60%**
- **60% aware of their infection, and only ~15% recommended for treatment receive it**
  - Using culturally appropriate outreach, community coalitions can increase testing and linkage to treatments

HBV Linkage to Care Cascade, Three Programs, United States, N=289, 2014–2016



Schillie S, Vellozzi C, Reingold AR, et al. *MMWR* 2018 Jan 12;67(1):1–31; Ly KN, Xing J, Klevens RM, et al. *Clin Infect Dis*. 2014 Jan;58(1):40-9; Abara WE, Qaseem A, Schillie S, et al. *Ann Intern Med*. 2017 Dec 5;167(11):794-804; Harris AM, Schoenbachler BT, Ramirez G, et al. *Public Health Rep*. 2016 May-Jun;131 Suppl 2:20-8; Lok AS, McMahon BJ, Brown RS Jr, et al. *Hepatology*. 2016 Jan;63(1):284-306; Harris AM, Chandrasekar E, Wang S, et al. *Hepatology* 2016, Abstract 1773 aasldpubs.onlinelibrary.wiley.com/doi/full/10.1002/hep.28800 .

HCV Can Be Cured

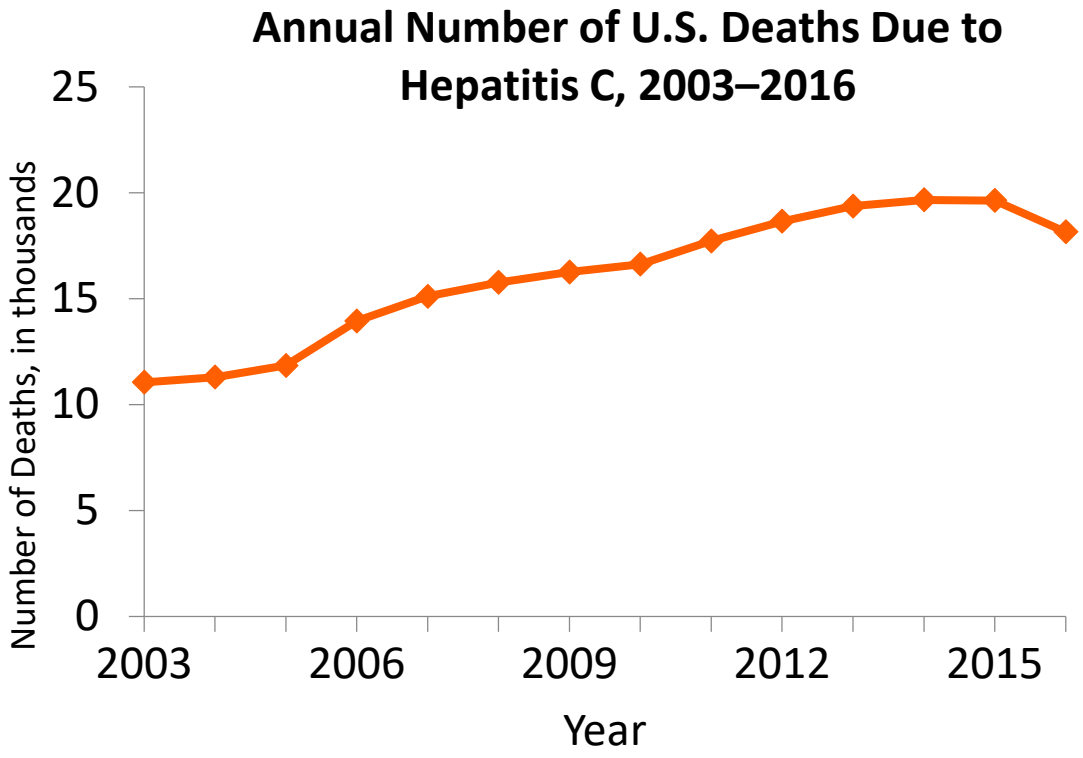
- **3.5 million people with HCV in U.S.**
  - 81% born 1945–1965 and 70% have moderate-severe liver disease
  - Birth year cohort testing recommended by CDC and USPDTF
- **HCV treatment - oral meds for 8–12 weeks**
- **Over 95% treated are cured**
- **HCV cure reduces liver related mortality by 93%**

Ward JW & Holtzman DA. Hepatitis C. In Zakim & Boyer's Hepatology A Textbook of Liver Disease 7th ed. 2017, 428-445

van der Meer AJ, Veldt BJ, Feld JJ, et al. *JAMA*. 2012 Dec 26;308(24):2584-93

By 2030, Reduce HCV Deaths by 65% in the United States

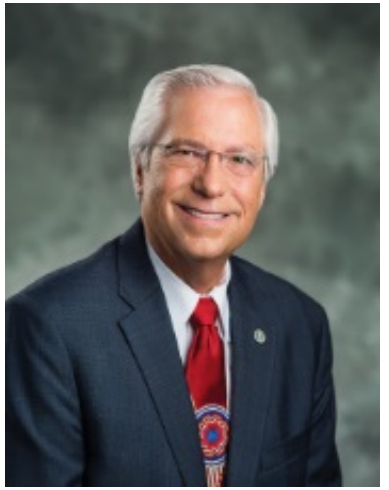
- **While 60% of persons aware of HCV diagnosis, only 22% treated**
- **In 2016, HCV mortality declined 7%**
- **Certain interventions increase testing and linkage to care and treatment**
- **Drug costs have declined and are cost-saving**
  - Many payers continue to restrict access
  - In 2017, HCV prescriptions fell 26% for Medicaid and 40% for private payers



van der Meer AJ, Veldt BJ, Feld JJ, et al. *JAMA*. 2012 Dec 26;308(24):2584-93; Chhatwal J, He T, Hur C, et al. *Hepatol.* 2017 Jun;15(6):827-837; Barua S, Greenwald R, Grebely J, et al. *Ann Intern Med*. 2015 Aug 4;163(3):215-23; lab.express-scripts.com/lab/drug-trend-report

“As Native People and as Cherokee Nation Citizens, We Must Keep Striving to Eliminate Hepatitis C.”

- **American Indians have highest HCV incidence and mortality**
- **Cherokee Nation launched elimination program in 2015**
  - Universal HCV testing for patients 20–69 yrs.
  - Training and electronic tools to prompt testing
  - Care managed by mid-level providers (e.g., pharmacists)
  - Health system strategies to pay for testing and treatment
  - Contact tracing to identify new HCV infections
  - Partnerships with CDC, state and local health, NGOs

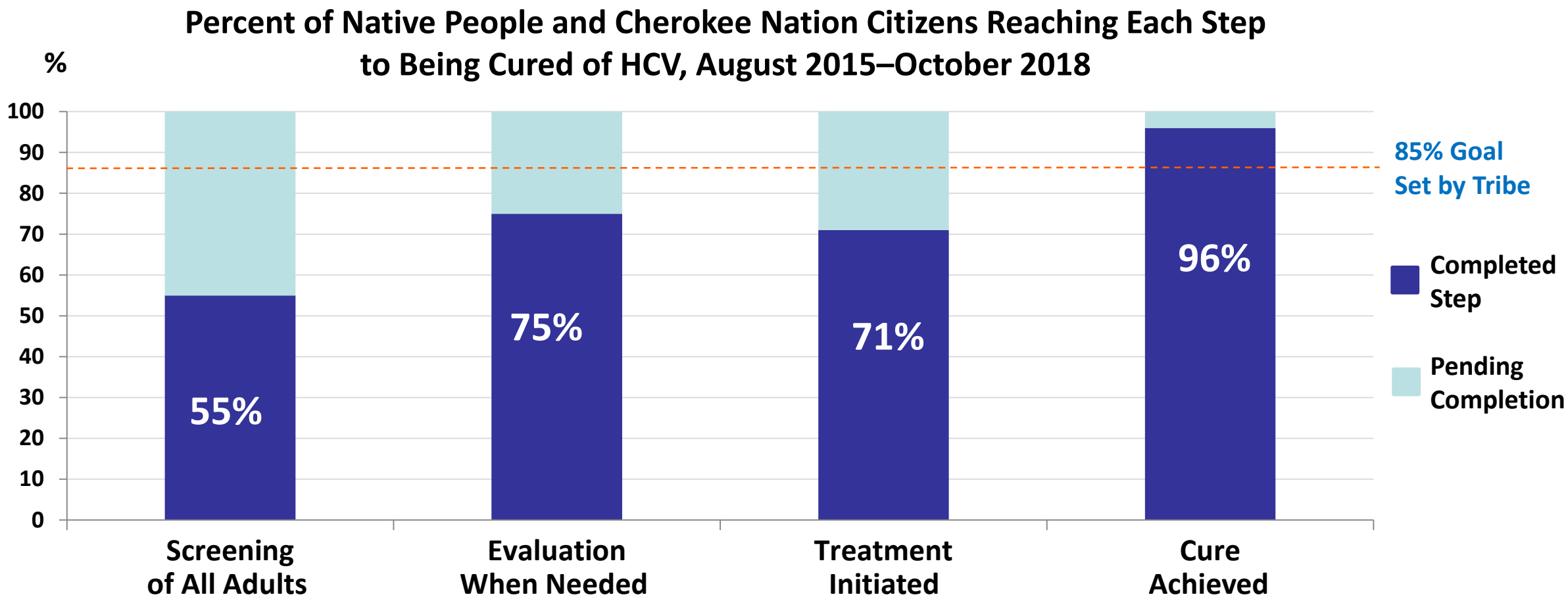


Chief Bill John Baker

Mera J, personal communication

Mera J, Vellozzi C, Hariri S, et al. *MMWR*. 2016 May 13;65(18):461-6

Native People and Cherokee Nation Citizens Have Made Substantial Progress to Eliminate Hepatitis C

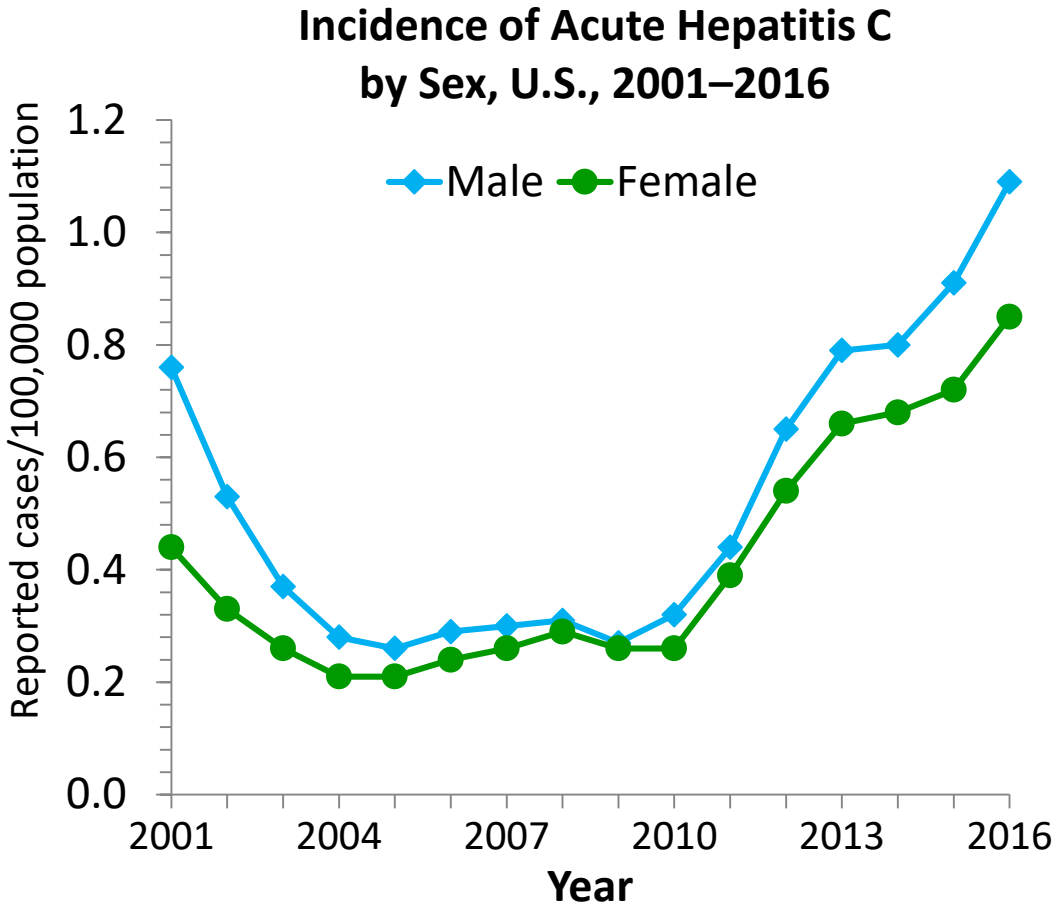


Mera J, personal communication

Mera J, Vellozzi C, Hariri S, et al. *MMWR*. 2016 May 13;65(18):461-6

New Concern:
Rising HCV Incidence Related to the Opioid Epidemic

- **In 2016, 41,200 new HCV infections in U.S.**
- **80% related injection drug use**
- **Threefold increase since 2010**
  - Adults less than 40 yrs. old, white, suburban and rural – esp. Appalachian, Midwestern, New England states
- **Parallel increases in injection of prescription opioids and heroin**



Zibbell JE, Asher AK, Patel RC, et al. *Am J Public Health*. 2018 Feb;108(2):175-181

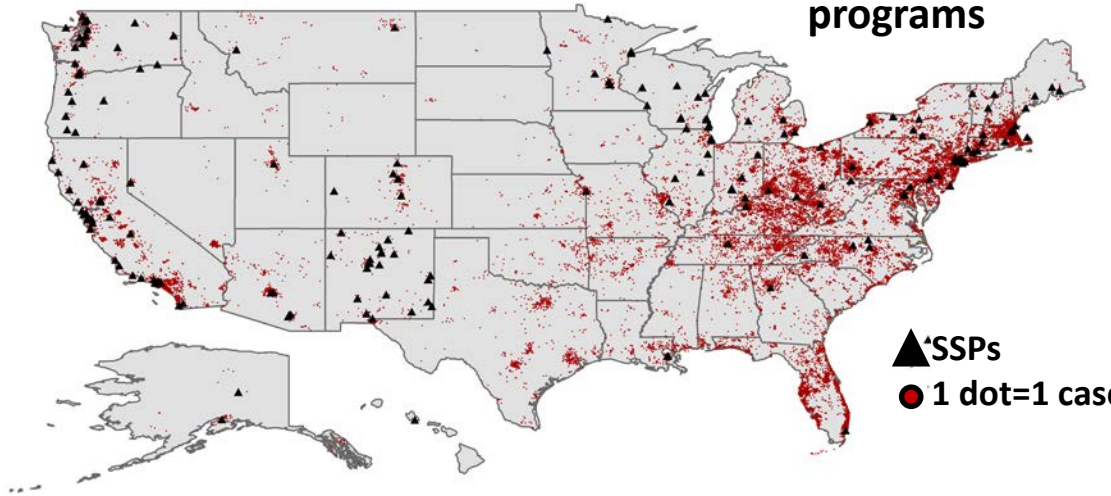
www. cdc.gov/hepatitis; https://www.cdc.gov/hepatitis/statistics/index.htm

Suryaprasad AG, White JZ, Xu F, et al. *Clin Infect Dis.* 2014 Nov 15;59(10):1411-9

Elimination of HCV Transmission Requires Greater Access to Prevention Services

- **Access to safe injection equipment and treatment for drug addiction can lower transmission risks by over 70%**
- **Add HCV therapy, cure as prevention, can reduce infection and transmission by 90%**
- **Areas with high HCV incidence have low SSP coverage**
  - Only three states have laws supporting access to safe injections
  - 24 state Medicaid programs deny HCV treatment for recent or current PWID

Only 20% of people 15–29 years old with HCV, live within 10 miles of one of 270 syringe service programs

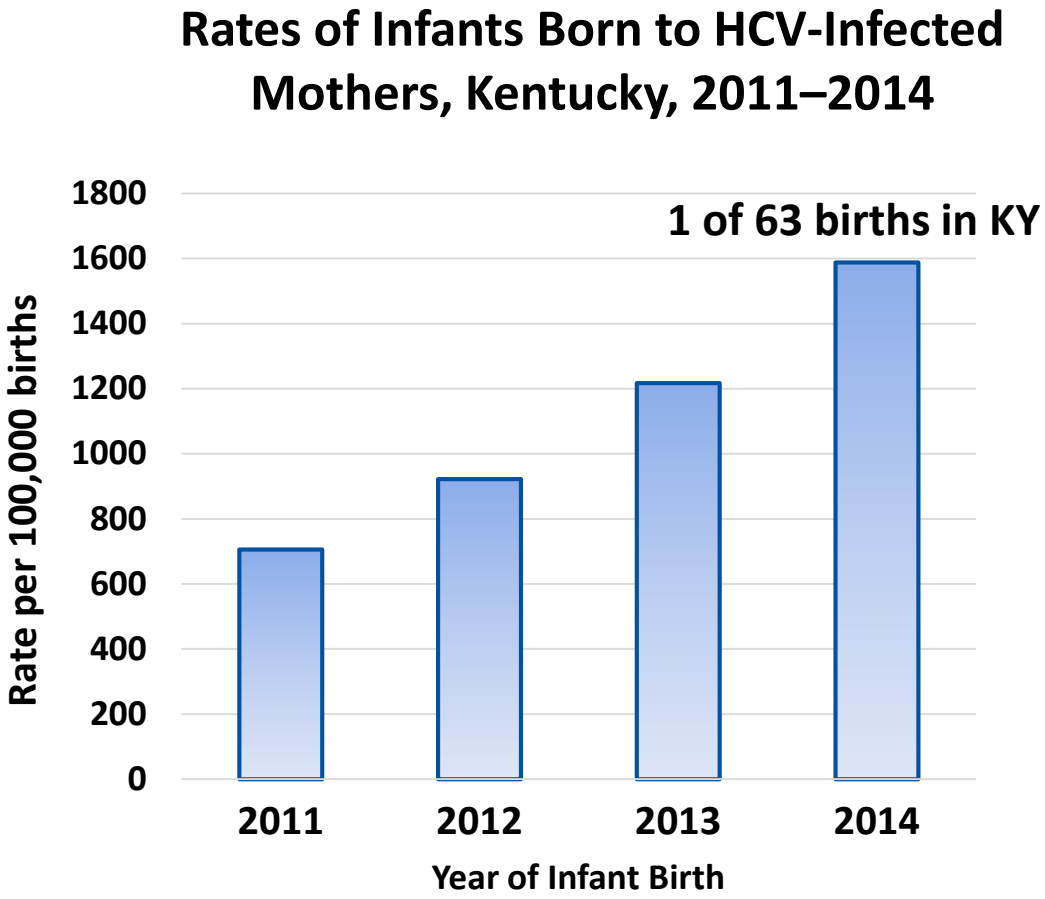


Map of Syringe Services Programs and HCV Infected Persons, Aged 15–29 Yrs, Tested July 2015–June 2016

SSP: Syringe services program Platt L, Minozzi S, Reed J, et al. *Cochrane Database Syst Rev*. 2017 Sep 18;9; Canary L, Hariri S, Campbell C, et al. *Clin Infect Dis.* 2017 Aug 1;65(3):514-517; Fraser H, Zibbell J, Hoerger T, et al. *Addiction.* 2018 Jan;113(1):173-182; Campbell CA, Canary L, Smith N, et al. *MMWR* 2017 May 12;66(18):465-469

New Concerns: HCV Infected Mothers and Newborns

- **Increased HCV among pregnant women**
- **In 2014, 1 of 308 U.S. births were to HCV-infected mothers**
  - 1 of 63 in Kentucky (high incidence state)
- **6–12% transmission risk for infants**
- **In 2018, perinatal HCV surveillance started**
- **Consider policies for routine HCV testing of young persons and pregnant women**

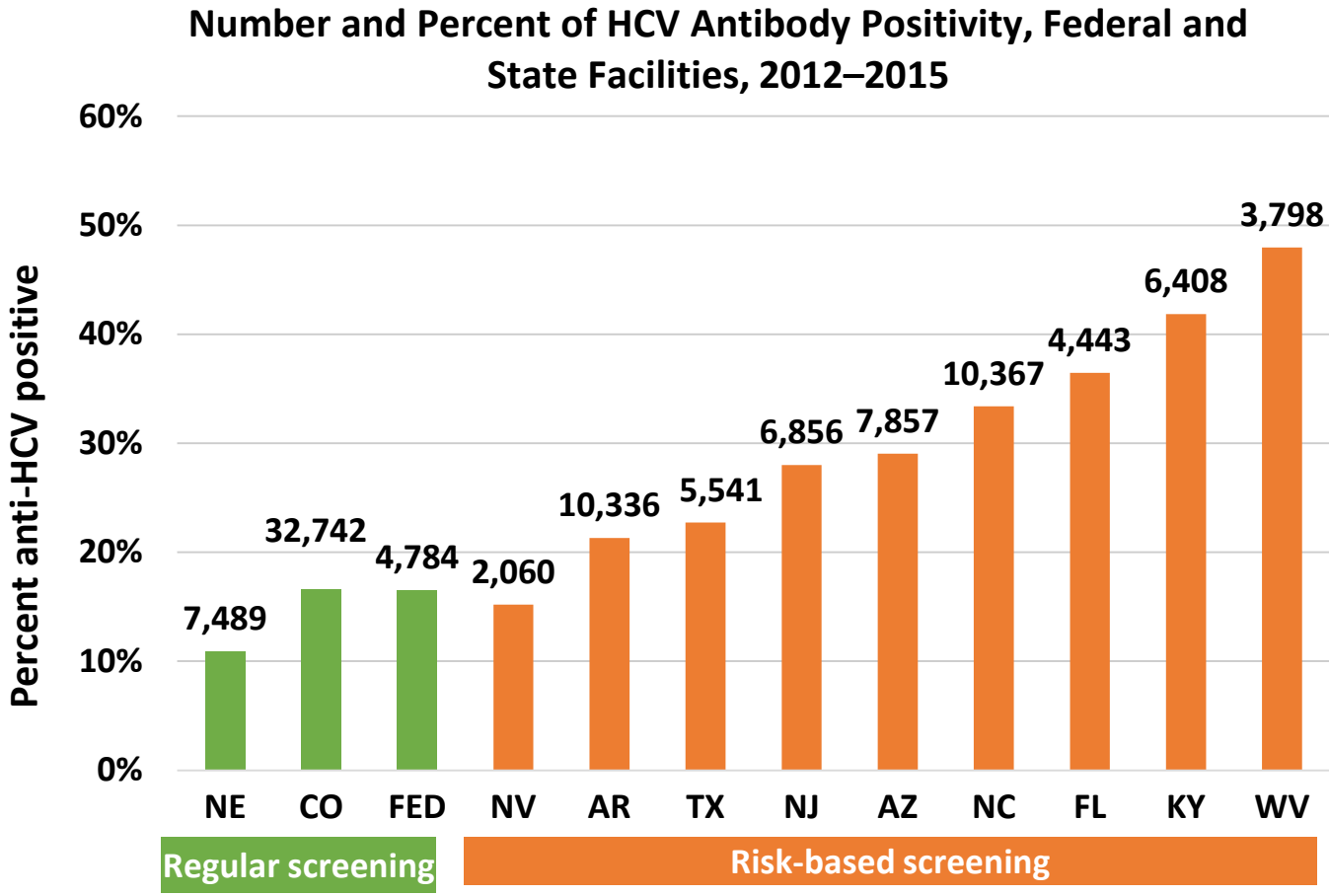


Adapted from: Koneru A, Nelson N, Hariri S, et al. *MMWR* 2016 Jul 22;65(28):705-10

"Any National Campaign to Eliminate Hepatitis C Would Almost Certainly Involve Prisons." — The New York Times

March 18, 2018

- **Multiple prison systems**
- **High HCV prevalence**
- **Testing and treatment are effective prevention**
  - Reduces deaths and prevents new infections in the community upon release
  - $20–29K per QALY
- **Lawsuits in 10 states for HCV treatment access**



QALY: Quality-adjusted life year

Canary L, APHA 2016; CDC unpublished data. Hochstatter KR, Stockman, L, Holzmacher R, et al. *Health Justice.* 2017 Oct 30;5(1):10; He T, Li K, Roberts MS, et al. *Ann Intern Med.* 2016 Jan 19;164(2):84-92. www.nytimes.com/2018/03/15/us/hepatitis-c-drugs-prisons.html

Research and Evaluation Can Improve HBV and HCV Elimination Strategies

- **Technical**
  - HCV vaccine can reduce high HCV incidence among new injectors
  - Point-of-care tests can simplify testing for current and recurrent HCV
  - Next generation HBV therapies can improve treatment outcomes
- **Operational**
  - Simplified care models can expand access in resource-constrained settings
  - Field trials of *HCV Cure as Prevention* strategies for people who inject drugs
- **Evaluation and data**
  - Systems to provide data to evaluate quality and monitor progress toward elimination

Liang J. & Ward JW. *N Engl J Med*. 2018 Mar 29;378(13):1169-1171


Making
Hepatitis B
History
Learn More
HEPATITIS B
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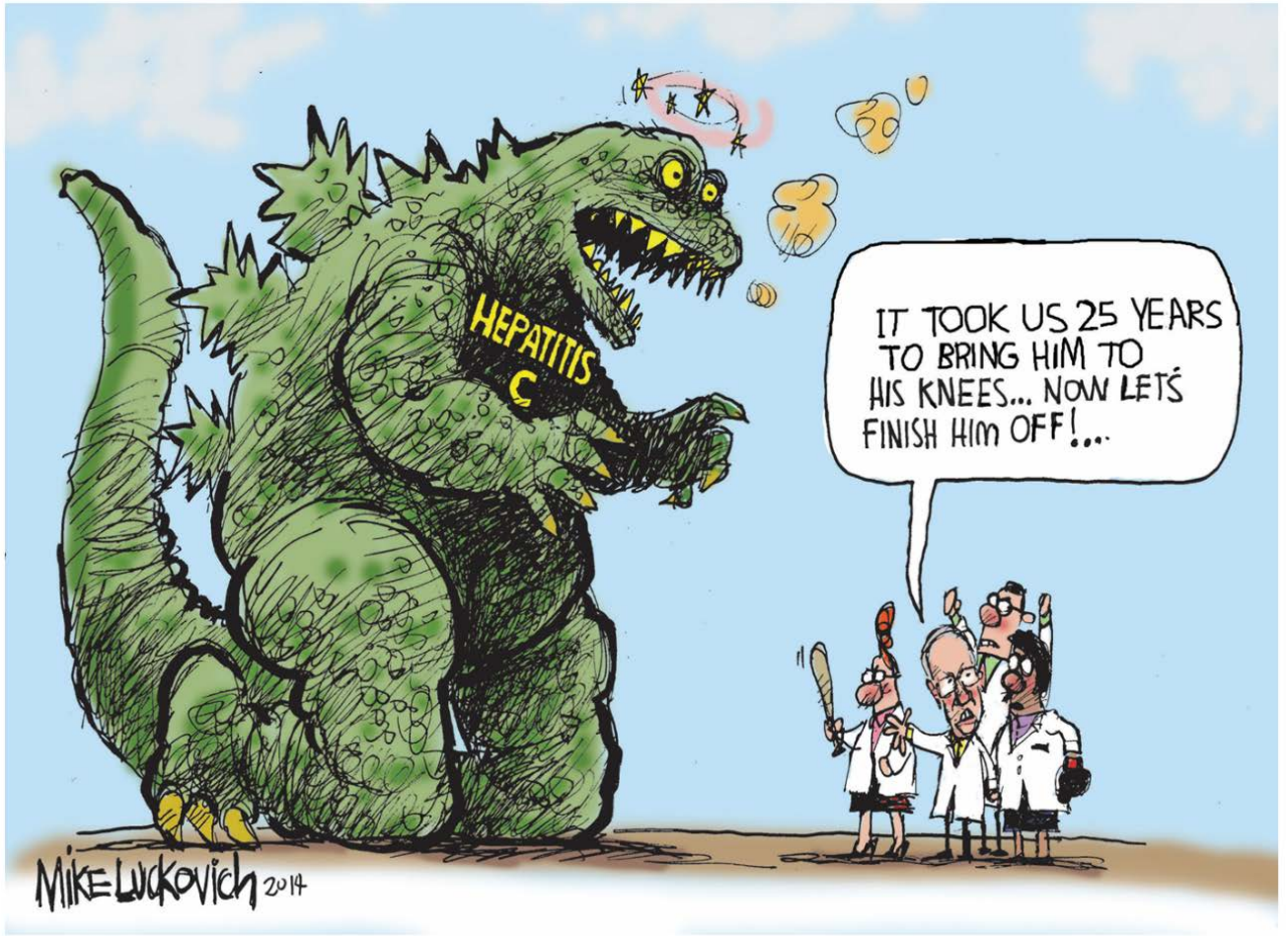
www.hepb.org


HEPATITIS C
IT TOOK US 25 YEARS TO BRING HIM TO HIS KNEES... NOW LETS FINISH HIM OFF!...
MIKE LUCKOVICH 2014

Collaborations and Strategies to Eliminate Hepatitis B and C in San Francisco

Katie Burk, MPH

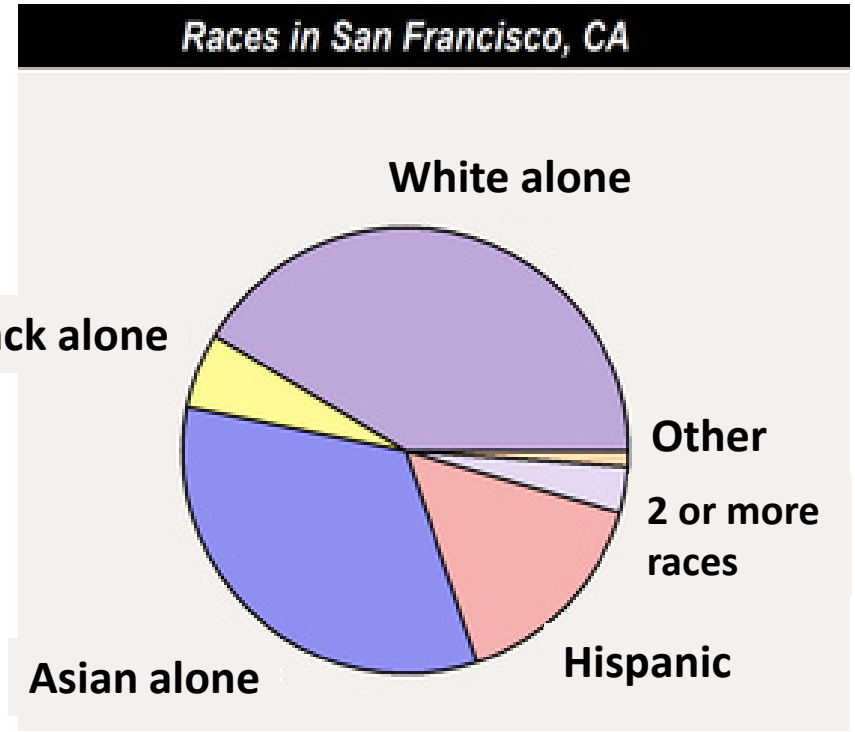
Viral Hepatitis Coordinator

San Francisco Department of Public Health

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Hepatitis B in San Francisco

- **In 2016, there were 819 (95.6/100,000) newly confirmed cases of chronic hepatitis B (CHB)**
- **About 88% of cases of CHB are among Asian/Pacific Islanders (A/PI)**
  - Many people of A/PI ancestry are foreign born, particularly in China
  - Death rates from CHB are highest for A/PI
- **Multiple barriers (e.g., social or cultural, educational, language) hinder access to recommended prevention interventions**



A Nishimura, Personal Communication, March 9 2018

www.city-data.com

Success in Preventing Perinatal Transmission of Hepatitis B

- **The Perinatal HBV vaccination program in San Francisco identifies and tracks pregnant, HBV+ women and ensure their infants are given the birth dose vaccine upon birth.**
- **Since 2011, no new perinatal HBV infections**
  - Each year, 140–180 infants born to HBV+ women

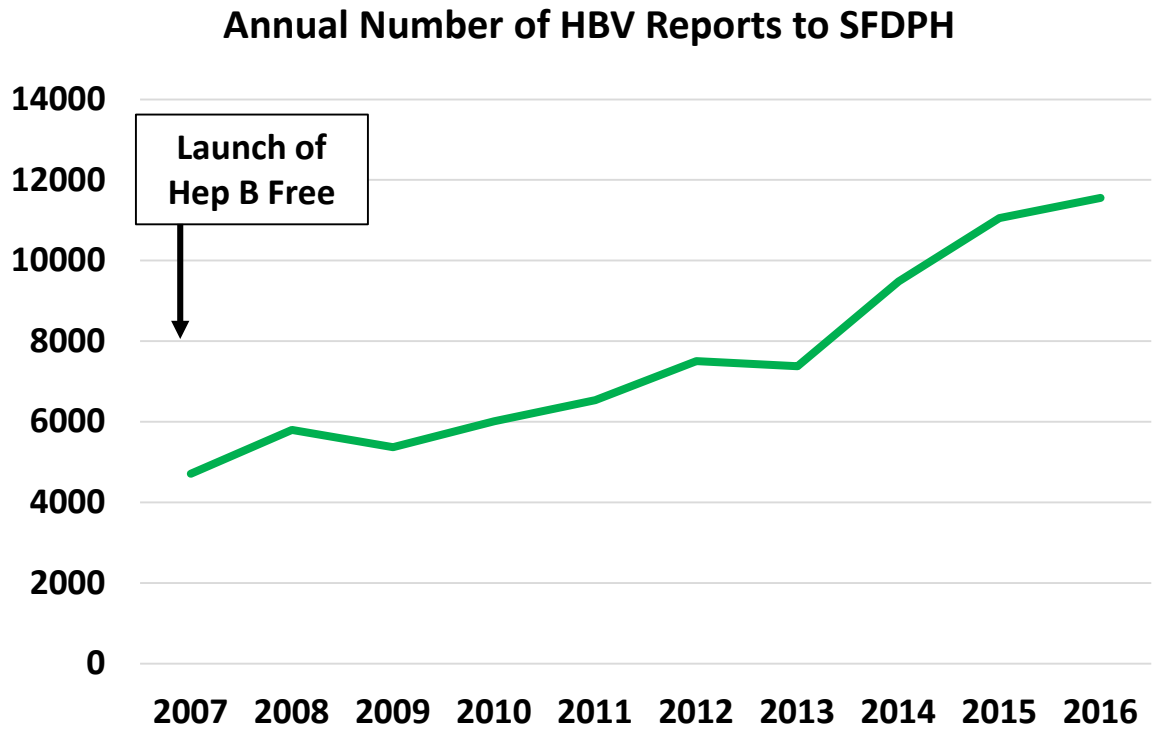
L Afu-Li, Personal Communication, February 28, 2018

Hep B Free Bay Area

- **Mission: To turn San Francisco into the first HBV-free city in the nation**
  - Founded in 2007 as a public–private partnership
  - Launched media campaign to raise awareness in 2010

Hep B Free Bay Area Efforts Led to Increased HBV Testing, Reports

- **Between 2012–2014, 10,000 HBV tests performed in community settings**
  - Supported by CDC grant
- **In 2015, business initiative launched, creating Business Honor Roll**
- **In 2016, HBV linkage to care phone line launched, in multiple languages**
- **2017 San Mateo County expansion**
  - Y1 San Mateo County expansion targets 250 community screenings



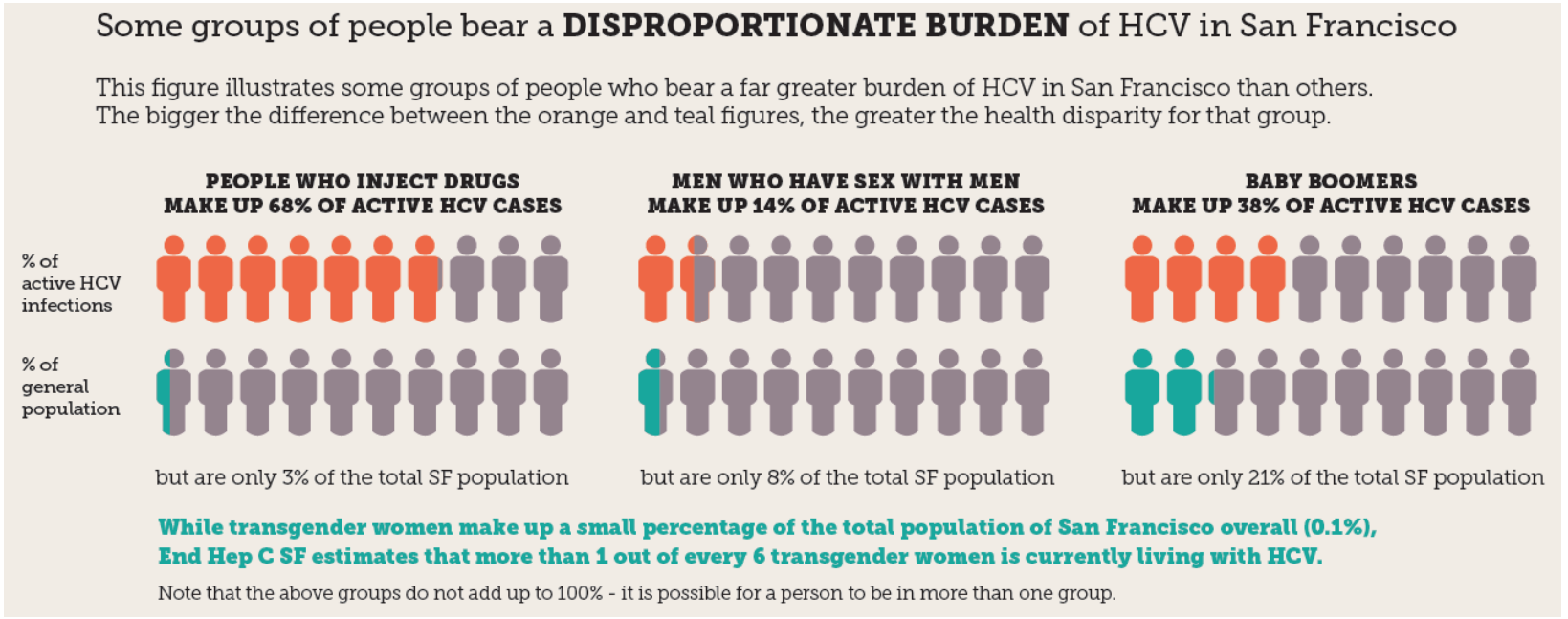
Nishimura A, Unpublished Data, 2018

Hepatitis C in San Francisco

- **In 2016, there were 1,008 (117.6/100,000) newly confirmed cases of hepatitis C**
  - 30% African American

A Nishimura, personal communication, Feb 2018

- **About 2.5% of the population (or 22,000 residents) have been infected with HCV**
- **An estimated 12,000 people currently infected with HCV**



Facente SN, Grebe E, Burk K, et. al. *PLOS ONE* 13(4): e0195575

HCV Prevention and Testing Infrastructure in SF

- ✓ **Syringe exchange**
  - 7 days/week availability
  - Secondary exchange network
- ✓ **Naloxone Access**
- ✓ **HIV and HCV Testing**
- ✓ **Low-threshold methadone and buprenorphine**
- ✓ **Referrals to drug treatment**

Map of San Francisco Syringe Access and Disposal Locations

★ = syringe access and disposal sites

End Hep C SF Partnerships and Strategic Plan

We are the Drug Policy Alliance.

GLIDE UNCONDITIONALLY

SAN FRANCISCO HEALTH PLAN Here for you

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St. James Infirmary

Sutter Health

HOMELESS YOUTH ALLIANCE S.F. CA.

Hughes Healthcare Disparities Group

the UFO STUDY

UCSF

Walgreens

ZUCKERBERG SAN FRANCISCO GENERAL Hospital and Trauma Center

UCSF Alliance HEALTH PROJECT SERVICES FOR THE LGBTQ AND HIV COMMUNITIES

BAART PROGRAMS

BAYVIEW HUNTERS POINT FOUNDATION for Community Improvement

CalHEP California Hepatitis Alliance

OTOP OPIATE TREATMENT OUTPATIENT PROGRAM

MNHC Mission Neighborhood Health Center

mission wellness pharmacy

harm reduction COALITION

health RIGHT 360 A FAMILY OF PROGRAMS

Project Open Hand meals with love

RTI INTERNATIONAL

PositiveHealthProgram HIV/AIDS Division at SFGH

PROJECT INFORM

KAISER PERMANENTE

LARKIN STREET YOUTH SERVICES

SEAL OF THE CITY AND COUNTY OF SAN FRANCISCO · SFDPH

SAN FRANCISCO Hepatitis C TASK FORCE

SAN FRANCISCO AIDS FOUNDATION

SF CAN San Francisco Cancer Initiative

Representation of Impacted Communities: End Hep C SF Coordinating Committee

Katie Burk, MPH
SFDPH

Kelly Eagen, MD
Tom Waddell Urban Health

Perry Rhodes III
Alliance Health Project

Pauli Gray
SFAF

Andrew Reynolds
Project Inform

Isaac Jackson, PhD
Urban Survivors Union

Joanne Kay
End Hep C SF

Annie Luetkemeyer, MD
UCSF

Meghan Morris, PhD
UCSF

Alfredta Nesbitt
Bayview Hunters Point Foundation

Melissa Sanchez, PhD
SFDPH

Robin Roth
SF Hep C Task Force

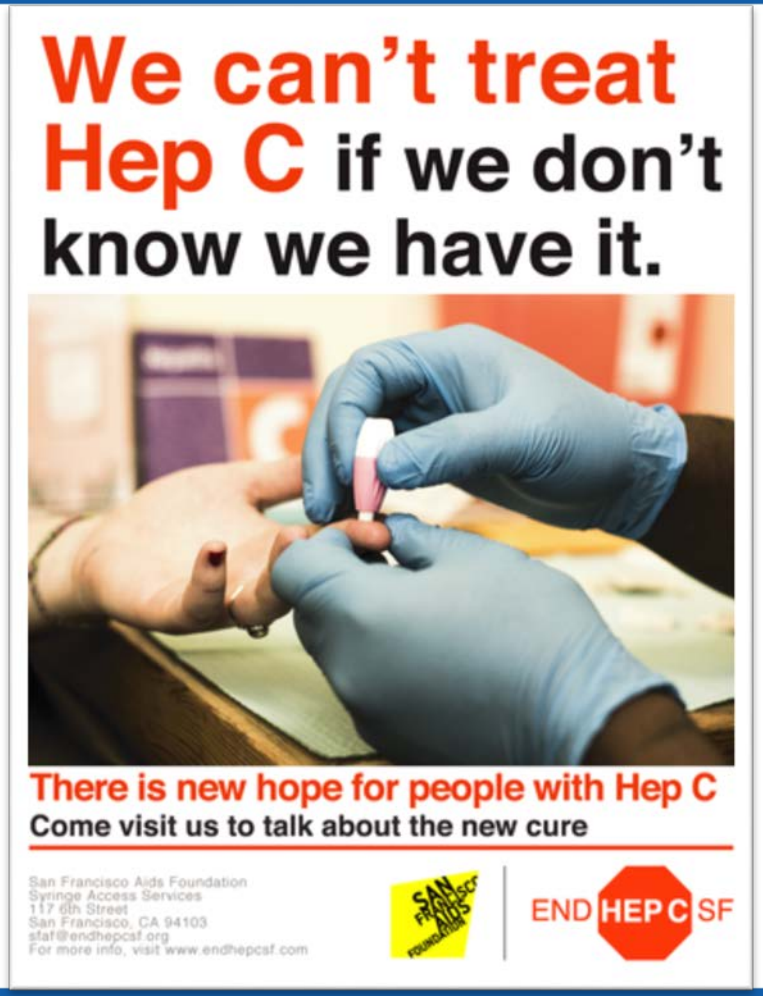
End Hep C SF Community Engagement Strategies

- **"New Treatments Have Changed the Game" Campaign 2015**
  - Video installment, 2018
- **"Tales from the Cured" community meeting, August 3, 2017**
- **"Get Cured, Stay Cured" community meeting, March 8, 2018**
- **Peer-based HCV linkage program, 2018**

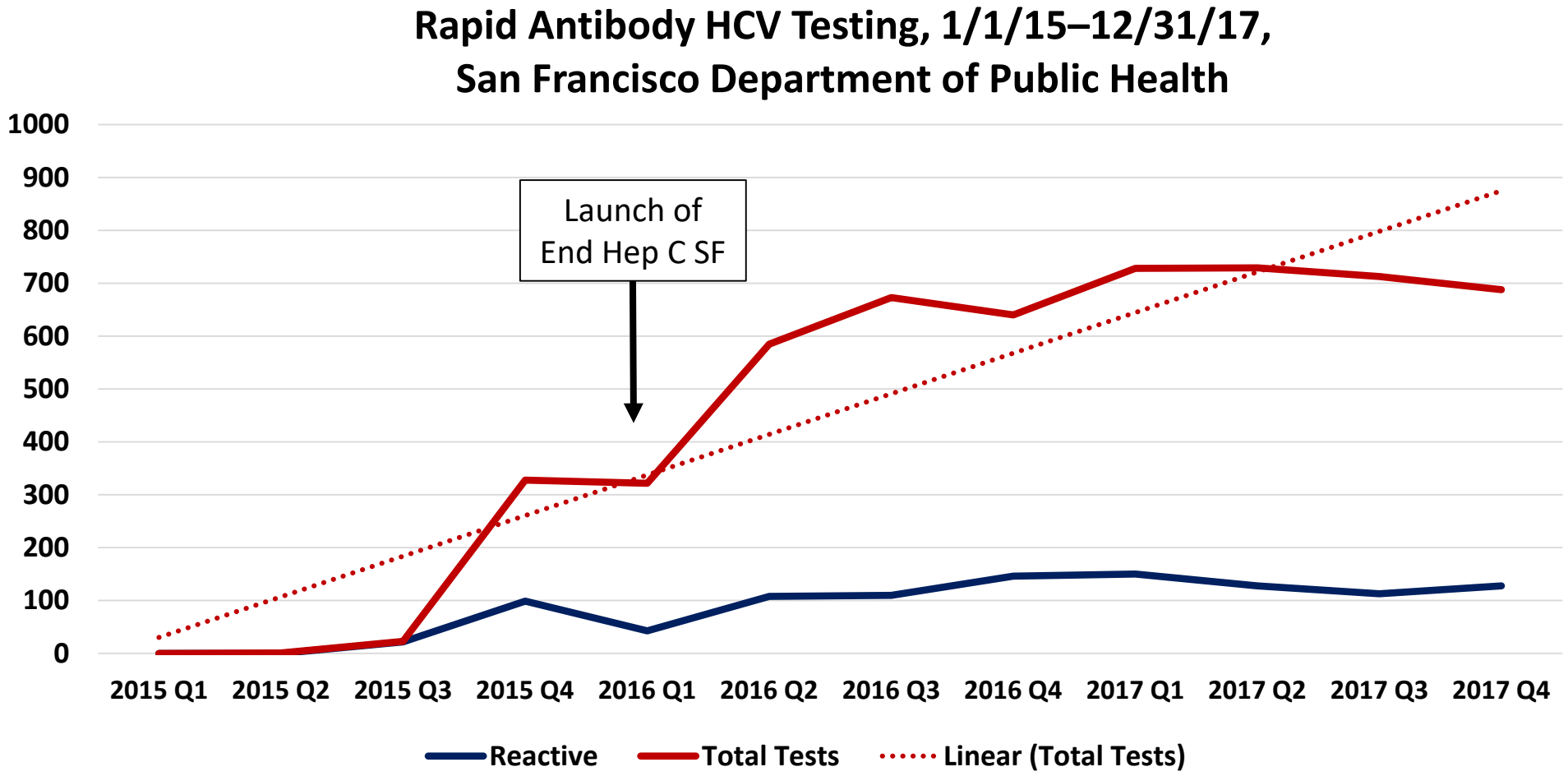
Photos: End Hep C SF, Community meeting 8/3/17

End Hep C SF
Community-based Testing Strategies

- **HIV/HCV rapid testing sites**
  - Syringe exchange programs
  - Shelters
  - Single-room occupancy hotels
  - Residential drug treatment intake
  - Transgender wellness group
- **Lab-based testing**
  - Methadone programs
  - Jails



Increased Community-based Screening



Overall 2017 Antibody Reactivity Rate 18.4%

Raganold, E. SFDPH unpublished data, 2018

Community-based Screening Antibody Reactivity by Risk Factor

Community-based HCV Rapid Tests January 1–December 31, 2017 Reactive Tests (N=519)		
Risk Group	**Percent of Reactives**	**Total Ab+ (N=519)**
IDU ever	92%	478
Ever stimulant smoking	84%	436
Homeless (in past 12 months)	72%	374
Baby Boomer	43%	225
Ever incarcerated	24%	125

In 2017, total number of HCV rapid tests: 2,858

IDU: Injection drug use

Raganold, E. SFDPH unpublished data, 2018

Primary Care-based HCV Treatment Access: Strategy for Scale

- **As of February 2016, 3 components of the capacity-building HCV treatment initiative for primary care physicians in the San Francisco Health Network**
  1. In-person training
  2. eReferral consultation services
  3. Individualized clinic technical assistance

Pre- and Post-Intervention Analysis					
	Pre-intervention (16 months)		Post-intervention (23 months)		Percent Increase
	Total Number	Number per month	Total Number	Number per month	
Total Patients Treated*	**143**	**8.9**	**435**	**18.9**	**112%**
Total Clinics Represented among Treated	**5**	**n/a**	**12**	**n/a**	**140%**

*Five treated cases had no listed PCP

Facente SN, Burk K, Eagen K, et al. *Infectious Disease Clinics of North America* (in press)

HCV Treatment Access Beyond Traditional Clinic Settings: Strategy for Impact

- **Discussions underway to start treatment in inpatient settings, and to restart treatment at the shelter and jail**

Clinic	Number of Treatment Starts	Treatment Completion	Date Treatment Program Initiated
Opiate Treatment Outpatient Program (UCSF)	136	120	August 2016
San Francisco County Jail	100	77	March 2017
Residential Drug Treatment (HealthRIGHT 360)	69	67	January 2016
Syringe Exchange (San Francisco AIDS Foundation)	19	10	August 2017
Street Medicine	12	7	May 2016
Shelter	10	10	Dec 2016
Magnet (Gay Men's Sexual Health Clinic, SFAF)	4	1	June 2017
Total	350	292	

Walton P, Yoshida-Cervantes M, Desruisseau A, Crouch P, Unpublished data, 2018

HCV Resources Needed

- Resources for surveillance to track negative test results, HCV cures
- Additional funding for HCV testing and linkage services for vulnerable populations
- HCV-specific nursing in high-prevalence clinics
- HCV treatment access for jail-based and privately funded populations
- Sustainable funding to support the End Hep C SF initiative

Placing New Mexico on The Path to HCV Elimination

Kimberly Page, PhD, MPH

Professor and Division Chief

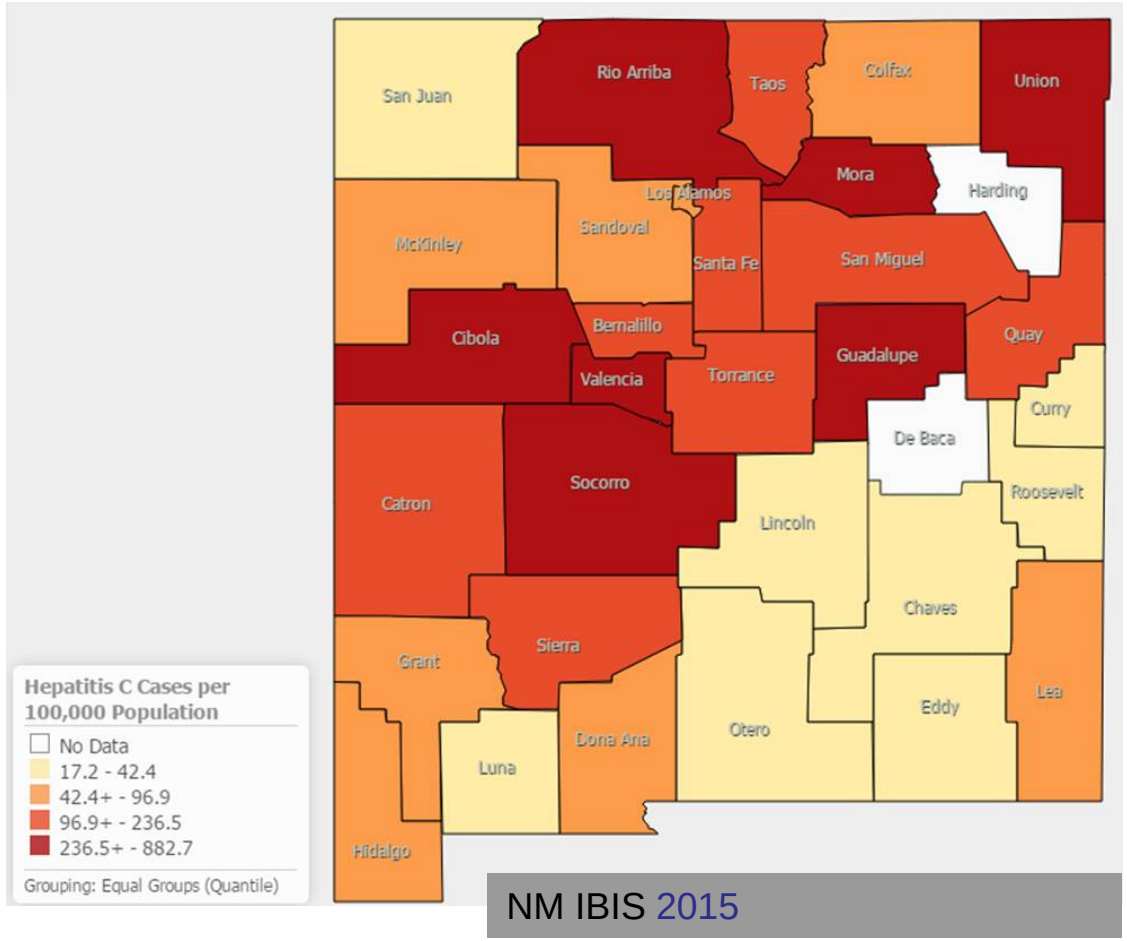
Epidemiology, Biostatistics and Preventive Medicine

University of New Mexico Health Sciences Center

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

High Hepatitis C Virus (HCV) Burden in NM

- **High prevalence and incidence of HCV**
  - 2016 NMDOH*: 53,286 unique individuals with a positive test for HCV in 2016
  - 280.7/100,000 (vs. US 52.3/100,000)++
- **Modeling by using multiple population size sources:#**
  - 53,107 people with HCV infection



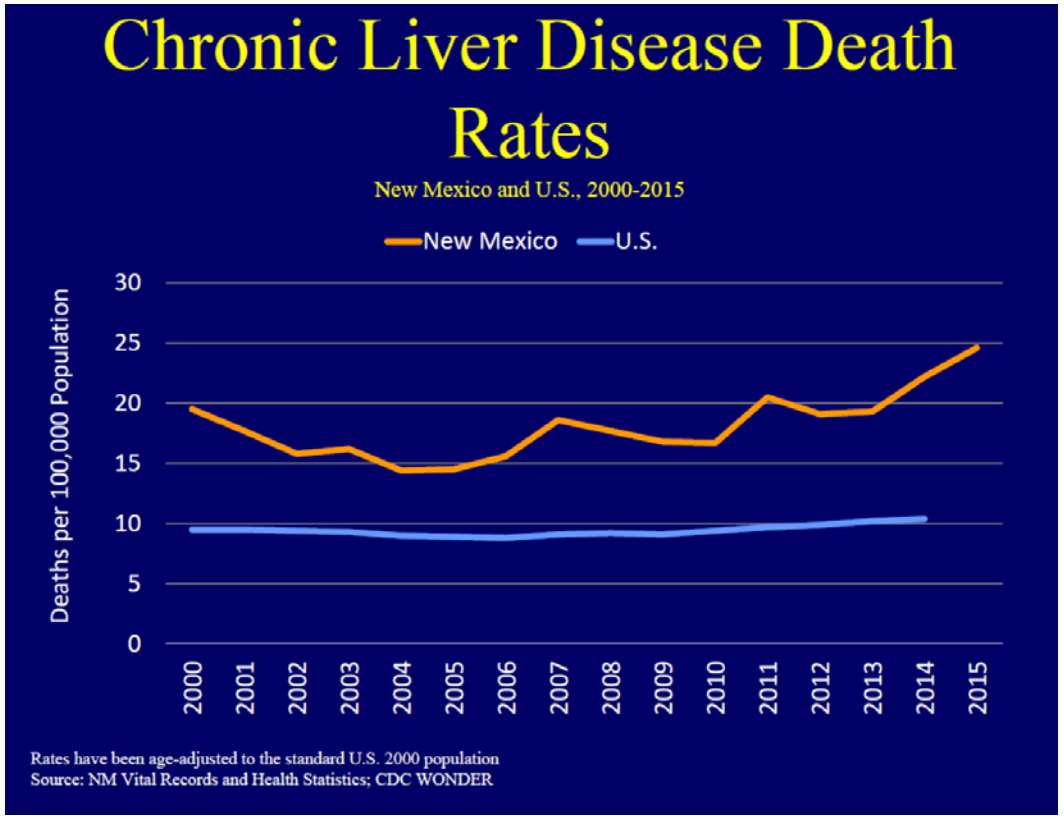
NM IBIS 2015

NMDOH: New Mexico Department of Health *Confirmed and probable past or present HCV cases ++ CDC Enhanced surveillance sites, US 2015

#Denniston et al. 2014; Edlin et al, 2015; Chak et al. 2011; Varan et al. 2014; Strehlow et al.2012; Brillman et al. J 2002; Neumeister et al. 2007

Disproportionate Rates of Liver Disease Morbidity And Mortality in New Mexico

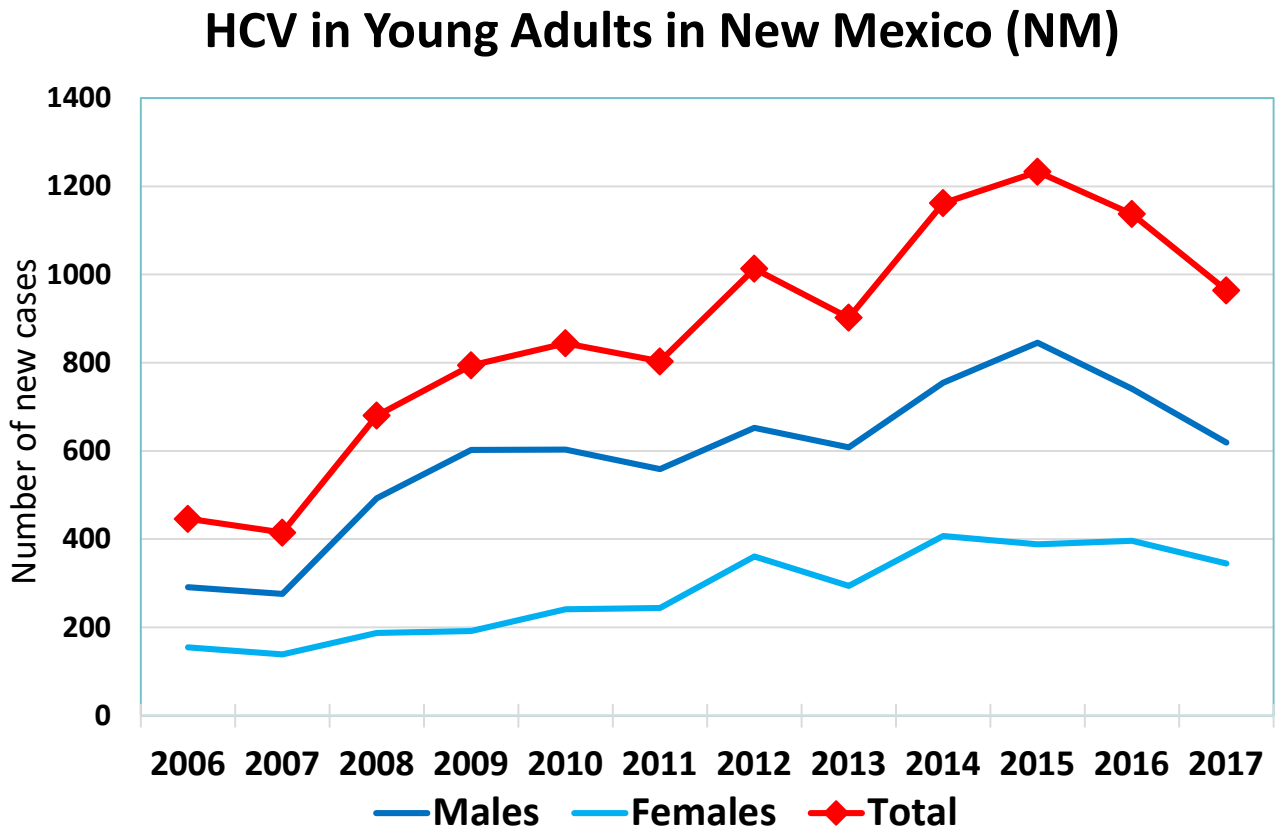
Condition (year)	New Mexico	U.S.
	Age-adjusted/100,000	
Liver disease mortality (2015)	25.0	12.5
HCC incidence or mortality (2012)	8.6	6.2
HCV-related mortality (2104)	10.0	6.0



HCC: Hepatocellular carcinoma

Increasing HCV in Young Adults in NM

- **Following national trends, HCV is increasing among young adults**
  - Significant opioid use in NM
- **Acute HCV cases detected has increased by 40% since 2010**
  - Majority report injection drug use exposure as likely transmission route
  - VÁLE Study of young PWID:
    - 65% have been exposed (anti-HCV positive)
    - 45% are actively infected (HCV RNA-positive)



Young adults: Under 30 years of age

ibis.health.state.nm.us/ accessed on 03/04/2018

Setting HCV Elimination Goals in NM: NM-HEP

- **HCV Elimination Collaborative, initiated in 2016. Stakeholders include:**
  - NM Department of Health
  - University of New Mexico Health Sciences Center, including Project ECHO, and Division of Epidemiology, Biostatistics, and Preventive Medicine
  - NM Department of Corrections
  - Indian Health Service
  - Tri-Core Laboratories
- **Agreed to adopt an "incremental approach" with a targeted population: Medicaid population was prioritized**
  - Other groups identified to focus on: the baby-boomer cohort, children, PWID, American Indians, homeless, and incarcerated populations to inform the "whole"

PWID: People who inject drugs

Program Development, Structure and Workgroups of HCV Elimination Collaborative

Steering Committee

Research and Strategic Information

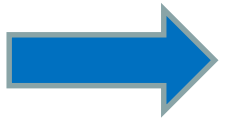
HCV Prevention

HCV Testing and Linkage to Care

HCV Care and Treatment

Public Awareness and Communications

Advocacy, Policy, and Practice



Strategic Planning

Factors that Contribute to Feasibility of HCV Elimination in NM

1. Data: Informed by surveillance and research
2. HCV treatment access: Equitable policies to facilitate treatment
3. Disseminated care model to reach rural areas of NM: Project ECHO
4. Extensive prevention and treatment for PWID: Evidence-based approaches that reduce incidence
5. Department of Corrections: Programs in place

1. Data, Research, and Strategic Information

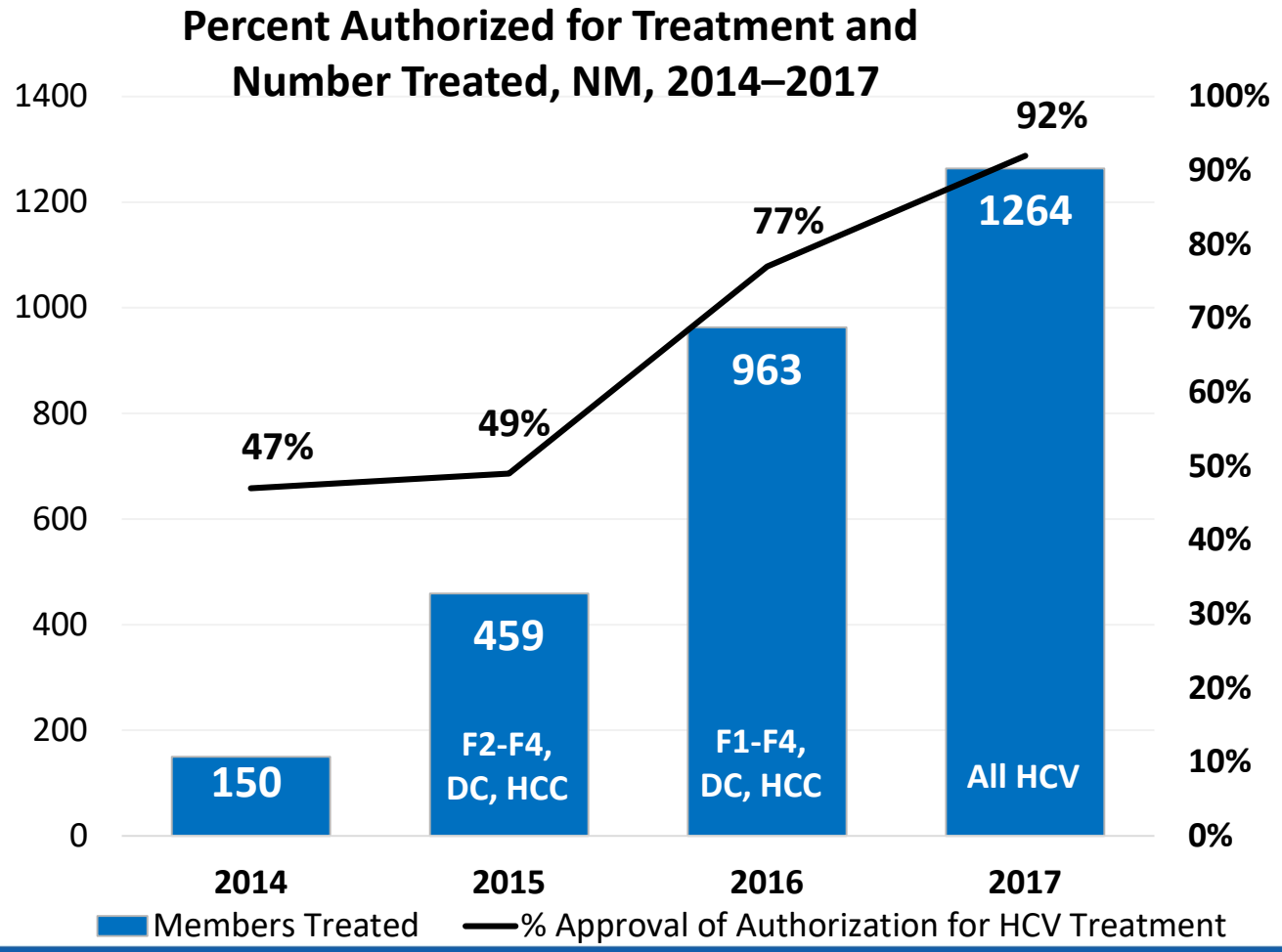
- **Surveillance**
  - NMDOH HCV reporting and surveillance of under 30-year-olds
  - Harm reduction program supported by the NMDOH
- **Research**
  - The VÁLE! Study (1U18PS004568; PI K. Page): Assesses HCV epidemiology and access to prevention and care in young adult (<30 yrs) PWID in two counties
  - HERO study: HCV treatment uptake in PWID in two clinics at UNM
- **Registry**
  - Precedent: Cancer Registry, UNM is custodian for NMDOH
  - Data exists so we are assessing feasibility

NMDOH: New Mexico Department of Health

UNM: University of New Mexico

PWID: People who inject drugs

2. HCV Treatment Is Highly Accessible in NM



- **NM gets an "A" ***
- **47% of NM population covered by Medicaid**
  - Medicaid treatment guidelines as of 2017: no restrictions by disease stage, provider type, or abstinence
- **HCV treatment has increased 8-fold during 2014–2017 and is expected to continue**

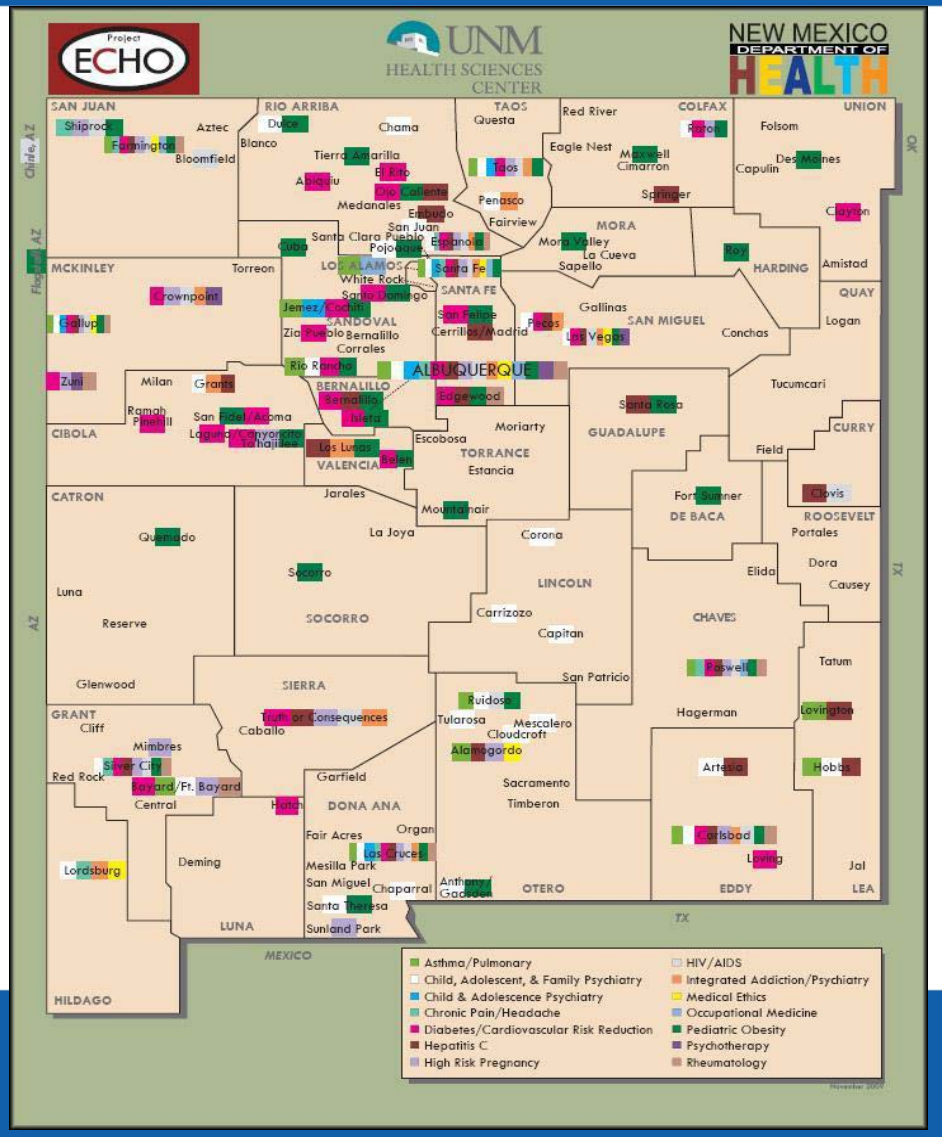
*Harvard Center for Health Law and Policy Innovation

No. of NM Medicaid members treated and percent approval of authorizations at year end for 2014 through 2017

F1-F4: Metavir fibrosis stages 1-4. DC: Decompensated cirrhosis. HCC: Hepatocellular carcinoma

3. Project ECHO: Building Capacity To Disseminate HCV Health Care and Reduce Health Disparities

- **41 sites in HCV teleECHO clinics**
  - ECHO has enabled widespread ramp up of DAA treatment, provider knowledge and experience for working with patients in rural areas.
- **Other teleECHO capacity**
  - Integrated Addiction and Psychiatry program: 99 providers at 41 sites
  - UNM Opioid ECHO: 69 providers at 46 sites
  - Indian Health Service: 37 clinics at 9 IHS/Tribal sites
  - Community health worker: 64 providers at 43 sites



DAA: Direct-acting antivirals

4. HCV Prevention and Treatment: Reduce and Prevent HCV In High Risk Groups

- **Large population of people at risk of HCV due to injection drug use**
  - Using SSP program data and capture-recapture methods, we estimate 20,150 active PWID in New Mexico in 2016
  - At least 60% have HCV, or a minimum of 12,090 persons
- **Programs, policies and research supported and implemented by public health, academic and community partners**
  - NM Department of Health
  - UNM Health Sciences Center: Epi-Biostat-PM, Truman Health Services, Addictions and Substance Abuse Program, Project ECHO
  - Mountain Center, El Centro, Healthcare for the Homeless, Southwest Care

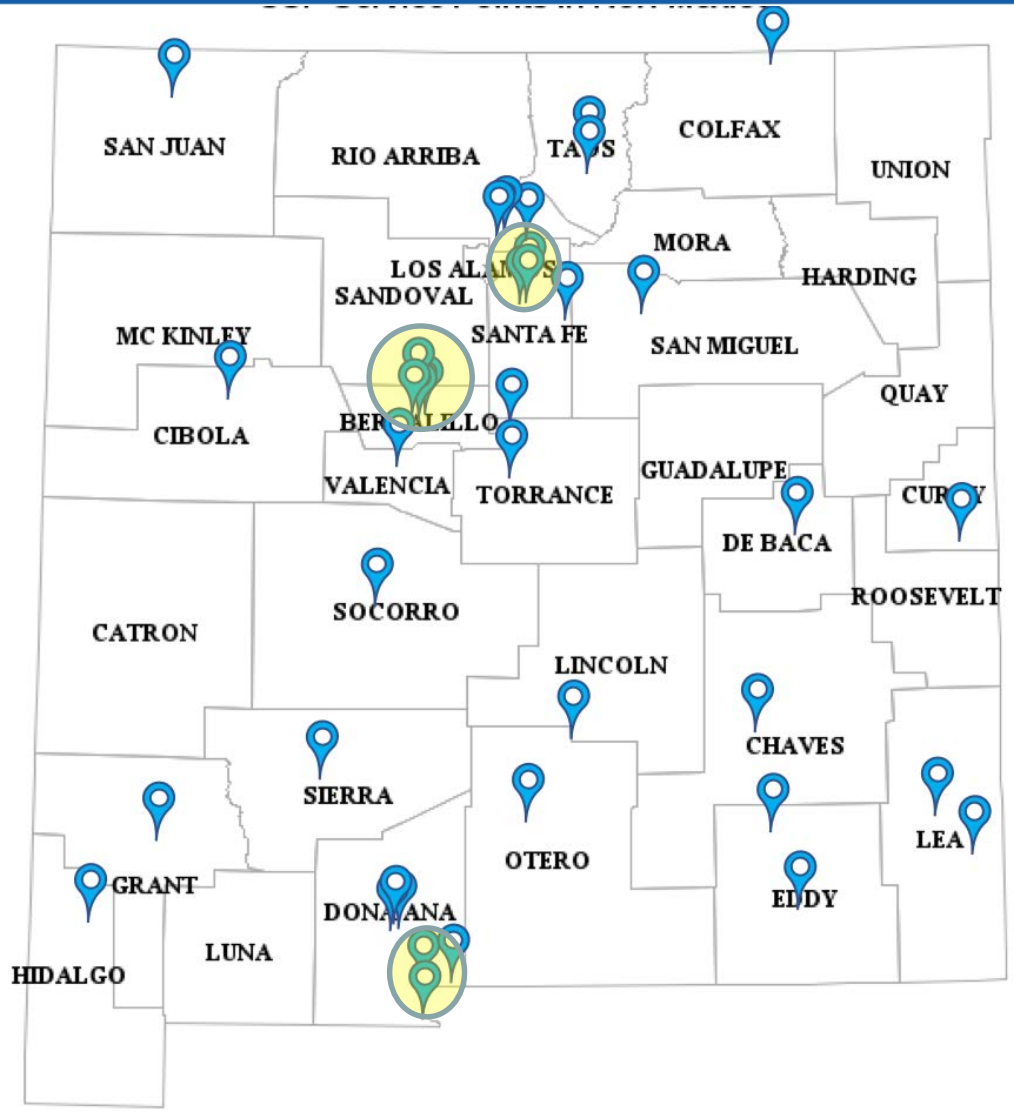
SSP: Syringe services program

PWID: People who inject drugs

Extensive Support and Breadth of Prevention Services

- **Extensive harm reduction services including: Syringe Services Program (SSP), education, health referrals, and naloxone distribution**
  - Yearly distribution of ~6 million syringes through 2017, including rural areas
  - With new polices passed in 2017, over 9 million syringes will be distributed in 2018
- **Medically Assisted Treatment (MAT) programs**
  - Public and private services
  - Project ECHO Integrated Addictions and Psychiatry Program has expanded training for certified buprenorphine providers in underserved areas
- **But –**
  - Wait lists for MAT
  - Other drug use, including methamphetamine, is prevalent

SSP Service Points in New Mexico



SSP Service Points

Urban areas

SSP: Syringe services program

HCV Treatment for PWID

- **For people who inject drugs (PWID), HCV treatment can break the cycle of transmission**
  - Estimated 20,150 active PWID in NM in 2016
  - At least 60% have HCV, over 12,000 people
- **90% of young adult PWID report having medical insurance, making HCV treatment accessible in this high risk group**
  - However, compared to older PWID, they are not accessing treatment
- **New methods needed to educate and deliver treatment to this group**

HCV Treatment for PWID… *and more research needed*

- **Ongoing treatment research – HERO Study**
  - HCV treatment in active PWID at community and MAT sites, randomized to mDOT or Patient Navigation

- **HCV vaccine research – VIP Study – results in Nov. 2018**

HERO is funded by Patient-Centered Outcomes Research Institute (PCORI) Award HPC-1503-28122 with additional support by Gilead Sciences, Quest Diagnostics, Monogram Biosciences, and OraSure Technologies

VIP is funded by NIAID/DMID HHSN2662040074C, Clinicaltrial.gov ID: NCT01436357

5. New Mexico Corrections Department

- **Currently 7,327 people incarcerated in NM (February 2018)**
  - 6,524 men; 803 women
- **Universal screening for HCV at entry 2009–2017**
  - 27,994 unique individuals were screened for anti-HCV
  - 11,514 anti-HCV positive: 41.13%
  - 1,540 found to be anti-HCV positive while incarcerated
- **HCV treatment: 106 patients (August 1, 2015 to December 30, 2017)**
- **Prevention: New Mexico Peer Education Project**

Strategic Planning for HCV Elimination

- **Strategic Planning Committee representing academia, public health department, and community, drafting strategic plan, including**
  - Defined measures, strategies, and indicators of success
  - Metrics for each workgroup
- **New Mexico HCV elimination website in development**
- **Financing: This remains a large gap and challenge for our overall effort**

Goal Setting Is In Progress …

2016

Baseline Estimates

2023

Measurable increases in prevention and treatment

2030

80% reduction in incidence, chronic HCV and mortality

By 2030, We Aim To:

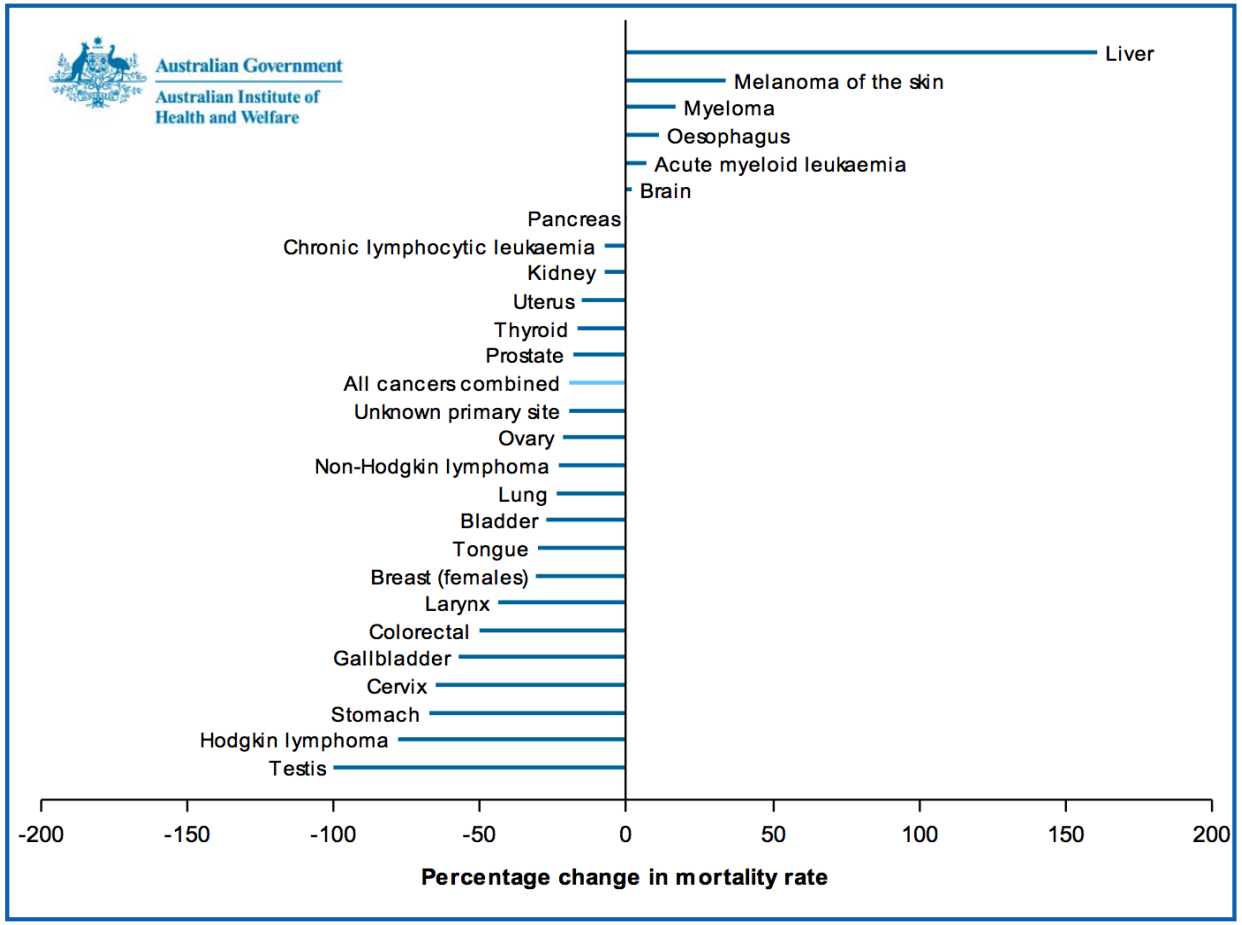
National Progress toward Hepatitis B and Hepatitis C Elimination in Australia

Benjamin C. Cowie MBBS, PhD, FRACP

Director, WHO Collaborating Centre for Viral Hepatitis, Doherty Institute,
Physician, Royal Melbourne Hospital and University of Melbourne

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

Percentage Change in Age-standardised Cancer Mortality Rates, Australia, 1982–2014



- In 2016, estimated 2% of Australians living with chronic viral hepatitis
- GBD 2016 mortality estimates for Australia
  - Chronic hepatitis B – 900 deaths
  - Chronic hepatitis C – 1,100 deaths
  - HIV/AIDS – 74 deaths
- Liver cancer is now the 6th most common cause of cancer deaths of Australians
- Low 5-year survival – 16%, compared with 67% for all cancers

GBD: Global burden of disease

www.aihw.gov.au/getmedia/f6e80a97-a8a3-4709-bcc3-ea3d76175c31/18302.pdf

Brown CR, Allard NL, MacLachlan JH & Cowie BC. *Int Med J* 2017;47(5); GBD 2016 Causes of Death Collaborators. *Lancet*. 2017 Sep 16;390(101000

How Can We Increase Access to Treatment And Care for Chronic Viral Hepatitis to Reverse The Increasing Mortality Burden?

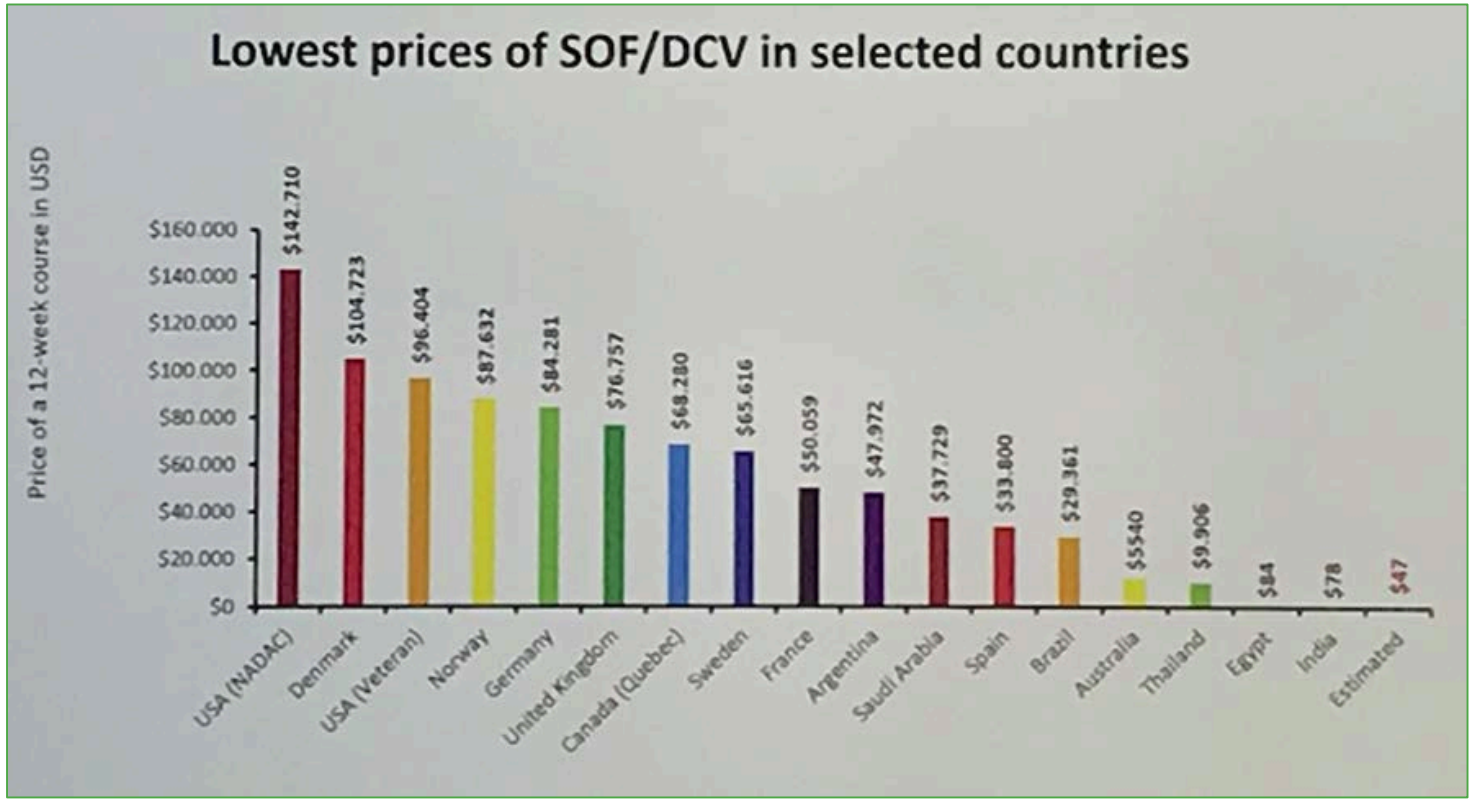
- **Example: Innovative financing solutions for HCV DAAs**
  - After repeated rejections and intense negotiations between pharmaceutical companies and the Australian Government, the first DAA regimens were listed on national pharmaceutical benefits scheme (PBS)
  - For treatments listed on the PBS, for each month of treatment, the total co-payment by the patient is USD $30; for concessional patients, it is $5
  - Competitive pricing agreed with pharmaceutical companies; innovative risk-share 'cap' arrangement
    - Cost to the PBS is USD $6,000–$7,500 per course
    - Lowest price-per-cure in the OECD – e.g., some European national health insurance programs paid more than 10 times as much per cure as Australia

DAA: Direct-acting antivirals

OECD: Organisation for Economic Co-operation and Development

Dore GJ. & Grebely, J. *J Hepatol*. 2017 Aug;67(2):419-420

Comparative Prices of Sofosbuvir and Daclatasvir Per 12-week Course



Andrew Hill at World Hepatitis Summit, 2017:

Huge variation in list prices –

- <$ 100 in India and Egypt
- $ 6,000 in Australia
- $50,000 in France
- $77,000 in the UK
- $96,000 in the USA

Hill, A. Presented at: World Hepatitis Summit, São Paulo, 2017

How Has This Financing Arrangement Influenced Models of Care?

- **Strong financial incentive for Government to liberalise access to CHC care**
  - Any doctor can prescribe—not restricted to specialists
    - Most scripts now written by nonspecialists
  - Any stage of liver disease
  - Treatment in prisons, treatment of active injectors, re-treatment all funded
  - Funding for workforce training, community groups, surveillance and monitoring
  - Still some gaps—regional areas, Indigenous Australians
- **How does this compare with CHB?**
  - Treatment on PBS, monitoring (with some restrictions) also fully reimbursed
  - Specialist model—training and certifications for General Practitioners
  - Limited community awareness and engagement

CHC: Chronic hepatitis C

PBS: Pharmaceutical benefits scheme

Need to Ensure Continued Focus on Prevention
Keep Downward Pressure on Incidence While Reducing Prevalence

- **Harm reduction relatively strong in Australia**
  - Funded needle and syringe programs, opiate replacement therapy
  - Medically supervised and safe injecting rooms in Sydney and soon in Melbourne
  - Funded peer-support organizations for people who inject drugs
  - No NSPs in prisons
  - Need to ensure continued focus on ‘turning off the tap’
- **Free hepatitis B vaccination in addition to infant program**
  - Broad range of funded indications on a jurisdictional basis
  - Supported by subsidized or free primary care via national insurance

NSP: Needle syringe programs

Australian Cascade of Care for Chronic Hepatitis B

Figure 11: CHB cascade of care, Australia, 2016

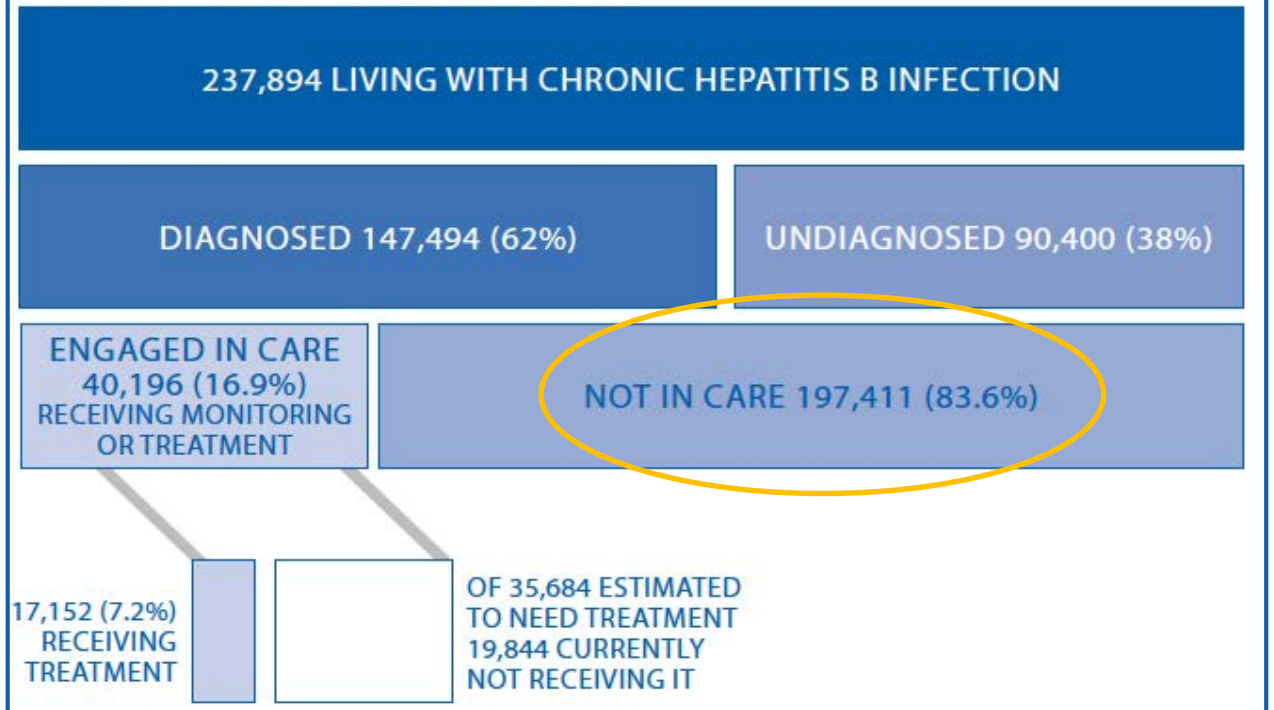


Table 4: Diagnosis, treatment, and immunisation targets in Australia's National Strategy for Hepatitis B 2014–2017

Indicator	2014 level	2015 level	2016 level	Target
Diagnosis	62%	62%	62%	80%
Treatment	6%	6%	7%	15%
Immunisation	91%	93%	94%	95%

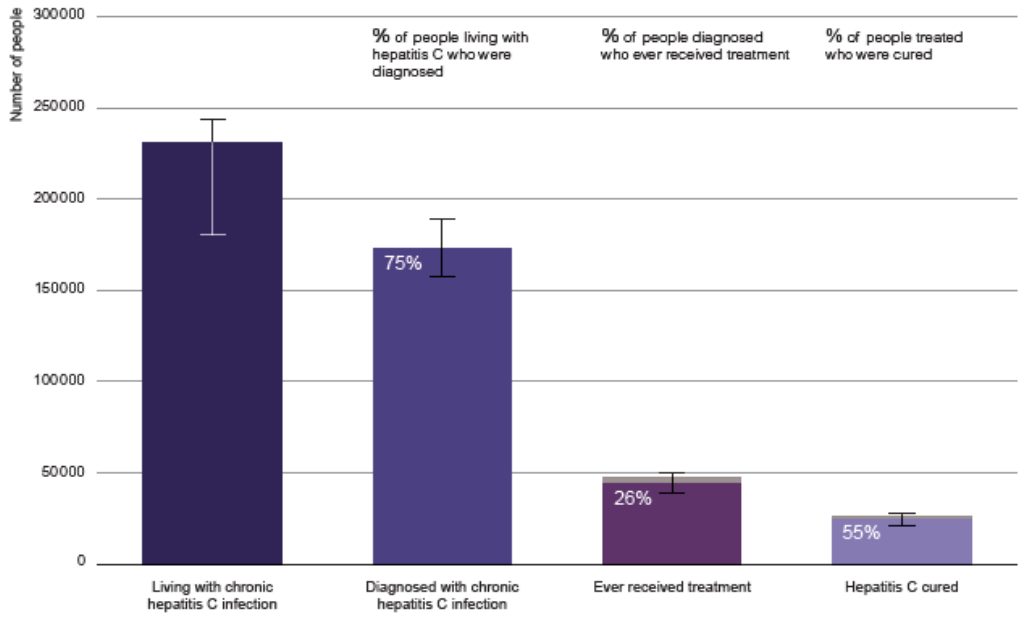
Immunization levels are approaching the 95% goal.

However, for people living with CHB, over 80% are not in care and little to no improvement since 2014.

Hepatitis B Mapping Project:
4th National Report, 2018
www.ashm.org.au/HBV/hepatitis-b-mapping-reports/

Australian Cascade of Care – Chronic Hepatitis C

Figure 47 The 2014 hepatitis C diagnosis and care cascade



Cascade stage	Estimate (range)	2014 estimate
Living with chronic hepatitis C infection*	230 470 (180 490 – 243 990)	
Diagnosed with chronic hepatitis C infection	172 932 (157 055 – 188 865)	
Ever received hepatitis C treatment	44 405 (38 811 – 49 999)	2 790
Hepatitis C cured	24 543 (21 426 – 27 659)	1 693

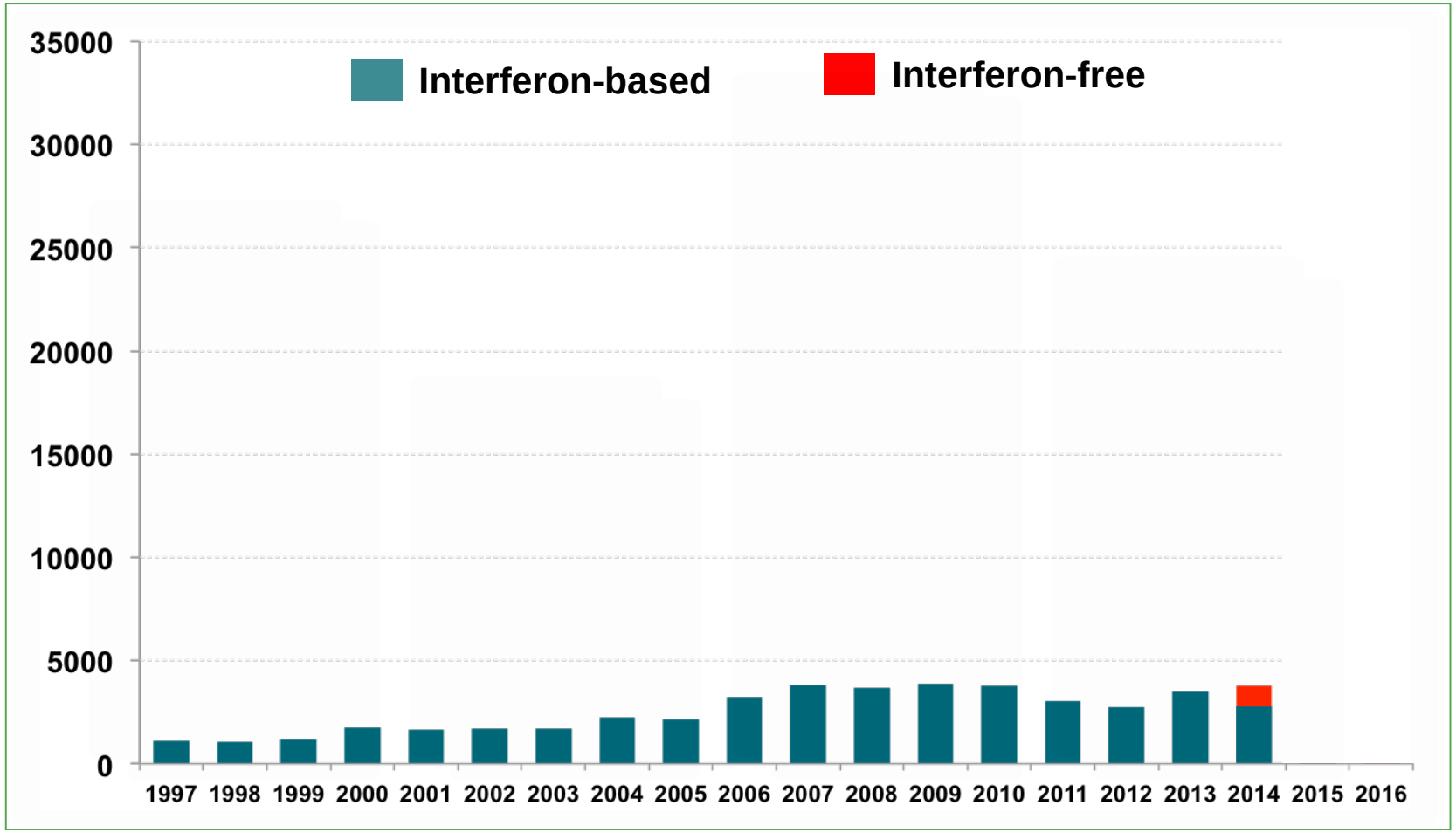
- **Before DAAs became available on the PBS (1st March 2016)**
  - Relatively high proportion diagnosed, ~ 75%
  - <60% of those diagnosed had HCV RNA testing
  - 1–2% of people living with hepatitis C treated per annum—significantly lower than estimated number of new infections each year

DAA: Direct-acting antivirals

PBS: Pharmaceutical benefits scheme

kirby.unsw.edu.au/report-type/annual-surveillance-report

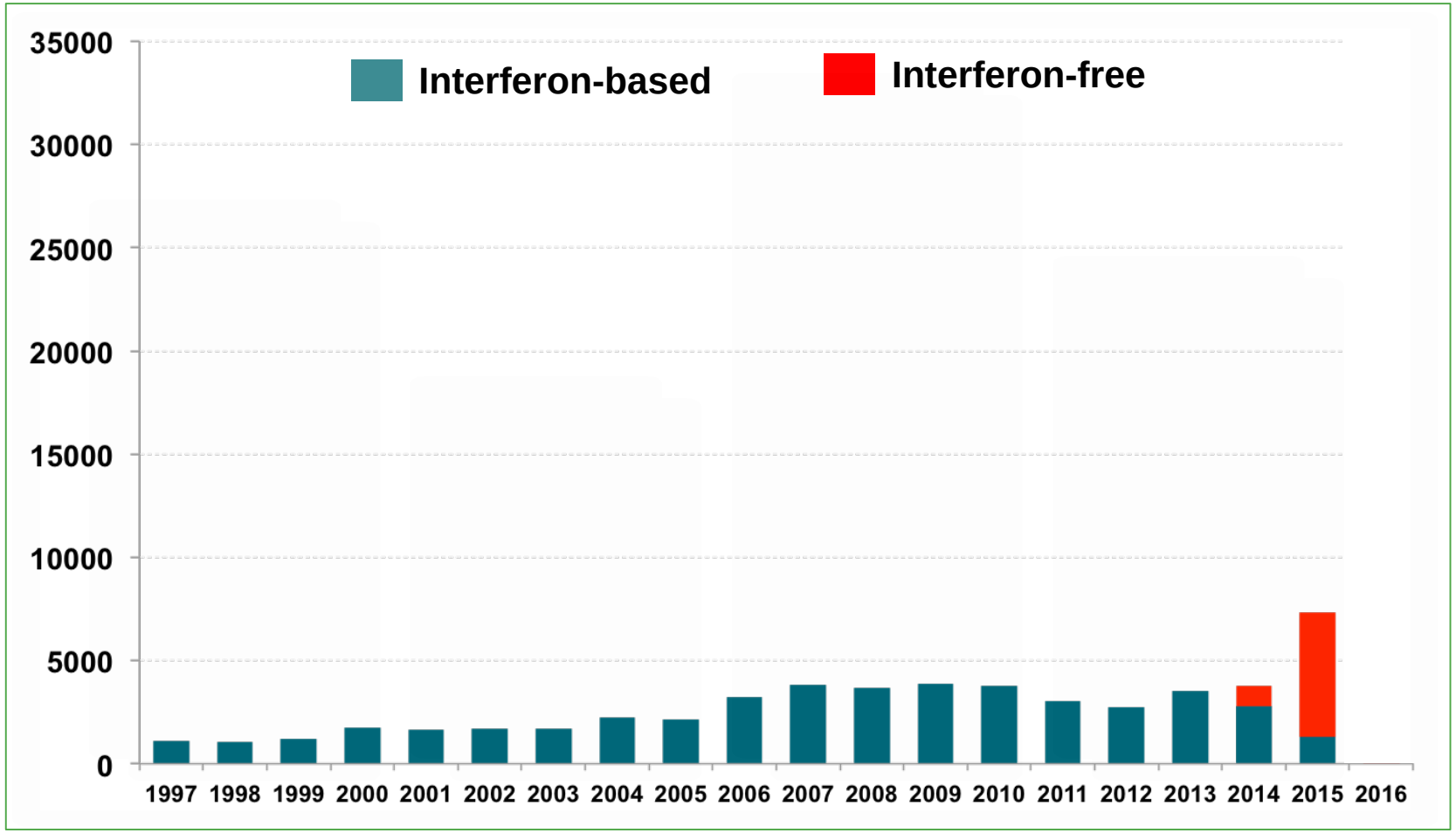
Australian Cascade of Care for Chronic Hepatitis C



Hajarizadeh B, Grebely J, Martinello M, et al. *Lancet Gastroenterol Hepatol.* 2016 Dec;1(4):317-327

Slide credit: Dore, G. Kirby Institute, UNSW

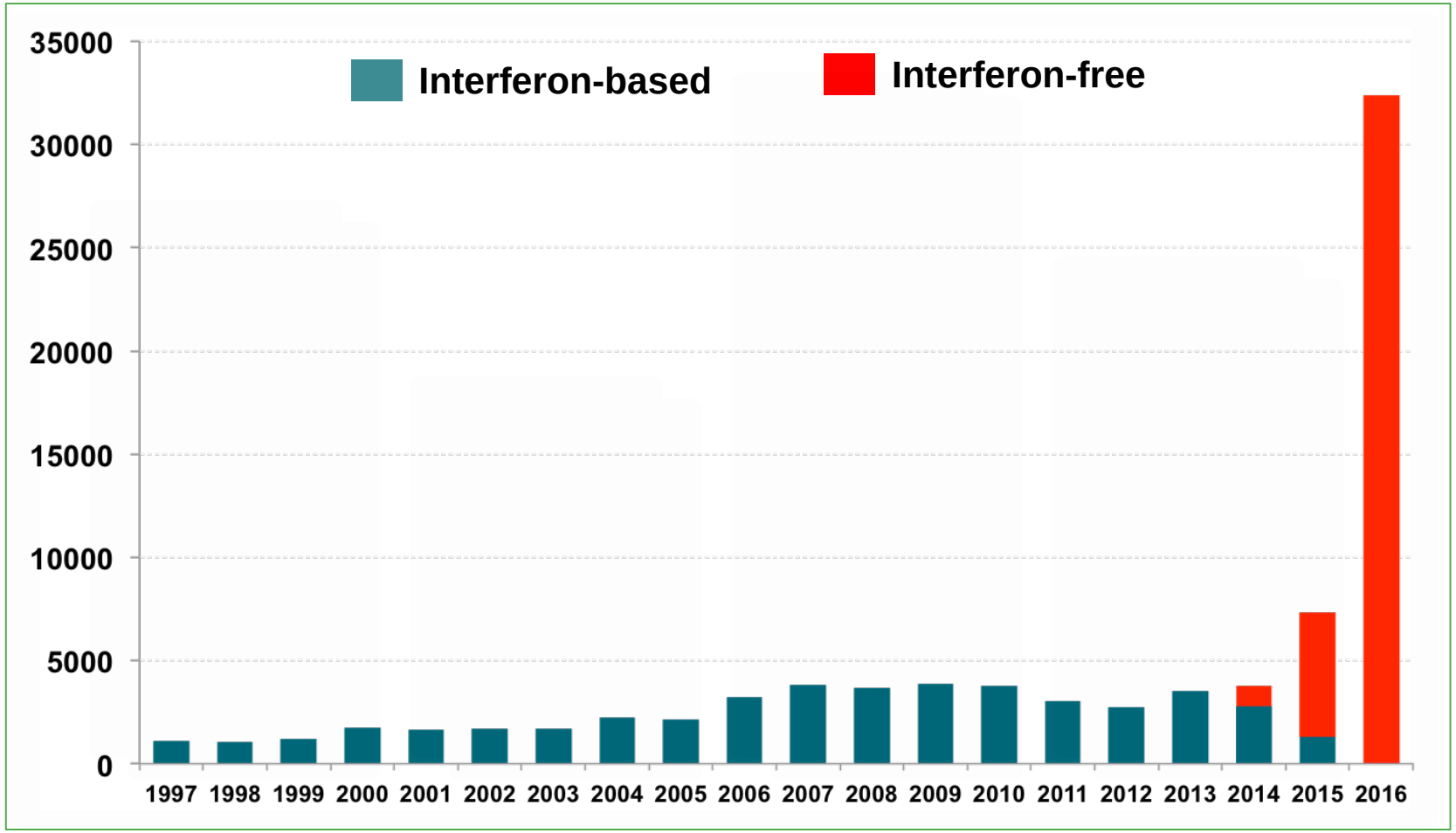
Australian Cascade of Care for Chronic Hepatitis C



Hajarizadeh B, Grebely J, Martinello M, et al. *Lancet Gastroenterol Hepatol.* 2016 Dec;1(4):317-327

Slide credit: Dore, G. Kirby Institute, UNSW

Australian Cascade of Care for Chronic Hepatitis C



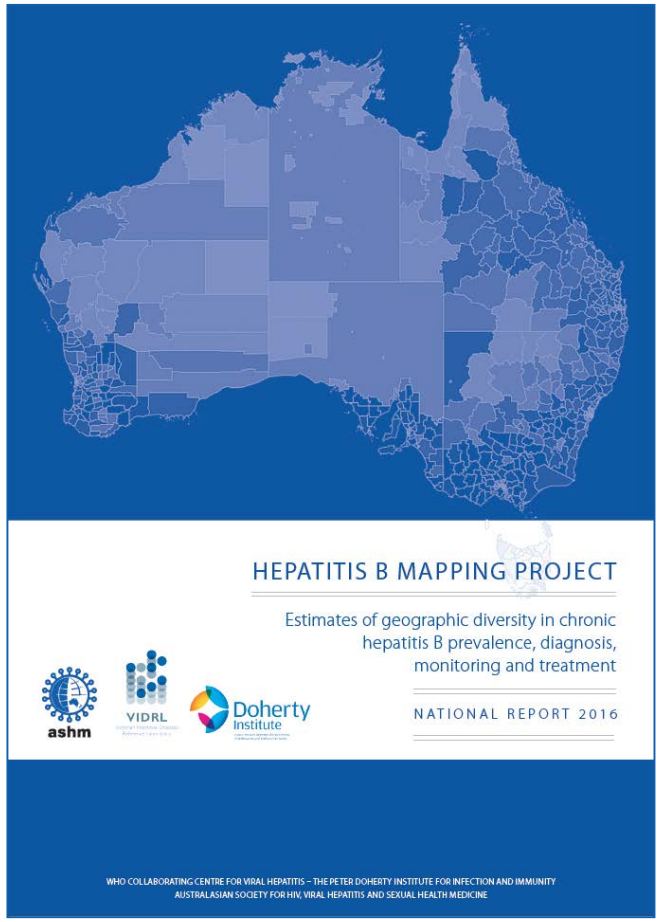
32,550 treated, ~14% of all Australians living with chronic hepatitis C, in 1st ten months of program

Hajarizadeh B, Grebely J, Martinello M, et al. *Lancet Gastroenterol Hepatol.* 2016 Dec;1(4):317-327

Slide credit: Dore, G. Kirby Institute, UNSW

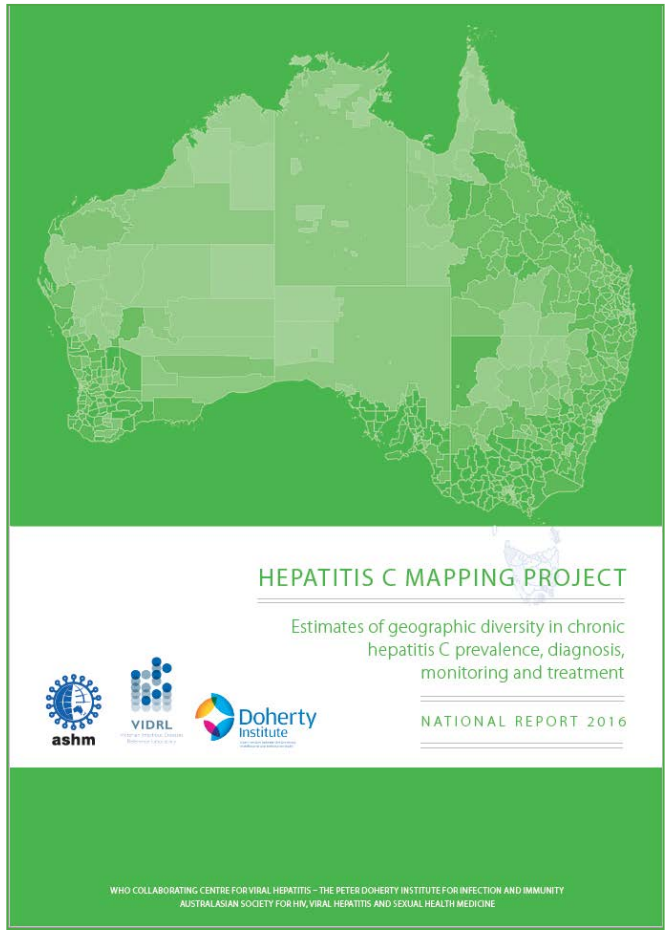
National Viral Hepatitis Mapping Project

Hepatitis B Mapping Project: 4th National Report, 2018



www.ashm.org.au/HBV/hepatitis-b-mapping-reports

Hepatitis C Mapping Project: 1st National Report, 2018



www.ashm.org.au/HCV/hepatitis-c-mapping-reports

Mapping Chronic Hepatitis C in Australia

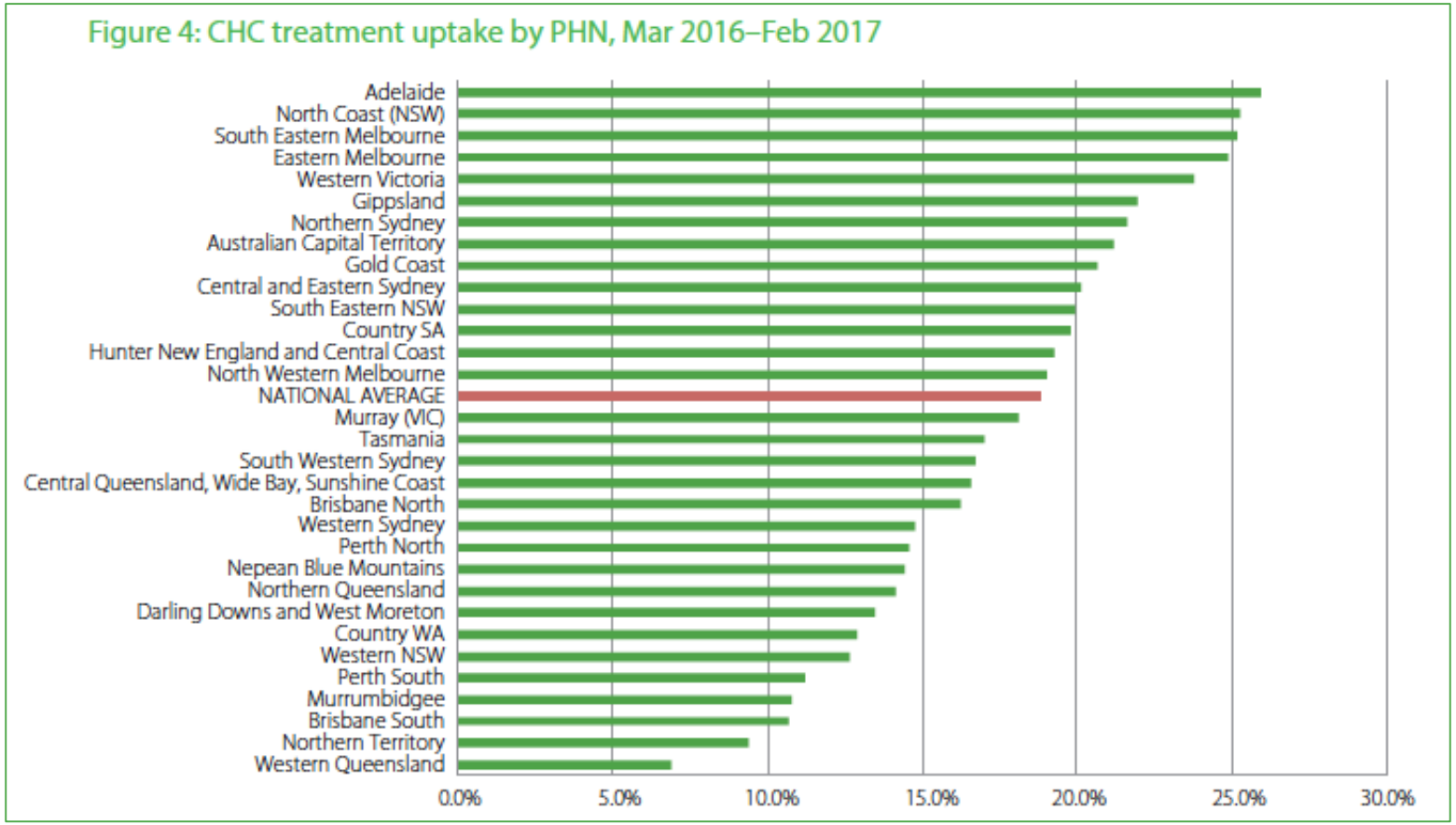


Figure 1: Heat map of CHC prevalence, diagnosis and treatment uptake uptake by Primary Health Network, 2016 (green = lowest; red = highest)

	PREVALENCE	DIAGNOSIS	TREATMENT
Primary Health Network	Proportion of the population living with CHC	CHC notification rate per 100,000	Proportion of people with CHC who received treatment
Northern Territory	1.87%	80.3	9.4%
Western NSW	1.64%	71.1	12.6%
North Coast (NSW)	1.57%	90.4	25.3%
Northern Queensland	1.30%	56.0	14.1%
Brisbane South	1.28%	55.1	10.7%
Murrumbidgee	1.26%	74.5	10.8%
Western Queensland	1.23%	45.6	6.9%
Darling Downs and West Moreton	1.10%	46.8	13.5%
Central Queensland, Wide Bay, Sunshine Coast	1.09%	52.6	16.6%
South Eastern NSW	1.09%	55.6	19.9%
Country WA	1.08%	53.0	12.9%
Hunter New England and Central Coast	1.05%	60.9	19.3%
Tasmania	1.04%	45.2	17.0%
Central and Eastern Sydney	1.03%	44.5	20.1%
Gippsland	1.01%	51.7	21.9%
South Western Sydney	0.99%	46.9	16.7%
Murray (VIC)	0.98%	54.9	18.1%
Perth South	0.97%	45.0	11.2%
Gold Coast	0.97%	46.2	20.7%
Nepean Blue Mountains	0.94%	41.6	14.4%
North Western Melbourne	0.94%	45.4	19.0%
NATIONAL AVERAGE	**0.94%**	**53.9**	**18.8%**

www.ashm.org.au/HCV/hepatitis-c-mapping-reports/

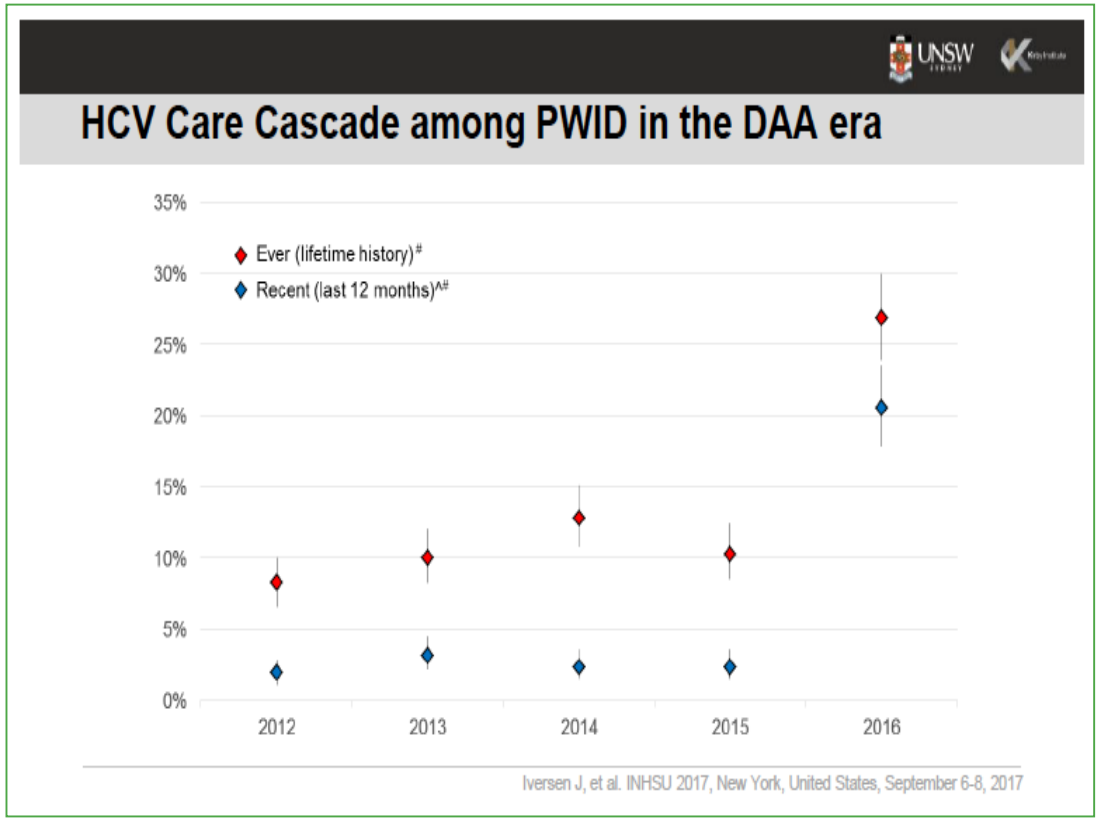
Treatment Towards Elimination in Priority Populations

PWID attending NSPs

- Treatment uptake in 1st 6 months higher among PWID (20%) than in general population living with HCV (14%)
- Viraemic prevalence fell from 45% to 32%, 2015-2016

Prison-based treatment

- HCV virtually eliminated in 3 prisons in North Queensland by 2018
- 98% of prisoners in main prison in Canberra initiated treatment since April 2016



NSP: Needle and syringe programs

Bartlett SR, Fox P, Cabatingan H, et al. *Clinical Infectious Diseases*, 12 March 2018

Iversen J, et al. Presented at: INHSU 2017, New York, United States, September 6-8, 2017

Is Australia on Track to Achieve The WHO 2030 Viral Hepatitis Elimination Targets?

- **Modeling by the Kirby Institute suggests YES for hepatitis C**
- **For hepatitis B, NO**
  - Substantial scale-up in diagnosis, care, treatment will be required
  - Beyond 2030, impact of overseas infant vaccination programs will be significant
- **What can these two trajectories tell us about steps needed for achieving elimination goals?**

Estimated year Australia Meets Each World Health Organization Target Compared to 2015 estimates

	Treatment Scenario		
WHO Target	Pessimistic	Intermediate	Optimistic
80% reduction in new chronic infections	**2028**	**2026**	**2023**
80% of people living with chronic HCV treated	**2031**	**2026**	**2021**
65% reduction in HCV-related deaths	**2029**	**2024**	**2021**

Adapted from Kwon A, Dore G, & Grebely J. Presented at AVHEC 10/08/2017

An Australian Perspective on How to Achieve Elimination

- **Continued focus on prevention including harm reduction needed**
- **Reduce costs of care – consultations, diagnostics, treatment**
  - Universal health coverage
- **Community-based, primary care focus of treatment essential**
- **Engagement with those most affected is crucial**
- **Innovative methods to assess coverage, areas where response is lagging, and implement widely that which is working**
- **Global solutions essential—no country will eliminate in isolation**

Forging Global Partnerships to Eliminate Viral Hepatitis

World Hepatitis Report 2017, World Health Organization
www.who.int/hepatitis

Working Together to Eliminate the Threat of Hepatitis B and C

April 17, 2018

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention