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DISCLOSURES

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Upon successful completion of this activity 1 contact hour will be awarded

Successful completion of this continuing education activity includes the following:

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If you have any questions about this CE activity, contact Michelle Daugherty at mdaugherty@cardeaservices.org or (206) 447-9538



CONFLICT OF INTEREST

Dr. Jorge Mera is director of a program partially funded by Gilead.

None of the other planners or presenters of this CE activity have any relevant financial relationships with any commercial entities pertaining to this activity.



Acknowledgement

This presentation is funded in part by:

The Indian Health Service HIV Program
and

The Secretary's Minority AIDS Initiative Fund



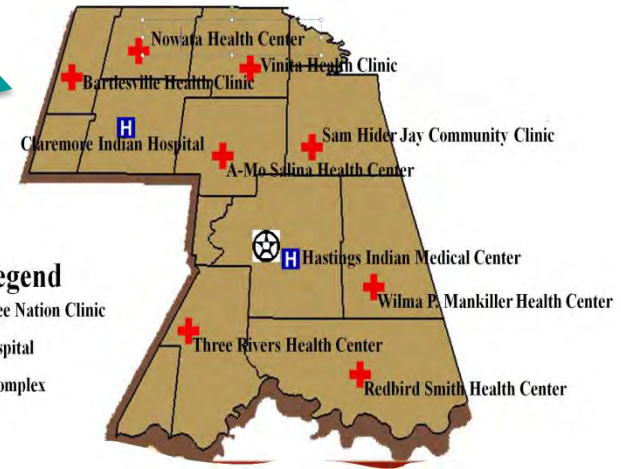
Cherokee Nation Health Services HCV Elimination Program

Jorge Mera, MD, FACP

American Indian/Alaskan Natives

- 566 Federally recognized tribes
- **In 2013, ~ 5.2 million AI/AN living in the U.S.**
- Largest tribes
 - Navajo, Cherokee, Choctaw, Chippewa, Sioux, Apache, Blackfeet
- **States with largest populations of AI/AN**
 - Oklahoma, New Mexico, South Dakota, Montana

Cherokee Nation Jurisdiction and Health Services



- **Sovereign Nation within a Nation**
- **2nd largest Indian Nation (~350,000 citizens)**
- **Tripartite government**
- **14 county area (over 9,200 sq mi.)**
- **Capitol located in Tahlequah, Oklahoma**

- **Largest Tribal Health System in the USA**
- **One central hospital and 8 outlying clinics**
- **Medically serves 130,00 AI/AN**
- **4.7 million patient visits between 2009 – 2014**
- **Unified electronic health record.**

AI/AN: American Indian/Alaskan Native

Source: Cherokee Nation Health Services, 2018

HCV in the CNHS: Historical Trauma and Cultural Disconnection

HCV in the CNHS: Historical Trauma and Cultural Disconnection

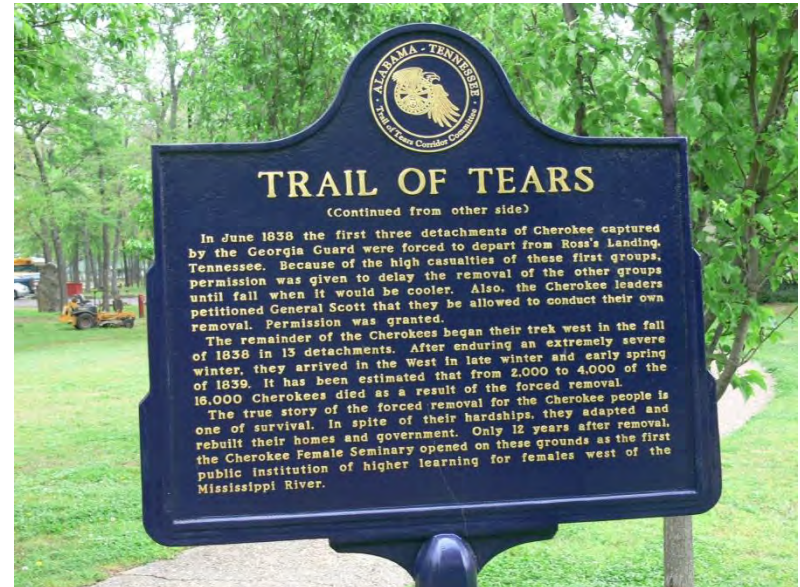
THE CHEROKEE TRAIL OF TEARS

The forced removal of more than 15,000 Cherokee from the eastern U.S. to Oklahoma resulted in the deaths of thousands. Fort Armistead, near Coker Creek in Monroe County, was used as a collection point along the historic Unicoi Turnpike.



Source: National Park Service

NEWS SENTINEL



Linkage to Care

Screening

Quality of Care

HCV

Unsafe Medical Practices

IVDU

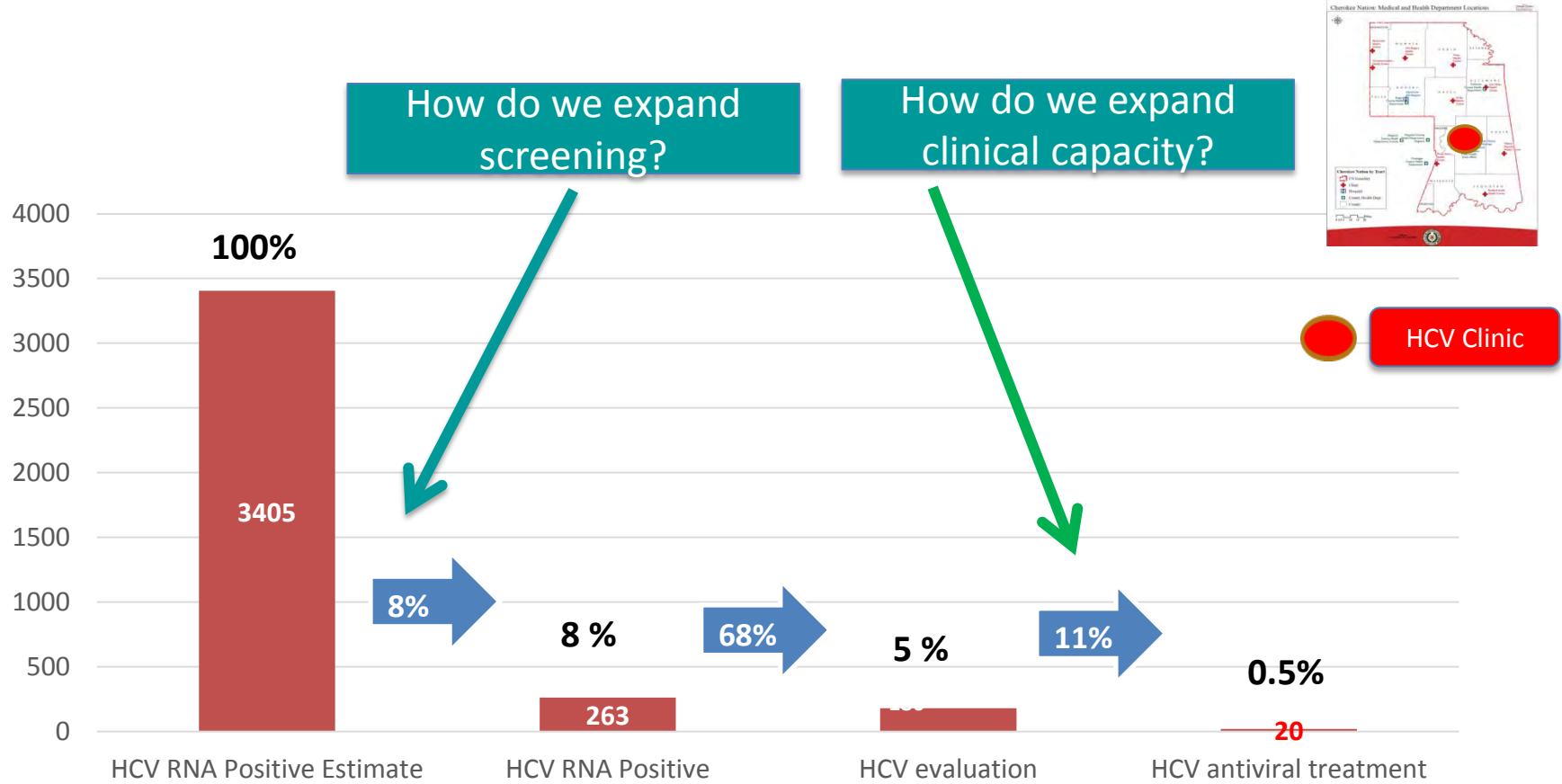
Harm Reduction Strategies

Prevention

Poverty
Domestic Violence
Mental Illness
Historical Trauma*
Cultural Disconnection
others

*Maria Yellow Horse Brave Heart
Journal of Psychoactive Drugs Vol. 35, Iss. 1, 2003

CNHS HCV Cascade of Care 2013*

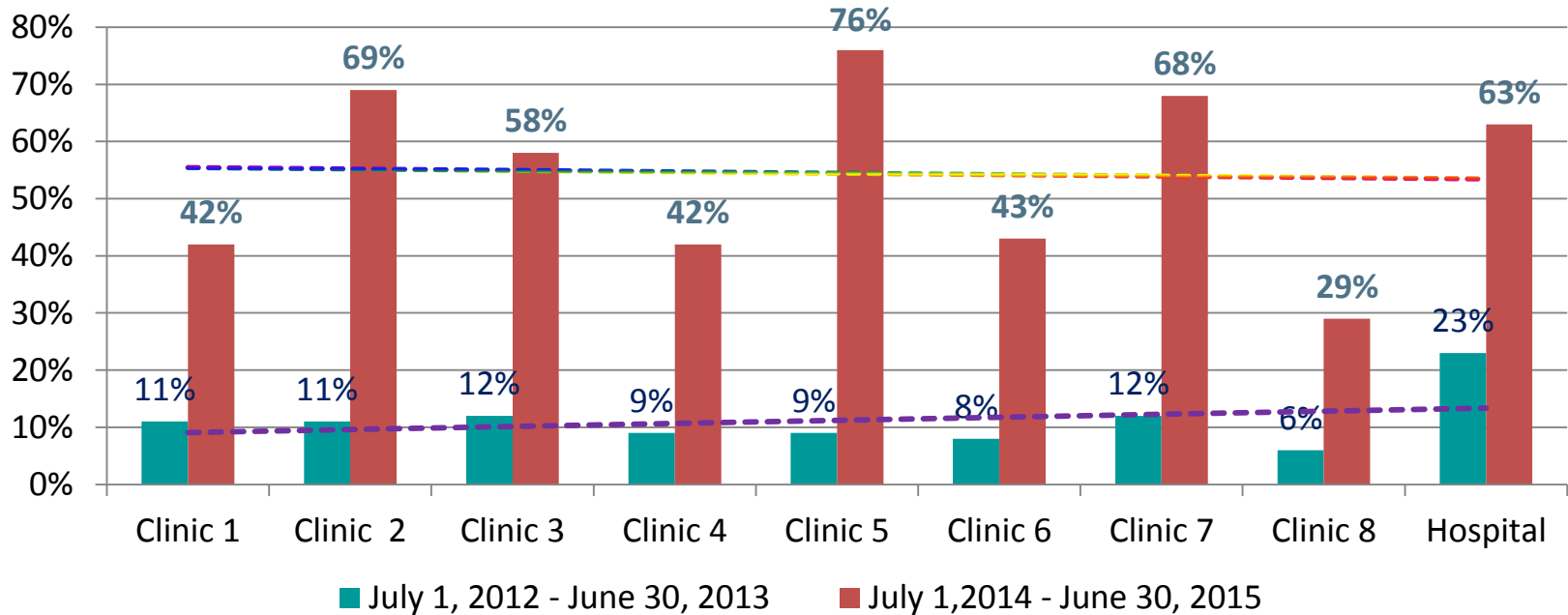


*Preliminary data

Cherokee Nation Health Services 2013

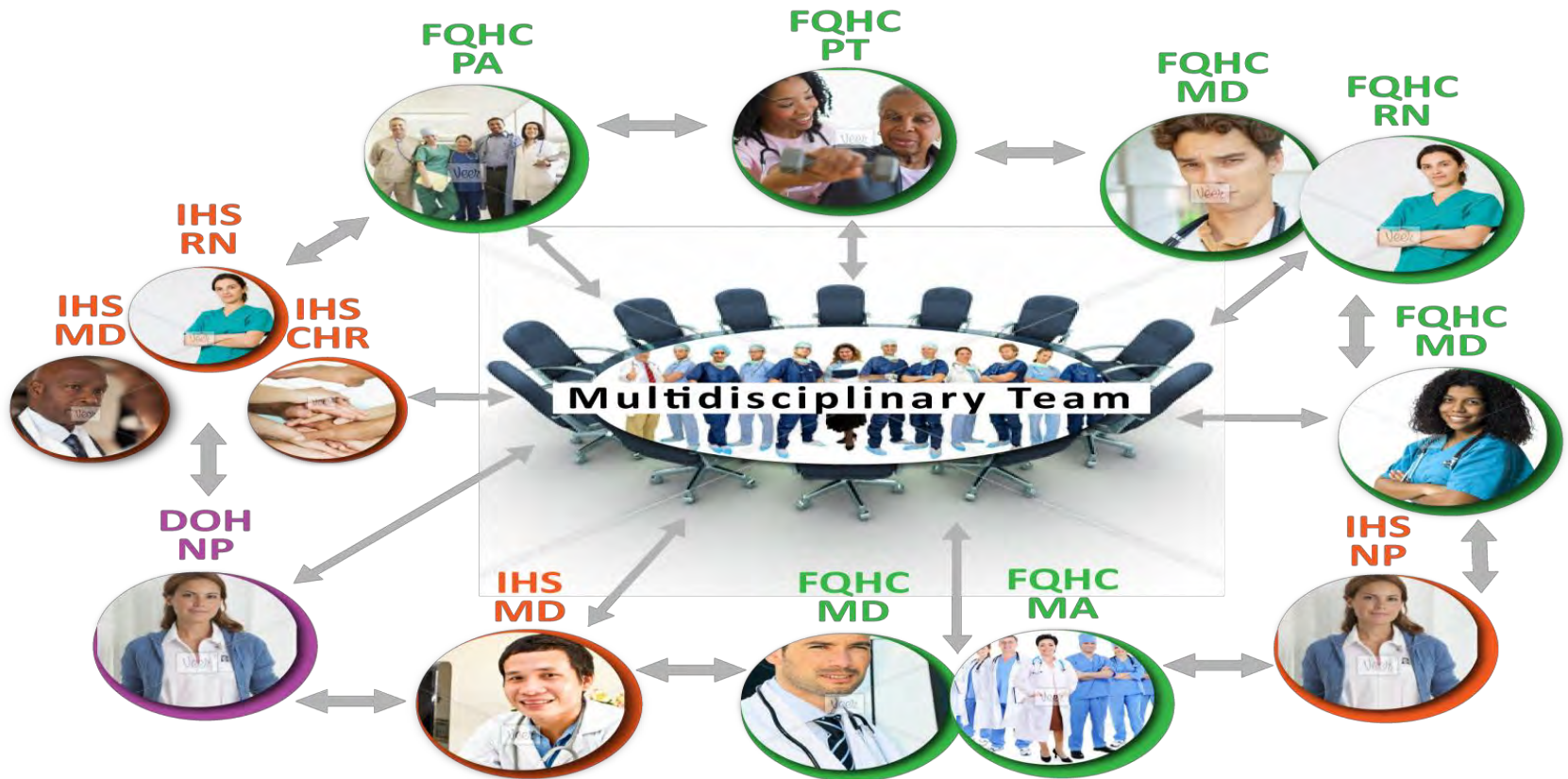
Impact of EHR reminder on HCV birth cohort screening rates

Percentage of baby boomers who attended a primary care clinic and were screened for HCV



Extended Community Health Outcomes Project

The ECHO Model Improves CAPACITY and ACCESSS simultaneously



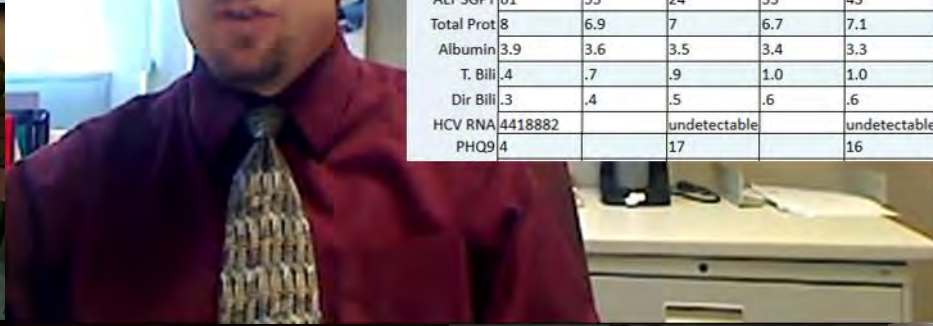
FQHC = Federally Qualified Health Centers ; IHS = Indian Health Service; DOH = Department of Health.; PT = physical therapist; PA = physician assistant; RN = registered nurse; CHR = community health representative; NP = nurse practitioner; MA = medical assistant.

TeleECHO Clinic: "Moving Knowledge Instead of Patients"

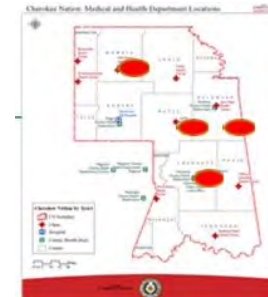
Arora S et al. *N Engl J Med* Volume 364(23):2199-2207 June 9, 2011



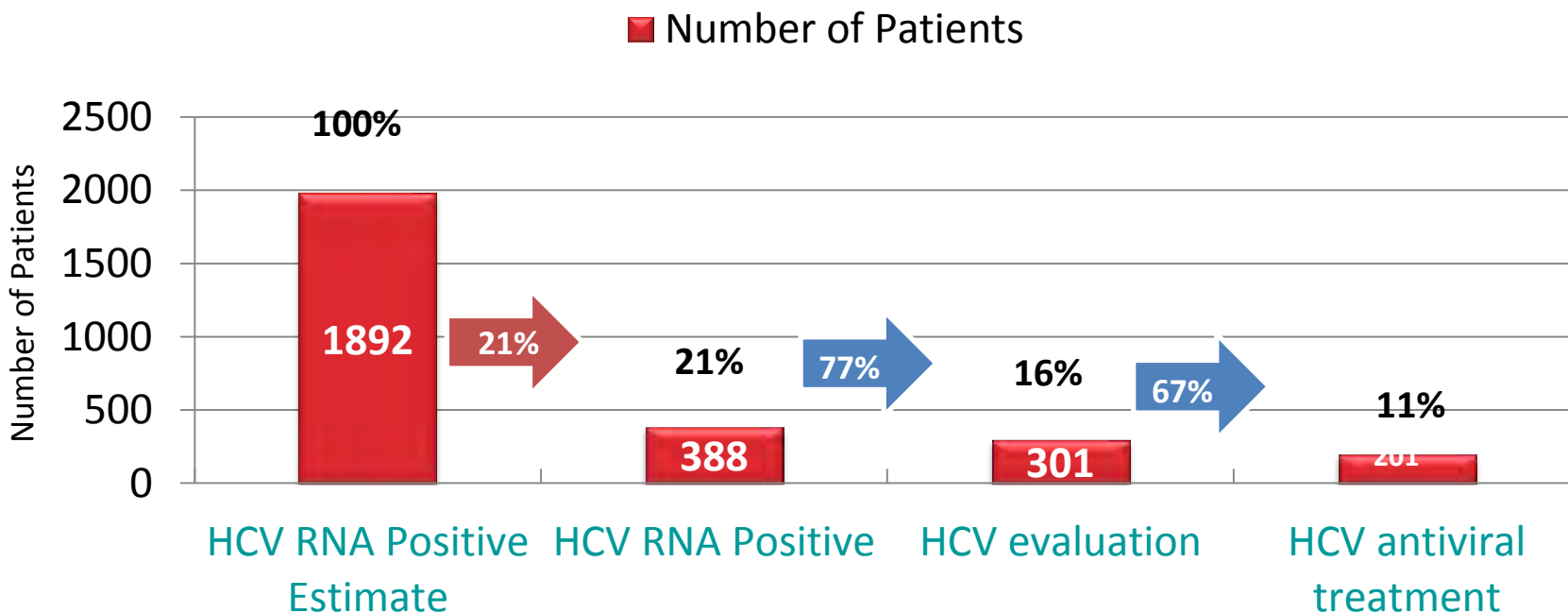
Week	Baseline	Week 2	Week 4	Week 8	Week 12
Actual Date	07/01/2013	07/15/2013	07/29/2013	08/26/2013	09/23/2013
WBC	9.8	6.9	5.3	3.7	6.5
ANC	3.6	3.4	3.5	3.6	2.9
HGB	15.5	11.4	8.3	8.9	9.4
HCT	46.3	34.1	30.2	27.4	29.2
Platelets	360	157	128	106	131
Creatinine	.8	.8	.8	.8	.8
AST SGOT	81	60	24	35	43
ALT SGPT	61	55	24	33	43
Total Prot	8	6.9	7	6.7	7.1
Albumin	3.9	3.6	3.5	3.4	3.3
T. Bili	.4	.7	.9	1.0	1.0
Dir Bili	.3	.4	.5	.6	.6
HCV RNA	4418882		undetectable		undetectable
PHQ9	4		17		16



How did we get from this point.....

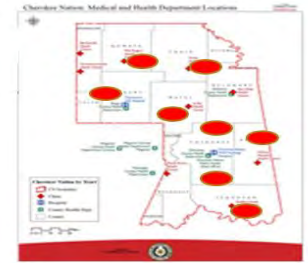


CNHS HCV Cascade of Care: July 2015

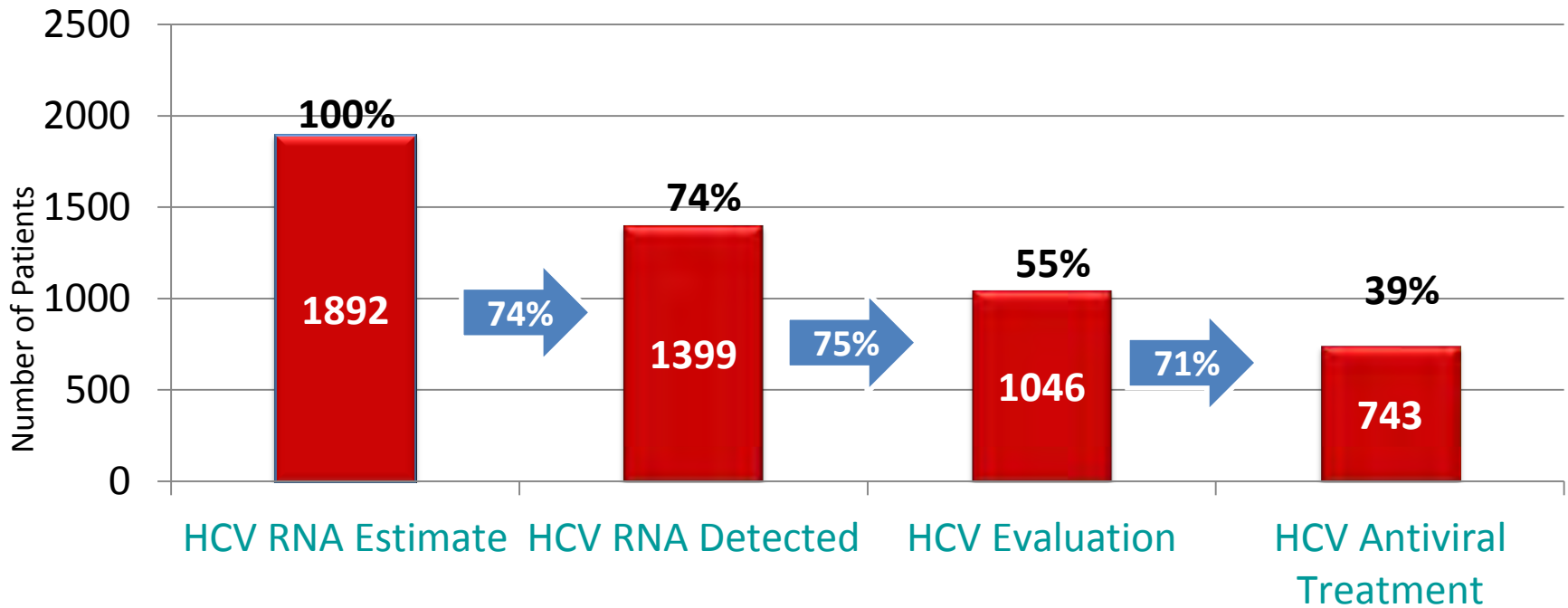


Adapted from: Mera J, Vellozzi C, Hariri S, et al. Identification and Clinical Management of Persons with Chronic Hepatitis C Virus Infection — Cherokee Nation, 2012–2015. MMWR Morb Mortal Wkly Rep 2016;65:461–466.

.....to this point?



CNHS HCV Cascade of Care: December 2017



CDC: “Do you think the CNHS can pursue an HCV elimination goal?”


HEPATOLOGY

[Explore this journal >](#)

 Open Access  Creative Commons

Viral Hepatitis

Hepatitis C virus treatment for prevention among people who inject drugs: Modeling treatment scale-up in the age of direct-acting antivirals

Natasha K. Martin , Peter Vickerman, Jason Grebely, Margaret Hellard, Sharon J. Hutchinson, Viviane D. Lima, Graham R. Foster, John F. Dillon, David J. Goldberg, Gregory J. Dore, Matthew Hickman



View Issue TOC
Volume 58, Issue 5
November 2013
Pages 1598-1609



Elimination of Hepatitis C Virus Infection Among People Who Inject Drugs Through Treatment as Prevention: Feasibility and Future Requirements

Jason Grebely, Gail V. Matthews, Andrew R. Lloyd, Gregory J. Dore

Clinical Infectious Diseases, Volume 57, Issue 7, 1 October 2013, Pages 1014-1020,

[Antiviral Research 110 \(2014\) 79-93](#)

Contents lists available at [ScienceDirect](#)

 **Antiviral Research** 

journal homepage: www.elsevier.com/locate/antiviral

Commentary

Can hepatitis C be eradicated in the United States?

Brian R. Edlin ^{a,b,*}, Emily R. Winkelstein ^b

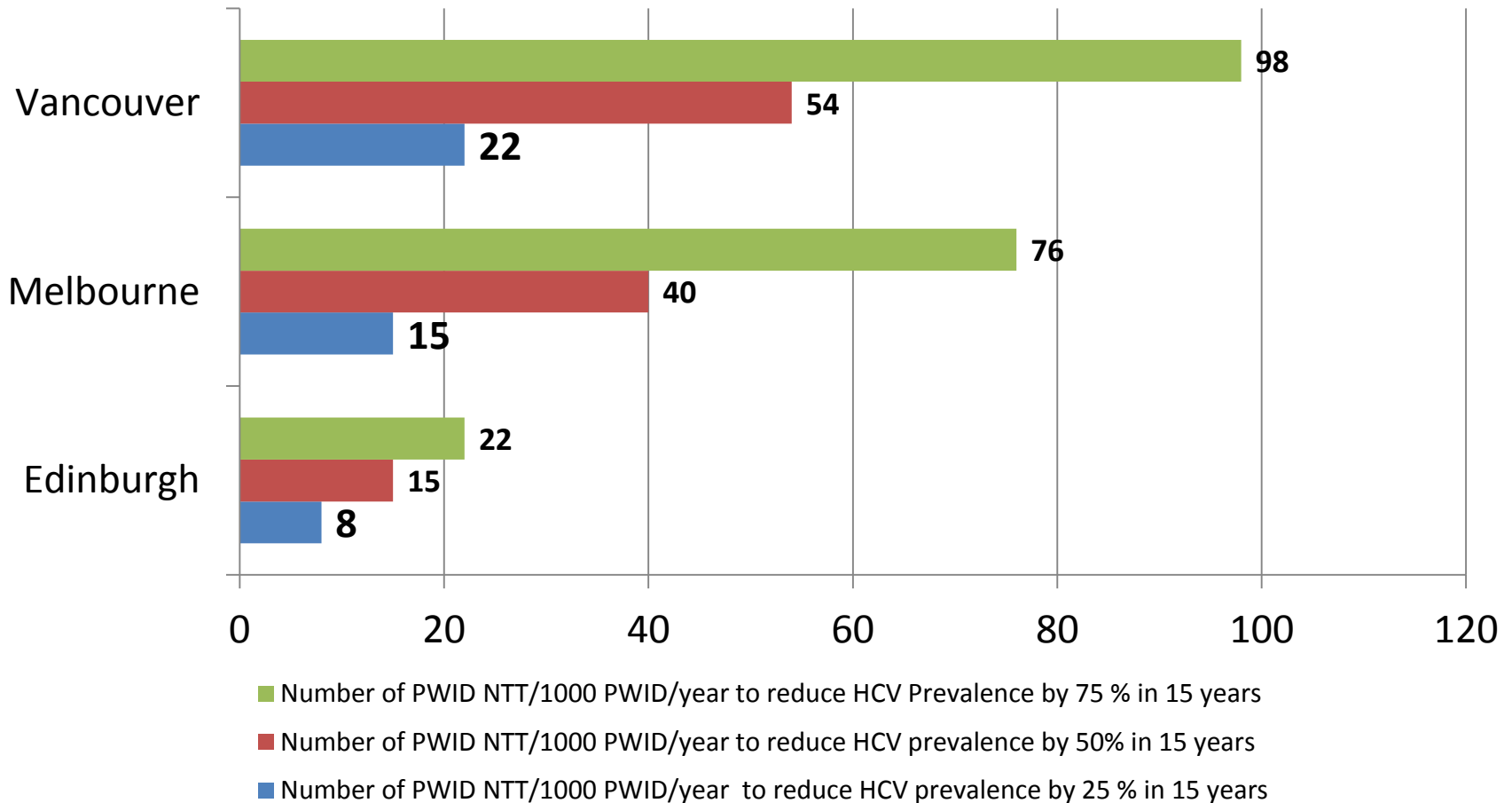
^aWeill Cornell Medical College, New York, NY 10065, United States

^bNational Development and Research Institutes, 71 West 23rd St., 4th floor, New York, NY 10010, United States



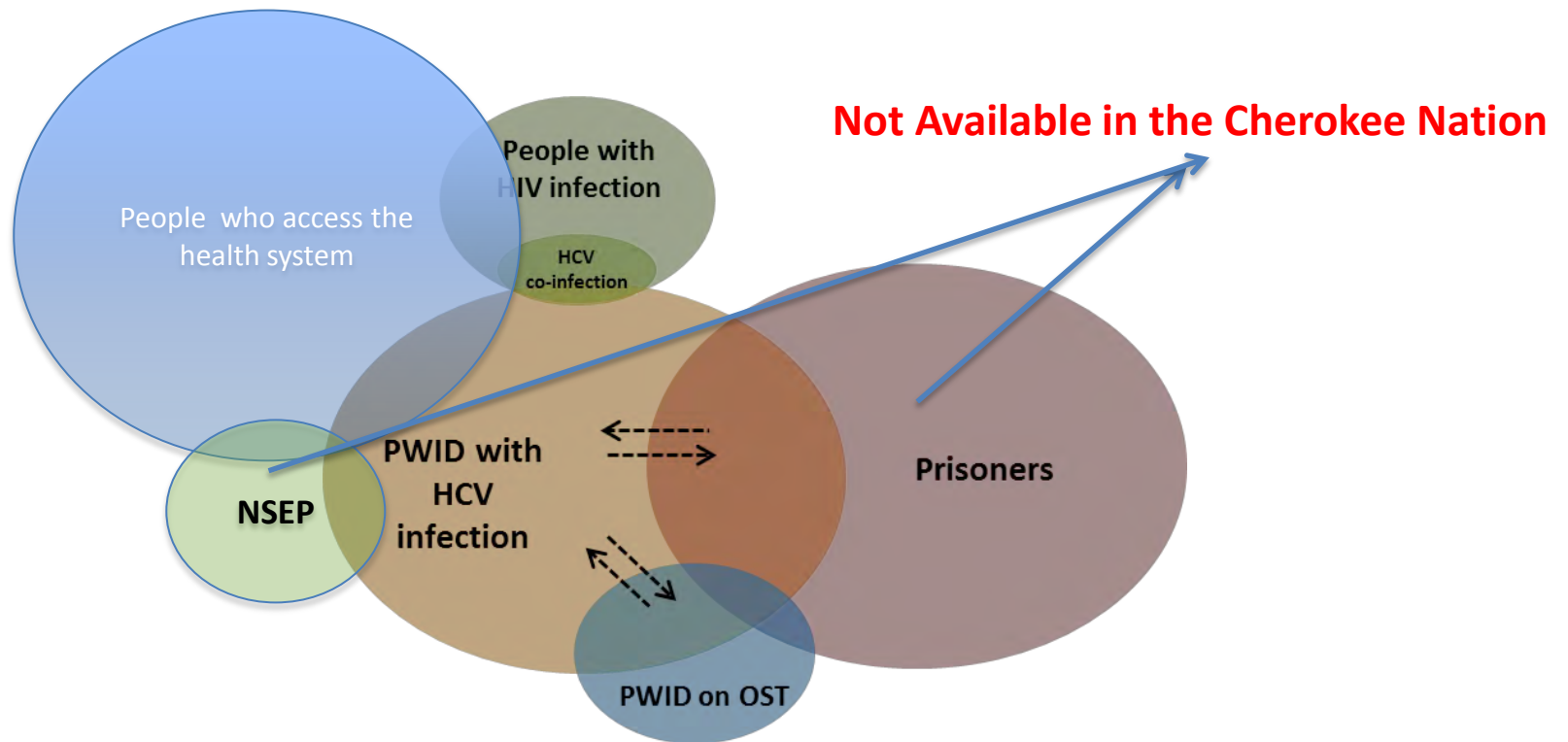
Impact of Treatment as Prevention on HCV Prevalence

(Mathematical Modeling)



NTT: Number Needed To Treat.
PWID: People Who Inject Drugs

Where Can We Find and Treat HCV (+) PWID?



Key Concepts to Guide HCV Elimination

- **Treat the HCV infected population to decrease the burden of liver disease (Decrease Prevalence)**
 - Mainly target birth cohort (patients born between 1945-1965)
- **Prevent Transmission (Decrease Incidence and prevalence)**
 - **Mainly target the younger population who are PWID**
 - *Treatment as prevention* (HCV + PWID, HIV/HCV coinfection)
 - Establish or expand MAT
 - Establish or expand needle and syringe services

CNHS HCV Elimination Program 8/2015 – 10/2018

1. Secure political commitment for HCV elimination
- 2. Expand the HCV screening program**
3. Establish robust programs to link to care, treat, and cure patients
- 4. Reduce the incidence of new HCV infections**

Goal #1: Secure Political Commitment

HCV Awareness Day
October 31, 2015



HCV Elimination Awareness Day
October 31, 2017

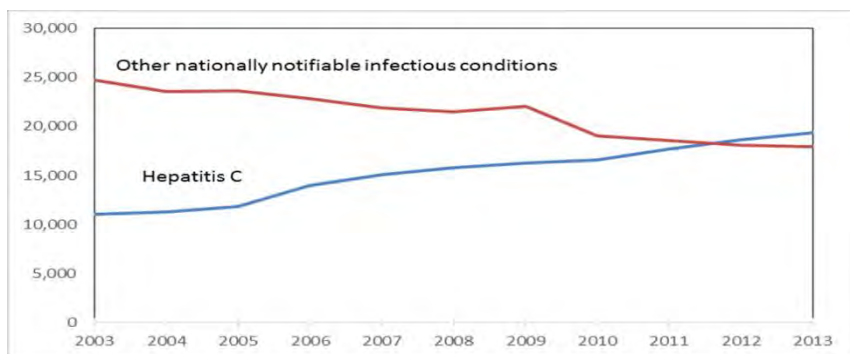


“As Native people and as Cherokee Nation citizens, we must keep striving to eliminate hepatitis C from our population.”

Chief Bill John Baker

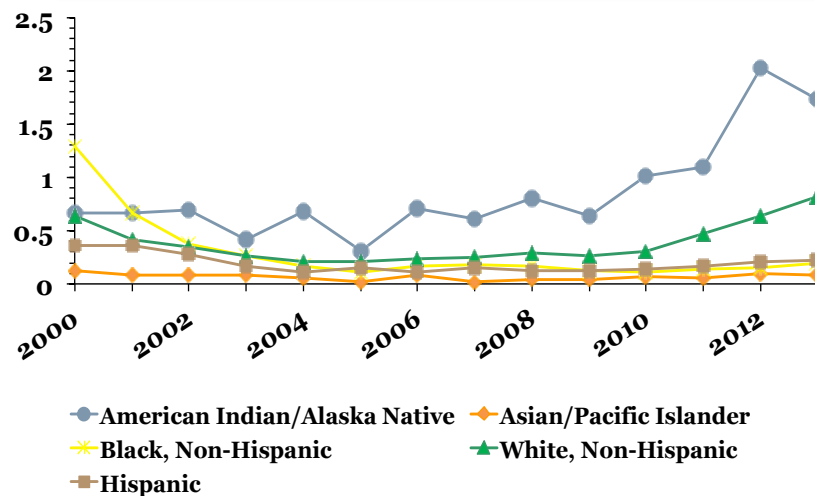
What were the “talking points” for HCV Elimination?

- AI/AN have the highest
 - Mortality¹
 - Incidence²



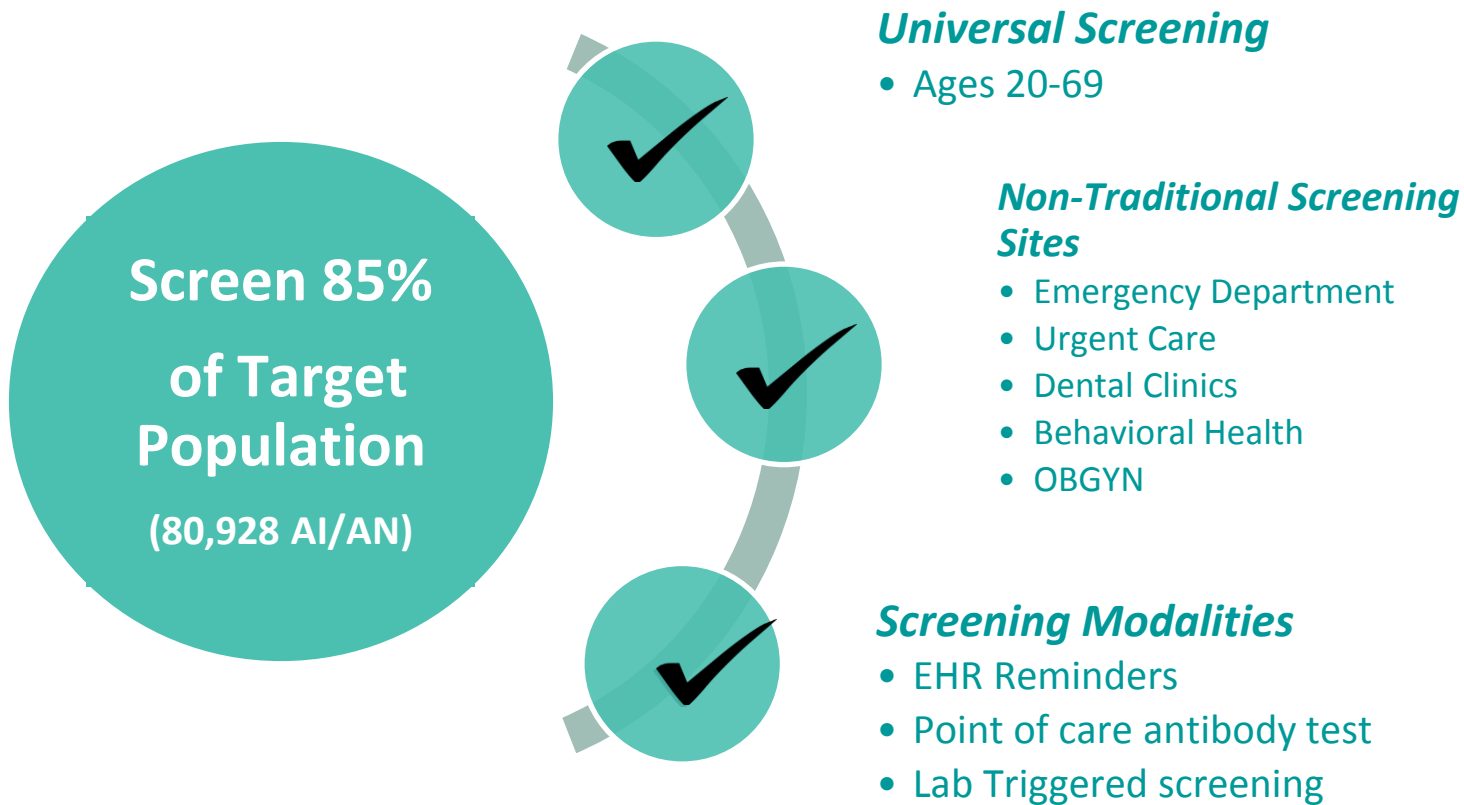
HCV Deaths and Deaths from Other Nationally Notifiable Infectious Diseases, USA 2003- 2013³

Incidence of Acute Hepatitis C Stratified by Ethnicity: USA 2010-2013

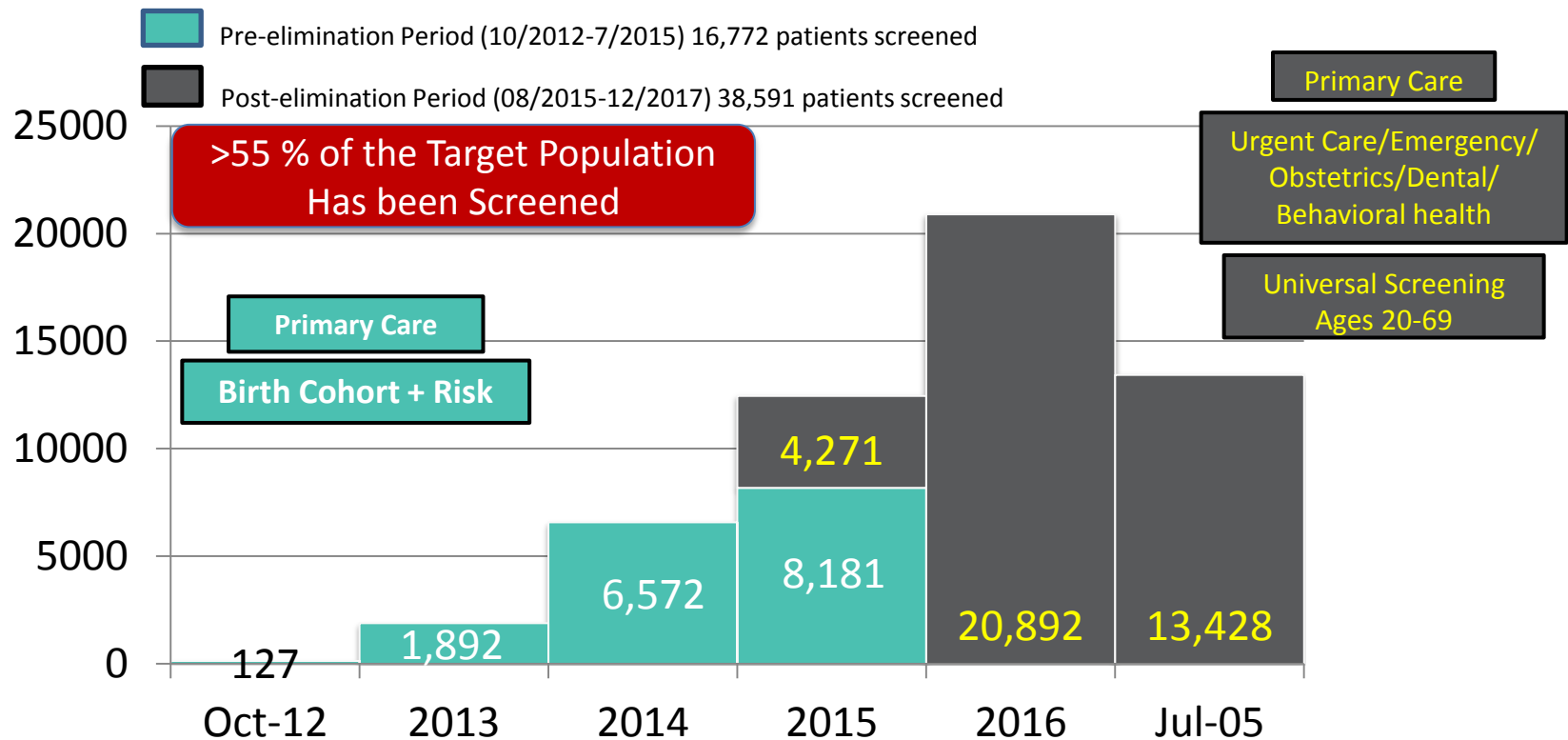


1. <https://www.cdc.gov/hepatitis/statistics/2015surveillance/index.htm> Accessed February 12, 2018
2. Source: CDC, National Notifiable Diseases Surveillance System (NNDSS)
3. Ly KN, et al. Clin Infect Dis 2016 May 15;62(10):1287-1288

Goal #2: Expand Screening Program



HCV Screening in the CNHS: 10/2012 – 12/2017



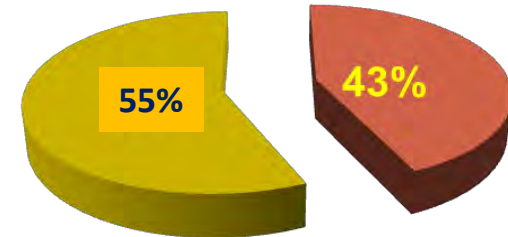
*preliminary data

HCV Prevalence, Gender and Age Distribution*: 8/2015 – 12/2017

Prevalence

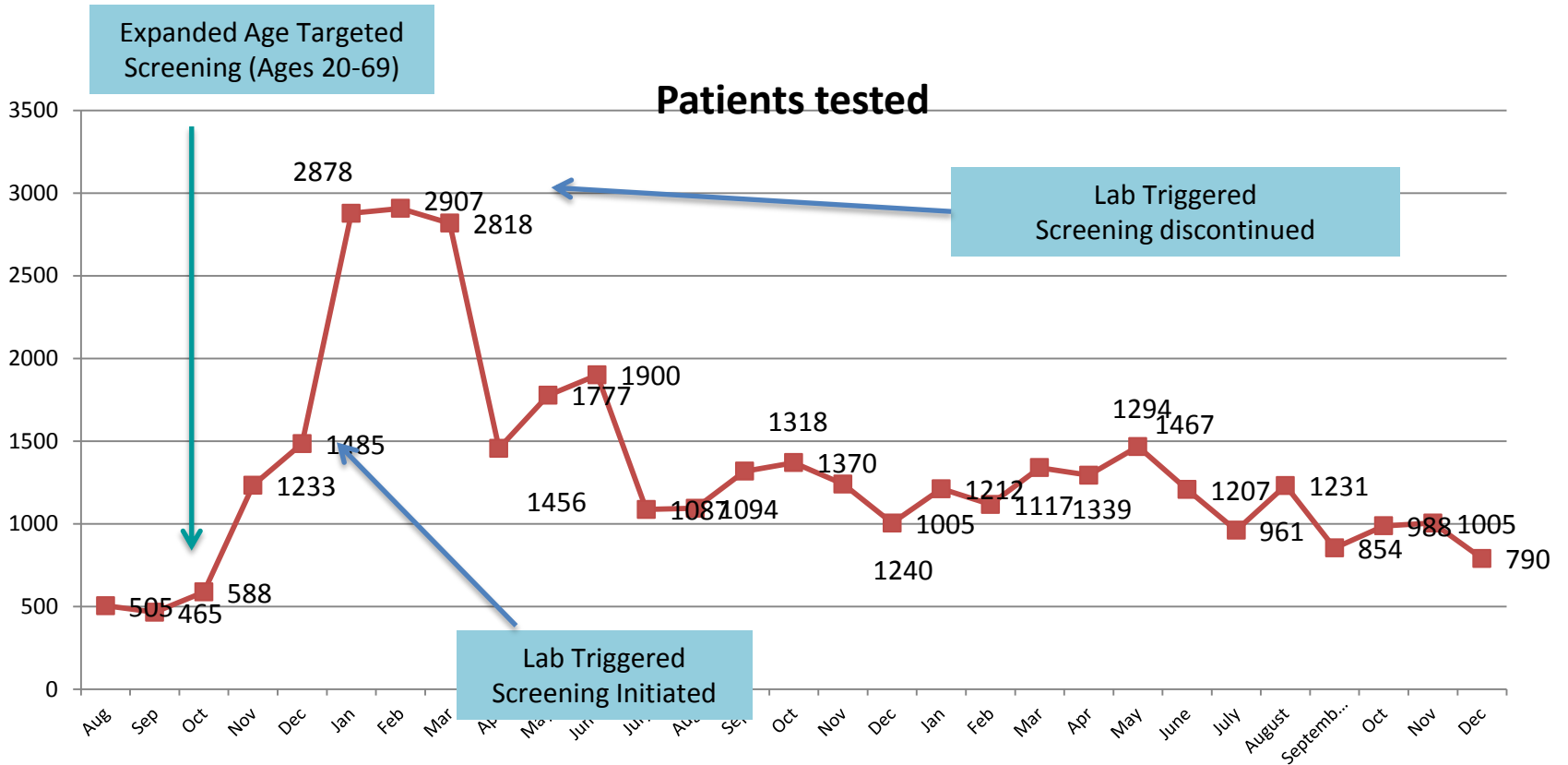
- 38,591 patients screened
- 1,328 HCV antibody positive
 - Overall Prevalence ~ **3.4%**
 - Male **4.5%**
 - Female 2.7%
 - Baby boomers
 - **3.9%** (12,540)
 - Younger than Baby Boomers
 - 3.2% (18,319)

Age Distribution of HCV Ab (+)



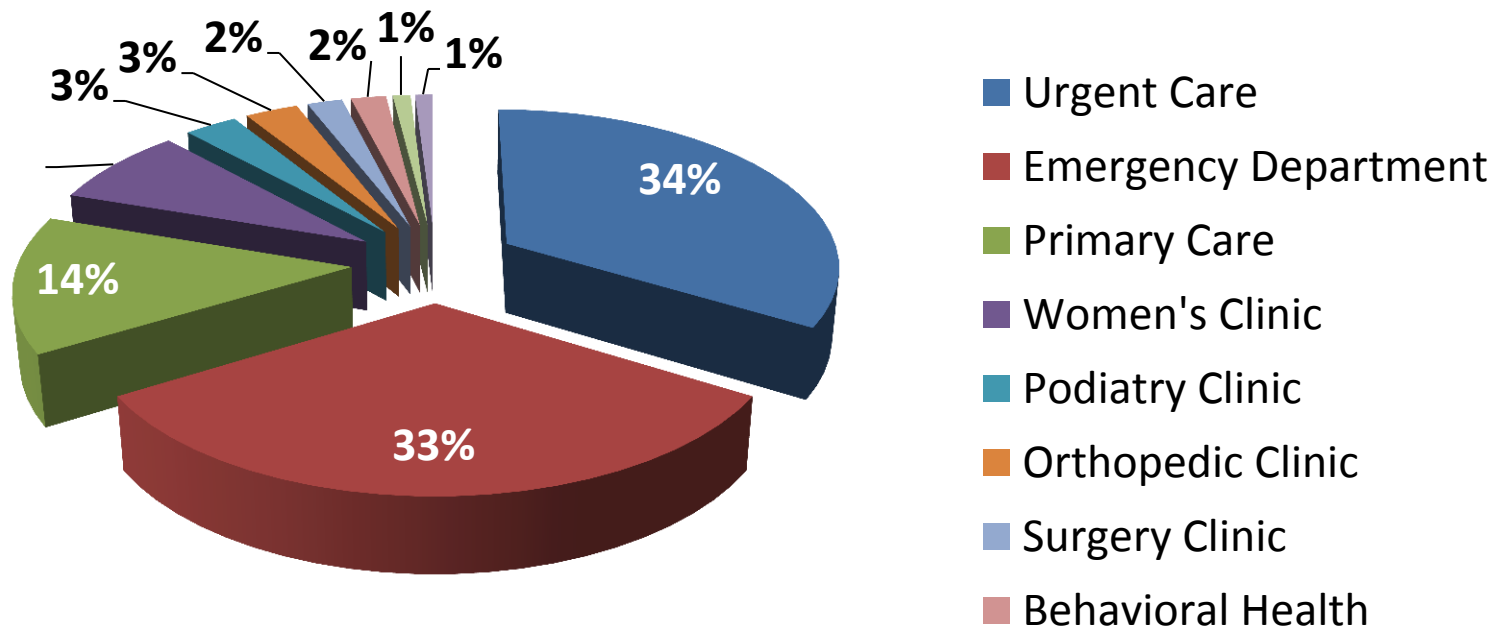
- Baby Boomers
- Younger than Baby Boomers

CNHS: HCV Screening* 8/2015 – 12/2017



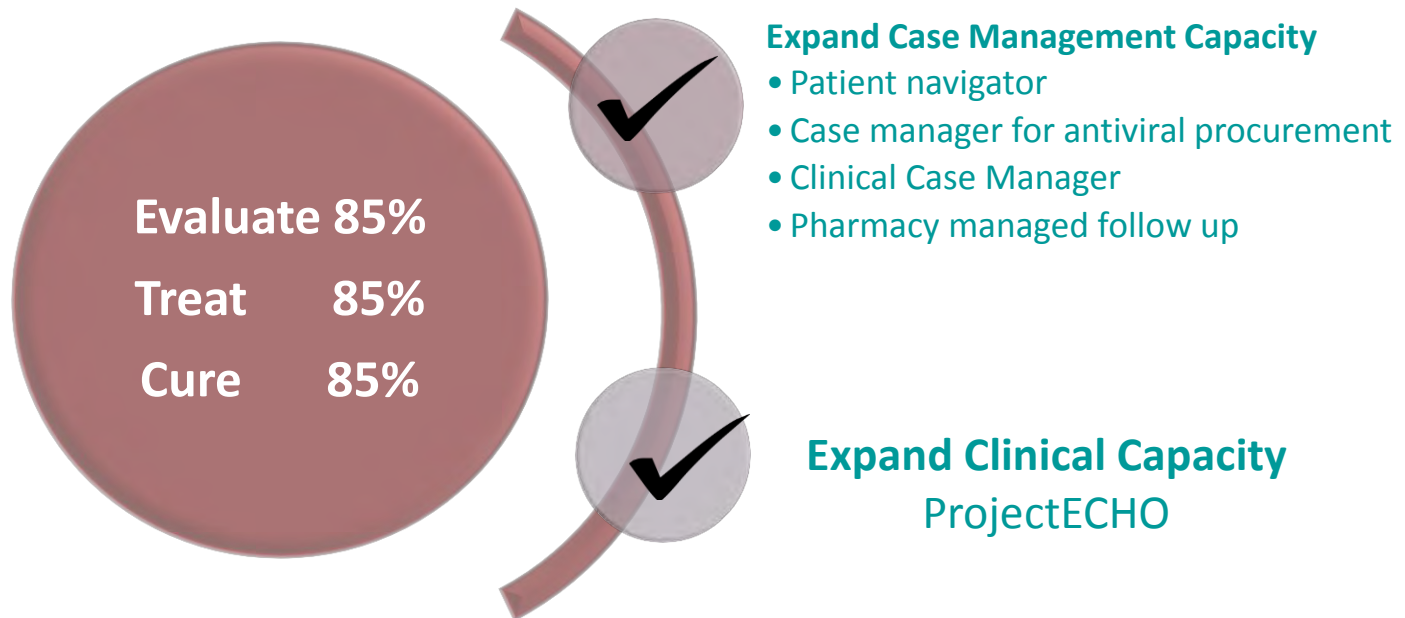
Lab Triggered Screening: Screening location

97 patients with new positive HCV antibody screen at WW Hastings Hospital



67% were detected in the Urgent Care/Emergency Department

Goal # 3: Link to Care, Treat, and Cure



Patient and Medical Provider Support

➤ Before HCV Evaluation

- **Patient Navigator** contacts patient to make sure and appointment is secured
- If the patient can't be reached a **Public Health Nurse** is sent to the patient's home

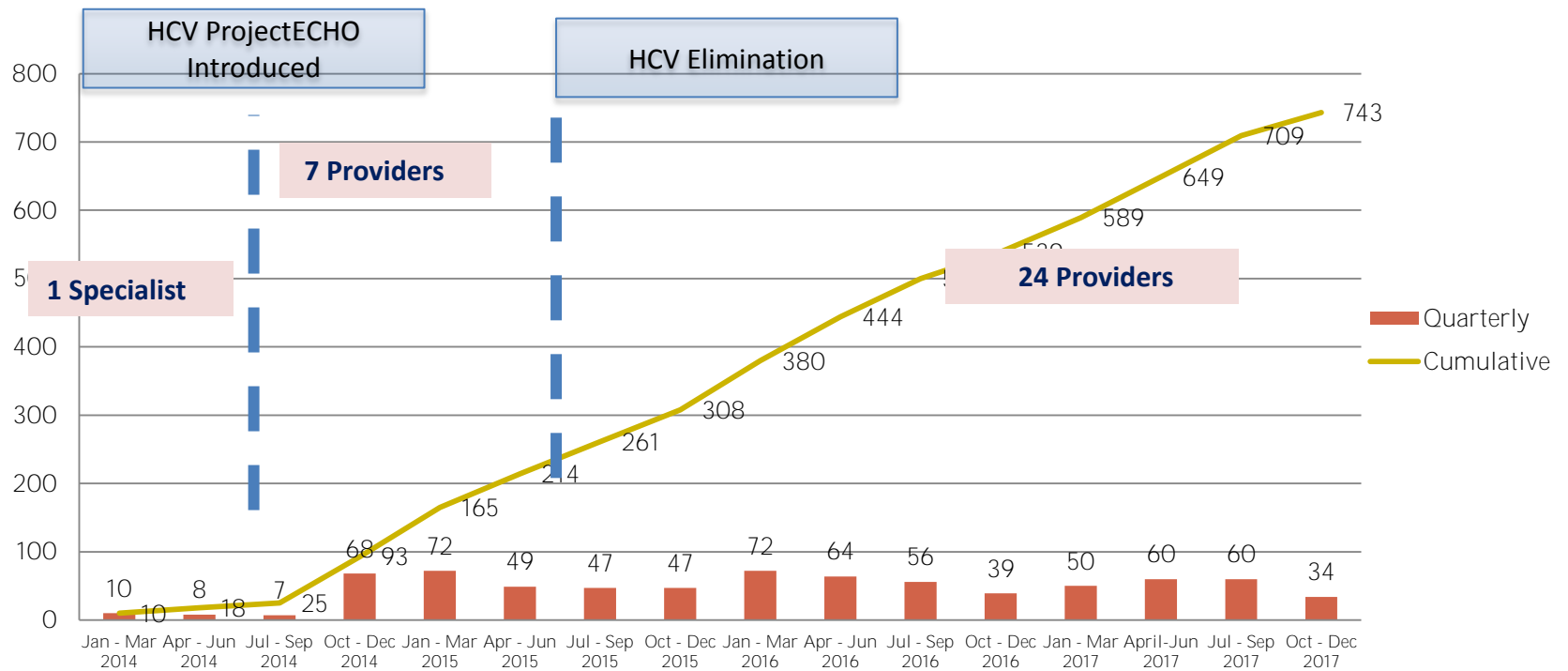
➤ During Evaluation

- Most patients are evaluated by a **drug and alcohol counselor**,
- If substance use disorder is detected, referral to a **behavioral health specialist**

➤ After Treatment Initiated

- **Clinical case manager, pharmacist** and a **community health worker** will assist with adherence follow-up and treatment (including DOT)

CNHS HCV Program: Clinical Capacity Expansion: 1/2014 – 12/2017



Providers included 1 Specialist, 8 Physicians, 8 Pharmacists and 7 Nurse Practitioners

Goal #4: Reduce the incidence of new HCV infections



Decrease Incidence

Public and Provider Awareness

- Public Campaign
- Provider Training

Contact Tracing

- Acute HCV
- PWID

Harm Reduction

- Treatment as Prevention
- OST
- NSEP

**CNHS HCV Elimination Program Strategies and Goals,
8/2015-10/2018**

CNHS: Cherokee Nation Health Services. PWID: People Who Inject Drugs, OST: Opioid Substitution Therapy, NSEP: Needle and Syringe Exchange Program

Moving Forward

- **Increase public awareness and intensify HCV screening** in “hot spots” and out in the community
- **Improve engagement in care of PWID**
 - Expand Medication Assisted Treatment
 - Advocate for needle and syringe service
 - Identify networks of transmission through the Global Health Outbreak Surveillance Technology (GHOST) program
- **Treat, treat and treat patients with HCV!!!!!!!**
- **Define measures to monitor program outcomes**
 - 90 % reduction in incidence by the year 2030
 - 65 % reduction in mortality by the year 2030

Conclusions

- **The CNHS HCV elimination program is based on**
 - *Universal HCV screening, a robust primary care work force (ProjectECHO) and harm reduction interventions*
- **Mathematical models can guide your pathway towards elimination**
- The Cascade of Care is useful in letting you know where you are and what you need to do
- **The main barrier to HCV elimination in settings where DAA are available is engagement in care and clinical capacity to treat**