Cherokee Nation HCV Program: From Evaluation to Cure to Elimination

Jorge Mera, MD, FACP
Whitney Essex, MSN, FNP-BC
Objectives

• Why is HCV a problem?

• Define elimination as it relates to infectious diseases

• Identify interventions required to achieve HCV elimination

• Describe the CNHS HCV Elimination program
Overview of Viral Hepatitis in the United States

- An estimated 3.5 million people are estimated to be living with HCV
  - May be as high as 4.7 million

- Prescription opioid addiction is driving increases in heroin use and HBV, HCV, and HIV infection

- Only 9% of people living with HCV are cured

- HCV deaths continue to increase - most could have been prevented
Health Disparities in HCV

- More than half of people with HCV have lower income and education

- AI/AN have the highest rate of new HCV infections

- African Americans account for 25% of people with chronic HCV (but only 11% of the whole population)

- **PLWHA**
  - 1 in 4 people with HIV are coinfected, 1 in 2 among PLWHA PWID

- **People who inject drugs**
  - In 2014, estimated cause of 70% of new infections

- **Incarcerated individuals**
  - Estimated 33% of people with HCV have a history of incarceration

- **Homeless people**
  - Estimated 22-52% of homeless individuals have HCV

AI/AN: American Indian/Alaskan Native, PLWHA: People living with HIV/AIDS

Increasing Deaths Due to Hepatitis C

More people are dying of HCV than all 60 other nationally notifiable infectious diseases combined.

Source: Centers for Disease Control and Prevention
Incidence of acute HCV infection by race/ethnicity - USA, 2000-2013

What is driving the HCV epidemic today in the USA?

Source: National Notifiable Diseases Surveillance System (NNDSS)

Source: Time Magazine, June 15, 2015
Benefits of HCV Treatment

Current treatments can cure >90% after 8-12 weeks

- Treatments work equally well in
  - People who are coinfectcd with HIV
  - People of all races/ethnicities
  - People with moderate liver damage and other comorbidities
  - PWID that are engaged in MAT programs

Benefits:
- 73% reduction in liver cancer
- 93% reduction in liver-related mortality

Impact:
- Prevention of 321,000 HCV deaths
- Decreased HCV transmission to others
  - Networks of people who inject drugs
  - Women of childbearing age

Van der Meer JAMA 2012; Morgan Ann Int Med 2012; Rein CID 2015; Martin, CID 2013
Stages of the HCV Continuum of Care

Only 9% of people living with HCV are CURED
Considerations: Elimination

- National Academies of Sciences, Engineering and Medicine (formerly IOM)
  - Released report on April 11, 2016
  - Committee determined that:
    - Both hepatitis B and C could be rare diseases in the US
    - Considerable will and resources would be required to do this
  - Released report in April 2017 addresses what steps must be taken

Available at: nas.edu/hepatitiselimination

*Decrease the incidence of HCV by 90% and mortality by 65% by the year 2030*
Poverty
Domestic Violence
Mental Illness
Historical Trauma
Cultural Disconnection
others

IVDU
HCV

Prevention
Unsafe Medical Practices

Screening
Linkage to Care
Quality of Care

Harm Reduction Strategies

Strategies
Prevention
Screening
Linkage to Care
Quality of Care
Discovery of HCV and Impact on HCV Incidence in US

- Discovery of HCV 1989
- 1986 Indirect blood screening for HCV
- Anti-HCV test licensed 1992
- Needle stick Safety and Prevention Act 2001
- HIV Prevention

Year

22,000 cases of incident HCV infection reported in 2012
Definitions

• **Control:**
  – The reduction of disease incidence, prevalence, morbidity or mortality to a *locally acceptable level* as a result of deliberate efforts; continued intervention measures are required to maintain reduction. *Example*: diarrheal diseases

• **Elimination:**
  – Reduction to zero of the incidence of infection caused by a specific agent in a *defined geographical area* as a result of deliberate efforts; continued measures to prevent re-establishment of transmission are required. *Example*: measles, poliomyelitis.

• **Eradication**
  – *Permanent reduction to zero of the worldwide* incidence of infection caused by a specific agent as a result of deliberate efforts; *intervention measures are no longer needed*. *Example*: Smallpox
# Feasibility Criteria for Elimination

<table>
<thead>
<tr>
<th>In General¹</th>
<th>Hepatitis C Virus</th>
<th>Check list</th>
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<tbody>
<tr>
<td>No non-human reservoir and the organism can not multiply in the environment</td>
<td>No human reservoir</td>
<td>✔️</td>
</tr>
<tr>
<td>There are simple and accurate diagnostic tools</td>
<td>Serology widely available</td>
<td>✔️</td>
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<tr>
<td>Practical interventions to interrupt transmission</td>
<td>Treatment as prevention Needle exchange programs Opioid substitution programs</td>
<td>✔️</td>
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<tr>
<td>The infection can in most cases be cleared from the host</td>
<td>Treatment is 95 % curative</td>
<td>✔️</td>
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1. Hopkins DR NEJM 2013. 368;1
Essential Goals to Eliminate HCV

• Prevent sequelae of advancing liver disease in those already infected
  – Baby Boomers, born 1945 -1965

• Prevent new or “incident” infections
  – Persons who inject drugs
  – Unsafe healthcare practices
  – Sexual exposures in Immunocompromised individuals
  – Women in child bearing age
    • To decrease maternal to child transmission
Cherokee Nation Jurisdiction

Sovereign Nation within a Nation

Oklahoma

- 14 county area (over 9,200 sq mi.)
- Largest tribal operated health system (U.S.)
- Second largest Indian Nation in the U.S.
- 322,855 Registered citizens world-wide
- Medically serves 130,000 AI/AN

AI/AN: American Indians/ Alaskan Natives
Cherokee Nation Health Services (CNHS)

- Rural area with high HCV prevalence
- 130,000 AI/AN
- 80,928 citizens *ages 20 – 69*
- HCV program since in 2012
  - ECHO model for delivery of HCV care
  - Clear pathways for medication procurement

Source: Cherokee Nation, 2017
262 HCV infected patients waiting to be treated
Prevalence unknown, possibly 5.8%
Possibly 3,285 patients!!!!!

How do we increase screening?
How do we engage and treat more patients?
Hepatitis C Screening
Electronic Health Reminders Work!!!!!!

July 1, 2012 - June 30, 2013
July 1, 2014 - June 30, 2015

- Bartlesville: 11%, 42%
- Jay: 11%, 69%
- Muskogee: 12%, 58%
- Nowata: 9%, 42%
- Salina: 9%, 76%
- Sallisaw: 8%, 43%
- Stilwell: 12%, 68%
- Vinita: 6%, 29%
- WW Hastings: 23%, 63%
GOALS:
- Develop capacity to safely and effectively treat HCV in all areas and to monitor outcomes
- Develop a model to treat complex diseases in rural locations and developing countries
Methods

- Use Technology to leverage scarce healthcare resources
- Sharing “best practices”
- Case based learning
- Web-based database to monitor outcomes

The ECHO Model Improves CAPACITY and ACCESS Simultaneously
10 Minute Didactics
ECHO vs. Telemedicine

ECHO Telehealth

ECHO Supports Community Based Primary Care Teams

Patients reached with specialty knowledge & expertise

Traditional Telemedicine

Specialist Manages Patient Remotely

Telemedicine Improves ACCESS by using technology to bridge distance
HCV Services Available at CNHS
1/2012 - 6/2014

HCV Clinics
HCV Services Available at CNHS
7/2014 – 7/2015
First ProjectECHO HCV Team 2014
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 with HCV.

4. Reduce the incidence of new HCV infections
“As Native people and as Cherokee Nation citizens, we must keep striving to eliminate hepatitis C from our population.”

Chief Bill John Baker

CNHS: Cherokee Nation Health Services
Goal #2: Expand Screening Program

Screen 85% of Target Population (80,928 AI/AN)

Universal Screening
- Ages 20-69

Non-Traditional Screening Sites
- Emergency Department
- Urgent Care
- Dental Clinics
- Behavioral Health
- OBGYN

Screening Modalities
- EHR Reminders
- Rapid Tests
- Lab Triggered screening
HCV Screening in CNHS*
10/2012 – 6/2017
46 % of the target population has been screened

Pre-elimination Period (10/2012-7/2015) 16,772 patients screened*
Post-elimination Period (8/2015 – 3/2017) 31,399 patients screened

46 % of the target population has been screened

*preliminary data
HCV: Prevalence and Age Distribution*
Post Elimination Period, 8/2015 – 5/2017

- **Prevalence**
  - 31,399 patients screened
  - 1,076 HCV seropositive
    - Overall Prevalence ~ 3.4%
      - Male 4.4%
      - Female 2.9%
    - Baby boomers
      - 3.7% (12,540)
    - Younger than Baby Boomers
      - 3.3% (18,319)

- **Age Distribution of HCV Ab (+) patients**
  - 57% Baby Boomers
  - 43% Younger than Baby Boomers

*preliminary data*
HCV Screening in Cherokee Nation*
8/2015 – 5/2017

Number of Patients Tested Per Month

- Expanded Age Targeted Screening (Ages 20-69)
- Lab Triggered Screening Initiated
- Lab Triggered Screening discontinued

*preliminary data
HCV “Lab Triggered” Screening*
WW Hastings Hospital

Patients Screened 11/15 - 2/16

- HCV Negative (4908)
- New HCV Positive
- Known HCV Positive

New HCV Positive Patients

- Baby Boomers (37)
- Non Babyboomers (60)

*preliminary data
67% of the HCV seropositive patients were detected in the Urgent Care/Emergency Department
HCV Screening in the Hospital Dental Clinic*

**AWARENESS AND ENGAGED IN CARE STATUS AT THE TIME OF SCREENING IN THE DENTAL CLINIC N=36**

- **Unaware of HCV**
  - 33%
- **Aware, VL positive, Engaged**
  - 17%
- **VL negative**
  - 31%
- **Aware, VL positive, Not engaged**
  - 19%

**NUMBER OF PATIENTS SCREENED FOR HCV IN THE DENTAL CLINIC, MARCH 2016 – FEB 2017**

- March 16: 626
- April 16: 424
- May 16: 230
- June 16: 55
- July 16: 40
- August 16: 4
- September 16: 35
- October 16: 23
- November 16: 8
- December 16: 3
- January 17: 2
- February 17: 9

*preliminary data
Goal #3: Link to Care, Treat, and Cure

Evaluate 85%
Treat 85%
Cure 85%

Expand Clinical Capacity
- ProjectECHO

Expand Case Management Capacity
- Patient navigator
- Medication procurement
- Clinical case management
HCV Services Available at CNHS
8/2015 – 9/2017
CNHS HCV Program: Clinical Capacity Expansion*
1/2014 – 6/2017

*preliminary data
Treatment Group Characteristics*

No Difference in HCV Cure Rates between Provider Types at CNHS (n= 365)

Genotypes
n= 547

Fib-4 Index
n= 553

Specialists are almost as good as primary care providers

No Difference in HCV Cure Rates between Provider Types at CNHS (n= 365)

Cherokee Nation Health Services

*preliminary data
**CNHS HCV Cascade of Care**
**10/2012 - 6/2017**

90% of patients who have completed treatment have achieved cure

*preliminary data
Goal #4: Reduce the Incidence of New HCV Infections

Public and Provider Awareness
- Public Campaign ✓
- Provider Training ✓

Contact Tracing
- Acute HCV ✓
- PWID ✓

Harm Reduction
- Treatment as Prevention ✓
- OST ✓
- NSEP (Not Implemented)

Cherokee Nation Health Services. PWID: People Who Inject Drugs
OST: Opioid Substitution Therapy, NSEP: Needle and Syringe Exchange Program
Public Campaign
September 20, 2016 - September 28, 2016.

Advertisement

- Gas pumping
- Indoor advertisement
- Radio advertisement
- Digital marketing
- Social media
Gas Pump Advertising
Provider Education

• **HCV Providers**
  – University of Washington HCV Website
  – ½ day Preceptorship at the hub HCV clinic
  – Shadowing the provider on their first day of HCV clinic
  – Biannual workshops in the 8 outlying clinics
  – Bimonthly HCV projectECHO telehealth clinics

• **All providers**
  – Biannual workshops in the 8 outlying clinics
CNHS Buprenorphine Clinic*

- Buprenorphine Clinic started in March 2016 with 2 prescribers currently managing ~ 40 patients each
- Drop out rate has been < 10% since March 2016
- No Emergency Department (ED) visits or hospitalizations due to buprenorphine misuse
- No ED visits or Hospitalizations for opioid overdose in patients managed with buprenorphine

*preliminary data
HCV Transmission can be Prevented

In the US 80% of HCV Transmission Occurs in PWID

An Effective Intervention to Prevent HCV Transmission

- Treatment as prevention
- Harm reduction strategies in combination
  - Opioid substitution programs
  - Needle and syringe exchange programs

Distribution of HCV Among Young Persons and Location of Syringe Service Programs

Of 29,382 persons 15-29 yrs. with HCV, 20% lived within 10 miles of a syringe service program.
How are we doing with our 85% Goals?

Screening: 46% completed, 54% pending
Evaluation: 78% completed, 22% pending
Treatment: 64% completed, 36% pending
Cure: 90% completed, 10% pending
Moving Forward

- Advocate for NSEP
- Expand OST to all CNHS clinics
- Increase public awareness
- Intensify HCV screening in “hot spots”
- Engage and retain in care difficult to reach populations
- Identify networks of transmission to implement focused interventions (GHOST program)
- Adapt program goals to the newly defined recommendations for HCV elimination in the United States
- Define measures to monitor program outcomes
  - HCV incidence
  - HCV related mortality
The visible people taking care of the invisible epidemic
GΛ (Wado)

Thank you

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