TRIPLE E for HCV

SATELLITE SYMPOSIUM SERIES
ENGAGEMENT EDUCATION AND ERADICATION

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FEATUREURING:

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Educational Objectives

- Discuss data on the incidence, prevalence and transmission of HCV in incarcerated individuals
- Describe the detrimental effects of chronic HCV to emphasize the need for diagnosis and treatment in incarcerated individuals
- Discuss updates in screening mandates and treatment guidelines for HCV including the importance of harm reduction and prevention of reinfection
- Propose that HCV elimination is possible now that many prior HCV treatment obstacles have been removed
Transmission, Epidemiology and Natural History of Hepatitis C
Hepatitis C by the Numbers

170 million people worldwide

#1 blood-borne infection in US

5.2 million people in US

0 FDA-approved vaccines

0 indication for liver transplantation

cause of liver cancer in US

Chak, Talal, Sherman, Schiff, & Saab. 2011.
Transmission and Liver Disease

- **Injection drug use** is the principle risk factor for transmission
- Spontaneous resolution of acute infection occurs in 15 – 25% cases
- **Chronic disease** develops in most patients and can lead to cirrhosis, liver cancer, liver failure, and death
- **Sustained Viral Response** (SVR) can be achieved in the majority of cases = cure!
Populations at Risk

Baby Boomers (born 1945-1965)

- **1960s**
  - Up to 300,000 cases of acute HCV per year; risk of exposure via blood transfusion up to 33%

- **1970s**
  - Volunteer donor system reduces risk of exposure via blood transfusion

- **1989**
  - HCV discovered

- **1992**
  - Widespread introduction of HCV antibody testing

People Who Use Drugs (PWUD)

- 30 – 70% prevalence

Incarcerated Individuals

- 17% – 43% serologic HCV
- 12% – 35% chronic HCV infection

Prevalence of HCV Infection in Correctional Settings

- HCV infection disproportionately affects individuals in correctional institutions
- According to CDC data from 2013, of ~2.2 million inmates in the US, 1 in 3 have HCV
- HCV prevalence estimates in inmates far exceed the 1.0% HCV prevalence in the general population
- Injection drug use is the most common risk factor (~60%) for HCV transmission in correctional settings
- HCV-associated liver disease is a frequent cause of death and has recently surpassed death from HIV in inmates

Available at: [https://www.hcvguidelines.org/unique-populations/correctional](https://www.hcvguidelines.org/unique-populations/correctional). Accessed September 24, 2019;
Available at: [https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5201a1.htm](https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5201a1.htm). Accessed September 24, 2019.
Model of HCV Disease Transmission and Progression in Prisons and in the General Population

Complex dynamics between prison-related interventions and disease burden in society as a whole

LRD = liver-related deaths
Reduction in HCV Transmission Among PWUD Has Been Lower Than HIV

- HCV easier to transmit than HIV
  - Less sharing is needed for transmission
  - Sharing of drug preparation equipment will transmit HCV
- Prevalence of HCV much higher in PWUD than HIV

Such expansion of HIV prevention services resulted in very large reductions in HIV incidence.
Transmission via Contact with Contaminated Blood: Needles and Syringes

Fixed

Detachable

Zibbell J. CDC. Presented as part of Hepatitis C Prevention Opportunities Among PWID. April 28, 2015.
Transmission via Contact with Contaminated Blood: Needles and Syringes

Mean Volume of Fluid Retained with Plunger Depressed

- **DETACHABLE Needle**
  - Low dead-space
  - QD syringe

- **FIXED Needle**
  - Low dead-space syringe

- **HIGH Needle**
  - High dead-space syringe

Zibbell J. CDC. Presented as part of Hepatitis C Prevention Opportunities Among PWID. April 28, 2015.
Transmission via Contact with Contaminated Blood: Preparation Equipment

Filters

Cookers

Water

Surfaces

Zibbell J, CDC, Presented as part of Hepatitis C Prevention Opportunities Among PWID. April 28, 2015.
HCV Transmission

Bloody fingers

Fingers on cooker and in solution

Zibbell J, CDC, Presented as part of Hepatitis C Prevention Opportunities Among PWID. April 28, 2015.
Hepatitis C and Other Drugs: More Than Just Injecting

- HCV can be spread through straws and pipes!
- HCV in nasal drug users ranges from 2.3% to 35.3%
- HCV has been found on the stems of crack pipes
- USPSTF and AASLD/IDSA Guidance recommend screening for persons with history of intranasal drug use
- Consider HCV in people who smoke crack or crystal meth, especially if linked to sex (“chem-sex”)

How Long Can HCV Survive on Inanimate Objects?

HCV-contaminated solution needs to be heated for almost 90 seconds and reach temperatures of 144°F for the virus to be at undetectable levels.

Duration of Infection Drives Transmission Among PWUD

- Patients with chronic HCV infection are infectious until they are successfully treated
- To reduce viral transmission
  - Reduce number of contacts & probability of transmission per contact
    - Safe injection equipment
    - Regular testing within networks
  - Reduce duration that patient is infectious with HCV treatment
Likelihood of HCV Infection: Initiation and Duration of Injection Drug Use Matters

The Changing Face of Heroin Use in America

948,000

Americans reported heroin use in 2016

170,000

Americans started using heroin in 2016; nearly double the number of people than in 2006 (90,000)

US Overdose Deaths Involving Heroin: Number Among All Ages, 1999 – 2017

Source: Centers for Disease Control and Prevention, National Center for Health Statistics, Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Of the 1,118 acute HCV case reports that contained information about IDU, 68.6% (n = 767) indicated use of injection drugs.

Impact of the US Opioid Epidemic:
Opioid Overdose Deaths Increased from 2016 to 2017

Opioids were involved in 70,237 deaths in 2017 and the age-adjusted rate of overdose deaths increased significantly by 9.6% from 2016 to 2017.

Red indicates statistically significant increases from 2016 to 2017.
Available at: https://www.cdc.gov/drugoverdose/data/statedeaths.html. Accessed April 1, 2019.
Increasing Deaths Due to Opioids


CDC: Reported Number of Acute HCV Cases: United States, 2001–2017

Source: CDC, National Notifiable Diseases Surveillance System (NNDSS).
Natural History of HCV

HCV Infection

Acute Infection, 20-30% with symptoms

Clearance of HCV RNA, 15%-25%

Fulminant Hepatitis, Rare

Chronic Infection, 75%-85%

Extrahepatic Manifestations

Chronic Active Hepatitis

Cirrhosis, 10%-20% over 20 years

 Decompensated Cirrhosis, 5-year survival rate of 50%

HCC, 1%-4% per year

Chen & Morgan. 2006.
Chronic HCV Infection May Lead to Liver Disease and Liver Cancer

~75% of patients infected with HCV will develop a chronic infection

65% with chronic infection will develop chronic liver disease

HCV-associated liver disease is a frequent cause of death and has recently surpassed death from HIV in inmates
The Future of Chronic Hepatitis C

- Burden of HCV liver disease expected to triple in next 10 – 15 years
- Prevalence of cirrhosis 45% by 2030
- HCV deaths doubled 1999 – 2007 to current > 17,000 (projected peak 35,000/yr)
- Economic burden > $10 billion per year

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

Source: Center for Disease Control and Prevention.
Death certificate data from the National Center for Health Statistics.
Conclusions

• The prevalence of HCV infection in correctional institutions far exceeds prevalence in the community, although definitive numbers are hard to pinpoint

• Injection drug use is the most common risk factor for HCV transmission in correctional settings

• HIV transmission reduction interventions resulted in decreased incidence of HIV and HCV, but HCV is easier to transmit than HIV

• HCV and opioid injection use are increasing in parallel

• Untreated chronic HCV increases morbidity and mortality

• HCV care in inmates (particularly those who use drugs) is a significant issue that requires immediate attention
Screening, Diagnosis, and Linkage to Care
Bottleneck in HCV Cascade to Cure: Screening and Linkage to Care Remain Low

- Only 50% of patients living with HCV are aware
- 5 to 9% of patients living with HCV are cured

Low Screening and Linkage to Care Rates in the Prison Population

• Most HCV-infected inmates are unaware of their infection

• The US Preventive Services Task Force and the WHO recommend HCV testing in *all* inmates but this is *not universally* performed

• Transmission persists
  – > 90% of infected inmates are released, many are not treated
  – > 68% of inmates are reincarcerated within 3 years of release


Current HCV Testing in the Prison Setting

- A 2015 HCV management survey was administered to 57 members of the CCHA, representing 50 states
- 90% of the time HCV testing is performed
  - Routine opt-out testing is generally not conducted across the prison system
- Triggers for testing varied; very few prisoners were tested at intake (Figure)

HCV Screening Is Straightforward: Algorithm for Screening/Diagnosis of Asymptomatic Persons

- **Screening Test for Anti-HCV**
  - Negative: STOP
  - Positive: Test for Quantitative HCV RNA
    - Negative: Retest in 6 months
    - Positive: Refer for Management Plan

Hepatitis C Screening Update

New Draft USPSTF Recommendations

1. HCV screening in persons at high risk of infection
2. 1-time screening for HCV infection in adults ages 18 to 79 years. (B recommendation)

Is Reactive HCV Antibody Test a Diagnosis for Chronic HCV Infection?

• No! It’s a SCREENING test

• Some individuals become infected with HCV and then spontaneously clear the infection

• Approximately 15% – 25% of individuals clear the virus without treatment and do not develop chronic infection

• HCV RNA (viral load) is required to confirm chronic infection

HCV Screening/Treatment Recommendations

- Prisons should implement opt-out HCV testing
- Chronic HCV patients need antiviral therapy while incarcerated
- Upon release, patients should be provided linkage to community healthcare for surveillance for HCV-related complications

Recommendations for PWUD in Prisons

- Prisons should provide harm reduction and evidence-based treatment for underlying substance use disorder
- This prevents HCV reinfection and reduces the risk of progression of HCV-associated liver disease

Recent/active IDU should not be seen as contraindication to HCV therapy\(^1\)

EASL

Treatment should be prioritized in those at risk of transmitting HCV including active PWUD\(^2\)

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Detection of HCV Infection Should Result in Linkage to Care

- **Nonreactive**
  - No HCV antibody detected
  - STOP*

- **Reactive**
  - Reactive
    - HCV RNA
      - Not Detected
        - No current HCV infection
          - Additional testing as appropriate†
      - Detected
        - Current HCV infection
          - Link to care

Telemedicine-Based HCV Evaluation: An Example

**Entry**
- Two onsite patient education sessions
- HCV RNA +

**Patient Evaluation**

**Study Flow**
- HCV medications delivered to program
- Discussion with physician assistant
- Documentation in electronic health record

**HCV medications dispensed with methadone**

**Electronic bill submission**

Efficacy of Telemedicine in a Correctional Facility

- 180 inmates with chronic HCV were started on DAA therapy
- Patients were seen via telemedicine prior to starting therapy and for multiple “visits”
  - At each visit, compliance, tolerance, side effects, and response to therapy were assessed
- SVR12 data on GT1 patients who received ledipasvir/sofosbuvir with or without ribavirin (RBV) were 96%
  - Data similar to indigent (95%) and private clinic (93%) patients despite differences in age, gender, treatment experience, FIB-4, and use of RBV
- HCV treatment in the DOC by telemedicine with DAA is not only feasible but has a very high SVR12 similar to published trials

Continuum of Care in PWUD

The continuum of care for PWUD in Philadelphia 2013-17

- HCV Ab(+) Ever Tested for HCV RNA
- HCV RNA (+) Initiated HCV Care
- Treatment**

Younger (≤ 35) PWUD (N=1,239)
- HCV Ab(+): 81%
- Ever Tested for HCV RNA: 90%
- HCV RNA (+): 85%
- Initiated HCV Care: 29%
- Treatment**: 8%

Older (> 35) PWUD (N=1,151)
- HCV Ab(+): 90%
- Ever Tested for HCV RNA: 75%
- HCV RNA (+): 66%
- Initiated HCV Care: 41%
- Treatment**: 25%

Poor linkage to care and very low treatment rates, especially in younger PWUD

*In HCV Care = seeing a specialist or having another RNA > 180 days from 1st RNA result.
**Treatment = report that treatment initiated or the infection resolved.
Barriers Persist – Poor Access for Medicaid Patients in the US (Varies by State)

Rate of initiation of HCV therapy

\(< 50\% (n = 15)\)

\(50\% < 70\% (n = 6)\)

\(\geq 70\% (n = 8)\)

Impact of Care Coordination: Triple E Model

- CLDF designed a self-sustaining, comprehensive HCV education, screening and treatment model
- This program provided 4 important fundamentals to substance abuse centre sites:
  - Staff education
  - Patient education and counselling
  - Antibody (Ab) screening and secondary blood draw (if Ab positive)
  - Linkage to care: links patient directly hepatitis specialist (onsite or via telemedicine in areas where HCV providers are limited) and a CLDF healthcare provider for onsite counselling and management

Impact of Care Coordination: Triple E Model (cont’d)

- Patient screening and outcomes data
- 19 substance abuse centre sites involved

Results*

<table>
<thead>
<tr>
<th></th>
<th>Ab Screened</th>
<th>Ab Positive</th>
<th>Blood Draw Completed (on Ab Positive Patients)</th>
<th>Linked to Care (Patients who had Blood Drawn)</th>
<th>HCV RNA Detectable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Pts</td>
<td>1475</td>
<td>658</td>
<td>531</td>
<td>384</td>
<td>369</td>
</tr>
</tbody>
</table>

Impact of Care Coordination: Triple E Model (cont’d)

- HCV education, screening and effective linkage to care are necessary to effectively integrate these treatments into disease management
- Broadening the Triple E model could result in recovery center-focused eradication of HCV

Impact of Care Coordination

• RCT of patients attending ORT clinics in SF and NYC (N = 489)
• Intervention arm received onsite screening, education, counseling, and case management
• 59% HCV seropositive
• Intervention arm
  – ↑ Linkage to care
  – 6 month follow up
  – OR 4.1 (2.35 – 7.17)

OR, odds ratio; RCT, randomized controlled trial.
Accessing the Drug Involved Population Beyond the Conventional Healthcare Setting

• Accessing drug-involved persons at venues where they habitually congregate or receive treatment can potentially overcome the:
  – Stigmatization associated with HCV and
  – Reluctance to seek care within a conventional health care setting

Conclusions

- HCV screening and diagnosis is straightforward
- Screening and linkage to care remain low in incarcerated individuals
- Society guidelines recommend HCV screening and treatment in inmates
- HCV education, screening and effective linkage are necessary as part of the inmates treatment plan
Management and Treatment Update
Decrease in HCV-Related Mortality Coincides with the Introduction of Direct Acting Antivirals (DAA’s)

Direct-Acting Antivirals (DAA)

**NS3/4a protease:**
- simeprevir
- paritaprevir
- grazoprevir
- voxilaprevir
- glecaprevir

**NS5A replication complex:**
- ledipasvir
- ombitasvir
- daclatasvir
- velpatasvir

**NS5B polymerase:**
- sofosbuvir
- dasabuvir
- elbasvir
- pibrentasvir
Efficacy of Antiviral Therapy

Sustained Virologic Response (%)

- 5 – 19% for 24 wks
- 11 – 19% for 48 wks
- 10 – 22% for 78 wks
- 33 – 36% for IFN + RBV x 48 wks
- 42 – 52% for PegIFN + RBV x 48 wks
- 63 – 75% for BOC/TVR + PegIFN + RBV
- 92 – 100% for DAA 2015-2017
Baseline factors associated with all-cause mortality

- Older age
- GT 3 (2-fold increase in mortality and HCC)
- Higher fibrosis score
- Diabetes
- Severe alcohol use

*Median follow-up 8.4 years.
Impact of Antiviral Therapy (cont’d)

- Large-scale VA observational cohort studies
- Survival benefit and deceased HCC risk even in patients without advanced liver disease

FIB-4 ≤3.25
No cirrhosis
No decomp
No HCC
No OLT

\[(n=103,346)\]

Direct-Acting Antiviral HCV Regimens

- Choice of regimen, treatment duration, and use of ribavirin depends on several factors
  - Presence/absence of cirrhosis
  - Prior treatment experience
  - Genotype (1 – 6)

- All oral, virtually no side effects, no interferon
- Methadone/buprenorphine/naloxone are safe to use during therapy
Proportion of Prisoners with Known HCV Receiving Treatment

- Yale survey was administered to the directors of the DOC in all 50 US states
- Survey inquired about current HCV practices within state correctional facilities
- The overall number of inmates who were reported to have chronic HCV in the 41 reporting states was 106,266 prisoners
  - This corresponds to 10% of the overall prison population
- Among these inmates, < 1% (n = 949) received any form of HCV treatment on or about December 31, 2014

HCV-Infected Inmates (N = 106,266)

- Not Being Treated for HCV
- Being Treated for HCV

DOC, Department of Corrections.
At the state level, the median proportion of prisoners with known HCV being treated in 2015 was 0.45% (IQR: 0.12 – 1.48)

States with a high proportion of HCV-infected inmates did not treat more patients than states with a low proportion of infections

### Advantages of Administering DAA Treatments in Correctional Facilities

<table>
<thead>
<tr>
<th>Advantage</th>
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<tbody>
<tr>
<td>Increased efficacy</td>
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<tr>
<td>Reduced treatment duration</td>
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<tr>
<td>Standard of care in the community</td>
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<tr>
<td>Opportunity to decrease the epidemic of projected deaths from liver disease</td>
<td></td>
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<tr>
<td>Avoid overall high costs of advanced liver disease, cancers, and transplants</td>
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Treatment of Substance Use Disorders in HCV-Infected Inmates

- A 2015 HCV management survey was administered to 57 members of the CCHA, representing 50 states.

- Substance use disorder (SUD) treatment is needed in HCV-infected inmates, since this is an important cause of HCV infection.

- However, only 56% of jurisdictions provide SUD treatment for patients with HCV infection (Figure).

CCHA, Coalition of Correctional Health Authorities.
Improvements in Patient Reported Outcomes and Quality of Life in HCV-Treatment Patients with or Without ORT (cont’d)

- SVR results in improved PROs for 12 consecutive weeks after HCV treatment cessation (SVR-12)
- PRO improvements are more dramatic in patients on IFN/RBV-free regimens
- DAAs may have more dramatic positive effects in patients receiving ORT (A) than in those not receiving ORT (B) when compared to older regimens

Effect of Opiates on the Liver

Heroin
No hepatotoxicity
Street heroin may be contaminated with toxic substances (e.g., lead)

Methadone
No hepatotoxicity

Buprenorphine
Elevated transaminases possible
Anecdotal cases of liver failure

HCV Treatment in PWUD

- Treatment has no impact on ORT or increased drug use
- Drug use within 6 months of HCV therapy does not affect response
- *However*, more frequent drug use decreases HCV treatment efficacy

Social functioning and attendance are better indicators of treatment outcome; independently associated with SVR after adjusting for drug use

HCV Treatment in PWUD Is a Priority

- Real-world study results support DAA use in ORT patients
  - Including those with recent drug use
- Adherence and response in these patients is comparable to other HCV-infected populations
- Reducing HCV transmission means treating HCV in patients with recent (previous 6–12 months) or ongoing IDU
- Time from HCV infection to the development of cirrhosis among PWUD is 30–40 years; delaying treatment may prolong period of infectiousness and potential transmission
- International guidelines support the prioritization of HCV treatment among PWUD

ORT = Opioid Replacement Therapy.
HCV Treatment and Drug Use

- Prospective RCT in patients with high HCV treatment adherence despite drug use
- ~60% of patients had positive urine test for ≥ 1 of 8 drug classes
  - Amphetamines, barbiturates, benzodiazepines, cannabinoids, cocaine, opiates, phencyclidine, propoxyphene
- 6/18 (2%) with recurrent viremia had evidence of reinfection

SVR12 Rates Among Patients with High HCV Treatment Adherence

GT, genotype; RCT, randomized controlled trial.
• Patients on stable regimen of ORT

• Methadone vs. buprenorphine: No difference in antiviral efficacy, pharmacokinetics, no dose adjustments

• No difference in efficacy, adherence, adverse events vs. non-ORT

Adherence generally high but even missed doses and finishing late had little effect on SVR

HCV Treatment and ORT

• Post-hoc analyses focus on restricted PWUD populations
  – Small sample sizes, recent drug users were excluded

• However, these analyses provide important outcomes data

• Treatment of mild-to-moderate HCV in PWUD is more cost-effective than delaying treatment until cirrhosis develops

HCV Treatment in Patients Not Receiving ORT

- Patients with IDU history might *not* be receiving ORT, but *are* receiving HCV care
  - Treatment provided at hospital-based HCV clinics, drug treatment clinics, community health centers, and needle and syringe programs
- Real-world studies of DAA therapy in these patients demonstrate efficacy
  - 93 – 100% treatment completion
  - 80 – 96% SVR

Data on HCV Treatment in Patients Receiving and Not Receiving ORT: The ION Studies

- Stored blood samples tested for illicit drugs
  - 8% \((n = 70)\) of samples showed illicit, non-cannabis drug use by participants during therapy
- SVR12 stratified by treatment duration for participants receiving and not receiving ORT

Among people without drug use at the time of therapy initiation, subsequent illicit drug use during therapy did not have a major effect on SVR

Additional Data on HCV Treatment in Patients Not Receiving ORT:

- In a study of 174 participants with a history of IDU in the last year:\(^1\)
  - 63% cirrhosis, 37% treatment experienced, 58% genotype 1
  - 95% completed therapy
  - 93% achieved SVR
- Data strongly support DAA treatment in patients not on ORT with recent IDU:\(^2\)
- More data needed on PWUD who are not on ORT:\(^2\)

Improvements in Patient Reported Outcomes and Quality of Life in HCV-Treatment Patients with or Without ORT

- 8450 patients enrolled in phase 3 clinical trials of sofosbuvir
- PRO instruments completed before, during, and after treatment
  - 4.8% (407) were receiving ORT
- At baseline, ORT recipients had significantly ($P < .0001$) lower PRO scores (by -3.5 to -15.6 on a 0 – 100 scale)

Clinical Trials on Patient Reported Outcomes During HCV Treatment

A

PROs for the General Population Infected with HCV

- Fatigue: 55% improvement, 39% stability, 20% worsening
- Psychiatric Disorders: 45% improvement, 28% stability, 12% worsening

B

PROs for Persons with Substance Use Disorders Who Are Receiving ORT

- IFN+RBV+DAA+ regimen
  - Fatigue: 71% improvement
  - Psychiatric Disorders: 43% improvement
- IFN-/RBV+/DAA+ regimen
  - Fatigue: 65% improvement
  - Psychiatric Disorders: 27% improvement
- IFN-/RBV-/DAA+ regimen
  - Fatigue: 14% improvement

References:
Reinfection – It Will Happen

- Drug use persisted after cure but remained stable
- Reinfection more common early after SVR

\[\begin{align*}
5 \text{ reinfections (Part A: Through FW12)} &+ 1 \text{ reinfection (Part A: Through FW24)} &+ 4 \text{ reinfections (Part B: Through 36 months of follow-up)} = 10 \text{ reinfections per 100 person-years}
\end{align*}\]

<table>
<thead>
<tr>
<th>Description</th>
<th>Person-years</th>
<th>Reinfection rate (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All persons</td>
<td>564</td>
<td>1.8 reinfections per 100 person-years (0.8, 3.3)</td>
</tr>
<tr>
<td>Injection users</td>
<td>212</td>
<td>2.8 reinfections per 100 person-years (1.0, 6.2)</td>
</tr>
</tbody>
</table>

Conclusions

- Promising new direct-acting antiviral drug regimens offer the possibility of eradication of HCV
- Guidelines support the administration of HCV treatment among inmates
- SUD treatment is needed in HCV-infected inmates, since this is an important cause of HCV infection
- HCV treatment has no impact on ORT or increased drug use
- Drug use within 6 months of HCV therapy does not affect response
- Broadening the treatment of HCV in inmates will have an invaluable effect on public health
Conclusions
Overall Conclusions

- HCV testing and treatment have been historically uncommon in correctional facilities
- However, correctional facilities represent an important public health setting in which to test and treat for chronic HCV infection
- Lack of continuity of therapy lowers the likelihood of achieving a cure and could promote development of viral resistance
- Without systems to facilitate continuation of HCV therapy, correctional facilities may interfere with community HCV treatment efforts

Overcoming Barriers to Expand HCV Testing, Prevention Counseling and Treatment

- Appropriately trained staff are needed to screen inmates for HCV infection
- Trained staff are also needed to provide counseling on HCV prevention, linkage to care, and access to antiviral treatment
- The use of telemedicine allows for offsite providers to assist in these endeavors
- Telemedicine has been shown to be effective for the evaluation and treatment of chronic HCV in underserved settings