Perspectives on HCV Transmission among Persons Who Inject Drugs: The *Known*, the *New*, and the *Need*

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The Known
PWID acquire HCV rapidly after initiation of injection....

HCV is highly infectious (10x more than HIV)

Transmission through shared drug prep equipment in addition to needles/syringes

Time immediately following initiation is particularly risky

R₀ = β

Probability of transmission

C

Number of contacts

D

Duration of infectiousness

Time to HCV infection has lengthened but incidence remains high....

Basics of HCV prevention

\[ R_0 = \beta \cdot C \cdot D \]

- **\( R_0 \)**: Probability of transmission
- **\( \beta \)**: Number of contacts
- **\( C \)**: Duration of infectiousness

**HCV is highly infectious** (10x more than HIV)

Transmission through **shared drug prep equipment** in addition to needles/syringes

Time immediately following initiation is particularly **risky**

- Needle /syringe exchange programs (NSEP)
- Opioid substitution therapy (OST)
- Education / Outreach
- HCV Counseling and Testing

Large **reservoir** of HCV-infected PWID (~67% prevalence)
Current prevention strategies are **inadequate** for preventing HCV at a population level

![Graph showing RR for HCV infection with 95% CI]
Coverage is suboptimal

Mathers BM et al, Lancet 2010
Not reaching young PWID early enough to prevent HCV

Combination prevention may be more effective than any single intervention on its own

Hagan H et al, Clin Infect Dis 2014
The New
Changing face of injection drug use

Figure 1. Percentage of the Total Heroin-Dependent Sample That Used Heroin or a Prescription Opioid as Their First Opioid of Abuse

Cicero TJ et al, JAMA Psych 2014
Changing face of injection drug use

Figure 3. Racial Distribution of Respondents Expressed as Percentage of the Total Sample of Heroin Users

Cicero TJ et al, JAMA Psych 2014
Changing face of injection drug use

Figure 2. Sex Distribution of Respondents Expressed as Percentage of the Total Sample

Cicero TJ et al, JAMA Psych 2014
Shifts are being seen in rural and urban settings

*Any opioids include heroin and prescription opioids.*

Zibbell JE et al, MMWR 2015
The prevention package is also changing

\[ R_0 = \beta \]

- Probability of transmission

HCV is highly infectious (10x more than HIV)

- Number of contacts

Transmission through shared drug prep equipment in addition to needles/syringes

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- Duration of infectiousness

Large reservoir of HCV-infected PWID (~67% prevalence)

Needle /syringe exchange programs (NSEP)
Opioid substitution therapy (OST)
HCV Counseling and Testing
Education / Outreach

HCV Treatment as Prevention
The Need
Need a comprehensive approach to HCV prevention (and treatment)

Prevent infection
- Identify infected persons
- Expanded testing
  - Including HCV RNA
  - Integrate into existing venues
  - Outreach
  - Community mobilization

Link to care
- Disease staging
- Navigation / case management
- Care for comorbidities
- Adherence support
  - Directly observed therapy

Cure
- Navigation / case management
- Outcomes

Prevent Reinfection

Colocation of services will increase impact!
Example: Colocation of HIV, harm reduction and other services for PWID in India

**General medical care:** Glucose screening, blood pressure monitoring, doctor available for general health problems

**HCT:** rapid testing performed on-site; positive results confirmed at govt center

**Opioid substitution** (delivered either in Government hospital or NGO)

**TB Testing & Treatment**
- Sputum collected on site but tested in govt center
- TB drugs from DOTS program dispensed on-site

**Needle exchange**
Field-based & on-site

**STI syndromic management**
Government sponsored

**Counseling:** Individual & group/ substance use, alcohol, adherence, couples, family etc

**Condoms**

**ART:** delivered through a link model (ARVs provided by government but peer health worker picks up meds so clients can receive directly from ICC)

**HCV testing:** currently not covered by government
- External funding through NIH intramural to integrate HCV testing
- *Treatment will be initiated in some sites in 10/2015*
Co-location on its own may not be sufficient for some groups...

Education / outreach
Needle/syringe exchange
Opioid substitution

Disease staging
Navigation / case management
Care for comorbidities

Prevent infection
Identify infected persons
Link to care
Cure
Prevent Reinfection

Expanded testing
- Including HCV RNA
- Integrate into existing venues
Outreach
Community mobilization

Navigation / case management
Adherence support
Directly observed therapy
Need novel approaches to reach the hardest of the hard to reach

Who to target?
- Young new initiates into drug injection
- Young persons who use drugs (prior to initiation of drug injection ➔ prevent transitions into injection)

How?
- Network-based approaches
- Spatial targeting
- Field-based treatment
- Incentives
- Others?
Network-based approaches – harnessing the power of respondent-driven sampling
Network-based approaches for optimizing HCV treatment & prevention

Identify new infections & engage in care and treatment

Reduce risk of reinfection by treating all connections (reduce reservoir of HCV in a network)

Engage persons at risk for HCV in harm reduction, HCV testing, education

- HIV/HCV negative
- HCV only
- HIV & HCV positive
- HIV only
Networks of PWID: Still much to learn

- Is it enough to characterize the networks of just an index?
  - What if their partners have more partners?

- Stability of networks over time?
  - In-migration
  - Out-migration
Identifying **hotspots** of infection and providing targeted services
Need a comprehensive approach to HCV prevention (and treatment)

Prevent infection

Identify infected persons

Link to care

Cure

Prevent Reinfection

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Expanded testing
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Outreach
Community mobilization

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Adherence support
Directly observed therapy

Colocation of services will increase impact!
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