Injection Risk Behaviors and HCV Infection Among Young Opioid Injectors In New York City: A Challenge For HCV Elimination

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Background

•Nationwide, there is an expanding cohort of young (< 30 years of age), recently-initiated PWID linked to the current opioid epidemic.

•Incidence of acute HCV is increasing nationwide among PWID under age 30.

•Harm reduction efforts have led to major declines in HIV infection among PWID, but the effect on HCV has been markedly less pronounced.

•The threshold of risk reduction necessary to avoid HCV via the parenteral route is significantly higher than for HIV, due both to HCV's higher background prevalence in PWID populations and the hardiness of HCV.

•This new generation of young PWID is vulnerable to HCV and HIV infection through the use of non-sterile injection equipment which may undermine the feasibility of eliminating HIV in New York State by 2020.

Methods

- Participants were recruited using Respondent-Driven Sampling (RDS), a form of chain-referral sampling designed to engage hard-to-reach populations.
- Eligibility Criteria: opioid use (either nonmedical PO use or heroin use) in the past month; ages 18-29; live in New York City; speak English; and able to provide informed consent.
- Structured assessment queried: socio-demographics; age of initiation into use of various opioids and other drugs and drug injection; drug-use and injection practices; and overdose experiences.
- HIV and HCV status was assessed with rapid antibody testing
- Unless otherwise noted, this analysis is restricted to the 66% (353/539) of the total sample who reported ever injecting drugs or the 63% (337/539) who reported injecting in the past 12 months.

Characteristics of Lifetime Injectors (n=353)

- Mean Age: 24 (SD=3)
- Gender: Female: 34%; Male: 65%; Transgender: 1%
- Ever Homeless: 70%
- Race-Ethnicity
  - White: 73%
  - Latino/a: 19%
  - Non-White/Non-Latino/a: 8%
- Education
  - Some high school: 19%
  - High school diploma or GED: 38 %
  - Some college: 37%
- Annual Household Income while Growing Up:
  - $0-50,000: 36%
  - $51,000-100,000: 33%
  - >$101,000: 23%
  - Don't Know: 8%
- Ever Overdosed: 56%

Injection Risk Behavior (n=337)

- **Distributive Sharing (past 12 months)**
  - 51% distributed used syringes
    - 31% to 1-2 people
    - 20% to 3 or more people
- **Receptive Sharing (past 12 months)**
  - 40% injected with a non-sterile syringe
    - 33% received a non-sterile syringe from 1-2 people
    - 7% received a non-sterile syringe 3 or more people
- **Sharing Cookers (past 12 months)**
  - 59% shared cookers in the past year
    - 32% with 1-2 people
    - 27% with 3 or more people

HIV and HCV Prevalence

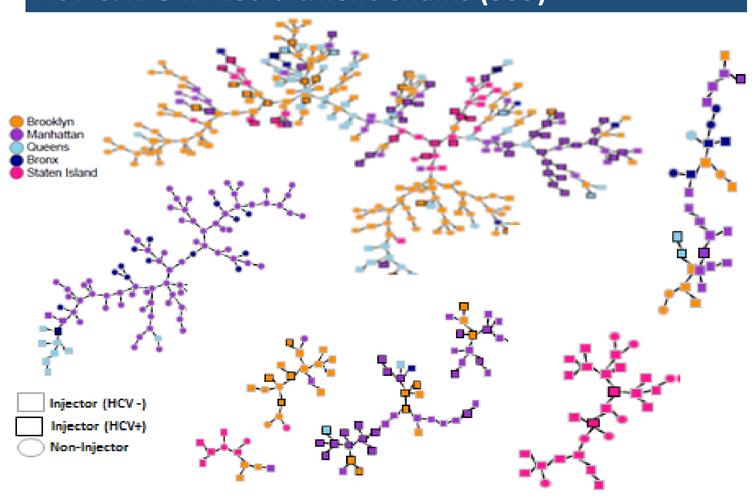
- 30% (n=105) of PWID tested HCV antibody-positive.
- 0.8 % (n=3) tested HIV antibody-positive.

HCV Antibody Status by Years of Injection (n=352)

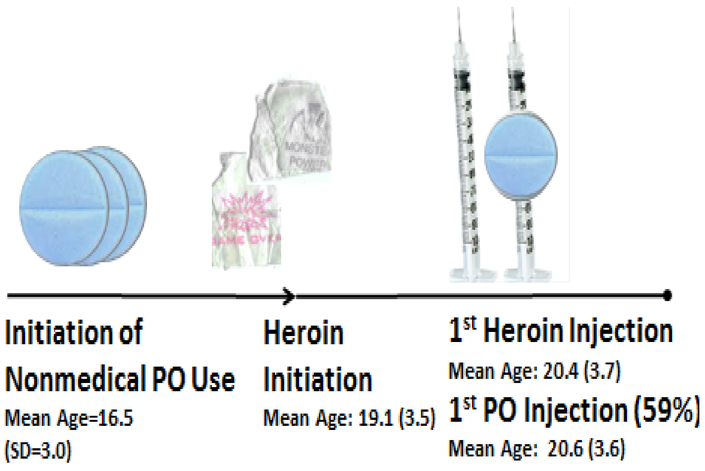
Years Injection	HCV-	HCV+	Prevalence	Incidence per 100 PY
< 1 year	42	0	0%	0
1 year	42	6	13%	13
2 years	37	10	21%	12
3 years	28	8	22%	8
4 years	29	6	17%	5
5 years	16	18	53%	14
6 years	17	8	32%	6
7 years	12	9	43%	8
8 yrs or more	25	39	61%	
Total	248	104	30%	9

Incidence = total # HCV positive/(total # injecting years for HCV- + 0.5* total # injecting years for HCV+). This equation assumes HCV occurs at the midpoint between drug injection initiation and the time of survey. Also assumes that those injecting for <1 year have been injecting for 0.5 years total.

HCV & IDU in Recruitment Chains (539)



Opioid Use Trajectory



Associations with HCV+ Status (MV, cont.)

Variable	HCV – n (%)	HCV + n (%)	OR (95% CI)	p value	AOR (95% CI)	p value
# PWID pts injected with (last 3 mos.)						
< 8	188(77)	49(48)	ref	ref	ref	ref
8+	57(23)	54(52)	3.63(2.23-5.92)	< 0.01	2.00(1.12-3.59)	0.020
Incarceration (lifetime)						
< 3 times	191(78)	49(48)	Ref	ref	Ref	ref
3 or more times	54(22)	54(52)	3.89(2.39-6.37)	< 0.01	2.45(1.38-4.35)	< 0.01
HCV status of recruiter and recruit(s) (max=4)						
All negative	177(71)	53(50)	Ref	ref	Ref	Ref
At least 1 positive	71(29)	52(49)	2.44(1.53-3.92)	< 0.01	1.34(0.75-2.40)	0.316
Number of Years Injecting						
0-3	149(60)	24(23)	Ref	ref	Ref	ref
4-6	62(25)	32(31)	3.20(1.75-5.88)	< 0.01	1.79(0.90-3.60)	0.101
7+	37(15)	48(46)	8.05(4.39-14.79)	< 0.01	3.98(1.96-8.27)	< 0.01

Association of Knowing PO Users Older than 29 with HCV+ Status

	Participants with one or more network member older than 29 years n (%)	Odds of being HCV+ Referent group = HCV- OR (95% CI)	p-value for OR
Network of All Prescription Opioid Users Known to Participant in NYC			
PWID Participants' Age Group	204 (59)	1.87 (1.15, 3.04)	0.01
18-21 years (n=68, 20%)	30 (44)	3.55 (0.83, 15.16)	0.09
22-25 years (n=138, 40%)	74 (54)	1.02 (0.98, 2.18)	0.9
26-29 years (n=142, 41%)	100 (70)	1.96 (0.90, 4.27)	0.09
Network of Prescription Opioid Users in NYC Whom Participant Has Seen in Past 30 Days			
PWID Participants' Age Group	170 (49)	1.92 (1.20, 3.06)	0.006
18-21 years	26 (38)	2.85 (0.72, 11.29)	0.1
18-24 years	57 (41)	1.30 (0.61, 2.77)	0.5
25-29 years	87 (61)	1.82 (0.89, 3.70)	0.1

Summary of Analysis

- In multivariable analysis, testing HCV-positive was associated with
  - lifetime homelessness;
  - injecting with 8 or more people in past 3 months;
  - having been incarcerated 3 or more times; and
  - injecting 7 or more years.
- In a separate analysis, knowing any opioid user(s) older than 29 was associated with testing HCV-positive.

Conclusions

- Many nonmedical PO users who transition to injection drug use engage in risky injection behavior.
- HCV prevalence among 18-29 y/o PWID in NYC is high. HIV prevalence is low but may increase.
- Young PWID are interconnected across boroughs and are connected to young opioid users who do not inject drugs.
- Network variables (injecting with a greater number of PWID, knowing older PWID) is associated with increased likelihood of being HCV+. As these young PWID get older, they may have more contact with HIV+ PWID, which could increase their risk of exposure to HIV.
- Harm reduction services should make concerted efforts to reach young PWID who may be unaware of syringe exchange services.
- Prevention efforts should aim to: a) prevent escalation of opioid use – in particular the transition to injection; b) expand early access to Medication-Assisted Treatment; c) increase awareness of safer injection practices and the HCV risk associated with sharing syringes and other injection paraphernalia.
- HCV testing and treatment needs to be expanded to young opioid users.

Associations with HCV+ Status (Multivariate)

Variable	HCV – n(%)	HCV + n(%)	OR (95% CI)	p value	AOR (95% CI)	p value
Homeless (lifetime)						
Never homeless	94(38)	11(11)	ref	ref	–	–
Ever homelessness	154(62)	93(89)	5.16(2.63-10.14)	< 0.01	2.09(1.00-4.67)	0.059
Overdose (lifetime)						
Never overdosed	124(51)	26(25)	Ref	ref	Ref	ref
Overdosed at least once	118(49)	79(75)	3.19(1.92-5.32)	< 0.01	1.58(0.87-2.92)	0.140
PO Injection (lifetime)						
Never injected POs	119(48)	26(25)	Ref	ref	Ref	ref
Ever Injected POs	129(52)	79(75)	2.80(1.69-4.66)	< 0.01	0.99(0.52-1.88)	0.989
Syringe-sharing (last 12 mos.)						
Never shared syringes	170(69)	50(48)	Ref	ref	Ref	ref
Shared with at least 1 person	77(31)	55(52)	2.42(1.52-3.88)	< 0.01	1.48(0.80-2.76)	0.211
Cooker-sharing (last 12 mos.)						
Never shared cookers	123(49)	28(27)	Ref	ref	Ref	ref
Shared with at least 1 person	124(50)	77(73)	2.72(1.66-4.49)	< 0.01	1.63(0.86-3.16)	0.136

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- NIDA R01DA041298 Accessible Care Intervention for Engaging PWID in HCV Care