Kirby Institute

Opioid Substitution Treatment Protects Against Hepatitis C Virus Acquisition in People Who Inject Drugs: The HITS-c Study

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The HITS-c Study

BACKGROUND

- Hepatitis C virus (HCV) highly prevalent among people who inject drugs (PWID) globally
- Among the estimated 15.9 million (range 11-21 million) PWID worldwide, approximately 10 million (range 6.0-15.2 million) estimated to be HCV antibody positive.
- Strong evidence of the effectiveness of opioid substitution therapy (OST) in reducing HIV transmission among PWID but less known about its impact on HCV transmission
- Despite increasing evidence of the protective effects of OST in combination with other interventions, a recent systematic review concluded there was insufficient evidence of the effectiveness of OST alone in preventing HCV infection in PWID

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BACKGROUND

- Good coverage of harm reduction initiatives among PWID in Australia
- Low and sustained HIV prevalence and incidence
- High HCV prevalence and incidence
  - 50%-60% of needle and syringe program (NSP) attendees nationwide test HCV Ab+ (1995-2014)
  - HCV incidence rate of 44.1/100 PY observed in a community-based cohort of PWID in South West Sydney (1999-2002)
- Decline in HCV infection at the population level over last decade but no recent data to assess whether this is related to increased prevention coverage or reduced risk among PWID.

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AIMS

- Estimate HCV incidence in the Hepatitis Incidence and Transmission Study – community (HITS-c)
- Identify risk and protective factors associated with incident infection, including NSP and OST (methadone/buprenorphine/suboxone).

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METHODS

- Field sites in 6 Sydney neighbourhoods selected following 10 months of ethnographic fieldwork
- Targeted outreach sampling (TOS) and respondent driven sampling (RDS) used to identify potentially eligible PWID
- Eligibility criteria for study screening:
  - Aged 16 years or older
  - Self-reported HCV antibody negative or unknown status
  - Injected drugs in the past 12 months

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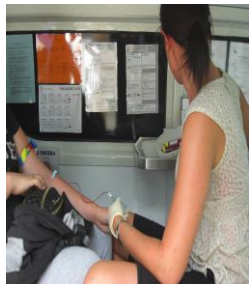
METHODS

- Followed-up every 3 months
- Interviewer-administered risk and serological assessments (including HCV Ab and RNA) every 24 weeks
- Study protocol by UNSW HREC.



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METHODS

- Data collected at screening and baseline visits on a range of demographic characteristics, injecting and sexual risk behaviour
- Composite variable was created to directly assess proportion of participants potentially eligible for, but not currently receiving, OST:
  - Reference: those specifying opioids as "main drug injected in the last 6 months" (predominantly heroin but also methadone, buprenorphine, morphine or oxycodone) and indicating "OST in the last 6 months"
  - Compared to: those who had mainly injected opioids and indicated no OST in the last six months, and those who had mainly injected a non-opioid drug and indicated no OST.

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METHODS: Incident case definition & data analysis

- Incident cases included participants who tested HCV Ab- at screening and were positive for HCV Ab and/or HCV RNA at a subsequent visit
- Date of infection estimated as the midpoint between last negative and first positive HCV Ab result
- Cumulative HCV incidence was estimated using the person-time method
- Parametric proportional hazards models used to assess baseline factors independently associated with HCV infection.

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Characteristics of PWID screened for HITS-c

	Oct 2011
Screened	268
Anti-HCV (%)	166 (37%)
Enrolled	156
Median age at enrolment (years)	27
Female (%)	24
Born in Australia (%)	79
CALD Background (%)	30
F/T work or study (%)	15
Lived 3+ places last 6 months (%)	37
Median age first injected (years)	20
Main drug injected - heroin (%)*	52
Daily or more frequent injection (%)*	23
Receptive syringe sharing*	14
Current drug treatment (%)	31
Prison last year (%)	20

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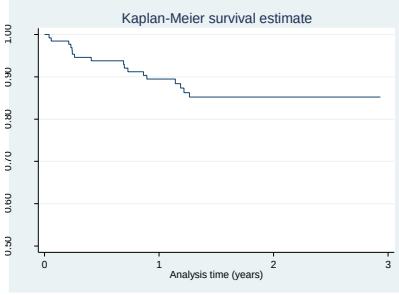
RESULTS: Survival curve for progression to primary HCV infection



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RESULTS: Annual incidence of primary HCV infection among HITS-c participants, 2008-2011 (n=129)

	PY at risk	Number of cases	Incidence/ 100 PY	95% CI
2009	59.9	6	10.0	4.5, 22.3
2010	88.7	6	6.8	3.0, 15.1
2011*	63.9	5	7.8	3.3, 18.8
Total**	215.2	17	7.9	4.9, 12.7

*2011 includes data to 31/10/ 2011; **Total includes 2.7 person-years at risk observed between 10 November and 31 December 2008

RESULTS: Adjusted associations between baseline factors and incident HCV infection among the HITS-c cohort, 2008-2011 (n=129)

	n	%	AHR	95% CI	p
Age					
≥27 years	66	6	1.00		
< 27 years	63	21	5.66	1.69, 18.95	0.005
Injecting frequency last 6 months					
<Daily	94	7	1.00		
≥Daily	32	31	4.06	1.15, 14.30	0.03
Receptive syringe sharing last 6 months					
No	109	11	1.00		
Yes	17	29	1.16	0.30, 4.55	0.83
Ethnic background					
Anglo-Australian	89	9	1.00		
CALD	40	23	2.19	0.71, 6.13	0.18
OST last 6 months					
Yes	50	18	1.00		
No OST & mainly injected heroin	30	59	5.64	1.30, 24.42	0.02
No OST & mainly injected other drugs	47	24	1.80	0.39, 8.24	0.45

OST Protects Against HCV in PWID: The HITS-c Study

CONCLUSIONS

- Incidence of HCV among PWID in Sydney has declined substantially over the last decade
- Incidence of HCV was 7.9/100py - substantially lower than the 30.8/100 py observed a decade previously in a similar cohort in urban Sydney
- Results consistent with international reports of declining HCV incidence among PWID in high income settings, including in The Netherlands and the United States
- Subsequent studies recently completed in Canada (VIDUS) and the US (UFO) report very similar effects: - 60% reduction in risk of incident HCV infection.

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CONCLUSIONS

- First community-based prospective cohort study to observe an independent protective effect of OST against HCV infection among heroin injectors not on OST
- Declining HCV incidence likely reflects:
  1. A decrease in the size of the PWID population, resulting from changes in the drug market and reduced initiation to injecting
  2. An increase in the number of Australians receiving OST, which has almost doubled since 1998 from 1.3 to 2.1 per 1,000 population
- These two factors – a decrease in the PWID population and a concurrent increase in OST coverage – are the likely key drivers of the lower incidence of HCV observed in the current study.

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CONCLUSIONS

- Other non-OST prevention and education initiatives, such as innovative health service delivery models, remain essential
- Despite recent advances in DAA therapies and the potential impact of these new agents on trends in HCV incidence, barriers to access and prohibitive costs mean that uptake by PWID is likely to remain low in the short to medium term.

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