

One-year injecting frequency trajectories as predictors of hepatitis C acquisition

Findings from an observational cohort of PWID in Montréal, Canada

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Background

- Injecting frequency is a well-established risk factor for HCV acquisition
- However, few studies have assessed frequency variations as predictors of HCV acquisition

Objectives

1. To identify one-year injecting frequency trajectories among PWID in Montréal, Canada
2. To examine the relation between injecting frequency trajectories and subsequent HCV acquisition

Bruneau et al. *Addiction* 2012. Judd et al. *JVH* 2005.
Miller et al. *Hepatology* 2002. Patrick et al. *CMAJ* 2001.

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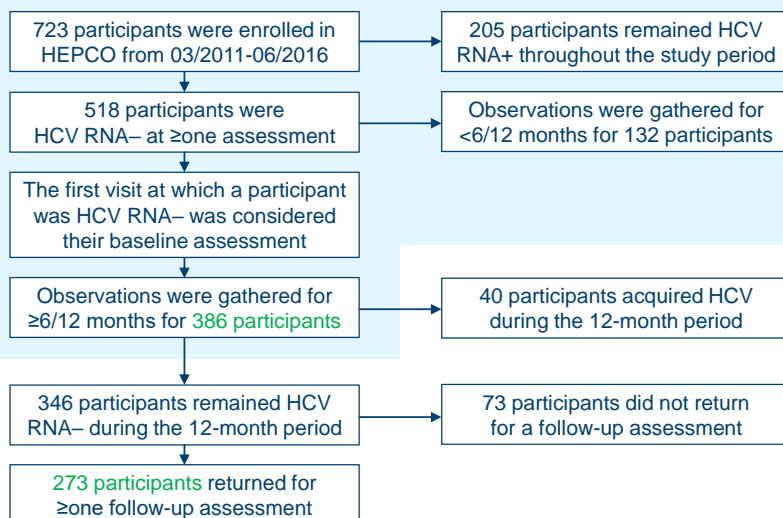
Methods

- **Participants:** HEPSCO cohort study (active PWID, follow-up ×3 months)
- **Variables of interest:**
 - Injecting frequency: no. of injecting days (0–30) for each of the past 3 months
 - HCV infection: HCV RNA+ and/or HCV antibody+ test following a negative one
- **Statistical analyses:**
 - Group-based trajectory modeling (TRAJ procedure in SAS)
 - Identification of trajectories of injecting frequency over a 12-month period
 - Estimation of the proportion of the population following each trajectory
 - Assignment to the most likely group using the max. posterior probability rule
 - Estimation of the HCV incidence according to trajectory groups
 - Graphical illustration of cumulative incidence according to trajectory groups

Nagin D. *Group-based modeling of development*. 2005: Harvard University Press.
Jones et al. *Sociological Methods & Research* 2001 & 2007.

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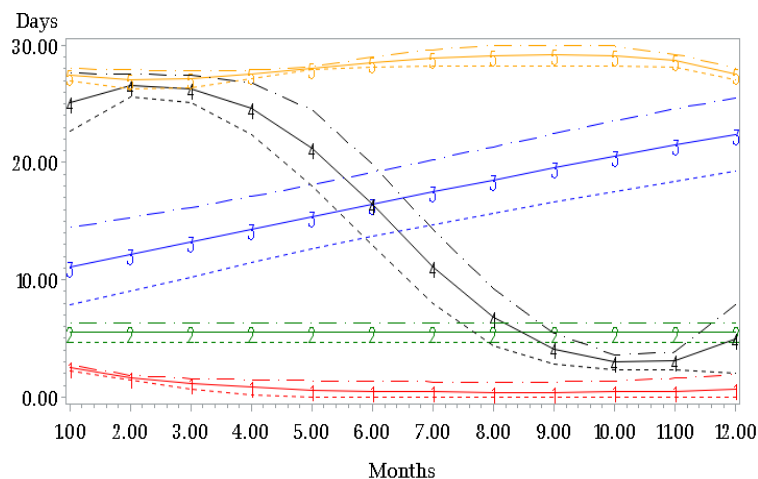
Inclusion criteria



Trajectory modelling analyses
HCV incidence analyses

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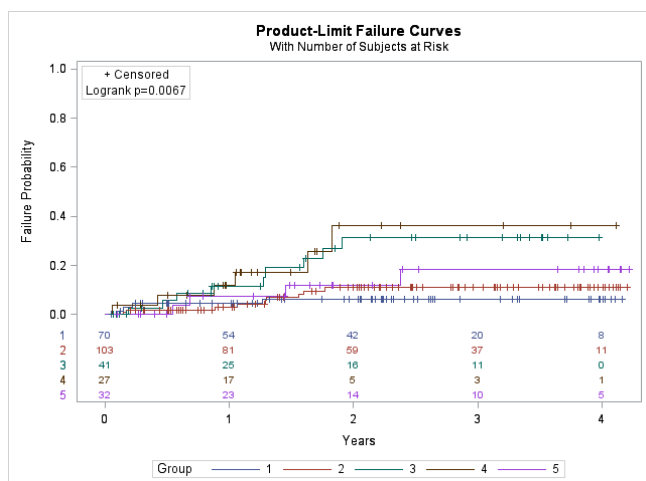
One-year injecting frequency trajectories Censored normal model



Trajectory group	Estimated probability (n=386)	Assigned group (n=273)
1. Sporadic injecting	26%	26% (n=70)
2. Infrequent injecting	34%	38% (n=103)
3. Increasing injecting	15%	15% (n=41)
4. Decreasing injecting	11%	10% (n=27)
5. Frequent injecting	13%	12% (n=32)

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HCV incidence according to injecting frequency trajectories



Trajectory group	HCV incidence (per 100 p-yrs)
1. Sporadic injecting	2.7 (95%CI 0.9-6.4)
2. Infrequent injecting	3.8 (95%CI 1.9-7.0)
3. Increasing injecting	12.1 (95%CI 5.9-22.2)
4. Decreasing injecting	15.6 (95%CI 6.3-32.5)
5. Frequent injecting	5.9 (95%CI 1.9-14.3)
Overall	5.7 (95%CI 3.9-7.9)

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Conclusions

- Trajectories with varying injecting frequencies (increasing & decreasing) were more likely to predict HCV acquisition than stable trajectories, including frequent injecting
- Short-term injecting trajectories could potentially be used as a tool to identify most-at-risk PWID and tailor clinical care and harm reduction referrals accordingly

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HEPCO Research Team

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 Adelina Artenie, PhD student
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Personnel

Participants



Thank you!

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Backup slides

Baseline characteristics

Characteristics, n (%)	Overall (n=273)	Sporadic injecting (n=70)	Infrequent injecting (n=103)	Increasing injecting (n=41)	Decreasing injecting (n=27)	Frequent injecting (n=32)	P
Age at baseline							
Mean (±SD)	41.2 (±10.0)	41.7 (±9.6)	42.9 (±9.8)	40.7 (±9.8)	38.0 (±10.8)	38.0 (±9.9)	0.08
Gender							
Female	47 (17)	10 (14)	16 (16)	9 (22)	3 (11)	9 (28)	0.33
Male	226 (83)	60 (86)	87 (84)	32 (78)	24 (89)	23 (72)	
Education							
Completed ≥ high school	177 (65)	47 (67)	64 (62)	24 (60)	19 (70)	23 (72)	0.74
Did not complete high school	95 (35)	23 (33)	39 (38)	16 (40)	8 (30)	9 (28)	
Housing stability past 3 months							
Stable	190 (70)	49 (70)	70 (68)	29 (71)	19 (70)	20 (63)	0.94
Unstable	83 (30)	21 (30)	33 (32)	12 (29)	8 (30)	12 (38)	
Incarceration past 3 months							
No	245 (90)	66 (94)	98 (95)	40 (98)	24 (89)	31 (97)	0.63
Yes	28 (10)	4 (6)	5 (5)	1 (2)	3 (11)	1 (3)	
Opioid IV past 3 months							
No	183 (67)	63 (90)	89 (86)	22 (54)	18 (67)	12 (38)	<.01
Yes	90 (33)	7 (10)	14 (14)	19 (46)	9 (33)	20 (63)	
Cocaine IV past 3 months							
No	133 (49)	61 (87)	43 (42)	13 (32)	16 (59)	10 (31)	<.01
Yes	140 (51)	9 (13)	60 (58)	28 (68)	11 (41)	22 (69)	
Amphetamine IV past 3 months							
No	261 (96)	70 (100)	100 (97)	39 (95)	26 (96)	30 (94)	0.21
Yes	12 (4)	0 (0)	3 (3)	2 (5)	1 (4)	2 (6)	
OST past 3 months							
No	167 (61)	46 (66)	64 (62)	20 (49)	10 (37)	16 (50)	0.05
Yes	106 (39)	24 (34)	39 (38)	21 (51)	17 (63)	16 (50)	
HCV antibody status							
Negative	126 (46)	33 (47)	51 (50)	13 (32)	15 (56)	14 (44)	0.29
Positive	147 (54)	37 (53)	52 (50)	28 (68)	12 (44)	18 (56)	

HCV infection in the first 12 months			
	<i>N</i>	<i>No. cases</i>	<i>Proportion</i>
Sporadic injecting	99	6	6%
Infrequent injecting	132	5	4%
Increasing injecting	61	11	18%
Decreasing injecting	44	11	25%
Frequent injecting	50	7	14%
Total	386	40	10%

HCV incidences			
	<i>N</i>	<i>No. cases</i>	<i>Incidence (per 100 p-yrs)</i>
Primary infection	126	11	4.3 (95%CI 2.2-7.4)
Reinfection	147	21	6.8 (95%CI 4.4-10.3)
Global	273	32	5.7 (95%CI 3.9-7.9)

	<i>Median</i>	<i>IQR</i>
Median follow-up time	24.0	11.0-39.5
Median no. of visits	9.0	4.0-12.0
Median time between consecutive visits	3.1	3.0-3.7

