Reinfection following successful HCV DAA therapy among people with recent injecting drug use: the SIMPLIFY and D3FEAT studies

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14 August, 2018

UNSW SYDNEY Kirby Institute

Disclosures

Nothing to disclose

Background/rationale

- There is a significant burden of hepatitis C virus infection among people who inject drugs globally[1]
- Treatment has been shown to be safe and effective in people who inject drugs
    - 94% SVR in SIMPLIFY and 91% in D3FEAT
- Reinfection following therapy has been one of the major concerns around scale up of HCV DAA treatment among people who inject drugs
- There is limited data on reinfection following HCV DAA therapy among people with ongoing injecting risk behaviours

[1]Grebely et al, 2018, Addiction

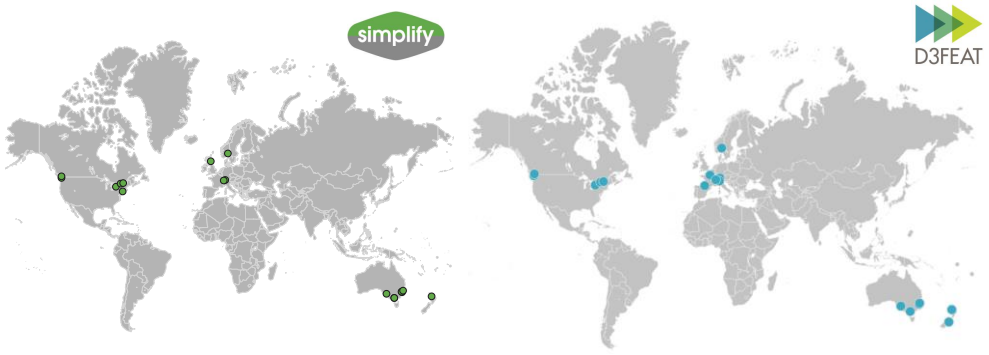
Aims

1. Assess the incidence of HCV reinfection, including stratification by key risk behaviours.

2. Investigate predictors of time to HCV reinfection

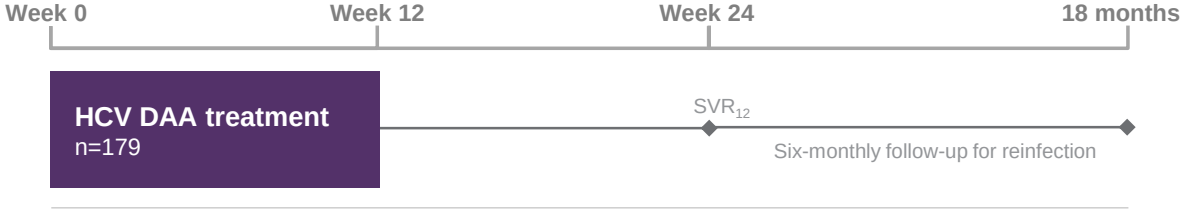
SIMPLIFY and D3FEAT study Design

- Investigator-initiated, Kirby/UNSW sponsored, international open-label trials
- 25 sites, 8 countries
- Study recruitment conducted through a network of drug and alcohol clinics, hospital clinics, and community clinics
- Participants enrolled between April 2016 and February 2017



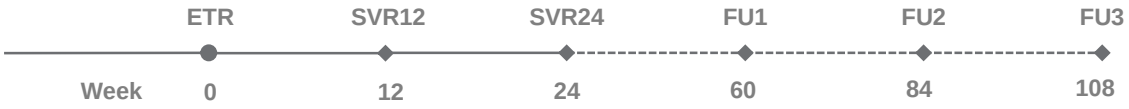
Study design and participant eligibility

- DAA treatment-naïve patients with GT1-6 chronic HCV infection (F0-4)
- Treated with sofosbuvir and velpatasvir (SIMPLIFY; n=97) or PrOD±RBV (D3FEAT; n=82)
- People with recent injecting drug use (past six months; SIMPLIFY) or people with either recent injecting drug use or currently on OST (D3FEAT)
- Participants with HIV and decompensated liver disease excluded



Reinfection

- Measured every 6 months following SVR24
  - Tested for HCV RNA
  - Complete follow-up questionnaire
- Reinfection assessed from end of treatment
  - Distinguished from relapse using viral sequencing



Study outcome and statistical analysis

Reinfection

- Quantifiable HCV RNA following HCV DAA therapy
  - Distinguished from HCV relapse using viral sequencing
- Rate calculated using person-time (cases per 100 person-years)

Participant characteristics

Characteristic	DAA treatment (12 weeks) N = 179
Female, n (%)	48 (27%)
Age, median years (25%, 75%)	48 (42, 54)
Current opioid substitution therapy, n (%)	108 (60%)
Injecting at EOT	
Any injecting drug use	97 (54%)
Daily or greater injecting	34 (19%)
Injecting following EOT	
Any injecting drug use	124 (69%)
Daily or greater injecting	52 (29%)
Heroin injecting	82 (46%)
Methamphetamine injecting	52 (29%)
Other opioid injecting	43 (24%)
Cocaine injecting	34 (19%)

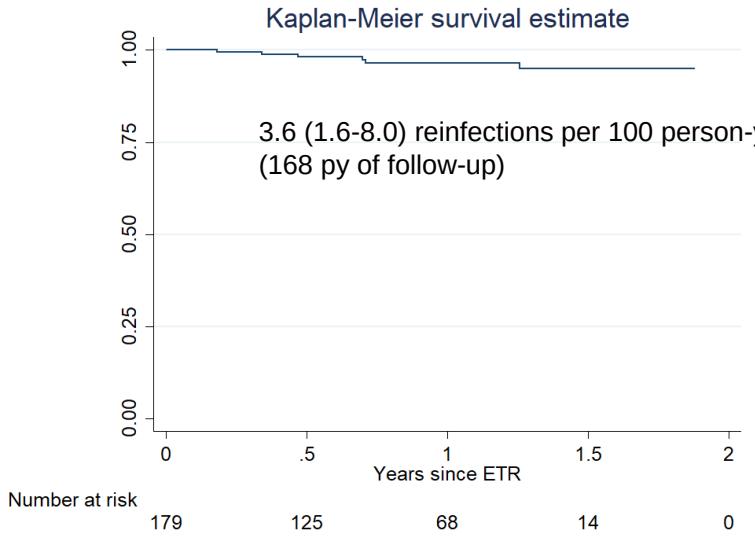
Reinfections

- Overall there were 9 cases of viral recurrence including 6 reinfections and 3 relapses

Risk behaviours post EOT

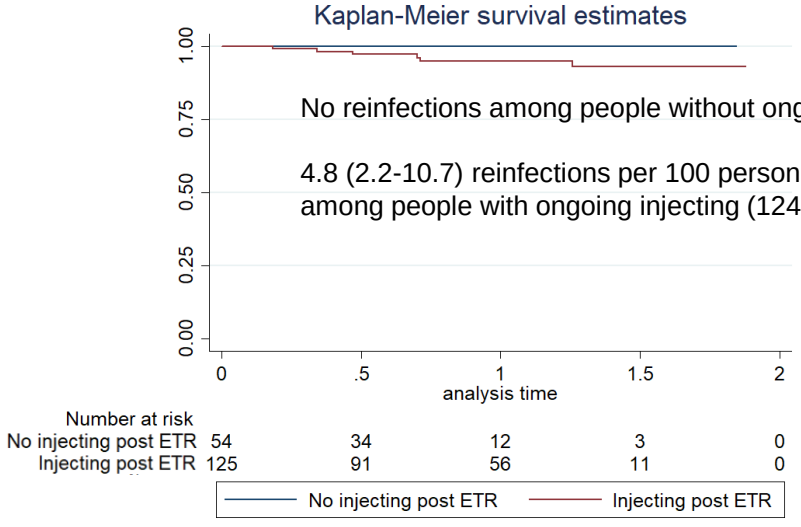
ID	Sex	Age	Country	Injecting drug use	Highest frequency	Main drug	Sharing needles
16	Male	36	Canada	Yes	≥daily	Morphine	No
27	Male	55	Canada	Yes	≥daily	Morphine	No
93	Male	41	Australia	Yes	≥daily	Heroin	No
98	Male	24	New Zealand	Yes	≥daily	Methamphetamine	No
59	Male	32	Switzerland	Yes	≥daily	Cocaine	Yes
87	Female	28	New Zealand	Yes	<daily >monthly	Morphine	Yes

Incidence of reinfection



3.6 (1.6-8.0) reinfections per 100 person-years
(168 py of follow-up)

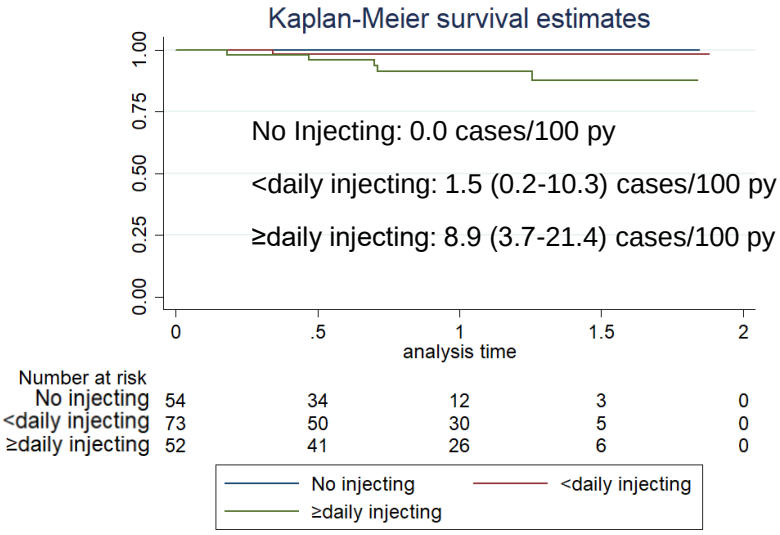
Incidence of reinfection



No reinfections among people without ongoing injecting

4.8 (2.2-10.7) reinfections per 100 person-years
among people with ongoing injecting (124 py of follow up)

Incidence of reinfection



Discussion

- Reinfection following successful HCV DAA therapy does occur
- All observed reinfections occurred among people with ongoing injecting after ETR
- Higher incidence of reinfection in those with more frequent injecting
- The incidence of reinfection is consistent with previously reported rates of reinfection in the interferon era
- DAA treatment has the potential to be used as an opportunity to encourage safe injection practices and uptake of harm reduction

Acknowledgements

SIMPLIFY and D3FEAT study participants

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SIMPLIFY study group

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